1019

CIGARETTE LABELING AND ADVERTISING—1965

HEARINGS

BEFORE THE

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE HOUSE OF REPRESENTATIVES

EIGHTY-NINTH CONGRESS

FIRST SESSION

ON

H.R. 2248

A BILL TO AMEND THE FEDERAL FOOD, DRUG, AND COSMETIC ACT SO AS TO MAKE THAT ACT APPLICABLE TO SMOKING PRODUCTS

H.R. 3014, H.R. 4007, H.R. 7051

BILLS TO REGULATE THE LABELING AND ADVERTISING OF CIGARETTES, AND FOR OTHER PURPOSES

H.R. 4244

A BILL TO PROVIDE THAT CIGARETTES SOLD IN INTERSTATE AND FOREIGN COMMERCE SHALL BE PACKAGED AND MARKED SO AS TO BEAR A WARNING THAT THEY MAY BE DANGEROUS TO HEALTH AND TO SHOW THE NICOTINE AND TAR CONTENT OF THE CIGARETTES IN EACH PACKAGE

APRIL 6, 7, 8, 9, 13, 14, 15, AND MAY 4, 1965

Serial No. 89–11

Printed for the use of the Committee on Interstate and Foreign Commerce

KSU LIBRARIES A11900 808189

KANSAS STATE UNIVERSITY LIBRARY MANHATTAN, KANSAS AUG 4 1967

AUTHENTICATED U.S. GOVERNMENT INFORMATION GPO

CIGARETTE LABELING AND ADVERTISING—1965

HEARINGS

BEFORE THE

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE HOUSE OF REPRESENTATIVES

EIGHTY-NINTH CONGRESS

FIRST SESSION

ON

H.R. 2248

A BILL TO AMEND THE FEDERAL FOOD, DRUG, AND COSMETIC ACT SO AS TO MAKE THAT ACT APPLICABLE TO SMOKING PRODUCTS

H.R. 3014, H.R. 4007, H.R. 7051

BILLS TO REGULATE THE LABELING AND ADVERTISING OF CIGARETTES, AND FOR OTHER PURPOSES

H.R. 4244

A BILL TO PROVIDE THAT CIGARETTES SOLD IN INTERSTATE AND FOREIGN COMMERCE SHALL BE PACKAGED AND MARKED SO AS TO BEAR A WARNING THAT THEY MAY BE DANGEROUS TO HEALTH AND TO SHOW THE NICOTINE AND TAR CONTENT OF THE CIGARETTES IN EACH PACKAGE

APRIL 6, 7, 8, 9, 13, 14, 15, AND MAY 4, 1965

Serial No. 89–11

Printed for the use of the
Committee on Interstate and Foreign Commerce

U.S. GOVERNMENT PRINTING OFFICE
48-824 WASHINGTON : 1965

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington, D.C., 20402 - Price $2.00

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE

OREN HARRIS, Arkansas, *Chairman*

HARLEY O. STAGGERS, West Virginia
WALTER ROGERS, Texas
SAMUEL N. FRIEDEL, Maryland
TORBERT H. MACDONALD, Massachusetts
JOHN JARMAN, Oklahoma
LEO W. O'BRIEN, New York
JOHN E. MOSS, California
JOHN D. DINGELL, Michigan
PAUL G. ROGERS, Florida
HORACE R. KORNEGAY, North Carolina
LIONEL VAN DEERLIN, California
J. J. PICKLE, Texas
FRED B. ROONEY, Pennsylvania
JOHN M. MURPHY, New York
DAVID E. SATTERFIELD III, Virginia
DANIEL J. RONAN, Illinois
J. OLIVA HUOT, New Hampshire
JAMES A. MACKAY, Georgia
JOHN J. GILLIGAN, Ohio
CHARLES P. FARNSLEY, Kentucky
JOHN BELL WILLIAMS, Mississippi

WILLIAM L. SPRINGER, Illinois
J. ARTHUR YOUNGER, California
SAMUEL L. DEVINE, Ohio
ANCHER NELSEN, Minnesota
HASTINGS KEITH, Massachusetts
WILLARD S. CURTIN, Pennsylvania
GLENN CUNNINGHAM, Nebraska
JAMES T. BROYHILL, North Carolina
JAMES HARVEY, Michigan
TIM LEE CARTER, Kentucky
HOWARD H. CALLAWAY, Georgia

W. E. WILLIAMSON, *Clerk*
KENNETH J. PAINTER, *Assistant Clerk*

Professional Staff

ANDREW STEVENSON
KURT BORCHARDT
JAMES M. MENGER, Jr.
WILLIAM J. DIXON

CONTENTS

	Page
Hearings held on—	
April 6, 1965	1
April 7, 1965	61
April 8, 1965	89
April 9, 1965	111
April 13, 1965	221
April 14, 1965	307
April 15, 1965	337
May 4, 1965	421
Text of—	
H.R. 2248	3
H.R. 3014	4
H.R. 4007	6
H.R. 4244	7
H.R. 7051	8
Report of—	
Commerce Department on H.R. 3014, H.R. 4007, and H.R. 4244	14
Health, Education, and Welfare Department on H.R. 3014, H.R. 4244, and H.R. 4007	10
Justice Department on H.R. 3014, H.R. 4007, and H.R. 4244	17
Treasury Department on H.R. 3014	17
Statement of—	
Auerbach, Dr. Oscar, senior medical investigator, Veterans' Administration Hospital, East Orange, N.J	250
Bass, Frank M., professor of industrial administration, Purdue University	401
Brownlee, K. Alexander, professor of statistics, University of Chicago	393
Buffington, J. V., administrative assistant to the Chairman, Federal Trade Commission	36, 61, 90
Chelf, Hon. Frank, a Representative in Congress from the State of Kentucky	33
Crissy, William J. E., professor of marketing and associate dean, Graduate School of Business Administration, Michigan State University	358
Dalrymple, Dr. Willard, director of university health services, Princeton University	202
Dixon, Hon. Paul Rand, Chairman, Federal Trade Commission	36, 61, 90
Downs, Fred, attorney, Bureau of Deceptive Practices, Federal Trade Commission	36, 61, 90
Ellenbogen, Theodore, Acting Assistant, General Counsel for Legislation, Department of Health, Education, and Welfare	111, 158
Fino, Hon. Paul A., a Representative in Congress from the State of New York	18
Foote, Emerson, chairman, National Interagency Council on Smoking and Health	221
Gray, Bowman, chairman of the board, R. J. Reynolds Tobacco Co	281
Hoffman, Joseph, Cigarette Advertising Code	421
Horn, Dr. Daniel, Chief, Special Projects Section, Cancer Control Program, Public Health Service, Department of Health, Education, and Welfare	111, 158
Hundley, Dr. James, Assistant Surgeon General for Operations, Public Health Service, Department of Health, Education, and Welfare	111, 158
Kornegay, Hon. Horace R., a Representative in Congress from the State of North Carolina	445
Lennon, Hon. Alton, a Representative in Congress from the State of North Carolina	32

Statement of—Continued Page
Mayer, Dr. John H., Jr., thoracic surgeon 441
Meyner, Hon. Robert B., administrator, Cigarette Advertising Code 421
Moran, Dr. Thomas J., pathologist 307
Ober, Dr. William B., pathologist and director of laboratories, Knickerbocker Hospital, New York, N.Y. 337
Ramm, H. H., vice president and general counsel, R. J. Reynolds Tobacco Co. 281
Royster, Fred S., managing director, Bright Belt Warehouse Association 435
Saiger, Dr. George L., consultant in medical research 410
Sprunt, Dr. Douglas H., chairman, Department of pathology, University of Tennessee 326
Svestka, Miroslav J., Washington, D.C. 263
Sweeney, Charles, Chief, Division of Food and Drug Advertising, Bureau of Deceptive Practices, Federal Trade Commission 36, 61, 90
Terry, Dr. Luther L., Surgeon General, Public Health Service, Department of Health, Education, and Welfare 111, 158
Udall, Hon. Morris K., a Representative in Congress from the State of Arizona 23
Wheelock, John, Executive Director, Federal Trade Commission 36, 61, 90
Williams, Dr. Ashbel C., chairman, medical and scientific committee, board of directors, American Cancer Society 207
Additional information submitted for the record by—
American Association for Health, Physical Education, and Recreation:
Letter from John H. Cooper, assistant executive secretary and consultant on school health 704
Resolution of 705
Statement of 706
American Association for Thoracic Surgery, letter from Dr. Henry T. Bahnson, transmitting resolution 696
American Cancer Society:
Cigarette smoking, a serious health hazard? (Positions of medical and scientific organizations) 211–216
Letters from Dr. Harold S. Diehl 710, 711
Telegram from Dr. Gray H. Twombly, president, New York division 710
American Dental Association, statement of 702
American Newspaper Publishers Association, letter from Stanford Smith, general manager 375
American Pharmaceutical Association, letter from William S. Apple, executive director 695
American Public Health Association, statement of Dr. Morton L. Levin, chief, Department of Epidemiology, Roswell Park Memorial Institute 384
Barrett, Dr. Raymond J.:
Bibliography 536
Curriculum vitae 536
Statement of 531
Brownlee, K. Alexander, publications of 400
Burford, Dr. Thomas H.:
Curriculum vitae 614
Publications 615
Statement of 612
Carnes, Dr. William H.:
Bibliography 678
Curriculum vitae 677
Statement of 674
Carr, Dr. David T., letter from 707
Carr, Dr. Duane:
Bibliography 522
Biographical data 521
Statement of 518
Clerf, Dr. Louis H.:
Contributions to medical literature 595
Contributions to textbooks 599
Curriculum vitae 594
Statement of 591

Additional information submitted for the record by—Continued
Page
Colorado Tuberculosis Association, letter from Ronald A. Miller, executive director 703
Connecticut Health League, letter from Milton Geyer, president 694
Council for Tobacco Research, U.S.A.:
Institutional recipients of grants from 463
Public symposia in which participated 487
Published reports on research supported in whole or in part by 466
Statement of 455
Distinctive Advertising Service, letter from John W. Flanigan 701
Donnahoe, Alan S., statement of 537
Farnsley, Hon. Charles P., newspaper articles 180–182, 247–249
Farris, Dr. Jack M.:
Bibliography 589
Curriculum vitae 589
Statement of 587
Federal Trade Commission:
Section 5 of the Federal Trade Commission Act 48
Statement of Hon. Paul Rand Dixon before Senate Committee on Commerce 43
Trade regulation rule for the prevention of unfair or deceptive advertising and labeling of cigarettes in relation to the health hazards of smoking 41
Fontana, Dr. Robert S., letter from 708
Garland, Dr. L. Henry:
Bibliography 556
Biographical data 556
Statement of 554
Greene, Dr. Harry S.N.:
Bibliography 507
Curriculum vitae 506
Statement of 504
Greer, Dr. Alvis E.:
Personal and professional summary 552
Publications 553
Statement of 550
Health, Education, and Welfare Department:
Cancer control program—Remedial action statements: Part of a national study on smoking behavior and attitudes, by Daniel Horn and Selwyn Waingrow 117
Status of the law and the question of causation in cigarette-cancer cases (memorandum) 177
Helwig, Dr. Ferdinand C.:
Bibliography 668
Curriculum vitae 668
Statement of 665
Hickam, Dr. John B., letter from 375
Hockett, Dr. Robert Casad, statement of 447
Huff, Darrell:
Biographical data 503
Statement of 498
James, Dr. George, commissioner of health, New York City Health Department, statement of 389
Jenkins, Dr. Daniel E.:
Curriculum vitae 379
Publications 379
The respiratory system, chart and explanation 382, 383
Johnson City (Tenn.) Press-Chronicle, letter from Carl A. Jones, publisher 694
Kaplan, Dr. Sherman:
Biographical data 497
Statement of 495
Katz, Dr. Leo:
Publications 649
Reviews 650
Statement of 646
Vitae 648
Kennedy, John J., chairman, department of marketing, University of Notre Dame, statement of 547
Kornegay, Hon. Horace R.: Figures on Italian cigarette advertising 302

Additional information submitted for the record by—Continued

	Page
Langston, Dr. Hiram:	
Bibliography	584
Biographical data	583
Statement of	580
Levin, Dr. Morton L., curriculum vitae	388
Little, Dr. Clarence Cook:	
Curriculum vitae	546
Statement of	542
Louisiana State Board of Health, telegram from Dr. T. N. Armistead, State health officer	693
Louisiana State Medical Society, telegram from Dr. C. Grenes Cole, secretary-treasurer	693
Lucas, Dr. Darrell B., statement of	686
Macdonald, Dr. Ian:	
Biographic data	528
Publications	528
Statement of	523
McMahon, Dr. Henry Easton, statement of	453
Magazine Publishers Association, Inc., statement of John K. Herbert, president	388
Miller, Dr. Alden H.:	
Bibliography	661
Curriculum vitae	660
Statement of	651
Moran, Dr. Thomas J.:	
Bibliography	315
Curriculum vitae	314
National Association of Broadcasters, statement of Vincent T. Wasilewski, president	698
National Congress of Parents and Teachers:	
Resolution adopted in—	
1963	709
1964	710
Statement of	708
National Editorial Association, letter from Theodore A. Serrill, executive vice president	700
National Interagency Council on Smoking and Health, petition of	222
National Tuberculosis Association, statement of Dr. Daniel E. Jenkins	377
New York State Department of Health, letter from Dr. George E. Moore	693
Ober, Dr. William B.:	
Curriculum vitae	343
Letter from	357
List of publications	344
Ogura, Dr. Joseph H.:	
Curriculum vitae	653
Publications	654
Statement of	651
Pennsylvania Department of Health, letter from Dr. C. L. Wilbar, Jr., secretary of health	692
R. J. Reynolds Tobacco Co.:	
Cigarette Advertising Code	287
Letter from Bowman Gray	304
Rappaport, Dr. Israel, statement of	513
Rigdon, Dr. R. H.:	
Biographical data	602
Publications	603
Statement of	599
Rosenblatt, Dr. Milton B.:	
Curriculum vitae	644
Publications	644
Statement of	624
Russek, Dr. Henry I.:	
Curriculum vitae	684
Publications in the cardiovascular field	685
Statement of	681

Additional information submitted for the record by—Continued

	Page
Sachs, Dr. Bernice C.:	
Curriculum vitae	513
Statement of	510
Saiger, Dr. George L., curriculum vitae	415
San Juan Basin (Colo.) Health Unit, letter from Mrs. Robert L. McKenna, vice chairman, board of health	703
Sisson, Dr. George A.:	
Curriculum vitae	657
Publications	658
Statement of	651
Sommers, Dr. Sheldon C.:	
Published articles	563
Statement of	561
South Carolina Department of Agriculture, letter from William L. Harrelson, commissioner of agriculture	701
Sprunt, Dr. Douglas H.:	
Curriculum vitae	330
Publications of	330
Sterling, Dr. Theodor D.:	
Bibliography	578
Biographical information	569
Statement of	569
Svestka, Miroslav J.: Condensed abstract from the unpublished study, "Death, Smoking, and Reason"	271
Tabb, Dr. Harold G.:	
Bibliography	660
Curriculum vitae	659
Statement of	651
Tobacco Workers International Union, statement of John O'Hare, president, and R. J. Petree, secretary-treasurer	697
Udall, Hon. Morris K.: Newsletter, November 15, 1963	24
Wilens, Dr. Sigmund L.:	
Curriculum vitae	663
Publications	664
Statement of	662
Winick, Dr. Charles, statement of	689
Wolffe, Dr. Joseph B.:	
Biographical data	621
Publications	622
Statement of	618

CIGARETTE LABELING AND ADVERTISING—1965

TUESDAY, APRIL 6, 1965

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to notice, at 10 a.m., in room 2123, Rayburn House Office Building, Hon. Oren Harris (chairman) presiding.

The CHAIRMAN. The committee will come to order. This morning the committee has assembled for hearings on a number of bills dealing with cigarettes. In general the bills referred to the committee relate to the labeling of cigarettes. In some instances they deal with the authority of the Federal agencies to control the content of the advertising of cigarettes.

It will be recalled that last year the Federal Trade Commission issued a trade practice rule providing that it would be an unfair and deceptive act or practice within the meaning of section 5 of the Federal Trade Commission Act to fail to disclose clearly and prominently on all advertising and on every pack or other container in which cigarettes are sold to the consuming public that cigarette smoking is dangerous to health and may cause death from cancer and other diseases.

During the last Congress the committee conducted hearings for a total of 5 days, I believe. At that time, we did not complete the hearings.

Pursuant to the direction of the committee at that time, I asked the Federal Trade Commission to defer the effective date of this proposed rule applicable to cigarette labeling until July 1 of this year. This was for the purpose of giving the committee a further opportunity to go into the problem and develop it fully. This request was transmitted to the Federal Trade Commission on August 19 last year. In a letter to the Commission I pointed out that testimony which we had received indicated that the validity of the trade regulation rule would be challenged in the courts, and that judicial review could delay the enforcement of labeling requirements for a considerable period of time, and that the enactment of the legislation in this area by the Congress could very well eliminate this delay.

There was a great deal of discussion of this problem during the 5-day hearing before the committee.

It was also pointed out in the letter that the closing days of the session of Congress would not permit sufficient time for further hearings and for the preparation and consideration of carefully drawn legislation in this field, recognizing, of course, that it is highly technical, it is a sensitive area to deal with, and in many instances highly emotional.

Pursuant to this request the Commission promptly met and agreed to postpone the effective date of its order as applicable to labeling to July 1, 1965.

I want to take this occasion to compliment the Commission for its willingness to cooperate with the committee. I fully realize, as we all know in our experience, that these regulatory commissions have broad and important jurisdiction. The Congress, of necessity, gives them jurisdiction, and sometimes I cannot help but think that probably, in my opinion at least, some of these commissions attempt to reach beyond the scope of what was intended. Because of this, it appears to me a very good procedure to have this kind of cooperation, and I am gratified that the Commission so readily agreed.

Mr. Chairman, I compliment you for it and want to thank you for it. After all, you are an arm of the Congress, and any action of yours is the result of Congress setting up your agency for a given purpose, a purpose that this Congress cannot actually, from a practical viewpoint, accomplish itself through legislation.

Recognizing the importance and the emotions that go with a problem of this kind, I think you are to be commended for your willingness to cooperate and give an opportunity for these matters to be heard in the usual and regular way.

Now, since that time, there has been some activity in some of the State legislatures, as I understand it, designed to deal with the advertising of cigarettes. Proposals have been made in addition that manufacturers of cigarettes voluntarily refrain from advertising their products on radio and television. It is also noted that a grant has been made to the American Medical Association of about $10 million to conduct research into medical problems associated with the use of tobacco.

Appropriations have been requested by the executive branch of the Government for funds to conduct an educational program with respect to smoking.

Our responsibilities make it important that we do look into these questions, not only because of the impact on interstate commerce, but also because it is contended that this problem vitally affects the public health of our country.

The Surgeon General's report last year stated that cigarette smoking is a health hazard. Some have challenged the statement. Tobacco is manufactured in 21 States. There are over 500 industries in which nearly 100,000 people are employed in 30 States engaged in the manufacture of tobacco products. There are 1.5 million businesses in this country that share in the tobacco trade. In 1963 there were 70 million American who bought tobacco products at a cost of some $8 billion. Over $2 billion of this sum went to the Federal Government in taxes, and over $1 billion went to State governments and municipalities.

So this problem does have far-reaching consequences. It is therefore our intention in resuming these hearings to carry out what the committee intended to do last year; namely, to develop fully this record, and to give the committee the opportunity to take whatever action, if any, it desires to take in this field.

We therefore intend to go into all these problems, giving full opportunity for the facts to be developed for the record.

I want to state that the hearings last year will be incorporated in the record by reference. The bills that are pending, some of them sim-

ilar to certain bills that we had before us last year before the committee, will be included in the record at this point, and any and all agency reports that we have received will likewise be included in the record.

(The bills and documents referred to follow:)

[H.R. 2248, 89th Cong., 1st sess.]

A BILL to amend the Federal Food, Drug, aand Cosmetic Act so as to make that Act applicable to smoking products

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That section 201 of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 321) is amended by adding at the end thereof the following:

"(v) The term 'smoking product' means any cigarette, made with tobacco or any other substance, cigar made with tobacco or other substance, or tobacco or any other substance intended for smoking in a pipe."

SEC. 2. The Federal Food, Drug, and Cosmetic Act is further amended by inserting immediately after chapter VI the following new chapter:

"CHAPTER VIA—SMOKING PRODUCTS

"ADULTERATED SMOKING PRODUCTS

"SEC. 651. A smoking product shall be deemed to be adulterated—

"(1) if it bears or contains any poisonous or deleterious substance which may render it injurious to users under customary or usual conditions of use;

"(2) if it consists in whole or in part of any filthy, putrid, or decomposed substance;

"(3) if it has been prepared, packed, or held under unsanitary conditions whereby it may have been contaminated or whereby it may have been rendered injurious to health; or

"(4) if its container is composed, in whole or in part, of any poisonous or deleterious substance which may render the contents injurious to health.

"MISBRANDED SMOKING PRODUCTS

"SEC. 652. A smoking product shall be deemed to be misbranded—

"(1) if its label is false or misleading in any partciular;

"(2) if in package form unless it bears a label containing (A) the name and places of business of the manufacturer, packer, or distributor; and (B) an accurate statement of the contents in terms of weight, measure, or numerical count, except that under this clause (B) reasonable variation shall be permitted, and exemptions as to small packages may be established by regulations prescribed by the Secretary;

"(3) if any word, statement, or other information required by or under authority of this Act to appear on the label or labeling is not prominently placed thereon with such conspicuousness (as compared with other words, statements, designs, or devices, in the labeling) and in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use; or

"(4) if its container is so made, formed, or filled as to be misleading.

"REGULATIONS MAKING EXEMPTIONS

"SEC. 653. The Secretary shall promulgate regulations exempting from any labeling requirements of this Act smoking products which are, in accordance with the practice of the trade, to be processed, labeled, or repacked in substantial quantities at establishments other than those where originally processed or packed under conditions that such smoking products are not adulterated or misbranded under the provisions of this Act upon removal from such processing, labeling, or repacking establishment."

SEC. 3. Chapter III of the Federal Food, Drug, and Cosmetic Act is amended by striking out "food, drug, device, or cosmetic" each place where it appears therein and inserting in lieu thereof "food, drug, device, cosmetic, or smoking product".

SEC. 4. (a) Section 702(b) of the Federal Food, Drug, and Cosmetic Act is amended by striking out "food, drug, or costmetic" and inserting in lieu thereof "food, drug, cosmetic, or smoking product".

(b) Section 703 of such Act is amended by striking out "food, drugs, devices, or cosmetics" both places where it appears therein and inserting in lieu thereof "food, drugs, devices, cosmetics, or smoking products", and by striking out "food, drug, device, or cosmetic" both places where it appears therein and inserting in lieu thereof "food, drug, device, cosmetic, or smoking product".

(c) Section 704(a) of such Act is amended by striking out "food, drugs, devices, or cosmetics" both places where it appears therein and inserting in lieu thereof "food, drugs, devices, cosmetics, or smoking products".

(d) Section 704(b) of such Act is amended by striking out "food, drug, device, or cosmetic" and inserting in lieu thereof "food, drug, device, cosmetic, or smoking product".

(e) Section 705(b) of such Act is amended by striking out "food, drugs, devices, or cosmetics" and inserting in lieu thereof "food, drugs, devices, cosmetics, or smoking products".

(f) Section 801(a) of such Act is amended by striking out "food, drugs, devices, and cosmetics" and inserting in lieu thereof "food, drugs, devices, cosmetics, and smoking products".

(g) Section 801(b) of such Act is amended by striking out "food, drug, device, or cosmetic" and inserting in lieu thereof "food, drug, device, cosmetic, or smoking product".

(h) Section 801(d) of such Act is amended by striking out "food, drug, device, or cosmetic" and inserting in lieu thereof "food, drug, device, cosmetic, or smoking product".

SEC. 5. The amendments made by this Act shall apply with respect to all smoking products manufactured after the ———— day after the date of enactment of this Act.

[H.R. 3014, 89th Cong., 1st sess.]

A BILL To regulate the labeling and advertising of cigarettes, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Federal Cigarette Labeling and Advertising Act".

FINDINGS

SEC. 2. The Congress hereby makes the following findings:

(a) A Federal program dealing with cigarette labeling and advertising is desirable to provide national uniformity in labeling and advertising requirements for the cigarette industry.

(b) The production, processing and distribution of cigarettes, the employment directly and indirectly resulting therefrom, and the revenues derived from taxes imposed thereon, affect commerce and the national economy.

DECLARATION OF POLICY

SEC. 3. It is the policy of the Congress, and the purpose of this Act, to establish a comprehensive Federal program to deal with cigarette labeling and advertising with respect to any relationship between smoking and health, whereby—

(a) the public may be adequately informed that cigarette smoking may be hazardous to health by inclusion of a warning to that effect on each package of cigarettes.

(b) Commerce and the national economy may be (i) protected to the maximum extent consistent with this declared policy and (ii) not impeded by diverse, nonuniform, and confusing cigarette labeling and advertising regulations with respect to any relationship between smoking and health.

DEFINITIONS

SEC. 4. As used in this Act—

(a) "Cigarette" means any roll of tobacco or other substance wrapped in paper or in any substance other than tobacco, and intended for smoking.

(b) "Commerce" means commerce among the several States or with foreign nations, or in any territory of the United States or in the District of Columbia, or between any such territory and another, or between any such territory and any State or foreign nation, or between the District of Columbia and any State or territory or foreign nation.

(c) "Territory" means the insular possessions of the United States, the Commonwealth of Puerto Rico, and any territory of the United States.

(d) "Package" means a pack or box, carton, or container of any kind in which cigarettes are offered for sale, sold, or otherwise supplied to consumers.

(e) "Person" means an individual, partnership, corporation, or any other business or legal entity.

(f) "United States" means the States, the District of Columbia, and the territories and possessions of the United States.

(g) "Sale or distribution" includes sampling or any other distribution not for sale.

LABELING

SEC. 5. It shall be unlawful for any person to manufacture, import, or package for sale or distribution within the United States any cigarettes the package of which fails to bear the following statement: "Caution: Cigarette Smoking May be Hazardous to Your Health." The foregoing statement shall appear on either of the two side panels of the pack, or in the case of a cylindrical pack on the side thereof, in not less than ten-point type on a twelve-point body. In the case of boxes, cartons, or containers of any kind, other than the individual pack, containing cigarettes, the statement shall be printed on a side in not less than twelve-point type on a fourteen-point base.

ADVERTISING

SEC. 6. Nothing herein contained shall be construed to limit or to expand the authority of the Federal Trade Commission with respect to the dissemination in commerce of any false or misleading advertisement of cigarettes, provided that the Commission shall not have authority in any proceeding under any statute administered by the Commission to require the inclusion in any advertisement of any statement concerning any hazard to health involved in smoking cigarettes where the advertised cigarettes have been packaged in conformity with the labeling provisions of this Act. No Federal agency shall require any additional caution statement on any package labeled in conformity with this Act.

PREEMPTION

SEC. 7. No caution statement with respect to smoking and health other than specified herein shall be required on any package. No caution statement with respect to smoking and health shall be required in advertising for cigarettes packaged in conformity with the labeling provisions of this Act.

CRIMINAL PENALTY

SEC. 8. Any person who violates the provisions of this Act shall be guilty of a misdemeanor and shall on conviction thereof be subject to a fine of not more than $10,000.

INJUNCTION PROCEEDINGS

SEC. 9. The several district courts of the United States are invested with jurisdiction, for cause shown, and subject to the provisions of section 381 (relating to notice to the opposite party) of title 28, to prevent and restrain violations of this Act upon the application of the Attorney General of the United States acting through the several United States attorneys in their several districts.

CIGARETTES FOR EXPORT

SEC. 10. Cigarettes manufactured, imported or packaged (a) for export from the United States or (b) for delivery to a vessel or aircraft, as supplies, for consumption beyond the jurisdiction of the internal revenue laws of the United States shall be exempt from the requirements of this Act: *Provided*, That such exemptions shall not extend to cigarettes manufactured, imported or packaged for shipment to United States military vessels or shore-based activities wherever such vessels or activities may be located.

SEPARABILITY

SEC. 11. If any provision of this Act or the application thereof to any person or circumstances is held invalid, the other provisions of this Act and the application of such provision to other persons or circumstances shall not be affected thereby.

EFFECTIVE DATE

SEC. 12. This Act shall take effect one hundred and twenty days after the date of its enactment.

[H.R. 4007, 89th Cong., 1st sess.]

A BILL To regulate the labeling and advertising of cigarettes, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Federal Cigarette Labeling and Advertising Act."

FINDINGS

SEC. 2. The Congress hereby makes the following findings:

(a) A Federal program dealing with cigarette labeling and advertising is desirable to provide national uniformity in labeling and advertising requirements for the cigarette industry.

(b) The production, processing, and distribution of cigarettes, the employment directly and indirectly resulting therefrom, and the revenues derived from taxes imposed thereon affect commerce and the national economy.

DECLARATION OF POLICY

SEC. 3. It is the policy of the Congress, and the purpose of this Act, to establish a comprehensive Federal program to deal with cigarette labeling and advertising with respect to any relationship between smoking and health, whereby—

(a) the public may be adequately informed that cigarette smoking may be hazardous to health by inclusion of a warning to that effect on each package of cigarettes.

(b) commerce and the national economy may be (i) protected to the maximum extent consistent with this declared policy and (ii) not impeded by diverse, nonuniform and confusing cigarette labeling and advertising regulations with respect to any relationship between smoking and health.

DEFINITIONS

SEC. 4. As used in this Act—

(a) "Cigarette" means any roll of tobacco or other substance wrapped in paper or in any substance other than tobacco, and intended for smoking.

(b) "Commerce" means commerce among the several States or with foreign nations, or in any territory of the United States or the District of Columbia, or between any such territory and another, or between any such territory and any State or foreign nation, or between the District of Columbia and any State or territory or foreign nation.

(c) "Territory" means the insular possessions of the United States, the Commonwealth of Puerto Rico, and any territory of the United States.

(d) "Package" means a pack or box, carton or container of any kind in which cigarettes are offered for sale, sold, or otherwise supplied to consumers.

(e) "Person" means an individual, partnership, corporation, or any other business or legal entity.

(f) "United States" means the States, the District of Columbia, and the territories and possessions of the United States.

(g) "Sale or distribution" includes sampling or any other distribution not for sale.

LABELING

SEC. 5. It shall be unlawful for any person to manufacture, import, or package for sale or distribution within the United States any cigarettes the package of which fails to bear the following statement: "Caution: Cigarette Smoking May be Hazardous to Your Health." The foregoing statement shall appear on either of the two side panels of the pack, or in the case of a cylindrical pack on the side thereof, in not less than ten-point type on a twelve-point body. In the case of boxes, cartons, or containers of any kind, other than the individual pack, containing cigarettes, the statement shall be printed on a side in not less than twelve-point type on a fourteen-point base.

ADVERTISING

SEC. 6. Nothing herein contained shall be construed to limit or to expand the authority of the Federal Trade Commission with respect to the dissemination in commerce of any false or misleading advertisement of cigarettes: *Provided*, That the Commission shall not have authority in any proceeding under any statute administered by the Commission to require the inclusion in any advertisement of any statement concerning any hazard to health involved in smoking cigarettes where the advertised cigarettes have been packaged in conformity with the labeling provisions of this Act. No Federal agency shall require any additional caution statement on any package labeled in conformity with this Act.

PREEMPTION

SEC. 7. No caution statement with respect to smoking and health other than specified herein shall be required on any package. No caution statement with respect to smoking and health shall be required in advertising for cigarettes packaged in conformity with the labeling provisions of this Act.

CRIMINAL PENALTY

SEC. 8. Any person who violates the provisions of this Act shall be guilty of a misdemeanor and shall on conviction thereof be subject to a fine of not more than $10,000.

INJUNCTION PROCEEDINGS

SEC. 9. The several district courts of the United States are invested with jurisdiction, for cause shown, and subject to the provisions of section 381 (relating to notice to the opposite part) of title 28, to prevent any restraint violations of this Act upon the application of the Attorney General of the United States acting through the several United States Attorneys in their several districts.

CIGARETTES FOR EXPORT

SEC. 10. Cigarettes manufactured, imported, or packaged (a) for export from the United States or (b) for delivery to a vessel or aircraft, as supplies for consumption beyond the jurisdiction of the internal revenue laws of the United States shall be exempt from the requirements of this Act, provided that such exemptions shall not extend to cigarettes manufactured, imported or packaged for shipment to United States military vessels or shore-based activities wherever such vessels or activities may be located.

SEPARABILITY

SEC. 11. If any provision of this Act or the application thereof to any person or circumstances is held invalid, the other provisions of this Act and the application of such provision to other persons or circumstances shall not be affected thereby.

EFFECTIVE DATE

SEC. 12. This Act shall take effect one hundred and twenty days after the date of its enactment.

[H.R. 4244, 89th Cong., 1st sess.]

A BILL To provide that cigarettes sold in interstate and foreign commerce shall be packaged and marked so as to bear a warning that they may be dangerous to health and to show the nicotine and tar content of the cigarettes in each package

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Cigarette Labeling Act".

DEFINITIONS

SEC. 2. As used in this Act—

(1) The term "commerce" means commerce among the several States or with foreign nations, or in any possession of the United States or in the District of

Columbia, or between any such possession and another, or between any such possession and any State or foreign nation, or between the District of Columbia and any State, possession, or foreign nation.

(2) The term "cigarette" means tobacco rolled in paper or any other material but tobacco.

PROHIBITED TRANSACTIONS

SEC. 3. (a) For the purposes of this Act, cigarettes shall be considered to be misbranded unless each individual package in which such cigarettes are usually sold to the ultimate consumer (whether such packages are sold individually or in a carton or a case containing more than one package) has printed on its outside the following in clear, legible, and plainly visible print: (1) The nicotine content and the tar content of the total number of cigarettes in the package and (2) "Warning—Contents May Be Dangerous to Health".

(b) The introduction, or manufacture for introduction, into commerce, or the sale, advertising, or offering for sale in commerce, or the transportation or distribution in commerce, of any cigarettes which are misbranded within the meaning of this Act is unlawful and shall be an unfair method of competition, and an unfair and deceptive act or practice, in commerce under the Federal Trade Commission Act.

(c) This section shall not apply to any common carrier, contract carrier, or freight forwarder in respect of any cigarettes shipped, transported, or delivered for shipment in commerce in the ordinary course of business.

ADMINISTRATION AND ENFORCEMENT

SEC. 4. (a) This Act shall be enforced by the Federal Trade Commission under rules, regulations, and procedures provided for in the Federal Trade Commission Act.

(b) The Commission is authorized and directed to prevent any person from violating the provisions of section 3 of this Act in the same manner, by the same means, and with the same jurisdiction, powers, and duties as though all applicable terms and provisions of the Federal Trade Commission Act were incorporated into and made a part of this Act; and any such person violating any provision of section 3 of this Act shall be subject to the penalties and entitled to the privileges and immunities provided in said Federal Trade Commission Act as though the applicable terms and provisions of the said Federal Trade Commission Act were incorporated into and made a part of this Act.

(c) The Commission is authorized and directed to prescribe such rules and regulations as may be necessary and proper for purposes of administration and enforcement of this Act.

(d) The Commission is authorized to—

(1) cause inspections, analyses, tests, and examinations to be made of any cigarettes which it has reason to believe fall within the prohibitions of this Act; and

(2) cooperate on matters related to the purposes of this Act with any department or agency of the Government; with any State or possession or with the District of Columbia; or with any department, agency, or political subdivision thereof; or with any person.

EFFECTIVE DATE

SEC. 5. This Act shall take effect on the date of its enactment, except that section 3(b) shall take effect ninety days after the date of enactment.

[H.R. 7051, 89th Cong., 1st sess.]

A BILL To regulate the labeling and advertising of cigarettes, and for other purposes

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "Federal Cigarette Labeling and Advertising Act".

FINDINGS

SEC. 2. The Congress hereby makes the following findings:

(a) A Federal program dealing with cigarette labeling and advertising is desirable to provide national uniformity in labeling and advertising requirements for the cigarette industry.

(b) The production, processing and distribution of cigarettes, the employment directly and indirectly resulting therefrom, and the revenues derived from taxes imposed thereon, affect commerce and the national economy.

DECLARATION OF POLICY

SEC. 3. It is the policy of the Congress, and the purpose of this Act, to establish a comprehensive Federal program to deal with cigarette labeling and advertising with respect to any relationship between smoking and health, whereby—

(a) the public may be adequately informed that cigarette smoking may be hazardous to health by inclusion of a warning to that effect on each package of cigarettes.

(b) Commerce and the national economy may be (i) protected to the maximum extent consistent with this declared policy and (ii) not impeded by diverse, nonuniform, and confusing cigarette labeling and advertising regulations with respect to any relationship between smoking and health.

DEFINITIONS

SEC. 4. As used in this Act—

(a) "Cigarette" means any roll of tobacco or other substance wrapped in paper or in any substance other than tobacco, and intended for smoking.

(b) "Commerce" means commerce among the several States or with foreign nations, or in any territory of the United States or in the District of Columbia, or between any such territory and another, or between any such territory and any State or foreign nation, or between the District of Columbia and any State or territory or foreign nation.

(c) "Territory" means the insular possessions of the United States, the Commonwealth of Puerto Rico, and any territory of the United States.

(d) "Package" means a pack or box, carton, or container of any kind in which cigarettes are offered for sale, sold, or otherwise supplied to consumers.

(e) "Person" means an individual, partnership, corporation, or any other business or legal entity.

(f) "United States" means the States, the District of Columbia, and the territories and possessions of the United States.

(g) "Sale or distribution" includes sampling or any other distribution not for sale.

LABELING

SEC. 5. It shall be unlawful for any person to manufacture, import, or package for sale or distribution within the United States any cigarettes the package of which fails to bear the following statement: "Caution: Cigarette Smoking May be Hazardous to Your Health." The foregoing statement shall appear on either of the two side panels of the pack, or in the case of a cylindrical pack on the side thereof, in not less than ten-point type on a twelve-point body. In the case of boxes, cartons, or containers of any kind, other than the individual pack, containing cigarettes, the statement shall be printed on a side in not less than twelve-point type on a fourteen-point base.

ADVERTISING

SEC. 6. Nothing herein contained shall be construed to limit or to expand the authority of the Federal Trade Commission with respect to the dissemination in commerce of any false or misleading advertisement of cigarettes, provided that the Commission shall not have authority in any proceeding under any statute administered by the Commission to require the inclusion in any advertisement of any statement concerning any hazard to health involved in smoking cigarettes where the advertised cigarettes have been packaged in conformity with the labeling provisions of this Act. No Federal agency shall require any additional caution statement on any package labeled in conformity with this Act.

48-824—65——2

PREEMPTION

SEC. 7. No caution statement with respect to smoking and health other than specified herein shall be required on any package. No caution statement with respect to smoking and health shall be required in advertising for cigarettes packaged in conformity with the labeling provisions of this Act.

CRIMINAL PENALTY

SEC. 8. Any person who violates the provisions of this Act shall be guilty of a misdemeanor and shall, on conviction thereof be subject to a fine of not more than $10,000.

INJUNCTION PROCEEDINGS

SEC. 9. The several district courts of the United States are invested with jurisdiction, for cause shown, and subject to the provisions of section 381 (relating to notice to the opposite party) of title 28, to prevent and restrain violations of this Act upon the application of the Attorney General of the United States acting through the several United States attorneys in their several districts.

CIGARETTES FOR EXPORT

SEC. 10. Cigarettes manufactured, imported or packaged (a) for export from the United States or (b) for delivery to a vessel or aircraft, as supplies, for consumption beyond the jurisdiction of the internal revenue laws of the United States shall be exempt from the requirements of this Act: *Provided*, That such exemptions shall not extend to cigarettes manufactured, imported or packaged for shipment to United States military vessels or shore-based activities wherever such vessels or activities may be located.

SEPARABILITY

SEC. 11. If any provision of this Act or the application thereof to any person or circumstances is held invalid, the other provisions of this Act and the application of such provision to other persons or circumstances shall not be affected thereby.

EFFECTIVE DATE

SEC. 12. This Act shall take effect one hundred and twenty days after the date of its enactment.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE,
Washington, April 6, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives,
Washington, D.C.

DEAR MR. CHAIRMAN: This letter is in response to your request of February 15 and 18, for reports on H.R. 3014 (to be known as the Federal Cigarette Labeling and Advertising Act) and H.R. 4244 (to be known as the Cigarette Labeling Act). (We assume that H.R. 3014 is intended to supersede H.R. 885, by the same sponsor, on which we were asked for a report on February 10.)

This report is also applicable to H.R. 4007, which is identical with H.R. 3014 and is included along with that bill and H.R. 4244 in the announcement of your forthcoming hearings.

I. DESCRIPTION OF BILLS

H.R. 3014 and H.R. 4007 would make it unlawful to manufacture, import, or package cigarettes for domestic sale or distribution, or for shipment to U.S. military vessels or shore-based activities wherever located, unless the package (defined to include any pack or box, carton, or container in which cigarettes are offered or supplied to consumers) bears the statement "Caution: Cigarette Smoking May be Hazardous to Your Health." The bill prescribes, in terms discussed below, the type size and placement of the required statement on the label. No regulatory agency would be charged with enforcement of the bill but actions for injunction by the Attorney General acting through the U.S. attorneys would lie and the violation would be a misdemeanor subject to a fine up to $10,000.

The bills would forbid any Federal agency from requiring any additional cautionary statement on packages labeled in conformity with the bill and would deny to the Federal Trade Commission authority to require that advertisements for cigarettes packaged in conformity with the bill include health-hazard warnings, although in other respects the authority of the Federal Trade Commission with respect to false or misleading advertisements of cigarettes is stated to be unaffected. In addition, the bills, in section 7 headed "Preemption" and apparently intended to be applicable at State and local levels, preclude any requirement for a health-risk warning in cigarette labeling other than that specified in the bill and any health-risk warning requirement for advertising for cigarettes labeled in conformity with the bill.

H.R. 4244 would deem cigarettes to be misbranded unless each consumer package (whether sold individually or in a carton or case) has printed on it the nicotine and tar content of the total number of cigarettes in the package, and the words "Warning—Contents May Be Dangerous to Health." The bill would make commerce in, or manufacture for commerce of, misbranded cigarettes unlawful and deem it to be an unfair method of competition and unfair and deceptive practice under the Federal Trade Commission Act, which would be applicable to violations of the provisions of the bill. In connection with vesting administrative responsibility for regulation of cigarette labeling in the Federal Trade Commission, the bill would authorize the Commission to cause inspections, analyses, tests, and examinations to be made of any cigarettes which it has reason to believe fall within the prohibition of the bill and to cooperate with Federal, State, and local government agencies and with others on matters related to the purposes of the bill.

II. DISCUSSION

The basic objectives of these bills—fair warning of health risks to the prospective consumer of cigarettes—are objectives that this Department strongly supports. The report of the Surgeon General's expert Advisory Committee on Smoking and Health, which has been accepted by this Department, concluded, on the basis of "prolonged study and evaluation of many lines of converging evidence," that "Cigarette smoking is a health hazard of sufficient importance in the United States to warrant appropriate remedial action" (p. 33), a conclusion with which we fully agree. Summaries of some of the major findings and conclusions of the Advisory Committee and of this Department's existing and proposed activities in the field of smoking and health are contained in our report to you, dated June 22, 1964, on eight bills relating to cigarettes and other smoking products. The Surgeon General of the Public Health Service appeared and testified before you on June 23, 1964.

Acting upon the call of the Advisory Committee for "appropriate remedial action," the Federal Trade Commission, after hearings, issued its trade regulation rule of June 22, 1964, requesting that, in connection with the sale, offering for sale, and distribution in "commerce" (as defined in the Federal Trade Commission Act) of cigarettes, all advertising and every pack or other containers in which cigarettes are sold to the consuming public, disclose "clearly and prominently * * * that cigarette smoking is dangerous to health and may cause death from cancer and other diseases." While originally made effective January 1, 1965, with respect to labeling and July 1, 1965, with respect to advertising, the Federal Trade Commission, as your committee is aware, has at your committee's request also deferred the effective date of the labeling requirement to July 1 in order to give your committee an opportunity to consider legislation on the subject.

This Department, as the major Federal agency charged with the protection of the public health and as the agency responsible for the administration of the Food, Drug, and Cosmetic Act, the Federal Hazardous Substances Labeling Act, and other consumer protection legislation, believes that labeling and advertising should, in general, serve not only as a medium of identification and market promotion of a product, but should, in the interest of honesty and fair dealing, neither mislead nor fail to give the consumer the information concerning the product that he needs in order to make an informed decision. This is especially so where the product has a potential for harm, and all the more so where children and young people are involved.

We do not share the view of those who assume that, since the health risks of smoking have been widely publicized, no useful function would be served by including an appropriate reminder of those risks in information to the consumer.

We believe, rather, that not only specific warning, but also other requirements to prevent misleading statements or omissions in such promotional material, would help to round out our efforts by way of public information and education to impress upon the public the hazards of smoking. This is particularly true in view of the fact—a fact especially significant for young people—that, as stated in the Advisory Committee's report, the "overwhelming evidence indicates that smoking—its beginning, habituation, and occasional discontinuation—is to a large extent phychologically and socially determined."

The considerations arguing for appropriate regulation in this field are, moreover, sufficiently compelling to make it likely that in the absence of Federal regulation the States or municipalities, or a number of them, would attempt to fill the void. With respect to advertising, such attempts would largely be abortive because of the territorial limits to State authority, the nature of some of the advertising media, and the exclusivity of Federal control over radio and television communication. But with respect to labels and labeling such efforts could be more effective, with results that, because of the diversity of regulation likely to occur, would tend to burden the industry far more severely than Federal regulation would be likely to do. In the case of a product; such as, cigarettes, which is shipped by the manufacturer into every State by the millions of packages, uniformity of labeling requirements would seem to be of the essence. It is no doubt because of such considerations that section 7 of H.R. 3014 and H.R. 4007 provides for Federal preemption of the field.

We are encouraged by, and welcome, the current effort of the industry at self-regulation, as evidenced in the cigarette advertising code agreed upon by the cigarette manufacturers, which also covers labeling and which includes not only a statement of standards but provisions for clearance with an independent code administrator by members of the voluntary system, and for pecuniary sanctions and publicity by the administrator against violators of the code. An adequate voluntary program might offer a reasonable solution to advertising problems, and we support efforts in this direction. We note, however, that the code, though progressive in a number of ways, stops short of requiring an affirmative health-risk warning.

We believe that regulation, whether voluntary or statutory, should extend both to labeling; i.e., any written, printed, or graphic matter upon or accompanying the consumer package and carton and to advertising (other than labeling) in its various forms. Further, without in any way questioning the Federal Trade Commission's regulatory authority in this field, we have concluded, as indicated to your committee last year, that remedial action in this field should, with respect to labeling at least, include new and specific legislation and that in our view the most effective approach to labeling regulation (with respect to the health hazard from cigarette smoking) is to bring the labeling of cigarettes, by appropriate amendment, under the Federal Hazardous Substances Labeling Act, where it could be readily fitted into the regulatory scheme of that act and its enforcement. (While it may be argued that cigarettes already fall within the scope of that act, we believe that amendment of that act is desirable to avoid controversy on this point and to adapt the labeling requirements, etc., to the specific objective.)

Such regulation over the advertising of cigarettes as may be needed should, we believe, continue to be exercised by the Federal Trade Commission, whether under existing law or under appropriate addenda to the relevant provisions of the Wheeler-Lea amendment to the Federal Trade Commission Act (i.e., secs. 12–16) of the act, which now prohibit false or misleading advertisement of food, drugs, devices, and cosmetics.

It should be emphasized in connection with the above-stated proposals that coordination between administration of the Food, Drug, and Cosmetic Act and that of the Wheeler-Lea amendment has been achieved without difficulty under a working agreement between the two agencies.

In view of the above-mentioned considerations, while favoring the objective of these bills to convey to the consumer a warning of the risk to health involved in smoking, we have several reservations about the present bills.

1. In the first place, it seems preferable, from the standpoint of flexibility in the light of advancing knowledge, to leave formulation of the precise warning required to administrative regulation instead of setting forth the warning in the statute itself. We therefore suggest that the Federal Hazardous Substances Labeling Act be amended to authorize us, on the basis of the current state of knowledge at any given time, to formulate by regulation and appropriate warn-

ing. Should the situation change; e.g., should research or technical improvements in the course of time develop a cigarette that would justify a reduced warning or perhaps even its omission, either for all cigarettes or those meeting particular specifications, the regulation would be modified accordingly.

2. Second, whether or note the statute sets forth the terms of the warning to be used in the label, we believe that the statute should require the warning to be prominent and conspicuous but should leave the precise location and size of the warning on the label, and related matters, to regulation in the light of the expertise and experience of the regulatory agency.

H.R. 3014 and H.R. 4007 would, instead, require that the caution statement "appear on either of the two side panels of the pack, or in the case of a cylindrical pack on the side thereof, in no less than a 10-point type on a 12-point body. In the case of boxes, cartons, or containers * * * other than the individual pack * * * the statement shall be printed on a side in not less than 12-point type on a 14-point base." Not only should a prescription of this character be left to implementing regulation in our view, but the specific provisions quoted are such as to make it unlikely that the warning will be noticed or remembered. For one thing, in many places where cigarettes are sold at retail and in vending machines it is the face (or one of the two faces) of the pack, and not the side, that is displayed; and after the pack is bought a notice on the side is also less likely to be read than if it were one one or both faces of the pack. Again, 10-point type, which is 2 points smaller than the type size used in typing this letter, is hardly calculated to invite the consumer's attention. We believe, also, that both the signal word (i.e., "Caution") and the statement of hazard should be in capital letters to attract attention, as is required under our regulations under the Federal Hazardous Substances Labeling Act which, incidentally, call for not less than 18-point time for the signal word and not less than 12-point type for the hazard (unless the label statement on the container is too small to accommodate such type size, which is not true in the case of most cigarette packs).

H.R. 4244, while also requiring only initial capitals, has no precise directions as to type size and location but requires only that the warning be "printed on (the) outside * * * in clear, legible, and plainly visible print." We would prefer the requirement of the Federal Hazardous Substances Labeling Act that the statement be located "prominently * * * in conspicuous and legible type in contrast by topography, layout, or color with other printed matter on the label," as more particularly specified in regulations. The principle that should govern is well stated in the Federal Food, Drug, and Cosmetic Act which directs that all statements required on a label be "prominently placed thereon with such conspicuousness (as compared with other words, statements, designs, or devices in the labeling) and in such terms as to render it likely to be read and understood by the ordinary individual under customary conditions of purchase and use."

3. We assume that it is intended—but it may be desirable to make it explicit in the Federal Hazardous Substances Labeling Act (not only for cigarettes but for substances otherwise covered by it)—that if the required warning is, in effect, negated or disclaimed on the label or in accompanying literature by words, statements, designs, or other graphic material, the warning requirement shall be deemed not to have been met. (See 21 CFR sec. 191.102.) However, in the view of the subtle gradations possible in this respect, we would suggest that consideration be given to the desirability of including specific authority to prohibit or regulate the use of statements that while not clearly negating the warning and while literally true or at least not demonstrably false, may give the consumer the misleading impression that a given cigarette is safer than others.

4. As stated at the outset, H.R. 4244 would require that packages of cigarettes have printed on them the nicotine content and the tar content of the cigarettes in the package. We are concerned that such a statutory requirement might, especially in a competitive context where the public may be more highly conscious that there is danger in smoking, be utilized by cigarette manufacturers in such a way (for example, as part of a larger advertising campaign) that many persons would be misled to believe that cigarettes (or a particular brand) are being made safer than they actually are, even if no statement as to the nicotine or tar content were actually untrue. We are mindful of the so-called tar derby that led to the 1960 agreement of leading cigarette manufacturers (obtained by the Federal Trade Commission) to discontinue the confusing practices of the industry in this connection. It would be unfortunate if such competition were resumed, stimulated by a labeling requirement of the kind proposed by H.R.

4244. On the other hand, it is a reasonable assumption that a reduction in the tar and nicotine content would to some extent reduce the likelihood that smoking will result in adverse health effects, especially cancer.

It would seem to us, on balance, that the best course would be to authorize, but not direct, this Department, under the Federal Hazardous Substances Labeling Act, to require that labeling of cigarette packages and containers offered for sale to consumers include a statement of the average yield or other index of incriminated agents found in the smoke of cigarettes contained in such package or container, if the Secretary determines that an index, based on a particular method which he specified, can communicate information on the basis of which the consumer can make meaningful choices. We would recommend that the Secretary also be given flexible authority with respect to which particular incriminated agents (or, in the case of tar, for example, what composite of agents) shall be required to be stated in the labeling, and to require manufacturers to let us have and verify any information they have as to ingredients (including additives) in the tobacco used by them or in smoke from such tobacco.

5. As above indicated, not only would H.R. 3014 prevent any regulatory agency from imposing a label warning requirement other than that prescribed in the bill—a position which we consider too inflexible—but the bill makes no provision for implementing regulations in respect to the cautionary statement that it requires. If our above-mentioned recommendations are accepted as to the substantive content of the legislation it is plain that only a regulatory agency could carry it out. Moreover, even if these recommendations were not followed and the precise warning, its size, and its location on the package were to be spelled out in the statute to the extent provided in this bill, further implementation, as well as policing, by a regulatory agency would seem to be desirable.

6. Finally, H.R. 3014, as above stated, would deny authority to the Federal Trade Commission to require the inclusion, in any advertisement, of any statement concerning any hazard to health involved in smoking cigarettes where the advertised cigarettes have been packaged in conformity with the labeling provisions of the bill.

The Federal Trade Commission, in its trade regulation rule, has specifically invited interested parties to apply for suspension, modification, or abrogation of the rule with respect to advertising of cigarettes before its effective date if circumstances have sufficiently changed—and this could include consideration of the effect of label warnings—to justify such action in the public interest. We do not believe that the public health would be well served by striking from the hands of the Federal Trade Commission the authority that it asserts.

7. H.R. 3014 and H.R. 4007 define the term "cigarette" as "any roll of tobacco *or other substance* wrapped in paper or in any substance other than tobacco, and intended for smoking." [Emphasis ours.] The reference to "other substance" may be aimed at possible substitutes, but there is no information as to their health hazard comparable to the information as to the hazard of "cigarettes" in their accepted sense. H.R. 4244 defines a "cigarette" simply as "tobacco rolled in paper of any material but tobacco."

For the above-stated reasons, we favor legislation along the above-suggested lines in view of these bills in their present form. We should be glad to work with the committee or staff to the end of carrying out our recommendations if the committee should so desire.

We are advised by the Bureau of the Budget that there is no objection to the presentation of this report from the standpoint of the administration's program.

Sincerely,

ANTHONY J. CELEBREZZE, *Secretary.*

GENERAL COUNSEL OF THE DEPARTMENT OF COMMERCE,
Washington, D.C., April 7, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in further reference to your request for the views of this Department with respect to H.R. 3014 and H.R. 4007, identical bills to regulate the labeling and advertising of cigarettes, and for other purposes, and H.R. 4244, a bill to provide that cigrettes sold in interstate and foreign commerce shall be packaged and marked so as to bear a warning that

they may be dangerous to health and to show the nicotine and tar content of the cigarettes in each package.

H.R. 3014 and H.R. 4007 would make it a criminal offense, subject on conviction to a maximum fine of $10,000, for any person to manufacture, import, or package for sale or distribution within the United States or for shipment to U.S. military vessels or shore-based activities, any cigarettes the package of which, including pack, box, carton, or container of any kind in which cigarettes are offered for sale, fails to bear the statement, in not less than specified size print, "Caution: Cigarette Smoking May Be Hazardous to Your Health." The bill also provides that nothing therein contained shall be construed to limit or expand the authority of the Federal Trade Commission with respect to the dissemination in commerce of any false or misleading advertisement of cigarettes, provided that the Commission shall not have authority to require the inclusion in any advertisement of any statement concerning any hazard to health involved in smoking cigarettes where the advertised cigarettes bear the caution statement prescribed therein. Further, the bill would preempt the field with respect to caution statements in the labeling and advertising of cigarettes.

H.R. 4244 provides that cigarettes shall be considered to be misbranded unless each individual package in which such cigarettes are usually sold to the ultimate consumer has printed on its outside in clear, legible, and plainly visible print (1) the nicotine and tar content of the total number of cigarettes in the package; and (2) "Warning: Contents May Be Dangerous to Health." The bill also provides, in substance, that the Federal Trade Commission shall administer and enforce the provisions thereof under rules, regulations, and procedures provided for in the Federal Trade Commission Act as though the applicable terms and provisions of that act were incorporated into the and made a part of this bill. The Commission is also authorized to (1) cause inspections, analyses, tests, and examinations to be made of any cigarettes which it has reason to believe fall within the prohibitions of the bill; and (2) to cooperate on matters related to the purposes of the bill with any Federal, State, or local agency, or with any person.

One basic objective of each of these bills is the same: to protect the health of consumers and prospective consumers of cigarettes. H.R. 3014 and H.R. 4007 have the additional stated objective of protecting commerce and the national economy. While we would ordinarily strongly support both objectives, we feel that for the reasons hereinafter stated the proposed means of attaining the latter objective may be incompatible with the health protection objective. Under such circumstances we believe that the public health interest must prevail.

The report of the Advisory Committee to the Surgeon General of the Public Health Service on smoking and health (issued January 11, 1964) made a number of detailed findings with respect to the health hazards of cigarettes and concluded that "Cigarette smoking is a health hazard of sufficient importance in the United States to warrant appropriate remedial action." "Remedial action" was thereafter promptly initiated.

On February 25, 1964, the Surgeon General spoke of a 10-year-plus program he envisages: "We are aiming at a program of prevention—following the traditional and time tested public health approach—a program aimed at preventing the habit before it is established. This means a program aimed at young people—teenagers and younger. This means a research program aimed at developing a safer cigarette and other safer forms of tobacco use." The Surgeon General also spoke of continuing research; cooperation with major voluntary health agencies and professional societies; conference plans of the Children's Bureau; a National Clearinghouse on Smoking and Health for public education purposes; and regulatory programs of other Federal agencies.

On April 27, 1964, the cigarette companies announced the Cigarette Advertising Code which prescribed voluntary standards to eliminate advertising and promotional activities in three general areas—(1) tending to make cigarette smoking attractive to minors; (2) health representations; (3) representations as to the quantity of an ingredient to be found in the smoke of a cigarette, unless such representations are significant in terms of health and based on adequate, relevant, and valid scientific data, or the representations are accompanied by a satisfactory disclaimer as to the significance thereof in terms of health.

On June 22, 1964, the Federal Trade Commission, after extensive public hearings, issued a trade regulation rule that "it is an unfair or deceptive act or practice * * * to fail to disclose, clearly and prominently, in all advertising and on every pack, box, carton, or other container in which cigarettes are sold to the consuming public that *cigarette smoking is dangerous to health and may cause death from cancer and other diseases.*" [Emphasis supplied.] The effective date, as amended, of rule 1 of the FTC trade regulation rule requiring inclusion of the prescribed warning statement relating to health hazards in both the advertising and labeling of cigarettes is July 1, 1965. It is significant that, because of the action by the cigarette industry voluntarily to end undesirable advertising practices in the area of health claims and deceptive statements as to the quantity of cigarette smoke ingerdients, the Commission determined that it would not adopt at that time the additional proposed rules 2 and 3 relating to such practices. However, the Commission stated that it 'will maintain a close surveillance of the industry's efforts to eradicate, through voluntary efforts, all traces of unfairness and deception in affirmative representations or suggestions in advertising and labeling."

On January 11, 1965, marking the first anniversary of the issuance of the Advisory Committee Report on Smoking and Health, the Surgeon General, in an address presented at the Conference of the National Interagency Council on Smoking and Health, cited facts and figures supporting his statement that "measurable and encouraging progress has been made during the year." He further stated that "I doubt that any health message has ever reached so many in so short a time." Also, he commented on the extensive "research on the components of smoke and their physiological effects" being conducted by the National Institutes of Health, by the Department of Agriculture in close cooperation with the Public Health Service, by universities and foundations, and "by the American Medical Association with financial help from the tobacco industry itself."

In the light of this background, while we strongly favor necessary or desirable legislation to protect the health and safety of the consuming public and to prevent deceptive or unfair labeling and advertising of consumer products, we are not convinced of the need for H.R. 4244 at this time, nor do we believe that enactment of H.R. 3014 or H.R. 4007 would be in the public interest.

As to H.R. 3014 and H.R. 4007, since the Federal Trade Commission has determined that appropriate remedial action to meet the health hazard of cigarette smoking requires the regulation of cigarette advertising as a complement to the regulation of cigarette labeling and has taken implementing action on the basis thereof, we are unable to endorse legislation which would effectively deprive the Commission of regulatory authority in the field of cigarette advertising. As to H.R. 4244, we believe that legislative action might properly await some indication of the effectiveness of the remedial action taken and proposed by the Federal Trade Commission and by the tobacco industry. We fully recognize that there is no assurance that this combined action by the Commission and the industry will provide the public with suitable warnings and protection. Nevertheless, we feel it should be given a fair trial before legislation to accomplish these objectives is enacted.

Further, with specific reference to the provision in H.R. 4244 that there be shown on the label of each package of cigarettes the nicotine and tar content of the cigarettes therein, we invite attention to the indicated extensive research deemed necessary and currently being conducted in this field. We do not believe that it has been scientifically established that the reduction or elimination of tar, nicotine, or any other specific ingredient in cigarette smoke will significantly lessen the health hazards of cigarette smoking. Until there is more scientific identification and data on the ingredients in cigarette smoke which create the health hazard and on the extent to which these ingredients must be removed to be significant in terms of health, we fear that any showing of the yield of specified ingredients in cigarette smoke may provide a sense of false security and inadvertently mislead, rather than protect, consumers of cigarettes. Further, such a showing respecting nicotine, tars, or other components of cigarette smoke, which is unsubstantiated as significant in terms of health, has been regarded by the Federal Trade Commission as an ufair or deceptive trade practice and, in conformity therewith, is prohibited under the Cigarette Advertising Code of April 27, 1964.

We have been advised by the Bureau of the Budget that there would be no objection to the submission of this report from the standpoint of the administration's program.

Sincerely,

ROBERT E. GILES,
General Counsel.

THE GENERAL COUNSEL OF THE TREASURY,
Washington, D.C., April 8, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: Reference is made to your request for the views of this Department on H.R. 3014, "To regulate the labeling and advertising of cigarettes, and for other purposes."

The proposed legislation would make it unlawful for any person to manufacture, import, or package for sale or distribution within the United States any cigarettes the package of which fails to bear a prescribed statement relating to the health hazard involved in cigarette smoking.

The Bureau of Customs of this Department would be concerned with inspecting imported cigarettes for the presence of the required warning. The Department assumes that the proposed legislation is intended to cover cigarettes imported for commercial purposes. In that case, the Department anticipates no unusual administrative difficulties in carrying out its responsibility. If, however, the proposed legislation is intended to apply to cigarettes imported as passengers' baggage for the personal use of the importer, administration of the law would involve difficulties since it would expand the customs activities in connection with the already onerous task of examining articles brought into the United States by passengers, particularly tourists.

The Department has been advised by the Bureau of the Budget that there is no objection from the standpoint of the administration's program to the submission of this report to your committee.

Sincerely yours,

FRED B. SMITH,
Acting General Counsel.

U.S. DEPARTMENT OF JUSTICE,
OFFICE OF THE DEPUTY ATTORNEY GENERAL,
Washington, D.C.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: This is in response to your request for the views of the Department of Justice on the bills, H.R. 885, H.R. 3014, H.R. 4007, and H.R. 4244, relating to the labeling of cigarettes with respect to their effect on health.

H.R. 885 would make it unlawful, and an unfair method of competition in commerce, and an unfair or deceptive act or practice in commerce, under the Federal Trade Commission Act, to manufacture, import, or package for sale in commerce any package of cigarettes which does not bear a plainly legible warning reading "Caution: Cigarette Smoking May Be Hazardous to Your Health." The bill provides that the legislation shall constitute a preemption of the subject matter, and that it shall take effect 120 days after enactment.

Identical bills H.R. 3014 and H.R. 4007 would make it unlawful for any person to manufacture, import, or package for sale or distribution within the United States any cigarettes the packaging of which fails to bear the following statement: "Caution: Cigarette Smoking May Be Hazardous to Your Health." The bills provide that nothing therein shall be construed to limit or to expand the authority of the Federal Trade Commission with respect to the dissemination in commerce of any false or misleading advertisement of cigarettes. However, the bills also provide that the Commission shall not have any authority to require the inclusion in any advertisement of any statement concerning any hazard to health involved in smoking cigarettes where the advertised cigarettes have been packaged in conformity with the labeling provisions of the bills. All Federal agencies would be precluded from requiring any additional cautionary statement

on any package labeled in conformity with the bills. The bills also contain Federal preemption provisions. Violations of the provisions of the bills would be a misdemeanor punishable by a fine of not more than $10,000.

The bill H.R. 4244 provides that cigarettes shall be considered to be misbranded unless each individual package in which cigarettes are usually sold has printed on its outside the following in clear, legible, and plainly visible print: (1) The nicotine content and the tar content of the total number of cigarettes in the package and (2) "Warning—Contents May Be Dangerous to Health." Enforcement of the provisions of the bill would be vested in the Federal Trade Commission with directions to the Commission to prevent any person from violating the foregoing provisions in the same manner, by the same means, and with the same jurisdiction, powers, and duties as though all applicable terms and provisions of the Federal Trade Commission Act were incorporated into and made a part of the statute. Persons violating any of the above provisions would be subject to the penalties and entitled to the privileges and immunities provided in the Federal Trade Commission Act.

Inasmuch as these measures involve considerations of primary concern to the Federal Trade Commission and the Department of Health, Education, and Welfare, the Department of Justice defers to the views of those agencies with respect to legislation in this field.

The Bureau of the Budget has advised that there is no objection to the submission of this report from the standpoint of the administration's program.

Sincerely,

RAMSEY CLARK,
Deputy Attorney General.

The CHAIRMAN. I think I should mention the bills that have been referred to the committee. Three of them are identical, H.R. 3014 by our colleague from Texas, Mr. Rogers; H.R. 4007 by our colleague from Minnesota, Mr. Nelsen; H.R. 7051 by our colleague from Pennsylvania, Mr. Rooney; and there is a fourth bill by Mr. Udall of Arizona, H.R. 2248.

I would like for that bill to be included for consideration because it takes an entirely different approach, as I understand it, and would send this matter to the Food and Drug Administration.

Then another bill by our colleague from New York, Mr. Fino, H.R. 4244 would require I believe a different type of warning on each package.

We want to again welcome the Chairman and other members of the Federal Trade Commission here this morning to kick off this hearing.

Mr. Dixon, we want to again thank you for your consideration of this problem, your cooperation with the committee. We know that the Commission and the staff of the Commission has given a lot of study and thought to this problem. We are glad to have you back with us.

I believe first though we will hear our colleague. That is the usual procedure which should prevail. First I should like to recognize the presence of our colleague from New York, Mr. Paul A. Fino.

STATEMENT OF HON. PAUL A. FINO, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NEW YORK

Mr. FINO. Mr. Chairman and members of the committee, first may I begin by expressing my appreciation for this opportunity to testify on behalf of my bill, H.R. 4244, which provides that each package of cigarettes sold in interstate commerce be labeled with a warning notice as well as with information concerning the tar and nicotine content of the cigarettes. I would also like to compliment the committee for

the wisdom it showed in requesting the Federal Trade Commission to postpone the effective date of the cigarette labeling regulations announced before this group last June. Now, I want to make it clear that my last remark implies no criticism whatsoever against the Federal Trade Commission. Indeed, the Commission is to be commended for its initiative and for the well-reasoned and documented arguments it presented in support of its proposed regulations. However, I recognize as you do that to attempt to control cigarette labeling by Commission regulations alone is to invite years of litigation and delay as the industry fights to overthrow such restrictions. Federal legislation, it seems to me, would shore up rather than erode the authority of the Federal Trade Commission in this matter. We share the same principal concern—namely, the protection of the consumers. I am convinced that Federal legislation is required to protect consumers adequately in this case, and I am very pleaesd that this committee has been successful in obtaining a postponement of the effective date of the FTC regulations so that Congress might have another opportunity to enact legislation to deal with this problem.

The report of the Surgeon General's Advisory Committee on Smoking and Health was firm, clear, and unequivocal; cigarette smoking is associated with a 70-percent increase in the age-specific death rates of males. The Committee found that in men cigarette smoking is causally related to both lung cancer and cancer of the larynx and perhaps to cancer of the esophagus and urinary bladder as well. The committee also found that cigarette smoking is the most important cause of chronic bronchitis in the United States and increases the risk of dying from both chronic bronchitis and pulmonary emphysema. The panel made it clear that for bulk of the population of the United States cigarette smoking far surpasses air pollution or occupational exposures as the leading cause of these and other bronchopulmonary diseases.

While the Committee did not feel the existing data was sufficient to prove a causal relationship between cigarette smoking and heart disease, the group did point out that it is established that male cigarette smokers have a higher death rate from coronary disease than nonsmoking males. In view of this fact, the experts felt it would be more prudent for us to assume that the established relationship between cigarette smoking and coronary disease has causative meaning than to suspend judgment until no uncertainty remains.

We know that nearly 70 million people in the United States consume tobacco regularly and that per capita consumption has risen markedly in recent years. It is true that in 1964, following the release of the report on smoking and health, cigarette sales declined and that sales for the year were 3 percent below those for 1963. It is also true, however, that after the sharp drop in early 1964, sales began to rise again and by the end of the year were back to 1963 levels. Industry spokesmen are already predicting an even better year in 1965.

We might well ask why the so-called smoking scare did not last and why people who temporarily stopped smoking or switched to pipes and cigars after the release of the Advisory Committee's report later resumed the cigarette habit. The answer to this is that many people ceased to take the report seriously when the Federal Government failed to take any further action. Their reasoning seems to be,

"If cigarettes were really so dangerous, the Government would do something about them." It is interesting that among physicians and medical students, the groups probably best equipped to evaluate the importance of the report on smoking and health, there has recently been a significant decrease in the percentage of cigarette smokers. Most of the population, however, seems to need some constant reminder of the health implications of smoking before any permanent change in their habits can take place.

Smokers themselves feel they should be reminded of the health threat of cigarettes and would like to see the Government take appropriate action. A survey last fall of a random nationwide sample of 3,500 households by the National Center for Health Statistics revealed that 70 percent of those questioned thought that cigarette smoking was enough of a health hazard for something to be done about it. By a ratio of two to one those interviewed favored compulsory warning labels on cigarette packages (and advertisements). Eight out of ten—including 7 out of 10 smokers—also said they believed that a statement of tar and nicotine content should be required on each package.

Frankly, I was very heartened by the results of this survey. I began introducing legislation to require the labeling of cigarettes to show nicotine content back in 1955. In 1957 and again in 1962 and 1963 I sponsored bills to require that both the tar and nicotine content of cigarettes be stated on the packages. I testified before this committee last year in support of a similar bill, and now I have come once more to urge the adoption of such legislation. It has seemed a long and unrewarding crusade at times so I am delighted by the survey I just spoke of and by the number of bills now pending on cigarette labeling and other evidence that the time has finally come when the climate of opinion is favorable to the passage of labeling legislation.

In adopting labeling requirements for cigarettes I think it is imperative that we include both a clear, direct warning notice and a statement of tar and nicotine content. First of all, people ought to know that there is a risk involved in regular and prolonged cigarette smoking. Furthermore, if they choose to take this risk, they should be provided with information about the various brands so that they will know which are most and least harmful. The steadily rising percentage of filter brands sold each year seems to me to suggest that the majority of the population is aware of the health danger from cigarettes but either honestly believes or rationalizes that filter-tip cigarettes are less harmful than nonfilters. There is no evidence that this is true; on the contrary, many filter tips because of their increased length and stronger tobacco and flavorings are actually more harmful than their nonfilter twins in terms of their tar and nicotine content. This information should be clearly displayed on the package for the benefit of the consumer.

An added benefit of requiring that the tar and nicotine content of each package of cigarettes be stated would almost surely be the renewed competition between major manufacturers to produce cigarettes with low tar and nicotine levels. This would certainly be a major achievement in the protection of the consumers' welfare and one in which we could be proud to have played a part.

I cannot urge too strongly that the committee report favorably on legislation to require that cigarettes carry a warning label and a notice

of their tar and nicotine content. The facts are in which clearly indict cigarette smoking as a serious health hazard. In the meantime, while the tobacco industry continues to spend more than $250 million a year in advertising its products, the Government is doing little if anything to protect and inform the consumer. I think it is most regrettable that the administration has chosen to remain silent on this issue, but the duty of the Congress is nonetheless clear. If we are to fulfill our obligation to protect the public welfare, we must enact strong cigarette labeling requirements, and the time is now. I gladly pledge my support to this effort and hope that 1965 will finally witness the adoption of this vitally important legislation.

May I at this time, Mr. Chairman and members of the committee, bring to the attention of this committee an editorial that appeared in the Times yesterday. I just want to quote parts of the editorial. It says:

> Its spokesmen have not gone to the extent of claiming that cigarette smoking is healthful. But they are less than frank in disputing statistical evidence linking smoking with the big increase in the incidence of lung cancer and other chronic diseases.

Then the editorial goes on to say:

> What these investigations have revealed is evidence of a definite correlation between cigarette smoking and cancer. This evidence amply justifies the mild device of a warning to alert consumers to the danger they may face.

It concludes its editorial by saying:

> There is a need for a Government program that will keep the public continually informed about the dangers in smoking, and there is need for further efforts to help those who want to get rid of the cigarette habit.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Mr. Fino, for your statement. We want to commend you for the interest that you have maintained in this subject over the years. We appreciate your presence here again and the contribution that you have made and are making to this problem.

Mr. FINO. Thank you.

The CHAIRMAN. At this time we would like to recognize the presence of our colleague, Mr. Udall of Arizona, who has a bill, H.R. 2248.

Mr. Younger has a question of Mr. Fino. I was hoping that we might forego lengthy questioning of you colleagues who come here before us today and whom we see all the time in the House, so that we might get to these other witnesses with whom we are not associated every day. I thought there would not be any lengthy questioning of our colleagues.

Mr. YOUNGER. Unfortunately, Mr. Chairman, the questions which we ask on the floor of the House and otherwise are not a part of the record, and I would like to have this in the record. I want to get his reasoning.

Mr. Fino, you state in your first page:

> However, I recognize, as you do, that an attempt to control cigarette labeling by Commission regulations alone is to invite years of litigation.

Yet you include on the next to the last page:

> In adopting labeling requirements for cigarettes, I think it is imperative that we include both a clear, direct warning notice * * *.

Now, if that is done, why do you think that your procedure would invite less litigation than the other procedure?

Mr. FINO. Mr. Younger, we all know that whenever an agency of government makes regulations, it always invites litigation much more than when the Congress passes legislation, and what I am proposing here is that the Congress do this job, and the likelihood of litigation is much slighter than it would be if the agency did the job.

I think this is a responsibility of Congress and that Congress should pass this law. I say that the only question then would be the question of constitutionality, and you very seldom have that. Of course you cannot depend on the U.S. Supreme Court these days, but I would judge that there would be less litigation if the Congress did its job.

Mr. YOUNGER. Thank you very much.

Mr. ROGERS of Texas. Would the gentleman yield for one question?

Mr. YOUNGER. I yield the floor.

Mr. ROGERS of Texas. Mr. Fino, is it your position that the Federal Trade Commission has the power to do this?

Mr. FINO. I would say that they have some degree of power which we have given them to regulate this industry. However, I think, as I said in my statement, if they were to enforce this warning edict that they promulgated, that the tobacco industry would have them in court 24 hours a day for the next 10 years. However, if the Congress did the job, the chances are very, very slim.

Mr. ROGERS of Texas. Thank you, Mr. Chairman.

The CHAIRMAN. Dr. Carter has a question.

Mr. CARTER. Mr. Fino, I take it that you are terribly upset by the use of tobacco by so many millions throughout the United States; is that true?

Mr. FINO. I am not upset about it. I am a firm believer in human nature, and I know it is human nature to smoke, and it is human nature to gamble. What I say is that as long as you cannot curtail gambling and smoking and drinking, let us regulate it and control it.

Mr. CARTER. Do you use tobacco, Mr. Fino?

Mr. FINO. I smoke cigars.

Mr. CARTER. I believe you will find in the New England Journal of Medicine, June 1964, or about that time, that while they are not considered perhaps as causing as much trouble as cigarettes, that they cause at least half that much. You favor labeling. However, you continue to use the weed.

Thank you, sir.

Mr. FINO. May I say this to the doctor. If they had a warning label on the cigars that they are dangerous to your health, I might hesitate in smoking eight and might smoke four.

Thank you.

The CHAIRMAN. They might put a warning on there that it is a weed.

Mr. Rooney?

Mr. ROONEY. I have one short question.

Mr. Fino, I would like to ask you in your opinion, What is a safe tar and nicotine content?

Mr. FINO. Scientists have determined—I do not know the percentage—they have determined that there is a level of safety, and if you look at, I think it was the Reader's Digest that had a report on this several years ago, in which they had the tar and nicotine content of all

these cigarettes that are being sold to the American public showing the level of tar and nicotine, and some of them were lower than the others. And of course there is a safe level which I feel that the manufacturers could arrive at in making cigarettes safer for the public.

Mr. ROONEY. Do you know that according to Mr. Dixon that he made the statement basically the study has never arrived at what is safe and what is not safe? They have not arrived at what in smoking is the agent that really causes cancer.

Mr. FINO. I am familiar with Commissioner Dixon's position. I do not fully agree with it, but I have been supported in my position by the Rockwell Institute up in Buffalo which feels that we should bring to the public's attention the tar and nicotine content and urge by this competition all the manufacturers to reduce the level of their tar and nicotine content.

Mr. ROONEY. Thank you, Mr. Chairman.

Mr. FINO. Thank you, Mr. Chairman.

The CHAIRMAN. Does any other member have any other question of Mr. Fino?

(No response.)

The CHAIRMAN. Mr. Udall, we are glad to welcome you also to the committee, and we will be glad to hear you at this time.

STATEMENT OF HON. MORRIS K. UDALL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF ARIZONA

Mr. UDALL. Thank you, Mr. Chairman. I have no prepared statement, and I know the committee has other important witnesses here, and if the smoking members of this committee will light up whatever they smoke and give me about 3 minutes, I think I can express my position on the bill I have sponsored. First of all I want to say that this great committee has done more in recent years in the fields of public health than has been done perhaps in this generation, and I think there is no more important matter before the Congress today than the matter the committee is taking up. I want to commend the chairman and the members of the committee for continuing the investigation of this very important subject and the different legislative suggestions which have been made.

As the chairman indicated, my bill would place smoking products in the same class as food, drugs, and cosmetics in the enforcement of the Federal Food, Drug, and Cosmetics Act. The effect of my bill would simply be to empower the Food and Drug Administration to establish standards for smoking products as they have for other products consumed or used by the public.

I want to say at this point thatI am not committed to my bill as the only approach to this problem. The introduction of my bill, which was originally sponsored nearly 2 years ago, was designed as an expression of my interest and my intention that something should be done about the very serious health hazard posed by the use of tobacco products in this country.

Some may say that the approach taken by my bill is too mild, that it ignores the role of the Federal Trade Commission. Some may say that it is an extreme bill which could totally halt the sale of tobacco because nicotine content exceeds levels that we now permit in food products.

This is not my intention, and I think no such strained interpretation can fairly be put upon the bill that I have introduced because this would obviously be unworkable. I have no interest in prohibiting the sale of tobacco. I think we learned our lesson in the 1920's and the 1930's in attempting to outlaw the sale of alcoholic beverages. I think people are entitled to smoke it they wish to.

The Constitution guarantees us all these great freedoms including the freedom to abuse our health and make fools of ourselves if we want to, and I do not intend to deprive people of these great freedoms.

But I am greatly concerned about the mounting death rates from the use of tobacco products, particularly cigarettes. I will not take the time to go over the statistics that have been given by my friend from New York, Mr. Fino, but I want to associate myself with the remarks that he has made. My particular concern is not with adults because this is a habit that is hard to break. I do not think we are going to make too much change in the older generations, the people that have established this habit. The doctors have found that it is extremely difficult to break this, even with the best psychiatric and scientific knowledge that we have.

But I am concerned about the young people, the coming generations. I think labeling—I think giving the Food and Drug Administration some power to act in this field might do something about it.

I am satisfied from everything I have read that the annual death rate in this country which we can fairly attribute to smoking is 100,000 a year. This is a high figure. It is more than the lives that were lost in the atom bombing of Hiroshima. And while all the facts are not in, while all the facts are not in on drugs, all the facts are not in on space travel, all the facts are not in on the law of gravity—there is a lot we need to know in many fields—enough facts are in to satisfy me as a citizen and as a Member of Congress that there is a correlation between smoking and death and illness of the kinds that have been described before the committee.

And so I say that this is a very serious problem that deserves the attention of the Congress. I am pleased that the committee is considering legislation to deal with it.

I would only make one further requests, Mr. Chairman, to save time. About 18 months ago I did a newsletter for my constituents on this subject in which I expressed by thoughts in more detail, and I would ask that this be made a part of the file or the record in the hearings.

The CHAIRMAN. Let it be included in the record along with your statement.

(The newsletter referred to follows:)

CONGRESSMAN'S REPORT

MORRIS K. UDALL, SECOND DISTRICT OF ARIZONA

NOVEMBER 15, 1963.

IF THIS IS PEACE, WHAT WOULD WAR BE LIKE?

Suppose I began this report by revealing a secret plot to undermine the United States and take the lives of 100,000 or more Americans in the next 12 months—as many persons as were killed in the atom bombing of Hiroshima. Suppose I said that this was actually a conservative estimate, that in fact the number of fatalities resulting from this evil plan next year might exceed a quarter of a million—say roughly the total number of Americans killed in battle in World War

II. Would you be shocked? Would you want to know who had hatched this terrible scheme? I'm confident you would.

But let's go a little further. Suppose I told you that persons in the highest places knew about this plot but had done nothing about it. Suppose I said that many of your fellow Americans were not only aware of these facts but were coconspirators in the plot. Suppose I told you that, not just a few, but most of your fellow Americans were already aware of this evil design, and they didn't really care. Suppose I said that many of your own neighbors, and perhaps members of your own household, would help contribute more than $7 billion in the same 12-month period to carry out this mass murder. Would you wonder about the sanity of the American people?

In truth, there is such a plan. It may not be formulated in specific terms and written in disappearing ink on old gum wrappers. But I'll tell you this: formulated or not, conscious or not, deliberate or not, a program is going forward that will take 100,000 or more lives this coming year, and every succeeding year, and up to this point nobody is doing much about it. If Nikita Khrushchev had hatched the scheme, it couldn't be more effective. If Americans had been brainwashed by the Communists, they couldn't care less.

By this time I'm sure you know I'm not talking about some Soviet plot, or even some plan of those lunatics in Arlington, Va., the members of the American Nazi Party. I'm talking about the plan of the American tobacco industry to lure more and more young people to smoke cigarettes, to stimulate more and more adults to smoke more and more packs a day, all in the face of mounting scientific evidence showing that the end result of this massive sales effort will be casualties in the next 3 to 10 years exceeding the total battle deaths in all the wars we have fought since 1776.

Speaking as a parent, as well as a Congressman, I might express my reaction to these facts in some such manner as this: Who needs enemies when we have friends like the "Marlboro Man"?

WHERE THERE'S SMOKE * * *

In years past people who campaigned against smoking could be classed either as (1) health faddists, or (2) members of certain religious groups which discourage smoking. Most people are neither, and thus appeals to young people to avoid the habit have fallen largely on deaf ears. All that is changing with the accumulation of massive scientific evidence linking smoking with lung cancer, emphysema, cardiovascular disorders and other diseases. The campaign against smoking has moved from the pulpit to the laboratory to the Halls of Congress.

Let's look at some recently published facts:

In 1920 consumption of cigarettes in the United States was 750 for each adult, or about three-quarters of a pack a week. By 1961 this had increased to 4,000 per adult, an average of about 4 packs a week for our entire adult population.

Medical researchers say that three-fourths of all lung cancer cases are caused by cigarette smoking. Among men who smoke 2 packs a day, more than 25 will die for every nonsmoker who dies of the disease. Death attributable to lung cancer now total over 36,000 a year in the United States.

A study by the U.S. Public Health Service last year revealed a relationship between smoking during pregnancy and the occurrence of premature births. Birth weight was found to vary inversely with the amount of smoking done by the mother during pregnancy. More startling relationships, such as infant breathing difficulties and other abnormalities, are likely to show up in future studies.

The same U.S. Public Health Service reports that the death rate for regular smokers is 32 percent greater than for nonsmokers. Among persons who smoke regularly the ratio of deaths from cancer is approximately 10 times that of nonsmokers.

The Surgeon General of the U.S. Air Force said last year there is an ever-increasing link between cigarette smoking and cancer, pulmonary diseases, cardiovascular disease, etc. Because of these facts he announced that the Air Force no longer will permit cigarette companies to make free distribution of their products in Air Force hospitals and flight lunches.

A study published by the Scientific American last year revealed that out of 3,361 deaths among cigarette smokers felled by coronary artery disease, only 1,973 would have died had they been nonsmokers. That meant that more than 40 percent of the deaths in this group were attributable to

cigarette smoking. Note that heart disease is our No. 1 killer, taking around 1 million lives a year.

These are just a few of the facts that are accumulating on the effects of cigarette smoking. What began as a popular theme for "odd balls, kooks, and religious fanatics" is becoming something more. As a nation can we ignore facts like these? Where there's this much smoke, there to be some fire. If we can't put it out, we certainly ought to keep it from spreading.

GET 'EM WHILE THEY'RE YOUNG

We began hearing about the lung cancer threat several years ago, but what was the reaction of the tobacco companies? Why, they turned to Madison Avenue, stepped up their advertising campaigns and began an all-out effort to depict smoking as synonymous with virility and sex appeal, using pictures of pretty girls no red-blooded American boy could possibly resist, and handsome boys no girl could possibly ignore.

Because of this massive appeal to youth the American Public Health Association predicts more than 1 million present school-age children will die of lung cancer before they reach the age of 70. And this says nothing about the deaths that will come from cigarette-caused heart disease and lung ailments.

Several years ago the American Journal of Public Health reported a major study which found that among high school students in Portland, Oreg., only 19 percent of the boys and 32 percent of the girls got to their senior years without having smoked experimentally or otherwise. Among the boys it was discovered that 15 percent were regular smokers in their freshman year, 25 percent in their sophomore year, 31 percent in their junior year, and 35 percent in their senior year. Figures on the girls were somewhat lower but, even so, by the time they reached their senior year 26 percent of the girls were, not occasional, but regular smokers. I find these figures shocking when viewed in the light of recent scientific evidence on the likely result of this smoking pattern.

Since I first took an interest in this problem about a year ago I have had hundreds of letters from all over the country and a most interesting exchange of correspondence with leading medical researchers. One is Dr. Charles F. Tate, of the University of Miami. Dr. Tate tells me that increased consumption of cigarettes by schoolchildren will likely result in a tremendous increase in disabling emphysema in the years ahead. He points out that chest specialists now believe emphysema is caused principally by smoking. And emphysema now ranks as the second highest cause of total physical disability in this country.

"STUDENTS ARE TREMENDOUSLY LOYAL"

The college campus has been perhaps the No. 1 target of the cigarette industry for years. Students are usually introduced to their first free cigarettes as they complete registration as freshmen. There at the end of the line is the friendly "campus representative" of some cigarette company, handing out free packs to one and all. He also shows up for other events and has supplies of free cigarettes for all kinds of campus affairs. The school newspaper also feels the impact of the cigarette industry, which has accounted for 40 percent of all campus advertising in recent years.

There are all sorts of promotions employed by cigarette companies, but I think one of the worst is the campaign which offers premiums to college fraternities which collect Marlboro wrappers. I am told that many fraternities assign quotas to their pledges, generally freshmen newly arrived from the innocence of hearth and home.

Why all the emphasis on young people? Well, the college sales director of one cigarette company put it quite bluntly when he said: "Students are tremendously loyal. If you each them, they'll stick with you like glue because your brand reminds them of their happy college days."

If that's true for a particular brand, how much more true is it for smoking itself?

"BUT THE FACTS AREN'T ALL IN"

Another reaction of the tobacco industry has been the formation of a so-called Tobacco Industry Research Committee, ostensibly to determine and publish factual reports on the hazards of smoking. In fact, the purpose has been to minimize the importance of legitimate scientific findings and to question the truth of unbiased research. The committee's main theme is: "but that facts

aren't all in." In the world of science the facts are never all in; Galileo or Newton or Einstein may ultimately be proved wrong on some theory as new facts turn up. However, we built modern science on the discoveries of Galileo and Newton, and we built an atomic bomb wth Einstein's theories. Surely the causal relationship between smoking and lung cancer (or heart disease) requires no greater order of proof. In truth, nearly all medical scientists agree that the case has been made.

Here are some other interesting arguments used to counter scientific findings:

1. People who are going to get lung cancer have an increased desire to smoke throughout their adult lives. Thus the correlation of high mortality with high cigarette consumption is not significant and can be ignored.

2. Smoking produces cancer only in the lungs of people who are going to get cancer somewhere anyway, and smoking simply determines it will be in the lungs instead of, say, the left ear lobe or third right toe.

3. Lung cancer affects people who would have died of tuberculosis in former times but who have now survived with lungs susceptible to cancer.

4. Smokers inherit their desire to smoke and with it inherit a susceptibility to some other undiscovered agent that causes lung cancer.

5. Smokers are by their nature more liable to many diseases, including lung cancer, than the "self-protective" minority of nonsmokers.

6. Smokers tend to drink more alcohol than nonsmokers, and its the booze, and not the tobacco, that does them in.

Such explanation are ludicrous, of course, but they're understandable when one considers this important fact: the tobacco industry is a $7 billion industry. It pays $3 billion in taxes to various levels of government. It is one of the major users of advertising in all media, adding heavily to the earnings of Madison Avenue agencies, television networks, newspapers, magazines, and thousands of local radio and television stations. We live today in a sea of cigarette advertising.

THE POWER OF THE DOLLAR

I know something about the power of the tobacco dollar because I had a little run-in with it last winter. It seems I sent out a questionnaire in which I asked constituents (maybe you were one of them) whether they thought advertising of beer, wine, and tobacco products should be confined to hours after children go to bed (as is done in England). Fifty-six percent of my respondents said, "Yes," and I reported this fact. That's all I did. I didn't introduce a bill or even indicate a willingness to do so. But you should have seen the flood of mail and angry telegrams my little question produced.

"Udall, are you out of your cottonpicking mind?" That's the way one radio man addressed me in a hot letter. One advertising man on the west coast even went so far as to say, in print, that the children of America were more in need of protection from Congressmen like Morris K. Udall than they were from the effects of advertising.

To be sure a lot is at stake when we talk about doing something to reduce the hazards of smoking. However, a lot is at stake when we talk about winning the space race, or building antimissile missiles, or probing toward some kind of disarmament. Imagine what would happen to Tucson and Phoenix if this country suddenly stopped building missiles or maintaining bomber and missile squadrons. The economic effect would be tremendous, but I don't think anyone would suggest that we maintain a military machine just to keep dollars flowing into these cities. The same is true of the prosperity of the tobacco industry.

I don't have any ill will for my friends in North Carolina and Kentucky. I want them to have all the prosperity possible. But I don't want them enjoying that prosperity at the expense of the American people, and that is what they are doing now. If a way can be devised to take all the harm out of tobacco, and I hope it can, I will bless their efforts at expanding their industry, and they can run all the romantic ads they want. Until that happy day I think the American people had better do something about the menace in their midst.

ONE APPROACH TO THE PROBLEM

Because of the enormous accumulation of scientific evidence indicating serious effects from cigarette smoking I wondered what my responsibilities might be as a Member of Congress. I don't believe you can outlaw smoking or legislate habits, and I don't ever intend to try. But we can legislate about misleading advertising

and see that people get the truth about products like cigarettes. In the course of my study I came across this startling fact:

The Food and Drug Administration controls the nicotine content of foods sold to the public, permitting nicotine to be present as a residue only to the extent of 2 parts of nicotine to 1 million parts of food. There is no such regulation for tobacco products, even though the nicotine content of the average cigarette is 12,000 parts in a million, or 6,000 times as much nicotine as FDA permits in food.

When I discovered this fact, I decided the time had come for one concrete step by the Congress, and that was legislation to bring smoking products under the Federal food and drug laws. I prepared such a bill and introduced it last April. Since then companion bills have been introduced on the Senate side by Senator Joseph S. Clark, of Pennsylvania, and Senator Frank E. Moss, of Utah. Another colleague interested in the problem and preparing legislation of her own is Senaator Maurine Neuberger, of Oregon. I don't expect to see any progress on our bills this year but hope for hearings next year.

"SOMETHING'S GOT TO GIVE"

Although leading authorities say the food and drug approach holds the most promise, legislation may take some other form. The one thing I know is that we're headed for some kind of legislation on the tobacco problem. Nearly all medical researchers, nearly all practicing physicians, nearly all health organizations and many other leading individuals and groups have come to the conclusion that something has to be done. No matter what weapons the tobacco industry may use to block effective action it is obvious to me that "something's got to give." Overwhelming scientific evidence and mounting public opinion will demand it.

Already the pendulum has started to swing. Athletes are now giving testimonials against smoking. Advertising copy is being toned down, with less appeal to young people, and cigarette ads have been dropped from college newspapers. Only Philip Morris Inc., with its Marlboro leading the pack among college smokers, has refused to withdraw from the campus.

The most important development, however, is a study now nearing completion by the Surgeon General's Advisory Committee on Smoking and Health. The committee, composed of seven doctors, a chemist and a statistician, has been working steadily for the past year and expects to have its report ready for publication next month. I predict the report will be a real "blockbuster" and the trigger of a drive that will end in national legislation.

WHO NEEDS MARIHUANA?

The variety of hemp known as marihuana is smoked by perhaps a few thousand people in this country. Aside from possibly being habit forming, marihuana is not known to have any other harmful effects. But the mere possession of it can bring a fine and imprisonment. Tobacco is equally, or more, habit forming. It has proven harmful effects and is probably much more lethal. But it is not only legal to produce, sell; and use; we are told hundreds of times daily that it is a prerequisite of the full and rewarding life.

How long can this obvious inconsistency go on? I am told that without prompt action we can expect one of the worst medical catastrophes in history in the next 25 to 30 years. Surely we have a responsibility to ourselves and coming generations to head off such an unfortunate event.

Already casualties are running in excess of 100,000 a year. If this is peace, what would war be like?

The CHAIRMAN. Does that conclude your presentation?

Mr. UDALL. Yes, Mr. Chairman. I thank you.

The CHAIRMAN. Thank you very much.

Do any members of the committee have any questions?

Dr. Carter?

Mr. CARTER. Do you use tobacco, Mr. Udall?

Mr. UDALL. No, I don't smoke tobacco. Some of the members may have seen me occasionally with a cigar in my pocket but I have never smoked, and I am happy that I haven't.

Mr. CARTER. I was under a false impression. I have seen you with a cigar. I thought I saw it in your mouth.

Mr. UDALL. Once in a while as a nervous habit I chew cigars.

Mr. CARTER. Yes.

Mr. UDALL. But I should give this up, and I hope that I will. But I have never smoked and I am happy to say that.

Mr. CARTER. Thank you, sir.

The CHAIRMAN. Does anyone else have a nervous question?

Mr. Udall, thank you very much.

I am asking this question really on the sincere side. Your bill—and I would say there have been others who proposed that this matter be referred to the Public Health Service. If I remember correctly it has become a part of the Hazardous Substances Act? I think that has been one proposal, at least or consideration given. Do you think that all cigarette smoking should be prohibited?

Mr. UDALL. Oh, no, not at all. I don't think this is feasible. I don't think it could be done, and I want to make it very clear I do not favor this.

The CHAIRMAN. Under your proposal on page 2 you say, "Smoking products shall be deemed to be adulterated" and you enumerate, "One, if it bears or contains any poisonous or deleterious substance which may render it injurious to users under customary or usual conditions of use."

I assume that it is your feeling that cigarettes do contain certain poisonous or deleterious substances.

Mr. UDALL. Oh, yes, they do, there is no question about it.

The CHAIRMAN. That being true, wouldn't it be a fact that your proposal would make it mandatory that a shipment of tobacco products be prohibited in interstate commerce?

Mr. UDALL. No, I don't read the bill that way, Mr. Chairman.

The CHAIRMAN. I know, but you have got to consider it with other laws.

Mr. UDALL. I think you can place this interpretation on it, and in defense of my bill, I want to say that I think my bill was the first one that was introduced in the last session of Congress. I was attempting to get some interest in this subject, to get something done, and this bill was drafted with the assistance of some people, and I understand that it can be read as the chairman has indicated it can be read.

Now, if the committee takes action I would hope they would make it very clear in any legislation that there is no intention on the part of the Congress to try to stop or prohibit smoking, because this should not be done. As I said previously, I am not wedded to the approach that I have taken in my bill, and I think it does raise some questions which the chairman has put his finger on. But I have enough confidence in this committee that I know it can write legislation which is feasible and moderate and reasonable.

The CHAIRMAN. I hope our colleagues will understand that my questions were not intended to imply anything but merely to develop the facts.

Mr. UDALL. I appreciate that.

The CHAIRMAN. And we are seeking just what is intended by whatever proposal is made to us.

Mr. UDALL. I am grateful for the chairman raising that question because I want to make my intention very clear.

Mr. CARTER. Will the chairman yield for a question?

The CHAIRMAN. Yes, Dr. Carter.

Mr. CARTER. You say cigarettes contain these harmful substances. What are they, Mr. Udall?

Mr. UDALL. Well, the Surgeon General's report has covered this in some detail, and I may say in this regard the Food and Drug Administration now has control over nicotine which may appear in food products. This is used as an insecticide, and now the Commissioner or the Administration, the Food and Drug Administration, will take action if there is as much as two parts per million nicotine on an apple or an orange or some food product. Yet the average cigarette has something like 12,000 parts of nicotine per million in it, and under my bill the Food and Drug Administration, which now has no jurisdiction over nicotine in smoking products but does have jurisdiction over nicotine in food products would have the same kind of jurisdiction.

Mr. CARTER. In the work of the surgeon general's commission, experimentation and so on, did they find that nicotine and cigarettes directly affected people's health as you have stated?

Mr. UDALL. I think my friend from Kentucky can interpret the report as well as I can, and I won't——

Mr. CARTER. You find it there, I believe.

Mr. UDALL. I find it there, yes.

Mr. CARTER. I would ask you to show it to me that it says nicotine in cigarettes causes difficulty.

Mr. UDALL. There is room for doubt and dispute here, certainly. All the facts are not in. But I am satisfied, as my friend apparently is not satisfied, that there is a connection between smoking and lung cancer, emphezema and the other diseases.

Mr. CARTER. The 100,000 deaths, sir, can you show me where you obtained these figures, each year?

Mr. UDALL. As I said in my earlier testimony, this is my own personal estimate. I think it can be substantiated in the Surgeon General's report, and in other scientific investigations which have been made. I recognize that other people could conclude that there are no deaths from cigarettes and that in fact that they are good for you, and I respect the right of people to hold those opinions.

Mr. CARTER. We don't maintain anything like that.

However, we do have tables from the Surgeon General's office showing the number of deaths from lung cancer each year, and as it happens they don't, at least in 1962, they were not as much as half the figure you quoted, sir.

Mr. UDALL. We could dispute the implications.

Mr. CARTER. Let me read these figures. I will give you the Surgeon General's report, if you would like to have it.

Mr. UDALL. I have it available and I have read most of it.

Mr. CARTER. Yes, sir. It is hardly half what you are quoting. I don't want to make a case for cigarettes, but still we might very well injure an industry in which thousands and thousands of people are employed, and as yet it has never been proven that nicotine or tar cause lung cancer for that matter.

Mr. UDALL. It has been proven to my satisfaction. I recognize that there are those who disagree with me.

Mr. CARTER. Thank you, sir.

Facts and figures——

The CHAIRMAN. Mr. Farnsley, you have a question?

Mr. FARNSLEY. I would like the record to show at this point that Mrs. Farnsley and I own a small tobacco patch. You say you are not in favor of prohibition of cigarettes.

Mr. UDALL. That is right, sir.

Mr. FARNSLEY. You must have something in mind which you hope the bill will accomplish.

Mr. UDALL. That is right.

Mr. FARNSLEY. Would you mind telling me what?

Mr. UDALL. The main objective of my bill, and I think the other bills that have been introduced is an attempt at education. Education is the answer. If we can keep in front of the young people of this country the dangers of smoking so that they don't get this habit and get stuck on the cigarette habit, I think the long-range benefits, the long-range reduction in deaths, and serious illness, can be brought about. I think prohibition would have the same result that it had in this unfortunate experiment on alcohol that we undertook in this country. I don't think it would work but my bill is designed, and I think the other bills are designed to constantly call attention to the evils of tobacco, the dangers of smoking it, in the hope that the young people in this country will not take it up to the extent that their parents have.

Mr. FARNSLEY. If you had your druthers, if you had what you liked, I gather you would reduce the consumption of cigarettes—how fast would you do that, sir?

Mr. UDALL. I have no set prescribed rate at which I would reduce it, but I hope that we can make a marked reduction over the next few years by labeling, by some action in the field of advertising, by some things of this kind. But I would comfort my friends from Kentucky and these other States by telling them that in my judgment if you adopted all of the proposals that are before the Congress, there wouldn't be any dramatic or marked sudden reduction in the sales of tobacco.

I think it is a long-term problem which offers very slow results at best. But I think we ought to get started and do something along these lines.

Mr. FARNSLEY. I think perhaps my people would be more interested if there was total prohibition, and I don't think they want to kill people——

Mr. UDALL. I am sure they don't.

Mr. FARNSLEY. You still don't know how much you would reduce it, but your idea is to reduce it. You say you have ideas about advertising.

Would you tell me about that?

Mr. UDALL. Well, some of the legislation which has been proposed in the Congress would require that the sort of label we have been talking about on the cigarette carton or package would also be required to appear in advertising.

This is an approach which I think should be studied. Perhaps it is an approach which the Congress might want to leave to the Federal Trade Commission rather than legislating itself. But I certainly think this approach has some merit and that it ought to be studied and considered.

Mr. FARNSLEY. Would you think this would reduce advertising or reduce consumption, or both?

Mr. UDALL. I would think it would probably reduce both.

Mr. FARNSLEY. Reducing advertising might wound an innocent bystander.

Thank you, sir.

The CHAIRMAN. Any further questions?

Thank you very much, Mr. Udall. We assure you that your proposal will be given careful consideration by the committee.

Mr. UDALL. Thank you, Mr. Chairman.

The CHAIRMAN. The next witness is our colleague from North Carolina, the Honorable Alton Lennon. Mr. Lennon, we will be glad to hear you at this time.

STATEMENT OF HON. ALTON LENNON, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NORTH CAROLINA

Mr. LENNON. Mr. Chairman and members of the committee, I should like to offer to the committee two basic conclusions which I believe should be controlling in the area of tobacco and health.

(1) In view of the wide-ranging social and economic interests in questions of tobacco and health, it should be the Congress that determines policy and not a Federal agency.

(2) The policies and programs determined by Congress for so important a national question should be applicable throughout the country and not encumbered or frustrated by a diversity of local action.

As to the first, Mr. Chairman, it is clear that this issue relates not only to the problem of smoking and health, but to the individual citizen's determination whether and how much to smoke. The decisions in this connection are of vital concern to the tobacco growers, to the millions of our citizens concerned in the manufacture and distribution of tobacco products, and to both Federal and State revenues.

Congress, and Congress alone, should determine how these important national issues should be resolved. As further information develops Congress alone should determine what additional changes may be needed. It is not the responsibility of any administrative agency or department of the Federal Government to do so.

I was shocked when less than a week after the report of the Surgeon General's Advisory Committee was issued, the Federal Trade Commission moved in with an unprecedented set of proposed trade regulation rules which were not only premature but plainly unauthorized. I say premature because when the Surgeon General set up the Advisory Committee, it was clearly understood their report was to be phase I in dealing with the problem. There was to be a phase II in which all concerned would examine all of the questions in the light of the report and make recommendations as to what should be done.

I have studied the legislative authority of the Federal Trade Commission and the Administrative Procedure Act which Congress in 1946 provided to prevent this very type of abuse of statutory power by administrative agencies. I am satisfied that when this committee examines these questions, it also must conclude that what the Commission has done—for the first time in the 50 years since it was created by Congress—is not authorized by law. It is a usurpation of the congressional power to legislate.

The Federal Trade Commission, I feel, has acted in plain violation of the fundamental rules of due process, as well as the requirements of the Administrative Procedure Act. It can hardly be due process to make administrative determinations without having sworn testimony, or the opportunity to cross-examine witnesses. These fundamental rights were not honored before the Commission last March.

Despite that, the Commission told me at its hearing that it has the power to act where it can "make a finding based upon competent, reliable, probative, relevant evidence" (Commission proceeding, p. 403). It did not proceed to get that kind of evidence.

I mention these facts because they underscore my point that Congress, and Congress alone, should deal with this problem.

My second conclusion is plainly based on commonsense.

In a program of such wide concern to so many segments, it would make little sense, and contribute nothing except chaotic confusion for each State and city to write its own rules about the labeling of tobacco products. Such action would create an impossible situation for the production and distribution of cigarettes and other tobacco products. The determinations of Congress should prevail.

This is not a question of the Federal Government attempting to invade the rights and authority of any State. When it comes to protecting the interstate movement and sale of marketed products, Congress has often exercised authority to prevent unnecessary interstate barriers. There are many precedents for this view.

In my opinion a caution label for tobacco products is not necessary. Certainly, the public is acutely aware of the charge that smoking may be injurious to health, and the issue will undoubtedly receive continuing publicity. However, should this committee determine that legislative action is desirable in the tobacco-health area, I hope it will also provide that the rules and requirements which may be enacted by the Congress are to preempt the field.

The CHAIRMAN. Are there any questions? If not, we appreciate your appearance and testimony, Mr. Lennon.

Mr. LENNON. Thank you, Mr. Chairman.

The CHAIRMAN. The next witness is our colleague from Kentucky, the Honorable Frank Chelf. Mr. Chelf, we welcome you to the committee.

STATEMENT OF HON. FRANK CHELF, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF KENTUCKY

Mr. CHELF. Mr. Chairman and members of the committee, as the Representative of the Fourth Congressional District of Kentucky which is the second largest Burley tobacco-producing district in our State, it is a real pleasure to appear before you today.

Since tobacco is so very important to the economic well-being of Kentucky and the entire Nation, it is fitting and proper that I should represent the deep interest of my constituents in the matter of cigarette package labeling now before your fine committee. However, our desire to protect the tobacco industry does not mean that we do not have an intense concern for the physical well-being of all of us. Indeed, we well appreciate the laudable effort on the part of the Surgeon General and his associates to safeguard the health of our citizens

by their effort in making public any and all information which could be considered deleterious.

Notwithstanding this, however, it is my considered judgment that it would be a serious mistake to give to the Department of Health, Education, and Welfare, the Federal Trade Commission, or any other Federal agency the regulatory power of labeling the contents of a package of cigarettes as being dangerous to health. In my opinion, the Federal Trade Commission has gone far beyond its jurisdiction in issuing the trade regulation rule currently due to go into effect on July 1 of this year.

There are numerous and diverse reasons for my having reached this conclusion. Many distinguished and learned scientists feel that it has not been definitely established that smoking causes disease. In many areas there appear to be uncertainty and a paucity of facts upon which to base correct assumptions. This indicates that there is a glaring and urgent need for research.

I do not feel it is appropriate or in the best interest of the American people to have an arbitrary and administrative action taken by a governmental agency in this connection. Since this problem is so wide in scope and of such vast importance to so many people, I am convinced that should it prove to be necessary for any action to be taken, it should be taken by the Congress which represents, and remains close to, the people affected by this matter.

It must be recognized today that millions of persons throughout the world (including the majority of men and women in this country) enjoy the benefits of pleasure and diversion derived from smoking. Soon after the Surgeon General's health report was published and the information was disseminated via all news media, tobacco consumption decreased. However, later, sales rose as people decided to use their own judgment in the matter. This has shown that the use of tobacco is a tension reducer which, in addition to the pleasurable benefits of smoking, many people find to be necessary to their sense of well-being and, what's more important, a boon to the individual state of good health.

People have read the reports, have analyzed the statements and have made the decision not to deny themselves the real pleasures and tangible benefits of smoking. Therefore, the labeling of cigarette packages in the manner proposed by the Federal Trade Commission is about as valid as labeling packages of butter that an excessive consumption could produce obesity, with the possibility of a resultant dangerously high level of cholesterol, or the labeling of all liquor bottles to show that uncontrolled consumption of the product could produce various health hazards.

Gentlemen, not to be taken lightly in the consideration of this matter is the importance of the tobacco industry as an $8 billion enterprise. Literally, millions of persons depend directly or indirectly upon tobacco for their livelihood. In 1963, some 500,000 farms—with some 700,000 farm families—produced tobacco which had a cash value of over $1.3 billion. Exports of leaf tobacco and tobacco products totaled more than $522 million in 1963. Approximately, $3,300 million went into local, State, and Federal treasuries from taxes on cigarettes in 1963. Other industries are very definitely affected by the tobacco industry—such as advertising, transportation, printing, paper, and nu-

merous others. Considering the importance of this industry to our Nation as a whole, we cannot, we must not, take action which is inimical to its best interests without first having definite and conclusive proof that such drastic action is necessary.

At the same time, it is possible and necessary to be mindful of any health hazard which might exist. Since we do not know the source of the injurious effect of tobacco, it would be ill advised to condemn all tobacco until we know what ingredient of the leaf should be removed. We must not overlook the fact that evidence has shown that the burning of vegetable fibers other than tobacco has the same inherent properties of containing possible carcinogenic materials as those allegedly found in tobacco.

Mr. Chairman, how else can we clear up this entire picture of confusion, of disparate points of view, of conflicting opinion, of lack of knowledge, except by conducting prodigious, painstaking, and intensive research in the matter of the tobacco plant, itself, and the effects of smoking? The medical center and agricultural experiment station of the University of Kentucky, Lexington, Ky., and the National Tobacco Research Laboratory are coordinating their efforts in connection with the tobacco health problem. They are working with zeal and dedication on the pertinent aspects of tobacco research such as enzyme chemistry, identification of tobacco smoke constituents, and so forth. President Oswald, of the University of Kentucky, himself a scientist, has stated that there is an intensification of graduate work which cuts across college and departmental lines. The university is located in a very important tobacco-producing area and with its research facilities, together with the Spindletop research lab nearby, is in a unique position to continue the research program.

In view of the importance of the contribution of the tobacco industry to our Nation's economic well-being and, furthermore, in view of the inconclusive evidence upon which deductions have been based and the persistence of the average citizen in pursuing the smoking habit, in spite of the warning issued, it appears that it behooves us to proceed with the utmost caution in permitting any kind of labeling action for cigarette packages. Most assuredly, such action should not be taken unless further and exhaustive research has shown a compelling and overwhelming need for it and then it should be accomplished by legislative measure.

I want to thank you, Mr. Chairman and members of the committee, for allowing me the time and the opportunity again to present my convictions and views concerning this problem which is of such paramount interest to the tobacco growers, warehousemen, and auctioneers whom I have the honor to represent here in Congress. It is a problem which is, indeed, of vast significance to all Americans.

The CHAIRMAN. Are there any questions? If not, we thank you for your appearance, Mr. Chelf.

Mr. CHELF. Thank you, Mr. Chairman.

The CHAIRMAN. Now we will hear the Chairman and other members of the Federal Trade Commission.

Mr. Dixon, you and your colleagues may take seats and I am going to let you present them and the staff members who are with you here for the record.

STATEMENT OF HON. PAUL RAND DIXON, CHAIRMAN, FEDERAL TRADE COMMISSION; ACCOMPANIED BY J. V. BUFFINGTON, ADMINISTRATIVE ASSISTANT TO THE CHAIRMAN; JOHN WHEELOCK, EXECUTIVE DIRECTOR; CHARLES SWEENEY, CHIEF OF DIVISION OF FOOD AND DRUG ADVERTISING OF BUREAU OF DECEPTIVE PRACTICES; AND FRED DOWNS, ATTORNEY OF BUREAU OF DECEPTIVE PRACTICES

Mr. DIXON. I have with me members of the staff. To my right is my assistant Mr. J. V. Buffington and to his right is Mr. John N. Wheelock, the Executive Director of the Federal Trade Commission. To my left is Mr. Charles Sweeney the Chief of the Food and Drug Advertising Division, and to his left, a staff attorney, Mr. Fred Downs.

Mr. Chairman, I appreciate the opportunity to appear before you on behalf of the Federal Trade Commission and to present the Commission's views on H.R. 4244 and H.R. 3014. My comments on H.R. 3014 will apply equally to H.R. 4007 since these two bills are identical.

The Federal Trade Commission as this committee knows, has played a leading role in the initiation of remedial measures dealing with cigarette labeling and advertising in relation to the public health questions raised by cigarette smoking. On September 15, 1955, the Commission promulgated Cigarette Advertising Guides (FTC Ann. Rept. 1960, p. 82). Among other things, they prohibited representations in cigarette advertising or labeling which refer to either the presence or absence of any physical effects from cigarette smoking, or which make unsubstantiated claims respecting nicotine, tars, or other components of cigarette smoke, or which in any other respects contain implications concerning the health consequences of smoking cigarettes or any advertised brand. In 1960, the Commission obtained agreement from the leading cigarette manufacturers to discontinue the confusing and unsubstantiated representations of tar and nicotine content which had characterized the so-called tar derby. (FTC Ann. Rept., 1960, p. 82.)

Since the promulgation of the Cigarette Advertising Guides, the Commission has maintained a close and continuous scrutiny of cigarette advertising practices, and has been very much interested in the progress of medical research delving into the health aspects of cigarette smoking. The Commission, through its staff members has monitored all cigarette advertising during this period and today is continuing such monitoring. We have maintained a close contact with officials of the cigarette industry, as well as with public and private bodies which have engaged in scientific research in this field.

With the mounting of emphasis, in recent years, on the grave hazards to life and health involved in cigarette smoking, the Commission's concern with fulfilling its statutory responsibilities in the area of the merchandising of cigarettes has increased. As a manifestation of this concern, the Commission requested technical guidance from the U.S. Public Health Service on the labeling and advertising of tobacco products. One of the reasons you will find in this report of this "blue ribbon scientific committee" for the establishment of such a committee was this request I have just referred to. I wrote the letters myself because we were getting, Mr. Chairman, questions from the Congress and from the public. What is your attitude on the bill? What are

you going to do about this representation? I turned to what I would consider the best scientific source I could in America when I asked the Surgeon General to give us some guidance, and so he cited that as one of his several reasons for establishing this committee which he established.

In fact, the Associate Chief of the Division of Scientific Opinions of the Commission's Bureau of Deceptive Practices, a medical doctor, was one of the observers from interested Federal agencies who participated in the initial deliberations of the expert Advisory Committee established by the Surgeon General in 1962, to undertake a comprehensive review of available data on the relationship between smoking and health. Our doctor merely was in a liaison capacity. He was not a member of the committee that made a report or study, sir.

Thus, the Commission was prepared, when the Advisory Committee's report was released on January 11, 1964, to act upon the Surgeon General's statement—made in announcing the release of the report—that:

> Out of its long and exhaustive deliberations the Advisory Committee has reached the overall judgment that cigarette smoking is a health hazard of sufficient importance in the United States to warrant remedial action.

On January 18, 1964, the Commission, pursuant to the Federal Trade Commission Act and to procedures set forth in the Administrative Procedure Act and the Commission's procedures and rules of practice, initiated a proceeding for the promulgation of a trade regulation rule or rules for the prevention of unfair or deceptive acts or practices in the sale of cigarettes in relation to the health hazards of smoking, as found by the Advisory Committee to the Surgeon General. After receiving extensive written data, views and argument, and after holding public hearings, the Commission closed the record of the rulemaking proceeding on May 15, 1964. Thereafter, on June 22, 1964, the Commission, on the basis of findings made by it in the rulemaking proceeding and set forth in a comprehensive statement of basis and purpose of trade regulation rule, promulgated a trade regulation rule for the prevention of unfair or deceptive advertising and labeling of cigarettes in relation to the health hazards of smoking.

This rule expresses the Commission's determination, for the purpose of preventing future violations of law, of the requirements of the Federal Trade Commission Act as applied to the marketing of cigarettes in light of the health hazards of smoking. The rule provides that it is an unfair or deceptive act or practice within the meaning of section 5 of the Federal Trade Commission Act (15 U.S.C. 45) to fail to disclose clearly and prominently in cigarette advertising and labeling that cigarette smoking is dangerous to health and may cause death from cancer and other diseases. Both the advertising and labeling requirements of the rule become effective on July 1, 1965.

The reasons justifying such a rule, as more fully explained in the statement of basis and purpose, are basically twofold. First, there is a consensus of medical and scientific opinion that cigarette smoking is a significant cause of certain grave diseases and contributes substantially to mortality from those diseases and to the overall death rate. These were the findings of the Surgeon General's blue-ribbon Advisory Committee on Smoking and Health. These findings are authoritative and reliable. Mr. Chairman, that group of scientists and doctors who sat on that blue-ribbon committee were picked from a group that were

nominated by the tobacco industry and all that were interested in this subject. The men that were allowed to sit on that committee, the 10 that sit there, sat there with the veto right of every member of the tobacco industry to strike them if they had any reason to strike them, and their report didn't quibble. It was unanimous, sir.

They provide a compelling basis for prompt and effective governmental remedial action. Second, the Commission found that the methods by which cigarettes have been and are being sold to the consuming public—by means of labeling, and advertising, which fails to disclose the health hazards of cigarette smoking—are deceptive and unfair to consumers—especially children and teenagers, among whom cigarette smoking is very widespread—under settled legal principles governing truth and fairness in advertising.

The Commission, therefore, strongly believes that effective remedial measures with respect to current cigarette advertising and labeling are necessary in the public interest, and supports legislation consistent with the objectives of its rule.

Insofar as labeling is concerned, H.R. 4244 would require the statement "Warning—Contents May Be Dangerous to Health" on each package of cigarettes and H.R. 3014 would require the statement "Caution: Cigarette Smoking May Be Hazardous to Your Health" on each package of cigarettes. It is our opinion that either of these two cautionary warnings on the label of cigarettes would have a certain remedial effect in warning cigarette smokers of the dangers which may result from smoking cigarettes. We would suggest, however, that the statement in H.R. 3014 be changed by substituting the word "Is" for the words "May Be" because it is our opinion that cigarette smoking is a health hazard.

H.R. 3014, provides that its labeling requirements are to be enforced solely by criminal proceedings and by injunctive action instituted by the Attorney General, while H.R. 4244, provides for its enforcement by the Federal Trade Commission under the rules, regulations, and procedures provided for in the Federal Trade Commission Act. It is our opinion that H.R. 4244, would provide the more appropriate method of enforcement. I say that, Mr. Chairman, because I think Congress was wise in establishing a regulatory agency such as the Federal Trade Commission. It is a pliable agency. Circumstances and remedies that appear necessary can be changed by circumstances of tomorrow, whereas if you pass a law and you say "This shall be the law" and you turn it over to the enforcement of the respective U.S. Attorneys General, the only way you can change that, is to change the law.

With respect to cigarette advertising, the bills take entirely divergent approaches.

H.R. 4244 describes when cigarettes are misbranded. It further provides that the—

> sale, advertising, or offering for sale in commerce * * * of any cigarettes which are misbranded * * * is unlawful and shall be an unfair practice, in commerce under the Federal Trade Commission Act.

Beyond this, H.R. 4244 does not deal with cigarette advertising. The Commission would interpret this omission as no preemption of its existing authority under existing statutes to prevent, if necessary through a requirement of affirmative disclosure, unfair and deceptive cigarette advertising. It was, of course, pursuant to its existing gen-

eral statutory authority that the Commission promulgated the trade regulation rule. In this connection, however, I might add that if the Congress should adopt the approach as provided in H.R. 4244, the Commission would not, in any event, require in advertising any affirmative disclosure which would be inconsistent in any way with the statement required on the cigarette package.

H.R. 3014 provides that nothing in it—

> shall be construed to limit or to expand the authority of the Federal Trade Commission with respect to the dissemination in commerce of any false or misleading advertisement of cigarettes * * *

but with the proviso that the Commission shall not have authority in any proceedings under any statute which it administers—

> to require the inclusion in any advertisement of any statement concerning any hazard to health involved in smoking cigarettes where the advertised cigarettes have been packaged in conformity with the labeling provisions

of the bill. It also prohibits any Federal agency from requiring any additional cautionary statement on any package labeled in conformity with the provisions of the bill.

As we interpret H.R. 3014 on this point, it would prohibit the Federal Trade Commission from bringing any proceeding to require the inclusion in any advertisement of cigarettes any statement concerning the danger to health from smoking where the advertised cigarettes have been labeled in conformity with the provisions of the bill. The effect of this would be to single out cigarettes and exempt them from any requirement that advertising must disclose the danger attendant to their use. Thus, while under settled principles the Commission in order to avert deception of consumers could in the future require a seller to affirmatively disclose in advertising the country of origin of his imported products, the fact that his fabric depicted to resemble mink is in fact made of a synthetic fiber, or the adverse consequences of the normal use of his drug, device, or cosmetic, it could not require in the advertising of cigarettes a statement of the established danger to health associated with the smoking of them.

This, of course, is a limitation on the Commission's authority which the Congress may, if it wishes, impose. We are fully aware of that, Mr. Chairman. I do feel, however, that it is my duty to point out to this committee one of the factors which led the Commission to the conclusion that cigarette advertisements should contain a warning statement. Our study of the problem convinced us that the principal means of promoting the sale of cigarettes is advertising, not labeling. According to our information the total expenditures in 1963 for cigarette advertising by the six leading cigarette manufacturers exceeded $200 million. Of this, over $125 million was spent on television advertising, including both network and spot commercials. This represented a substantial increase over 1962, and an increase over 1952 expenditures for television advertising of over 250 percent.

We reviewed and studied a lot of this television advertising in our rulemaking proceeding and found it to portray the smoking of virtually every significant brand of cigarette as pleasant, desirable, a social asset, romantic, and associated with manliness and popularity. Portrayal of the desirability of smoking was also accomplished by the association of smoking with ideas and individuals worthy of emulation or likely to be emulated, so as to suggest that smoking is an

important attribute of full personal success and development. All of these themes are, of course, attractive to teenagers, and radio and television programs sponsored by cigarette manufacturers can be seen and heard at any time of day or night. Cigarette companies were found to be the sponsors of numerous television programs having a particularly large audience of children and teenagers, through which they suggested to them over and over again the desirability of smoking, without suggesting in any way that children should not smoke or that smoking might impair one's health. One program, "The Beverly Hillbillies" had an audience of children 2 to 12 years of age equal to 12.6 million, or about 28.8 percent of the children of the United States of that age group. It is sponsored by Winston.

And, Mr. Chairman, this impact of cigarette advertising on young people was a particularly important consideration in our proceeding. Available data on smoking patterns indicate that an ever-increasing proportion of persons in younger age groups are becoming regular smokers. Among males 25 to 34 years of age as of February 1955, 61.4 percent had become regular smokers prior to the age of 21, and among females 25 to 34 years of age, 28.9 percent had become regular smokers prior to the age of 21. By contrast, among males and females 45 to 54 years of age, 51.2 percent and 7.5 percent, respectively, had become regular smokers prior to the age of 21.

We get some overall indication of the effectiveness of advertising by making a comparison of cigarette consumption data and advertising expenditure data. Between 1956 and 1962 there was an increase of 25.8 percent in domestic cigarette consumption and 16.9 percent in domestic cigarette consumption and 16.9 percent increase in per capita cigarette consumption. In this same period of time there was a 47.3 percent increase in cigarette advertising expenditures by the six leading manufacturers.

Another indication of the effects of cigarette advertising on cigarette consumption is found in this quote from the April 20, 1964, issue of Advertising Age.

> April sales of P. Lorillard Co. are running ahead of last years, following a "low point" in February—thanks in part to "record levels of advertising," Morton J. Cramer, president, told the company's annual meeting today.
>
> Because of the Surgeon General's report and "competitive considerations" Lorillard's advertising reached record levels during the first quarter, he said. "The decision to spend these record amounts was made in the full knowledge that commitments of this magnitude would significantly affect our already depressed earnings, but it has already been proved sound—by the turnaround in sales," said Mr. Cramer.

Having in mind these and the other considerations set forth in its statement of basis and purpose of its rule, the Commission felt that it would not be in the public interest to leave unregulated the advertising of cigarettes and thereby fail to have the public, especially children, warned of the relationship between cigarette smoking and health. In this connection, however, I would point out that this was on the assumption that past conditions of cigarette advertising would continue unchanged. In its published statement, the Commission expressly recognized that circumstances might change, and that such change could affect the public interest with respect to the need for the required disclosure in cigarette advertising would continue unchanged. In its published statement, the Commission expressly recognized that

circumstances might change, and that such change could affect the public interest with respect to the need for the required disclosure in cigarette advertising. Hence, the Commission made express provision in the rule for dealing with such changed circumstances should they occur. It not only expressed the hope that the industry would voluntarily bring about such changes in its practices as would obviate the need for formal enforcement proceedings or sanctions against it, but also provided that the Commission would entertain an application filed prior to May 1, 1965, by any interested party to postpone the effective date or otherwise suspend, modify, or abrogate the provision of the rule as to advertising, upon a showing of such a change in circumstances as to justify it in the public interest. To date, no such application has been filed.

That completes my formal statement, Mr. Chairman.

The CHAIRMAN. Thank you very much, Mr. Dixon, for your statement.

In further reference to this proposal, I believe it would be appropriate at this time to include as a part of the record by reference the report of the committee, which has been referred to here today by several as the "Blue Ribbon Commission," in order that the committee and the record may have this available. Also I believe it would be appropriate to have the record to include by reference the booklet I suppose.

Mr. DIXON. The trade regulation rule.

The CHAIRMAN. The proposed trade regulation rule that was referred to here a year ago and which the chairman had with him at the time which was disclosed.

Mr. DIXON. Enclosed with that rule also is the basis and purpose of the rule. It is in a booklet form, sir.

The CHAIRMAN. I would assume you have plenty of copies of this, do you not?

Mr. DIXON. We have I think 10 with us, but if there is any need for any more, we will turn over more to you, sir. We will supply as many as you need, sir.

The CHAIRMAN. I recall there were only a few copies available at the time it was announced a year ago.

Mr. DIXON. We were printing them that day, sir.

The CHAIRMAN. I am not sure if I even have one myself. I have one of the others. I am advised that we have an ample supply back in the committee room, so that will suffice. If we do need any more, we will advise you.

(The trade regulation rule referred to follows:)

FEDERAL TRADE COMMISSION,
Washington.

TRADE REGULATION RULE FOR THE PREVENTION OF UNFAIR OR DECEPTIVE ADVERTISING AND LABELING OF CIGARETTES IN RELATION TO THE HEALTH HAZARDS OF SMOKING

PARAGRAPH 1. The Federal Trade Commission, pursuant to the Federal Trade Commission Act, as amended, 15 U.S.C. §§ 41, et seq., and the provisions of Subpart F of the Commission's Procedures and Rules of Practice, 28 F.R. 7083–84 (July 1963), has conducted a proceeding for the promulgation of a Trade Regulation Rule, or Rules, for the prevention of unfailr or deceptive acts or practices in the sale of cigarettes. Notice of this proceeding, including a set of proposed Rules, was published in the Federal Register on Janu-

ary 22, 1964 (29 F.R. 530-32). Interested parties were thereafter afforded an opportunity to participate in the proceeding through the submission of written data, views and argument and to appear and express orally their views as to the proposed Rules and to suggest revisions thereof and amendments and additions thereto. In adopting this Rule, the Commission has given due consideration to all such views, data and argument together with all other relevant matters of fact, law, policy and discretion.

PAR. 2. The Commission, on the basis of the findings made by it in this proceeding, as set forth in the accompanying Statement of Basis and Purpose of Trade Regulation Rule, hereby promulgates as a Trade Regulation Rule its determination that in connection with the sale, offering for sale, or distrbution in commerce (as "commerce" is defined in the Federal Trade Commission Act) of cigarettes it is an unfair or deceptive act or practice within the meaning of Section 5 of the Federal Trade Commission Act (15 U.S.C. § 45) to fail to disclose, clearly and prominently, in all advertising and on every pack, box, carton or other container in which cigarettes are sold to the consuming public that cigarette smoking is dangerous to health and may cause death from cancer and other diseases.

PAR. 3. For purposes of this Rule:

(1) "Cigarette" means any roll of tobacco wrapped in paper or otherwise commonly considered a cigarette.

(2) "Advertising" includes all radio and television commercials, newspaper and magazine advertisements, billboards, posters, signs, decals, matchbook advertising, point-of-sale display material, and all other written or other material used for promoting the sale or consumption of cigarettes but does not include the labeling of packs, boxes, cartons and other containers in which cigarettes are sold to the consuming public.

PAR. 4. In the event that any person subject to this Rule is of the opinion that new or changed conditions of fact or law, the public interest, or special circumstances require that the Rule be suspended, modified, waived, or repealed as to him, or otherwise altered or amended, such person may file with the Secretary of the Commission a petition to reopen this rule-making proceeding, stating the changes desired and the grounds therefor. The Commission will act on the petition as provided in Section 1.66 of the Commission's Procedures and Rules of Practice.

PAR. 5. Except with respect to advertising, this Rule shall become effective on January 1, 1965.

PAR. 6. With respect to advertising, this Rule shall become effective on July 1, 1965; provided, however, that the Commission will entertain an application filed prior to May 1, 1965, by any interested party to postpone the effective date or otherwise suspend, modify, or abrogate the provisions of the Rule as to advertising, upon a showing of such change in circumstances as to justify such requested action in the public interest.

Issued: June 22, 1964.

By the Commission.

JOSEPH W. SHEA, *Secretary.*

(NOTE.—The accompanying statement of basis and purpose of rule has been placed in the committee files.)

The CHAIRMAN. Mr. Chairman, you referred to the various proposals that have been introduced in the House and referred to the committee. Have you not concluded within recent days a presentation to the Senate committee?

Mr. DIXON. Yes, sir; just about a week ago yesterday I testified.

The CHAIRMAN. There are two bills pending before the body. One of them which has been called to my attention by the distinguished chairman of our counterpart committee, the Commerce Committee of the Senate, S. 559. As a matter of fact, he was courteous enough to make a copy of it available to me together with the statement that he made in the record at the time of its introduction.

In view of the fact that several bills had been introduced and pending before the committee, I did not introduce it, and so explained to him that I thought that I would refrain at the moment.

I am sure you must have had an opportunity to comment on the Senator's proposal.

Mr. DIXON. I made a statement there, a formal statement, and if it is the Chairman's desire, I will furnish a copy of that for this record. It is not a very extensive statement—on the two bills that were pending before the Commerce Committee of the Senate.

The CHAIRMAN. And you commented on both of them?

Mr. DIXON. On both of them—S. 559 and S. 547.

The CHAIRMAN. If there is no objection, I think it should be included in the record. I myself would like to have it.

(The statement referred to follows:)

STATEMENT OF PAUL RAND DIXON, CHAIRMAN, FEDERAL TRADE COMMISSION

Mr. Chairman, in response to your invitation, I am pleased to appear on behalf of the Federal Trade Commission and present to the committee the Commission's views on S. 547 and S. 559.

S. 547 recites that "The Congress hereby finds and declares that the unrestricted promotion and advertising of cigarettes in interstate commerce, in the light of the conclusive evidence that cigarette smoking is injurious to health, constitutes a grave threat to the public welfare," and provides that "The Federal Trade Commission, with the cooperation of the Secretary of Health, Education, and Welfare, shall establish such standards and requirements for the labeling and advertising of cigarettes which are in commerce as it may deem necessary to protect the public health."

With respect to the labeling of cigarettes, it is provided that such standards and requirements "shall include the requirement that each package or container in which cigarettes in commerce are offered for sale to consumers bear a clear and distinct label which (1) contains the following words: 'Caution—Habitual Smoking Is Injurious to Health'; and (2) sets forth the average yield, or other index, of each incriminated agent to be found in the smoke of the cigarettes contained in such package or container." The bill defines the term "incriminated agent" as "any substance found in cigarette smoke which, as determined by the Commission, tends to contribute to the medical hazards of smoking."

With respect to advertising, the bill provides that such standards and requirements shall "(1) provide that each cigarette advertisement contain the following warning: 'Caution—Habitual Cigarette Smoking Is Injurious to Health'; and (2) provide for the elimination of all advertising matter which tends to make cigarette smoking attractive to children." It is further provided that any cigarette package or container or cigarette advertisement which fails to comply with the standards and requirements established by the Commission shall be deemed a false advertisement within the meaning of sections 12–15 of the Federal Trade Commission Act.

S. 559 provides that "It shall be unlawful for any person to manufacture, import, or package for sale or distribution within the United States any cigarettes the package of which (1) fails to bear the following statement: 'Warning: Continual Cigarette Smoking May Be Hazardous to Your Health' or (2) fails to state the average tar and nicotine yields per cigarette as determined by the Cambridge filter method or such other method as may hereafter be approved for such purpose by the National Bureau of Standards." It further provides: "No other warning requirement shall be imposed on cigarette labeling or packaging by any Federal, State, or local authority." Criminal and injunctive sanctions are provided in the bill for failure to comply with its requirements.

The Federal Trade Commission has played a leading role in the initiation of remedial measures dealing with cigarette labeling and advertising in relation to the public health questions raised by cigarette smoking. On September 15, 1955, the Commission promulgated Cigarette Advertising Guides (FTC Ann. Rep., 1960, p. 82). Among other things, they prohibited representations in cigarette advertising or labeling which refer to either the presence or absence of any physical effects from cigarette smoking, or which make unsubstantiated claims respecting nicotine, tars, or other components of cigarette smoke, or which in any other respects contain implications concerning the health consequences of smoking cigarettes or any advertised brand. In 1960, the Commis-

sion obtained agreement from the leading cigarette manufacturers to discontinue the confusing and unsubstantiated representations of tar and nicotine content which had characterized the so-called "tar derby." (FTC Ann. Rep., 1960, p. 82.)

Since the promulgation of the Cigarette Advertising Guides, the Commission has maintained a close and continuous scrutiny of cigarette advertising practices, and has been very much interested in the progress of medical research delving into the health aspects of cigarette smoking. The Commission, through its staff members, has monitored all cigarette advertising during this period and today is continuing such monitoring. We have maintained a close contact with officials of the cigarette industry, as well as with public and private bodies which have engaged in scientific research in this field.

With the mounting of emphasis, in recent years, on the grave hazards to life and health involved in cigarette smoking, the Commission's concern with fulfilling its statutory responsibilities in the area of the merchandising of cigarettes has increased. As a manifestation of this concern, the Commission requested technical guidance from the U.S. Public Health Service on the labeling and advertising of tobacco products. In fact, the Associate Chief of the Division of Scientific Opinions of the Commission's Bureau of Deceptive Practices, a medical doctor, was one of the observers from interested Federal agencies who participated in the initial deliberations of the expert Advisory Committee established by the Surgeon General in 1962, to undertake a comprehensive review of available data on the relationship between smoking and health.

Thus, the Commission was prepared, when the Advisory Committee's report was released on January 11, 1964, to act upon the Surgeon General's statement (made in announcing the release of the report) that, "Out of its long and exhaustive deliberations the [Advisory] Committee has reached the overall judgment that cigarette smoking is a health hazard of sufficient importance in the United States to warrant remedial action."

On January 18, 1964, the Commission, pursuant to the Federal Trade Commission Act and to procedures set forth in the Administrative Procedure Act and the Commission's Procedures and Rules of Practice, initiated a proceeding for the promulgation of a trade regulation rule or rules for the prevention of unfair or deceptive acts or practices in the sale of cigarettes in relation to the health hazards of smoking, as found by the Advisory Committee to the Surgeon General. After receiving extensive written data, views and argument, and after holding public hearings, the Commission closed the record of the rulemaking proceeding on May 15, 1964. Thereafter, on June 22, 1964, the Commission, on the basis of findings made by it in the rulemaking proceeding and set forth in a comprehensive statement of basis and purpose of trade regulation rule, promulgated a trade regulation rule for the prevention of unfair or deceptive advertising and labeling of cigarettes in relation to the health hazards of smoking.

This rule expresses the Commission's determination, for the purpose of preventing future violations of law, of the requirements of the Federal Trade Commission Act as applied to the marketing of cigarettes in light of the health hazards of smoking. The rule provides that it is an unfair or deceptive act or practice within the meaning of section 5 of the Federal Trade Commission Act (15 U.S.C. 45) to fail to disclose clearly and prominently in cigarette advertising and labeling that cigarette smoking is dangerous to health and may cause death from cancer and other diseases. Both the advertising and labeling requirements of the rule become effective on July 1, 1965.

The reasons justifying such a rule, as more fully explained in the statement of basis and purpose, are basically twofold. First, there is a consensus of medical and scientific opinion that cigarette smoking is a significant cause of certain grave diseases and contributes substantially to mortality from those diseases and to the overall death rate. These were the findings of the Surgeon General's blue-ribbon Advisory Committee on Smoking and Health. These findings are authoritative, reliable, and stand essentially unchallenged. They provide a compelling basis for prompt and effective governmental remedial action. Second, the Commission found that the methods by which cigarettes have been and are being sold to the consuming public—by means of labeling, and advertising, which fails to disclose the health hazards of cigarette smoking—are deceptive and unfair to consumers—especially children and teenagers, among whom cigarette smoking is very widespread—under settled legal principles governing truth and fairness in advertising.

The Commission, therefore, strongly believes that effective remedial measures with respect to current cigarette advertising and labeling are necessary in the public interest, and supports legislation consistent with the objectives of its

rule. We believe that both S. 547 and S. 559 are effective remedial measures; and we support both because either, if enacted, would contribute to the protection of the consuming public against unfair and deceptive cigarette labeling and advertising. We further think that it is desirable and in the public interest for Congress to enact such legislation since this would enable remedial action to become effective immediately.

With respect to cigarette advertising, the bills take slightly divergent approaches. S. 547, in requiring that every cigarette advertisement make affirmative disclosure of the dangers to health of smoking, would, if enacted, forbid cigarette advertising which fails to make such disclosure as unfair and deceptive. S. 559 does not, on its face, deal with cigarette advertising. The Commission would interpret this omission as no preemption of its existing authority under existing statutes to prevent, if necessary through a requirement of affirmative disclosure, unfair and deceptive cigarette advertising. It was, of course, pursuant to its existing general statutory authority that the Commission promulgated the trade regulation rule.

In support of the trade regulation rule the Commission found that cigarette advertising, not labeling, has been the principal sales method employed in the marketing of cigarettes to the American public. We feel, therefore, that the public interest will be served if the Commission is left free by the Congress to take action, within its existing authority, to prevent unfair or deceptive advertising acts or practices in commerce as may be necessary and appropriate in the public interest.

Accordingly, the Commission believe that any effective legislation in the field of smoking and health should be consistent with the trade regulation rule with respect to cigarette advertising, and that it should neither preclude nor preempt the Commission's authority under existing law with respect to cigarette advertising and thereby leave such advertising unregulated. Both S. 547 and S. 559 satisfactorily meet this requirement.

We would suggest for the consideration of the committee some changes in the wording of some of the provisions in the two bills.

The first concerns the required cautionary statement in S. 547. In our opinion, the required warning that habitual smoking "is injurious to health" overstates the medical and scientific evidence of the health hazards of smoking. While cigarette smoking is, on the basis of present knowledge, undoubtedly hazardous to health since smoking substantially increases a person's risk of injury or death from certain diseases, the evidence is less conclusive that cigarette smoking is in fact always injurious to the health of all who smoke. We would suggest that the present wording be changed to read that habitual cigarette smoking "is hazardous to health" or "is a substantial health hazard."

Along the same line, we believe the required cautionary statement in S. 559, that "continual" cigarette smoking may be hazardous to health, should be changed. Anything may be hazardous to one's health; cigarette smoking, however, has been shown to be, in fact, a substantial health hazard. In addition, the word "continual" (which is often understood as synonymous with "continuous") could be misleading in this context, since it could be misunderstood to imply that only the chain smoker runs any risk to his health from smoking. The Surgeon General's Advisory Committee did not find that the hazards of smoking are confined to chain smokers or others who smoke with unusual frequency. We would suggest that the words "continual" and "may be" as used in S. 559 should be changed to "habitual" and "is," so that the cautionary statement would read that "habitual cigarette smoking is hazardous to health."

Section 4(f) of S. 547 specifies that for purposes of disclosure requirements of the bill, it shall be the Federal Trade Commission's responsibility to determine which substances in cigarette smoke tend to contribute to the health hazards of smoking. The Commission, however, is not the best equipped among the Federal agencies to make technical evaluations of this kind. It would be more appropriate if responsibility for making such determinations were placed in the Surgeon General of the U.S. Public Health Service.

The Commission particularly endorses the inclusion in S. 547 of an express legislative finding that the unrestricted promotion and advertising of cigarettes is, in view of the health hazards of smoking, a threat to the public welfare. We would suggest that, should the committee prefer to endorse the enactment of S. 559 rather than S. 547, the former be amended to include such an express legislative finding. It is our opinion that this inclusion would be of considerable aid in interpreting and applying any law regulating the marketing of cigarettes to the consuming public.

The CHAIRMAN. Could you tell us, did you favor either of the proposals?

Mr. DIXON. Mr. Chairman, with some slight comments we favored really—we thought both bills would accomplish the remedial purpose we sought. Senator Magnuson's bill, S. 559, this bill would only apply to the labeling, the warning that would go upon the label and the bill would be required to be enforced in the constitutional courts by various U.S. Attorneys General and U.S. district attorneys.

The other bill was Senator Neuberger's bill.

The CHAIRMAN. It did require the warning for tar and nicotine, too?

Mr. DIXON. It did, sir, and we suggested that that not be included in the bill, and I——

The CHAIRMAN. If that was your opinion then, how do you justify your recommendation here this morning that the Fino bill, which would require that information, as I understand it——

Mr. DIXON. I did not comment on the Fino bill.

The CHAIRMAN (continuing). Whereas the other bill did not——

Mr. DIXON. I did not say anything about that, sir, in my report. But we take the same position as to that section as we took in the Senate, and I am very happy for your calling that to my attention because it is the view of the Commission that it would be better not to include this, or include in the statute this requirement.

As of this moment the existing authorities that we studied before we issued our rule, the basis of our rule, scientific opinions and authorities that we reviewed, there was no certainty as to which if any of these substances could cause or even may cause cancer, and there also was pointed out in this document, this report, that there was no established moderation, you might say, of what would be a safe number of cigarettes for one to smoke, or level of content of any substance in any cigarette, and so for that reason in our statement we specifically——

The CHAIRMAN. Let me clarify what I did say. Probably I might have overstepped it a little bit. What you had reference to, that you liked the enforcement provisions in H.R. 4244 better than you did 3014.

Mr. DIXON. Yes, sir. I did not understand you, Mr. Chairman.

The CHAIRMAN. You preferred the enforcement procedure under H.R. 4244——

Mr. DIXON. Yes, sir.

The CHAIRMAN (continuing). Than you did for the Attorney General.

Mr. DIXON. Well, that is because it would leave it to the Federal Trade Commission.

The CHAIRMAN. Under H.R. 3014.

Mr. DIXON. That is correct, sir.

The CHAIRMAN. Mr. Staggers.

Mr. STAGGERS. I have no questions.

The CHAIRMAN. Mr. Younger.

Mr. YOUNGER. Thank you, Mr. Chairman.

I was not sure, Mr. Dixon, what you meant when you said that the Commission was a pliable agency.

Mr. DIXON. I think one of the purposes of the Congress in establishing the Federal Trade Commission as an independent regulatory body as its arm to help carry out the Congress' duty to regulate

commerce in interstate commerce, under the specific language of the statutes, was the full realization that different from a constitutional court where all matters are taken to an appointed judge who knows nothing about the controversy that is coming up, when something is brought to him. If it is good pleading and he can see that there is a basis, that is, a statutory basis for the charge, he will hear it and make a decision, whereas at the Federal Trade Commission the Commissioners were presumed, by the staggering of their appointments and their services, to acquire a bit of expertise.

Then the Commission also, different from the constitutional court, receives complaints from the public, institutes matters on its own expertise, weighs them, and if they are found to be in the public interest, proceeds under its own procedures looking toward ultimate issuance of a cease-and-desist order.

But also basic, written into the law by the Congress itself in section 5(b) of the act is this language:

> The Commission may at any time after notice and opportunity for hearing reopen, alter, modify, or set aside in whole or in part any report or order made or issued by it under this section whenever in the opinion of the Commission conditions of fact or of law have so changed as to require such action, or if the public interest shall so require.

So Congress itself anticipated that to make this agency pliable, so that you would not have to go back and pass a new statute or start a new proceeding. The Commission upon its own motion can do this.

Mr. YOUNGER. You had no intention of using pliable as meaning that you are easily convinced.

Mr. DIXON. I hope that—I always try myself, sir—I can answer for myself—based upon my training and experience to carry out my statutory obligations, and, Congressman Farnsley, I come from a tobacco State, too, sir, Tennessee.

Mr. FARNSLEY. A fine State.

Mr. DIXON. But I still took an oath to enforce the Federal Trade Commission Act, and so I try to do that, too, sir.

Mr. YOUNGER. One other question. If the question of smoking was turned over to the Food and Drug as some have indicated in their bill, that would not alter the right of your Commission to still supervise and regulate the advertising.

Mr. DIXON. We would not so interpret anything in any of these bills, sir.

Mr. YOUNGER. Thank you.

Mr. DIXON. I would point out to you, of course, their procedures are quite different from ours. If you would pass this bill, the Udall bill, Congressman Udall's basic approach, when they—under the terms of that bill—found a violation or thought there was a violation, they would seize the product, and then they would go through a constitutional court. You are back into that rigidity again, I say to you, sir.

Still with respect to the advertising we would still be left free and responsible for it just as we are today. The provisions of the Food, Drug, and Cosmetic Act gives them that responsibility over labeling, branding, and labeling. It leaves specifically, with respect to advertising, the responsibility to the Federal Trade Commission. So we live with this kind of a division every day, sir.

Mr. YOUNGER. Thank you.

The CHAIRMAN. Mr. Rogers.

Mr. ROGERS of Texas. Mr. Dixon, let me ask one thing for the record. Would you or your lawyer give me the citation where you say that you have the authority in the first instance to promulgate the rule which you did promulgate with regard to this situation?

Mr. DIXON. I was asked that same thing by the Senate. I have in my hand these papers right here. I would suggest you make it a part of the record, sir.

Mr. ROGERS of Texas. Do you have a specific citation of the law that we can have included in the record, a very short and brief one? Certainly it would not require——

Mr. DIXON. It just is not short, Mr. Congressman, and I tell you that I would have a hard time improving upon it. There are hundreds of citations in these pages. They are court cases.

The CHAIRMAN. That is important, but I think Mr. Rogers is trying to get from you what is your basis to start from.

Mr. DIXON. For the basis for the authority?

Mr. ROGERS of Texas. For the authority. Mr. Dixon, let me make myself clear.

Mr. DIXON. It is statutory authority.

Mr. ROGERS of Texas. I understand it is statutory. The point of the thing is this: the Federal Trade Commission was created by the Congress. It was not created by the Constitution. And as I understand the law—and maybe they have changed it, I hope not—that you get no more authority than is given you by the Congress of the United States under the statutes passed by the United States in compliance with the Congress.

Now, what I am after is the basic authority from which you start and not all the authority with which you undertake to support your original authority.

Mr. DIXON. I think I understand you, sir. Section 5 of the Federal Trade Commission Act is really the very basis of the act. This declares to be unlawful unfair methods of competition in commerce and unfair or deceptive acts or practices in commerce. The Congress said that they are hereby declared unlawful.

Now, in section 5——

Mr. ROGERS of Texas. If you will yield at that point—Mr. Chairman, I would ask unanimous consent that section 5 be included in the record at this point.

Mr. DIXON. In its entirety?

Mr. ROGERS of Texas. In its entirety.

The CHAIRMAN. Let it be included.

(The document referred to follows:)

SEC. 5. UNFAIR METHODS OF COMPETITION AND UNFAIR OR DECEPTIVE ACTS OR PRACTICES. COMPLAINTS, FINDINGS, AND ORDERS OF COMMISSION. APPEALS. SERVICE. PENALTIES. (38 STAT. 719; 52 STAT. 111; 15 U.S.C.A., SEC. 45.)

SEC. 5.[1] (a) (1) Unfair methods of competition in commerce, and unfair or deceptive acts or practices in commerce, are hereby declared unlawful.

(2) Nothing contained in this Act or in any of the Antitrust Acts shall render unlawful any contracts or agreements prescribing minimum or stipulated prices, or requiring a vendee to enter into contracts or agreements prescribing minimum or stipulated prices, for the resale of a commodity which bears, or the label or container of which bears, the trade-mark, brand, or name of the producer or distributor of such commodity and which is in free and open competition with

[1] See Sec. 4 of Act of April 10, 1918, (P.L. 65–124), "Webb-Pomerene Export Trade Act of 1918" (40 Stat. 516) for extraterritorial effect of this section. This section also includes the McGuire Fair Trade Act amendments of July 14, 1952 (see footnote 2).

commodities of the same general class produced or distributed by others, when contracts or agreements of that description are lawful as applied to instrastate transactions under any statute, law, or public policy now or hereafter in effect in any State, Territory, or the District of Columbia in which such resale is to be made, or to which the commodity is to be transported for such resale.

(3) Nothing contained in this Act or in any of the Antitrust Acts shall render unlawful the exercise or the enforcement of any right or right of action created by any statute, law, or public policy now or hereafter in effect in any State, Territory, or the District of Columbia, which in substance provides that willfully and knowingly advertising, offering for sale, or selling any commodity at less than the price or prices prescribed in such contracts or agreements whether the person so advertising, offering for sale, or selling is or is not a party to such a contract or agreement, is unfair competition and is actionable at the suit of any person damaged thereby.

(4) Neither the making of contracts or agreements as described in paragraph (2) of this subsection, nor the exercise of enforcement of any right or action as described in paragraph (3) of this subsection shall constitute an unlawful burden or restraint upon, or interference with, commerce.

(5) Nothing contained in paragraph (2) of this subsection shall make lawful contracts or agreements providing for the establishment or maintenance of minimum or stipulated resale prices on any commodity referred to in paragraph (2) of this subsection, between manufacturers, or between producers, or between wholesalers, or between brokers, or between factors, or between retailers, or between persons, firms, or corporations in competition with each other.

(6) The Commission is hereby empowered and directed to prevent persons, partnerships, or corporations, except banks, common carriers subject to the Acts to regulate commerce, air carriers, and foreign air carriers subject to the Federal Aviation Act of 1958, and persons, partnerships, or corporations subject to the Packers and Stockyards Act, 1921, except as provided in section 406(b) of said Act, from unsing unfair methods of competition in commerce and unfair or deceptive acts or practices in commerce.[2]

---

[2] Public No. 542, 82d Cong., Ch. 745, 2d Session, H.R. 5767, approved July 14, 1952 (the McGuire Act, 66 Stat. 631), amended Sec. 5(a) of this Act, by adding in lieu thereof Sec. 5(a)(1) through (6), as herein set out.

Theretofore, by subsection (f) of Section 1107 of the "Civil Aeronautics Act of 1938," approved June 23, 1938, Public No. 706, 75th Congress, Ch. 601, 3d Sess., S. 3845, 52 Stat. 1028, the language of former Sec. 5(a) was amended by inserting immediately following the words "to regulate commerce," the words "air carriers and foreign air carriers subject to the Civil Aeronautics Act of 1938," as set out in Sec. 5(a)(6); by Act of Aug. 23, 1958 (72 Stat. 809, P.L. 85-726), "Federal Aviation Act of 1958" was substituted in lieu of "Civil Aeronautics Act of 1938".

Public No. 85-909, 85th Cong., H.R. 9020, approved Sept. 2, 1958, amended the Packers and Stockyards Act, 1921, as amended (7 U.S.C. 226, 227, and 72 Stat. 1749, 1750) by striking out subsec. (b) of sec. 406 and inserting in lieu thereof the following:

"(b) The Federal Trade Commission shall have power and jurisdiction over any matter involving meat, meat food products, livestock products in unmanufactured form, or poultry products, which by this Act is made subject to the power or jurisdiction of the Secretary, as follows:

"(1) When the Secretary in the exercise of his duties requests of the Commission that it make investigations and reports in any case.

"(2) In any investigation of, or proceeding for the prevention of, and alleged violation of any Act administered by the Commission, arising out of acts or transactions involving meat, meat food products, livestock products in unmanufactured form, or poultry products, if the Commission determines that effective exercise of its power or jurisdiction with respect to retail sales of any such commodities is or will be impaired by the absence of power or jurisdiction over all acts or transactions involving such commodities in such investigation or proceeding. In order to avoid unnecessary duplication of effort by the Government and burdens upon the industry, the Commissioner shall notify the Secretary of such determination, the reasons therefor, and the acts or transactions involved, and shall not exercise power or jurisdiction with regard to acts or transactions (other than retail sales) involving such commodities if the Secretary within ten days from the date of receipt of the notice notifies the Commission that there is pending in his Department an investigation of, or proceeding for the prevention of, and alleged violation of this Act involving the same subject matter.

"(3) Over all transactions in commerce in margarine or oleomargarine and over retail sales of meat, meat food products, livestock products in unmanufactured form, and poultry products.

"(c) The Federal Trade Commission shall have no power or jurisdiction over any matter which by this Act is made subject to the jurisdiction of the Secretary, except as provided in subsection (b) of this section."

* * * * * * *

The same Public Law also amended subsection 6 of sec. 5(a) of the Federal Trade Commission Act (15 U.S.C. 45(a)(6) and 38 Stat. 719) by substituting "persons, partnerships, or corporations insofar as they are subject to the Packers and Stockyards Act, 1921, as amended, except as provided in sec. 406(b) of said act" for "persons, partnerships, or corporations subject to the Packers and Stockyards Act, 1921, except as provided in sec. 406(b) of said act."

Act of July 18, 1958, provides for nonapplicability of the Federal Trade Commission Act in respect to certain types of collective action taken by small business concerns under the conditions therein specified (72 Stat. 388; 72 Stat. 392-393).

(b) Whenever the Commission shall have reason to believe that any such person, partnership, or corporation has been or is using any unfair method of competition or unfair or deceptive act or practice in commerce, and if it shall appear to the Commission that a proceeding by it in respect thereof would be to the interest of the public, it shall issue and serve upon such person, partnership, or corporation a complaint stating its charges in that respect and containing a notice of a hearing upon a day and at a place therein fixed at least thirty days after the service of said complaint. The person, partnership, or corporation so complained of shall have the right to appear at the place and time so fixed and show cause why an order should not be entered by the Commission requiring such person, partnership, or corporation to cease and desist from the violation of the law so charged in said complaint. Any person, partnership, or corporation may make application, and upon good cause shown may be allowed by the Commission to intervene and appear in said proceeding by counsel or in person. The testimony in any such proceeding shall be reduced to writing and filed in the office of the Commission. If upon such hearing the Commission shall be of the opinion that the method of competition or the act or practice in question is prohibited by this Act, it shall make a report in writing in which it shall state its findings as to the facts and shall issue and cause to be served on such person, partnership, or corporation an order requiring such person, partnership, or corporation to cease and desist from using such method of competition or such act or practice. Until the expiration of the time allowed for filing a petition for review, if no such petition has been duly filed within such time, or, if a petition for review has been filed within such time then until the record in the proceeding has been filed in a court of appeals of the United States, as hereinafter provided, the Commission may at any time, upon such notice and in such manner as it shall deem proper, modify or set aside, in whole or in part, any report or any order made or issued by it under this section.[3] After the expiration of the time allowed for filing a petition for review, if no such petition has been duly filed within such time, the Commission may at any time, after notice and opportunity for hearing, reopen and alter, modify, or set aside, in whole or in part, any report or order made or issued by it under this section, whenever in the opinion of the Commission conditions of fact or of law have so changed as to require such action or if the public interest shall so require: *Provided, however*, That the said person, partnership, or corporation may, within sixty days after service upon him or it of said report or order entered after such a reopening, obtain a review thereof in the appropriate circuit[4] court of appeals of the United States, in the manner provided in subsection (c) of this section.

(c) Any person, partnership, or corporation required by an order of the Commission to cease and desist from using any method of competition or act or practice may obtain a review of such order in the circuit[4] court of appeals of the United States, within any circuit where the method of competition or the act or practice in question was used or where such person, partnership, or corporation resides or carries on business, by filing in the court, within sixty days[5] from the date of the service of such order, a written petition praying that the order of the Commission be set aside. A copy of such petition shall be forthwith transmitted by the clerk of the court to the Commission, and thereupon the Commission shall file in the court the record in the proceedings, as provided in Section 2112 of Title 28, United States Code. Upon such filing of the petition and transcript the court shall have jurisdiction of the proceeding and of the question determined therein concurrently with the Commission until the filing of the record and shall have power to make and enter a decree affirming, modifying, or setting aside the order of the Commission, and enforcing the same to the extent that such order is affirmed, and to issue such writs as are ancillary to its jurisdiction or are necessary in its judgment to prevent injury to the public or to competitors pendente lite.[6] The findings of the Commission as to the facts, if supported by evidence, shall be conclusive. To the extent that the order of the Commission is affirmed, the court shall thereupon issue its own order commanding obedience to the terms of such order of the Commission. If either party shall

---

[3] This sentence was amended by Public Law 85–791, 85th Cong., H.R. 6788, approved August 28, 1958, 72 Stat. 942.

[4] Act of June 25, 1948, (62 Stat. 991, § 32) as amended by Act of May 24, 1949, (63 Stat. 107), changed "circuit court of appeals" to "court of appeals".

[5] Section 5(a) of the amending Act of 1938 provides:

"SEC. 5(a). In case of an order by the Federal Trade Commission to cease and desist, served on or before the date of the enactment of this Act, as amended by this Act, shall begin on the date of the enactment of this Act."

[6] The latter two sentences reflect the amendments in Public Law 85–791 (see footnote 3, supra).

apply to the court for leave to adduce additional evidence, and shall show to the satisfaction of the court that such additional evidence is material and that there were reasonable grounds for the failure to adduce such evidence in the proceeding before the Commission, the court may order such additional evidence to be taken before the Commission and to be adduced upon the hearing in such manner and upon such terms and conditions as to the court may seem proper. The Commission may modify its findings as to the facts, or make new findings, by reason of the additional evidence so taken, and it shall file such modified or new findings, which, if supported by evidence, shall be conclusive, and its recommendation, if any, for the modification or setting aside of its original order, with the return of such additional evidence. The judgment and decree of the court shall be final, except that the same shall be subject to review by the Supreme Court upon certiorari, as provided in section 240 of the Judicial Code.

(d) Upon the filing of the record with it the jurisdiction of the court of appeals of the United States to affirm, enforce, modify, or set aside orders of the Commission shall be exclusive.[7]

(e) Such proceedings in the court of appeals shall be given precedence over other cases pending therein, and shall be in every way expedited. No order of the Commission or judgment of court to enforce the same shall in anywise relieve or absolve any person, partnership, or corporation from any liability under the Antitrust Acts.

(f) Complaints, orders, and other processes of the Commission under this section may be served by anyone duly authorized by the Commission, either (a) by delivering a copy thereof to the person to be served, or to a member of the partnership to be served, or the president, secretary, or other executive officer or a director of the corporation to be served; or (b) by leaving a copy thereof at the residence or principal office or place of business of such person, partnership, or corporation; or (c) mailing a copy thereof by registered mail or by certified mail addressed to such person, partnership, or corporation at his or its residence or principal office or place of business. The vertified return by the person so serving said complaint, order, or other process setting forth the manner of said service shall be proof of the same, and the return post office receipt for said complaint, order, or other process mailed by registered mail or by certified mail as aforesaid shall be proof of the service of the same.[8]

(g) An order of the Commission to cease and desist shall become final—

(1) Upon the expiration of the time allowed for filing a petition for review, if no such petition has been duly filed within such time; but the Commission may thereafter modify or set aside its order to the extent provided in the last sentence of subsection (b); or

(2) Upon the expiration of the time allowed for filing a petition for certiorari, if the order of the Commission has been affirmed, or the petition for review dismissed by the circuit[9] court of appeals, and no petition for certiorari has been duly filed; or

(3) Upon the denial of a petition for certiorari, if the order of the Commission has been affirmed or the petition for review dismissed by the circuit[9] court of appeals; or

(4) Upon the expiration of thirty days from the date of issuance of the mandate of the Supreme Court, if such Court directs that the order of the Commission be affirmed or the petition for review dismissed.

(h) If the Supreme Court directs that the order of the Commission be modified or set aside, the order of the Commission rendered in accordance with the mandate of the Supreme Court shall become final upon the expiration of thirty days from the time it was rendered, unless within such thirty days either party has instituted proceedings to have such order corrected to accord with the mandate, in which event the order of the Commission shall become final when so corrected.

(i) If the order of the Commission is modified or set aside by the circuit[9] court of appeals, and if (1) the time allowed for filing a petition for certiorari has expired and no such petition has been duly filed, or (2) the petition for certiorari has been denied, or (3) the decision of the court has been affirmed by the Supreme Court, then the order of the Commission rendered in accordance with the mandate of the circuit[9] court of appeals shall become final on the

---

[7] The above section was also amended by Public Law 85–791 (see footnote 3, supra).

[8] This section was amended by Public Law 86–507, 86th Cong., H.R. 10996, approved June 11, 1960 (74 Stat. 200).

[9] "Circuit court of appeals" changed to "court of appeals." Acts of June 25, 1948, (62 Stat. 991; § 32), and May 24, 1949, (63 Stat. 107).

expiration of thirty days from the time such order of the Commission was rendered, unless within such thirty days either party has instituted proceedings to have such order corrected so that it will accord with the mandate, in which event the order of the Commission shall become final when so corrected.

(j) If the Supreme Court orders a rehearing; or if the case is remanded by the circuit[9] court of appeals to the Commission for a rehearing, and if (1) the time allowed for filing a petition for certiorari has expired, and no such petition has been duly filed, or (2) the petition for certiorari has been denied, or (3) the decision of the court has been affirmed by the Supreme Court, then the order of the Commission rendered upon such rehearing shall become final in the same manner as though no prior order of the Commission had been rendered.

(k) As used in this section the term "mandate," in case a mandate has been recalled prior to the expiration of thirty days from the date of issuance thereof, means the final mandate.

(l) Any person, partnership, or corporation who violates an order of the Commission to cease and desist after it has become final, and while such order is in effect, shall forfeit and pay to the United States a civil penalty of not more than $5,000 for each violation, which shall accrue to the United States and may be recovered in a civil action brought by the United States. Each separate violation of such an order shall be a separate offense, except that in the case of a violation through continuing failure or neglect to obey a final order of the Commission each day of continuance of such failure or neglect shall be deemed a separate offense.[10]

Mr. DIXON. I point out specifically that section 5(a) is divided into several parts. No. 6, 5(a)(6) reads as follows:

The Commission is hereby empowered and directed to prevent persons, partnerships, or corporations except banks, common carriers subject to the acts to regulate commerce, air crarriers and foreign air carriers subject to the Federal Aviation Act, and persons, partnerships, or corporations subject to the Packers and Stockyards Act—

with citations—

from using unfair methods of competition in commerce and unfair or deceptive acts or practices in commerce.

Now that says to me the Commission is hereby empowered and directed to prevent the use of unfair methods of competition in commerce and unfair or deceptive acts or practices in commerce.

Now, the next section, 5(a)(7), spells out certainly one way the Commission can prevent it. At least we would interpret it; it spells out a proceeding where we can issue a cease-and-desist order after that proceeding.

The Administrative Procedure Act was passed by the Congress in 1946. It specifically had a great deal of implication upon all the so-called regulatory bodies, and it certainly affected the Federal Trade Commission.

Now, what the Federal Trade Commission did in trying to give guidance, in trying to give some clarification to law, rather than what we had done in the historical 48 years, during which we had proceeded on what I chose to call a squirrel gun approach. This means you attack them one at a time in an adversary proceeding where you would eventually get through, issue a cease-and-desist order, with the automatic right of appeal to a circuit court and to the Supreme Court would take place.

I felt when I went back to the Commission as Chairman, and in talking to my other Commissioners, that we had another obligation. We were not getting anywhere doing this. We had tried at that agency

[10] Foregoing sentence added by subsection (c) of Sec. 4, Public Law 459, 81st Congress, (64 Stat. 21; March 16, 1950).

lo these many years to pick out one example. Now, take cigarette advertising. Let us say there are six major cigarette manufacturers. Historically we could have picked one. How would you like to have had in your State the one we picked?

Now, we cannot pick all six. It would take the same confounded witnesses, and we would be up here for years just listening to the same witnesses in all six cases.

We turned to another proceeding. We said based upon the act, based upon the APA Act, based upon all of the judicial review we could make, we were going to adopt a proceeding looking toward the establishment of general trade regulation rules in industries, where they would apply prospectively, not retrospectively like a law case is.

Mr. ROGERS of Texas. When was this decision made?

Mr. DIXON. 1962 we adopted this.

Mr. ROGERS of Texas. How long had the Commission been in existence when that took place?

Mr. DIXON. Since 1914, 48 years.

Now, up to that time this Commision had given this type of advice or guidance through something that was called a trade regulation rule. We had issued trade practice rules. We did that in industries where the industry would come and say, "Look, we all think we are kind of in trouble. We think we may be transgressing. We would like to sit down with you and with your help work out some rules that you can promulgate, and we will try to live up to them," they are advisory, no bite in them, no bite at all, a gentleman's agreement. We would do this and set out to get this voluntary compliance. They worked very well.

Then the Commission had progressed along to where even without this request from industry, we would proceed on working with small numbers of experts out of industry and issue what we call a guide. This guide would be to our staff in a sense, but we would disseminate it to all of the affected industry members where they could take from this, that it is the view of the Commission. Henceforth that if this is done, we would proceed, and if not, we would not again to try to help.

Now, at the same time in 1962 we adopted this rule. We turned to another way to help the businessman. I thought the American businessman was entitled to binding advice if we could give it to him. And so we offered to give binding advisory opinions where practical and where we could do it.

These were radical new departures. Now we had used the trade regulation rule proceeding several times before we got to the cigarette problem. The constitutionality of it has not been questioned. The first time it was questioned was when we announced it, and during the hearings no member of the tobacco industry appeared before us. They sent a lawyer, and the lawyer told us, "You do not have the legal right to do this." Now that is what we have heard from the tobacco industry, no more, no less.

Mr. ROGERS of Texas. Mr. Dixon, I appreciate all this, but I mean I want to get back for a minute now to the procedure that was followed.

I understand that the Federal Trade Commission had been in existence since 1914 and had been following a certain practice, and then

in 1962 you underwent a radical change in the handling of business matters insofar as the American businessman was concerned, is that correct?

Mr. DIXON. I do not know whether you would call it radical or not. We adopted——

Mr. ROGERS of Texas. I thought that was your word. I thought you said this was a radical change, and you agreed to work out advisory, binding advisory opinions.

Mr. DIXON. We tried our best since that day to move against the evils as they exist rather than one at a time against those who might commit them.

Mr. ROGERS of Texas. I do not want to know the reason for it but just the procedure that was followed.

Now, you did not come back to Congress to get any authority to change what you had been doing in the past, did you, Mr. Dixon?

Mr. DIXON. No, sir.

Mr. ROGERS of Texas. Because in the basic act itself—I pointed to section 5. I will now point to section 6 of the act. Section 6(g) of the act reads as follows:

> From time to time to classify corporations and to make rules and regulations for the purpose of carrying out the provisions of this act.

Mr. ROGERS of Texas. Now, the provisions of this act, what that is referring to is the prevention of unfair practices.

Mr. DIXON. That is correct.

Mr. ROGERS of Texas. And deceptive practices.

Mr. DIXON. That is correct, sir. It has been there all this time.

Mr. ROGERS of Texas. Yes, I understand that. But now let us go back just a minute. For many, many years you were having great difficulty with this situation the way you were enforcing it, and you did not change it until 1962. Now, why was it not changed prior to 1962 if you had all this trouble?

Mr. DIXON. Well, I was not down there, sir. I cannot answer for that. I was not Commissioner, and I do not know whether they had seriously ever considered this or not. But I might say I came to the Federal Trade Commission as a young boy in 1938. I had been there as a trial attorney and up on the Hill 4 years before I went back. My fellow Commissioner here, Everette MacIntyre, who had served off and on here and was serving with the House Small Business Committee, came back as a Commissioner, in 1930. One of the other Commissioners, Mr. Elman, had been in the Solicitor's office since about 1946. At that time Governor Anderson from South Dakota had been there about 8 or 9 years. We had quite a bit of expertise and knowledge of the background, and we applied it.

Mr. ROGERS of Texas. If you had so much expertise at that time, why did you not make this change back there? I mean I do not understand why.

Mr. DIXON. I was not a Commissioner. In March 1961, I became Chairman of the Federal Trade Commission, and I have one-fifth of the power since that time.

Mr. ROGERS of Texas. You feel then that you were the author of this change, this radical change you referred to?

Mr. DIXON. I would not claim authorship. I think the first time I really seriously considered this type of rule was when Everette Mac-

Intyre mentioned it. But we kicked it around and studied it for several months before we evolved what we adopted.

Mr. ROGERS of Texas. Yes. And this type of authority, Mr. Dixon, had it been assumed by any other administrative agency?

Mr. DIXON. Practically everyone in town of the so-called true regulatory agencies—FCC which you are familiar with, the CAB, and the SEC, the Federal Power. They do not do anything but issue rules practically.

Mr. ROGERS of Texas. I mean the particular radical change that you went through in the Federal Trade Commission, did the other Commissions undergo the change at that time or did they do it before or since then?

Mr. DIXON. I have no knowledge of them, sir. I imagine they made some procedural changes since then.

Mr. ROGERS of Texas. Now, Mr. Dixon, actually what one administrative agency does can be and is used frequently as a precedent to support the action of another, is that not correct?

Mr. DIXON. I would not deny that, sir.

Mr. ROGERS of Texas. Yes, sir.

Mr. DIXON. If it goes to court, certainly.

Mr. ROGERS of Texas. So if what you did in 1962 would create a radical change in which you would get more power than some people thought you were entitled to have and Congress did not do anything about this, the situation would simply be that the other agencies could cite this as a precedent to make the same changes in their own procedures, could they not?

Mr. DIXON. If they wanted to, perhaps they could, sir.

Mr. ROGERS of Texas. Yes; I am not talking about if they want to. I mean if they did that, they could use your action and the acquiesence of the Congress, let us say, if you want to call it that, as a precedent for the basis or for the support of the fact that they do have this additional authority.

Mr. DIXON. You used the word acquiesence of Congress.

Mr. ROGERS of Texas. Yes, sir.

Mr. DIXON. We can do nothing. Congress very carefully said we could do nothing that was not reviewable in the constitutional courts.

Mr. ROGERS of Texas. I understand that, Mr. Dixon. I want to come to that in just a minute.

Mr. DIXON. Yes, sir.

Mr. ROGERS of Texas. But the point is this. Is there not a line of cases that if an administrative agency or a department takes certain action and the Congress does not do anything about it, the courts can use that acquiescence or failure to do something as a reasoning that it was the intent of Congress that that agency have that power in the first instance?

Mr. DIXON. It would depend a great deal upon the statute. I think I would have to parse each individual statute to find that.

Mr. ROGERS of Texas. Do you not think your counsel would argue that if this question came up before the Supreme Court?

Mr. DIXON. No, sir; if he did, I would break his neck. I do not think I have to argue acquiescence. It is in the law. It is already in the law. I do not have to talk about acquiescence.

Mr. ROGERS of Texas. Of course that is your decision though, not the Supreme Court's. If this matter was to get before the Supreme Court, I am sure there would be arguments on both sides as to whether or not it is in the law.

Mr. DIXON. I am quite sure, sir——

Mr. ROGERS of Texas. Now, let us get down to that. As I understand, your order was based upon the proposition of actually—we can confine it to two words—the prevention of deceptive advertising or representation, is that correct?

Mr. DIXON. That is correct, sir.

Mr. ROGERS of Texas. In other words you are authorized to prevent unfair practices or deceptive advertising, and, as I understand it—and I do not want to oversimplify it—your rule was based upon the prevention of a deceptive device that was being used in advertising.

Mr. DIXON. Failure to disclose something.

Mr. ROGERS of Texas. Yes.

Mr. DIXON. It was not informative. It was the failure, sir, nondisclosure.

Mr. ROGERS of Texas. All right. Now, of course, what we are getting there is a double negative to a certain extent.

Mr. DIXON. That is correct.

Mr. ROGERS of Texas. So if you are charged with the authority to prevent something, then you take the position that by saying that it fails to disclose something, that that gives you the authority to spell out what can be used as an affirmative proposition and nothing else can be used, is that correct?

Mr. DIXON. On page 88 of our basis and purpose you will see footnoted two pages of cases that have been decided exactly on this point where the court has agreed with it.

Mr. ROGERS of Texas. Has agreed with you that you do have then the affirmative power to spell this out?

Mr. DIXON. Based upon a proper finding and a basis. We just do not have any naked power. We have got to have a basis for the deception.

Mr. ROGERS of Texas. Yes, I understand that, that what you are talking about is the failure to disclose.

Mr. DIXON. That is right, sir.

Mr. ROGERS of Texas. And those cases would indicate that something should be disclosed.

Now your position, as I understand it, is that you presently have the authority, and I want to get this clear, Mr. Dixon, because I am interested in how much authority is being assumed here. You have the authority to spell out the language that can be used or merely what should be portrayed by language.

Mr. DIXON. If it is nondisclosure that attributes to the deception, then we have the affirmative power to require a disclosure.

Mr. ROGERS of Texas. A disclosure. Now, do you have the power, do you claim the power to require specific language?

Mr. DIXON. Each time that we write something, the court will review it very carefully to see——

Mr. ROGERS of Texas. No, I am not asking you that now, Mr. Dixon. I know the court is going to review it, unless we change the separation of powers form of government. I know what the court has got the

power to do. I am asking you whether or not you claim that you have the power to spell out the specific language that can be used.

Mr. DIXON. Yes, sir.

Mr. ROGERS of Texas. And if anyone advertises a product and does not use your specific language, they would be in violation, would they not?

Mr. DIXON. We would proceed against him, sir.

Mr. ROGERS of Texas. You would proceed against him.

Now, with regard to the cigarette thing, your position is that this was deceptive in not advising the people that it was injurious to their health.

Mr. DIXON. Basically that is true, sir.

Mr. ROGERS of Texas. Now, would you follow out on this with regard to pipes and cigars?

I yield to the chairman. Pardon me.

The CHAIRMAN. Off the record.

(Discussion off the record.)

Mr. ROGERS of Texas. Mr. Dixon, I do want to get this on the record because I think it is important not only for this committee but for future hearings.

Mr. DIXON. I appreciate that.

Mr. ROGERS of Texas. I think you will agree with me that although we may disagree about authority, that there is an issue here.

Now, with regard to the question of deception, this has to do only with cigarettes, and your rule has to do with cigarettes; does it not?

Mr. DIXON. That is correct, sir.

Mr. ROGERS of Texas. And as I understand it, your requirement would have been—had you not worked out this cooperation agreement with the Congress—your agreement or your requirement would have been that it had to say that it would cause lung cancer.

Mr. DIXON. We did not have that, Mr. Congressman, in quotes, but we would have arrived at some kind of a specific requirement of a notice if we had ever had to proceed. And being as pliable as we are, I am quite sure the industry would have been of the frame of mind to cooperate rather than resist.

Long before now we would have arrived at an adequate warning.

Mr. ROGERS of Texas. Yes.

Mr. DIXON. Such as is being discussed in these various bills. I have seen many warnings.

Mr. ROGERS of Texas. Yes.

Mr. DIXON. I am not married to any certain language.

Mr. ROGERS of Texas. Let me get back to the point though that unless you point this out that the finding of that committee had to do with inhalation rather than the cigarette itself—they assumed the premise that a cigarette was going to be inhaled; did they not?

Mr. DIXON. I have got to get inside their mind to find out what they assumed. I know what they found, and I know the discussion, and I know there was such discussion. There is a difference. The average cigar smoker does not inhale and maybe the average pipe smoker does not, but very few of the average cigarette smokers fail to inhale.

Mr. ROGERS of Texas. But let us get back to the deceptive practice. Would not the proper labeling be that the inhalation of a cigarette has been termed by the Surgeon General to be detrimental to health?

Mr. DIXON. I would not agree with you, sir; no, sir.

Mr. ROGERS of Texas. Why not?

Mr. DIXON. Because I think what is important is to warn them about the dangers of smoking, not how you smoke, the cigarette smoking as such. You are saying unless you inhale a cigarette——

Mr. ROGERS of Texas. Why would you not also warn him about cigar smoke or pipe smoking?

Mr. DIXON. Because there has been no finding on that sir. I am not a medical doctor. I do not profess to be, but the greatest scientific group that ever sat made this finding. I am not going to argue with it.

Mr. ROGERS of Texas. But you take the position then that cigarettes made of the same tobacco as a cigar, that because this advisory group has held that cigarette smoking—and they did not refer to inhalation—although their findings refer to inhalation, and the Surgeon General has testified before this very committee that the inhalation caused the lung cancer, that you would not be prone to move into the field of calling something deceptive if a cigar was advertised, but you would if a cigarette was advertised.

Mr. DIXON. Until the body of expert opinion jells as tightly as it has on the cigarette smoking, my hands are tied, sir. I have no body of expert opinion to rely upon for saying, "You have got to put a warning on cigar smoking."

Mr. ROGERS of Texas. I thought, Mr. Dixon, that you wanted to go around the judicial arm of this Government because the administrative agency was more pliable to handle these matters, and now you want to resort to an expert group on something.

Mr. DIXON. I can only act after an expert group such as this has acted, sir, unless you want to put——

Mr. ROGERS of Texas. Do you not think a court finding after a full hearing under the constitutional procedures would constitute an expert finding on a matter of this kind?

Mr. DIXON. Congressman Rogers, there is not a lawyer in this room—and there are plenty of them back here; I recognize them—that does not know that under the rule we have issued, he has still got his constitutional safeguards not once but twice.

Mr. ROGERS of Texas. You are not against that, are you, Mr. Dixon?

Mr. DIXON. Why, certainly not, sir.

Due process is the greatest thing we have in the country, and I have not usurped due process is what I am trying to say to you.

Mr. ROGERS of Texas. But you do to a certain extent under the Administrative Procedures Act. If you make a finding under this situation, even if you base it on expert testimony of an advisory committee, the court is bound by that, is it not, Mr. Dixon?

Mr. DIXON. We have noticed as one of the bases for the rule which we have promulgated—we have taken notice of many things, not only this but scientific documents that were issued in other countries.

Mr. ROGERS of Texas. I understand.

Mr. DIXON. And by other recognized medical bodies.

Mr. ROGERS of Texas. I understand that. But your findings—on whatever they are based—are binding on the courts, are they not?

Mr. DIXON. They would be, sir, if they are supported by substantial evidence.

Mr. ROGERS of Texas. Now wait just a minute.

Mr. DIXON. What the court would have to review——

Mr. ROGERS of Texas. You said something here. What is substantial evidence?

Mr. DIXON. It is more than scintilla but less than preponderance.

Mr. ROGERS of Texas. And that means under the findings of many of the courts any statement that does not refute what you claim.

Mr. DIXON. I would say no, sir. The courts are not too ready to slap us on the back. They slap us down every chance, it seems, they get.

Mr. ROGERS of Texas. I am going to quit now, Mr. Chairman. Time is passing. Thank you very much.

Mr. DIXON. Yes, sir. We will be back at 10 o'clock, Mr. Chairman.

The CHAIRMAN. Yes; it is suggested you come back at 10 o'clock. We will resume with further questions because of the importance of this. I think your testimony is highly important.

Mr. DIXON. I understand.

The CHAIRMAN. The members will have full opportunity to question you about this whole matter and your actions leading up to the issuance of the trade practice rule.

The committee will recess until 10 o'clock in the morning.

(Whereupon, at 12:05 p.m., the committee recessed, to reconvene at 10 a.m., Wednesday, April 7, 1965.)

CIGARETTE LABELING AND ADVERTISING—1965

WEDNESDAY, APRIL 7, 1965

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to adjournment, at 10 a.m. in room 2123, Rayburn House Office Building, Hon. Oren Harris (chairman) presiding.

The CHAIRMAN. The committee will come to order.

In resuming the hearings on numerous bills on labeling and advertising of cigarettes and such related matters, we will proceed with such questions as the members may have of the Chairman of the Federal Trade Commission.

Mr. Rogers, did you have any further questions?

Mr. ROGERS of Texas. Yes, Mr. Chairman, I do have quite a few which I think ought to be spelled out in the record, and I will proceed as speedily as possible.

Mr. Dixon, with relation to the change that took place in 1962, about which we were talking yesterday, could you give me a very brief and a very quick rundown of the procedure that was followed from the time of the creation of the Commission up until this change? What I mean by the question is that you would get a complaint and you would schedule hearings and make a determination on something that had happened. Could you do that, Mr. Dixon, very briefly.

STATEMENT OF PAUL RAND DIXON, CHAIRMAN, FEDERAL TRADE COMMISSION; ACCOMPANIED BY J. V. BUFFINGTON, ADMINISTRATIVE ASSISTANT TO THE CHAIRMAN; JOHN WHEELOCK, EXECUTIVE DIRECTOR; CHARLES SWEENEY, CHIEF OF DIVISION OF FOOD AND DRUG ADVERTISING OF BUREAU OF DECEPTIVE PRACTICES; AND FRED DOWNS, ATTORNEY OF BUREAU OF DECEPTIVE PRACTICES, FEDERAL TRADE COMMISSION—Resumed

Mr. DIXON. The ordinary procedures of the Commission which we still use?

Mr. ROGERS of Texas. Yes, sir.

Mr. DIXON. If we received a complaint or on our own observation observed a statement or the failure to make a statement in advertising, if we had reason to believe that it was violative of the law and it would be in the public interest to do so, we would have it investigated if necessary. By this I mean we will investigate to the point of determining if we were going to challenge it; that we would have reason to believe we could carry the burden of proof.

We would then issue a complaint, and under our normal procedure, we would serve the complaint upon the party. If the party joined issue, filed a denial answer which would make it then become adversary, the proceeding would be set down before a hearing examiner and evidence taken where the Commission's counsel, Government counsel, would put in his side subject to cross-examination, and then the other party would defend in the same manner.

The hearing examiner then would make an initial decision. If he made an initial decision that the complaint had been made out, the other party is afforded under the rules the right of filing a petition to review by the Commission. We would grant that, and then we would receive briefs, and we would have the briefs and hear oral argument and make the final decision upon it and arrive at a conclusion, and if we thought it was in the public interest and necessary, we would issue an order to cease and desist. From there, the order could be automatically reviewed by the courts.

Mr. ROGERS of Texas. During these proceedings the right of cross-examination would be afforded to the party against whom the complaint had been issued, would it not?

Mr. DIXON. This is correct, sir, under that procedure.

Mr. ROGERS of Texas. Yes. Now what was the radical change that took place in 1962 which changed that situation and created another facet to this proceeding?

Mr. DIXON. In 1962 we had—by background and experience we had realized that even in the nature of lawsuits one behind the other, there was a great deal of inequity that came from this proceeding. We believed that more equity would come if we could study problems and express by rule to an industry as a whole the Commission's views or determination upon a given problem.

We realize full well when we have done this, sir, that this does not resolve completely the problem. It is in the fullest sense advisory. It is telling the industry this is the determination of this agency on this problem. But it does not say that the industry cannot go ahead and violate that rule.

Then if that occurs, we would have to issue a complaint again. Now, in our rules of procedure and in various statements we have made to the public, we have made it plain that it is our intention that if one of these trade regulation rules are violated, that we will take notice of the record upon which that rule was predicated, and we will ask the party to show cause why that rule was not a sound rule and why that rule should not apply to him and why he should not have a cease-and-desist order.

Now, going back to a single case, Mr. Congressman, if we sued one party, that party's views would be in contest. Now, there may be a corollary, the same problem here as in the cigarette industry, to other manufacturers. If we challenged it, only one, the other parties would not have a voice in that proceding.

Mr. ROGERS of Texas. Yes.

Mr. DIXON. They would not have a voice in that proceeding, but they are afforded a voice in the rule proceeding.

Mr. ROGERS of Texas. The big difference that took place in 1962 was that prior to that time there had to be the commission of an act that was deceptive in order to trigger a complaint in the proceeding of the

FTC. In 1962, and correct me if I am wrong, your change was that you adopted a policy of laying down a rule with regard to certain activities and saying, "Mr. Businessman, if you do something in the future in violation of this rule that we have laid down, then you are going to have a complaint filed against you." Is that not correct?

Mr. DIXON. That is basically correct.

Mr. ROGERS of Texas. Now, Mr. Dixon, let me ask you this, if this is not the case. Did you consider at that time that that might be an invasion of the jurisdiction of the Congress in your laying down a rule applicable to an entire industry and saying that we are not authorized to legislate, but we are going to lay down rules for the future, and if you do not comply with them, you are going to be, in our opinion, in violation of the law?

Mr. DIXON. I certainly did consider it because in my right mind I would not legislate. I assure you the Federal Trade Commission has no authority to legislate except upon a grant of such power by the Congress.

Now, in several of our laws you have given us specific powers that fall in this classification, and I go back and cite to you the basic law that we operate under, the section 5(a)(6) and the other powers that we have. Now, what I think we are doing here, sir, in the fullest, is to set up something that I would characterize more of a procedural step than a legislative step I would assure you.

Mr. ROGERS of Texas. That is where you and I would differ.

Mr. DIXON. I believe so. I think the lawyers would back up that industry as such has taken this position, and I think that our position is sound at law and it is sound legislatively, too.

Mr. ROGERS of Texas. Let me ask you this question. Up until 1962 we talked about cross-examination. Now in 1962 when you adopted this new policy, when you make determination and lay down these laws, do you afford anyone the right to testify and be subjected to cross-examination by the adverse party?

Mr. DIXON. No, sir; but we go beyond that. There would be no cross-examination, but we afford, we use the Federal Register as the means of public notice, and we go beyond that. We saw to it that everyone that we could possibly think had any interest was served by mailing them a notice. Then this is an invitation for them to file or appear.

Now, during this type of proceeding, if someone has appeared today and if 3 days later someone makes a statement he disagrees with, we afford them a chance, before that record is closed, to so advise us so that we will have a complete record upon which to make a determination.

Mr. ROGERS of Texas. In prior proceedings and in the determination of these matters, the witnesses were sworn; were they not?

Mr. DIXON. Yes, sir.

Mr. ROGERS of Texas. Now in your proceeding last March the witnesses were not sworn, or were they?

Mr. DIXON. They were not sworn, sir.

Mr. ROGERS of Texas. And there was no right of cross-examination by adverse parties to question these witnesses; was there?

Mr. DIXON. There was not, sir; no more than there has been a right since the formation of this Commission to cross-examination on trade

practice conference rules. We have 169 such rules affecting industry outstanding today.

Mr. ROGERS of Texas. The point that disturbs me tremendously is that I have called on the Internal Revenue Service several times, Mr. Dixon, and asked them to give me an advance opinion on something that happened with some constituents of mine as to proceeding; if he did this, would that be in compliance with the law. They told me: "You do it, and we will determine later on whether it is in compliance with the law."

Mr. DIXON. I understand.

Mr. ROGERS of Texas. Now you are giving advance notice here of what is going to be a violation of the law. Are you going to give the same advance notice of what is not going to be in violation of the law?

Mr. DIXON. We are giving—we are issuing a rule predicated upon past occurrences. We are not saying our ruling is in a sense prospectively. We are not going back and saying, "Now look, back here you have done this. Cease and desist. Stop."

We are saying, "Now, we made this determination upon this point, and we have issued this ruling. This ruling tells you that if you were to advertise a cigarette product on the market without an adequate warning as to the health hazard, we would hold this to be in violation of section 5 of the Federal Trade Commission Act."

Mr. ROGERS of Texas. And you say that is not legislating.

Mr. DIXON. No, sir. I say that what we are doing——

Mr. ROGERS of Texas. Mr. Dixon, if you assumed the authority to do this very thing on a rule that you think is for the benefit of mankind, suppose the Federal Trade Commission got under the domination of people who might take action that would not be in the best interests of the people of this country. The people generally would have no recourse because you are not an elected official. The Federal Trade Commission is appointed. They have no way to get to you.

Mr. DIXON. I am not making an order. I am applying law to facts, not making law. I am applying a law to facts.

Mr. ROGERS of Texas. But did you not tell me yesterday that you felt you had the authority to fix the specific language that had to be used in an advertisement?

Mr. DIXON. I said that we had the authority once we have held it to be in violation of our law to tell someone exactly what he must reveal.

Now, say the exact language—I do not like to be caught between the stiffness of words. I like to think that men are more capable of saying the same thing several ways. But I would say what we have said here is that it is necessary to have an adequate warning as to the health hazard of smoking. There are several ways I think this could be said. I think we have the power to force this to be done under the law we operate.

The CHAIRMAN. Will the gentleman yield?

Mr. ROGERS of Texas. Yes, I would be glad to.

The CHAIRMAN. Are you saying, Mr. Chairman, that you construe the authority contained in the Federal Trade Commission Act, to permit you by rule or regulation to lay down the precise language that must be used in labeling and advertising in warning the public, and unless that precise language is used, this constitute a violation of the Federal Trade Commission Act?

Mr. DIXON. Yes.

The CHAIRMAN. Do you understand what I have in mind?

Mr. DIXON. I think so.

The CHAIRMAN. I would say this. Let's assume this. I want you to clearly understand what I have in mind.

Mr. DIXON. You meant the exact wording?

The CHAIRMAN. Let us assume that section 5 does give you broad authority to require certain procedures to be carried out, warnings and so forth. My question is: Do you believe that that broad authority can be so interpreted that you can lay down the precise language which must go on a package of cigarettes to comply with the broad terms of what would be deceptive and so forth? That is getting down to a pretty fine point, but I want to get to this very point, if you will.

Mr. DIXON. I would like to see if I can make it clear. We could require a warning on the product.

The CHAIRMAN. Assuming you can do that.

Mr. DIXON. Assuming we can do that. Now, the exact language of that warning, we would usually find the nature of this when we come to the compliance. We say "Now, you have got to on every package of cigarettes give an adequate warning as to the health hazards of smoking." Then the party would say, "All right, I propose to say this," and we would accept it or turn it down and come to a point of where somebody would say, "Well, I am not going to do anything but this," and then we might have to go in on a penalty suit.

The CHAIRMAN. No; that is not what I mean, that is not what I mean. I mean assuming that you have the authority, that you can say to company X, "You have got to put this exact language on that label" and set out what the language is, do you think that you have that authority?

Mr. DIXON. Obviously I think we have that authority. We have the authority to require an adequate warning.

The CHAIRMAN. I am assuming that you have that, but do you have the authority to go beyond that and lay down the precise language?

Mr. DIXON. We would have to——

The CHAIRMAN. In order to comply with the adequate warning, or does the company have any leeway at all to establish what they think would be language to comply with the adequate warning?

Mr. DIXON. This is the way I would like to leave it, that the company has leeway after we require the adequate warning, to select the correct verbiage to do it, because I am convinced there is more than one way to get this message across.

Now, if Congress passes a piece of legislation and says "This warning shall be required," then it has to be exactly in that language, exactly in the language.

The CHAIRMAN. I agree with that.

What I am trying to find out is if the Commission—and I know your staff can develop these things—if the Commission feels that it has the authority to specifically determine the language that must go on a cigarette label to carry out what we have assumed is the authority of the Commission if it determines adequate warning is necessary.

Mr. DIXON. We might have to reach the point in the determination that there was only one way to adequately put a warning out. If that was our ultimate decision, then we would have to say this is the only way it can be said adequately, sir.

The CHAIRMAN. Then what you are saying is that you do have authority to write the language and say this must be it?

Mr. DIXON. If that is the only way we could determine that it would be adequately done.

We did not do that in our rule on cigarettes, Mr. Chairman, because if you will notice in our rules we did not put any quote around that language. We expressed the thought.

The CHAIRMAN. I am glad you cleared that up. I thought you had.

Mr. DIXON. We did not, sir. I think that is where it is coming from. As in the bills that we are considering, that you are considering right here, the language as to the warning is in quotation. There is no choice here. You pass it, this is the way it is going to be. I have said to you that if you pass what is required on the label, I will assure you the Commission will adopt that same language for its enforcement of its advertising requirements.

Mr. ROGERS of Texas. Mr. Dixon, you wouldn't have any choice, would you?

Mr. DIXON. I would say I would be might stupid not to follow it.

Mr. ROGERS of Texas. Well, I think that if the law of this land is written by the Congress, the duly elected representatives, is going to be disregarded by commissions that were created by the Congress, we need to have some other kind of a hearing. Maybe I am mixed up on this, but I thought that our whole constitutional process of Government was that Congress passed the legislation. You say that if Congress passes this legislation and requires this certificate, that is the law. That is legislating.

Mr. DIXON. As to labeling——

Mr. ROGERS of Texas. If Congress does not do this you take the position that you have the authority to do it, which, in my opinion, would be legislating.

Mr. DIXON. Having the authority, I am under the admonition of the law and sworn to enforce it and you haven't preempted it. If you pass the so-called Magnuson bill, Senator Magnuson's bill that is fresh in my mind for a minute, that only applies to the label.

Mr. ROGERS of Texas. Yes, sir.

Mr. DIXON. It says nothing about advertising.

Mr. ROGERS of Texas. Yes, sir

Mr. DIXON. It leaves that. Therefore, what I have tried to say to the committee here, and as I tried to say to the Senate, then you would leave this Commission under the admonition of enforcing a law as to advertising that is outstanding now. I have said to them you can preempt this, as in your bill.

Mr. ROGERS of Texas. Well, now, let's put it another way, Mr. Dixon. You keep talking about preempting. The Congress isn't preempting anything from anybody. You don't get any powers unless the Congress gives them to you.

Mr. DIXON. But a Congress has already given us the power, Mr. Rogers.

Mr. ROGERS of Texas. I understand. Now, that is what you say, but some other people don't say that. Suppose we pass the Magnuson bill which has to do only with labeling and leaves out the advertising. Now, it is your position that you have the authority under section 5 to require warnings on advertising even though the Congress passed

a bill saying that it applied to cigarette labeling and didn't mention advertising.

Mr. DIXON. I say that with all respect and humility we have that authority.

Mr. ROGERS of Texas. Yes. Of course, that is something else we differ on, but that is your position.

I just want to get the record clear on these matters.

Now, actually, Mr. Dixon, this is the first time in the history that you have undertaken by this type of trade regulation to regulate an entire industry in advance as to what it is supposed to do, isn't it?

Mr. DIXON. Now, of course, with the degree of the effect of a general trade rule, yes, but I wanted to remind you that since 1928 or thereabouts the Commission has been having similar proceedings which we call trade practice conference rules and we have about 169 of those.

Mr. ROGERS of Texas. Yes, sir.

Mr. DIXON. So it is not completely new. It is just a procedural step that is different.

Mr. ROGERS of Texas. But it is the first time that an entire industry has been taken in by this change that took place in 1962, isn't it?

Mr. DIXON. No, sir. We have had trade regulation rules that include a whole industry and trade practice rules.

Mr. ROGERS of Texas. Name one of those industries.

Mr. DIXON. The rayon rule. We had a rayon industry very early. When rayon came out it looked just like silk and there was a great deal of confusion. The industry came in and we issued a rule and told them how it had to be represented. We gave them advice and guidance and set out other rules that would keep them out of trouble, which, in effect, said, "Now, if you do this you are not going to be in trouble with the law. If you don't do that, you will be sued."

Mr. ROGERS of Texas. And so you take the position that that is not legislating and wasn't legislating with regard to the rayon business? They came in and asked you, "If we advertise this product we are going to want to know what we can do in advance so that we won't get in trouble with your Commission"?

Mr. DIXON. That is correct.

Mr. ROGERS of Texas. And you take the position that you told them that.

Now, did you lay down rules and regulations in the same procedure conformity as you now use after 1962?

Mr. DIXON. We go further now because there it was a voluntary movement. We don't make the official notice where everybody is put on notice, so that if they don't come they can't say they didn't have a chance to come. Now we publish it.

Mr. ROGERS of Texas. Now, did you require them to put warnings on the rayon?

Mr. DIXON. Oh, obviously not; no, sir. There was no need for it.

Mr. ROGERS of Texas. Wasn't there some rayon sweaters that blew up?

Mr. DIXON. They had to reveal that it was not silk. That is an affirmative requirement saying this looks just like silk. If you don't tell somebody it isn't, somebody will buy thinking it is.

Mr. ROGERS of Texas. Let me ask you this, Mr. Dixon. If we pass this bill 3014 and put it on the books, it wouldn't change one iota of the

authority you have today to haul anybody before your Commission that engaged in deceptive advertising, would it?

Mr. DIXON. 3014. This is your bill?

Mr. ROGERS of Texas. Yes, sir.

Mr. DIXON. This bill would, I believe in your bill you would preempt. We would still have the authority over deceptive practices, but not as to health——

Mr. ROGERS of Texas. Over deceptive practices you would still have the same authority, would you not?

Mr. DIXON. I so understand it.

Mr. ROGERS of Texas. Yes, sir; that is right.

Now, let me ask you one further question. I have several questions in mind, but I am not going to impose on the time.

Mr. DIXON. I might say this to you, though, on this point, if you would listen to me just for a minute.

We could have some difficulties if you do this, but this is your decision.

For instance, in your bill you would say to us, "Now, look, Congress has solved this as to the health hazard as to smoking and you stay out of it, it is none of your business, but you can still go after deceptive advertising."

Suppose one of these cigarette companies would come out with an ad and they would say this. They come out with an ad and say: "Even though the Congress required us to put this warning on the label, there is still a medical controversy as to whether or not it causes cancer."

What could be done about that?

Mr. ROGERS of Texas. Isn't there a medical controversy?

Mr. DIXON. That is right, but how many people would that persuade that it was dangerous?

Mr. ROGERS of Texas. But the medical controversy is on one side that it is dangerous, on the other that it isn't dangerous.

Mr. DIXON. I understand that, but the preponderance of the scientific opinion is that it is a health hazard.

Now, it is not unanimous.

Mr. ROGERS of Texas. I know, but while we are on that, Mr. Dixon, let me ask you this question. You take the position now that there has been controversy and people saying that the committee that you relief upon was not properly advised, that what they said was not entirely true. Now, didn't you take the position some time back that this was uncontroverted, the decision that cigarettes cause lung cancer?

Mr. DIXON. What I tried to express is right here on page 22 in our rule, in our basis and purpose. I tried to express this in a very short paragraph. We noted, as noted earlier:

> Other expert bodies have reviewed the evidence and concluded that the substantial health hazards of cigarette smoking are clearly established. They include the World Health Organization, the British Ministry of Health, the American Public Health Association, and the American Cancer Society. No disinterested expert body upon a systematic review of the evidence has reached conclusions opposed to those of the College of Royal Physicians, the Surgeon General's advisory committee, and the many other highly competent and reliable organizations that have expressed themselves on the subject. Although there may not yet be complete unanimity on the question, there is plainly an authoritative consensus of qualified expert opinions.

Mr. ROGERS of Texas. Well, now, the way you have written that in the report, isn't it almost identical with the psychological approach that you were talking about awhile ago? If a cigarette company says, "Now, the Congress has said that we have got to warn you, but there is a controversy between the people," why would the cigarette people in advertising lose any rights that you have to make a report of this kind in which the psychological effect of that language is to lead people to believe that the leading authorities have said it causes lung cancer, but you don't give the names of the people or the discussion that went on to say that it doesn't cause lung cancer? I am looking for facts.

Mr. MACDONALD. Will the gentleman yield?

Mr. ROGERS of Texas. Yes; I will be happy to.

Mr. MACDONALD. Isn't it a fact, as you said yesterday in your testimony, that the so-called blue-ribbon commission set up for this very purpose and over which the cigarette companies themselves had a veto, came back unanimously and said that the smoking of cigarettes—I know you went into the fact about the inhalation, et cetera—was conducive to cancer, and that is a fact and that is not in dispute?

Mr. DIXON. Yes.

Mr. MACDONALD. They came back 16 to nothing, an absolutely neutral body, and the best people in this field. So I think that he already has answered that question.

Mr. ROGERS of Texas. Of course, it is a matter of conclusion as to who is best in the field and who is not best in the field. I think we had some testimony before this committee of some people that thought that they were just as good as the people that made the other decision, and so that is something that we are talking about here, whether or not there was controversy. The fact is that there is controversy on this subject.

Mr. DIXON. And many of the views of those eminent doctors that did not agree that cigarette smoking was a health hazard, were considered by this advisory committee. They know the situation. The bibliography here in this report is quite complete with what they said.

Mr. ROGERS of Texas. Yes; I understand.

Let me ask one more question, and then I will yield the floor, Mr. Dixon.

Let us assume that no legislation is passed by the Congress on this subject. Is it your position that if you bring into play the trade rule regulation which you anticipate, that this will constitute a preemption insofar as the handling of cigarettes and cigarette advertising in interstate commerce is concerned, and that any law by a State having to do with warnings on packages or warnings in advertising would fall because of the doctrine of preemption?

Mr. DIXON. You mean if the Federal Trade Commission exercises its enforcement powers, would this preempt?

Mr. ROGERS of Texas. Yes.

Mr. DIXON. The answer is "No," sir. And I might suggest to you this: That even in your bill where you make mention of this, I doubt very seriously whether the Congress can preempt all of these rights from the States because this is a police power, and it is a fundamental constitutional right, as I understand it, for a State or locality to pro-

tect the health of their people. And you have still got this problem. I would be hopeful that if it is——

Mr. ROGERS of Texas. You are not complaining about the language?

Mr. DIXON. No.

Mr. ROGERS of Texas. You are taking the position that we may not have the right?

Mr. DIXON. I say that I admire your effort and I think it is proper that you are trying to do this, because it would be quite a problem to merchandise a product with 50 separate laws and multiply that problem by many municipalities.

Mr. ROGERS of Texas. Yes, sir.

Mr. DIXON. But I think that if the problem is dealt with forthrightly, I don't think that the States or cities are going to feel any need to get into it.

Mr. ROGERS of Texas. Thank you very much, Mr. Dixon.

The CHAIRMAN. Mr. Nelsen?

Mr. NELSEN. I would like to develop the point of preemption.

I noted in your testimony, Mr. Dixon, before the Senate committee relative to the possibility of congressional action, and the question was asked of you if an act of the Congress should be inclusive and preempt any action by other governmental bodies, and your response to the question was that you hoped that it would. You would recommend it.

Now, at that time, you said nothing about any question as to the possibility of a preemption of State rules and regulations in that testimony.

Have you given any thought or examination further to the action, to the possible action of the Congress that would make it uniform nationwide but allay the possibility of 50 different States moving into the area which as you point out would be a very difficult problem?

Mr. DIXON. Oh, I would certainly encourage the attempt, sir. I would encourage the attempt. What I think you really mean there is my encouragement of the Congress to clarify by an act or by a word or by a resolution the dilemma we will be left in by the Congress merely acting upon a labeling requirement and saying nothing about any change or any attitude as to advertising. I can go away from here with a firm opinion that there are many Congressmen and many Senators that don't think we are doing our job right now and shouldn't do this. But that doesn't relieve me of an obligation that a Congress in 1914 and 1938 that passed the law and the President of the United States signed it, and it is a law in fact.

Mr. NELSEN. Now, one further question. Under the rulemaking procedure, would in your judgment, would there then be a possibility of the 50 States also moving under the rulemaking approach which you attempted?

Mr. DIXON. I would hope not. I think that the problem here is this. For instance, during our rulemaking proceedings down there, officials came, I remember an official coming from the city of New York, testifying about a problem, indicating that they had some ideas on this subject themselves.

But they strongly urged that this problem be met, at least my impression was that it be met, on a nationwide basis.

Mr. NELSEN. In other words, do you feel that there would be a greater tendency on the part of the 50 States to follow a uniform pattern if the Congress acts, rather than the approach of rulemaking?

Mr. DIXON. Rulemaking as we have proceeded will eventually arrive at the same point. What we have done is to meet the problem under existing law.

Now, there is no doubt, as Chairman Harris said in opening these hearings yesterday, that one of the bases of this committee suggesting to the Commission that we ought to delay or suspend the effective date of the labeling rule to coincide with the July 1 date of the advertising rule of this year, was that if this was a problem under the process and review that is afforded to interested parties or cigarette manufacturers, that I had estimated would require approximately 4 years if resistance was met. And so by legislation obviously you can speed this up.

Mr. NELSEN. Now, in the event that a bill is passed by the Congress relative to the labeling of the package, would it be your intention to proceed in the field of advertising even if the Congress does not touch that area? Would you then intend to proceed in the field of advertising?

Mr. DIXON. I answer that question affirmatively to the Senate, and I answer it to you: yes, sir, without some kind of an action of the Congress.

Mr. NELSEN. I noticed in your testimony that you made reference to the fact that the Federal Trade Commission played a leading role in initiating remedial measures. Now, I think as a member of this committee it is my feeling that several of us had introduced bills at the last session of Congress, and it was quite a surprise to us that the Trade Commission moved in under those circumstances, we feeling that because of the fact we were attempting to move, we should have not been interfered with at that point.

Now, it would seem to me that to suggest that the Federal Trade Commission played a leading role is hardly a fair statement as far as the Members of Congress are concerned because some of us had bills in at the last session.

Have you any comment relative to that?

Mr. DIXON. I meant that, sir, looking backwards for practically the past 30 years, we have had a problem with this industry, and we have played a leading role in that respect trying to straighten out some of these problems. I said in my statement if you will recall the "tar derby" and that we got the industry to quit representations as to which one had the most or the least tar nicotine in it. I did not have that in mind with respect to the bills, sir when I made the statement.

Mr. NELSEN. Thank you.

Now, relative to labeling, I think there is a question in the minds of the Members of Congress as to how far the Federal Trade Commission was intended to go by legislative intent if not by exact language. Now, in the instance of labeling of a bottle of whisky, I know of many people who may have gone to their grave drinking too much whisky. They may have enjoyed it on the way, but the point is, What has the Federal Trade Commission done in regard to labeling of a bottle of whisky to identify the possibility that you may have sclerosis of the liver or something like that?

Mr. DIXON. We pointed out in our report that the Congress has assisgned this problem to the Alcohol Tax Division of the U.S. Treasury. It is not any problem of the Federal Trade Commission.

Mr. NELSEN. Thank you, Mr. Dixon.

Now, in the field of advertising, what would be the approach that would be made? How would you approach—I noticed in your statement that you referred to the trends in advertising, a social asset, manliness, popularity, and what have you. How would you approach that problem to dilute such an image? I notice you have "romantic" in there, too. I just wondered how you would check that one?

Mr. DIXON. When we issued notice of our proposed rules on January 18, we set forth the proposed rules that would, had we followed through on them, have gone into this field. But we were soon advised after our announcement that the industry itself was binding itself together and was adopting a code and they were hiring a gentleman named Governor Meyner, the former Governor of New Jersey, giving him rather extraordinary power. If you read that cigarette code, you will find that it basically is aimed at these types of problems. So with this having been accomplished by the industry, when we came to that point we did not do anything on that.

We in a sense are waiting and hoping for voluntary change in the industry.

Now, maybe you have been noticing some of the advertising. Say a year past it was not unusual to see a rather prominent athlete or prominent public figure in an advertisement, and he said—well, he had been smoking X brand of cigarettes for 25 years. Now, if you had a man like Crazylegs Hirsch sitting up in the Los Angeles Rams' stadium in Los Angeles, who was a great football player and an idol to the youth of America, and he is sitting here taking a big drag on a cigarette saying, "I have been smoking them for 25 years," well, the kids say that is a way to be a good football player, smoking cigarettes. That thought just comes out just like that.

Mr. NELSEN. I would agree that certainly it is the hope of this committee any action that we take will be to discourage youth from using cigarettes.

Mr. DIXON. The industry has made these changes, sir. They are doing them now. You will notice they promised also they are going to update some of the girls that are on their ads. They all used to look like they were high school children. They are very attractive. I do not know how you determine an age, but I noticed one of them recently where they got the age in because they said it was a class reunion of so and so.

Mr. NELSEN. Mr. Dixon, I want to thank you for delaying the application of the rule that you presented, and I also want to express the hope that we can draw some kind of a bill that will be satisfactory, and I hope this Congress will pass such a bill. I do want to also express the feeling that there is a great danger of a 50-State approach with different labeling problems. We ran into the same thing in the canning industry in the food and drug legislation where there is that danger.

At the same time we do wish to bring to the attention of the youth of America the problem they are faced with.

I have no further questions, Mr. Chairman.

The CHAIRMAN. Mr. Dixon, you raised a question a moment ago that is of some interest to me. I am not sure that I go all the way with the implications about the great football player and his smoking

being a motivation that causes other youngsters who want to play football to start smoking. Now, you were a great football player of renown, a great quarterback at Vanderbilt University.

Mr. DIXON. You have got a long memory, Mr. Chairman.

The CHAIRMAN. Well, I do go back a few years myself. I have tried to play a little football in my time even before yours. I know something about it—I do not think it has changed these days—something about the general attitude of youngsters, football players. When you were going through high school and over at Vanderbilt, I imagine you had the urge to take a few puffs off a cigarette occasionally, did you not?

Mr. DIXON. You know, Mr. Chairman, I was so small I was afraid to smoke. I put off my smoking until I found myself coaching football and trying to learn law, and I started bumming cigarettes off my roommate until he finally insisted if I had to have it, I ought to pay for it. I was about 25 at that time.

The CHAIRMAN. But you have observed many of the football players who wanted to slip off and would take a walk around the block and get away from the coach.

Mr. DIXON. I have been satisfied they would have been better football players if they had not smoked.

The CHAIRMAN. Well, the coaches always contend that.

Mr. DIXON. They always insisted on it.

The CHAIRMAN. The point is I doubt that those boys—and I frankly admit that I was one of them, and I never was an inveterate smoker, and I am not now—but I do not believe that I was ever motivated by any national athlete sitting up on a high pedestal somewhere smoking.

Mr. DIXON. They did not have any such advertising then. We very carefully cataloged and reviewed the major advertising programs of cigarettes way back over the years. We had slides shown to us, we saw the picturization as they came, the different themes that were played, and you could nearly correlate some of these themes with the beginning of some statistics of smoking, especially with ladies.

The CHAIRMAN. The point I wanted to try to clear up was that humanity is the same today as it was a quarter of a century ago.

Mr. DIXON. It is not going to change.

The CHAIRMAN. It is going to be the same 50 years from now.

Mr. DIXON. Yes, sir.

The CHAIRMAN. And whatever you may do by rulemaking though, whatever the Congress may do, if anything, is not going to change the human nature of the individual.

Mr. DIXON. And it may not frighten too many, Mr. Chairman, because all the statistics and opinion that I have heard on this subject is that this is a cumulative thing. You must smoke for a long period of time.

It kind of reminds me of the thing when I went off to war in World War II, I used to wonder why everybody, when they got to shooting at you, did not turn around and run. I finally figured it out. Because, I said, every one of us is a dadburned optimist. Somebody is going to get shot, but it ain't going to be me.

The CHAIRMAN. Well, that is a good way to look at it, but unfortunately after you go down the line like some persons whose names I could mention, you would find that you had long since passed the place of no return.

Mr. DIXON. Yes, sir.

The CHAIRMAN. Mr. Macdonald, I did not intend to enter into this lengthy conversation at this time. I do not want you to accuse me as you did Mr. Rogers yesterday. I did want to clear it up.

Mr. MACDONALD. I am delighted, Mr. Chairman, and I certainly would not accuse you, and I did not intend to accuse Mr. Rogers, of filibustering. As a matter of fact, Mr. Dixon, I think hearing you and Mr. Rogers, I would have to say it was a two-way filibuster.

Mr. DIXON. I thought you were talking about me frankly.

Mr. MACDONALD. And in the two-way filibuster I had some points that I wanted to raise just for my own satisfaction, just as one member of this committee. When I first read your statement, I would have immediately congratulated you on the statement as being very forthright in stating the position of your Commission. But there has been a little cloud thrown over some matters to my mind because as I followed your very logical statement, you stated that it was of no real moment merely to label a package of cigarettes that has been purchased before a person gets a chance to see the label.

You then went on to say that in one of the bills it should be understood it was not just a caution but a statement following the Advisory Committee that this was injurious to health and could cause cancer.

Mr. DIXON. Yes, sir.

Mr. MACDONALD. But then in a colloquy between yourself and Mr. Rogers I became a little confused as to the final position to be taken by your Commission regarding whether or not you feel that each advertisement under the code (a body to consider which I think that you mentioned Governor Meyner is going to head up) should include the language indicated by you. Do you feel that any public advertisement should contain the words or language that can be worked out between yourselves and industry, to give warning that cigarette smoking is hazardous to health?

Mr. DIXON. Obviously the problem will develop into one where there will be some very serious judgments that are going to have to be made. I can think of one, a spot advertisement which is just bam like that. How could you adequately get a warning in? Suppose you had an hour program by a sponsor, a cigarette sponsor, and suppose that four or five times during the program there was some kind of announcement. Well, would it be adequate to let him only say it one time, to get the warning in one time? Could it come as a pass through on the screen, a line?

Now, when you get down to newspaper or periodical advertising, then it is the position of it, the prominence of it. You could say I see it, but you may have to have a magnifying glass to find it.

What I would like to leave you with is this. That I have a great deal of faith in the ingenuity of the American advertising agencies, in the businessman, and I think that this can be done fairly, and it can be done in such a way that there will be adequate warnings.

Mr. MACDONALD. We all believe in the ingenuity of businessmen, especially Madison Avenue.

Mr. DIXON. Yes.

Mr. MACDONALD. But my question is, do you say that they should include in other advertisements words——

Mr. DIXON. An adequate warning.

Mr. MACDONALD (continuing). Cautionary words that smoking is hazardous to health?

Mr. DIXON. I am saying this to you. That I was commenting on specific legislative language when I made that statement, and Congress can, if they want to, delegate it to an agency to spell out general language such as we have our delegation now, but if you are going to put it in specific language, that is the way it has got to be said.

Mr. MACDONALD. Right.

Mr. DIXON. Are you aiming specifically in these bills just at a package?

Mr. MACDONALD. You and I are going to get into the same colloquy as Congressman Rogers and you did. I am not saying that you are trying to preempt the field, or that you should. But I am asking once again, fairly directly, do you feel, representing your Commission, that in each public advertisement—I will strike the word "each"——

Mr. DIXON. Adequate warning.

Mr. MACDONALD (continuing). In adequate size and type advertisements that there should be a caution that smoking of cigarettes is injurious to the health?

Mr. DIXON. I sure do, sir.

Mr. MACDONALD. Right. Well, I am glad to hear that. Now I can congratulate you, because I think that——

Mr. DIXON. That is what we were trying to say, and we were trying to say to the Congress—I realize full well Congress may not agree with that position. They may say they would like to take something less than that position.

Mr. MACDONALD. Right. And because you do feel that way, you would be opposed to the Magnuson bill which does not have such a provision. You would also be opposed to Congressman Rogers' bill, would you not?

Mr. DIXON. The Magnuson bill I did not oppose because I assumed from that that the problem of dealing with advertising was left to us under our powers.

Mr. MACDONALD. No; it merely goes to labeling as I understand it.

Mr. DIXON. I know it. Therefore, what I said to him, we supported his bill so far as it went, and we understood from his bill, not having any reference to advertising in it, that we would be left to proceed in an orderly course to enforce the law and require an adequate warning on advertising.

Mr. MACDONALD. Are you saying that any bill that talks about labeling——

Mr. DIXON. Not only labeling——

Mr. MACDONALD (continuing). Specific language, then, open end, leaves to you to——

Mr. DIXON. That basically is it.

Mr. MACDONALD. On the advertising end.

Mr. DIXON. That is basically it, sir. You see, Congress passed—that is, in 1938 amended the law to say we had to also proceed against unfair or deceptive acts or practices, and they amended it specifically with respect to food, drugs, devices, and cosmetics, by adding sections 12 through 15.

Mr. MACDONALD. Yes.

Mr. DIXON. And with these amendments since 1938 we have had this responsibility. We proceeded in a large number of cases. They have been carried to court. They have been fully sustained as within the responsibility of the Federal Trade Commission.

Mr. MACDONALD. Right. Well, that is what you went through at some length with Congressman Rogers, and I was going to question you further on that very point. He kept—Walt Rogers and I have always been good friends, and I respect both his ability and his judgment—but he kept talking about a radical change in the procedure, and I was going to say to him, and I did say to him privately, that coming from Texas he is more familiar with radical changes than I am. But it did not seem to me that this was much of a radical change.

Mr. DIXON. I do not think it is much of a radical change. I think it was a change, one that had as its overall objectives fair play, a more fair procedure than the old procedure of one at a time.

The CHAIRMAN. Will the gentleman yield?

Mr. MACDONALD. I yield to the chairman.

The CHAIRMAN. Mr. Rogers needs no one to defend him, but he did advise me that he had to look after another problem. But at the time, as I recall, Mr. Rogers referred to the "radical change" which was the language you used, Mr. Chairman. He used your very words yesterday, and I think we ought to state that for the record. It was not Mr. Rogers' claim that it was radical. Those were Chairman Dixon's words.

Mr. DIXON. I had described our ways of doing things as radically different from the way we used to do things.

Mr. MACDONALD. Right.

Mr. DIXON. And he picked up the word "radical."

Mr. MACDONALD. He used the words "radical change in procedure."

Mr. DIXON. Yes, sir.

Mr. MACDONALD. He was not just quoting your words.

Mr. DIXON. Yes, sir.

Mr. MACDONALD. He must have used the words "radical change in procedure" 15 different times including again this morning. So perhaps you opened——

Mr. DIXON. I may have opened the box.

Mr. MACDONALD. You opened the box, and he jumped in. In any case, Mr. Rogers actually had used these words, and my point is, since you both had used them, that I do not believe it is a radical change, or indeed any change, at all. The power, it seems to me, was always there, but you did not see fit to exercise it until 1962. Is that correct?

Mr. DIXON. You have stated it better than I could sir, I am sure.

Mr. MACDONALD. And the second point is that you are are exercising this power that you have been granted by the Congress because, for one reason, for the first time, the subject matter involved constitutes a national problem.

Rayon being labeled silk, or other materials being labeled silk, does not present, perhaps, a national public health problem. But you have been told by a committee that was set up for this very purpose that cigarette smoking is a national health problem.

Mr. DIXON. And they called upon the Government to take immediate remedial action.

Mr. MACDONALD. Right, and that is why I say if you did not do something about it, you would—to use that congressional cliche—have been derelict in your duty.

Mr. DIXON. I felt so, sir, and I know that as soon as this report came in and very shortly thereafter, Dr. Terry adopted basically the findings, the recommendations in it, and here is the chief health official in the United States of America whom we called upon for advice and guidance was giving it to us, and gave it to the whole public very forthrightly, and I have not seen him deviate or change or duck since that day.

Mr. MACDONALD. In closing, sir, I would just like to say this, because yesterday several Members indicated their disapproval of this bill on the basic grounds they were from tobacco States—in fact, you yourself said that you were from a tobacco State.

Mr. DIXON. The State of Tennessee probably is fifth, sixth, or seventh in the production of tobacco.

Mr. MACDONALD. Do you not feel that this is not a matter of tobacco States or textile States or any product States. Perhaps my own State of Massachusetts has many advertisers which are affected by this. But is it not a question of a national problem versus a regional problem, and it is not true in your belief, as it is in mine, that the younger people of the United States—and I know that is also a cliche, but since the chairman indulged in some reminiscence, I will too—that I am not unaware of athletes who do smoke. I do not think that is the problem. But it is the younger boys, 14, 15, and 16, who, even though their coach tells them that if they smoke, they will not make the club, nevertheless, if they are exposed to a whole series of endorsements by athletes, not just "Crazylegs" Hirsch, but John R. National, and many of the other famous players, recalling some of their best plays and then they see a player's run which shows him criss-crossing the field, running 150 yards, and having 11 guys unsuccessfully taking a shot at him, that to any 13-, 14-, or 15-year-old boy, you know that picture is worth a thousand words, and that this picture would seem to say to these boys, "No matter what your coach does say, if these professional athletes smoke, if these boxers smoke, if these baseball players smoke"——

Mr. DIXON. It does not hurt them.

Mr. MACDONALD. Then obviously it is not going to hurt them. I could not help but go into this particular aspect of the problem because I think that is one of the basic problems that needs correcting, either by you or by the Congress, and certainly I think the tobacco people themselves must be aware of it, because as you indicated, there are fewer younger people smoking and there are fewer athletes giving their endorsements.

In concluding I would like to compliment you and yield back the floor. Thank you.

And thank you, Mr. Chairman.

Mr. DIXON. Thank you, sir.

The CHAIRMAN. I would not want to overlook the fact—and certainly not ignore, since I mentioned the athletic experience of the distinguished Chairman of the Federal Trade Commission—that the gentleman from Massachusetts, Mr. Macdonald, was quite an athlete himself and a great football player and a baseball player from the

great institution of Harvard University. I would think—as I have tried to keep up with some of these matters, particularly of my colleagues—if he had not come to the Congress of the United States, he probably would be playing professional baseball as he was at the time, I believe, trying out for the Yankees, that baseball team in the American League that we have heard of once in a while.

And since the gentleman does not mind the bit of reminiscing that he started a moment ago, I want to tell a story: In 1957 we were requested to assist the Navy project officer in Antarctica with getting his project off the ground in connection with the Geophysical Year. That was a tremendous program that the Congress had authorized, and Mr. Macdonald was along with the group that had this valuable experience, and a very trying experience and a very successful one, I might say.

We went from McMurdo Sound in Antarctica over to Little America. Little America is well known as being that station down in Antarctica that is under ice. You go in a door and it is like going into a cave.

An interesting thing happened. We arrived on a little plane that landed on skis. There was a sign on the door as we started to go in. The sign up over the door read: "Welcome Torby, Yale 60, Harvard 0."

Mr. MACDONALD. If my chairman will yield to me on that point, that has not happened since. Secondly, I would like to say to you, Mr. Dixon, like myself, my province in sports gets better and I get better as the years go along. If I live long enough, I will be an old-timer.

Mr. DIXON. That is right.

The CHAIRMAN. Mr. Curtin?

Mr. CURTIN. Thank you, Mr. Chairman.

Chairman Dixon, yesterday in your statement you said that you preferred the enforcement provisions of H.R. 4244 to the enforcement provisions in H.R. 3014. It is my recollection that, in a comment on that statement, you said your reason for such preference was the "flexibility of enforcement." Am I correct in that recollection?

Mr. DIXON. Basically; yes, sir. We are talking about Congressman Fino's bill?

Mr. CURTIN. That is right, as against Congressman Rogers'.

Mr. DIXON. Yes.

Mr. CURTIN. What do you mean by flexibility of enforcement? Would you elaborate on that, please?

Mr. DIXON. This bill would place the enforcement by rules and regulations.

Mr. CURTIN. You are speaking of 3014 or 4244?

Mr. DIXON. 4244.

Mr. CURTIN. That puts enforcement in your Commission, I believe.

Mr. DIXON. And it would put it there to be enforced under the rules, regulations, and procedures as provided for in the act.

The other one now, the other approach would be it would be a criminal proceeding and by injunctive action instituted by the Attorney General. Now that is rigid. That is one way to do it. You just say you shall do this and if you don't do this you will have to pay this fine or spend this time in the pokey. If other information is learned on this subject, either a cigarette that can be developed that

can be proven safer by competent opinion and authority, then you would have to change the rigid type. You would have to change the law.

Whereas, if it was left to the general enforcement of the administrative approach, so soon as the authority changed, we would change with it.

Mr. CURTIN. Yes; but if there is a violation of the law, where would the flexibility come in?

Mr. DIXON. The method of enforcing the rule or in this case the need for an adequate warning. Each of the respective U.S. district attorneys in the districts, the Federal districts of the United States, would have this obligation. They could be uniform or they could not, depending on how each decided to act. It is a centralization of a problem rather than spreading it out, basically.

Mr. CURTIN. Chairman Dixon, one other question.

Is the rule that you have in mind to become effective in July of this year the same rule that you had in mind for last January, or are you going to spell out the language of the form of notice on the cigarette packages in the rule that you would make effective July 1?

Mr. DIXON. We have invited the industry, anyone that is affected, to come in by May 1 to file a petition on this point, and an invitation even to have it set aside, change it, or amend it in any way if they can carry the burden to show us that there have been enough basic changes on this point. That is in advertising as such.

On the label as such, of course we passed that and it would become effective under our rule on the same day. We will have to spell all this out or do so in conference with the industry, and I am quite sure if it arrives at that point the industry is going to be down there together with my other Commissioners, I am quite sure we will sit down and we will hammer out something that is adequate and is uniform and will be palatable, you might say, but will still get the message across. That is the way we would approach it.

Mr. CURTIN. Then your rule as of July 1 will have spelled out therein the phraseology of the notice of warning?

Mr. DIXON. The sense of it will have been spelled out by then; yes, sir.

Mr. CURTIN. Have you made up your mind at this point as to what that phraseology will be?

Mr. DIXON. The sense is already in there. As to how extreme it will be we have not, sir.

Mr. CURTIN. Would you mind telling us just what the form of notice will be in this proposed rule?

Mr. DIXON. Well, it is right in the rule as such now. This is the framework of it. It is on the first page of this document here.

Mr. CURTIN. Yes.

Mr. DIXON. This is basically the rule. It would apply to both labeling and advertising. That there appear clearly and prominently in all advertising and on every pack, box, carton, or other container in which cigarettes are sold to the consuming public that cigarette smoking is dangerous to health and may cause death from cancer and other diseases.

It has got to be somewhere in the framework of that broad language to satisfy that. I don't think we will have any problem working out the adequate language within that.

Mr. CURTIN. Thank you, Mr. Chairman.

That is all.

The CHAIRMAN. Mr. Dingell?

Mr. CURTIN. Thank you, Mr. Chairman.

Chairman DIXON. I want to welcome you to the committee. I am one of your very enthusiastic admirers and I am always glad to see you up here.

I want to commend you for the vigor on which you have moved on this question. I want to say I feel this is an extraordinary example of how a Federal administrative agency can move in to meet a situation.

I would welcome it if some of the other administrative agencies would copy your method and your vigor.

I would like to treat with a number of points that have come up. In the legislation that we see before us, we have narrowed our choices between two approaches, one being through the criminal method as you have mentioned, one being through the method available under the Administrative Procedure Act to the hands of the Federal Trade Commission.

I would like to treat with this point. I would also like to discuss with you the need for the legislation in the light of the proposed rulemaking procedure that the Commission has set forth. And I would like to discuss a little bit with you, if I may, some of the content of the several pieces of legislation insofar as notice is given, insofar as the powers of the Commission or the Federal regulatory agencies concerned would be affected. Within that framework I would like to begin by asking you about how long you feel it would be before the proposed rules set out by the Federal Trade Commission could be enforced?

Mr. DIXON. I once answered this last year that I thought conservatively 4 years, if it was resisted.

Mr. DINGELL. It would be 4 years, if resisted?

Mr. DIXON. Yes, sir.

Mr. DINGELL. It appears on the basis of what we can discern that it will be resisted by the companies; is that correct?

Mr. DIXON. I have read public statements that if necessary the industry is prepared to question the right of the Commission to issue a rule. That would be the beginning point of the litigation.

Mr. DINGELL. I see.

Now, going further, if I may, I would like to discuss with you the provisions of the several pieces of legislation before the committee, and contrast it with the proposed rules, if I may, Mr. Chairman. I would like to discuss, first of all, H.R. 4244, Mr. Fino's bill, which generally vests the powers of enforcement on this in the Federal Trade Commission. I would like to ask you how that contrasts with, whether it expands, whether it contracts the authority of the Federal Trade Commission from what is apparently in rules 1 and 2 of the proposed rulemaking set out in the trade regulation rules mentioned which you submitted to the committee the other day.

Mr. DIXON. This has a requirement that the nicotine-tar content should be shown also on the package, which is different from our rule.

Then, of course, the quoted warning is specific, with not much of a difference, and outside of that there is no fundamental difference insofar as labeling is concerned.

Mr. DINGELL. Does this bill afford you the authority to reach the question of advertising?

Mr. DIXON. This bill does not refer to advertising in any respect.

Mr. DINGELL. And being silent on that point, what would your construction of it be with regard to the powers of the Commission as to reaching the question of advertising?

Mr. DIXON. It would be my interpretation that we have no other choice but to enforce the law which we are sworn to enforce and it does apply to advertising.

Mr. DINGELL. You would have the power, then, under this legislation on the question of advertising?

Mr. DIXON. Yes.

Mr. DINGELL. Very good.

Now, the other bills, H.R. 2248 and H.R. 4007 and 3014 and 7015, as I read them, generally vest in the criminal procedures of the United States the enforcement devices for this legislation; am I correct?

Mr. DIXON. That is correct.

Mr. DINGELL. This would deny, as you have pointed out, the administrative flexibility that the agency can so well give; am I correct?

Mr. DIXON. That is correct, sir.

Mr. DINGELL. So that this committee can very clearly understand the advantages of the administrative procedures available—if an individual were charged with a violation of the law, you would not have to initiate a criminal proceeding against him. Rather you could operate within the Federal Trade Commission Act; am I correct?

Mr. DIXON. That is correct, sir.

Mr. DINGELL. The matter could be handled administratively without any onus or burden being placed on the potential defendant; am I correct?

Mr. DIXON. That is correct, sir.

Mr. DINGELL. And there would be provisions for orderly and continued supervision of orders issued by the Federal Trade Commission; am I correct?

Mr. DIXON. That is right, sir.

Mr. DINGELL. Without the resort to initiation of further criminal proceedings for failure to comply, am I correct?

Mr. DIXON. That is right, sir.

Mr. DINGELL. This, very frankly, is much better from the standpoint of the defendant or potential defendant; am I correct?

Mr. DIXON. That is right, sir.

Mr. DINGELL. And you have broad compliance power within the Federal Trade Commission Acts to enforce through a whole series of devices compliance with the Federal Trade Commission orders?

Mr. DIXON. That is correct.

Mr. DINGELL. What are those?

Mr. DIXON. After an order is issued by the Commission?

Mr. DINGELL. Yes.

Mr. DIXON. Once an order is issued by the Commission, if a 60-day period is allowed to pass without a petition for review, it becomes final. It becomes final by virtue of the statute having said it is final.

Then if it is violated—well, first the law requires them, sir, to give us a report of compliance as to how they are complying with the order. If we don't get that—if they don't give us this compliance then we

will go for a violation of the order by certifying it over to the Attorney General for penalties, civil penalties.

Now, if a final order of the Commission is reviewed, a petition is filed in a U.S. circuit court of appeals, and a review is given to the proceeding, then if our decision is affirmed, the decision becomes the decision of the court. And if it then is violated, we go to the court, and we petition the court to institute contempt proceedings, and they can find whatever the court desires or feels is necessary.

So you have one of two routes, the civil penalty route; and the other, the contempt route for enforcement of compliance.

Mr. DINGELL. Now, let me ask——

Mr. DIXON. Now, we also have the power, Congress gave us the broad power of section 6, to see that final orders are being lived up to, a forceful right to call upon a party to say:

> Now, we have got this order against you and we want you to give us the following report, and we want it within, say, 45 days.

Now, if the party does not give it to us in 45 days, we give him a notice of default and they must pay $100 a day until they give us the report.

Mr. DINGELL. Now, none of these would be available through the criminal enforcement procedure; am I correct?

Mr. DIXON. No, sir; it means you would have to bring it over and over again. Of course they can get an injunction, I believe. They can seek an injunction.

Mr. DINGELL. I don't see any injunction in any bills.

Mr. DIXON. I think there was one there, something I noticed there. H.R. 3014 provides for criminal proceeding by injunctive action instituted by the Attorney General.

It is on page 5 under section 9. It is the first criminal penalty section 8, and then section 9 is injunctive.

Mr. DINGELL. All right.

Now, let me go a little further. I would like to have you tell the committee, if you would, please, how those bills compare with the proposed ruling or with the proposed regulation issued by the Federal Trade Commission in terms of the advertisements which must be—rather, in terms of the manner of advertising or in terms of the matter of labeling.

Mr. DIXON. One thing I can say to all of them. None of the bills cover advertising except one. Mr. Rogers' bill, which excludes advertising. It says no Federal agency, it preempts it from the Federal agency. It says, "We do not want you to do anything about advertising," so that that difference runs through all of them.

The CHAIRMAN. I believe Mr. Nelsen's bill is similar to Mr. Rogers' bill.

Mr. DIXON. There are several bills of that similar note. I am using the word illustratively, Mr. Chairman, because I am aware that the bills are similar in approaches.

The CHAIRMAN. I believe all of the bills have that in with the exception of ——

Mr. DIXON. Except Mr. Fino's bill.

The CHAIRMAN. Yes; his bill and I believe Mr. Udall's bill.

Mr. DIXON. Mr. Udall's bill, too. His approach would declare it to be a hazardous product and assign the whole problem to the Food and Drug Administration.

Mr. DINGELL. Now, if I could, along these lines I would like to treat with circumstances that might rise in the future. This prohibition against interference with advertising would effectively deny any Federal agency the authority to prevent the kind of seductive advertising which would tend to make the smoking of cigarettes and the utilization of tobacco products particularly attractive to young people or to others similarly situated; would tend to deny your agency or any other agency the power to go across that rather vague line where the advertising might not be false or misleading or deceptive, but where it might still nevertheless be in the minds of most of the people of this country clearly against the interests of our youth or clearly against the best interests of our society, am I correct?

Mr. DIXON. I do not think they go quite that far, Congressman. For instance, the 4007 bill—and it is the same language as S. 3014—on page 4, section 6 it says:

> Nothing herein contained shall be construed to limit or to expand the authority of the Federal Trade Commission with respect to the dissemination in commerce of any false or misleading advertisement of cigarettes, provided that the Commission shall not have any authority in any proceeding under any statute administered by the Commission to require the inclusion in any advertisement of any statement concerning any hazard to health involved in smoking cigarettes where the advertised cigarettes have been packed in conformity with the labeling provisions of this Act. No Federal agency shall require any additional caution statement on any package labeled in conformity with the Act.

If I read that correctly, Congressman, it says that the Federal Trade Commission still has the responsibility to enforce its laws against misleading advertising, provided though, there is definitely whittled out of that authority its authority with respect to this warning statement.

Mr. DINGELL. I want you to interpet this for the committee—is there then in the Federal Trade Commission the authority to assure that the provisions of the proposed rule 2 of your rulemaking are carried out? You are familiar with that. It says:

> No cigarette advertising shall state or imply by word, sound, or demonstration or any combination thereof that smoking promotes good health or well-being, that it is not a hazard to health or is less a hazard to health than smoking other brands.

Now, can you still reach that kind of activity in advertising under the provisions of this bill or similar legislation?

Mr. DIXON. I think that may have been in the proposed rule under our paragraph. What are you reading from?

Mr. DINGELL. I was reading from your proposed rule on page 4. I want to know whether you would be denied authority to enforce.

Mr. DIXON. This was in our notice about the hearing; the one we put out is on page 1 of this book.

Mr. DINGELL. Page 1. I was reading from page 4.

Mr. DIXON. Yes, sir. Well, the one that we issued and promulgated is in the first page. We held hearings on the proposed rule on page 4, but we decided that this is the rule based on the record that we should issue.

Mr. DINGELL. Without going into that, let me ask you whether or not you would be able to prevent under this advertisements which

would effectively indicate to the citizenry that smoking cigarettes promotes health or well-being? Under the provisions of H.R. 3014, section 6——

Mr. DIXON. We could prohibit the falsity of that representation, correct.

Mr. DINGELL. You would not be denied going forward under that.

Mr. DIXON. No, sir.

Mr. DINGELL. Very well.

Now, there is just one last thing. Will you as a kindness to the committee submit an example of the size print that would be required under this legislation in the labeling of cigarettes? I notice that it is generally smaller than typewriter type.

Mr. DIXON. This would have to be clearly legible, and it would depend I guess upon the size of the ad and the makeup. This is the reason it is so hard for me. Is your question about this bill?

Mr. DINGELL. I am referring to page 4 of H.R. 3014 where it says—

shall be printed on a size not less than 12-point type on a 14-point base.

What I would like to do is have in the record somewhere—I am asking you to do it—an example of the size print where we can see what it looks like.

The CHAIRMAN. I will say to the gentleman that that is obvious what it is. We will have the staff get that and include it in the record.

Mr. DINGELL. All right.

(The information referred to follows:)

"CAUTION:
CIGARETTE SMOKING MAY
BE HAZARDOUS TO YOUR
HEALTH"

Mr. DINGELL. Now, one last question. What are your comments with regard to the requirement that the labeling be printed on the side of the pack instead of the front or the back?

Mr. DIXON. I think that if you are serious about people seeing it, you ought not hide it. It is kind of like us trying to find the front side of a round can. We had that problem on some oil down at the Commission, and we had a heck of a time figuring out what the front side of the can was. We put it on both sides.

The CHAIRMAN. Dr. Carter?

Mr. CARTER. In your statement you say there is medical and scientific opinion that cigarette smoking is a significant cause of certain diseases which contribute substantially to mortality from these diseases and to the overall detriment. You say further there were findings by the committee that are authoritative, reliable, and stand—at least you said this in the Senate—essentially unchallenged. This latter part was omitted I believe. This is your basis for your trade regulation rule as I understand it.

I assume you are aware that this committee last year heard testimony from a number of scientists who questioned the conclusions of the Surgeon General's committee. I assume further that you are aware that more than 30 individual scientists, physicians, and other experts

testified before the Senate Commerce Committee and questioned the conclusions of the Surgeon General's advisory committee.

I have a list here of some scientists, doctors, and other experts who questioned the conclusions of the Surgeon General's report which I would like to read to you, at least a few of them. It begins with Joseph Berkson, former chief of the Division of Biometry and Medical Statistics, Mayo Clinic; Karl Freudenberg, director, seminar for medical statistics, Free University of Berlin.

Mr. DIXON. What was that name, sir?

Mr. CARTER. F-r-e-u-d-e-n-b-e-r-g. Elmer F. Gooel, M.D., president, Los Angeles County Medical Association; Otfrid Mitmann, M.D., medical faculty of the University of Bonn; Stanley P. Reimann, M.D., director emeritus, the Institute of Cancer Research, Philadelphia, Pa.; H. A. Shapiro, M.D., editor, Medical Proceedings of South Africa; Harry Soforenko, M.D., editor, General Practice; Boris Sokoloff, M.D., Southern Bio-Research Institute, Lakeland, Fla.; Harry J. Wartham, M.D., associate professor of surgery, Medical College of Virginia.

This goes on and on with outstanding men throughout the United States. William B. Ober, M.D., director of laboratories, Knickerbocker Hospital, New York City, assistant professor of pathology, Albert Einstein College of Medicine, associate professor of pathology, New York Medical College; John H. Mayer, Jr., M.D., thoracic and cardiovascular surgeon of Kansas City, Mo., head of the Division of Thoracic Surgery in Kansas City General Hospital and Medical Center.

To read all of them would take up a great deal of time. But you see that there are many men of wide reputation throughout the United States who dispute, or rather who are not convinced that smoking cigarettes does cause cancer. In fact, this has not been proved. It is an assumption based upon a correlation of statistics. In other words, the findings certainly have been challenged, have they not?

Mr. DIXON. I never tried to leave any impression that there was unanimity in this field. What I tried to say is that a systematic review of the evidence—I do not think any disinterested expert body has come to any different conclusion from this report.

Mr. CARTER. Yes, sir. I do not wish to disagree, but I believe that in your Senate statement you said it was essentially unchallenged, yes, sir.

Mr. DIXON. I will stick by that statement, sir.

Mr. CARTER. All right, sir. The Surgeon General's advisory committee admitted its conclusion was based on judgment. In fact the committee devoted a chapter explaining how it reached this judgment. Since you are not a scientist yourself, you cannot really be certain that the judgments or opinions of the advisory committees are any better than the judgment of the experts who testified before this committee last year or before the Senate Commerce Committee, can you?

Mr. DIXON. You mean I cannot accept their opinion, sir, their finding?

Mr. CARTER. Shall I state it again for you? The Surgeon General's Advisory Committee admitted its conclusions were based on judgment. In fact, the committee devoted a chapter to explaining how it reached

these judgments. Since you are not a scientist yourself, you cannot really be certain that the judgments or opinions of the Advisory Committee are any better than the judgment of the list of experts who testified before the committee last year.

Mr. DIXON. I think there is a preponderance of opinion, expert opinion, on this subject which we not only notice from this opinion—I mean from the finding of this expert body, but of other expert bodies.

You are quite correct in your assumption that I am not a scientist but I do not know how in the world that under any logical, fair system you could have had a fairer appraisal of this question than the methodology that was used by this Advisory Committee.

Mr. CARTER. Did you not state yourself that we do not know the cause, we know there is a statistical association as to the smoking of cigarettes and lung cancer?

Mr. DIXON. I was relying upon the expert opinion when I answered that question.

Mr. CARTER. I refer you to the transcript, page 963, if I can refresh your memory on your statement.

You say in your statement with reference to H.R. 885 that the warning notice should be changed to read "cigarette smoking is hazardous to your health" rather than "may be hazardous to your health."

Is it not a fact, Mr. Dixon, that even the Surgeon General's committee recognized that the vast majority of smokers do not suffer any damage to their health as a result of smoking?

Mr. DIXON. I did not say hazardous to your health. I said it is a health hazard. It is a health hazard.

Mr. CARTER. You said that rather than it may be hazardous to your health?

Mr. DIXON. That is what I recommend, speaking for the full Commission. I will read it:

> We would suggest, however, that the statement in H.R. 3014 be changed by substituting the word "is" for the words "may be," because it is our opinion that cigarette smoking is a health hazard.

Mr. CARTER. Even in the face of the Surgeon General's committee's recognition that the vast majority of smokers do not suffer any damage to their health as a result of smoking.

Mr. DIXON. The Surgeon General in this report found a causal connection. A causal connection in the law means something, sir. It is not casual. It is causal. It is related. It is the cause and effect in law. If you shoot somebody while idly shooting a gun up in the air and it came down and pierced his head and killed him, you would say the proximate cause was shooting the gun in the air.

Mr. CARTER. No definite cause has been proved in this case.

Mr. DIXON. It has been found.

Mr. CARTER. An assumption only.

Mr. DIXON. I agree.

Mr. CARTER. You are familiar with Mr. Hickam of the Blue Ribbon Committee, I suppose.

Mr. DIXON. I am familiar that he was a member.

Mr. CARTER. Dr. Hickam?

Mr. DIXON. I am, sir.

Mr. CARTER. All right. He was in Charlotte, N.C., last year, and his talk there was reported in the Charlotte Observer the following day. In this he stated:

The Government report on smoking and health may have been a bit strong——

Mr. DIXON. All I know is he agreed unanimously with it, sir. If he had any reservations at the time, he should have filed them.

Mr. CARTER. All right. This is what I am reading. This is his word. He is a member of the committee.

The great majority of smokers are not going to die of cancer of the lungs. Some people who never smoke at all will get lung cancer. About all we can say is that smoking can facilitate the development of cancer of the lung in people who are susceptible.

When we see cancer of the lung, we're talking about the product of a complex biological reaction with many factors in it * * *.

Not just one, not just smoking.

Hickam said he felt—

people should look at the question objectively. The more we look at the statistics, the more difficult the connection was to understand.

The relationship between smoking and cancer was not as clear as the raw statistics appeared to indicate at first.

He talked about some of the other diseases allegedly caused by smoking. He called coronary heart disease "a very tough nut to crack." He said that many factors were involved, including sex, ethnic group, and occupation.

"Smoking is just part of the picture in coronary heart disease. A smoker may merely be the kind of person who is more susceptible to heart disease."

Dr. Hickan admitted that "we still don't know the cause of emphysema," a condition in which the lungs lose their normal breathing capacity.

The statistics connecting emphysema with smoking are very shaky. We do know that a great many people who smoke have emphysema.

When you work with pulmonary disease as I do, you have a tendency to think the whole world has lung cancer or other lung diseases. But everybody doesn't.

Cigarette smoking is much less dangerous than alcohol, for example. You don't smoke, then go out and get into a crash.

From what Dr. Hickam says, and he was a member of this blue ribbon committee you depend upon so heavily, there should also be warnings on alcohol, should there not? I ask you.

Mr. DIXON. Doctor or Congressman, I have tried to answer this question this way. I know of no doctor that would say—I asked doctors during our hearings whether or not doctors did not at times prescribe the drinking of alcoholic beverages, and they said "Yes." I said, "Well, do you know of any doctor that would prescribe possible smoking of cigarettes?" The doctors I asked that, they were very positive they would not. But I point this out to you. Alcoholic beverages are licensed. They are controlled from one end to the other. In fact, you cannot even sell it unless you have a license, and to get the license there are very rigid regulations.

We do not have this applying in the cigarette market. You can buy them anywhere you can find a machine, even if you are 4 years old, you can do that.

Mr. CARTER. Regardless of what you say, Mr. Dixon, Dr. Hickam, a member of the advisory committee says:

Cigarette smoking is much less dangerous than alcohol, for example. You don't smoke, and then go out and get into a crash.

Mr. DIXON. He might be right. That does not change the picture on the cigarette smoking.

Mr. CARTER. When are you going to do something about alcohol?

Mr. DIXON. I do not have that problem, but I do not know of any body or expert committee that has met and studied this problem as long and as vigorously as they did the problem of cigarette smoking. But when you have such a body of experts as that, and they call for remedial action, I daresay something will happen.

Mr. CARTER. With regard to nicotine you are aware that the Surgeon General's report says on page 75 that nicotine in quantities absorbed from smoking and other methods of tobacco use is very low and probably does not represent a significant health problem.

Moreover, with regard to so-called tar, the Surgeon General has said:

> We need to know more about the substances in tobacco smoke which produce the health hazards. Until we know more in this area, we will be handicapped in our efforts to remove the hazard. It is difficult to assign a method of removing something if you do not know what it is.

Dr. Terry made that statement, did he not? Thank you.

Mr. DIXON. I believe so.

The CHAIRMAN. Mr. Rogers?

Mr. ROGERS of Florida. Sir, I might want to go into fairly lengthy questioning.

The CHAIRMAN. Mr. Dixon, I had hoped that we would not have to ask you to come back in the morning, but we do not seem to be able to control the time or the questions.

Mr. DIXON. I understand that, sir. I am at your disposal.

The CHAIRMAN. It is almost 12 o'clock. We cannot go beyond 12. We are going to be called to the House immediately. We have a bill coming up right off, and it will be challenged from the start. In view of this, I think we will adjourn until 10 o'clock in the morning at which time Mr. Rogers of Florida will proceed promptly at 10 o'clock, because we do want to get on with this so we can get to other witnesses.

But in view of the importance of this witness, I am determined that every member may have such opportunity as he wishes to ask questions.

Mr. DIXON. We will be back at 10 o'clock in the morning, sir.

The CHAIRMAN. All right.

Mr. DIXON. Thank you, sir.

(Whereupon, at 11:55 a.m., the committee recessed, to reconvene Thursday, April 8, 1965, at 10 a.m.)

CIGARETTE LABELING AND ADVERTISING—1965

THURSDAY, APRIL 8, 1965

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to recess, at 10 a.m., in room 2123, Rayburn House Office Building, Hon. Oren Harris (chairman) presiding.

The CHAIRMAN. The committee will come to order.

In resuming the hearing this morning, I would like to remind our colleagues that the House will meet at 11 o'clock, and if we could expedite the questioning and expedite the answers this morning, the chairman would be grateful because we certainly do want to move on with this program.

Mr. Rogers of Florida is recognized.

Mr. ROGERS of Florida. Thank you very much, Mr. Chairman. I will make my questions short. My good friend Rand Dixon and I had some colloquy on this last year. He knows of my high regard for him and of the very fine job he does. I am somewhat concerned about the movement of some of our agencies in that, like my colleague, Mr. Rogers of Texas, I perceive a movement to perhaps go beyond the intent of Congress in the basic law that sets up some of our agencies.

This is not confined to one agency by any means. But I am not quite sure but that the situation we find ourselves in now leads me to the same conclusion or impression, that is, perhaps this is beyond the area that the Congress had intended for your agency to regulate.

So I will not belabor the point that has already been made by Mr. Rogers of Texas on the authority set out and the change in direction that the Commission has taken from its first days in 1914 to the change in 1962 which was a radical change, without the action of the Congress.

Now, it is my feeling that the Congress has acted on labeling to the extent where your agency has perhaps been preempted. I think we discussed last time the fact that the Congress had passed a Federal Hazardous Substances Labeling Act. Admittedly it did not specifically cover smoking, but neither does your act.

Now, as I understand it, you feel that section 5 goes to advertising and unfair practices and deceptive acts.

Is that correct?

48-824—65——7

STATEMENT OF PAUL RAND DIXON, CHAIRMAN, FEDERAL TRADE COMMISSION; ACCOMPANIED BY J. V. BUFFINGTON, ADMINISTRATIVE ASSISTANT TO THE CHAIRMAN; JOHN WHEELOCK, EXECUTIVE DIRECTOR; CHARLES SWEENEY, CHIEF, DIVISION OF FOOD AND DRUG ADVERTISING, BUREAU OF DECEPTIVE PRACTICES; AND FRED DOWNS, ATTORNEY, BUREAU OF DECEPTIVE PRACTICES, FEDERAL TRADE COMMISSION—Resumed

Mr. DIXON. That is correct, sir, since it was amended in 1938, this is true.

Mr. ROGERS of Florida. Does it go to labeling?

Mr. DIXON. It would include labeling, sir. The representation can be made on the label as well as in advertising.

Mr. ROGERS of Florida. What about section 12?

Mr. DIXON. Section 12 deals specifically with foods, drugs, devices, and cosmetics. This was a special enactment of the Wheeler-Lea—when the Wheeler-Lea Act was passed, it not only added sections 12 through 15 to the basic Federal Trade Commission Act, but it amended section 5 and added the words "unfair or deceptive acts and practices."

Mr. ROGERS of Florida. Now, what authority do you feel you have say over advertising or labeling of prescription drugs?

Mr. DIXON. Since 1962, sir, we have a very limited and if anything a very tenuous and a very narrow, and I would rather say we have little or no responsibility in this field, since the 1962 act.

Mr. ROGERS of Florida. Why is this when section 12 covers drugs——

Mr. DIXON. Because in 1962 the Congress expressed itself and directed itself specifically to prescription drugs.

Mr. ROGERS of Florida. I share your feeling that, that when the Congress acted on drugs, this in effect said we wanted this handled by Health, Education, and Welfare, by Food and Drug. Now we have passed an act since your act was passed on labeling in the Federal Hazardous Substance Labeling Act. The Surgeon General stated that he felt, after the study was made, that this problem should be handled as a labeling problem under this act. Yet before the Department had come in to make recommendations, your Commission had taken an action asserting jurisdiction even though you base your action on the study made by the Surgeon General.

Mr. DIXON. There was a great deal of controversy as to whether the Hazardous Substances Act covered it or not, so I am informed, but there was no doubt in any commissioner's mind that the Federal Trade Commission Act did apply—and it is not unusual as you know, in the various statutes that Congress has passed to have some degree of overlap between functions. In fact, in 1938 when the Wheeler-Lea amendment was being debated, it was debated quite extensively as to whether or not the Congress was going to take this food, drugs, device, and cosmetic statute and vest it in one agency exclusively. After extended debate and study, the Congress separated it. As you know, they pretty well left labeling and branding to Food and Drug and left advertising to the Federal Trade Commission.

Now it is good logic here, because when you go into the advertising field, you are in the field of economics more than you are in health

and safety. Traditionally I think Congress has looked at health and safety as a kind of a police power. They have looked in the field of economics as one of sale, inducement, and they have left this one in the more pliable stage of administrative law rather than the executive branch.

Mr. ROGERS of Florida. Do you feel that your authority under section 12 is more concerned with the health factors than section 5 would be?

Mr. DIXON. I think section 12 is a specific enactment extending in a way our jurisdiction on a group of classes of products, food, drugs, devices, or cosmetics. Our very basic jurisdiction here was in a sense spelled out and extended a little bit more.

Mr. ROGERS of Florida. Yes. Well, I do not think you have got the gist of my question. I said do you think this has more to do with health since these items are set forth in section 12, than section 5 has to do with health?

Mr. DIXON. But when applied to the Federal Trade Commission, Congressman, still we were in the field of advertising, even though it dealt with health products that could be a health hazard or we might say a health problem could arise in their manufacture as well as their sale. It dealt specifically with both aspects of that.

Mr. ROGERS of Florida. With advertising, but in the health field here actually with food and drugs. That is what it specifically meant to do; was it not?

Mr. DIXON. I would say when it got to the Federal Trade Commission, we were talking more about economics than we were about the health aspect of it, although remember it was at the same time I think in 1938 that you had some amendments to the Food and Drug Administration. It was not called that then.

Mr. ROGERS of Florida. Yes. What I am talking about is false advertisement of food and drugs would be more inclined, probably, to go to the health, would it not, which we gave you the authority to enforce as to advertising in section 12? Would that be true?

Mr. DIXON. I would like to be able to say to you that they might go to the health, but they might not go to health, too.

Mr. ROGERS of Florida. I understand.

Mr. DIXON. There are other ways that you can advertise and misrepresent.

Mr. ROGERS of Florida. Right.

Mr. DIXON. Without talking about the health problem.

Mr. ROGERS of Florida. But now section 5 goes to what?

Mr. DIXON. Goes to deception.

Mr. ROGERS of Florida. Deception?

Mr. DIXON. Unfair practice.

Mr. ROGERS of Florida. Unfair practice?

Mr. DIXON. That is right.

Mr. ROGERS of Florida. Right. And not as much to health?

Mr. DIXON. It is all inclusive here. It covers everything here, sir. It was the wisdom, I again say the wisdom of the Congress rather than to try to say and elicit all of the things that Congress could think that would be unfair and all that could be deceptive, so they took the generic or broad word and said you shall proceed against an unfair practice.

Now, every time we proceed, no matter how we proceed or what we say, we fill that word out a little bit more. For instance, now after 50 years we know a whole lot about what is an unfair method of competition. We know now a whole lot about what is an unfair practice, what is a deceptive practice, what is a false and misleading advertising or statement.

Mr. ROGERS of Florida. Now, a false advertisement, would be covered, I guess, under section 5—is this true?

Mr. DIXON. Yes.

Mr. ROGERS of Florida. False advertising would be covered under section 5?

Mr. DIXON. That is correct, sir.

Mr. ROGERS of Florida. Now, in the definition of false advertisement in your act written by the Congress, it says, "'False advertisment' means an advertisement other than labeling."

Mr. DIXON. That is for the purposes of sections 12, 13, 14, sir, very specifically, and only for those does this definition apply.

Go ahead, sir, you are correct.

Mr. ROGERS of Florida. Yes, which indicates the definition that the Congress has in mind on false advertisement.

Mr. DIXON. This may be your interpretation, sir. In 1938—I have these words to read, and I do not read the history that way, sir.

Mr. ROGERS of Florida. Now, if the Congress so decides and considers this question, to pass a bill which sets up what may be put on a label, what action do you think your Commission would be entitled to take in any regard to this cigarette problem?

Mr. DIXON. As to the label?

Mr. ROGERS of Florida. Yes.

Mr. DIXON. Congress will have acted on the problem— it is true as to the label as far as I am concerned, unless—and I would hope you would do it—unless you give us the responsibility to enforce it. Then it is a question of enforcement, sir.

Mr. ROGERS of Florida. Yes. Then if the Congress acts after these hearings, and we state that we want such wordage on the labeling, this will be a directive to your Commission that this problem has been handled by the Congress.

Mr. DIXON. As far as labeling is concerned this will be the final word, sir.

Mr. ROGERS of Florida. Thank you very much.

Thank you, Mr. Chairman.

Mr. ROGERS of Texas. Have you been recognized, Mr. Curtin?

Mr. CURTIN. I have.

Mr. ROGERS of Texas. Mr. Callaway, you have not.

Mr. CALLAWAY. No, sir. I will be very brief.

Mr. ROGERS of Texas. The Chair recognizes Mr. Callaway.

Mr. CALLAWAY. I come from a tobacco State and I am very aware of the contribution that tobacco farmers make to our economy. I also have five children and concern has been expressed here about how to protect young children from getting the tobacco habit. I am more concerned about the advertising feature than the labeling feature. This is the area where the young children become involved. I believe you testified yesterday that unless some legislation comes you may be in court for as long as 4 years trying to enforce what you feel to be your authority in this matter, is that correct?

Mr. DIXON. That is correct, sir.

Mr. CALLAWAY. One of the bills that has been introduced solves the labeling problem, but has no application at all to advertising.

Mr. DIXON. That is correct.

Mr. CALLAWAY. If this bill is passed, do you feel that your authority so far as advertising is concerned would be questioned—that you might also be in the courts 4 years over this? In other words, do you feel there is need to have legislation on advertising to give you authority and to keep you out of the courts for 4 years?

Mr. DIXON. I don't think it is necessary to give us any new legislation for us to act in the field of advertising, but if the Congress will pass the law in solving it, it will speed it up. In other words, it will clarify the first part of the contest, I am quite sure, as to whether we have any power to act or not. If there is any doubt in somebody's mind the Congress can solve that one very easily.

Mr. CALLAWAY. Mr. Chairman, if we act only on labeling and clearly settle the authority here, do you still have the same problem in advertising that you have spoken of, of years of litigation, or with the labeling would this pretty well——

Mr. DIXON. In my opinion, it would halve the litigation, at least halve it. It might do better than that. It might quarter it. We might not take over a year to get an effective—or a little over a year to get effective action. You see, I would visualize the right of any industry member subject to the rules that we put out that he first has the right to go into court and question the authority to issue this rule. I think he can go to the nearest district court and pick the district court he wants and start action. I would anticipate when we start we will end up in the Supreme Court. I have confidence that we will be sustained, if we go that route, or I would not have participated in the issuance of this rulemaking procedure. But after we get through with that, that establishes the authority, then we are back to the enforcement. Nobody in America has to change his ways until he is finally told and has a final command stamped by the High Court that that day has arrived, and that takes time, sir. That is due process.

Mr. CALLAWAY. I understand that. My question is, Cannot the same people go to the same courts and have the same delays on the question of advertising even though the Congress has acted on labeling?

Mr. DIXON. You are correct, sir; they can. That is correct. They promise they will, too.

Mr. CALLAWAY. If you do intend to move, as you apparently do on both labeling and advertising, and if the Congress only acts on labeling, as is proposed in one of the bills now before us, then you still have a problem of delays in advertising or might have such a problem, is that correct?

Mr. DIXON. That is correct, sir.

Mr. CALLAWAY. Thank you, Mr. Chairman.

Mr. ROGERS of Texas. The Chair recognizes the gentleman from North Carolina, Mr. Kornegay.

Mr. KORNEGAY. Thank you very much, Mr. Chairman.

Last year you and I went up and down several hills together, Mr. Chairman, and I certainly understood the position that you took on the matter. And, I think you probably understood the position that I was taking with reference to the action that the FTC has taken in

this case. In view of the time element, I am not going to try to plow a lot of the same old ground with you. But, there are several questions that are of great interest to me in this matter, Mr. Chairman.

First, let me pursue the proposition which Mr. Rogers of Florida took up awhile ago, and that is about the Wheeler-Lea Act which was passed in 1938. That is the only section of the act, as I understand it, which specifically provides or conveys or confers upon the Commission authority in the field of advertising. Is that not right?

Mr. DIXON. No, sir; that is not right. It is wrong.

Mr. KORNEGAY. In what respect is it wrong?

Mr. DIXON. In 1914 when the Congress passed the Federal Trade Commission Act, the act then consisted of these simple words:

Unfair methods of competition in commerce are hereby declared unlawful

It was soon established under the procedures that the Commission was following——

Mr. KORNEGAY. I am talking about the act now, Mr. Chairman.

Mr. DIXON. I am talking about the act.

Mr. KORNEGAY. I am not talking about procedures.

Mr. DIXON. I am talking about the act, too.

Mr. KORNEGAY. Let's talk about that first.

Mr. DIXON. I am talking about an act. The words "unfair methods of competition," had to be spelled out by the doctrine of judicial inclusion and exclusion which we are familiar with. This is the common law approach. Congress didn't try to tell us what unfair methods of competition were. They left that to trial and error.

It was soon after that development that the Commission had to question some advertising. But in order to satisfy the proof, the requirements of proof then, it could only be wrong if it affected competition. It was not wrong if it was unfair and was deceptive to the consuming public. It wasn't until 1938 that the consuming public was taken care of by the Congress of the United States when they added the words "unfair or deceptive acts or practices."

Now, when those words went in there, we quit having to carry the burden of showing its effect on competition. We only had to carry the burden of the finding supported by substantial evidence that it was an unfair practice or it was a deceptive practice. That was our proof.

Now, with respect to sections 12, 13, 14, 15, here the Congress was again talking about specific products—food, drugs, devices, and cosmetics. At the same time, that they gave part of a problem to them, it was the Food and Drug Administration—what was it called then?

Mr. KORNEGAY. FDA.

Mr. DIXON. FDA. I think that was the year it may have been started, maybe before.

The Food and Drug Administration, they gave the Federal Trade Commission the responsibility of those classes of products in advertising. So we have had advertising responsibilities continuous since 1914. They have been made easier as the years go along to approach because Congress has strengthened the laws.

Mr. KORNEGAY. But the Congress came along in 1938, recognizing the shortcoming in the act, and I say with reference to advertising they amended the act and made it apply with reference to advertising to specific commodities. Is that not right?

Mr. DIXON. Yes, sir.

Mr. KORNEGAY. Foods, drugs, and devices.

Mr. DIXON. At least for the purposes of sections 12, 13, and 14.

Mr. KORNEGAY. And subsequent to that time, about 1952 or 1953 the Commission tried to put cigarettes under the Wheeler-Lea Act, didn't they?

Mr. DIXON. This is true. We tried it.

Mr. KORNEGAY. And cigarettes did not fall within the purview of——

Mr. DIXON. Of a drug product.

Mr. KORNEGAY. What?

Mr. DIXON. The court ruled it was not a drug product within the purview of that act.

Mr. KORNEGAY. In other words, the Commission first tried to regulate the advertising of cigarettes under sections 12 through 16. That is the Wheeler-Lea Act. The court said you couldn't do it there, and it was then that the Commission started looking to section 5(a) of the act to try to regulate the advertising in the field of cigarettes.

Mr. DIXON. We had a case against cigarettes under section 5 before the Wheeler-Lea amendment, and we had proceeded against cigarettes under section 5. But after the act was amended we chose the easier route; I think you would encourage us to take it. If you will read this act, it is easier to carry your burden here than it is under section 5.

Mr. KORNEGAY. But the court said you couldn't do that.

Mr. DIXON. Because it wasn't a drug product.

Mr. KORNEGAY. That is right.

Mr. DIXON. That is correct. So if we had jurisdiction we had to go back to section 5.

Mr. KORNEGAY. Now, if you, of course, have the right to control and regulate advertising of cigarettes under section 5(a) you also have the same authority to regulate and control the advertising of any other commodity under that section, do you not?

Mr. DIXON. You are correct, sir.

Mr. KORNEGAY. Even food?

Mr. DIXON. It is as broad as your imagination is.

Mr. KORNEGAY. Right.

Mr. DIXON. That is correct, sir.

Mr. KORNEGAY. I am not saying it is that broad, but I think the Commission is saying it is that broad.

Mr. DIXON. No; the Congress said it is that broad—not me.

Mr. KORNEGAY. I don't think the Congress did.

Mr. DIXON. I didn't invent these words, sir.

Mr. KORNEGAY. Now, would your rule apply to cigarettes that go into the export trade?

Mr. DIXON. We have a Webb-Pomerene Act to enforce.

Mr. KORNEGAY. What?

Mr. DIXON. Webb-Pomerene. After World War I the Congress passed the Webb-Pomerene Act to protect the American businessman when he went abroad and tried to compete with cartels. It said, in effect, he could get together and agree to do a whole lot of things if he would come and register with Federal Trade Commission, he got immunity.

Now, if he comes and does that, he is immunized, but he also then becomes, as a result of that, subject to the full force and effect of section 5 of the Federal Trade Commission Act. So we have some rather tenuous responsibilities here.

Mr. KORNEGAY. Now, let me ask you again, does your trade regulation rule apply to cigarettes that go into export?

Mr. DIXON. I will read this.

Mr. KORNEGAY. The rules under consideration here?

Mr. DIXON. I will read commerce to you as defined in the Federal Trade Commission Act and the answer is "Yes."

Mr. KORNEGAY. All right, that is all I wanted to know, Mr. Chairman.

Then every package of cigarettes, if your rule goes into effect, that is shipped out of this country to be sold in a foreign nation will be marked, labeled with your warning that you propose in your rule; is that correct?

Mr. DIXON. If they are packaged in packages to be sold to consumers, you are correct, sir.

Mr. KORNEGAY. Yes, sir. And I assume that you know that last year the United States sold approximately $114 million worth of cigarettes in foreign markets.

Mr. DIXON. I am aware of that, sir.

Mr. KORNEGAY. And I am sure that you are aware of the distinct disadvantage that the American manufacturers of cigarettes would be placed in as far as competing with foreign manufacturers which do not carry warning labels on their cigarettes.

Mr. DIXON. The argument could be made, sir.

Mr. KORNEGAY. Yes, sir. And it would have a very marked impression and effect upon the balance of payments that we are so concerned about in this country at this time isn't that right?

Mr. DIXON. No. We made an invitation to the tobacco companies to come right down and talk about that and they haven't showed up yet. They can come down there and convince me that we have got enough of a problem just worrying about our people and let the other countries worry about them, I think I would listen to them, sir.

Mr. KORNEGAY. Well, I am trying to point out to you, Mr. Chairman, that this is a big proposition that you are undertaking, and that it involves a whole lot of things.

Mr. DIXON. We very rarely get real small——

Mr. KORNEGAY. And it is not a question whether the companies came down there and talked to you or didn't talk to you. The question I am asking you is, "Isn't it true that if this rule goes into effect, and that American cigarettes are labeled in a fashion that you propose to do that it would have a marked effect upon the balance of payments of the United States of America?

Mr. DIXON. I might remind you that you had better pay attention to that in some of these bills that you are listening to here today. Mr. Fino's bill applies to foreign commerce. I am going to read them out to you.

Mr. KORNEGAY. I am well aware of that, Mr. Chairman.

Mr. DIXON. They are in here.

Mr. KORNEGAY. Well, I am well aware of that, and I am also aware of the fact that the bills Mr. Rogers, Mr. Rooney, and Mr. Nelsen have introduced specifically exempt cigarettes going into foreign markets.

Mr. DIXON. This is a decision for the Congress.

Mr. KORNEGAY. Well, that is true. I know that as far as the bills are concerned.

Mr. DIXON. Congress passed this bill in 1914 and defined commerce at that time, and it included foreign commerce.

Mr. KORNEGAY. Well, you will agree with me, will you not, it would have an effect upon the balance of payments?

Mr. DIXON. Anything that goes abroad that is manufactured here and is sold has an effect on the balance of payments.

Mr. KORNEGAY. All right, sir; thank you very much.

Now, insofar as the label which you suggest, you told us on several occasions that you would not put it in quots and it would not be necessary to use the exact words that are contained in your proposed rule. Let me ask you this, Mr. Chairman. Would it be necessary for the industry to include in a warning pursuant to your trade regulation rule the words "cancer and death"?

Mr. DIXON. I do not think so, sir.

Mr. KORNEGAY. You do not think so?

Mr. DIXON. I think that they can get this message over in different ways from that.

Mr. KORNEGAY. All right, sir, thank you.

Now, your rule, the purpose of it, as I get it, so far as advertising and labeling is concerned is to inform the smoking public that cigarette smoking is hazardous, dangerous, or any other words you want to use as to health, is that right?

Mr. DIXON. I did not understand that, sir.

Mr. KORNEGAY. I say insofar as I can see, as I understand it, this rule which you have proposed, the purpose of it is to inform the smoking public that cigarette smoking is hazardous to health.

Mr. DIXON. This is correct, sir. This is our finding of deception, the failure to so advise is deceptive.

Mr. KORNEGAY. And it is a warning, I believe you used the word, a warning of the dangers of smoking.

Mr. DIXON. The hazard of smoking, this is correct.

Mr. KORNEGAY. And this is the way you are trying to "get your message across" to the American public.

Mr. DIXON. This is correct, sir.

Mr. KORNEGAY. In other words, it is——

Mr. DIXON. This is the way we are trying to carry out our responsibility of law enforcement, I think is more nearly correct.

Mr. KORNEGAY. In orther words, it is informative in nature, is it not?

Mr. DIXON. That is correct, sir. It meets the test of the old—I have said this to you before in the record—the old common law doctrine of implied warranty of safety. A product that is not safe, then this would alert the purchaser that it is hazardous. He is properly advised when he buys it. At that time he is advised.

Mr. KORNEGAY. Well, there is also an old common law doctrine, caveat emptor.

Mr. DIXON. Yes, sir; and Congress buried it in 1914 and really dug it up in 1938 and buried it forever. The doctrine of caveat emptor does not try——

Mr. KORNEGAY. Do you mean to tell me that the doctrine of caveat emptor is dead in American jurisprudence today?

Mr. DIXON. I say to you in the realm of false advertising she is dead, that is correct, just as dead as Congress could make it, and it was the first civilized nation in the world that did it.

Mr. KORNEGAY. Well, that is news to me. Now let me get on with this, Mr. Chairman.

You say that you have the authority under the law to require affirmative statements or advertising and labeling to inform the American public about certain hazards which you contend exists in the product; namely cigarettes.

Now, let me point out and call to your attention a law review article that is contained in the University of Pennsylvania Law Review issued December 1964. Are you familiar with that law review article, Mr. Chairman?

Mr. DIXON. I had it called to my attention when I was testifying over in the Senate, sir. I am generally familiar with it.

Mr. KORNEGAY. Have you read it?

Mr. DIXON. I have scanned it, and I do not agree with it, sir.

Mr. KORNEGAY. Of course you and I both know——

Mr. DIXON. Yes.

Mr. KORNEGAY. And I will certainly admit that a law review article is not law. But at the same time it is a product of a great deal of legal research done by qualified people, is it not?

Mr. DIXON. I would say they are young people that are engaging in legal research, and they are expressing themselves, and this adds to the body of law.

Mr. KORNEGAY. Yes, sir.

Mr. DIXON. That is correct, sir.

Mr. KORNEGAY. And while usually the authors of these articles are young people, they have done it under the supervision of highly trained and skilled lawyers who are professors in the various law schools, is that not right?

Mr. DIXON. That is correct, sir.

Mr. KORNEGAY. And, of course, the University of Pennsylvania—which I believe my friend Mr. Curtin went to—is recognized as a very fine law school in this country, is it not?

Mr. DIXON. It certainly is, sir.

Mr. KORNEGAY. Now, on page 304 of that law review and in the article which I referred to, it says this:

> The Commission claims a clear mandate to issue the present order in the exercise of the power granted it by the Federal Trade Commission Act over trade practices, a term which by judicial definition encompasses advertising. But both the words and the history of the statute belie the Commission's contention. Under section 5(a)(6) the Commission is empowered "to prevent persons, partnerships, or corporations * * * from using * * * deceptive acts or practices in commerce." After an adjudicatory hearing, if a practice or act which the Commission has "reason to believe (an advertiser) * * * has been or is using" is found deceptive, the Commission may order the offender to "cease and desist."

I skip on over in the interests of time to the first paragraph on page 305 and quote:

In cases involving orders to excise a whole trademark, the Supreme Court has sanctioned only those complete excisions required to cure the deceptive quality of the trademark. Similarly, courts have distinguished affirmative disclosure "necessary" to eliminate a false statement or implication of the advertisement itself, and affirmative disclosure not "necessary" to dispel falsity, but informative to the consumer.

In its use of the former, or "corrective" disclosure, the Commission has acted cautiously and has generally been upheld by the courts. In such cases, the Commission functions positively by responding to a particular deceptive element in the advertisement itself. In this type of case, the Commission's order is conditional: so long as the misrepresentation continues, the affirmative disclosure must continue. For example, a scalp treatment company that claimed it could cure "almost all" bases of baldness did not reveal its actual ineffectiveness against the male pattern type. The court upheld the Commission order that "failure to disclose that approximately 95 percent of the cases of baldness fall within the male pattern type is plainly misleading, when the petitioners claim they treat effectively virtually all cases of baldness."

Now, listen to this:

On the other hand, *Alberty* v. *FTC*, the only case to consider the question squarely, held the Commission lacked power to order an informative disclosure and described such authority as "the power to control the marketing of all * * * products * * *." The Alberty court differentiated the Commission's right to prescribe "corrective" disclosures from power to order "informative" disclosure and, in reversing the FTC, concluded that "Congress gave the Commission the full of the former but did not give it the latter."

Mr. DIXON. You are talking about the Alberty case, and that case has been distinguished in many particulars. That writer was talking about it. We wrote a much better law review article than that writer did, and it is in this basis and purpose for our rule. I suggest that you make this a part of your record, because I have gleaned out of this document, which is about 100 and some odd pages, these pages bearing specifically upon the historical background and the legal basis for the rule.

Mr. KORNEGAY. I think you have already offered that for the record.

Mr. DIXON. I do not think it was received.

Mr. KORNEGAY. I think it is in the record.

Mr. DIXON. It was not received. I suggested it, and then Congressman Rogers said he did not want that, he wanted it to be more specific.

Mr. ROGERS of Texas. Will the gentleman yield?

Mr. KORNEGAY. Yes; I will be happy to yield.

Mr. ROGERS of Texas. Mr. Chairman, with regard to this, I thought this was included in the record.

Mr. DIXON. Not these specific pages that I made reference to. The big one is made a physical part, but I gleaned out of that the specific pages bearing upon jurisdiction from a historical background, and I had referred to it. This same colloquy took place in the Senate, and they asked me to go back and delineate the pages and send them to them, and I had a copy of it, and I offered it at that time, sir.

The CHAIRMAN. It was not included in the record because Mr. Rogers was interrogating the witness at the time.

Mr. DIXON. Yes, that is right.

The CHAIRMAN. And Mr. Rogers stated that he was not interested in that.

Mr. DIXON. Yes, sir.

The CHAIRMAN. He wanted your comments about your authority under the specific statute.

Mr. DIXON. That is my recollection of it also, Mr. Chairman.

Mr. KORNEGAY. If I may interrupt, I would say that I ask unanimous consent that it be made a part of the record.

The CHAIRMAN. We will receive it and determine whether it should be received for the files or the record. It is a rather voluminous discussion. It includes a great deal of printing that has already been incorporated in other publications. There is no necessity in going to the cost of printing it if that is so. We will see about it.

Mr. KORNEGAY. Mr. Chairman, the point as I see it here, you have admitted that the purpose and the intent of your trade regulation rule is to inform. In other words, it is informative in nature.

Mr. DIXON. It is to remove deception.

Mr. KORNEGAY. You testified a few minutes ago that it was to inform. You have used the words during the course of your testimony—

Mr. DIXON. It is to inform for the purpose of removing deception, that is correct, sir.

Mr. KORNEGAY. It is not corrective, is it?

Mr. DIXON. It is corrective in the sense that without it, it is deceptive.

Mr. KORNEGAY. How can you correct something that does not exist?

Mr. DIXON. It exists, sir, because I have said this, if I sell you this package of cigarettes and there is no statement on these cigarettes, I think you or any buyer is entitled to believe they are safe for ordinary usage. Now, that is deceptive if that is not true, and that is what we have found.

Mr. KORNEGAY. I just simply cannot follow your reasoning in this, Mr. Chairman, when you say that it is corrective. To correct something, to my way of thinking, you first have to have the premise to operate from. You have to have a statement that has been made. I think that the courts have held in this Alberty case which I referred you to that there are two areas here. One is corrective action which you no doubt have. That is to correct an advertisement or a label which in itself is either false or fails to give an accurate or true impression.

Now, where there is no statement, where there is no representation made, in the case I say of cigarettes, then of course you have nothing to correct. And your order to put a warning on cigarette packages and in advertising is nothing but informational at its best.

Mr. DIXON. On page 87 of the document I referred to, referring specifically to a tobacco manufacturer known as P. Lorillard at 186 Fed. Second 52, page 58 at the Fourth Circuit, in your circuit, sir, this quotation appears:

> To tell less than the whole truth is a well known method of deception.

Mr. KORNEGAY. I agree with that 100 percent, to tell less than the truth, to make a half statement or a half truth. Do you see what I mean? I ask you if in that case you were not trying to correct some advertisement that was put on by P. Lorillard.

Mr. DIXON. The half truth is one of our problems, this is correct.

Mr. KORNEGAY. That is right.

Mr. DIXON. But we have one here that does not have half truth, it does not even have a statement. It has an implied warranty that it is safe. It is a safe product.

Mr. KORNEGAY. Well, of course then you get back to the Surgeon General's report.

Mr. DIXON. I must start there, sir.

Mr. KORNEGAY. And that is the basis for the position you take, is that right?

Mr. DIXON. This is correct, sir, the highest medical authority in our land.

Mr. KORNEGAY. Even though some of the people on that commission, as I think was brought out by Dr. Carter yesterday, are sort of backing off from the conclusions that they came to, is that not right?

Mr. DIXON. If he backed off, he backed off after he had a chance to back off——

Mr. KORNEGAY. After he had a chance to think about it a good bit later.

Mr. DIXON. Well, many people do that, sir.

Mr. KORNEGAY. The commission did not do any original research did it, Mr. Chairman?

Mr. DIXON. The Federal Trade Commission?

Mr. KORNEGAY. I am talking about the Surgeon General.

Mr. DIXON. They did not——

Mr. KORNEGAY. They did no research, and all it amounts to is a compilation of all the statistical studies made in this area, is that not right?

Mr. DIXON. I think you might take that up with Dr. Luther Terry.

Mr. KORNEGAY. I am going to take it up with him.

Mr. DIXON. As I read the report, they went beyond statistics. They had available to them clinical research. They had available the right of interview which they utilized. They studied laboratory reports and tests as well as autopsy reports and tests. This is beyond statistics, sir. They did not just count people. They studied, as I would understand from reading this, many more details than that.

Mr. CARTER. Will the speaker yield for a statement?

Mr. KORNEGAY. I will be happy to yield.

Mr. CARTER. In the Surgeon General's report we find a great mass of facts from which a conclusion is reached. There is no direct proof that cigarette smoking or that any part of the content of cigarettes is directly causative of cancer. If you can find such evidence, I ask you to do that now, Mr. Dixon.

Mr. DIXON. Congressman, I think we are talking about what constitutes proof. I find nothing in here that says that anyone knows what actually causes cancer. From everything I have read, there is still a great quest going on trying to locate exactly what causes it.

What this seems to me to be is the sum and substance of the intellect of man. It says based on everything that has been done, written, studied, and said on this subject, we unanimously conclude that cigarette smoking has a causal relation with lung cancer, and so forth, and so forth.

Mr. CARTER. We conclude these things without showing the actual causal relationship. In experiments on animals, which have been conducted, lung cancer has never been produced by the inhalation of cigarette smoke. However, it has been produced by exposing that animal to polluted air, is that not true?

Mr. DIXON. I think I have read something on that, sir.

Mr. CARTER. Thank you, sir.

Mr. KORNEGAY. Thank you.

Now, Mr. Chairman, you referred a while ago to the *P. Lorillard* case. Of course that was a case where the P. Lorillard Co. was advertising in Reader's Digest with reference to the fact that they had the lowest nicotine and tar content, is that not right?

Mr. DIXON. That is correct.

Mr. KORNEGAY. In other words, that was a case where you had a specific advertisement by a specific company, is that not true?

Mr. DIXON. That is correct, sir.

Mr. KORNEGAY. And yet that is the type of a case that you are using and have annotated, documented, on page 88 of your report as being the basis for the jurisdiction that you are trying to take in this case, is that true?

Mr. DIXON. It is but one of the cases, sir.

Mr. KORNEGAY. I know it is one of them, but all of those other cases are actions against specific companies involving specific situations of advertising, is that not true?

Mr. DIXON. It went beyond that, and I think if you wish for me to go and delineate every one of them, we will be here a long time.

Mr. KORNEGAY. I do not want you to do that in the interests of time. I want you to just answer yes or no.

Mr. DIXON. The Rayon case made no particular reference to the fact that——

Mr. KORNEGAY. That was the one that you referred to yesterday.

Mr. DIXON. Yes, sir.

Mr. KORNEGAY. Where you and the industry boys got together and agreed on something, was it not?

Mr. DIXON. No.

Mr. KORNEGAY. What?

Mr. DIXON. We have had a litigated case follow it.

Mr. KORNEGAY. Did you have a litigation in the Rayon case?

Mr. DIXON. Yes, sir; we have a litigated case on rayon products.

Mr. KORNEGAY. All right. Now, let me move along.

Mr. DIXON. We try generally first to give advice, and then if it is not taken, we sue.

Mr. KORNEGAY. You take action, do you not?

Mr. DIXON. That is right.

Mr. KORNEGAY. Yes. Now, your only means of enforcement are what we call the cease and desist orders, are they not?

Mr. DIXON. Not the only means. It is the ultimate means.

Mr. KORNEGAY. It is the ultimate means.

Mr. DIXON. It is certainly one of them.

Mr. KORNEGAY. The only one with any teeth in it.

Mr. DIXON. I will agree with that.

Mr. KORNEGAY. You have the power of persuasion.

Mr. DIXON. This is correct.

Mr. KORNEGAY. Which you exercise.

Mr. DIXON. We have the power of injunctive relief.

Mr. KORNEGAY. But insofar as the legal remedies which the FTC has, it is the cease and desist order, is that not right?

Mr. DIXON. This is right, but we are enabled to accomplish this same result short of the cease and desists order. It is one of the methods that we certainly use—it is the ultimate.

Mr. KORNEGAY. Let me read you one of the footnotes here.

The CHAIRMAN. May the Chair interrupt?

(Discussion off the record.)

Mr. KORNEGAY. Let me just read this statement, if I may, Mr. Chairman, of the Commission; Judge Ewin Davis who was a former Commissioner and a Member of Congress when the Wheeler-Lea Act was passed in 1938 made a statement in the Congressional Record.

Mr. DIXON. Ewin Davis. He hired me.

Mr. KORNEGAY. You are well acquainted with him.

Mr. DIXON. I sure am, sir.

Mr. KORNEGAY. He was a fine fellow.

Mr. DIXON. He sure was.

Mr. KORNEGAY (reading):

> When the Commission issues a cease and desist order, that is all they can do. We can just say stop.

Is that not right?

Mr. DIXON. That is right. That is one way of saying it.

Mr. KORNEGAY. And yet here, as I see it, the Commission is intending to stop something that has never been started and attempting to cease and desist from something that has never been anticipated.

In conclusion, I want to say that the inconsistency of it all reminds me of a little poem that I learned somewhere back in school. It went something like this:

> "The time is Tuesday morning,
> Wednesday just at night;
> I know a thousand miles away
> A house just out of sight.
>
> "The house projected from the rear,
> The front was around the back;
> It stood alone with two others,
> And the fence was whitewashed black."

Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Van Deerlin, do you have any questions?

Mr. VAN DEERLIN. Mr. Chairman, I was just going to observe that if the estimate of 100,000 deaths a year to lung cancer is a valid one, then the breakdown shows that 11 Americans have died of lung cancer during the hour that we have been here this morning.

Thank you.

The CHAIRMAN. Mr. Jarman.

Mr. JARMAN. I'd like to commend the Chairman for his strong, positive statement. I salute the FTC for its courageous position on the problem before us—for the advertising and labeling requirements of the rule to become effective on July 1, 1965.

The pressures on the Chairman and the Commission in this matter must be heavy—I hope sincerely that you gentlemen will hold firm and will persevere in the effective enforcement of your rule.

Mr. Chairman, I am pleased to know that the impact of cigarette advertising on young people was a particularly important consideration in the FTC proceeding. This is the area of my main concern in this problem for I believe that the youth of our Nation must be protected from the advertising techniques of tobacco companies, especially in the medium of television.

Let me assure you, Mr. Chairman, that I will be doing all that I can here in the Congress to strengthen the authority of the FTC in this field.

Mr. DIXON. Thank you, sir.

The CHAIRMAN. Mr. Pickle.

Mr. PICKLE. Mr. Chairman, I think the legal points have been pretty well explored by lawyers. I want to ask you one or two questions of a general nature, one with respect to labeling.

You state you prefer that the wording would say "Warning, content is dangerous to health." If the package said——

Mr. DIXON. "Is hazardous" I think was our suggestion.

Mr. PICKLE. Hazardous?

Mr. DIXON. Yes, hazardous.

Mr. PICKLE. Now, if the package with a proper size type, was labeled "Warning, contents may be dangerous to health," and then by asterisk down below it would say "according to the Surgeon General's report is dangerous" or some such wording, because there is a difference of opinion, preponderance apparently says there is a hazardous aspect to smoking cigarettes, and yet we have got clear authority that says it is not.

Now, if there is a qualification on a package that perhaps would say, "Warning, is a hazard to health," and then down below it would say "according to the Surgeon General's report of 1964," would that suit you?

Mr. DIXON. I think we are playing on words. I would say if you are talking about danger, may be dangerous, if we are talking about hazardous, I think it is hazardous.

Mr. PICKLE. I mean to use the word "hazardous." What you want is a fair wording——

Mr. DIXON. That is right, sir.

Mr. PICKLE. A fair warning.

Mr. DIXON. We tried on the specific wording in the legislation to give you the best of our advice on it, and that is our suggestion.

Mr. CARTER. Would the speaker yield for one question?

Mr. PICKLE. I yield.

Mr. CARTER. Actually this refers to Mr. Van Deerlin's statement about 100,000 deaths. I have here the vital statistics for 1962 which show lung cancer causing 18,000 deaths, that is primary lung cancer. It seems that there is a tendency to exaggerate the number of deaths which are actually caused by lung cancer.

Mr. DIXON. Actually in this big report there were 41,000 attributed to it, but the figures——

Mr. CARTER. I agree with the statement of 41,000. However, of that 41,000, 22,000 may be metastatic conditions.

Mr. DIXON. I understand.

Mr. CARTER. From cancer of the other parts of the body which metastasized to the lung. The lung received these metastases from other

parts of the body. The vital statistics actually show only 18,000 deaths recorded as primary.

Thank you, sir.

Mr. PICKLE. Would you yield back to me?

Mr. CARTER. I yield back, sir. Thank you.

Mr. PICKLE. Mr. Chairman, assuming that we come up, the Congress comes up with an adequate warning—and that is all your Commission really is asking for—and that is our decision——

Mr. DIXON. That is correct.

Mr. PICKLE. We can largely settle this matter, this problem, by a good proper labeling. Now, the real problem that comes is in the field of advertisement.

Mr. DIXON. This is correct.

Mr. PICKLE. Now, you insist that though it does not specifically give you the authority, the permission to say—the statement that there is a misbranding or a misstatement about the product gives you the authority to regulate advertising, the sale of cigarettes.

Mr. DIXON. I have no doubt that we have the authority on advertising.

Mr. PICKLE. Now, my question is this. You said in the first day of testimony here that you felt that the advertising industry, cigarette tobacco manufacturers, your Commission, the advertising medias in their ingenuity could get together and work this problem out, but you would not say if it was a 30-second flash on the screen whether they would have to have this big labeling put up there, you would not say what size of type, if it was an ad 2 by 10 or 4 by 12, because you were kept out of that category because it is so hard to say exactly what is going to be required. You will admit that.

Mr. DIXON. That is the reason I suggested leave it.

Mr. PICKLE. Now my question is if we have proper labeling, if we have good strong proper labeling which gives a proper warning to the people concerned, then it would seem to me that accomplishes your purpose because you are not trying to scare people, are you? You are not trying to run the tobacco people out of business, are you? You are not trying to run the advertising media. All you are really doing in the Commission is trying to say there ought to be proper warning on a package of cigarettes.

Mr. DIXON. We are trying to stop deception, sir.

Mr. PICKLE. If we agree to that, why do you not stop at that point and say to the advertising industry and to the manufacturers, the growers and all people concerned with this product—give them a chance to work out this problem in their way without you making a rule that is going to be almost impossible to live by.

If we can come up with the proper wording, it seems to me like we ought to stop at that point and give them a chance to work it out. Now, what is wrong with that?

Mr. DIXON. We just simply do not agree with you, sir. We tried to point out to you that advertising is the very lifeblood of sales of cigarettes, and that it is quite important, and in order to remove the deception from the American public that it should be considered at this moment at least, because there have not been any other changes to speak of on this point, none suggested other than the bills that are here before the Congress. Thus it ought to be considered very deeply

before you foreclose one way or another, but it is your decision. We will abide by the decision of the Congress.

Mr. PICKLE. I am sure you would. But there is much more to this than just an advertisement, because you know you are dealing with something that is a custom, it is a social habit. You know you are not going to run cigarette smoking underground. You know that.

All you can do is give a proper warning. I think you ought to do that and then stop there and see if the industry cannot work this problem out themselves.

Thank you, Mr. Chairman. I will yield.

The CHAIRMAN. Mr. Murphy.

Mr. MURPHY. No questions.

The CHAIRMAN. Mr. Satterfield.

Mr. SATTERFIELD. I have some questions, sir.

One thing that I am a little concerned about, Mr. Chairman, is this. As I understand your testimony and your remarks here in the past couple of days, you feel and your Commission apparently feels that there are two areas in which you have a responsibility. One is economic in terms of free trade, and the other apparently, from what you have said, is with respect to protecting the health and welfare of the people against hazards, is that correct?

Mr. DIXON. We are proceeding here against deception, sir, and deception can occur on the label as well as in the advertising, and we know that our jurisdiction—or we have the strong belief that our jurisdiction goes to the label as well as to the advertising.

Mr. SATTERFIELD. But the underlying reason for this decision nevertheless pertains to protecting the health and welfare of the people, does it not?

Mr. DIXON. The underlying report of the Surgeon General's committee had to do with health and safety, sir.

Mr. SATTERFIELD. I understood too from a statement you made the other day that the reason you saw fit to act in this area was that a blue-ribbon panel of experts had come up with a decision and a recommendation.

Mr. DIXON. This is the principal basis, sir, yes, sir.

Mr. SATTERFIELD. Do you feel—apparently you did in this case—that the responsibility to the public in terms of health outweigh the responsibilities that you might have had in terms of regulating fair trade.

Mr. DIXON. The economics in my opinion does not override the responsibility of removing deception here. In fact, I would be hard put to ever try to meet that test. It is a part of fairness to the consuming public.

Mr. SATTERFIELD. I understood from your statement that one of the chief objections that the Commission has is the fact that advertising would tend to promote the sale of cigarettes in the future and perhaps create additional customers in terms of the youth today as they grow older.

Mr. DIXON. I think that is correct, sir. I think the past history that we studied illustrated it. I am a believer in advertising. I think this is the thing that makes products move in America in a large way.

Mr. SATTERFIELD. Nevertheless, it seems to me from your statement that what you are saying is that in this instance advertising is not good

and that it should be stamped out at least to the extent that people would be encouraged to smoke through advertising.

Mr. DIXON. No, sir; I am trying to say that truthful advertising is good; deceptive advertising I have a question mark on because Congress questioned it, not me.

Mr. SATTERFIELD. I got the impression from one thing you said either yesterday or the day before that any time a group of experts made a decision such as this, you felt bound to follow it if there also was a recommendation that some remedial action should be taken.

Mr. DIXON. No, sir; I do not think I said that. I say this. That when the chief medical officer of the United States under the conditions which he convened this committee, under the methodology that he followed, under the methodology that the committee followed, when they come up with a report to him and then he accepts the report, and in a sense underwrites it, he accepts the conclusions as is, the basic conclusion, I think is the highest type of authority you can turn to in America.

Mr. SATTERFIELD. Do you feel that the Commission has any right to examine these reports or do you feel it is bound to accept them as fact?

Mr. DIXON. They examine the report for methodology and the competency of the witnesses, the fairness of the report and everything. We examine that as well as many other reports. Now, we made it very plain in our statement of basis and purpose that this was the principal report, but we examined many others.

We frequently must rely upon expert opinion in order to decide many troublesome questions that come before us. If we did not do this in America, I do not know how you would decide many problems.

Mr. SATTERFIELD. You have a lot of advertising going on in this country today. There was some allusion to advertising a few years ago. I think all of it has improved, and I believe you with agree with me.

Mr. DIXON. Yes, sir.

Mr. SATTERFIELD. There are divergent advertisements today on television and radio with respect to appealing products—let me name one—beer, for example, where it is pictured being cooled in rippling brooks with the family out on a picnic having a good time. Should some expert committee decide that beer is not good for people, would it be in order, do you think, that you develop some type of regulation with respect to this product as you have with cigarettes?

Dr. DIXON. If we had the problem, I think we would be forced to consider it, sir.

Mr. SATTERFIELD. The question of whether you would consider it or not would depend or whether or not some committee of experts came up with a conclusion.

Mr. DIXON. I think so, sir. I think it would go beyond that. It would be the nature of the committee. Was it just a problem here, there, or another place, and the extent of the danger. This is that delicate thing that we must weight, as Congress said; we must weight what is in the public interest. We, the Commissioners, must decide what in the public interest in the beginning should be the action initiated by us under our statutory authority.

Mr. SATTERFIELD. Is free enterprise in the public interest?

Mr. DIXON. It sure it, sir.

Mr. SATTERFIELD. Then you must have decided here dealing with one industry whether or not the public interest in terms of health hazard based on this report outweighs the public interest of free trade in tobacco products.

Mr. DIXON. You are assuming that what we are doing by requiring, we might say, the elimination of deception, that this is going to eliminate free enterprise. I do not agree with you, sir.

Mr. SATTERFIELD. Is this decision not inherent?

Mr. DIXON. What is that, sir?

Mr. SATTERFIELD. Is that is not the decision that is inherent in this instance?

Mr. DIXON. I do not know as it is, sir. I guess that I am one of the believers that deception hurts free enterprise. Removal of deception helps free enterprise.

Mr. SATTERFIELD. I agree with you 100 percent when you are talking about fair trade practices as one to facet of an industry against another. In rayon, for example, there was a question of one product that looked like silk being in unfair competition with silk itself. Here you are regulating against an entire industry, and I think this question has not been answered yet, is it not true that this is the only time or the first time such a regulation has been issued against an entire industry where it was not in competition with another similar to it?

Mr. DIXON. In view of this report, sir, I think the least that the cigarette industry could expect would be this warning. I think that is the last they could expect.

Mr. SATTERFIELD. I have no other questions.

The CHAIRMAN. Mr. Farnsley, you had one.

Mr. FARNSLEY. Just real quick.

The CHAIRMAN. Mr. Gilligan, before you leave, did you have any questions?

Mr. GILLIGAN. No, sir.

The CHAIRMAN. I am trying to find out whether to bring Mr. Dixon back.

Mr. FARNSLEY. U.S. News & World Report says that there is pressure mounting for control on tiremakers. I am very worried about automobile safety.

Mr. DIXON. Yes, sir.

Mr. FARNSLEY. Are you all working on that?

Mr. DIXON. We have had hearings on the marketing of tires. We have heard something about the deficiencies there, too, sir.

Mr. FARNSLEY. Thank you.

The CHAIRMAN. Mr. Dixon, thank you very much for your patience and willingness to respond to questions that have been propounded to you by members of the committee. We appreciate your being here and contributing to these hearings and compliment you and your staff and thank you for your helpfulness to the committee in making this record.

Mr. DIXON. Mr. Chairman, may I thank you for your patience with me. This is a tedious problem, and I deeply appreciate the way I have been handled. Thank you, sir.

The CHAIRMAN. We appreciate your staying with us. We had not anticipated to take practically all this week with you. I have tried to be as lenient as I could knowing how sensitive and important this question is. I merely may comment at this time that if nothing is done legislatively on this problem, I repeat as I stated last year, you will have the dangedest lawsuit you had in a long time. It is going to take a long time to settle it.

Mr. DIXON. I agree with that sir, and I fully appreciate, therefore, the willingness of the Congress to look at this because I think there is a real problem here, and by the Congress taking action, certainly time will—you can legislate a lot of time out of this problem.

The CHAIRMAN. As I indicated at the last Congress, I think it is of great importance to avoid postponing this for 3, 4, or possibly 5 years. I believe it behooves you, Mr. Chairman, and your Commission and this committee and the counterpart committee in the Senate and indeed the Congress to try to work out some solution to this problem, and I am going to invite your asisstance and cooperation as we try to do that.

Mr. DIXON. We will certainly give to you our best, sir.

The CHAIRMAN. Thank you very much.

The committee will adjourn until 10 o'clock in the morning at which time we will have Dr. Luther Terry of the Public Health Service.

(Whereupon, at 11:15 a.m., the committee recessed, to reconvene at 10 a.m., Friday, April 9, 1965.)

CIGARETTE LABELING AND ADVERTISING—1965

FRIDAY, APRIL 9, 1965

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to recess, at 10 a.m., in room 2123, Rayburn House Office Building, Hon. Oren Harris (chairman) presiding.

The CHAIRMAN. The committee will come to order.

As we resume the hearings on the various bills having to do with cigarette labeling and advertising, we are pleased to have with us today Dr. Luther L. Terry, Surgeon General of the Public Health Service.

Doctor, I am sure we have caused you some inconvenience in the last few days. We regret that we have, but we are glad we could finally get to you and we will be glad to have your statement.

STATEMENT OF DR. LUTHER L. TERRY, SURGEON GENERAL, PUBLIC HEALTH SERVICE; ACCOMPANIED BY DR. DANIEL HORN, CHIEF, SPECIAL PROJECTS SECTION, CANCER CONTROL PROGRAM, PUBLIC HEALTH SERVICE; DR. JAMES HUNDLEY, ASSISTANT SURGEON GENERAL FOR OPERATIONS, PUBLIC HEALTH SERVICE; AND THEODORE ELLENBOGEN, ACTING ASSISTANT GENERAL COUNSEL FOR LEGISLATION, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Dr. TERRY. Thank you, Mr. Chairman. I might say in that respect that being as close as I am, the inconvenience has actually been minimal. I suppose the anxiety has been the principal problem.

Mr. Chairman, I would like to introduce the staff people whom I have with me.

The CHAIRMAN. We will be pleased to have you do so.

Dr. TERRY. On my immediate right is Mr. Theodore Ellenbogen, who is Acting Assistant General Counsel for the Department of Health, Education, and Welfare. On my immediate left is Dr. James M. Hundley, who is Assistant Surgeon General for Operations of the Public Health Service in my immediate office, and then on my far left is Dr. Daniel Horn, who is Chief of the Special Projects Section of our Division of Chronic Diseases.

Dr. Horn is a Ph. D. psychologist who has had special training and long experience in the field of statistical studies.

Mr. Chairman and members of the committee, I am grateful for the opportunity to appear before you today on behalf of the Department

of Health, Education, and Welfare to discuss the problem of smoking and health.

I am sure I need not remind the committee of the prolonged controversy over smoking and health that has occurred in this country. Physicians began to notice the relationship of cigarette smoking and lung cancer as early as 1928. In the early 1950's the shocking scope and magnitude of the problem were revealed by two studies which have since taken their place as classics in the medical literature. I refer, of course, to the study by Drs. Hammond and Horn in the United States and the report of Drs. Doll and Hill in England.

In 1959, Surgeon General Burney—my immediate predecessor—speaking for the Public Health Service in the "Journal of the American Medical Association," said:

> The weight of evidence at present implicates smoking as the principal etiological factor in the increased incidence of lung cancer.

In 1964, 10 years after the Hammond-Horn report, my advisory committee released its report. During those 10 years, study after study, scientist after scientist, and fact after fact added to our knowledge about the hazards of smoking. Research did not stop in January 1964 but has continued at an increased pace. Recent reports have further implicated cigarette smoking as a serious health hazard.

The risks of smoking have been clearly delineated and publicly pronounced time and again. Yet the nature of the problem is such that cigarette sales continued to increase from 1954 to 1964. The only real reversals in the trend occurred in 1954 at the time of the Hammond-Horn report and in the first quarter of 1964, following release of my advisory committee's report.

In spite of a rising level of public awareness and concern, it has proven difficult for people to stop smoking. It has proven difficult also to convince young people that the smoking habit is a dangerous one to acquire.

Cigarettes and ashtrays have become such commonplace accouterments of life that cigarette smoking, for many, has become a deeply rooted habit, and for others, youngsters, a habit to be desired.

Much was learned in those 10 years from 1954 to 1964 but hundreds of thousands of lives were needlessly lost. The problem is clear now: "Cigarette smoking is a health hazard of sufficient importance * * * to warrant appropriate remedial action." I quote this from my advisory committee's report. We can wait no longer. It is imperative that all appropriate steps be taken to safeguard the American public from the hazards of cigarette smoking.

What can be done? What will encourage smokers to stop and nonsmokers not to start? Public information and education are surely one answer. In 1954 and again in early 1964 the evidence suggests that millions of people tried to change their smoking habits. That they found this difficult goes without saying, but millions tried, and many succeeded.

We have been and are continuing to inform the public about the hazards of cigarette smoking. We are currently asking for $1.95 million for the fiscal year 1966 to develop a more effective program. This is a part of our appropriation bill which is before the Congress. But more needs to be done to inform the public adequately. Adequate warnings on cigarette packages and in cigarette advertisements, in

our opinion, should significantly aid these efforts by directly relating the warning to the product and thus assisting the consumer in making an informed choice. There is evidence—and I intend to present details of this later in my statement—that the public is awaiting and expecting these steps. Such warnings could materially increase public awareness of the health hazard and provide continuing evidence of governmental concern. In addition, the warnings would prevent the consumer from being led, however subtly, to the belief that the product is safe.

Several bills concerning the labeling and advertising of cigarettes are currently before this committee.

H.R. 3014, H.R. 4007, and H.R. 7051 would require that the statement:

Caution: Cigarette Smoking May Be Hazardous to Your Health

be printed on one of the side panels of a cigarette package in no less than 10 point type. H.R. 4244 uses the words "Warning—Contents May Be Dangerous to Health" and would also require that the tar and nicotine content of the cigarettes be printed on the package.

H.R. 3014, H.R. 4007, and H.R. 7051 would forbid any Federal agency or State or local government from requiring any other warning statement on packages or in advertising.

H.R. 3014, H.R. 4007, and H.R. 7051 would leave enforcement of the bill to the Justice Department while H.R. 4244 would give the Federal Trade Commission administrative responsibility for regulation on cigarette labeling.

The basic objective of these bills—fair warning of health risks to the prospective consumer of cigarettes—is strongly supported by our Department.

We have several recommendations concerning the provisions of these bills. The placement and size of the warning message are of real concern to us. To the extent that the warning goes unnoticed, it is useless. H.R. 3014, H.R. 4007, and H.R. 7051 would place the warnings on one of the side panels in rather small type. Warnings in this location and of this size would hardly invite the consumer's attention.

H.R. 4244 does not state the type size and location for the warning label but would require that the warning be—

printed on [the] outside * * * in clear, legible and plainly visible print.

We prefer the requirement of the Federal Hazardous Substances Labeling Act that a warning statement be located—

prominently * * * in conspicuous and eligible type in contrast by typography, layout, or color with other printed matter on the label.

It is important that this requirement is such that the average consumer would be likely to read the label.

With regard to the whole question of wording, location, and visibility, we feel it would be preferable to leave formulation of the specific requirements to administrative regulation. This flexibility would allow for changes in the phrasing of the warning which might result from research or technical improvements such as the development of a less hazarhous cigarette. In time these developments might justify a reduced warning or perhaps even its omission.

In order to insure the maximum effectiveness of the warning label itself, it is important that other statements on the package, or in other

labeling, or in advertising do not in any way serve to negate such a warning, however subtly. We would suggest that specific authority be included to prohibit use of statements that either negate the warning or, while not clearly doing so and at least not demonstrably false, might give the consumer the misleading impression that a given cigarette is less hazardous than it actually is or less of a risk than others.

We are also concerned about the fact that three of these bills (H.R. 3014, H.R. 4007, and H.R. 7051), would forbid any requirement, including any FTC requirements, for inclusion of a health message in advertising for cigarettes that are labeled as required by the bills. Whether the effect of a label warning can be adequate in itself, and whether it is likely to be neutralized or overcome by the effect of advertising, are questions, that, we believe, can best be resolved on the basis of actual experience.

The Federal Trade Commission, in its trade regulation rule, has specifically invited interested parties to apply for suspension, modification, or abrogation of its rule with respect to advertising of cigarettes before its effective date if circumstances have sufficiently changed. This could include consideration of the effect of a label warning. We do not believe that the public health would be well served by striking from the hands of the Commission the authority over advertising that it asserts.

One of the bills, H.R. 4244, requires a statement of tar and nicotine content on the cigarette package. At one time the use of tar and nicotine content claims, based on a variety of measurement methods, caused widespread confusion as to the possible healthfulness of one cigarette as opposed to another. However, there now is a standardized method of measuring tar and nicotine yield which can be duplicated. Although we cannot definitely prove that a reduction of tar and nicotine content in cigarette smoke will significantly decrease the health hazard, it is a reasonable assumption that this would result. There is evidence that symptoms associated with certain diseases are less common in those who use the lower nicotine, lower tar cigarettes. But it is exceedingly important that the consumer be informed that while such cigarettes may be less hazardous, they are not safe. Many smokers, as I have said, find it difficult to stop smoking, but the substantial switch to filter cigarettes indicates they are anxious to protect their health by smoking what they believe to be a less hazardous product. For these several reasons, we feel that a statement on the package of tar and nicotine content based on a standardized determination would be useful.

However, current research concerning the various components of cigarette smoke may call for changes in the tar and nicotine statement or indicate other components that should be listed on the cigarette package. We would recommend that instead of a specific statutory requirement for a statement as to particular components of cigarette smoke, regulatory authority be provided to decide which particular components should be disclosed on the label. This flexibility of authority should also extend to the analytical methods to be used and the manner in which the information is presented to the consumer. Any statement as to contents should, in our view, be based upon a standardized determination and should be utilized to present meaningful

information to the consumer. We would further recommend that the regulatory agency be authorized to require the manufacturers to provide the agency with continuing information as to the ingredients, including additives, in cigarettes.

H.R. 3014, H.R. 4007, and H.R. 7051 define the term "cigarette" as "any roll of tobacco or other substance wrapped in paper or in any substance other than tobacco, and intended for smoking." The reference to "other substance" may be aimed at possible tobacco substitutes, but there is almost no information as to the possible health hazards in this regard comparable to the information about "cigarettes" in the accepted sense of the word.

Lastly, I should like to touch briefly on the question of the agency or agencies in which these functions should be vested. It is clear, in view of what I have already said, that it would oversimplify the matter, in our opinion, to attempt to spell out the requirements in the statute itself and dispense altogether with regulatory administration. With regard to the labeling of cigarette packages, the Department has concluded, on balance, that responsibility should be vested in our Department, preferably by way of appropriate amendments to the Federal Hazardous Substances Labeling Act. This conclusion was reached after consideration of the type of regulatory approach required and the inspection, seizure, and other enforcement provisions which would then be automatically available. In addition, the staff and relevant experience built up in the administration of the Federal Hazardous Substances Labeling Act and the older Food, Drug, and Cosmetic Act further commends this approach. The regulation of cigarette advertising, on the other hand, should, we believe, continue to be left to the Federal Trade Commission as I have already indicated.

Mr. Chairman, the Public Health Service has been exploring the problem of smoking and health for some time now. We have begun in a very limited way, to implement the recommendations of my Advisory Committee report. Presently our activities are primarily in the following four areas:

(1) disseminating information to professional and lay groups on the health hazards of cigarette smoking;

(2) determining effective ways of helping those individuals who want to stop cigarette smoking to quit;

(3) exploring techniques for informing adequately young people and their teachers about the health hazards of cigarette smoking;

(4) studying the social, cultural, and psychological factors which determine smoking behavior, beliefs about smoking, and attitudes toward smoking.

As you may know, more than 350,000 copies of the report have been distributed. In addition, five separate pamphlets on various aspects of the report have been prepared and distributed. We are currently sponsoring smoking withdrawal clinics in California and Pennsylvania. In Arizona, we are assisting a project designed to evaluate children's reactions to a school educational smoking program. We have studied the smoking behavior of last year's medical school graduates and have found that only 29 percent were cigarette smokers. We plan further studies of other professional groups.

In 1963 the Public Health Service began to design a large study which would explore in depth the behavior, attitudes, and beliefs of the American people toward cigarette smoking. The scope and complexity of the study delayed the fieldwork until late 1964 and the raw data has just recently come out of the computer. The purpose of this study was to develop information on the basic facts underlying smoking behavior. The problem of cigarette smoking is a relatively unique one in the field of public health. It involves human reaction to a habit formerly accepted as harmless, and now scientifically determined as harmful. This change from harmless to harmful has created a number of problems. Some people are unwilling to accept this information, and other find themselves unable to do anything about their smoking habits despite their desire to do so.

In order to develop an effective health program to deal with this problem, we felt we needed to have a better understanding of just who the people are who smoke, why they smoke, what their beliefs about smoking are, what smoking means to them, what the conditions are under which they changed their habits or decide to change them, what influenced their starting to smoke, and what their experiences have been in giving up smoking. In addition to questions about individual smoking behavior; there were questions concerning what sorts of things people felt should be done—either by individuals, by groups, or by the Government.

As you may recall, on January 11 of this year I presented some preliminary results of the study. One of the sections of the study concerned public reaction to possible remedial action. Today I should like to refer specifically to several questions because of their pertinence to the subject of this legislative hearing. The complete figures from this entire section appear as an appendix to this statement.

77.7 percent of the people asked agreed with the statement:

Cigarette smoking is enough of a health hazard for something to be done about it.

71.5 percent of the people asked disagreed with the statement that—

The general public knows all it needs to know about the effects of smoking and health.

60.4 percent of the people asked disagreed with the negatively phrased statement:

Cigarette manufacturers should not be required to put on the outside package a warning label like, "Cigarette smoking is dangerous to health."

By the way, 62.4 percent of those asked agreed with the positive version of that statement. This indicated that no matter which way the statement is presented, positively or negatively, the meaning of the public's feeling is quite clear: Cigarette packages should bear a warning label.

The same kind of negative phrasing was deliberately employed in the following statement:

Cigarette advertising or commercials should not be required to carry a warning statement to the effect that smoking may be harmful to health.

Here, again, a large majority, 61 percent of the people asked, specifically disagreed with that statement. An even larger proportion, 67.3 percent agreed with the positive form of the question. This indicates again that no matter which way the statement is phrased the

public is in favor of a warning statement in cigarette advertising. The consensus grows even stronger when presented with the statement: "Cigarette companies should be required to put on the package the amount of tar and nicotine in their cigarettes"; 79.1 percent of the people asked agreed with that statement. An even greater consensus is found in response to the following statement: "There should be more education of the public about the health risk connected with smoking cigarettes"; 90.4 percent of the people asked agreed with that statement.

In short, it would appear that a substantial majority of the American people is ready and willing to see warning statements and the tar and nicotine content placed on cigarette packages and cautionary statements included in cigarette advertisements. More than that, they see such action as an appropriate and justified requirement.

We do not as yet know all we need to know about what it is in a cigarette that causes lung cancer any more than we know all we need to know about radiation and leukemia. But we do know that avoidance of cigarettes will reduce the risk of lung cancer to a significant extent. The same is true of chronic bronchitis and death from emphysema. The same thing increasingly appears to be true for heart attacks.

The passage of legislation along the above-suggested lines in lieu of the present bills would go a long way toward implementing the recommendations of my Advisory Committee that appropriate remedial action be taken. It would also demonstrate our continuing national concern over this needless and increasing loss of lives.

Mr. Chairman, I have only touched on the highlights of these very complex problems. The Department's position on H.R. 3014, H.R. 4007, and H.R. 4244 is presented in more detail in the Department's report on these bills to the committee.

I will be pleased to attempt to answer any question or to amplify any points in which the committee is particularly interested.

The CHAIRMAN. Doctor, that does conclude your statement?

Dr. TERRY. It does, Mr. Chairman.

The CHAIRMAN. The appendixes attached to your statement may be included at this point in the record to go along with your statement.

(The appendixes referred to follow:)

CANCER CONTROL PROGRAM, DIVISION OF CHRONIC DISEASES,
U.S. PUBLIC HEALTH SERVICE

REMEDIAL ACTION STATEMENTS: PART OF A NATIONAL STUDY ON SMOKING BEHAVIOR AND ATTITUDES

(By Daniel Horn and Selwyn Waingrow)

In October 1964, a national probability study of smoking behavior, attitudes, and beliefs was conducted under Public Health Service direction among adults, 21 and over, in about 3,500 households randomly selected in an interpenetrating sample design within 106 primary sampling units from which were drawn 424 segments.

The interview itself lasted from about one hour to an hour and a half, depending upon the person's smoking history, and included among the questions an agree-disagree series of 23 statements which the investigators have labeled the "remedial action statements" since they deal with either general or specific actions which might possibly be taken in the control of cigarette smoking.

These statements were culled from books, magazine articles, newspaper editorials, articles, or letters to the editor after the "Report to the Surgeon General" was releasted on January 11, 1964, and, while most of their original tone and intent was generally maintained, they were usually paraphrased in order to better fit within the context of an interview situation.

As part of the research design, the statements were presented differently in the four forms used by the interviewers, with the selection of the form to be used being predetermined on a randomly selected basis so that each respondent theorteically had an equal chance of being given any one particular form.

The differences and similarities between the four forms—A, B, C, and D—are as follows:

Wording—Some of the statements were worded exactly alike on all four forms, but other statements were presented conversely in one of the forms (D). For example, if forms A, B, and C contained the positive version of a statement, then on form D the converse of that statement was presented, that is, a negatively worded version. The percentages agreeing or disagreeing in response to the version given on most forms (A, B, and C) are provided in column 2, total, forms A, B, C of the attached table, while the percentages for the converse statement are presented in column 3, form D, "Converse."

However, the assumed effect of differences in wording is best estimated, for reasons explained below, by comparing percentages in column 3, form D, with those in column 4, form C.

The differences in the percentages between these two forms are listed in column 7, "C and D, Wording."

Position (question number) within interview schedule.—The statements were presented early in the interview situation in forms C and D, but late in forms A and B. Although in terms of their position within the interview schedule form C and D are equal as are forms A and B, the best estimate of the assumed effect of position upon answers is achieved by comparing the percentages in column 4, form C with those in column 6, form A.

The differences in the percentages between these two forms are listed in column 8, "A–C, position."

Order within this particular series.—The statements were presented in the identical order on forms A, C, and D but were reversed on form B, with the last, first, and the first, last, and so on. Since there were an odd number of statements, statement No. 6 in this report (letter 1 on the forms) remained in the middle on all four forms.

For apparent reasons described in the above two sections, the assumed effect of the order of presentation within the series of statements is best estimated by comparing the percentages in column 5, form B with those in column 6, form A.

The differences in the percentages between these two forms are listed in column 9, "A–B, order."

The percentages and differences between the percentages.—The following is submitted as a general guide to the *stastical* significance of data presented:

Since each of the forms was used in approximately 1,200 interviews, the standard error of a given percent obtained from any one form is in most cases approximately 1½ percentage points; therefore, differences between percentages obtained from *two* different forms are probably *not* statistically significant when the difference is *less* than 4 percentage points. In cases where the percentages being compared are *less* than 20 percent each or *more* than 80 percent each, differences of *less* than 3 percentage points are probably *not* statistically significant.

Although percentages are here given in terms of "agree" or "disagree," percentages are also available for each statement indicating the extent to which the position was "strongly" or "mildly" held. In addition, although not presented here, scores for each statement based upon a five-point scale are also available.

Percentage Distributions by Statement and Form

The following statements are ordered according to the percentage of people supporting the need for and/or the specific action proposed for the control of cigarette smoking. The first statement listed below is that which received the greatest support from a cigarette control viewpoint; the last statement received the last support from that viewpoint.

[In percent]

Statements: as worded on forms A, B, C	[1] Total sample col. 1	Total A, B, C col. 2	Form D converse col. 3	Form C col. 4	Form B col. 5	Form A col. 6	Difference between forms: [1] C-D wording col. 7	Difference between forms: A-C position col. 8	Difference between forms: A-B order col. 9
1. There should be a special program of education about cigarette smoking and health aimed at children in school:									
Agree	92.2	93.3	8.5	92.8	92.6	94.4	+4.3	+1.6	+1.8
Disagree	5.0	3.9	88.5	4.8	4.2	2.9	−3.7	−1.9	−1.3
No opinion	2.8	2.8	3.0	2.4	3.2	2.7	−.6	+.3	−.5
2. There should be more education of the public about the health risk connected with smoking cigarettes:									
Agree	89.1	90.4	11.7	90.6	90.4	90.1	+5.9	−.5	−.3
Disagree	7.6	6.4	84.7	7.1	5.4	6.8	−4.6	−.3	+1.4
No opinion	3.3	3.2	3.6	2.3	4.2	3.1	−1.3	+.8	−1.1
3. Sales of cigarettes to people *under* a certain age should *not* be against the law: [2]									
Disagree	87.7	87.5	88.4	87.7	85.8	88.9	−.7	+1.2	+3.1
Agree	9.2	9.3	8.8	9.0	10.3	8.7	+.2	−.9	−1.6
No opinion	3.1	3.2	2.8	3.3	3.9	2.4	+.5	−.3	−1.5
4. Athletes and entertainers who are well known to youngsters should *not* be used in cigarette advertising: [3]									
Agree	80.4	81.2	77.9	80.5	80.7	82.4	+2.6	+1.9	+1.7
Disagree	13.7	12.8	16.9	13.6	12.9	11.9	−3.3	−1.7	−1.0
No opinion	5.9	6.0	5.2	5.9	6.4	5.7	+.7	−.2	−.7
5. If cigarettes are *really* harmful then Federal Government money *should* be spent on research to find out why:									
Agree	79.2	79.8	16.9	82.7	72.3	84.3	+5.1	+1.6	+12.0
Disagree	15.4	14.9	77.6	12.6	21.7	10.5	−4.3	−2.1	−11.2
No opinion	5.4	5.3	5.5	4.7	6.0	5.2	−.8	+.5	−.8
6. Cigarette companies should be required to put on the package the amount of tar and nicotine in their cigarettes:									
Agree	78.2	79.1	16.8	78.4	76.9	81.9	+3.2	+3.5	+5.0
Disagree	14.3	13.6	75.2	15.2	14.0	11.6	−1.6	−3.6	−2.4
No opinion	7.5	7.3	8.0	6.4	9.1	6.5	−1.6	+.1	−2.6
7. Clinics to learn how to give up smoking should be set up to help those who want to quit but haven't been able to do it by themselves:									
Agree	76.5	79.3	26.7	77.4	79.6	80.6	+9.9	+3.2	+1.0
Disagree	18.2	15.6	67.5	17.3	14.8	14.9	−9.4	−2.4	−.1
No opinion	5.3	5.1	5.8	5.3	5.6	4.5	−.5	−.8	−1.1

See footnotes at end of table.

[In percent]

Statements: as worded on forms A, B, C	[1] Total sample col. 1	Total A, B, C col. 2	Form D converse col. 3	Form C col. 4	Form B col. 5	Form A col. 6	Difference between forms: [1] C–D wording col. 7	A–C position col. 8	A–B order col. 9
8. Cigarette smoking is enough of a health hazard for something to be done about it:									
Agree	76.4	77.7	22.1	78.5	76.0	78.9	+6.7	+.4	+2.9
Disagree	16.7	15.1	71.8	15.8	14.8	14.6	−6.3	−1.2	−.2
No opinion	6.9	7.2	6.1	5.7	9.2	6.5	−.4	+.8	−2.7
9. The general public knows all it needs to know about the effects of smoking and health: [2]									
Disagree	71.5	73.6	64.4	68.0	75.6	76.8	+3.6	+8.8	+1.2
Agree	24.3	21.9	32.3	28.0	18.1	19.8	−4.3	−8.2	+1.7
No opinion	4.2	4.5	3.3	4.0	6.3	3.4	+.7	−.6	−2.9
10. Individual doctors should be *active* in making speeches to the general public about the harmfulness of cigarette smoking:									
Agree	66.9	66.3	23.8	70.5	62.4	66.1	+1.8	−4.4	+3.7
Disagree	24.7	25.0	68.7	22.7	26.7	25.5	−1.1	+3.0	−1.2
No opinion	8.4	8.7	7.5	6.8	10.9	8.4	−.7	+1.6	−2.5
11. Cigarette advertising or commercials should *not* be required to carry a warning statement to the effect that smoking may be harmful to health:									
Disagree	62.6	61.0	25.1	61.2	61.8	60.3	−6.1	−.9	−1.5
Agree	27.9	28.8	67.3	28.1	28.3	29.8	+3.0	+1.7	+1.5
No opinion	9.5	10.2	7.6	10.7	9.9	9.9	+3.1	−.8	0
12. Cigarette manufacturers should *not* be required to put on the outside package a warning label like, "cigarette smoking is dangerous to health":									
Disagree	60.8	60.4	30.6	60.4	59.6	61.2	−2.0	+.8	+1.6
Agree	30.1	29.9	62.4	30.9	29.7	29.2	+.3	−1.7	−.5
No opinion	9.1	9.7	7.0	8.7	10.7	9.6	+1.7	+.9	−1.1
13. It is *not* the Government's business to do something about cigarette smoking:									
Disagree	59.6	61.3	39.4	55.8	64.5	63.2	+1.8	+7.4	−1.3
Agree	33.1	31.2	54.0	36.2	27.2	30.4	−3.2	−5.8	+3.2
No opinion	7.3	7.5	6.6	8.0	8.3	6.4	+1.4	−1.6	−1.9
14. The advertising of cigarettes should *not* be controlled or limited: [2]									
Disagree	57.1	56.8	58.3	56.3	55.7	58.2	−2.0	+1.9	+2.5
Agree	34.0	34.2	33.4	34.5	35.4	32.6	+1.1	−1.9	−2.8
No opinion	8.9	9.0	8.3	9.2	8.9	9.2	+.9	0	+3
15. A cigarette company should have to *prove* that its cigarettes are not harmful to health before they are allowed to sell them:									
Agree	56.2	55.8	33.2	55.4	55.4	56.4	−2.2	+1.0	+1.0
Disagree	34.9	35.4	57.6	36.8	35.0	34.5	+3.6	−2.3	−.5
No opinion	8.9	8.8	9.2	7.8	9.6	9.1	−1.4	+1.3	−.5

16. Federal Government money should be spent on research to develop a really safe cigarette:									
Agree	53.9	52.9	37.1	56.7	50.4	51.9	−.5	−4.8	+1.5
Disagree	38.9	39.5	57.2	35.9	43.0	39.3	−1.2	+3.4	−3.7
No opinion	7.2	7.6	5.7	7.4	6.6	8.8	+1.7	+1.4	+2.2
17. The smoking of cigarettes should be allowed in *fewer* places than it is now:[2]									
Agree	52.3	52.7	51.0	52.5	52.1	53.4	+1.5	+.9	+1.3
Disagree	37.7	36.8	40.7	37.1	36.7	36.7	−3.6	−.4	0
No opinion	10.0	10.5	8.3	10.4	11.2	9.9	+2.1	−.5	−1.3
18. Nothing should be done about cigarettes until the cigarette manufacturers are given a reasonable amount of time to come up with a safer cigarette:[2]									
Disagree	44.0	44.7	41.7	37.6	51.6	44.5	−4.1	+6.9	−7.1
Agree	43.5	42.6	46.2	48.8	36.5	43.0	+2.6	−5.8	+6.5
No opinion	12.5	12.7	12.1	13.6	11.9	12.5	+1.5	−1.1	+.6
19. Selling cigarettes through cigarette machines should *not* be against the law:									
Disagree	42.7	42.7	49.3	43.5	42.1	42.4	+.4	−1.1	+.3
Agree	48.6	48.4	43.1	46.8	49.9	48.6	−2.5	+1.8	−1.3
No opinion	8.7	8.9	7.6	9.7	8.9	9.0	+2.1	−.7	+1.0
20. The Federal Government should continue its practice of tobacco price support for the farmer:									
Agree	42.1	43.1	38.7	43.4	43.2	42.9	+4.9	−.5	−.3
Disagree	33.0	31.3	38.5	34.2	30.5	29.4	−4.6	−4.8	−1.1
No opinion	24.9	25.6	22.8	22.4	26.3	27.7	−.3	+5.3	+1.4
21. Cigarette advertising should be stopped completely:									
Agree	35.6	36.8	60.4	34.7	38.7	36.8	+3.1	+2.1	−1.9
Disagree	55.4	53.9	31.6	56.3	53.0	52.6	−4.1	−3.7	−.4
No opinion	9.0	9.3	8.0	9.0	8.3	10.6	+1.0	+1.6	+2.3
22. Taxes on cigarettes should be much higher than they are now:									
Agree	30.2	30.2	61.0	28.7	28.0	33.7	−1.7	+5.0	+5.7
Disagree	61.8	62.2	30.4	62.1	65.3	58.8	+1.1	−3.3	−6.5
No opinion	8.0	7.8	8.6	9.2	6.7	7.5	+.6	−1.7	+.8
23. The selling of cigarettes should *not* be stopped completely:									
Disagree	22.7	22.0	68.8	22.3	24.1	19.7	−2.7	−2.6	−4.4
Agree	70.2	70.6	25.0	70.6	69.0	72.1	+1.8	+1.5	+3.1
No opinion	7.1	7.4	6.2	7.1	6.9	8.2	+.9	+1.1	+1.3

[1] Where form D statement was the converse of that on forms A, B, C, the agree-disagree percentages were reversed for purposes of summation or comparison.

[2] Indicates same wording on all 4 forms.

The CHAIRMAN. I wish to compliment you on your statement. You certainly have made very clear and explicit just what you propose and how you and your associates in the Public Health Service feel about this problem. In view of this I am wondering why don't you recommend that the manufacture and distribution of cigarettes be prohibited?

Dr. TERRY. I would hesitate to go that far in a recommendation.

The CHAIRMAN. Why? If it is as bad as you have described it.

Dr. TERRY. Because I don't think it would be generally accepted by the public, Mr. Chairman. I think that over a period of time, by informing and educating the public, we can accomplish a great deal in the traditional American fashion of voluntary action on the part of our public.

The CHAIRMAN. That is a laudable approach to this problem. I must say that I am not an inveterate smoker. I smoke very rarely as a matter of fact. I do notice a lot of people who are inveterate smokers. I notice there are people who occasionally eat too much. They put on weight and they are in a bad physical shape. Either their respiratory system or some other aspect of their body malfunctions so that their health becomes endangered.

I myself have been bothered with what is called cholesterol. I have been told by the doctors that I had to hold it down. I got a book the other day, I think it was by Dr. White—you may know about it—and I have really been reading that chapter on cholesterol. It is amazing to me to read about the medical opinions and how high the cholesterol is in persons living in the United States as compared with other countries in the world. I am quite confused about the differences of medical scientific advice in this particular field. I have just about come to the conclusion that if smoking cigarettes is as bad as you have stated here today, I think we ought to do a lot more than is being proposed with reference to smoking.

With that let me ask you this: Is it the intention of your Department, the Public Health Service, to try to inform and educate the people of the country to virtually stop cigarette smoking?

Dr. TERRY. I think this is true.

The CHAIRMAN. I thought that was what you were getting at.

In view of that, on page 3 of your statement will you give us a little more detail of the public information program that you refer to?

Dr. TERRY. Yes, sir; Mr. Chairman.

We have been carrying out a public information campaign through a program activity in our Division of Chronic Diseases where we propose to establish our clearinghouse for information on smoking and health. This has been largely through work with the National Interagency Council, and with various other scientific and educational organizations. We have attempted in this way, Mr. Chairman, with the funds and resources available, to present to the public, and in instances to specific groups such as the youth group, the facts as they exist today concerning the hazards of smoking to health.

In addition to this, Mr. Chairman, through our various categorical programs, such as the National Cancer Institute and the National Heart Institute, we have worked with associated volunteer and related organizations outside of the Government in attempting to disseminate the information as widely and as completely as we can. This is an overall statement of the approach that we have used, Mr. Chairman.

If you would like more details, I, of course, would be glad to submit them to you.

The CHAIRMAN. Thank you very much.

Now, you say you have $1,950,000——

Dr. TERRY. We do not have that——

The CHAIRMAN (continuing). In your budget.

Dr. TERRY. Yes, sir; the 1966 budget. I might remind you that last year we asked for a supplemental appropriation for that amount for that purpose to be vailable in 1965, but action on this was deferred by the Appropriations Committee, and consequently we do not have that action or those funds available for the current year. It is in the administration's budget for 1966.

The CHAIRMAN. What is that to be used for?

Dr. TERRY This is to be used largely, Mr. Chairman, for the collecting of information as it continues to accumulate on the subject of smoking and health, for the dissemination of this information, and for the continuation of our studies in the field of smoking and health, particularly as related to the behavioral aspects of smoking and health. Those are the general areas in which we expect to use these funds.

The CHAIRMAN. How many people do you have working on this matter at the present time?

Dr. TERRY. At the present time, Mr. Chairman, 12 full-time positions have been assigned to smoking and health activities, and an estimated 6 to 8 professional staff personnel have worked in this area part time.

The CHAIRMAN. How many do you propose to put on with the $1,950,000?

Dr. TERRY. There will be approximately 25 persons working in this area.

The CHAIRMAN. A total or in addition to?

Dr. TERRY. In addition to, I am sorry, sir.

The CHAIRMAN. Pardon?

Dr. TERRY. In addition to.

The CHAIRMAN. In other words, you have now 18 or 20, and you propose to put on approximately 25 more?

Dr. TERRY. That is right, sir.

The CHAIRMAN. Will they be doctors?

Dr. TERRY. Some will be physicians, some will be other types of professional persons, and some will be clerical persons working on statistical and related information.

The CHAIRMAN. You evidently are going to pay them a pretty good salary?

Dr. TERRY. I don't mean to imply that the $1,950,000 would be used entirely for salaries, Mr. Chairman. A very large percentage of that would be used for materials, for conducting the studies, in collecting additional information, and many other supporting aspects. Certainly only a small fraction of it would be used for salaries.

The CHAIRMAN. Now, you refer also, on page 2, to adequate warning in advertisements.

What, in your opinion, would constitute an adequate warning?

Dr. TERRY. Mr. Chairman, as I indicated in my statement, I felt that this should be left up to regulatory action. I think in terms of the possibility of changing situations with regards to the relative de-

gree of the hazards of smoking to health, that it would be well not to have such a statement spelled out in the statute because this would require additional legislation if one wished to modify or to change the statement. Therefore, it would be my recommendation, Mr. Chairman, that the Congress authorize the administrative agency to determine the details by regulation.

The CHAIRMAN. How then can you reconcile the position you have taken here about the importance of this and what should be required with your further statement on page 5 that in time developments might justify a reduced warning or perhaps even its omission? Do you think that the human body is going to change biologically speaking over the years that it would not be affected by smoking?

Dr. TERRY. Mr. Chairmain, I do not expect such a change in the biological system. If this condition obtains, it will be as a result of the production of a less hazardous cigarette. I do not think in this respect, Mr. Chairman, that we have any reason to give you any assurance that this will result. On the other hand, there is a hope that we all have. There are a lot of people who get pleasure out of smoking cigarettes, and we would like to see them derive that pleasure if they were not——

The CHAIRMAN. Do you think that agency or any administrative agency should have sufficient broad authority to tell an industry what these must put on their label or in their advertisements?

Dr. TERRY. Yes, sir.

The CHAIRMAN. Well, that shocks me, I must say in all frankness.

Dr. TERRY. I think if such an intent is given to an administrative agency of the Government, the broad intent, that it is perfectly rational that that agency could reasonably and responsibly carry that out in terms of making administrative decisions as to exact location, size of print, and other aspects.

The CHAIRMAN. Doctor, keeping in mind our system of government which has made us such a great nation, and keeping in mind also the advancement which we have achieved in the field of health, I am quite surprised that you do not come before this committee and recommend the prohibition of cigarette smoking. That is my first question. Secondly it certainly does surprise me that you suggest we should move in a direction where our Government is going to say to the industry of this country, "We are going to tell you what label you must put on your product and what you must disclose with regard to your manufactured product."

If you propose that there is authority in the agencies to go so far as to prescribe exactly the wording of health warning, then that is a rather far-reaching authority, and certainly, in my judgment, it constitute a radical change in our procedures in this country.

I think under the circumstances I will not pursue my questioning any further.

Mr. Rogers?

Mr. ROGERS of Texas. Dr. Terry, you do believe in our constitutional form of government, do you not?

Dr. TERRY. I certainly do, sir.

Mr. ROGERS of Texas. Do you believe that the legislative powers ought to be delegated to the various branches of Government?

Dr. TERRY. I think this is a decision for the legislative branch of our Government to make. I think there are many instances when it

would be appropriate and wise for the Congress to delegate responsibilities of this sort to administrative agencies.

Mr. ROGERS of Texas. Yes. Well now, Doctor, that is not what I asked you. I asked you if you felt that the legislative powers of our Government ought to be delegated to these agencies and these bureaus.

Dr. TERRY. I think the Congress should decide what it wishes to delegate.

Mr. ROGERS of Texas. I know, but I am not talking about what the Congress should decide. I asked you if you believe that the legislative powers—let me clear this up. I do not want to get into an argument about it, but you have stated that you felt that we ought to give the powers to you or to the Federal Trade Commission to write rules and regulations to control the actions of American citizens in the future; have you not?

Dr. TERRY. I did, sir; in relation to cigarette smoking, labeling, and advertising; yes, sir.

Mr. ROGERS of Texas. If you are going to do that to cigarette smoking, what would prevent the Congress, if they had the constitutional right to do that in the first instance, from extending that power to an administrative agency in any field, whether it be automobiles, agriculture, or whatever you might have?

Dr. TERRY. Mr. Rogers, I am not capable of answering that. I think it is a legal question on which I am not——

Mr. ROGERS of Texas. Doctor, that is exactly what I am coming to. I have been amazed at the medical profession in their freedom to move into these legal decisions. I would not begin to tell the medical profession how to treat pneumonia, cancer, or a sore toe or anything else. Yet I have noticed that the doctors seem to have no hesitancy to walk right into the political field and to talk about the delegation of legislative powers to administrative agencies that are not answerable to the electorate of this country, and I say that if we should follow that advice, if we ever followed that advice, it would destroy government by the people, or as Abraham Lincoln put it, "of the people, by the people, and for the people," because when you go to permitting agencies that are not responsible directly to those people as are the Members of Congress, you are destroying the basic principles of it.

That is the reason I asked you that question in the first place, Doctor. It is the thing that really disturbs me.

Dr. TERRY. There are many regulatory functions, as you are well aware, which are carried out by the Federal Government, which are delegated by the Congress to operating agencies of the Government.

Mr. ROGERS of Texas. Yes, sir.

Dr. TERRY. And I feel that if the Congress so wishes, that this is not a radical departure from that, frankly, sir.

Mr. ROGERS of Texas. I know, but what I am thinking about is your thinking on this. That is what I am interested in because I think that we have got to get to the thinking of those people who are in these agencies in order to get to the source of the trouble, and if we are thinking on different wavelengths, I think maybe we ought to have some kind of discussion.

It is my feeling that in some of the agencies downtown that are not staffed or headed by lawyers, there ought to be some attention given to a course in constitutional law in some of these situations

so maybe we could come to a meeting of the minds and avoid a lot of trouble.

Dr. TERRY. Mr. Rogers, may I say this. In speaking in my printed statement to you here, I was speaking for the Department of Health, Education, and Welfare.

Mr. ROGERS of Texas. Yes, sir; I understand.

Dr. TERRY. This report has been carefully reviewed by our General Counsel, and he has agreed to this, so that it has not failed to have legal review and consent insofar as our lawyers are concerned in the Department, sir.

Mr. ROGERS of Texas. Does your General Counsel feel that the Congress ought to delegate its legislative powers to the boards and bureaus that are appointed, that are not directly answerable to the people, to the electorate?

Dr. TERRY. I do not know what our General Counsel feels on a question like this, sir. We have the Assistant General Counsel here. He could probably answer for himself as a lawyer.

Mr. ROGERS of Texas. I think it is quite important because we are constantly running up against this situation, and I was very disturbed yesterday when Mr. Dixon testified that when Congress did not spell out each thing that they felt was deceptive, that by using the word "deceptive" they simply opened up the door for the Federal Trade Commission to make any definition of "deceptive" they wanted to, and I say that under any theory of government, if that is not legislating, I do not know what it is.

Now, maybe I am wrong about this, and maybe I am living in the past, and if so, I think I will find it out because the people at home sure do not want me living in the past. That is a very difficult situation. If we are going to change the form of our government though, I think the people ought to have a choice in it.

Now, Doctor, you did say in March of 1965 that you felt that the limit of the responsibility of the Public Health Service was to insure that each individual knew the facts, and that whether or not they quit smoking was a matter for individual determination, did you not?

Dr. TERRY. I did not say that this was the limit of our responsibility, because we have a very large responsibility in the field of re search, Mr. Rogers. On the other hand, if you remove that limit——

Mr. ROGERS of Texas. I am talking about cigarette smoking.

Dr. TERRY. Sir?

Mr. ROGERS of Texas. I am talking about cigarette smoking.

Dr. TERRY. I know you are, and I am talking about cigarette smoking, too. The point I am making is this, that we in the Public Health Service have a responsibility which goes beyond information and education.

Mr. ROGERS of Texas. Yes.

Dr. TERRY. We have a responsibility to support research.

Mr. ROGERS of Texas. Yes, sir; I understand that.

Dr. TERRY. If you remove the word "limit," I would agree with that, yes, sir.

Mr. ROGERS of Texas. It was my understanding that you made a statement I believe to the Progressive Farmer magazine in March of this year in which you said:

> The limit of our responsibility is to insure that each individual has full access to the available facts on cigarette smoking as it may affect his health and ability to provide for himself and his family. Beyond this, the decision to take up and continue to smoke is the should remain the prerogative of the individual.

Now, did you say that or did you not? If you did not, I think we ought to know.

Dr. TERRY. I do not have a copy immediately at hand. I expect I did. But, Mr. Rogers, I think if you will look at the whole article, this was the section in which I was talking about our responsibilities of information and education.

Mr. ROGERS of Texas. Yes, sir.

Dr. TERRY. And it did not exclude our responsibilities in the field of research.

Mr. ROGERS of Texas. Yes, sir. Well now, that is the thing that I want to come to. You do feel that in addition to your duties to inform the public on these matters, that you should go into research and that sort of thing, a separate category, and I certainly agree with you.

Dr. TERRY. We have been supporting research on this subject for many years.

Mr. ROGERS of Texas. Yes.

Dr. TERRY. And we expect to continue it, sir.

Mr. ROGERS of Texas. As a matter of fact, Doctor, let me make myself clear. I think that more attention ought to be paid by the Public Health Service to research than in the field of—for want of a better word—let us say propagandizing, because I think sometimes these Government agencies are getting into that. But I do feel that if you are in your language here, in your statement, in which you say—if I can find it—that you feel—here it is: "In addition"—this is on page 3:

> The warnings would prevent the consumer from being led, however subtly, to the belief that the product is safe.

Now, I have listened with great interest to Mr. Dixon and to your testimony both in this hearing and the previous one, and I have concluded that it is generally assumed insofar as this is concerned, that the American public are suckers for propaganda. Am I correct in that assumption?

Dr. TERRY. I do not know whether you are not. I would say that the American public is responsive to advertising; yes.

Mr. ROGERS of Texas. Doctor, I have heard Hitler criticized and Goebbels and Mussolini, the Communists and everybody else for putting out propaganda, what they call propaganda.

Now, the testimony that has come before this committee would convince me that the people, many of the people in Government, feel that the American people are being taken advantage of because they are suckers for propaganda; that if this information that is being put out on cigarettes is deceptive, as Mr. Dixon said, and the American public falls for it, then there is no conclusion except that they are suckers for propaganda, is there?

Dr. TERRY. I do not know. This is your conclusion, sir. I would hesitate to refer to the American public as suckers.

Mr. ROGERS of Texas. Well, let us use another word then, victims.

Dr. TERRY. I think they are victims very frequently, sir, in many fields of advertising.

Mr. ROGERS of Texas. We will say that a sucker voluntarily refuses to acquaint himself with the facts and thereby becomes a victim, but we will say that a victim, for want of a better word, is an innocent person that is taken in by deceptive propaganda. Would you agree with that conclusion?

Dr. TERRY. It was so complicated, I am not sure I know what the question is, Mr. Congressman.

Mr. ROGERS of Texas. It was not as near as complicated as those negative questions you are putting to the public.

Dr. TERRY. Oh, I think it was far more complicated.

Mr. ROGERS of Texas. Doctor, I know you are a more able man to cope with that than some of those people with questions with double negatives in them. But the fact is it is your position that insofar as advertising is concerned, the use of the method of advertising misleads the public, is it not, Doctor?

Dr. TERRY. Advertising at times may mislead the public, Mr. Rogers.

Mr. ROGERS of Texas. I am talking about this cigarette advertising now. Let us keep on that.

Dr. TERRY. Cigarette advertising——

Mr. ROGERS of Texas. Yes.

Dr. TERRY (continuing). In the past has directly misled the public; yes, sir.

Mr. ROGERS of Texas. And the public then would have become victims because of misleading advertising.

Dr. TERRY. I think this is correct.

Mr. ROGERS of Texas. And you feel like that under these circumstances it then becomes a governmental duty to move into the area and put up a counterpropaganda or a counteradvertising campaign to offset this.

Dr. TERRY. I think it would, yes.

Mr. ROGERS of Texas. Actually that is what you are doing with this program that you are instituting, is it not?

Dr. TERRY. We are informing the public of the health hazards of smoking, and we are doing whatever we can to assist them in quitting smoking when they wish to.

Mr. ROGERS of Texas. That is very good for a conclusion and a statement, but it is like the word "deceptive." When you spread it out in all of its facets, there are a lot of other things attached to it.

Now, how are you informing the public? Are you simply issuing an official document, or are you spending a lot of time asking questions in which you are undertaking to test the psychological reactions of American citizens to a type of question that has a double negative in it? I mean are you pursuing these methods in doing this?

Dr. TERRY. We are pursuing the methods, for instance, of distribution of this advisory committee's report on smoking and health, by preparing and distrbuting pamphlets which are based upon the conclusions and recommendations of this committee's report. We are disseminating other information as it becomes available from research

in the field, and in addition to that, we are pursuing studies which help us understand better, as I mentioned in my statement, why people smoke, why they do not smoke, what are their problems when they wish to quit smoking, and how we can help them if they wish to quit smoking.

Mr. ROGERS of Texas. Then you consider that it is your job under your research responsibilities to not only research from the physical situation involved, but to research methods of educating and methods of advertising and methods of disseminating material to the public in order to get to them the information that you feel like that you think they ought to have.

Dr. TERRY. We have this responsibility as a part of our research authorization as well as our authorization for the collection and dissemination of information on health.

Mr. ROGERS of Texas. Doctor, you mean that you feel that you have the authority to do research in educational methods to disseminate information, or that you only have research authority in the field of public health insofar as the physical structure or the mental structure of the body is concerned.

Dr. TERRY. I do not know how you can make that sharp differentiation, Mr. Rogers; I cannot. At the same time, I feel that we have the responsibility and the authority to do research which will help us carry out our informational and educational responsibilities.

Mr. ROGERS of Texas. Would that, Doctor, include research into methods of advertising, propagandizing, that sort of thing? I am not talking about doing it. I am talking about engaging in and spending tax money for research as to the best way to get something through to a man's mind.

Dr. TERRY. I think that obviously if you have a responsibility for information and education in the field of health, one has to know how people react and receive such information, and what are the factors which determine whether they accept it or do not accept it.

Mr. ROGERS of Texas. Then, Doctor, you do not feel that your authority for research has to do primarily with public health, and that when you do this research and you make certain findings, and you turn that over to the proper authorities and say, "Here is a report," that does not finish your job. Your job then continues to go into research, to where you can sell these findings to the American public.

Dr. TERRY. My disagreement with your statement would be on the basis of the fact that I feel that the type of studies that we are doing are a part of public health.

Mr. ROGERS of Texas. Let me ask you this. What do you feel is included in public health?

Dr. TERRY. I would say responsibilities in the field that involve the health of the Public.

Mr. ROGERS of Texas. What is the health to the public? Is that the method by which they receive information? It seems to me that is in the communications field.

Dr. TERRY. Certainly there are lots of things in the communications field which are very important to the field of health in terms of letting you know that you should have a certain type of vaccination or that you should not. These can be health matters, Mr. Rogers.

Mr. ROGERS of Texas. Now, Doctor, you would not tell me that because it might be necessary to advise some group of people that they have been subjected to an epidemic or the possibility of an epidemic because of the loosing of some germs, that that would authorize you to go into research on communications to determine how it would be best to get that information to them over a shorter period of time?

Dr. TERRY. Let me turn it around this way and say that I think, for instance, in relation to communicable diseases, I think it is very important for us to find out how to get information to the public so that they will understand it and react to it and take steps to protect their health.

Mr. ROGERS of Texas. As to how they respond to the advertising that you put out?

Dr. TERRY. To the information we put out, Mr. Rogers.

Mr. ROGERS of Texas. Yes; so your duty is not only to do research in making determinations, but your duty is also in research in the various fields of how to get this to the public to convince them as to what your findings have been.

Dr. TERRY. I think our authorization in relation to the collection and dissemination of information and education in the health field includes studies of how people react to health matters.

Mr. ROGERS of Texas. You know, Doctor, this is very interesting to me because we had a special subcommittee established, I don't know whether they ever did anything or not, in the Congress, to find out where all of this money was going for these so-called research or R. &D. projects.

Everybody was doing research in every direction and no one knew who was doing what.

Now, if all of these departments are taking the same position, that when you do some research in public health, whatever your findings are, that entitles you then to go into research, into communications, into advertising, into everything else, maybe we have gotten to the root of this thing and something may come out of it. I would hope so. It would certainly save a lot of money.

Now, these questions that were asked by you of this group of people, who did that asking?

Dr. TERRY. Mr. Rogers, may I ask Dr. Horn to respond to this?

Mr. ROGERS of Texas. Yes, sir.

Dr. TERRY. He was responsible for our survey. But before I move to that, in connection with your committee, your select committee of the House under Mr. Carl Elliott.

Mr. ROGERS of Texas. Yes.

Dr. TERRY. The committee did study the matter of research and development in the Federal Government, and its reports are available to you and they are interesting reading.

Mr. ROGERS of Texas. Yes, sir; very interesting reading, but I have never been able to get to the meat of the coconut, so to speak, in it, and I think this: I don't know whether they misled by this or not, but I don't think any of that committee believes that the Public Health Service has the right, under the authority you have, and I wouldn't think that they would say that the Federal Trade Commission would be able to employ that same rule. If they did, they are liable to get in and put you out of the Public Health Service and take over that field.

Dr. TERRY. I really don't feel threatened.

Mr. ROGERS of Texas. I know you don't.

Dr. TERRY. Not in that regard.

Mr. ROGERS of Texas. The thing that I am worried about is that the American taxpayer might feel threatened which I think is the one that ought to be receiving the consideration.

Dr. HORN. You asked who did the actual interviewing?

Mr. ROGERS of Texas. Yes, sir.

Dr. HORN. In the survey, the results of which were reported here? The interviews were conducted by professional interviewers responsible to the market research company which was awarded the contract under open competitive bidding doing the field work of this study.

Mr. ROGERS of Texas. Doctor, you are going too fast for me, you say professional interviewers?

Dr. HORN. Yes, sir.

Mr. ROGERS of Texas. Who made them professional?

Did they have a license from somebody?

Dr. HORN. No, sir.

Mr. ROGERS of Texas. Who said they are professionals?

Dr. HORN. They are experienced interviewers on the staff of the company which uses them.

Mr. ROGERS of Texas. What company is that?

Dr. HORN. This was National Analysts, Inc.

Mr. ROGERS of Texas. And where is that located?

Dr. HORN. Philadelphia is its headquarters.

Mr. ROGERS of Texas. How much money did they receive for making these queries?

Dr. HORN. The original contract was about $90,000.

Mr. ROGERS of Texas. Do you know how many people they talked to?

Dr. HORN. Yes. There were just under 4,700 people actually interviewed in the main study.

Mr. ROGERS of Texas. Do you know how many of those were smokers and how many nonsmokers?

Dr. HORN. I don't have those figures right here but we do have those figures.

Mr. ROGERS of Texas. Did they get that information?

Dr. HORN. Oh, yes, sir.

Mr. ROGERS of Texas. They know, the analysts do?

Dr. HORN. Yes, sir. This sample was selected so as to be representative of the total audit population in the United States, age 21 or over, residing in private households.

Mr. ROGERS of Texas. Doctor, do you think that if they had included a question in there, "Do you think the taxpayers of this Nation ought to be paying for me out here asking you questions like this?" what do you think the answer would have been?

Dr. HORN. I am sorry, you will have to repeat that question, sir. I got lost.

Mr. ROGERS of Texas. How many question did they have, quite a few?

Dr. HORN. About 300.

Mr. ROGERS of Texas. About 300?

Dr. HORN. Yes, sir.

Mr. ROGERS of Texas. Don't you think you could have slipped one in there saying, "Do you think that the American taxpayers ought to be saddled with the cost of these questions I am asking you?"

Dr. HORN. As a matter of fact, sir, there were several questions asking the public what they considered was the role of Government in such matters as health.

Mr. ROGERS of Texas. No; I didn't ask you that. I am asking you this. That is the trouble about it. You put the question in a negative form, or you put it in some other words.

I recall the story of the man who told a fellow he took up for him, took his side, and he said, "How is that?" The fellow said, "A man said you were not fit to sleep with the hogs and I said you were."

Well, lots of times you can change these things around, and somebody gets a different result. Now, if you had just said to the man in straight plain English that everybody can understand, "Do you think the American taxpayer ought to be bearing the expense of me having a contract to come out here and ask you these questions," what do you think their answer would have been?

Dr. HORN. I think that the overwhelming majority would have responded, Yes.

Mr. ROGERS of Texas. You think they would?

Dr. HORN. Yes, sir. I think they evidenced this by their cooperation in submitting to the interview and participating in the study.

Mr. ROGERS of Texas. Do you expect to enter into some future contracts with some of these survey people to make surveys of this kind, take polls?

Dr. HORN. I should think that this would be part of our continuing obligation to study the nature of the problem and how it changes over the years; yes, sir.

Mr. ROGERS of Texas. Would you put that question I asked in the next survey?

Dr. HORN. I most certainly would be happy to include it, sir, if I have any responsibility for what goes into this questionnaire.

Mr. ROGERS of Texas. Well, now, wait a minute.

Who would have the responsibility for that?

Dr. HORN. I imagine that I will be involved in it, sir.

Mr. ROGERS of Texas. Well, a man in your position would, Doctor. I mean you might change positions, but a man in your position would determine the questions, would he not?

Dr. HORN. Yes, sir.

Mr. ROGERS of Texas. Or do the analyst people who get the contract do that?

Dr. HORN. This depends on the nature of the contract, sir. It is largely a matter of whether or not you are seeking the professional consultation related to the area under investigation or primarily the field service of an outside company.

Mr. ROGERS of Texas. But you feel like, too, Doctor, just as Dr. Terry does, that this is the proper office of the field of public health for you to be out doing this sort of thing?

Dr. HORN. Yes, sir. I think that it is impossible to deal with a problem of the magnitude of the cigarette smoking problem without having a pretty complete understanding of what the public is doing with regard to smoking, what they believe with regard to smoking, and what the basis for this is.

Mr. ROGERS of Texas. Why do you have to know that if you have already determined that cigarette smoking is bad?

Dr. HORN. Because, sir——

Mr. ROGERS of Texas. Why wouldn't it be cheaper just to hand them a page saying, "If you smoke cigarettes you are going to die of lung cancer, according to our findings"?

Dr. HORN. Well, how large should the page be? How large type should be on the page? What should you say on the page?

Mr. ROGERS of Texas. I was coming to that type thing in just a second, and I want to hurry along. Big type or little type, it would be cheaper to print a great big sign than it would be to pay $90,000 for a market analyst to go out and ask 300 questions.

Doctor, I will come back to that a little bit later.

I want to hurry along here on this other thing. There is so much to go into.

Dr. Terry, let me ask you this about this as a general question. Outside of this $1,950,000 that you anticipate getting for this sort of thing, how much more money is spent by your Department in this cigarette situation?

Dr. TERRY. For the year of 1965, the current fiscal year, we estimate that we are spending in the field of research, education, and other activities, something in the vicinity of $3½ million.

Mr. ROGERS of Texas. $3½ million?

Dr. TERRY. Yes, sir.

Mr. ROGERS of Texas. Thank you, sir.

Now, Doctor, with regard to your comments in your statement on the marking of the package, you are familiar with the bill H.R. 3014, and if I may do so, I have been led to believe that that is the size of the marking that would go on—that is 10-point type on a 12-point body. I don't know what that means.

The CHAIRMAN. I don't believe he can see it from here.

Mr. ROGERS of Texas. I can read that from down there, I think.

Dr. TERRY. You have better vision than I do, if you can.

Mr. ROGERS of Texas. Is that your understanding as to the size, or am I correct?

Dr. TERRY. This, Mr. Rogers, is a mockup of the type of labeling that would be required under H.R. 3014, as has been worked up by the Food and Drug Administration, showing the labeling on the edge of the package here.

The CHAIRMAN. This is what?

The reporter can't put the picture of what you have "this" in the record.

Dr. TERRY. Well, we have a demonstration here on three packages of cigarettes with the labeling which conforms to the specifications in H.R. 3014, and I would like to present these demonstrations to you for your information.

The CHAIRMAN. Let it be received as an exhibit.

(The items referred to were marked as an exhibit, and will be found in the files of the committee.)

Mr. ROGERS of Texas. Now, that warning covers the entire panel on one side of those cigarettes, does it not, Doctor?

Dr. TERRY. Not the entire panel, Mr. Rogers, as you can see.

Mr. ROGERS of Texas. A substantial part.

Dr. TERRY. A significant portion of it.

Mr. ROGERS of Texas. On the old regular-size cigarettes, which is the kind I used to smoke—I don't smoke any more—it would cover the whole side of the regular size, wouldn't it? It is the king size you are showing there.

Dr. TERRY. It would cover certainly a larger proportion than it does of the king size such as this.

Mr. ROGERS of Texas. Yes, sir.

Now, Doctor, you say that is not large enough to suit you?

Dr. TERRY. That is right, sir.

Mr. ROGERS of Texas. How large would you have it?

Dr. TERRY. What I would suggest is a labeling such as we have presented here in this mockup, both in terms of the size of the type as well as the location. These three packages of cigarettes which have been so labeled carry a statement on the front of the package, "Caution, cigarette smoking may be hazardous to your health." It is the same wording that is used in the other, and it it simply a different location. To our mind this would be more consistent with an adequate warning.

Mr. ROGERS of Texas. On the conclusion on your part that cigarette smoking does cause lung cancer?

Dr. TERRY. Yes, sir; and other serious diseases.

Mr. ROGERS of Texas. Now, what other serious diseases?

Dr. TERRY. I don't think there is any question but that it is responsible for other types of cancer, particularly cancer of the larynx, the voice box.

Mr. ROGERS of Texas. Yes, sir.

Dr. TERRY. Cancer of the mouth. There are other areas in which I think——

Mr. ROGERS of Texas. Now, Doctor, right there if you will excuse me—it is my understanding that the findings of your advisory committee were to the effect that the inhalation of the cigarette was causing the lung cancer. Now, do I understand that if you smoke cigarettes and didn't inhale them, that you are liable to get cancer of the larynx and cancer inside the mouth?

Dr. TERRY. Of course you have to inhale for it to get even into your larynx.

Mr. ROGERS of Texas. Not being a doctor, I didn't know that.

Dr. TERRY. I think the point is this, Mr. Rogers. There is evidence to indicate that wherever the mucous membranes of the upper respiratory tract are exposed to cigarette smoking over long periods of time, there is danger of cancer.

Mr. ROGERS of Texas. Is that because of the nicotine and tar in the tobacco itself?

Dr. TERRY. There is no evidence to indicate that the nicotine has anything to do with the production of——

Mr. ROGERS of Texas. Let's say some of the component parts of the tobacco itself.

Dr. TERRY. Yes, sir.

Mr. ROGERS of Texas. Now, wouldn't the same thing be true of cigars and with pipe smoke or chewing tobacco?

Dr. TERRY. There is a slightly higher incidence of cancer of the lips and of the mouth among pipe and cigar smokers than among non-

smokers, but it is not anything like the association of cancer of the lung with cigarette smoking.

Mr. ROGERS of Texas. But now you are not advocating the labeling of cigars or pipes.

Dr. TERRY. No, sir; I think the evidence we have of the harmful health effects are less significant compared to cigarettes so that I would not recommend such a thing at this time.

Mr. ROGERS of Texas. Mr. Dixon told me, and this is the first time I had ever gotten any kind of an answer to this question that was near satisfactory, that the reason they weren't jumping on cigars and pipe tobacco and chewing tobacco was because they didn't have the report of an advisory committee on this subject matter. Now, that is the first time I knew that an advisory committee was running this Government, Doctor. I thought an advisory committee was supposed to give advice, or whatever they found to be a fact in their own opinion.

Now he took the position that because he did have this advisory committee opinion, that it was almost incumbent upon him to move out into the area that he has undertaken to move into.

Dr. TERRY. I would call to your attention that my advisory committee report was not restricted to cigarettes, nor was it restricted to cancer of the lung. The title is "Smoking and Health," and it took up all aspects of smoking and health.

Mr. ROGERS of Texas. Then Mr. Dixon could use that advisory report to require labeling of cigars and pipe tobacco, couldn't he?

Dr. TERRY. I would say that——

Mr. ROGERS of Texas. If that is all he requires.

Dr. TERRY. I would say that there is specific information on the subject in the advisory committee's report.

Mr. ROGERS of Texas. To say that the smoking of cigars or pipes and also chewing tobacco cause cancer?

Dr. TERRY. There was a higher incidence of cancer of the lip and mouth among those in the studies reported.

Mr. ROGERS of Texas. This is very interesting, Doctor, but let me ask you one other thing, and I will confine it to this and conclude. About heart disease, there has been a lot of talk about cigarettes causing heart disease. As a medical doctor, would you tell me how the cigarette causes the heart disease?

Dr. TERRY. As a medical doctor, I can't tell you this. As a matter of fact, I can't tell you positively that it does or positively that it does not.

Mr. ROGERS of Texas. Don't you put a pamphlet out down there that says it does?

Dr. TERRY. No, sir, we do not say that it causes it. We point out there is a much higher incidence of heart disease among cigarette smokers as compared to nonsmokers.

Mr. ROGERS of Texas. Why is there a much higher incidence? What is it that the cigarettes do?

Dr. TERRY. This, Mr. Rogers, is one of the reasons we continue to do research. We are attempting to find the answer to this question. We do not know it today. We know certain aspects of the effects of smoking on the blood vessels, but I don't think that we have an explanation.

Mr. CARTER. Would the gentleman from Texas yield for a question?

Mr. ROGERS of Texas. I would be happy to yield to the gentleman.

Mr. CARTER. Isn't it true, Dr. Terry, that among those who have smoked and then have stopped smoking that there is less incidence of heart disease than there is among even nonsmokers?

Dr. TERRY. In the particular studies carried out, I believe that the group showed a slightly less incidence; yes, sir.

Mr. CARTER. How do you account for that, sir?

Dr. TERRY. I can't account for it, Mr. Carter. I would like to hear somebody's explanation for it, because we don't know.

Mr. CARTER. That seems to be a refutation of your theory that smoking does cause heart disease or might cause heart disease, wouldn't you think?

Dr. TERRY. I do not feel that it is any refutation of the belief that cigarette smoking may cause heart disease.

Mr. CARTER. Still the fact of your own investigation reveals that those who have smoked and have quit smoking have a lesser incidence of heart disease than even nonsmokers, right?

Dr. TERRY. I believe——

Mr. CARTER. Thank you, sir.

Dr. TERRY. I would like to to check this with Dr. Horn. There was a slightly lesser incidence?

Dr. HORN. As I recall that study, the difference was not statistically significant. In other words, the level of heart disease among those who stopped smoking was just about the same as that among those who had never smoked.

Mr. CARTER. Did you say just about the same? Was it exactly the same or was it less? Answer my question yes or no.

Dr. HORN. I am sorry, sir, this is a statistical question. Statistical differences are either significant or not, sir.

Mr. CARTER. Get your figures out and read them, if you will, if you have them.

You will find that among those who have smoked and have quit smoking the incidence is less than that among those who never smoked. I will be glad to have you read your figures on that.

Dr. HORN. Which report is that?

The CHAIRMAN. Any further of the Doctor?

Mr. ROGERS of Texas. I am finished, thank you.

The CHAIRMAN. Mr. Younger?

Mr. YOUNGER. Thank you, Mr. Chairman.

I think the record, Dr. Horn, should be a little clearer on your background. You are not a medical doctor?

Dr. HORN. No, sir. I did my undergraduate work in mathematics, and I took my Ph. D. in psychology.

Mr. YOUNGER. Where?

Dr. HORN. At Harvard University.

Mr. YOUNGER. At Harvard?

Dr. HORN. Yes, sir.

Dr. TERRY. Mr. Younger, I think that Dr. Horn, in order to substantiate his position and training, should give further details of his experience since getting his degree and throughout his professional life.

Dr. HORN. Well, sir, I have been engaged in research largely in the health field for the past 25 years. I gave my first lecture on public opinion methods when I was an instructor at Harvard in 1942. I have

been on the faculty at Yale and at Princeton as well. I served in the Navy as an aviation psychologist during the war, as a cadet advisory officer and an educational research officer. I worked for the Air Force in the psychological study of aircraft accidents in 1946 and published a number of papers in that field which were later turned in with administrative regulations for the handling of accidents both in this country and in foreign countries.

I have been engaged in cancer research, cancer control research, and the epidemiology of cancer and behavioral problems related to cancer since 1947, when I was employed by the American Cancer Society. I left the American Cancer Society in 1962 and came to work for the Public Health Service.

Mr. YOUNGER. In your research on cancer, do I understand that it did not have anything to do with the medical aspects of it? You were working on statistics?

Dr. HORN. I was working on behavioral problems in the field of cancer and on the statistical analysis of data. I was one of the authors of the Hammond and Horn Study to which Dr. Terry referred earlier. It is basically a long-term prospective epidemiological study in which we acquired information on the smoking habits of 200,000 men and followed them for 4 years, in order to determine what the relationship was between their smoking habits and their subsequent mortality experience.

Mr. YOUNGER. Thank you. I just felt the record should disclose your background.

Dr. HORN. Yes, sir.

Mr. YOUNGER. Dr. Terry, on your statement, page 6, to pursue the subject a little further than the chairman did,

> We recommend that instead of a specific statutory requirement for a statement as to particular components of cigarette smoke, regulatory authority be provided to decide which particular components.

Now, how can a manufacturer of any product, particularly cigarettes, arrange for a program of manufacture, advertising, and so forth, if he is going to be subject to the whims of one individual changing his mind all the time? That is the problem that disturbs me.

Dr. TERRY. I don't think such regulatory decisions would be made by one individual having whims and changing his mind, Mr. Younger.

Mr. YOUNGER. Well, say a group that have whims and change their minds.

Dr. TERRY. I think that such a group, when given such responsibility, would act in a responsible manner and would change the regulations only when there was a scientific basis for doing so.

Mr. YOUNGER. You are including here that each time they would go through the process of the regulatory authority with hearings and all? Is that what you propose?

Dr. TERRY. I am not sure exactly how it would be done, sir.

Mr. YOUNGER. It doesn't indicate here, your statement doesn't indicate, other than it would be the regulatory authority and you would be the regulatory authority, or the Commission, and that they had the privilege of changing their orders whenever they wanted to. I again raise the question now, how can a manufacturer plan a program of advertising and manufacture if he is going to be subject to some-

body else's change? He may print a whole lot of material and then find that it has all been changed and will have to be thrown away.

Dr. TERRY. They are doing it every day, Mr. Chairman, in relation to regulatory authority, for instance, in the Food and Drug Administration. Mr. Rankin of the Food and Drug Administration is here and he can tell you how they do it if you would like to know the details.

Mr. YOUNGER. Yes, I think he might express himself on that.

Mr. RANKIN. Mr. Younger, the procedure for issuing regulations under the Hazardous Substances Labeling Act is set forth in that act and it is the same procedure that is followed under the Food, Drug, and Cosmetic Act. The details are outlined in section 701(e) of the law.

Mr. YOUNGER. But what are they?

Mr. RANKIN. I will be glad to give them to you, sir. This is from section 701(e) of the Food, Drug, and Cosmetic Act.

> Any action for the issuance, amendment, or repeal of any regulation under section—

and this gives several sections of the Food, Drug, and Cosmetic Act, but as I indicated, the Hazardous Substances Labeling Act also includes this procedure—

> shall be begun by a proposal made (A) on the Secretary's own initiative or (B) by petition of any interested person showing reasonable grounds therefor filed with the Secretary. The Secretary shall publish such proposal and shall afford all interested persons an opportunity to present their views thereon, orally or in writing. As soon as practicable thereafter, the Secretary shall by order act upon such proposal and shall make such order public. Except as provided in paragraph (2), the order shall become effective at such time as may be specified therein, but not prior to the day following the last day on which objections may be filed under such paragraph.

Mr. YOUNGER. That is all right. The fact is——

Mr. RANKIN. Could I add, Congressman, that paragraph 2 goes on to specify the usual safeguards characteristic of the Administrative Procedure Act to guard against arbitrary or whimsical action on the part of the Secretary.

Mr. YOUNGER. But that does not follow in your regular rulemaking procedure under the Administrative Act.

Mr. RANKIN. That is a question on which I shall defer to counsel.

Mr. ELLENBOGEN. Sir, as you know, the Administrative Procedure Act has two types of rulemaking, the so-called informal rulemaking under section 4, which follows the outline that Mr. Rankin has given up to the point of hearing.

Now, it also provides, for those cases of rulemaking where the applicable statute provides for a hearing on the record, the procedure how that shall be done. That would be called formal rulemaking. Both types of rulemaking are provided for under the Hazardous Substances Labeling Act.

Now, section 701(e) of the Food and Drug Act that Mr. Rankin referred to is the formal rulemaking procedure, that is to say, it is started by a proposal, giving opportunity for comment, and then the rule is issued, subject to the right of adversely affected persons to file objections and a request for hearing, stating the grounds for the objections. The final decision is based on the record of the hearing on

such objections, and that decision is subject to judicial review in a court of appeals on the basis of the hearing record.

Mr. YOUNGER. But the Secretary is the one that makes the final decision.

Mr. ELLENBOGEN. Yes, although he has delegated this function in this respect to the Commissioner of Food and Drugs, Mr. Younger. This is subject to judicial review on the record.

Mr. YOUNGER. Thank you very much.

Now, Dr. Terry, one other question.

On page 8 you say—

> Our activities are primarily in the following four areas:
> (3) Exploring techniques for informing adequately young people and their teachers about the health hazards of cigarette smoking.

What action have you taken within your own Department?

Dr. HUNDLEY. I am not sure, sir, what kind of action you are referring to, but I can give you some examples, perhaps.

Mr. YOUNGER. How many people in your Department smoke cigarettes?

Dr. HUNDLEY. I have no way of knowing, sir.

Mr. YOUNGER. In other words, you have done nothing with your own Department to find out who smokes cigarettes and to try to persuade them not to smoke cigarettes, is that true?

Dr. HUNDLEY. No, that is not true.

Mr. YOUNGER. State the problem, what you have done in connection with exploring the techniques in your own Department, among your own employees.

Dr. HUNDLEY. We have conducted one course for our own employees, an experiment, if you will, which I believe involves some 160 or more employees, who were self-selected volunteers in an attempt to find out how we could help them to stop smoking. We also worked with the Children's Bureau in sponsoring a national conference on smoking and youth where each of the States sent representatives. In essence, our approach was to work with the youth to help them find out how to take care of their own problem.

This resulted in the Children's Bureau issuing two publications. We are working with the State agencies, with educators, with educational organizations and institutions in an attempt to find out how we can more effectively help youth to avoid or to control the smoking habit.

We have films, we have pamphlets, we have exhibits.

Mr. YOUNGER. In your own Department you say you have conducted an educational program within your own Department?

Dr. HUNDLEY. Yes, sir. Well, it was an experiment, if you will.

Mr. YOUNGER. Those experts may well begin at home. That is where I think you ought to be able to get a lot of information, or maybe nobody in your Department smokes or don't you know?

Dr. HUNDLEY. I assure you they do.

Mr. YOUNGER. They do?

Dr. HUNDLEY. Yes.

Mr. YOUNGER. Even after all the information that you have and the recommendations that have been made, people in your Department still smoke?

Dr. HUNDLEY. Of course, they are people just like the rest of the people in this country. I dare say in our Department a higher proportion of people have quit or modified their smoking habits than would be characteristic of other Government agencies.

Mr. YOUNGER. You don't inquire when you hire anybody as to whether they smoke or not?

Dr. HUNDLEY. We do not ask prospective employees about their smoking habits. We take the same attitude toward our employees that we do toward the American people, that after all, they should have the facts, but it is their decision.

Mr. YOUNGER. Dr. Terry, in connection with the advertising, is it your idea that either you or the Commission would have supervision over the advertising content in addition to the warning notice?

Dr. TERRY. The Department of Health, Education, and Welfare has recommended that the regulations and authorities with regards to advertising be in the Federal Trade Commission.

Mr. YOUNGER. Is it your idea that they would supervise the content of the advertising beyond the insertion of the warning statement after the statement has been agreed upon?

Dr. TERRY. I would assume they would, but I am not really qualified to speak on this subject, Mr. Younger.

Mr. YOUNGER. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Kornegay, I believe I agreed to recognize you next.

Mr. Rogers is now here.

Mr. ROGERS of Florida. I will defer to Mr. Kornegay since he has to catch a plane, Mr. Chairman.

Mr. KORNEGAY. Thank you very much. I appreciate your letting me go ahead, Mr. Rogers.

Dr. Terry, in pursuing the subject which Mr. Rogers of Texas brought up, that is your campaign of informing and educating the public on the evils of smoking, you are publishing a great deal of pamphlets or a large number of pamphlets and that sort of thing, aren't you?

Dr. TERRY. We have published several pamphlets.

Mr. KORNEGAY. And you published one on smoking and the heart?

Dr. TERRY. Yes.

Mr. KORNEGAY. Which I hold in my hand?

Dr. TERRY. Yes, sir.

Mr. KORNEGAY. And on the front of that four-page pamphlet you have a large picture of the report of the Advisory Committee to the Surgeon General of the Public Health Service, don't you?

Dr. TERRY. That is right, sir.

Mr. KORNEGAY. And let me ask you this. What was the purpose of putting that on the pamphlet, that is the picture of the report on smoking and health?

Dr. TERRY. Mr. Kornegay, these might be referred to as granddaughter publications related to and based on this specific information.

Mr. KORNEGAY. In other words, based on the report to the Surgeon General by the Special Advisory Committee?

Dr. TERRY. That is right, sir.

Mr. KORNEGAY. And you want to give the impression, of course, in this pamphlet—to anyone who looks at this pamphlet—that smoking has some very bad effect on the heart or causes heart disease, isn't that right?

Dr. TERRY. The thing that we attempted to do, Mr. Kornegay, was to present the information that there was strong evidence to suggest that cigarette smoking was related to heart disease.

Mr. KORNEGAY. And that came about as a result of the report of the Surgeon General to the committee, is that right?

Dr. TERRY. In part and largely; yes, sir.

Mr. KORNEGAY. Let me direct your attention to page 39.

Dr. TERRY. I am on page 39.

Mr. KORNEGAY. Of this report to the Surgeon General by the Special Advisory Committee, the first starting paragraph on that page reads:

> Male cigarette smokers have a higher death rate from coronary artery disease than nonsmoking males, but it is not clear that the association has causal significance.

Dr. TERRY. Mr. Kornegay, will you go back?

Mr. KORNEGAY. Answer my question. Isn't that statement in the report that was made to you by the Special Advisory Committee?

Dr. TERRY. That is right, and I would like to call to your attention——

Mr. KORNEGAY. And that says that it is not clear that the association has casual significance, isn't that right?

Dr. TERRY. You are quoting correctly.

Mr. KORNEGAY. Yes, sir.

But notwithstanding that statement in the report, you and your Department put on the front of a pamphlet paid for by the taxpayers a picture of the report to the Surgeon General for the purpose of trying to leave the impression that smoking and the heart—the adverse effects of smoking on the heart as pointed out by the report, isn't that right?

Dr. TERRY. That is right, and may I quote from, rather than just as you quoted, the preceding paragraph of this report?

Mr. KORNEGAY. Yes, sir.

Dr. TERRY (reading):

> The causative role of these factors in coronary disease, though not proven, is suspected strongly enough to be a major reason for taking countermeasures against them. It is also more prudent to assume that the established association between cigarette smoking and coronary disease has causative meaning than to suspend judgment until no uncertainty remains.

That immediately precedes the part that you read, sir.

Mr. KORNEGAY. And yet the author, whoever he might have been, comes right behind that paragraph in the succeeding paragraph and in large bold type says:

> It is not clear that the association has causal significance.

Dr. TERRY. I think it clearly means that it has not been proven, but——

Mr. KORNEGAY. In other words, you are not acting on proven facts? You are just chasing suspects, is that right?

Dr. TERRY. No, sir; that is not correct.

Mr. KORNEGAY. Well, it says that it is suspect. That says it has not been proven, doesn't it?

Dr. TERRY. It says the causal relationship has not been proven, yes.

Mr. KORNEGAY. Yes.

Dr. TERRY. But on the other hand it also points out the fact that the strong relationship, in the interpretation of these scientists, was of significance.

Mr. KORNEGAY. You don't put in the pamphlet the statement that I read, do you?

Dr. TERRY. I don't know whether it is there or not, Mr. Kornegay.

Mr. CARTER. Will the gentleman yield for a question?

Mr. KORNEGAY. I will be delighted to yield.

Mr. CARTER. Again, Dr. Terry, the whole question comes up, Why is it that people who have smoked and have quit have a lower death rate than those who have never smoked even, than those who have never smoked?

Dr. TERRY. May I ask Dr. Horn to answer that?

Dr. HORN. Sir, I have located the article to which I believe you have reference. This is the combined experience of the Albany and Framingham studies, I believe.

Mr. CARTER. Yes.

Dr. HORN. That appears in the Journal of the AMA in December of 1964. In table 3 under "Former Cigarette Smokers" relative to "Never Cigarette Smokers," it says that the 95 percent confidence limits on relative risk ranged from 0.2 to 1.4.

as up to possibly a 40-percent higher death rate than those who have given up cigarette smoking have somewhere between one-fifth as much as up to possibly a 40-percent higher death rate than those who have never smoked.

With this level of statistical instability, sir, I believe that my previcance has to stand. Although this difference is not statistically significant, it is not unreasonable to expect a group of ex-smokers to show a lower death rate than those who had never smoked. Having given up smoking is evidence of sufficient concern with their own health so that one might expect these same people to maintain proper dietary habits and adequate exercise, and thereby have a lower death rate.

Mr. CARTER. I can't accept that statement. I didn't understand your reading of it and I would like to see it. I am not sure that that is what I referred to. But the Surgeon General admitted that my statement was true when I asked him before, and the record will show that.

Mr. KORNEGAY. In that connection I would refer both my colleague from Kentucky and also Dr. Terry and Dr. Horn to page 221 of the hearings which were held by this committee on the subject last June, the top of that page is a graph which was introduced and talked about and, as I recall, backed up by the verbal testimony of Dr. Henry I. Hueper, from Staten Island, N.Y. The graph would indicate that the percentage of coronary heart disease in those who had never smoked is somewhere—I would estimate—between 6½ to 7 percent, and those who had smoked and stopped is a little bit over 2 percent.

Now, Dr. Terry, I believe you in your statement advocated the placing of nicotine and tar levels on cigarettes, is that right?

Dr. TERRY. That is right, sir.

Mr. KORNEGAY. You are at odds with Mr. Dixon on that question I believe. He testified that he didn't see the importance of it, is that the substance of it? You are familiar with his testimony?

Dr. TERRY. I am not. I didn't hear Commissioner Dixon testify, but I understand that this is what he said.

Mr. KORNEGAY. Let me refer you, sir, to page 75 of your report, of the report that was made to you. The last paragraph on that page says:

> The rapidity of the generation to nontoxic metabolites, the results from chronic studies on animals and the low mortality ratio of pipe and cigar smokers when compared with nonsmokers indicate that the chronic toxicity of nicotine in quantities absorbed from smoking and other methods of that use is very low. It probably does not represent a significant health problem.

That is in the report, isn't it?

Dr. TERRY. It certainly is, sir.

Mr. KORNEGAY. Dr. Terry, are you familiar with Dr. William C. Hueper?

Dr. TERRY. Yes, sir.

Mr. KORNEGAY. And he is quite an outstanding scientist in this country, is he not?

Dr. TERRY. Yes, sir.

Mr. KORNEGAY. In fact, he is the retired Chief of the Environmental Cancer Section of the American Cancer Institute, isn't he?

Dr. TERRY. National Cancer Institute; yes, sir.

Mr. KORNEGAY. I mean National Cancer Institute.

Dr. TERRY. Yes, sir.

Mr. KORNEGAY. And in 1962 he was awarded, by the World Health Organization or was honored by the World Health Organization, for outstanding scientific research work in the causes and control of cancer diseases, wasn't he?

Dr. TERRY. I don't remember the details. I certainly wouldn't argue with it.

Mr. KORNEGAY. Yes.

So far as you know then, he did receive that honor from the World Health Organization?

Dr. TERRY. As far as I know, that is right, sir.

Mr. KORNEGAY. In fact, he worked under you in the Public Health Service for a number of years, isn't that correct?

Dr. TERRY. Yes, sir.

Mr. KORNEGAY. Now, are you familiar with the book which he has recently published entitled "Chemical Carcinogenosis and Cancers."

Dr. TERRY. I have not seen it, Mr. Kornegay.

Mr. KORNEGAY. Have you heard about it?

Dr. TERRY. I don't know anything of its contents, sir.

Mr. KORNEGAY. I mean, have you heard of the publication of the book?

Dr. TERRY. I am hearing of it now, sir.

Mr. KORNEGAY. Yes, sir. I mean you have heard about it before I mentioned it?

Dr. TERRY. I think I have.

Mr. KORNEGAY. Yes, sir.

Dr. TERRY. But I think this is unimportant in terms of——

Mr. KORNEGAY. You know whether you heard about it, don't you?

Dr. TERRY. I don't see what difference it makes whether I have heard or not, Mr. Kornegay.

Mr. KORNEGAY. I am just asking you a simple question, Doctor, if you have heard of the fact that Dr. Hueper has published a book, together with Dr. Conway who is a Ph. D. and who is former senior chemist environmental cancer section of the National Cancer Institute in Bethesda, Md.?

Dr. TERRY. Yes, sir.

Mr. KORNEGAY. The book has just come on the market, hasn't it?

Dr. TERRY. I believe so, sir.

Mr. KOGNEGAY. It was certainly published subsequent to the report to you from the Special Advisory Committee, isn't it true?

Dr. TERRY. I think it is true. I don't have the exact date of publication, Mr. Kornegay. You have it there in the book and can read it. Our Advisory Committee report was released on January 11, 1964.

Mr. KORNEGAY. 1964.

My information is that this book was published in the latter part of 1964. Are you familiar with the statement that Dr. Hueper made last year that the charge that smoking is proven a predominant cause of lung cancer is "scientifically unsound and sociologically irresponsible?"

Dr. TERRY. Yes, sir.

Mr. KORNEGAY. You are familiar with that quotation?

Dr. TERRY. Yes.

Mr. KORNEGAY. Now, let me read you, Dr. Terry, from Dr. Hueper's book a paragraph or two. The first is found on the page ending on 144. It says:

Although it has been claimed by these and other investigators—

and he refers back to Doll, Hammond, and Horn—

Levin, et al., Breslow, Wynder, et al., although it has been claimed by these and other investigators mainly on the basis of statistical evidence that cigarette smoking is the principal cause of lung cancer accounting for up to 95 percent of all pulmonary cancers, an objective and sober analysis of all information on epidemiology, etiology, and pathology on this subject scarcely upholds such far-reaching allegation.

Then he goes on to say in the paragraph on down the page:

The decision as to which one of the various chemical carcinogens or types of carcinogens emanating in this development has played a major or minor role is at present a matter of scientific discussion and depends apparently not only on the professional knowledge, experience, and judgment of the individual investigator but not indirectly also on his personal preference or prejudices. That is to say, his inclination to assess the whole or only part of the evidence available.

Now, let me refer you to page 638 where Dr. Hueper in his book, in the second paragraph says:

It has repeatedly been demanded during the past few years that the alleged causation of lung cancer from the inhalation of cigarette smoking would officially be recognized by forcing the cigarette manufacturing companies to place a proper warning of such hazards from cigarette smoking on the package and perhaps also on vending machines. If the existence of such correlations and the justifications of such demands are conceded as a matter of argument, would it not follow that similar warnings should be required for products containing many other generally recognized and often very much more potent respiratory chemical carcinogens to which workers and consumers are being exposed often on a daily basis, and to the amounts exceeding in general those encountered from cigarette smoking? Should the coal companies, for instance, be forced to sell coal with a

warning that the inhalation of coal smoke and soot and coal tar fumes may cause cancer of the lungs?

Now, Dr. Terry, in reading those and pointing out to you this book which I understand was just published by one who is an eminent expert in the field is to point up that there is a great deal of difference and quarrel with the report which was made to you and upon which I understand you base your opinions in this matter, isn't that true?

Dr. TERRY. My opinions in this matter are based in part upon this report, Mr. Kornegay.

Secondly, I would like to say that you have expressed there the viewpoint of one man.

Furthermore, during the period when this study was being carried out and the report was being prepared by the Advisory Committee, the members of the committee met with Dr. Hueper, discussed in great detail his viewpoints on the subject, and certainly had this information made available to them. I believe also at that time he even made some of the draft chapters of his book available to them.

Despite that, this group of 10 eminent scientists did not feel that his convictions on the subject were convincing to them, and this is true of many others, sir.

Mr. KORNEGAY. None of those, and they were eminent men, I am not quarreling with the composition of the Surgeon General's Committee, but none of them were recognized experts in the field of cancer, were they?

Dr. TERRY. I don't think this is true, sir.

Mr. KORNEGAY. None of them had formed or expressed any opinion prior to the time they were appointed to that committee in this field, had they?

Dr. TERRY. I don't think this is correct. The thing that we attempted to do was to get eminent scientists who had not entered into the political controversy to participate in this Committee. In other words, the makeup of this committee included people who had not become strongly committed, pro or con.

Mr. KORNEGAY. Well, anybody who does any substantial research on the matter would become committed, wouldn't he?

Dr. TERRY. Not necessarily.

Mr. KORNEGAY. Doesn't that follow as a matter of reason that he would form some conclusions from that research?

Dr. TERRY. I personally could spend a lifetime in research on cancer without ever writing or issuing a statement on smoking and health as related to cancer.

Mr. KORNEGAY. Well, of course, I would concede that is possible.

Dr. TERRY. And these people who prepared this report and carried out this study are certainly eminent people, many of them with very extensive experience in the field of cancer.

Mr. KORNEGAY. Your committee went about the matter somewhat like two lawyers went about selecting a jury, didn't they?

Dr. TERRY. I think this is essentially true.

Mr. KORNEGAY. Mr. Rand Dixon many times said here during the course of his testimony in backing up the Surgeon General's Committee that the tobacco industry had the veto on any or all of the people who were coming on the committee.

Dr. TERRY. This is essentially true. The initial proposed list was drawn up and the tobacco industry had the opportunity to object to anyone who was proposed, and no such——

Mr. KORNEGAY. Did they object to any of them?

Dr. TERRY. Yes; they did object to some of them on the original list.

Mr. KORNEGAY. Were they people who had made some contribution in the field of research in the area of cancer?

Dr. TERRY. I don't remember the exact details, but for one reason or another the tobacco industry objected to them.

Mr. KORNEGAY. Of course, it was an objective study? It is only natural that you should not have anybody on that that has already made up his mind, is that right?

Dr. TERRY. That was our intention.

Mr. KORNEGAY. Let me move on to one other thing, and I am not going to take as long as I did last time, Dr. Terry, but I do want to ask you a few questions and probably Dr. Horn will come in on this, and that is the question about the questionnaire that has been brought up. Before I go to that, how long was Dr. Hueper on your staff? How long did he work under you?

Dr. TERRY. Dr. Hueper was in the Public Health Service for many years. I don't remember how many, sir.

Mr. KORNEGAY. We was a loyal qualified man, wasn't he?

Dr. TERRY. Yes, sir.

Mr. KORNEGAY. Thank you very much.

Mr. CARTER. Mr. Kornegay, would you yield for one observation?

Mr. KORNEGAY. Yes; I would be glad to, Doctor.

Mr. CARTER. I am sure you are acquainted with Dr. Harry Heimann, also.

Dr. TERRY. Yes, I am.

Mr. CARTER. He is quite an authority on respiratory diseases, has done specific research; is that true?

Dr. TERRY. Yes; he is respected.

Mr. CARTER. In a recent publication of the U.S. Department of Health, Education, and Welfare, Dr. Heimann has quite an interesting writeup concerning air pollution and respiratory diseases, and in summary he states:

> Air pollution, as it exists in some of our communities, contributes significantly as a cause or aggravating factor for the following medical conditions: Acute respiratory infections, chronic bronchitis, chronic constrictive ventilatory disease, pulmonary emphysema, bronchial asthma, and lung cancer.

So you see we have various things which may cause lung cancer, not just tobacco smoking.

Dr. TERRY. Mr. Carter——

Mr. CARTER. Yes, sir.

Dr. TERRY. I have never maintained that cigarette smoking was the only cause of lung cancer. On the other hand, we have clearly recognized that among urban populations that are exposed to more air pollution, that there is a higher incidence of lung cancer than among rural dwellers, with presumably less exposure.

Mr. CARTER. Yes.

Dr. TERRY. The thing that my Committee has said, and the thing that I believe, is that in the United States, cigarette smoking is the principal causative factor in lung cancer, not the only one, sir.

Mr. CARTER. How is it said, then, that you have by inhalation of certain hydrocarbons in hamsters produced lung cancer, and at the same time while these have been exposed to cigarette smoke you have not produced lung cancer? Is that not true?

Dr. TERRY. Insofar as I know, no lung cancer has been produced in experimental animals by the inhalation of cigarette smoke.

Mr. CARTER. But they have been produced——

Dr. TERRY. On the other hand, changes have been produced in the respiratory tract of those animals which in the opinion of pathologists are precancerous lesions.

Mr. CARTER. No cancerous lesions, however?

Dr. TERRY. That is right, sir.

Mr. CARTER. You have produced cancerous lesions by inhalation of hydrocarbons among those laboratory animals, isn't that true?

Dr. TERRY. I am not sure on this, sir. I would like to ask Dr. Hundley. I think he knows more.

Dr. HUNDLEY. I don't believe it was by inhalation, sir. I think it was by implantation or painting rather than in the form of smoke.

Mr. CARTER. I think I have that for you right here, if you would like for me to read it for you, sir. This is by Dr. Harold L. Stewart. You recognize him as an eminent authority.

Dr. HUNDLEY. I didn't get the name, sir.

Mr. CARTER. Dr. Harold L. Stewart.

Dr. HUNDLEY. Yes, indeed.

Mr. CARTER. Yes, sir; former Chief of Pathology of the National Cancer Institute.

Dr. Harold L. Stewart, former Chief of Pathology of the National Cancer Institute under Dr. Terry, said: "After more than 60 years of experimentation, exposure to inhalation of smoke from cigarettes or cigarette tobacco has failed to unequivocally induce cancer of the lung in the mouse, hamster, rat, white Pekin duck, rabbit, dog, guinea pig, or the chicken." (Bulletin de L'Institut International de Statistique, Paris, 1961, p. 467.)

The report of the Surgeon General's Advisory Committee, while admitting failure to produce lung cancer in animals with tobacco smoke, admits that other substances have produced animal lung cancers (p. 167):

"The lungs of mice, rats, hamsters, and primates have been found to be susceptible to the induction of bronchogenic carcinoma by the administration of polycylic aromatic hydrocarbons, certain metals, radioactive substances, and oncogenic viruses. The histopathologic characteristics of the tumors produced are similar to those observed in man and are frequently of the squamous variety."

Do you admit the truth of this statement, sir?

Dr. HUNDLEY. Correct.

Mr. CARTER. You admit the only form of lung cancer produced has been by hydrocarbons and not by tobacco smoke, is that right?

Dr. TERRY. Not the only. He mentioned carcinogenic viruses and other materials.

Mr. CARTER. You have admitted they have not been produced by tobacco smoke, but by these other methods.

Dr. HUNDLEY. But not by inhalation as I said earlier.

Mr. CARTER. All right, sir, not by tobacco smoke. Thank you, sir. That is my question.

I yield back to Mr. Kornegay.

Thank you, sir.

Mr. KORNEGAY. In connection with the survey, Dr. Terry, that was made, I believe it was last year—is that right?

Dr. TERRY. Which survey is this?

Mr. KORNEGAY. The one that Mr. Rogers went into.

Dr. TERRY. The public opinion survey, yes, sir, it has been made over the past year.

Mr. KORNEGAY. And it was the one you said was done by the National Council——

Dr. TERRY. No, sir, Dr. Horn can straighten this out.

Dr. HORN. The field work was carried out by National Analysts, Inc.

Mr. KORNEGAY. Is National Analysts, Inc., a recognized pollster outfit?

Dr. HORN. Yes, sir. It is one of the five largest market research survey organizations in the country.

Mr. KORNEGAY. Comparable, we will say, to Roper, or Lou Harris?

Dr. HORN. Yes, sir.

Mr. KORNEGAY. Or Gallup?

Dr. HORN. Yes, sir.

Mr. KORNEGAY. You said this was put out on a bid?

Dr. HORN. Yes, sir.

The CHAIRMAN. You wouldn't overlook Nielson, would you?

Mr. KORNEGAY. I hope not, Mr. Chairman.

Did anybody else bid on this?

Dr. HORN. Yes, sir, there were five submissions.

Mr. KORNEGAY. Five bids on it?

Dr. HORN. Yes, sir.

Mr. KORNEGAY. And National Analysts was the low bid, I take it?

Dr. HORN. Yes, sir.

Mr. KORNEGAY. Now, I believe you said that there were 300 questions in the questionnaire, Dr. Horn.

Dr. HORN. The exact number of questions, sir, varies depending on the kinds of answers people give. For example, smokers were asked more questions than nonsmokers, because a good many questions were asked about their smoking habits; when they began, how much they smoked, and so on.

Mr. KORNEGAY. The total number of questions—how many was that? Assuming he was asked every question.

Dr. HORN. Well, an individual couldn't be asked every question because some questions were asked only of people who had never smoked and other questions were asked only of those who did.

Mr. KORNEGAY. I mean questions that were prepared and put into the questionnaire.

Dr. HORN. The questions are numbered, and the number of the last question which was asked is No. 260.

Mr. KORNEGAY. 260?

Dr. HORN. Yes, sir.

Mr. KORNEGAY. And this is a copy of the questionnaire, isn't it?

Dr. HORN. Yes, sir, it looks like it.

Mr. KORNEGAY. And it covers some 40 pages?

Dr. HORN. I haven't counted them, sir.

Yes, it says page 40 at the end.

Mr. KORNEGAY. And many of the questions run a page or more in length, and are broken down into A, B, C's, aren't they?

Dr. HORN. Yes, sir.

Mr. KORNEGAY. Let me just ask you this, Dr. Horn, and I don't mean to belittle this questionnaire at all, but how in the world can you get people to stand still long enough to go through all this, unless you pay them to do it?

Dr. HORN. I am sorry, sir, but apparently you are inexperienced in the field of public opinion polls.

Mr. KORNEGAY. I am. I want to get some knowledge on it. I can't see how anybody who has got anything at all to do, whether it is a housewife, businessman or anybody who works, is going to have time to go through this. I have looked through it and it takes several hours to read and answer.

Dr. HORN. Sir, the average amount of time for this interview was 1 hour for those who had never smoked cigarettes and about 1 hour and 20 minutes for those who had ever been cigarette smokers.

Mr. KORNEGAY. Did the pollster ask the questions? Did he read the questions?

Dr. HORN. The interviewer interviewed by asking the questions; yes, sir.

Mr. KORNEGAY. Does he go around to the house or go to the office and say, "Let me ask you to participate in this poll" or how are the prospects gotten?

Dr. HORN. This is done by probability sampling procedures which involves dividing the country up into a great many different areas, and then selecting portions of the country, segments which are characteristic of the total population of the United States. Then all the households and members of households within those portions are listed, and by random means the individuals to be interviewed are selected, so that in this sense, a person's inclusion in the study is predetermined, but a function of chance.

Now, the refusal rate on this interview was less than 5 percent.

Mr. KORNEGAY. Dr. Horn, I am thinking more in terms of what is the approach? How does the pollster get somebody who is willing to participate in the program and take the time to answer all these questions that would be put to him?

Dr. HORN. He introduces himself and tells the individual what he wants, and in about 19 cases out of 20 the individual is willing to be interviewed.

The refusal rate was under 5 percent, which is remarkable.

Mr. KORNEGAY. Isn't it true that the interviewers and pollsters who went around told the people to be interviewed that this was a study being done by the U.S. Government?

Dr. HORN. No, sir. They introduced themselves by saying:

I am so and so from the National Analysts, Inc., a research organization in Pennsylvania. I am working on a study of people's opinions for a branch of the U.S. Government. This study is being done all over the country and your home happened to be selected as a part of the national sample.

Mr. KORNEGAY. Did you say it was being done for U.S. Government?

Dr. HORN. Yes, sir; for the Government, not by the Government. The individual introduced himself as being from National Analysts, Inc.

Mr. KORNEGAY. Do you think that that would have any impression on the person, the prospect——

Dr. HORN. There are a good many surveys that are done for the Government.

Mr. KORNEGAY. In any answers he might give?

Dr. HORN. There are a good many surveys done for the Government in the same way which have a much higher rate of refusal.

Mr. KORNEGAY. You testified, I believe, that you only interviewed 47,000 people. Isn't that right?

Dr. HORN. 4,700, sir.

Mr. KORNEGAY. 4,700?

Dr. HORN. Yes, sir.

Mr. KORNEGAY. That is even worse than I thought, Dr. Horn. I would give you credit for doing 47,000 in trying to arrive at some percentage of the total adult population.

Mr. VAN DEERLIN. Will the gentleman yield?

Mr. KORNEGAY. Yes, indeed.

Mr. VAN DEERLIN. The Gallup survey in conducting a nationwide survey relies on 1,200 samplings.

Mr. KORNEGAY. Is that dealing with this subject matter?

Mr. VAN DEERLIN. Comparable subject matters.

Dr. HORN. If I might comment on that, sir, the typical national survey contains from 1,200 to 1,500 interviews. The political surveys on intentions to vote for President and so on are typically based on approximately this number of interviews, and obtain results that have an average error of under 4 percent.

Mr. KORNEGAY. Anyway you feel that you interviewed a sufficient number of people to get a reliable result?

Dr. HORN. Sir, the questions that have been asked about that imply some concern as to the possible accuracy of this interview and the interview results. I would like to submit for the record a very brief statement on another poll which was done quite independently by Lou Harris, to whom you have already referred, and which appeared in his syndicated column on February 1, 1965.

He asked three questions in the area of smoking. Although his questions were phrased somewhat differently, there were two questions that appeared to be trying to get at the same opinions as two of the questions in our own study, and they resulted in almost identical percentages as ours.

For example, on requiring a warning label on the package, this was accepted in his poll by 62 percent and rejected by 29 percent as compared to our own poll results of 61 to 30 percent. That is 1 percentage point off in each.

Similarly, the proposal that the selling of cigarettes should be prohibited was rejected by 70 percent of the population and accepted by only 20 percent in his poll as compared to our survey figures of 70 and 23 percent, so that of the four figures in which we have a direct comparison, one was identical, two varied by 1 percentage point, and one varied by only 3 percentage points.

Mr. KORNEGAY. Now let me ask you the question again, doctor, and that is did you question a sufficient number, in your opinion, to come up with a reliable result, is that right?

Dr. HORN. Yes, sir; within the order of magnitude that I thought was necessary.

Mr. KORNEGAY. In other words, you have confidence in this report which came to you.

Dr. HORN. Yes, sir.

Mr. KORNEGAY. How far down the line or what number was the question when you finally got around to asking the person being interviewed what he thought about cigarette labeling in advertising?

Dr. HORN. Sir, that depended on which form of the questionnaire he was being asked.

Mr. KORNEGAY. If it is a smoker.

Dr. HORN. It does not matter whether it is a smoker or not. We had four different forms of the interview.

Mr. KORNEGAY. Oh, you mean you did not have the same form throughout the survey.

Dr. HORN. We asked the same questions, but we varied the procedure of asking the questions so that we would have a measure of the extent to which the phrasing of the question, the position of the question, and the sequence in which the question was asked might influence the choice of answers. And you will see in the appendix to Dr. Terry's testimony an account for each of the four forms. The same questions were asked in effect. However, in some cases these questions were asked near the beginning of the interview, in some cases they were asked near the end of the interview. In some cases they were asked near the beginning of the sequence of questions on remedial action, in some cases they were asked near the end of that sequence, and in some forms the question was phrased in one manner, while in another form it was phrased conversely.

This is a procedure that is used in order to measure the degree of change that is introduced by these methodological considerations so as to be sure that we are in fact objective in interpreting the results.

Mr. KORNEGAY. Sort of like a printed ballot in an election, every so many thousand you change the positions, is that right?

Dr. HORN. Yes, sir; the position can influence the result by 1 or 2 percentage points, sometimes by more.

Mr. KORNEGAY. Could you give me the information about where in each of the four different forms that you used or the different sequence that you finally got down to asking the question about cigarette labeling, the labeling of cigarettes?

Dr. HORN. The labeling of cigarettes? In one form, form A, it was asked as question 216, which was near the end of the interview, and it was item (g) under that, that is the seventh in the series of remedial action questions.

In form B it was also asked as question 216, but this time it was the seventh from the last in the series.

In form C it was asked near the beginning of the interview.

Mr. KORNEGAY. It was question 216?

Dr. HORN. Yes, sir. In form C it was asked as question number 25 which took place within the first 10 or 12 minutes of the interview and it was again the seventh item in the series of questions on remedial action.

In form D it was also question number 25, and again seventh in position. This is one of the precautions one takes in doing a good public opinion survey, sir, in order to be able to measure what these artificial effects may be.

Mr. KORNEGAY. Did it produce any different effects?

Dr. HORN. This is included in the report that you have appended to Dr. Terry's testimony. There were some differences. In some cases the differences were trivial. In some cases they were as much as 5 or 6 percentage points. In no case would it make a serious variation in the interpretation of what the general level of public opinion is about the issue on the matter of cigarette labeling, that is item 12; the percentage expressing themselves for labeling in effect was 61 percent in one case, 60 percent in another, 60 percent in the third, and 62 percent in the fourth.

Mr. KORNEGAY. Dr. Terry gave us the results of eight of the questions during the course of his statement.

Dr. HORN. Yes, sir.

Mr. KORNEGAY. I take it you have the answers there to the rest of them with you, is that right?

Dr. HORN. Yes, sir; the 23 questions are all included in the appendix here.

Mr. KORNEGAY. What?

Dr. HORN. The 23 questions on remedial action are all included in the appendix, sir.

Mr. KORNEGAY. I am not talking about that. I am talking about the 216, Dr. Horn.

Dr. HORN. Oh, no, they are not included. Most of them have nothing to do with the issue under discussion.

Mr. KORNEGAY. What?

Dr. HORN. Most of them are not pertinent to the issue under discussion.

Mr. KORNEGAY. Why did you not include it?

Dr. HORN. I do not have them all worked out. We are just getting this data off the computers. In each case these forms have to be compared.

Mr. KORNEGAY. Did you say that many of them were not relative to the issue?

Dr. HORN. Yes, sir. What I said was these 260 questions all have a reason for being in the study.

Mr. KORNEGAY. You have an answer to those questions. I mean you tabulate the results, do you not?

Dr. HORN. Yes, sir; we have approximately 16,000 statistical tables that have come off the computers representing answers to these questions.

Mr. KORNEGAY. Do you have them with you?

Dr. HORN. I am sorry, sir, I cannot carry them. They must weigh at least 300 pounds.

Mr. KORNEGAY. I am not talking about that. When you get the answer, you know what the percentage is. All you have got to do is take one of your questionnaires and fill in the answer, do you not?

Dr. HORN. This has not been done yet, sir.

Mr. KORNEGAY. It has not been done?

Dr. HORN. No, sir. They have been coming off on groups from the computer. They are all in my office at the present time.

Mr. KORNEGAY. When will it be done, Doctor?

Dr. HORN. For the overall figures I am sure that that will be done within the next month or so.

Mr. KORNEGAY. Will it take you that long?

Dr. HORN. I imagine so.

Mr. KORNEGAY. You did not then take the answers to these questions into consideration in arriving at your results?

Dr. HORN. I am sorry, I do not get the implication or even what the question is.

Mr. KORNEGAY. Let me go at it this way. You had picked out certain questions that were contained in the questionnaire tabulated the results of those, and are they the ones that Dr. Terry gave us in his statement?

Dr. HORN. We tabulated the section that referred to remedial action, that is the public's view of a number of things which had been proposed by various individuals and in various places, including the floor of Congress, as possible ways of dealing with the problem of smoking, or even the acceptance of this as a problem, and this group of 23 questions was asked as one sequence, and seemed to be one that was particularly pertinent to this issue.

Mr. KORNEGAY. Why did you add so many other questions if they were not pertinent to this issue?

Dr. HORN. Because the attitudes of the public on remedial action was only a very small part of the purpose of this survey. This survey had a great many different purposes. One of the purposes——

Mr. KORNEGAY. You mean purposes other than the public opinion on smoking, the labeling of cigarettes, the labeling of advertising, and how long people had smoked.

Dr. HORN. Oh, yes, sir.

Mr. KORNEGAY. And whether they had ever had cancer and all that sort of thing.

Dr. HORN. For example, one of the important aims of this survey was to develop full systematic information on people's experience in giving up smoking, whether or not they were successful. One of the problems that we face and one of the problems that we are engaged in studying is that of helping those people who wish to give up smoking who find themselves unable to do so. Among the things that we hoped to learn from this study were what were some of the factors that make for the successful stopping of smoking.

Mr. KORNEGAY. So you were going into a program not only of trying to find out what people thought about what the Public Health Service ought to do, the FTC ought to do, but also what you can do, is that right?

Dr. HORN. We are trying to find out all we can about the behavioral aspects of smoking, which would include the topic of giving up smoking.

Mr. CARTER. Will the gentleman yield for a question?

Mr. KORNEGAY. Yes, sir.

Mr. CARTER. What was the total cost of this poll?

Dr. HORN. I would say that the total cost, including what was spent last year and this year, is in the neighborhood of $120,000.

Mr. CARTER. You interviewed 4,700 people, right?

Dr. HORN. Yes, sir.

Mr. CARTER. And what was the cost for each one of these interviews, taking one poll?

Dr. HORN. Sir, the cost is built up of a great many different parts. There is the cost of developing and printing the interview, pretesting

the interview, developing the instructions for the interview, the interviewer's time, and getting the material out to the field.

Now, the cost of any one interview varies depending on how hard it is to get the individual who is designated to be interviewed. In some cases an individual had to be contacted five, six, seven times before he was able to take the time to give the interview.

Mr. CARTER. I did not ask only that. What is the average cost per person, what is the average for each one of these polls?

Dr. HORN. If you just take the total cost and divide it by the number of people interviewed, it would be in the neighborhood of $22 per interview.

Mr. CARTER. I believe I get a different figure from that. If you divide $120,000 by $4,700, is it not $250?

Dr. HORN. No, sir. You have got the decimal point in the wrong place.

Mr. CARTER. That is possible.

Dr. HORN. You must remember, sir, I used to teach mathematics.

Mr. CARTER. What was the average cost per person for one of these polls?

Dr. HORN. Its average cost per interview if you put it on an interview basis——

Mr. CARTER. Yes, sir.

Dr. HORN. Would be in the neighborhood of $25.

Mr. CARTER. About $25. That is still pretty high for an interview for each person, is it not?

Dr. HORN. No, I think it is really quite low, sir.

Mr. CARTER. I wonder if the taxpayers are willing to pay that much for such a poll. If we made a rather extensive poll, the cost would almost be prohibitive.

I yield back. Thank you.

Mr. KORNEGAY. Doctor, I do not want to belabor the point, but I would like to get as soon as you get it tabulated—I think it would be of great interest to the committee, Mr. Chairman—to get the results of all of the questions that were contained in this questionnaire which, as Dr. Carter pointed out, cost $120,000 or $25 per interview.

The CHAIRMAN. Doctor, you may supply the committee with this information if you have it, but I understood you to say this information was obtained under a contract with one of these national organizations which is at Philadelphia.

Dr. HORN. Yes, sir.

The CHAIRMAN. And your report evidently comes from that organization, and there is——

Dr. HORN. The contract called, sir, for their collecting the information, doing the interviews, drawing the sample, coding and punching the IBM cards for information, and then tabulating these. We get them in the form of raw statistical tables.

As I said, the number of such tables is approximately 16,000. Of course, we have asked for them in great detail by age, by sex, by smoking habits, and so on, and the overall figures on the total distribution of the population responses to any one of these questions is, at the present time, in these tables. It simply takes a certain amount of time to get them out, to check them, and make sure that there has not been any inconsistency.

We have to check them to make sure that the answers to the four different forms are sufficiently close to show that this is a stable question and is not a question that varies according to the vagaries of how it happens to be placed.

The CHAIRMAN. Do you mean to say that you—if the gentleman will permit—because he has asked something for the record.

Mr. KORNEGAY. Yes, sir.

The CHAIRMAN. I think it might be rather impractical. As a matter of fact, let me say to the gentlemen, both of you, if you are interested in ratings and samples and polls procedures with reference to it, we have all of that information in another subcommittee that we will be glad to refer you to, if you want some interesting dry reading. We have rather substantial information.

Mr. KORNEGAY. Mr. Chairman, let me state I wasn't requesting it for the record. I thought that it would be of interest to the committee and perhaps to have it in the files.

The CHAIRMAN. Yes, such information as is finally obtained, but what the doctor says here, I don't think they will ever be able to get all of this information. What concerns me about it is that apparently you have made a contract with this Philadelphia group to obtain for you the information, but you are going to analyze it yourself. They are not analyzing it.

Dr. HORN. Sir, they have analyzed it to the extent that they have prepared the statistical tables in very detailed breakdowns. The analysis of these data in terms of the basic purpose of this study, which is to study the behavioral aspects of smoking, is our responsibility.

The CHAIRMAN. You have said that, I think, about 6 or 10 times. It doesn't mean any more to me now than when you mentioned the behavioral study the first time.

Dr. HORN. Would you like me to amplify that, sir?

The CHAIRMAN. If you keep on with that, I still must say, Doctor, that I am not at all convinced why it was necessary to spend $120,000 by the Public Health Service and the Government to go out and force some rating company to go take a sample throughout the Nation as to what the public opinion would be on something that you have already made a decision on and announced it to us and to the whole world. I simply don't understand and why all of this public opinion taking has been thrown into this.

I have listened to it here for sometime, and still I must say that I am confused as to why the Secretary even, or the Bureau of the Budget would permit the budgeting of substantial funds for what has been referred to one time, twice, a dozen times as to obtaining the behavioral action of the people on something which you have already made a decision on. To me it just don't make sense.

Dr. TERRY. Mr. Chairman, I would certainly have to disagree with you on it, because I think there was adequate justification and reason for a study of the public's attitudes, knowledge, and habits, with regard to smoking and health.

The CHAIRMAN. All right, what is the reason for it?

Dr. TERRY. The reason for it is that we have a responsibility in terms of the distribution of information on this subject, therefore, we need to learn how to present this information to people in such a way that it will be meaningful and most apppreciated in the sense of being most accepted.

The CHAIRMAN. All right. Going out and getting a poll of the public opinion, how does that permit you to carry out your responsibility?

Dr. TERRY. I think it gives us a great deal of information as to how we can present material to the public and how they will accept it and understand it. There is no point in giving information to the public if you don't present it in some form that they will understand it.

Now, we can learn a lot from this study as to when the public accepts something and when it doesn't, and what it understands and what it doesn't.

The CHAIRMAN. How does it help you, Doctor, to go out and say that you have gotten public opinion on a question such as the Federal Government should continue its practice of tobacco price support for the farmers? Agreed, 42.1, disagreed, 33 percent, no opinion, 24.9 percent. Now, how does that help you in trying to advise and notify the people of the country that cigarette smoking is a hazard?

Dr. TERRY. I wouldn't say that that specific question necessarily meant anything in terms of gaining insights into how to advise people of the health hazards of smoking, but a very large percentage of them did in the overall. However, this question can give us insights into what they know about the whole problem, as well as how strongly they feel about it.

The CHAIRMAN. The smoking of cigarettes should be allowed in fewer places than it is now, agreed 52 percent, disagreed, 37.7 percent, and so on and so forth.

Now, I don't to question your motives or suggest any impropriety, Doctor, but what I would like to know is how does this fit into the picture? You say you have a responsibility. I agree. And we expect you to assume that responsibility.

But here you have gone out and obtained a public opinion poll on the subject that you say will help you. How does it help you? That is what I want to know.

Dr. TERRY. I think, as I have tried to explain to you, Mr. Harris, I think it very definitely helps us in terms of evaluating what information the public has as well as how strongly they feel about the whole problem of smoking and health. We can then make some determinations as to how we can best present information to the public so they will accept as well as understand the seriousness of smoking as a health hazard.

The CHAIRMAN. You are evaluating here what a public opinion poll shows, not what you have learned from a scientific study.

Dr. TERRY. Well, we are trying to evaluate what the public gets out of the information that comes from educational efforts in this health area, how it is most effectively transmitted to them, and what is best or least understood by them.

The CHAIRMAN. Well, maybe so. Maybe I will find out later on.

Mr. ROGERS of Texas. Will the gentleman yield to me for one question?

Mr. KORNEGAY. Yes.

The CHAIRMAN. I am sorry we got off into the public opinion polls.

Mr. KORNEGAY. I think it is very important that we do, Mr. Chairman.

The CHAIRMAN. We don't want to get into ratings again. We spent 2 years doing that. I hope we can cut it off sooner or later.

Mr. ROGERS of Texas. Doctor, I just have one question on this that has caused me some concern in going through this book that you gave us here this morning.

On page 376 you have a finding No. 3, and I presume this comes from one of these scientific investigations that is in the summary.

It says:

Although smokers are different from nonsmokers psychologically and socially, there are many differences among smokers and among nonsmokers, so that some smokers may be like some nonsmokers.

I am just wondering what value that has, that finding.

Dr. TERRY. I don't know that that particular finding of the Advisory Committee is of any value to me. I can't specifically state at the moment what that is.

Mr. KORNEGAY. Doctor, it is things like that that appear in a book of this kind that makes some question in the minds of the average fellow who is paying the bill for this sort of thing, that makes him suspicious of who is doing what in this whole picture.

Dr. TERRY. May I ask Dr. Hundley to respond to this?

Mr. KORNEGAY. Yes, sir.

Dr. TERRY. Since he worked closely with the committee that made this recommendation.

Mr. KORNEGAY. It infringes upon the gentleman's time.

The CHAIRMAN. I think we are going to have to quit for lunch. We have gone way beyond.

Does the gentleman want to come back at 2 o'clock?

Mr. KORNEGAY. Yes, sir; Mr. Chairman.

The CHAIRMAN. After your comments we had better take a recess here.

Dr. HUNDLEY. Actually, that is a very important point. An argument is made that because I am uniquely psychosocially different from you I smoke and you don't. Also, because I am uniquely psychosocially different I must also be uniquely constitutionally different and therefore I get cancer and you don't get cancer. It is a type of constitutional difference hypothesis which attempts to explain how psychosocial differences may be related to differences in susceptibility. What this statement says is, if you take smokers as a group and nonsmokers as a group, you can find lots of psychosocial differences between the groups, but you will find a lot of psychosocial differences within a group as well. Therefore, the argument that unique constitutional differences produce both cancer and unique psychosocial differences that make you smoke doesn't hold.

Mr. KORNEGAY. It seems to me what you end up with is saying you found out nothing.

Dr. HUNDLEY. Not at all, sir. Not at all.

Mr. ROGERS of Texas. Why, because you found out there wasn't any difference?

Dr. HUNDLEY. It helps to rule out, sir, one theory of why smokers get cancer, and that theory is that it isn't because you smoke, it is because you are constitutionally different from a nonsmoker.

Mr. ROGERS of Texas. I thought we were trying to find out why smokers got cancer.

I give up.

Mr. KORNEGAY. A lot of people get cancer. Not just smokers get cancer.

Mr. ROGERS of Texas. Yes; I understand.

That is all. Thank you, Mr. Chairman.

The CHAIRMAN. We will recess until 2 o'clock.

(Whereupon, at 12:45 p.m., the committee recessed, to reconvene at 2 p.m., the same day.)

AFTERNOON SESSION

The CHAIRMAN. The committee will come to order.

Dr. Carter, I recognize you at the moment until Mr. Kornegay returns.

Mr. CARTER. Thank you, sir.

Dr. Terry, you refer in your statement to the prolonged controversy over smoking and health. I introduced into the record the other day the names of more than 40 physicians, scientists, and other experts who questioned the conclusions of your Advisory Committee on Smoking and Health. I think you would agree that there is still controversy among doctors and scientists over this subject, is there not?

STATEMENT OF DR. LUTHER L. TERRY; ACCOMPANIED BY DR. DANIEL HORN, DR. JAMES HUNDLEY, AND THEODORE ELLENBOGEN—Resumed

Dr. TERRY. There is some difference of opinion, Dr. Carter, but I think when you realize the large number of physicians and the fact that you can list only 40 of those, it certainly does not represent any consensus.

Mr. CARTER. This was not just as you have termed it. These people were eminent men from various parts of this country and from Germany, Great Britain, and were chosen not rountinely but because of their eminence in their profession.

Dr. Terry, you said in your statement that it is a reasonable assumption that a reduction in tar and nicotine content in cigarette smoke will significantly decrease the health hazards. That surprised me, Dr. Terry, because I believe you told the Senate Commerce Committee there is no proof that this is so, and I refer you to the transcript page 53.

Dr. TERRY. I do not think there is proof of it, Dr. Carter.

Mr. CARTER. Yes, sir.

Dr. TERRY. On the other hand, I think there is certainly suggestive information with regard to the effects of smoking lower nicotine, lower tar content cigarettes which would suggest that this may be of quite some significance.

Mr. CARTER. Do you have figures to show that smoking cigarettes with a smaller content of tar and nicotine is less effective in causing lung cancer?

Dr. TERRY. No, sir; I do not have this. However, in relation to certain symptoms like shortness of breath, cough, and other things, certain studies have indicated that there is a lesser incidence and a lesser intensity of these symptoms among persons smoking lower tar and nicotine content cigarettes. I would not propose to you that this is an established fact. I think it is a strong suggestion, and I suspect that it will obtain when the final scientific information is in, but at the same time I do not think it is a proven fact.

Mr. CARTER. Are these studies available?

Dr. TERRY. Yes, sir. I think we could make them available.

Mr. CARTER. Yes, sir. I believe the report of your Advisory Committee says on page 75 that:

> Nicotine in amounts absorbed through smoking and other methods of tobacco use probably does not represent a significant health problem,

is that not correct?

Dr. TERRY. In relation to nicotine?

Mr. CARTER. Yes, sir.

Dr. TERRY. Yes, sir, that is what the report says.

Mr. CARTER. The report also says on page 74:

> There is no acceptable evidence that prolonged exposure to nicotine creates either dangerous functional change of an objective nature or degenerative disease,

is that correct?

Dr. TERRY. That is correct, sir.

Mr. CARTER. With regard to tar, you testified before the Tobacco Subcommittee of the House Committee on Agriculture, January 29, 1964:

> We need to know more about the substances in tobacco smoke which produce health hazards. Until we know more in this area, we will be handicapped in our efforts to remove the hazard. It is difficult to design a method of removing something if you do not know what it is.

In other words, you do not know what the substances are in tobacco smoke that produce the health hazards that you say smoking causes; is that not correct?

Dr. TERRY. I think we have some very strong evidence with regard to certain carcinogenic substances which are in the tobacco smoke.

Mr. CARTER. Your answer, however, would still be "No." You do not know what the substances are in tobacco smoke that produce the health hazards you say smoking causes.

Dr. TERRY. I do not think that we have absolute proof of what it is, Dr. Carter.

Mr. CARTER. Yes, sir. Do you have any actual proof?

Dr. TERRY. Yes, sir. I think the fact that certain of these substances which are derived from the tobacco smoke, which have been shown in experimental animals to be carcinogenic, strongly suggest that they are the principal ones if not the ones.

Mr. CARTER. Then I take it that you have by tobacco smoke produced lung cancer in experimental animals.

Dr. TERRY. I think we went into this before lunch, sir.

Mr. CARTER. Well, do you state that you have agents which have caused cancer, and I am just asking——

Dr. TERRY. I did not say lung cancer. I was referring—I said cancer from carcinogenic substances.

Mr. CARTER. Our subject here is lung cancer, I believe.

Dr. TERRY. We are talking about smoking and health broadly, Dr. Carter.

Mr. CARTER. Smoking and health and not about any type of cancer except lung cancer, right?

Dr. TERRY. No, sir; I certainly would not agree to that.

Mr. CARTER. Why not?

Dr. TERRY. I refer to other types of cancer which have a very definite association with smoking. Laryngeal cancer is one example, cancer of the mouth, even cancer of the urinary bladder.

Mr. CARTER. Yes, sir; that is quite true, but it is passing strange, is it not, that although the larynx and trachea are subjected to heavy concentrations of smoke, cancers are less commonly found there than further down in the lung where the concentrations of tobacco smoke is much less; is that not true?

Dr. TERRY. I do not know exactly how to answer your question, Dr. Carter. I think this. There have been suggestions that there is some relationship of lung cancer to inhalation, though it is a very difficult thing to prove; and certainly insofar as this is concerned, there are many facts that we need to know more about.

Mr. CARTER. Yes, sir. In the trachea we do have heavy concentrations of smoke from inhalation, but cancers in the trachea are relatively rare; is that not true?

Dr. TERRY. They are not one of the most common types of cancer; but, Dr. Carter, you know as well as I, that certain tissues are more resistant to or less susceptible to the formation of tumors, including malignant lesions such as cancer, than others, so that I do not think this proves anything.

Mr. CARTER. If the smoke of cigarettes causes cancer, it seems that the parts of the body which are exposed to stronger concentrations of the smoke would be more readily affected. That would be my conclusion.

Dr. TERRY. I would not agree to that necessarily, sir.

Mr. CARTER. Do you really know what the substances in tobacco smoke are that produce the health hazards you say smoking causes?

Dr. TERRY. I do not know all of the substances in tobacco. I think we know many of them in relation to certain chemical substances that are found in tobacco.

Mr. CARTER. That do cause lung cancer?

Dr. TERRY. Probably in relation to lung cancer.

Mr. CARTER. Probably. You cannot say definitely.

Dr. TERRY. I said that earlier, sir, that we did not know definitely.

Mr. CARTER. All right, thank you.

In effect, there is no acceptable evidence to support the listing on cigarette packages of the components of cigarette smoke as you suggest, is there?

Dr. TERRY. This does not follow at all. Just because one cannot name the exact component which may play the principal part or a large part in causing lung cancer does not mean there is no hazard associated with cigarette smoking. To say that there is no hazard would be a completely unjustified deduction.

As a matter of fact, all of the evidence points in the other direction, that there is a very definite relationship between cigarette smoking and lung cancer, and not only that, in relation to the duration smoked and the number of cigarettes smoked.

Mr. CARTER. I believe you have confused the question. I will repeat my question.

In effect, there is no acceptable evidence to support the listing on cigarette packages of the components of cigarette smoke as you suggest, is there? In other words, we cannot put on a cigarette package that tar or nicotine are the causative agents.

Dr. TERRY. I think there is sufficient suggestive evidence that there is a corresponding relationship between production of disease in association with cigarettes to justify listing tar and nicotine content; yes, sir.

Mr. CARTER. Thank you, sir, for admitting that it was suggestive evidence.

Dr. TERRY. I admitted that much earlier. I told you that this was merely suggestive evidence.

Mr. CARTER. Thank you, sir. That is my point exactly.

The CHAIRMAN. Is there reference in this report as to the agents in tobacco, Doctor?

Dr. TERRY. The chemical composition?

The CHAIRMAN. Yes.

Dr. TERRY. Yes, sir.

The CHAIRMAN. Where is it? I have looked for it. If you do not know right off, why do not bother. Go ahead, Doctor.

Mr. CARTER. Would you agree that lung cancer occurs in people who have never smoked?

Dr. TERRY. Yes, sir, I would agree.

Mr. CARTER. A good bit of testimony to that effect based on the personal experience of pathologists and surgeons was given to the Senate Commerce Committee, was it not?

Dr. TERRY. I believe this fact was presented to the committee, yes, sir.

Mr. CARTER. What causes lung cancer in nonsmokers?

Dr. TERRY. I do not know, sir. I have not contended at any time, Dr. Carter, that cigarette smoking is the only cause of lung cancer.

Mr. CARTER. Occupation and pollution do not account for all of it, do they?

Dr. TERRY. I told you I did not know, sir.

Mr. CARTER. But pollution, air pollution has produced—you have produced lung cancer in experimental animals by that method, have you not, with hydrocarbons?

Dr. TERRY. Some types of cancer have been produced. Whether lung cancer has been produced or not, I am not certain.

Mr. CARTER. That is true, there has been, but with no other substance. How do you know that that unknown factor is not also causing lung cancer in smokers?

Dr. TERRY. I do not know, but it may contribute to the production of lung cancer in smokers. But certainly the very clear evidence in relation to the incidence and the positive relationship between the quantity smoked convinces me that there is a very definite causative relationship. As my committee has said, that in its opinion it is the principal cause of lung cancer in the United States.

Mr. CARTER. Without any basic mechanism having been identified.

Dr. TERRY. I do not think this is quite true, Dr. Carter. I think that the studies that have been done on the mucous membranes of the tracheal-bronchial tree among smokers and nonsmokers, and the studies of the effect of cigarette smoke on the ciliary action of the bronchi, are all, to my mind, very strongly supportive of the statistical evidence of the incidence of lung cancer among cigarette smokers.

Mr. CARTER. Again this is statistical and not actual. Lung cancer has never been produced in this manner, has it? I understand that when you were before the Senate committee, you were asked whether

you could support the statement made by Dr. Eugene Guthrie, the Staff Director of your Advisory Committee which you made on October 13, 1964, that "No reasonable person disputes that cigarette smoking is the principal cause of lung cancer," and that you stated, "It is difficult to say this absolutely and positively."

Dr. TERRY. Yes, sir; that is correct.

Mr. CARTER. You said, "It is difficult to say this absolutely and positively."

Dr. TERRY. Absolutely and positively. On the other hand, I think that I should point out to you that there are many responsible people and organizations who have repeatedly made that statement. I think it places me somewhat in a difficult position to say that some scientist, because he differs with me in his opinion, is unreasonable.

On the other hand, very frankly, with the evidence before the medical and scientific profession today, it is hard for me to understand how anyone could disagree with the causative relationship established between lung cancer and smoking cigarettes.

Mr. CARTER. You know, in a sense you are asking me a question. As it happens, I am not on the stand today. You are.

Dr. TERRY. I did not intend to ask you a question, Dr. Carter. I was making a statement.

Mr. CARTER. The fact remains that no definitive mechanism of the causation of lung cancer has been found, and until that is found, I think we should be very careful about the things we do which might affect thousands and thousands of people who make their living in this industry.

Thank you, sir. That is all.

The CHAIRMAN. Mr. Kornegay, you may resume.

Mr. KORNEGAY. Thank you, Mr. Chairman.

I would like to direct this question to Dr. Horn.

Dr. Horn, as a part of your educational program on smoking and health, do your plans include a program of education in the high schools of the country? Is that right?

Dr. HORN. Yes, sir; we would do what we could to help local communities that seek our help in developing such a program.

Mr. KORNEGAY. Now, you made a speech to the National Association of School Administrators, isn't that correct, back in February 1965?

Dr. HORN. Yes, sir.

Mr. KORNEGAY. I ask you, sir, if in that speech you didn't state that: "In addition to direct teaching about the harmful effects from smoking" you suggested that the teachers use their ingenuity to get the message across in other contexts. "When the mathematics teacher discusses graphs, could he use lung cancer," you ask. "Could the English teacher discuss cigarette advertising copy? Might the civics or history teacher discuss the role of Congress and the Federal Trade Commission in developing consumer safeguards and the effect of industry," wasn't that a part of your speech?

Dr. HORN. Yes, sir.

Mr. KORNEGAY. You went on to say in that speech: "We are trying to persuade people to not do something forever," is that right?

Dr. HORN. Yes, sir.

Mr. KORNEGAY. In other words, you are doing more than just the direct approach in your education program. You are encouraging and resorting to subtleties and that type of propaganda, aren't you?

Dr. HORN. Sir, this is a well recognized method of teaching. It is called indirect teaching.

Mr. KORNEGAY. I am not asking you that. I am asking you what your plan is. How do you plan to teach the youth of this country about cigarettes?

Dr. HORN. Sir, I don't plan to teach the youth of the country about cigarettes, but we do provide the research foundation on which those people who do teach learn what are the more effective methods of giving information on smoking to youth.

Mr. KORNEGAY. Let me stress here, I am not opposed in any way to teaching the truth, teaching the whole subject, but I do think that it is terribly dangerous and particularly dangerous for the Government and Government officials to launch a program of education that fails to reveal the whole truth about a situation, and I am fearful that that is what we might have in this particular case.

Dr. HORN. Sir, I am on record in my research in this area as not only supporting but demonstrating through my own research that a two-sided approach, that is information which presents both sides of the issue, is in fact the more effective method of teaching.

Mr. KORNEGAY. Let me ask you this, Doctor. How are you going to fairly and accurately present this question, the question of smoking, in the schools of America when the best experts in this country can't agree on it?

Dr. HORN. I think you will find that the best experts in this country do agree on it. That doesn't mean that it is unanimous.

Mr. KORNEGAY. Do I understand by that there are a number of outstanding doctors and scientists who take issue with you on smoking and health, that they are not qualified?

Dr. HORN. I didn't say that, sir, but do you expect that we must have 100 percent agreement with every issue before any action is ever taken?

Mr. KORNEGAY. I am not saying we ought to have 100 percent agreement. I don't think that is the point.

Dr. HORN. In the poll of Modern Medicine there were only 2.8 percent of physicians that disagreed with the findings of the Surgeon General's report, and over 90 percent that agreed with it, 95 percent, I believe. In other words, for every physician who disagreed with the report, there were 34 who agreed with it.

Mr. KORNEGAY. Well, a lot of them who apparently agreed with it in the first instance, that is when it was first published, have backed off from it now, haven't they?

Dr. HORN. I don't know of any such case, sir.

Mr. KORNEGAY. Well, in fact one member, hasn't it been brought out, I am not going to repeat it, one member of the Commission himself——

Mr. CARTER. Will the gentleman yield for a question?

Mr. KORNEGAY. Yes, sir.

Mr. CARTER. Along that line, you would recognize Dr. Berkson of the Mayo Clinic as an authority along this line, would you not?

Dr. HORN. An authority and a good friend of mine.

Mr. CARTER. Yes, sir. I believe that among his statements he said:

Some of the leading medical statisticians do not believe that a cause and effect relationship has been demonstrated. Among them is Joseph Berkson of the Mayo Clinic, perhaps the most eminent man in the field.

You see this is not just a few medical men, but some of the most eminent men in the profession in the United States.

Dr. TERRY. Dr. Carter, if I may step in there, there has not been a single medical or related professional organization which has taken a position on this subject which has not been in support of the fact that cagarette smoking is a serious health hazard, and I can give you a list of dozens of these, and this includes 37 of our State medical societies.

Now, to portray that because a few people disagree, and we are going to always have this in the field of medicine and science, but to portray it in such a way as to infer that there is an equally divided opinion I think is not fair, Dr. Carter, because it is not equally divided at all.

Mr. CARTER. I have never maintained that. I say there are those who disagree and they are eminent men who disagree, and I have just named one whom you admit is one of the most eminent men in this field in the United States.

Dr. TERRY. I agree that there are some eminent men who disagree, and that we will always have on any medical subject some disagreement.

But when you get to where 95 percent of your physicians who are polled say that they believe smoking is a health hazard, I think this is more clearly a reflection of the way the medical profession takes it and evaluates it.

Mr. CARTER. I hardly think that that many would say that it causes lung cancer, that it has definitely been proved that it causes this. That is my point.

Dr. TERRY. Dr. Carter, we are talking about smoking and health.

Mr. CARTER. Smoking and health, and I believe lung cancer is a part of that.

Dr. TERRY. It certainly is, a very important one.

Mr. CARTER. It is to me.

Dr. TERRY. But it is by no means all of it.

Mr. CARTER. But still it has never been proven there.

Dr. TERRY. Frankly, to my mind the relation of cause and effect——

The CHAIRMAN. Would the gentleman indulge me at this point in view of this colloquy between the two esteemed and highly recognized professional gentlemen? Let me pose this question to both of you. See if we can't start back on what is proposed here as to what might be done about it.

As I gather it, you say, Doctor, that you do not have positive conclusive proof that what is in this report is a fact, but there is a causal relationship between the tobacco user and lung cancer.

Dr. TERRY. I did not say that with regard to what is in the report, because there are all sides of the question, many aspects of health are presented in this report, Mr. Harris.

The CHAIRMAN. What I had in mind was I just understood that your whole position was based on this report, and you stood by it. Am I wrong about that?

Dr. TERRY. My position is basically in support of this report.

The CHAIRMAN. And this report is that it is a health hazard if you smoke cigarettes excessively.

Dr. TERRY. That cigarette smoking is a health hazard; yes.

The CHAIRMAN. Now, you say that there is no scientific or other evidence that definitely and positively shows that to be a fact, but you believe it to be true and there is a causal relationship.

Dr. TERRY. The thing that I say is this. I think the scientific evidence at hand indicates that cigarette smoking is a principal cause of lung cancer.

The CHAIRMAN. Right.

Dr. TERRY. And other diseases, though I cannot name the specific substance in cigarette smoke which is responsible for this fact.

The CHAIRMAN. All right. Now, right at that point, in view of that situation, it is true, then, according to your belief, and based on the information that you have, that the smoking of cigarettes is a health hazard and may very well cause cancer.

Dr. TERRY. Yes, sir.

The CHAIRMAN. Now, Dr. Carter, eminent physician that you are, what would be wrong with requiring a label that would acknowledge this to be a fact, that there would be a label that would indicate in whatever terms may be appropriate that the smoking of cigarettes is a health hazard and may cause cancer? Would you agree that that would be one way to meet this problem?

Mr. CARTER. I think anyone might say that smoking may be a health hazard. I hate to be put in the position as a witness in such a case as this.

The CHAIRMAN. I am sorry, what I am trying to do is to try and get two great minds in a professional field here together to see if we might not get back down to the problem at hand as to how we can resolve this thing.

Dr. Terry says that he cannot positively show the agent or the substance that causes this problem, but he is convinced from the scientific evidence that it is there.

Now, if that is admitted on both ends here, why couldn't we agree to some approach to it where the people would be advised of what the facts are insofar as we know them?

Mr. CARTER. I think, sir, that something like that might be arrived at. However, since there has been no actual and positive causal relationship shown, I think the placing of cancer upon a package of cigarettes would do great harm to an industry. When they are able to produce cancer in experimental animals by the inhalation of tobacco smoke as they have by the inhalation of hydrocarbons——

The CHAIRMAN. Then let me make this point. You would admit that cigarette smoking is a health hazard. I am going to ask Mr. Kornegay this same question in a minute. I don't want to put you gentlemen in an embarrassing position, but the record has got to be made. We have finally got to get down to considering this thing, or leave it go to a 5- or 6-year lawsuit.

It seems to me you would agree, then, that a warning should be given that cigarette smoking is a health hazard.

Mr. CARTER. I should say "May be," sir.

The CHAIRMAN. But you would not agree to go the rest of the way to indicate what the results might be.

Mr. CARTER. Until that is proven, I would not.

The CHAIRMAN. Mr. Kornegay, may I ask you the same question? You come from an area that has given a lot of consideration to this problem, and you have people, constituents of your own State who

have given this a lot of study from the standpoint of the production as well as other phases of it, and I have heard of the great research laboratories proposed, and so forth.

What would be your reaction to that kind of an approach? Would you go that far or not?

Mr. KORNEGAY. Mr. Chairman, I could not agree to that, for these reasons. As the doctor has pointed out, as has been pointed out during the course of these hearings, there is a great deal of controversy. I don't know the percentages. I don't know how many people or doctors, qualified scientists say that it does cause cancer or how many that it does not cause cancer.

The CHAIRMAN. I am not talking about that now. I am talking about would you agree that there is a health hazard?

Mr. KORNEGAY. No, sir; no more than there is a health hazard in the intolerant use of most anything else.

Now, here is a point I haven't raised during the hearings. It was raised last time. Do you say to smoke one cigarette is a health hazard, one pack, or how many?

You get into a question of the quantity. You get into a question of the individual.

Now, if we are going to start labeling all of the commodities in America, any kind of evidence you can collect, if it is overused it is a health hazard, certainly I couldn't ask that tobacco or cigarettes be exempt. But I think once we start this business of labeling things because somebody or some large and substantial group says it is dangerous, then we are setting a pretty dangerous precedent.

There is one other reason, too, Mr. Chairman. I am as interested as anybody in the health of this Nation. I am as interested as anybody in trying to find whether or not there is something in cigarette smoking that is detrimental to health, and I am fearful that if we put the stamp of health on the cigarette and everybody says that is what causes lung cancer, what happens to the research program? And suppose it is not really what causes lung cancer and we are letting the criminal get away while we are locking-up somebody that at best is only slightly guilty?

The CHAIRMAN. I would merely like to suggest to the gentleman, knowing of his intense interest that he has had in this field for a long time, and the able way he represents his State and his district and his constituency, I would just like to suggest to you and to your great industry you had better start a lot of thinking on this and come up with something that everybody can live with or else I suspect it is going to be a lot more severe than you might expect.

Mr. KORNEGAY. If the Chairman will let me just say this, I think he knows me well enough to know that I am not an unreasonable man, and I certainly want to do what is not only in the best interests of the country but in the best interests of my constituents, my district, and my State. I am willing to listen and discuss this thing.

The CHAIRMAN. I hope the gentleman will pardon me. I just thought it was a good chance to see if we couldn't narrow this controversy here, but I can't see that I have gotten too far with it.

Mr. KORNEGAY. I think the Chairman has certainly helped a great deal by that statement.

Let me just ask Dr. Terry a couple of other questions, and I am going to be through, Mr. Chairman.

Dr. Terry, isn't it recognized in medical circles that there is some beneficial effect from smoking in the area of mental health?

Dr. TERRY. I really don't know how to answer that. I think you get an extreme variation of answers if you ask many members of the profession. Certainly persons who have become habituated to smoking find some difficulties in stopping, but I don't think that I could frankly say that it has mental health benefits in the broad sense.

Mr. KORNEGAY. Let me direct your attention to the summary on page 356 of the report, and I am sure you are familiar with it, Doctor, which says:

> Medical perspective requires recognition of significant beneficial effects of smoking primarily in the area of mental health.
>
> These benefits originate in a psychogenic search for contentment and are measurable only in terms of individual behavior. Since no means of quantitating these benefits is apparent the Committee finds no basis for a judgment which would weigh benefits versus hazards of smoking as it may apply to the general population.

In other words, there aren't you saying, not you but your Committee, the Committee that has made its report to you saying that in certain instances smoking is beneficial, and that the committee found or knew of no way where they could quantitatively balance off the benefits against the detriments of smoking?

Dr. TERRY. I suppose this is what they are trying to say. I think it is very difficult to be any more specific than they have been here, and this was the opinion of the committee.

Mr. KORNEGAY. In other words, the report does recognize that in certain instances cigarettes are beneficial, the smoking of cigarettes is beneficial? Wouldn't that be a fair analysis of that statement and conclusion and summary?

Dr. TERRY. I don't know really.

May Dr. Hundley comment on this?

Mr. KORNEGAY. All right, sir.

Dr. HUNDLEY. I think mainly, sir, the Committee's feeling was that this is a habit that is practiced so widely by people that there must be some benefit in it some place even though they can't measure it or define it.

Mr. KORNEGAY. I am sorry, I didn't hear you.

Dr. HUNDLEY. That there must be some benefit or some pleasure or the people wouldn't keep on doing it, even though it can't be measured quantitatively.

Mr. KORNEGAY. Then the report itself does recommend or recognize that there are significant beneficial effects.

Thank you very much.

That is all, Mr. Chairman.

Mr. CARTER. Mr. Chairman?

The CHAIRMAN. Dr. Carter.

Mr. CARTER. A moment or so ago when you asked me about the labeling, I think that the package may be labeled in such a manner as, "may be dangerous," and as far as I am concerned I could agree to some such labeling as that. Anything more than that would be damaging to farmers who have raised tobacco for hundreds and hundreds of years, and I think would harm the economy of our country.

Mr. KORNEGAY. Will the gentleman yield?

Mr. CARTER. Yes, sir.

Mr. KORNEGAY. There is one other point I want to make that I failed to make a while ago, and that is that I do feel very strongly that any action in this area ought to be taken by the Congress. As the chairman knows, I seriously question the authority of the FTC and I feel it is a congressional matter, and, of course, if in the wisdom of this committee and the Congress, after hearing this testimony the feeling is that something needs to be done and should be done, I would be satisfied with the conclusions, knowing this committee and the fair and judicious way that matters are handled here, I would accept that, certainly.

Mr. CARTER. Mr. Chairman, I am in agreement with the gentleman from North Carolina.

The CHAIRMAN. I hope my colleagues will understand that I was merely trying to get these hearings back on the track to consider the specific problem that we have before us—not the language, but the principle that is involved in the bills that we have before us. I would not want either of my colleagues to think that I was attempting to pin you down on any given language or any given principle. It was a general thought that I was trying to get in the record for our consideration at the appropriate time. Certainly I want to make it very clear that I have no intention of embarrassing either of you or putting either of you on the spot. I do point these questions directly at you, because in doing so I think I am alerting the industry itself to the fact that with the intelligence that it has and with the capabilities it has, it had better start coming up with something for our consideration, that we might take up with the Public Health Service and with the Federal Trade Commission and with everybody else that is involved in this thing, so that we might do the right thing. That was the purpose of my stepping into the colloquy at the time, and I hope you will understand.

I would like to say to my colleagues that there may very well be a result, whatever we do, that will have some economic impact on the industry, but certainly no one wants unnecessarily to make that economic impact worse.

But we must all recognize that the health of the Nation is paramount over whatever economic considerations that must be given attention. I don't think we can take any other position, recognizing the importance of the economic consequences, too. That is the reason this is a highly sensitive, a highly difficult, and a highly controversial subject. I know it is a hot potato, but we are going to do the best we can with it.

Mr. Nelsen, our colleague, is recognized not only to ask any questions of these gentlemen that he desires, but before doing so we would suggest that he present to us the certainly fine-looking group of young people that he brought in with him and that we are so happy to have with us today.

Mr. NELSEN. Mr. Chairman, thank you. The class from Worthington, Minn., high school group from Worthington, Minn. And I would agree with you, Mr. Chairman, they are a very healthy and good-looking lot.

The CHAIRMAN. Nonsmokers, I presume.

Mr. NELSEN. I am sure, and I might put a little commercial in here. Washington, Miss., is known as the Turkey capital not of the State, not of the Nation, but of the world, and this group made this trip to Washington to visit our Nation's Capital and have been over on the House floor to try to get a little of the atmosphere of our legislative body, and we are very happy to welcome them here.

I might advise the group that this hearing may go on for some time, but feel free to get up and leave when you want to, because I know there are many things you wish to see, and don't feel you are disturbing us. We expect that you will want to visit other points here in the Nation's Capital.

Mr. Melm leads the group, and Mr. Nelson. We welcome anybody from the Second District.

For the information of the group, I am sure by now you will sense that the hearing is on whether or not the Federal Trade Commission or the Congress should place a label on cigarette packages, indicating that it may be a hazard to health, so now at the moment the discussion seems to be whether it should say it may be or shall be, but anyone——

The CHAIRMAN. May be or is.

Mr. NELSEN. May be or is; yes. Thank you, Mr. Chairman, for recognizing me. I have no further comment relative to the class, but I might say to the witness, Dr. Terry, the Surgeon General of the United States, is the witness at the moment, and I might point out, Mr. Terry, that I am sure you know that one of the bills that we have before us is my bill, and it is my suggestion that the packs be labeled to indicate that the cigarette may be injurious to health, or something to that effect.

I might also further add that I feel this is a congressional responsibility, and that we should select whatever be the definition or the language to go on the package, and that we also are a little bit jealous of how far we permit a regulatory agency to go, and we feel we should meet our responsibility in the legislative process. I am sure that you would accept that if that be the jdugment of the Congress.

I have no questions, Mr. Terry, but I want to welcome you again before our committee.

Thank you.

Dr. TERRY. Thank you, Mr. Nelsen.

The CHAIRMAN. Mr. Satterfield?

Mr. SATTERFIELD. Thank you, Mr. Chairman.

Before I begin, I would like to refer briefly to the colloquy that just occurred, because I am a new Member of Congress and a new member of this committee. I am a lawyer, I am not a doctor or a scientist, but there are some things about this whole situation that disturb me.

The CHAIRMAN. Would the gentleman permit me at this point——

Mr. SATTERFIELD. Yes, sir.

The CHAIRMAN. The gentleman is a relatively new Member of the Congress, and of course of this committee, but I would like to suggest that the gentleman is not entirely a stranger to legislative proceedings because the gentleman's dad served in the Congress and I had the

privilege of serving with him for a good many years, and, consequently, he knows something about what the problems are.

Mr. SATTERFIELD. Thank you, Mr. Chairman.

What I am disturbed about, nevertheless, is in reading the report on which these findings were based, and in listening to the testimony that has been adduced here, I am disturbed that the question of scientific basis on which absolute conclusions are presumed to have been arrived at, and the statements that have been made in response to questions, talking about a suggestion, talking about statistical probabilities, and I am even more disturbed that the full weight and credibility of the Federal Government has been placed entirely behind this conclusion, which puts me in the position of not fully being able to exercise my complete prerogative, I think that we have got to recognize that whatever the effect of this finding with the full weight of the Federal Government behind it is now a fait accompli and we must start from there. Recognizing this, I frankly believe very firmly that Congress has got to act in this case. Coincidentally with this, I am equally concerned about what appears to be an attitude in Government agencies about statutory and delegated authority.

It seems to me that in this Government of the people, we as representatives of the people, are limited in terms of the limitations placed on this Government at its inception.

I am concerned that the agencies of this Government and particularly the regulatory agencies, do not concern themselves so much with the limitation of statutory or delegated authority, but rather they seem to concentrate their inquiries and their intention upon how broad they may make these statutory or delegated acts of authority.

With this in mind, I would like to pursue a line of questioning.

I notice in your report, Dr. Terry, at page 9 you mentioned this morning—

> that it involves human reaction to a habit formerly accepted as harmless, and now scientifically determined as harmful.

I won't argue that point, but your next statement does concern me.

> This change from harmless to harmful has created a number of problems. Some people are unwilling to accept this information.

Now, I would like to ask you, Dr. Terry, what is wrong with that?

Dr. TERRY. I don't see anything wrong with it. It is your privilege as an individual just as it is mine to accept information or not accept it.

Mr. SATTERFIELD. Back on page 2, of your report, and this seems to be carried throughout the entire theme of your report, you mention, "The nature of the problem is such that sales have continued to increase," notwithstanding your report, and further down on the page you pose two questions: "What can be done? What will encourage smokers to stop and nonsmokers not to start?"

It would seem to me that you are concerning yourself here not merely with informing the people of your conclusions, but that it is the province of your agency and perhaps other agencies of the Federal Government to go further and do something about it in of terms of affecting the habits or the mores of our society. Is this your intent?

Dr. TERRY. I think it is quite clearly my responsibility when I see something as a health hazard to prevail upon people not to persist in carrying out that hazard.

Mr. SATTERFIELD. Do you mean by "prevail upon people" to go to the extent of, a study of behavior pattern, and possible courses of education or information in the public school systems, that it is the province of the Federal Government to make sure that people understand and obey these findings?

Dr. TERRY. I have not said anything about obeying. I think that when something is demonstrated as a health hazard, it should be clearly presented to the members of our country as a health hazard, and in a way as to hope that they will avoid this health hazard.

Mr. SATTERFIELD. I can understand and agree with that statement, but I cannot reconcile this with what appears to me to be the underlying train of thought that runs through your entire statement this morning, including the statement that you have on page 8, concerning the activities that you are presently conducting. It seems to me that these are directed along a far deeper inquiry or effort than merely to inform and educate people, but to actually study those things that bring about smoking.

It is my clear impression from what you have testified to, and particularly the answer that you made to the chairman this morning when he asked you why, in view of the findings, that you don't recommend against smoking, period. I got the impression from your answer then, when you said that you didn't think that the public would accept it but that you thought this could be done in the American way, and what you say here, that is it your intention and objective in time, through educational procedures or otherwise, to do away with public smoking by taking away from people the urge to smoke. Is this what your aim is?

Dr. TERRY. I think it is my responsibility to inform the people of the health hazard associated and also in connection with this health hazard to attempt to prevail upon them not to smoke.

Mr. SATTERFIELD. I keep going back to the question of the problem. When asked a question today what had been done in your Department, you mentioned that something had been done by way of experiment, and I believe the answer was to help people with their problem. This has been repeated two or three times, and I am interested, Doctor, in exactly what we mean by helping them with the problem. What problem are we talking about?

Dr. TERRY. We are taking about the problem of smoking.

Mr. SATTERFIELD. In other words, to help them with the problem of smoking in terms of helping them not smoke.

Dr. TERRY. If they would like to stop smoking, anything that we can do to assist them in stopping smoking.

Mr. SATTERFIELD. When you talk about groups to help them with this problem and educating groups in this area, you are going further than that, are you not, in actually encouraging them not to smoke?

Dr. TERRY. I would certainly encourage anyone not to smoke, sir.

Mr. SATTERFIELD. I do not know whether I heard you correctly, but I believe in answer to a question by Mr. Rogers you made a statement that your view with respect to smoking was based in part on the Advisory Committee's report. Is that what you said?

Dr. TERRY. That is right, sir.

Mr. SATTERFIELD. Would you mind telling me what else it is based on?

Dr. TERRY. It is based on many other reports that have come out in this country and abroad on the subject.

Mr. SATTERFIELD. Is your report here not based on those same reports?

Dr. TERRY. It is a composite actually. It is a summary of those reports which were available up until the Committee completed studies at the end of 1963.

Mr. SATTERFIELD. In the funds that you are asking from the Federal Government, I take it that part of these funds will go into research.

Dr. TERRY. Of the $1,950,000?

Mr. SATTERFIELD. Yes.

Dr. TERRY. To some extent, yes, sir; but largely not.

Mr. SATTERFIELD. Would this be the research in connection with the effects of smoking cigarettes or tobacco on the health, or would it be in the general area of harmful aspects of cigarette smoking?

Dr. TERRY. Yes; but it would also be in relation to other aspects of smoking in terms of why people smoke, what they can do to stop smoking if they wish to stop, and so forth and so on.

Mr. SATTERFIELD. Does your Department or your agency in any way handle or administer any of the grants of Federal funds that are being used for research on the problems or hazards of smoking per se?

Dr. TERRY. Yes; as a matter of fact, most of the funds that are available for research in relation to smoking are available through grants from the Public Health Service. Last year the Congress made funds available to the Department of Agriculture in this direction also. Those, I believe, represent about the only funds that are available from the Federal Government to support research in this field.

Mr. SATTERFIELD. There are no specific grants to individual doctors or to colleges or institutions to conduct specific research projects?

Dr. TERRY. Oh, yes; there are, sir. Actually our research program in relation to smoking and health, as with many other conditions related to health, is done in two ways. Some of the research is done by our own scientists working in our own laboratories. The other research is done largely by grants to scientists on the outside who wish to pursue a subject.

They submit an application, usually, to the National Institutes of Health asking for financial support in order to pursue this subject. After a careful review by advisory bodies, the decision is made in terms of whether or not this project is to be supported. Many of these are individuals working in universities, in colleges, and in other research institutions throughout the country.

Mr. SATTERFIELD. I take it in administering these grants, it would be the intent of your office to give equal grants to those that might attempt to disprove the findings of your Committee as well as those that might substantiate it.

Dr. TERRY. It would be the intent of our organization, the entire Public Health Service, to give first consideration to any research proposals which would add to our information pro, con, or however.

Mr. SATTERFIELD. Now, one last question to get back to the question of labeling. I notice on page 7 you made a statement that it is clear in view of what you have already said that it would oversimplfy the matter in your opinion to attempt to spell out the requirements in

the statute itself and dispense altogether with the regulatory administration.

Are you talking about the labeling there?

Dr. TERRY. I am not sure exactly where we are here.

Mr. SATTERFIELD. It is the third paragraph on page 7.

Dr. TERRY. Yes, sir.

Mr. SATTERFIELD. I fail to follow the logic of this, sir. You come up with certain conclusions with respect to cigarette smoking, and it would seem to me that with these conclusions, the matter becomes, if we accept it, rather simple. I do not know what you mean by oversimplifying the matter if we attempted to spell out what the label should be.

Dr. TERRY. Well, the point we made I think was in terms of the details of this. We felt that it should be left to administrative handling, and that this gave more flexibility. For example, if additional information becomes available, one might decrease the nature of the warning or even possibly, if a safe cigarette is demonstrated, to omit the health warning.

Mr. SATTERFIELD. But as far as what is required in your view today, it is not so complicated that we as a committee could not recommend specific wording, is it?

Dr. TERRY. I think it is, of course, your decision as to whether you want to give this to an administrative agency to carry out or whether you wish to spell it out yourself.

Mr. SATTERFIELD. I have no other questions, Mr. Chairman.

The CHAIRMAN. Mr. Mackay?

Mr. MACKAY. Thank you, Mr. Chairman.

Dr. TERRY. I would like to first say that I am very much aware of your alertness to public health, and I want to support your efforts in every way I can. I come from an urban district in which there are no tobacco farms, no tobacco manufacturers, but several hundred thousand consumers. Like Mr. Satterfield, I am new to the committee, and I am very much of a layman, and there are some questions I can ask that have not been asked yet.

The relationship between the abuse of tobacco and liquor is certainly nothing new, is it?

Dr. TERRY. I am not sure just exactly what you mean by that.

Mr. MACKAY. I mean that the church and the school have discouraged the use of tobacco and liquor by young people for a long time.

Dr. TERRY. Yes, sir; the churches certainly have looked unfavorably in general upon those.

Mr. MACKAY. The public schools have discouraged the use of tobacco.

Dr. TERRY. This is true.

Mr. MACKAY. As a matter of fact my wife told be it was a shipping offense to smoke cigarettes in her good Presbyterian college. That was 25 years ago.

Now, I want to know when this concern that prompted this action emerged? Was it the increasing incidence of lung cancer, or was it the belief that lung cancer was associated with the use of tobacco?

Dr. TERRY. Mr. Mackay, I think that the tendency in this direction—and by the way, insofar as I am concerned, we are not talking about a moral issue. I think the tendency in this direction began back in the early 1920's when there began to be a very noticeable increase in the amount of lung cancer in this country.

Subsequent to this, as time went along there were certain further studies which tended to show a correlation between cigarette smoking and lung cancer.

Then as time further developed, and in the early fifties, there were several very significant studies, one particularly, or two, which I have particularly mentioned in my report that pointed out the strong association in a large group of individuals studied of the incidence of lung cancer to cigarette smoking.

Since that time, there has been a gradual addition of information year by year, which further validates what was back in the twenties and thirties a beginning suspicion, what looked to be quite certain in the early fifties, and which to my mind is an established scientific fact today: that there is a causal relationship between cigarette smoking and lung cancer. This is furthermore borne out by the fact that the incidence of lung cancer bears a very definite relationship to the amount of cigarette smoking.

Mr. MACKAY. Has there not been a corresponding discovery of the impact of tobacco on the heart?

Dr. TERRY. The evidence is not as strong. For instance, there is among the large groups of individuals studied, a higher incidence of coronary diseases among persons who smoke than among nonsmokers; but I think we know much less about this than we know about the question of certain types of cancer, and particularly lung cancer and cigarette smoking.

Mr. MACKAY. Is it the use or abuse of tobacco that this recommendation is aimed at?

Dr. TERRY. Let me put it to you this way. When one looks at the incidence of lung cancer in relation to cigarette smoking, one can point out a very definite correlation, as has been pointed out in such studies. For instance, one of the large studies showed in comparison with nonsmokers, average male smokers of cigarettes have approximately a ninefold to tenfold risk of developing lung cancer, and heavy smokers at least a twentyfold risk.

Now, I do not know on the basis of the information that we have today how we can say that a certain amount of smoking is judicious and above that particular level it is abuse. I think insofar as the risk is concerned, there is a parallelism. On the other hand, I think the person who would like to have the best chance of avoiding the health hazards associated with smoking would quit completely. If he cannot do that, I think he would cut down on his smoking considerably.

So that I do not know how to move from that area that one might call accepted usage in relation to smoking and abuse, because literally if one wanted to face up to the facts, you would have to say that zero is the cutoff point between those two.

Mr. MACKAY. That is why I was interested in your response to the chairman's question at the outset which I thought was very appropriate, and that is if there is a strong correlation, why do you settle for just a little notice on the package instead of prohibiting the sale of this?

Dr. TERRY. Of course we have recommended warnings associated with advertising as well, so that we do go beyond this in terms of our recommendation.

Mr. MACKAY. You would hope that the result of these educational efforts being undertaken in the schools would be abstinence from tobacco, would you not?

Dr. TERRY. Yes.

Mr. MACKAY. Then there really is not any middle ground.

Dr. TERRY. This is about it as of today; yes, sir.

Mr. MACKAY. Now, that leads to another question. We got a very unsatisfactory response from Mr. Dixon. In my town there are 25,000 acute alcoholics. There are perhaps more than 75,000 in the State of Georgia. Mr. Dixon was asked about this the other day, and he dismissed it, I thought, very superficially and lightly and said, "Well, that is up to another agency of the Federal Government."

Now, the Public Health Service cannot take quite this cavalier attitude if you are concerned about the health of our people.

Dr. TERRY. No, we cannot.

Mr. MACKAY. We have got some right shocking statistics developing now about the use and abuse of alcohol.

Dr. TERRY. That is right, sir.

Mr. MACKAY. I would like to ask you whether your Department has conducted any studies along this line dealing with alcohol.

Dr. TERRY. Yes, we have had some very extensive studies conducted in the Public Health Service with regard to alcoholism and its effects, why people drink alcohol and why they drink it in excess, to try to help us understand better the problem of alcoholism.

Mr. MACKAY. Have you made any recommendations though, about the marking of liquor or the restraint of advertising of liquor? There is a very striking parallel, as I see it.

Dr. TERRY. No, we have not made any recommendations in this direction. I would not say that there is a striking parallelism between advertising of cigarettes and the advertising of liquor in relation to our news media—radio, television, and so forth.

Mr. MACKAY. You do not see the same basic appeal for the use of the——

Dr. TERRY. Do you see liquor advertised on television and radio?

Mr. MACKAY. I see it in all the slick magazines.

Dr. TERRY. Yes, I do, too, but I think there is a considerable difference between the advertising of cigarettes and liquor.

Mr. MACKAY. But the extent of alcoholism is associated with drinking liquor, is it not?

Dr. TERRY. Oh, yes.

Mr. MACKAY. It is a major health problem, is it not?

Dr. TERRY. Yes, sir; I think it is.

Mr. MACKAY. Well, is it not possible that you are really swatting at flies here and ignoring the dragon?

Dr. TERRY. No, sir; I do not think when you talk about the magnitude of the health hazard in smoking, I do not think so.

Mr. MACKAY. You do not think the health hazard associated with the consumption of liquor approaches the health hazard associated with smoking?

Dr. TERRY. I did not say that, sir. The thing I said was this, that the magnitude of the health problem associated with smoking was such that you could not compare it to a dragon. On the other hand, I admit that the problem associated with alcoholism is a very large problem.

Mr. MACKAY. I would like to ask if the Public Health Service is conducting any education in the public schools dealing with the hazards associated with the consumption of liquor.

Dr. TERRY. I do not know whether we are or not. We are certainly participating in studies, and I am not sure whether we have any in school or not.

Do you know, Dr. Hundley?

Dr. HUNDLEY. We do have a school health program which attempts to promote the teaching of good health principles in schools, and certainly the danger of alcoholism is part of that curriculum. I do not think we have any specific program for this.

Mr. MACKAY. It seems to me that the reaction of the tobacco industry is that there is unfairness here in this approach of the FTC to their industry as distinguished from the Government's attitude toward liquor.

Now, I would like to address a question to your counsel here. I do not see anything in your report—I may have missed it—on the recent legal history of damage suits associated with tobacco and cancer. Do you have any such summary of whether suits have been brought and what the history of these suits has been?

Mr. ELLENBOGEN. We may, possibly, in the Department have such a summary, but I am not aware of it. While I know, myself, of some cases, like the *Green* case, we do not consider it our responsibility to compile a report on product liability, because that is a private matter and would not be regulated by this bill, although labeling could have quite an effect on——

Mr. MACKAY. It seems to me that you cannot discuss this proposed legislation apart from the legal implications. A friend of mine at lunch today said: "You know, this bill is being sponsored by the tobacco industry to relieve them from liability and from bothersome and expensive lawsuits."

Mr. ELLENBOGEN. I believe that the industry lawyers, their counsel, and the responsible managers, must be extremely conscious of this aspect of the problem, and it may well be that this may reconcile them to this type of regulation.

Mr. MACKAY. I would like to ask you this as a lawyer. Would not the presence of the type of warning suggested in these bills greatly strengthen the hand of a defendant in a tort case?

Mr. ELLENBOGEN. In the long run it might do so, because those cases that I have read—and I have not made a real study of this particular thing—but the *Green* case, for example, is based, I believe, on the implied warranty of fitness, and there being no notice of the health hazard to the consumer.

Mr. MACKAY. Have any judgments been handed down by any court of law yet on this type of damage suit?

Mr. ELLENBOGEN. As I said before, I have not made a study of it. In the *Green* case there were judgments, but I think the final—according to the press, it went up to higher courts two or three times, and I think the final verdict was not ultimately favorable to the plaintiff according to the newspaper, and I do not know whether that case is finished or not. I believe there was also a case in Pennsylvania, but again I am not acquainted with that.

I would prefer—if you think it should be—to have that supplied for the record.

Mr. MACKAY. I would be grateful for that, because I am just getting into this subject.

(The information referred to follows:)

MEMORANDUM

To: William W. Goodrich.
From: Charles K. Marr.
Subject: The status of the law and the question of causation in cigarette-cancer cases.

Reported decisions exist for cases in Florida, Louisiana, Massachusetts, Missouri, New York, and Pennsylvania. Two of the cases arose in State courts and were transferred to the Federal courts on the basis of diversity of citizenship. The remainder arose in the Federal courts. No reports have been found of a recovery by a plaintiff.

While these cases were decided in the Federal courts on the basis of diversity of citizenship, under the doctrine of *Erie* v. *Tompkins*, 304 U.S. 64 (1938), such an action has to be decided on the basis of applicable State law.

The actions have been based on negligence or breach of implied warranty of suitability and safety for use. The question of causation, that is, whether or not cigarettes caused the plaintiff's cancer, has gone to the jury as a question of fact in four actions.

In *Green* v. *American Tobacco Co.*, 304 F. 2d 70 (C.A. 5, 1962), the jury, in reply to written interrogatories, found that cigarettes had caused the plaintiff's cancer. The jury found for the defendant, but the judgment was reversed because of an error in instructing the jury that the defendant must have reasonably foreseen the injury to be held responsible. The case was remanded for retrial. *Green* v. *American Tobacco Co.*, 325 F. 2d 673 (C.A. 5, 1963), cert. den. 377 U.S. 943 (1964).

Pritchard v. *Liggett & Myers Tobacco Co.*, 295 F. 2d 292 (C.A. 3, 1961), reversed a summary judgment for the defendant and remanded the action for trial. No further report on this case has been found, but *Ross* v. *Philip Morris & Co., Ltd.*, 328 F. 2d 3, 11 (C.A. 8, 1964), reports in a footnote that the jury subsequently found that cigarettes were the cause or one of the causes of the plaintiff's cancer but returned a verdict for the defendant for other reasons. The footnote reported that this case was again on appeal.

Lartigue v. *R. J. Reynolds Tobacco Company*, 317 F. 2d 19, 23 (C.A. 5, 1963), reported the opinion of the trial court judge that the jury did not find any connection between the plaintiff's cancer and his cigarette smoking. The trial court judge cautioned, however, that he had no way of ascertaining for sure that this was what the jury found since the jury returned a general verdict. This is the only reported case which indicates the jury did not find cigarettes to cause the plaintiff's cancer.

In *Ross* v. *Philip Morris & Co., Ltd.*, 328 F. 2d 8 (C.A. 8, 1964), the question of causation was one of the issues. The jury returned a general verdict for the defendant. Thus, it is impossible to ascertain whether or not they found cigarettes to have caused the plaintiff's cancer.

The remaining three reported cases, *R. J. Reynolds Tobacco Company* v. *Hudson*, 314 F. 2d 776 (C.A. 5, 1964); *Cooper* v. *R. J. Reynolds Tobacco Company*, 234 F. 2d 170 (C.A. 1, 1956), 158 F. Supp. 22 (D. Mass., 1957), aff'd 256 F. 2d 565 (C.A. 1, 1958), and *Padovani* v. *Bruckhausen*, 293 F. 2d 546 (C.A. 2, 1961), 27 F.R.D. 37 (E.D.N.Y., 1961), 23 F.R.D. 255 (E.D.N.Y., 1959), reported the disposition of motions made prior to trial and did not deal with the question of causation. In the *Cooper* case, the defendant received summary judgment. The *Hudson* case only reported a denial of the defendant's motion for summary judgment. The *Padovani* case reported the granting of a writ of mandamus to overcome pretrial order that would have precluded the admission of most of the plaintiff's evidence.

A detailed discussion of the law of breach of warranty is beyond the scope of this memorandum. However, several points are worthy of mention. The cases have uniformly placed cigarettes in the same category as food and drugs. Thus, absolute liability would ordinarily attach for any breach of an implied warranty by the manufacturer. In an action for breach of warranty involving a food or drug the plaintiff ordinarily alleges that a foreign substance was present, or the product was of substandard quality, or that the product contained an allergen of which the defendant should have warned.

This is not the situation in litigation involving cigarettes and cancer. There is no allegation that a foreign substance was present in the cigarettes. The plaintiff does not claim that the cigarettes were of substandard quality. The plaintiff does not allege the presence of an allergen of which the plaintiff should have been warned. In effect, the plaintiff is alleging that the product sold, even though it was of standard quality, inherently contains a substance in the tobacco which made it unsuitable and unsafe and which caused his injury. The plaintiff demands that this defendant reimburse him for the injury he suffered because of this substance in the tobacco which breached the implied warranty of suitability and safety.

Under the rationale that the law imposes strict liability on the manufacturer (seller) on the theory that he has the better opportunity of informing himself of defects and dangers in the product, the courts have directed the jury that in order to be liable, the defendant through the exercise of ordinary human skill and knowledge, at the time of sale of the product causing the cancer, must have been able to foresee the injury to the plaintiff. This restriction of "foreseeability," a doctrine often found in negligence actions, is generally new to warranty actions. Such a charge was approved in *Ross* v. *Philip Morris & Co., Ltd., supra; Lartigue* v. *R. J. Reynolds Tobacco, supra;* and *Pritchard* v. *Liggett & Myers Tobacco Co., supra,* and could account for the jury verdict for the defendant in these cases.

The jury's verdict for the defendant in *Green* v. *American Tobacco Co., supra,* was possibly brought about, at least in part, by this charge. The Florida Supreme Court in reply to a question certified to it by the Court of Appeals for the Fifth Circuit ruled that "foreseeability" was not a requirement for liability in a Florida breach of warranty action. As a result, the court of appeals reversed its prior ruling and remanded the action for a new trial on the basis of absolute liability.

Since the publication of "Smoking and Health; Report of the Advisory Committee to the Surgeon General of the Public Health Service, U.S. Department of Health, Education, and Welfare" in 1964, and the widespread attention that the report received, the manufacturers of cigarettes surely had knowledge of the basic facts the report contains. Thus, the danger of cancer from cigarettes is now foreseeable. The publication of the report created three categories of potential plaintiffs: those that smoked and developed cancer before the report; those that were smoking before the report, but developed cancer after the report; and, those that started to smoke after the report and subsequently developed cancer. As to the last group, there is no question that the cancer was foreseeable. The group that smoked and developed cancer before the publication of the report could not depend on the report to establish foreseeability, and if they have to establish foreseeability they would have to rely on other proof.

It is the group that smoked prior to the publication of the report but developed cancer subsequent to the publication that create a quandary. Cigarette-induced cancer is not a one-shot proposition. It is generally recognized that prolonged exposure is needed. The issue would be, whether before the possibility of cigarettes causing cancer had become foreseeable by way of the report, the plaintiff had received sufficient exposure to cigarettes to induce his cancer. If he had not, then he would have to show the foreseeability of his injury by other proof.

To have any legal effectiveness, a warning statement on a package of cigarettes would have to be clear as to its meaning. Assuming a clear statement, suits based on negligence probably would be barred on three grounds. Having warned the buyer, the manufacturer could not be said to be negligent; the buyer is contributorily negligent in using a product he knows might harm him; and having been warned the buyer assumes the risk attendant to the use of the cigarettes.

Assuming a clear warning was present on the package of cigarettes, actions based on breach of warranty would probably be unsuccessful. When a seller warns a buyer of the possibility of a certain form of injury, it cannot be said that he is warranting that the injury will not occur. Thus, if the warning clearly informed the buyer that smoking cigarettes may cause him to develop cancer, and he goes ahead and smokes anyway, he is not relying on any expressed or implied warranty that the cigarettes will not cause cancer. The warning has already told him a carcinogen may be present.

A warning statement, if in the form of a general disclaimer of liability for any breach of warranty, express or implied, may well be ineffective. There is precedent for the proposition that in some types of products, such as foods and drugs, the implied warranties may not be disclaimed. Thus, any general disclaimer without a warning as to the specific injury disclaimed may be totally ineffective from a product liability standpoint.

Mr. MACKAY. I would like to ask you, Dr. Terry, to comment on your recommendation as to advertising.

Dr. TERRY. Our recommendation with regard to advertising is that there be a health warning associated——

Mr. MACKAY. With all advertising?

Dr. TERRY. With all advertising; yes, sir.

Mr. MACKAY. Have you made any recommendation as to the form of that?

Dr. TERRY. Not specifically; no, sir.

Mr. MACKAY. Did you make any recommendation to the Federal Trade Commission, or was there action just on their own in response to your report?

Dr. TERRY. Before they took their action, I do not believe that we made any formal recommendation to them. To say the least, the action of the Federal Trade Commission was based largely upon the substance of the report with whatever other information it obtained from other sources.

Mr. MACKAY. So the extent to which the Public Health Service is involved in this at this point is that you have made a scientific study, investigated the health of the public, and have come up with the findings that you have in this report, and you have not undertaken, through any kind of administrative order, to have anybody do anything, is that true?

Dr. TERRY. That is right. We have, on the other hand, undertaken, to the best of our ability, an active educational information campaign on the subject as well as redirecting and extending some of our research toward answering some of the questions that were raised by the committee, and for which we would like answers.

Mr. MACKAY. Some members of the committee have felt that there has been an invasion of the proper sphere of Congress here by the ruling of the Federal Trade Commission, but that does not involve your Department it seems to me. It would be between the Congress and the regulatory body.

Dr. TERRY. I believe that everything that we have done has been clearly within our statutory authorization, sir.

Mr. MACKAY. You have really done nothing at this point except made certain findings and attempted to publicize those and educate people about your findings, is that not correct?

Dr. TERRY. And expanded and redirected some of our research and conducted certain studies to try to learn better how to do the job we are doing, this sort of thing, yes.

We have no regulatory function, and do not believe that we should have a regulatory function in this field in the Public Health Service.

Mr. MACKAY. No further questions, Mr. Chairman.

Mr. ROGERS of Texas. Mr. Farnsley.

Mr. FARNSLEY. Thank you, Mr. Chairman. Mr. Chairman, I have three articles from yesterday's New York Times and Herald Tribune I would like to make a part of the record.

Mr. ROGERS of Texas. What is that?

Mr. FARNSLEY. I have two articles from yesterday's Herald Tribune and one from the New York Times which I would like to make part of the record. Should I turn them over to this gentleman?

Mr. ROGERS of Texas. Yes. I am not sure, but I think there are some regulations with regard to the inclusion of newspaper articles in the record. But let the Chair receive those with the understanding that if there are no regulations against it, they will be inserted if there is not objection. If there is, they will be included in the files.

Mr. FARNSLEY. Is it all right for me to read a portion of them in questioning?

Mr. ROGERS of Texas. Yes, it is.

Mr. FARNSLEY. Doctor, I know you are tired. I am low man on the totem pole, and by the time you get to me, everybody is worn out. I am not complaining. I am enjoying my job very much. I thank you for your carefully reasoned report and want to say to you that one of the most heartening things that has happened to me in Washington is that you have brought a psychologist with you. I believe that the Government has much to learn and much help to get from the social and behavioral sciences. In fact back in 1948 one of the first things I did was to get the university school of medicine, to allow Dr. Keller, who is in the department of psychiatry, to advise me and he has done this continuously. Since election to Congress I have conferred with him by long-distance telephone.

I then employed a full-time political sicentist as administrator and consultant and made a point every 2 or 3 months of visiting a different university and talking to their department of political science.

I had just finished 2 years of graduate work myself in social sciences, so I knew I needed help. I am hoping that you have gotten somewhere near as good advice on the effects of your recommendations, as you have on the question of smoking and health from the social sciences or from the behavioral sciences.

There are a couple of articles I would like to read you a little bit from and then ask your opinion and then discuss the problem of the possible effects of your program.

This is the Herald Tribune of yesterday. I think you and Dr. Carter were talking about this, but you all were pretty technical for me. This is by Earl Ubell, science editor, of Philadelphia.

> For 6 weeks a strange looking truck stood at the curb on Herald Square. In essence, it was an electrically-driven giant breathing machine and in that period it inhaled 5,000 cubic meters of New York's air—the same air you and I breathe.
>
> Afterward, scientists from Sloan-Kettering Institute removed the filters—coated with soot, metals, and organic gum. They dissolved the organic material in chemicals and separated it into several factions.
>
> They painted the material onto the backs of mice and waited. After several months, 90 percent of the animals developed cancers of the skin.

You were talking about this, were you not?

Dr. TERRY. Yes, sir. We referred to this.

Mr. FARNSLEY. They say it is much worse in Detroit, the percentage. You said some of the lung cancer was caused or probably caused by air pollution. Is there any guess as to what percent?

Dr. TERRY. I do not have any estimation on that, Mr. Farnsley. I think that it is entirely possible. There have been some studies which showed the relative incidence among urban dwellers as related to rural dwellers. How much of that can be attributed completely to air pollution I am not certain. Certainly a part is likely, but we could submit to you the figures on that, on the difference. I do not have them immediately at hand.

Mr. FARNSLEY. It is not too important. I thought perhaps off the top of your head you had some guess. Your feeling is that tobacco is much more——

Dr. TERRY. That is right, sir.

Dr. HUNDLEY. If I might amplify a little bit on that Mr. Farnsley, the committee did not publish any of its own estimates. Its thinking was that if you take total lung cancer, for example, as 100 percent, that 80 to 90 percent of it was due to cigarettes, and 10 to 20 percent due to air pollution and other things. These were its ballpark figures.

Mr. FARNSLEY. I remember somebody said when the earlier reports came out about mice, that mice should not smoke. I am convinced they should not breathe, at least in the cities.

Here is another one in the Herald Tribune headlined yesterday "Cancer Virus Theory; Advance Reported," by the same man, Earl Ubell, science editor, Philadelphia.

Dr. Sarah Stewart has been chasing the viruses of human cancer for 15 years. These biological criminals have eluded every trap set for them. Yesterday, Dr. Stewart reported she had cornered a member of the gang in the brain of a hamster.

For the first time, Dr. Stewart recovered a virus from a human malignancy injected into animals which then died of a proliferating disease. "It looked like cancer to me," she said.

Actually, Dr. Stewart had given her report Tuesday to a private meeting of scientists at the Wistar Institute here, but word soon spread to sessions of the American Association for Cancer Research, which opened here yeterday. Her work, if confirmed elsewhere, is the closest anybody has come to confirming the virus theory of human cancer.

Up to now scientists have found dozens of viruses in animals which cause cancer, including leukemia. Dr. Stewart, with Dr. Bernice Eddy, was one of the first to discover a ubiquitous mouse virus that causes cancer.

Others, including Dr. Eddy, have found viruses that affect human beings, but apparently do not cause cancer in them, while they ignite wild growth in animals such as mice and hamsters. And other scientists have seen under the electron microscope, particles that look like viruses in the tissue of human cancer victims.

Up to now, scientists believed they could prove the cancer-causing proclivities of a virus in humans only by injecting viruses into new born humans. They knew that new born animals were most susceptible to cancer viruses. Dr. Stewart may have circumvented that fearful requirement.

Is this a wholly different theory of cancer or what is it?

Dr. TERRY. It is an evolving theory. I know the work very well of Dr. Stewart and Dr. Eddy. They both are employed by the Public Health Service at the National Institutes of Health.

I think the strongest evidence is related to leukemia, and the strong suggestion that leukemia may be due to viruses. There is one thing to remember in this respect, and that is that where viruses participate in the causation of some disease, or where they appear to, they may work together with some other agent to produce the disease.

Certainly we have seen this sort of evidence in some of the experimental work where animals were subjected to inhalation of chemical substances. When animals have been exposed to the inhalation of these chemical substances and to the influenza virus, tumor formation results in some animals; whereas when they have been exposed only to the inhalation of these same substances or to the influenza virus, no tumor formation results.

So that I think that we have to have the appreciation that it may be that a virus on occasion or it may be that other substances may act like cocarcinogens or helping to produce this.

On the other hand, I do not think that this alters the basic concept that we have about the relation of cigarette smoking to lung cancer or certain other diseases.

In other words, there may be more than one substance that participates in causing lung cancer, but it is very clear that the relationship between cigarette smoking and lung cancer is so strong that our committee felt that this was the principal factor. The committee did not say, for instance, that it was the only factor.

Mr. FARNSLEY. Well, I did not mean to imply that this was. Could it be that viruses cause it all, or do some people believe that? This is really an innocent question.

Dr. TERRY. Is it true that some people believe viruses cause all cancer?

Mr. FARNSLEY. Could it turn out that all cancer is caused by viruses, or do some people now believe that?

Dr. TERRY. Let me say this. The belief is getting very strong that viruses participate in the formation of some types of cancer. I do not think you could say all by any means. The strongest evidence in that direction points to leukemia which we consider as cancer of the white blood cells. Certain viruses have been isolated, identified in the blood of persons with leukemia which have not been found in the blood of normal individuals, and the same is true in animals, with animal leukemia.

I think there is a very strong suggestion that viruses may be important in the causation of certain types of cancer.

Mr. FARNSLEY. Doctor, you cannot imagine what a nice job I have got. I have great scientists who help conduct seminars for me. It is wonderful.

I have got one more. This is from the New York Times, dated April 8. "Lung Cancer Link to Hormones Seen." This is all yesterday. I got excited. I guess these things come every day.

LUNG CANCER LINK TO HORMONES SEEN—PATTERNS OF CHANGE FOUND IN CALIFORNIA SURVEY

(By Walter Sullivan)

A survey of 400 Californians at a Los Angeles hospital has brought to light patterns of hormone change that seem typical of various forms of cancer, including those that attack the lungs.

It had been suspected that male hormones play a role in lung cancer because the disease is so much more common in men than in women. The percentage of male victims seemed higher than could be explained by the greater prevalence of cigarette smoking in men than in women.

The survey was carried out by the University of Southern California School of Medicine. It was described to the New York Academy of Sciences at a meeting being held this week at the Waldorf-Astoria Hotel. Dr. Jessie Marmorston of the medical school presented the report and enlarged upon it at a news conference yesterday.

Dr. TERRY. I have not seen this original article. I too saw the newspaper article, and that is all I have seen of it thus far. However, I might say that over a considerable period of time in relation to the actual difference in lung cancer, as an example, among men and women, that there has been a suspicion, a question as to whether there is a hormonal influence which may play a part.

In other words, the relative balance of the male and female sex hormones may play a role. I do not think we know any answer to it.

It is certainly a matter which merits considerable exploration, just as in certain other cancers where there is a difference between the two sexes.

For instance, there is a much higher incidence of stomach cancer among men than among women. Why is this true? I do not think we really know today. Many of these things are being explored, but we are not sure why they are true.

Mr. FARNSLEY. Could this be sort of like what you said a while ago? It is another cocarcinogen?

Dr. TERRY. I think it is entirely possible that this may be true, Mr. Farnsley, that this is another one of several factors which influence the pattern.

Mr. FARNSLEY. I guess you have been asked this question. How do I answer the question myself, is there reasonable doubt about cigarettes being the cause of cancer or a principal cause as we have said, of 85 percent of lung cancer?

Dr. TERRY. To my mind there is not any reasonable doubt, Mr. Farnsley.

Mr. FARNSLEY. You have answered my question.

Dr. TERRY. I could quote to you here—I have marked in here——

Mr. FARNSLEY. You do not have to, Doctor.

Dr. TERRY (continuing). Indication of several scientists and scientific groups who take a similar position. In other words, I do not stand alone on this.

Mr. FARNSLEY. I will take your answer, that there is no reasonable doubt.

Dr. TERRY. To my mind there is no reasonable doubt that this is true.

Mr. FARNSLEY. What are these co things I have got? You are ruling them out, are you not?

Dr. TERRY. I am not ruling them out. I think that one has to consider that they may participate, but that they themselves might not be enough to cause the effect alone.

Mr. FARNSLEY. Judge, shall we call them accessories after the fact?

Mr. MACKAY. Would you yield?

Mr. FARNSLEY. Let me ask the judge, what have we got here legally. I was not a very good lawyer, but, a lawyer.

Mr. ELLENBOGEN. Contributors.

Mr. FARNSLEY. Cocarcinogens, that there is no reasonable doubt that cigarettes cause 85 percent of one cancer but we took out these cocarcinogens that I as a lawyer would like to take care of in legal terms.

Mr. ELLENBOGEN. Why do you wish to take care of them?

Mr. FARNSLEY. The doctor can rule them out to his satisfaction, but I am a layman and a lawyer, and I would like you to help rule them out for me as a lawyer.

Mr. ELLENBOGEN. As a lawyer, as I see the difference. Cigarettes are marketed, advertised, and sold, and these cocarcinogens—if you are speaking of cocarcinogens other than those in cigarette smoke—may not be. I mean, how do you identify them and how do you control them?

Mr. FARNSLEY. Well, we have magnificent talent in the health department to work on this thing of air pollution.

Mr. ELLENBOGEN. We are working, sir, on air pollution. We, of course, now have the Clean Air Act thanks to this committee in part.

Mr. FARNSLEY. Is there anything we can do on air pollution? How about automobiles?

Mr. ELLENBOGEN. There is now—hearings are underway now in the Senate on S. 306, the Muskie bill, on that subject. I think—I am pretty sure—there is a corresponding bill pending in the House.

Mr. FARNSLEY. Have you all got a report on that or have you made studies on it?

Mr. ELLENBOGEN. Do you mean the bill?

Mr. FARNSLEY. I am trying to help. I am trying to stamp out disease.

Mr. ELLENBOGEN. The Secretary made a report to Congress in December of 1964 in response to a statutory mandate on the subject of emissions from motor vehicle exhaust.

Mr. FARNSLEY. Were there recommendations?

Mr. ELLENBOGEN. Yes. There were conclusions. He has also reported on S. 306.

Mr. FARNSLEY. My friend Dr. Keller and I serve on the Governor's committee on automobile safety in Kentucky, and we were very much agitated about that.

Mr. ELLENBOGEN. Incidentally, it was a former member of this committee, Mr. Schenk, who was extremely interested in the subject and responsible for the insertion in the Clean Air Act of language on that subject, I believe.

Mr. FARNSLEY. The nearest I can remember, there are 30,000 people killed by automobiles or more, and my traffic engineer taught me there were 35 injuries for every 1 killed. Our committee believes that automobiles are not designed to safety standards, but it could easily be done.

Have you all done some work on this, or have you some recommendations for some labeling?

Mr. ELLENBOGEN. Dr. Terry, do you wish to answer that?

Dr. TERRY. Certainly through our Division of Accident Prevention in the Public Health Service we have been active in this field as well as the prevention of household accidents and other accidental types of injuries or death. He have carried on active campaigns over the years in certain respects jointly with the American Medical Association and the National Safety Council in relation to seat belts.

We have been working with the industry in other respects with regard to the problems of the types of injuries that occur and how design might prevent them.

At the present time, one of the things that we are doing is moving into an area where we look at the problem of traffic safety, as far as the Federal Government is concerned, in about three parts. One part has to do with the planning and design of roads in relation to safety. Another has to do with planning and design of automobiles and vehicles in the terms of the safest vehicle that would be acceptable to the public. The third thing is the human factor. I think the area in which we have been most derelict in that respect is that there has not been enough research. We know that if people are inebriated and they attempt to drive a car that their chances of having an accident is much greater, and we know that certain other diseases and condi-

tions make automobile operation a hazard. At the same time there are many things that we do not understand.

One of the things that we have done over the past couple of years has been to develop a driving simulator which is going to be available very soon for studies of reactions of individuals to driving circumstances or situations, and under particular circumstances. We have not had the money and personnel to move along as fast as would like in this direction.

On the other hand, I think we have made some significant steps.

Mr. FARNSLEY. Thank you. Are you asking for more money for this? I will try and lobby.

Dr. TERRY. I think that we have enough in our budget request this year, Mr. Farnsley, to allow us to move ahead well with the driving simulator, its development, and our other accident prevention programs.

Mr. FARNSLEY. I can give you some clues. U.S. News & World Report tells about how dangerous tires are and how badly labeled they are this week. If you have two cylinders in your brakes, you have a big margin of safety, and it costs very little to add that extra cylinder. One American car has it. I have taken cars up to the legal limits on expressways, up to the legal limit and stopped right straight with disk brakes. I would not dare do this with any other kind of brakes.

You know about seat belts and the danger of the luggers coming out if there is not something to stop it. You must realize that there are three times as many people employed in automobile assembly in my district than there are cigarette people.

But this one is a tough one. These are people of any age. We know what causes automobile deaths. We may not know the details. We know when there is an automobile accident. There is no argument. There are not 40 men saying these guys were not hit or killed by an automobile. One of the first things was to get the meathook off the front of a Cadillac. The chief of police had said there had been people torn to pieces. We got them off police cruisers. We could not get the police to wear seat belts. This was in 1948 and 1949. It was a long time ago.

I have been hitting at this one for a long time.

Now, let me explore one more thing. I know it is late. I have wondered if you have really got the social and behavioral sciences, enough opinion from them as to the effects that your proposals will have.

Now, this may not be true, but I am told when Bromo Seltzer put on the warning labels and changed the formula, they said, "Improved formula," and then the warning says:

> Caution, keep all medicines out of the reach of children. Follow dosage directions. Not for use by children. Consult physician and discontinue if unusual nervous symptoms or skin rash occur or in the presence of kidney disease, excessive dosage may cause kidney damage or if symptoms require, discontinue use for more than 10 days.

My friend Dr. Keller was a witness for these people and he said a year later their stock had doubled in value, and their sales went way up when they adopted these proposals.

Is there any truth in that? Do you remember this case? Does this sometimes happen when you warn people?

Dr. TERRY. I am not acquainted with this particular circumstance. Mr. Rankin from the Food and Drug Administration is here.

Mr. FARNSLEY. Is there anybody who can help me on this?

Mr. RANKIN. I do not know, sir.

Mr. FARNSLEY. I am going to put that in as an exhibit if I can.

Mr. ROGERS of Texas. The bottle of Bromo Seltzer will be received as an exhibit.

Mr. FARNSLEY. One more thing, Doctor. This to a social scientist and a layman, there are some people who think when the cigarette people say they will quit advertising if they have to give a warning that it is a threat, but there is some thought that maybe—I assume that you think it will cut sales because you want to cut consumption.

Now, if their advertising with a warning cuts sales, they might actually quit, in which case we have gained nothing, and thus no advertising, will reduce the total consumption. Have you got studies on this and opinions from trained men as to what effect this will have?

Dr. TERRY. I don't know how much information. Dr. Horn.

Dr. HORN. I think this is all speculation as of this time.

Mr. FARNSLEY. Absolutely.

Dr. HORN. But we are watching with great interest what is happening in England where the prohibition of advertising will go into effect shortly.

Mr. FARNSLEY. Aren't these things that could be studied by the behavioral and social sciences? In other words, we have a program without any—I am beginning to get this idea—we haven't any scientific information on what effect our recommendations have. We have a lot of good doctors, good scientists in their fields. They know what they are talking about and what it does to you when they smoke and what it does to mice and all those things. But what will this program do?

Will it cause more cigarettes to be consumed? Will it give the companies a $225 million bonanza, because Hershey doesn't advertise, Volkswagen penetrated our market deeply with an awfully funny automobile with no advertising. Now they have very funny advertising for a funny automobile, and that seems to work fine.

I am glad you are here and I am glad you are getting surveys.

Another one of the first things I did was get a Roper survey when I was elected, and I have one at least every year, one you might be interested in, on mental health. It is a pretty good one. You can get it through a library loan, from the Louisville Free Public Library.

I sat at home in my chair, having on one side the Roper Surveys, on the other side the surveys that our party had made. Our party has had surveys every year since 1942, more than one. We have had Harris, we have had Roper, Quayle, professors at the University of Louisville, you name them, we have got them. In fact the survey I studied the other day looks like it is going to clear up the problem of school taxes. So we believe in them, we know about them, we live with them.

Was this to find out what effect people's actions had, was there anything in there to find out what effect this label would have, whether it would cause sales to go up, down or sideways, and what effect putting warnings in advertising would have?

Dr. HORN. Sir, I am glad you asked this because there is built into these studies an attempt to find out just what cigarette smoking means

to people, why they smoke, what might happen if various kinds of remedial action were taken as well as under what conditions they would try to stop, and how all this relates to how they seem to value health and if that affects whether or not they accept the health hazards of smoking.

We have millions of people in this country who say they are convinced that smoking is a serious health hazard, but they continue to smoke, and why is this so? And there are a number of different reasons and a number of different patterns. For some of these, we feel there are things that we ought to be able to do. For others, we feel it is up to the individual to make an informed choice and we feel that warnings can help them make that choice.

Mr. FARNSLEY. What is your professional opinion, based on your studies if you have done any?

Dr. HORN. With regard to advertising?

Mr. FARNSLEY. Don't give an answer unless you are ready. Is there a scientific opinion as to what effect the warning on the labels will have on the sales of cigarettes, and will it stop children or will it encourage children, because of the challenge?

Dr. HORN. In my own judgment, sir, the warning label will have the effect of reducing smoking. There is already underway a reduction of smoking and, in my opinion, an increase in the extent to which people are suspicious of the hazards of smoking. But one of the rationalizations, one of the beliefs that is stated when you ask people whether or not they think smoking is harmful, is this, "But of course if it were really harmful they would do something about it" or "The Government would do something about it."

The fact that the product is freely sold without any restrictions, without any inhibitions, without any statement of warning, is taken as evidence that this is a perfectly safe and harmless product. I think the presence of a warning label will remove this particular obstacle that many people find to accepting the fact that cigarette smoking is in fact a health hazard.

Mr. FARNSLEY. Do you have a guess as to how fast this would be able to reduce the sales?

Dr. Horn. No, sir; I have not.

Mr. FARNSLEY. What is your opinion as to using a warning in advertising, the same as on the other?

Dr. HORN. I think this would have a more rapid effect. In advertising you are reaching not only the individual who uses cigarettes, but you are also reaching the potential user of cigarettes. A child does not have a package of cigarettes unless he goes out and buys one. An individual who is considering the use of cigarettes, such as the 9-, 10-, or 11-year-old child, sees adults smoking and uses this as the basis to decide "Gee, maybe I ought to be like these grownups," whom he admires and takes up smoking himself. This child is the one who does not get the warning on the label because he doesn't have the package of cigarettes, but he does see the advertising.

Mr. FARNSLEY. These opinions you are giving me, are they the result of studies comparable to this committee's studies that these warnings are going to cut children's smoking, this advertising is going to cut the smoking?

Dr. HORN. I would say based on the results of studies on the psychology of smoking that have been conducted over the past 10 years, but I don't think I would say they are beyond reasonable doubt.

Mr. MACKAY. Would the gentleman yield for a point?

Mr. FARNSLEY. Yes, sir.

Mr. MACKAY. Doctor, could you furnish me for the consideration of this committee the behavioral studies that are being conducted now by your Department?

Dr. TERRY. Surely, we would be glad to submit a list of the studies that are being carried out; where, and so forth.

Mr. MACKAY. There was a discussion several weeks ago and many of us were more concerned about the reason why people consumed 4½ million pep pills than we were concerned about how to stop the sale of them.

Are there any studies in that area on barbiturates and amphetamines?

Dr. TERRY. Yes, sir; there are. I can't give you the details. Insofar as our studies are concerned, in addition to some done at the local and State level, they are largely supported through the National Institutes of Health, and I don't happen to know the details.

Mr. MACKAY. I would like to have that information. I think several of us just as working lawyers have been offended by the term "suggestive evidence." We talked about beyond a reasonable doubt. Under Georgia law, if you want to send a fellow to the chain gang you have to convict him. That is not beyond doubt, but beyond reasonable doubt, and in civil suits you have to prove your case by the preponderance of the evidence.

What you are saying is that it is the position of your Department is that the preponderence of the evidence tells you that there is an association between cigarette smoking and cancer. Wouldn't that be——

Dr. TERRY. No; I would have to say beyond a reasonable doubt.

Mr. MACKAY. You would go that far?

Dr. TERRY. I would go that far insofar as lung cancer is concerned; yes, sir. Now, there is a preponderance in another area, for instance, in relation to cardiovascular disease.

Mr. MACKAY. I think that you ought to state it that strongly rather than to use the term "suggestive evidence," because people feel——

Dr. TERRY. We have stated over and over again that we feel that cigarette smoking is the principal cause of lung cancer in the United States.

I don't know how much more positive you can be than that, Mr. Mackay.

Mr. ROGERS of Texas. Will the gentleman yield at that point?

Mr. FARNSLEY. Yes, sir.

Mr. ROGERS of Texas. Doctor, if you are so positive about that why in the world aren't you on a crusade to prohibit the growing and sale of tabacco for cigarette purposes? That is the thing I can't understand. You are saying that it causes lung cancer and is killing people, and I would gather that a thing like that ought to be prohibited. Yet you are advocating the taxpayers of this country to underwrite a campaign of propaganda to try to get people to do voluntairly what you say ought to be prohibited in the first instance. I mean this is thinking that I just can't get through my head. Maybe I am wrong about it.

Dr. TERRY. Well, I think you well recognize that even if you tried to prohibit smoking in this country, you wouldn't be successful, Mr. Rogers.

Mr. ROGERS of Texas. I don't know about that. I wouldn't agree with that.

Mr. FARNSLEY. I think that is a question for the psychologist; I think that is a social science question. I am not batting you down. I am sure you got your answer from him. But do you have other men in the social and behavioral sciences besides psychologists?

Dr. TERRY. Yes, sir; connected with this specific study or this specific program area. Dr. Hundley, maybe you can answer this better than I.

Dr. HUNDLEY. We have the advantage, sir, of the counsel and advice on our staff of quite a number of social and behavioral scientists.

Mr. FARNSLEY. Is this in the report?

Dr. HUNDLEY. They are acknowledged in the report, sir.

Mr. FARNSLEY. This was on smoking and health, not on what to do about it after you got it, not on the proposals that I think are going to increase consumption. Your psychologist guesses otherwise. He and I are both guessing, bless his heart.

Dr. HUNDLEY. The one piece of concrete information, sir, that we do have is the results from the Italian ban on advertising that went into——

Mr. FARNSLEY. A ban? They wouldn't let them advertise?

Dr. HUNDLEY. That is right.

Mr. FARNSLEY. Good, yes; I am for that.

Dr. HUNDLEY. In the spring of 1962, and in that instance there was quite an apparent effect. The increase in sales had been approximately 6 percent per year in the 2 years preceding the ban. There was only an increase of 1½ percent in the year after the ban.

Mr. FARNSLEY. They prohibited all advertising of cigarettes?

Dr. HUNDLEY. Yes, sir.

Mr. FARNSLEY. I am sure your panel of social and behavioral scientists considered this, and why did they reject this as a proposal?

Dr. HUNDLEY. We did not, sir, consider this during the study. The committee was not asked to consider this. This wasn't its job.

Mr. FARNSLEY. That is what I thought. So they have never considered the social and economic and psychological aspects of this thing. You are considering the health.

Dr. HUNDLEY. That was all this study purported to be.

Mr. FARNSLEY. You have convinced me that smoking is bad for people. There is no argument about what kills people on highways. It is automobiles. We got that one, and there are no cocarcinogens in that one. You say the people aren't so smart who drive them. Well, I know they are not well engineered.

Dr. TERRY. There are in effect like cocarcinogens in relation to automobile accidents as to whether someone is under the influence of a drug or alcohol or the specific effect of an illness. There are lots of factors.

Mr. FARNSLEY. Let's put labels on everything that you ought not take before you drive, or put it on the dash of the automobile, "Don't drive if you have done this and this and this. And, besides, this automobile isn't very safe if you go very fast because if you put on the brakes goodness knows what is liable to happen."

Why not? I mean this is serious. I am not just teasing.

All right, if the cigarette people took the whisky people's advertising code, you implied that would help awhile ago, where they don't advertise on television.

Dr. TERRY. I don't know whether it would help or not.

Mr. FARNSLEY. What are the arguments against prohibiting all advertising of cigarettes?

Dr. TERRY. I just don't think from a philosophical or practical standpoint that we ought to go that far at this time, sir.

Mr. FARNSLEY. What do you think, Mr. Psychologist?

Dr. HORN. I think the point to be made is that you can't even get a warning on advertising.

Mr. FARNSLEY. This FTC man is a crusader. Talk to him about abolishing advertising.

You are talking now politically. You think maybe the Congress doesn't have courage to stop advertising?

Dr. HORN. No, no; I didn't say that. But you asked my opinion about what would happen and the basis for that opinion is that if advertising were prohibited or if advertising had——

Mr. FARNSLEY. Cigarette consumption would go down.

Dr. HORN. I would say the strongest point of evidence in favor of the fact that cigarette consumption would go down is the energy with which the tobacco industry resists this proposal.

Mr. FARNSLEY. Just because they are tobacco people doesn't make them competent in all fields any more than being the Surgeon General makes you competent in his field or him in yours. I couldn't take out your appendix. This is silly. But awfully good guys come in here and give us opinions, the AMA did in the social sciences and I couldn't tell them about their insight but they sounded pretty childish to me about application of Government sociology, psychology, and anthropology, and I told them so, and they changed their position. They are nice people.

I said, "Look, when I am sick, I am a hypochondriac, I need doctors," and I worked hard to raise money for medical schools and hospitals, but they are out of their field. Now you have got one guy in this field here on these questions, just one, and he is all you have got. I am going to quit. It is late and you are nice and you are patient and I have enjoyed it.

Thank you, gentlemen.

Mr. CARTER. Would the gentleman yield for a question?

Mr. FARNSLEY. Yes; I yield.

Mr. CARTER. I ask the distinguished Surgeon General one more question. You brought out the possible hazards, shall we say of the smoking, the dangers which are inherent. I would ask the distinguished gentleman if he still smokes his pipe.

Dr. TERRY. Yes, sir; I still do.

Mr. FARNSLEY. I yield. I quite smoking everything in 1948.

Mr. CARTER. I yield back.

Mr. ROGERS of Texas. The Chair recognizes the gentleman from Florida, Mr. Rogers.

Mr. ROGERS of Florida. Thank you very much, Mr. Chairman.

Dr. Terry, I think it is a pretty accomplished fact, now, everyone agrees that there is some danger to smoking and we have got to do

something about it. The course of action I think is what we are really concerned with here and how it should be done.

Do you feel that a warning on a package of cigarettes is labeling? Is it the Department's position that this would be labeling?

Dr. TERRY. Yes, sir.

Mr. ROGERS of Florida. Not advertising, but labeling?

Dr. TERRY. Yes, sir; this is the Department's position.

Mr. ROGERS of Florida. I understand now from your testimony that you feel that it is more appropriate for HEW to administer this provision if we were to pass the law, give authority to HEW to see that this is done, rather than to have the Federal Trade Commission do it as to labeling.

Dr. TERRY. This is the Department's viewpoint on it, and Mr. Ellenbogen can discuss it with you if you would like, sir. He is much more acquainted with the background for this decision than I am.

Mr. ROGERS of Florida. When was this decision made?

Dr. TERRY. Well, actually, this was a proposal even last year when we testified before your committee, that this was one mechanism by which labeling could be carried out. I think as time has gone along, that the Department possibly feels a little more strongly that this is the better way to do it, but I would like Mr. Ellenbogen to speak on that.

Mr. ROGERS of Florida. Fine.

Mr. ELLENBOGEN. As you will recall, sir, when the Surgeon General appeared last year before you—among others I accompanied him—we reported at that time on eight different bills that were pending before this committee, and the Secretary took the view that in view of the type of regulation involved, the type of legislation that is represented by the Federal Hazardous Substances Labeling Act—inspection, seizure authority, and so forth, that you are familiar with—and the experience in the administration of that type of legislation that is in the Department, and more particularly in the Food and Drug Administration, it would be preferable if the labeling of cigarettes were regulated under that act. In fact, some have argued that it is now covered. We have doubted that in view of the legislative history, but that would lend itself best to that type of regulation.

Mr. ROGERS of Florida. Have you submitted, or its there any particular piece of legislation to accomplish this that you recommend in its entirety, or do you have language that you could submit for the committee's consideration on the amendment of the hazardous labeling?

Mr. ELLENBOGEN. We do not have completed language, sir, but we should be glad, if you so desire, to submit language or work with staff, whichever you prefer.

Mr. ROGERS of Florida. I would like to see a little language of what you suggest, because what I am concerned about is that if we let Food and Drug come in and start regulating, and then the Federal Trade is still trying to assert its jurisdiction, I want to make sure that we make it clear who is going to be doing this.

Mr. ELLENBOGEN. I believe—and correct me if I am wrong—but I believe that the Chairman of the FTC has indicated that if this committee and the Congress in their wisdom should decide to regulate labeling under the Federal Hazardous Substances Labeling Act, the Commission would not be disposed to regulate that aspect of the matter as distinguished from advertising.

Now, I could be wrong.

Mr. ROGERS of Florida. Well, I got this impression, too, but I think it is going to have to be drawn very clearly.

Mr. ELLENBOGEN. May I say, sir, they, I think, would assert that even in the food, drug, and cosmetic field their act is broad enough to cover labeling as well. But they have, by and large, resisted that.

Mr. ROGERS of Florida. Section 12?

Mr. ELLENBOGEN. Not under section 12, but 5. They take the view it covers labeling as well, but as a matter of fact they have not been active in this field. We have a working agreement with the FTC which has been working very satisfactorily, I understand.

Mr. ROGERS of Florida. Do I understand you to say that you have been working with the Federal Trade and Food and Drugs and they have——

Mr. ELLENBOGEN. We have a working agreement with them, and Mr. Rankin who is here might want to speak to that, as to the coordination of activity.

Mr. ROGERS of Florida. On labeling under section 12?

Mr. ELLENBOGEN. In this field. Mr. Rankin.

Mr. ROGERS of Florida. Could you clear us up on that, Mr. Rankin. I thought there was an express prohibition against labeling under section 12.

Mr. ELLENBOGEN. That section 12 doesn't apply to labeling within the meaning of the Food and Drug Act, but the Commission, I think, would take the view that other parts of the act—in fact section 5 is what they invoke on cigarettes—would apply to labeling and advertising as well.

Now, section 12 and the other parts which we have called the Wheeler-Lee amendment, are specifically addressed to foods, drugs, devices, and cosmetics.

Mr. ROGERS of Florida. The amendment specifically says advertising and not labeling.

Mr. ELLENBOGEN. False and misleading advertising of those products.

Mr. ROGERS of Florida. That is right.

What is your opinion on that, Mr. Rankin?

Mr. RANKIN. Mr. Rogers, the agreement, the working agreement that we have worked out with the Federal Trade Commission is an agreement designed to coordinate the work of our two agencies so that we don't in effect stumble over each other in our joint activities.

A legal decision under the Food, Drug, and Cosmetic Act may be binding upon the Federal Trade Commission under its law and vice versa.

The agreement we have worked out is basically that with regard to regulation of advertising, the Federal Trade Commission will take the first action, and with regard to labeling the Food and Drug Administration will take the first action.

The reason we need such an understanding is that quite frequently a piece of advertising becomes associated with a product subject to our jurisdiction, so that it is labeling, or a piece of labeling could also be regarded as advertising under the Federal Trade Commission laws.

We have supplemented this agreement by periodic meetings between our staffs to discuss the areas of activity that are under consideration,

and I would say that in the past year or 2 years, we have found in the Food and Drug Administration at least that the joint discussions have been of considerable benefit.

Mr. ROGERS of Florida. Who got mixed up on this tobacco matter, when? When Federal Trade comes into label——

Mr. RANKIN. I believe there was no mixup so far as the Food and Drug Administration was concerned. The Food and Drug Administration has no jurisdiction under the Food, Drug, and Cosmetic Act over tobacco, unless it bears drug claims. As Mr. Ellenbogen mentioned a moment ago, there are some who believe that the Hazardous Substances Labeling Act could be applied to tobacco.

Mr. ROGERS of Florida. And I am one. I agree with you.

Mr. RANKIN. I recall that, Mr. Rogers. You will recall that in our correspondence with you last year on this subject, we expressed the view that since there was no contemplation in our minds at the time the Hazardous Substances Labeling Act was enacted, and since there is no indication in the legislative history of that act, that it was to cover tobacco, it was our conclusion that if tobacco were to be covered under that act, we would wish to have the Congress tell us and lay down the guidelines for that coverage.

Mr. ROGERS of Florida. Yes. I understand that. I wondered why your liaison broke there. Knowing this, knowing that it is a health problem, that it is a labeling problem that we are concerned with, the Federal Trade moved ahead. Where did your liaison break down there?

Mr. RANKIN. I do not recognize a breakdown in liaison. As a matter of fact, the Chairman of the Federal Trade Commission was in contact with us by telephone before he issued his announcement of a proposed rulemaking just after the Surgeon General's Advisory Committee issued its report. I believe there was not a breakdown of communication.

Mr. ROGERS of Florida. Maybe I misunderstood. I thought you said it is the Department's feeling that it should be done through Food and Drug and not Federal Trade.

Mr. RANKIN. The recommendation that our Department is making to the Congress at this time is that the legislation, the new legislation, if enacted, should place regulation of labeling in our Department and leave regulation of advertising with the Federal Trade Commission. This was not speaking with regard to the rulemaking activity already undertaken by the Federal Trade Commission.

Mr. ROGERS of Florida. Well, the Federal Trade Commission's proposed rule is labeling, don't you think?

Mr. RANKIN. Is to regulate labeling.

Mr. ROGERS of Florida. Don't you think that is true?

Mr. RANKIN. Yes, that is correct.

Mr. ROGERS of Florida. Well, then your views are contrary to that proposed rule. You think it should be done by Food and Drug, as I understand your testimony.

Mr. RANKIN. If the Congress concludes——

Mr. ROGERS of Florida. Well, no, it is not what we conclude. It is what you recommend to us. Aren't you saying now that you want us to put it under Food and Drug definitely? I took that from the statement of the Surgeon General.

Mr. RANKIN. The position of the department, Mr. Rogers, is that the regulation of labeling of cigarettes should be under the Hazardous Substances Labeling Act, that is correct.

Mr. ROGERS of Florida. That is exactly what I said.

Mr. RANKIN. That is correct.

Mr. ROGERS of Florida. You don't agree with the Federal Trade Commission's proposed rule as far as its administration; would that be correct? I am not trying to put you on the spot. I am trying to make very clear the department's view on this.

Mr. RANKIN. No, I am not prepared to say, Mr. Rogers, that the department disagrees——

Mr. ROGERS of Florida. You don't want to come out and say it, but you don't want it done by Federal Trade, you want it done by Food and Drug; right?

Mr. RANKIN. There is as I understand it, as I understand the testimony that has been given, both on the Senate side and in this committee on these bills, there seems to be great question as to the scope of Federal Trade Commission's authority. I am not competent to pass on that question.

Mr. ROGERS of Florida. I understand. I won't ask you on that. I also share the feeling, you have just mentioned which others share on that.

Now, I notice that in the very rule itself they say in their definition, the Federal Trade proposed rule, that advertising includes all radio, television commercials, and so forth, but "does not include the labeling of packs, boxes, cartons, and other containers in which cigarettes are sold to the consuming public."

So they evidently aren't making a difference between advertising and labeling, and yet they still try to take jurisdiction over labeling.

I personally felt that the Food and Drug Administration, if a Hazardous Substances Act is passed, would be the one to act, and I think that the Public Health Service concerned with the health of the Nation and originating the report, I would have thought the liaison would have been good enough so that the Federal Trade could have held up until your suggestions to amend the Hazardous Substances Act had come to Congress. But that hasn't happened. But I am glad to see you take a positive position; that you think it should be done here, and I think that is a proper activity for Food and Drug.

Now, let me just ask a question of Dr. Horn. I believe I heard you testify earlier. What is your position with the Department?

Dr. HORN. I am employed in the cancer control program of the Division of Chronic Diseases.

Mr. ROGERS of Florida. Of the cancer control program?

Dr. HORN. Yes.

Mr. ROGERS of Florida. In what capacity?

Dr. HORN. As Chief of the Special Projects Section.

Mr. ROGERS of Florida. Special Projects?

Dr. HORN. Yes, sir.

Mr. ROGERS of Florida. Are those entirely to do with surveys or what?

Dr. HORN. No; not entirely with surveys, but they have to do largely with behavioral problems in the control of cancer.

Mr. ROGERS of Florida. I believe you are a psychologist?

Dr. HORN. Yes, sir.

Mr. ROGERS of Florida. And how long have you been with the Department?

Dr. HORN. A little over 2 years.

Mr. ROGERS of Florida. Two years. Were you hired for the project?

Dr. HORN. No, sir. When I came with the Department, my assignment was to review the entire field of applied research in the field of cancer control.

Mr. ROGERS of Florida. And where have you been before?

Dr. HORN. I had been employed by the American Cancer Society for the preceding 15 years.

Mr. ROGERS of Florida. For 15 years?

Dr. HORN. Yes, sir.

Mr. ROGERS of Florida. And what was your work concerned with there?

Dr. HORN. I was for some years the assistant director of statistical research, during which time I engaged in epidemiological studies on the relationship of smoking to various diseases. In addition, I was, for a number of years before I left, director of program evaluation which was concerned with measuring and testing the effectiveness of various educational and other programs conducted by the American Cancer Society.

Mr. ROGERS of Florida. For the Cancer Society?

Dr. HORN. Yes, sir.

Mr. ROGERS of Florida. I see. Thank you very much. I am hopeful that the committee will see fit to take some action here to clear this matter up, because I think there was precipitous action by Federal Trade, and I would hope that the Department will stand firm in its feeling on jurisdiction in this matter. Thank you, Mr. Chairman.

Mr. FARNSLEY. Mr. Chairman, can I ask another question?

The CHAIRMAN. Yes, Mr. Farnsley.

Mr. FARNSLEY. Doctor, it seems to me that you brought an indictment of mass murder with a codefendant. You say, as the prosecuting attorney always says, he is guilty beyond a reasonable doubt. I say that you brought codefendants, you call them cocarcinogens, cocauses of cancer. That means things that cause cancer?

Dr. TERRY. Yes, sir.

Mr. FARNSLEY. You say hormones, air pollution, which is mostly caused by automobiles, at least in Detroit, which can be cured almost completely with things we know about now. We also have viruses as cocauses of cancer, and cancer causes death, and that is what this trial is about.

Now I contend that you also, from your testimony, have produced accessories after the fact, the newspapers and the television that advertise this causer of death. Now we haven't even indicted these other causes, cocauses of death, which you don't bring before us.

Dr. TERRY. I am not sure of what you want of me.

Mr. FARNSLEY. It is semilegal. What I am contending is that there are other people—if you had a murder, you are pretty much mixed up, is that right, if you are on the side of the murderer, and might help. These things might help. The doctor says so. There can be a cause of cancer or a partial cause, and you have got three, four, or five of them. Now shouldn't they be indicted, too?

Mr. ELLENBOGEN. I am not sure how they can be indicted. Are they indictable in the sense in which you use the term?

Mr. FARNSLEY. Yes; I think so.

Mr. ELLENBOGEN. Are they marketable products?

Mr. FARNSLEY. Yes, automobile exhausts, gases, they are not marketable, you don't sell them, but you can market a car that doesn't produce anywhere near as much where we have all that going on now in the Senate.

Mr. ELLENBOGEN. Secretary Quigley testified before a Senate committee the other day on the efforts of the Department to do research in this field, and he is again testifying today.

Mr. FARNSLEY. You are all working on this. I am trying to bring out what is happening.

Mr. ELLENBOGEN. This Department, or rather the Public Health Service, in conjunction with the GSA, has worked on the adoption, essentially, of the California automobile exhaust standards——

Mr. FARNSLEY. And your Department is recommending——

Mr. ELLENBOGEN. For the purchase of Government cars—that is, to incorporate in the 1966 models emission control systems based on those that are now required, or rather will be, under the California requlations—so that these can be tested all over the country to see whether these are the——

Mr. FARNSLEY. Can the FTC enforce them to put it on all cars?

Mr. ELLENBOGEN. The FTC would have no such authority.

Mr. FARNSLEY. Is there anybody in the Government that can force them to put it on all cars?

Mr. ELLENBOGEN. There is no authority now in the Government to require the industry to put this on. There are legislative proposals before the Congress.

Mr. FARNSLEY. Do you endorse these bills?

Mr. ELLENBOGEN. This question is being discussed this morning by Secretary Quigley, and I had to be here and I couldn't be there, and I am not sure what came up today.

Mr. FARNSLEY. What about viruses? Can we indict them? Can we do anything about viruses?

Mr. SATTERFIELD. Will the gentleman yield before he answers that question? I have a question in point.

Mr. FARNSLEY. Yes.

Mr. SATTERFIELD. I have been reliably informed that Mr. Quigley appeared before the Senate committee and informed them that HEW was not interested in this legislation.

Mr. ELLENBOGEN. I didn't hear what you said, sir.

Mr. SATTERFIELD. I have been informed that Mr. Quigley, in appearing before the Senate committee you mentioned indicated that the Department of Health, Education, and Welfare had no particular interest in that bill. Is that correct?

Mr. ELLENBOGEN. No, sir; that is not correct, that it had no interest. This Department is vitally interested in the subject matter of that bill.

Mr. FARNSLEY. What can you do about the virus, anything?

Dr. TERRY. I don't know what we can do, Mr. Farnsley. We are certainly pursuing the question of defining more clearly whether or not this is a causative factor. I think the evidence today is far from being convincing, but at the same time it is strongly enough suspicious that it needs to be followed, and we are doing just that.

Mr. FARNSLEY. You are working on the hormones too?

Dr. TERRY. Just one further word there. The congressional committees became sufficiently interested in this last year that they set aside $4 million of our appropriations to the Cancer Institute to further studies along this line of cancer and viruses, particularly as related to leukemia, but in other cancer also. So you see, we are working on it, but I don't think that we have enough evidence at the present time.

Mr. FARNSLEY. I understand. Your reason for not recommending that advertising be stopped, is it philosophical in point, do you remember? You gave an answer to this question as to why we shouldn't stop advertising in newspapers and TV, which is causing people to smoke cigarettes, which is killing them.

Dr. TERRY. I don't remember exactly what I said. Well, to say the least I am not ready to go that far personally.

Mr. FARNSLEY. I understand. Thank you so much. You have been very courteous and very helpful, and I have learned a lot, and I appreciate it.

The CHAIRMAN. Doctor, it is getting late and I am not going to detain you any longer. I regret that we have not been able to make more progress in these hearings than we have, but I asked you earlier about the chapter in your report on the chemistry of tobacco. It is chapter 6 on page 48, beginning on page 48 and on page 49. It explained what a tobacco leaf contains. Do you know whether it is the tobacco leaf that presents the threat, if that is the right word to use here, or is it the stem? I guess the only other part would be the root. I guess that wouldn't be any problem.

Dr. TERRY. Mr. Chairman, may I ask Dr. Hundley to answer this. He has more of the technical details than I do, sir.

The CHAIRMAN. Yes.

Dr. HUNDLEY. The hazardous material, sir, is both in the leaf and rises as a result of the burning of the leaf.

The CHAIRMAN. The burning of the leaf?

Dr. HUNDLEY. Yes, sir; during the actual consumption of a cigarette.

The CHAIRMAN. That burning then presents the hydrocarbons?

Dr. HUNDLEY. Yes, sir. As any vegetable material, when it is burned, especially if it is burned under conditions of lack of oxygen, as cigarettes are, gives rise to, just like coal when it is burned, hydrocarbons that are carcinogenic.

The CHAIRMAN. If it were not burned, it would not present near the hazard?

Dr. HUNDLEY. There is some but much less hazard in unburned tobacco.

The CHAIRMAN. In that regard I would assume that smoking a pipe or a cigar would present the same threat insofar the mouth is concerned or the throat and the other parts of the——

Dr. HUNDLEY. To some extent you would expect the same results, although there are many differences. As you know, there are differences in the usual amount of inhalation. There are differences in the way that tobacco is smoked or the way the tobacco burns. There are differences in the types of tobacco that are used for cigars, for pipes, for cigarettes.

There are marked differences in the smoke itself, in the pH of the smoke, and in fact in the constituents of the smoke. They are in the

same class, but you can't translate from cigarettes to pipes and cigars.

The CHAIRMAN. Now this says that the tobacco leaf contains a complex mixture of chemical components, cellulose products. That is not any more problem than wood, is it?

Dr. HUNDLEY. Tobacco, of course, is a vegetable material, sir. It has many of the same components as other vegetable materials, but there are also some classes of chemicals that are unique to the tobacco plant.

The CHAIRMAN. Yes.

Dr. HUNDLEY. Yes, sir.

The CHAIRMAN. But that within itself wouldn't create any problem.

Dr. HUNDLEY. Some of these are alkaloids, sir, that do give rise to hydrocarbons when they are burned, and also the general class of materials from which the nicotine and other components come are unique to tobacco.

The CHAIRMAN. But the body consumes this kind of a component in various products.

Dr. HUNDLEY. In eating you mean, sir?

The CHAIRMAN. Well, in whatever way it is; yes.

Dr. HUNDLEY. Many common materials.

The CHAIRMAN. Drinking or eating or whatever it might be.

Dr. HUNDLEY. Yes; indeed.

The CHAIRMAN. Now starches, you get starches out of other products?

Dr. HUNDLEY. All forms of animal and vegetable materials have starches in them, sir.

The CHAIRMAN. Protein?

Dr. HUNDLEY. The same.

The CHAIRMAN. That is necessary to the welfare of the body.

Dr. HUNDLEY. Quite so.

The CHAIRMAN. Sugars, I didn't know tobacco had all this in it, alkaloids. Of course you get that in various ways and different components. There is no way I suppose to prevent the body, if it lives, from consuming some kind of alkaloid, is there?

Dr. HUNDLEY. Alkaloids are a little different, sir. These are not common to all vegetable materials.

The CHAIRMAN. No, but to a great many.

Dr. HUNDLEY. A great many alkaloids of one kind or another, but many of them will not have harmful or any physiological effect. Some do. For example, ergot is a poison that is an alkaloid that is found under various substances.

The CHAIRMAN. Pectin substances, is that one that causes any threat?

Dr. HUNDLEY. No, sir, these are the same things that they use for making jelly, pectins.

The CHAIRMAN. Well, that is necessary too. I am trying to find what components we have here that are causing all this.

Dr. HUNDLEY. Well, there are two kinds of components, sir. If you will turn to page 56——

The CHAIRMAN. Let's stay with this. I don't want to leave this very clear description of what is contained in the tobacco leaf. Now you can turn to the other page to explain what you want to, but let's not get away from this.

Dr. HUNDLEY. Well, so far as cigarettes, sir, the things that matter are not in the tobacco but what is in the smoke. This is the thing to which people are exposed, and there are materials that are in the tobacco.

The CHAIRMAN. Well, I used to go out when I was a boy and smoke a vine, we called it the cross vine. Did you ever recall the cross vine?

Dr. HUNDLEY. No, sir.

The CHAIRMAN. You know what I am talking about?

Dr. TERRY. Yes, I do.

The CHAIRMAN. Is that hazardous?

Dr. TERRY. I have no idea, sir. I would say that probably the experience that we have had is so limited in terms of the numbers of people and the duration of exposure that it would be very hard to evaluate it.

The CHAIRMAN. I suppose you have smoked rabbit tobacco, have you, doctor?

Dr. TERRY. Yes, sir; I have.

The CHAIRMAN. What is that hazard?

Dr. TERRY. I don't know.

Mr. FARNSLEY. It is bad for mice.

The CHAIRMAN. Did you have something else you wanted to say about what was on page 56 at this point?

Dr. HUNDLEY. Well, I just wanted to point out, sir, that the Committee has identified here some seven of these carcinogenic cancer-causing chemicals that are in the smoke of the togacco. This is one class of materials that has been identified with tobacco.

The CHAIRMAN. I know, but you are getting away from the problem. You are getting ahead of me. Let's stay with what I have got here. We ought to see what the basic cause of this is. We are talking about the tobacco leaf now.

I am trying to find out what is in the tobacco leaf that is causing all this. Hydrocarbons, where do you get that?

Dr. HUNDLEY. Hydrocarbons, sir, are materials like gasolines. Gasoline is a hydrocarbon.

The CHAIRMAN. Exhaust fumes, is that hydrocarbons?

Dr. HUNDLEY. Yes, sir.

The CHAIRMAN. What is a phenol?

Dr. HUNDLEY. Phenol you would know as carbolic acid, sir. It is a poison. It is a chemical.

The CHAIRMAN. I would not want to take any of that then. We will underscore that. Fatty acids?

Dr. HUNDLEY. These are chemical substances that are components of fat.

The CHAIRMAN. We all consume fatty acids in many ways.

Dr. HUNDLEY. That is correct.

The CHAIRMAN. Isoprenoids, that must be one that would be bad.

Dr. HUNDLEY. I think that is one of the alkaloids. I don't know that this is bad in itself. It may, however, when burned give rise to some undersirable materials.

The CHAIRMAN. Sterols.

Dr. HUNDLEY. Sterols are a class—cholesterol is a sterol. Many hormones are sterols.

The CHAIRMAN. Then I will lay off of that one. It is not good for me. An inorganic mineral, of course that includes a lot of things.

Dr. HUNDLEY. Yes, sir.

The CHAIRMAN. Now what page is that up there that you referred to?

Dr. HUNDLEY. The one I was referring to, sir?

The CHAIRMAN. Yes.

Dr. HUNDLEY. It is on page 56.

The CHAIRMAN. You have certainly got beyond me on this with all these diagrams here.

Dr. HUNDLEY. We are in the smoke now, sir, and these are the compounds that the committee identified, that they thought were solidly established as cancer-causing chemicals that can be isolated from the smoke.

Now in addition, there is another broad class of compounds or classes of compounds which get into the cocarcinogenic area. These may be irritants, compounds of various kinds that in themselves are not cancer causing, but they will promote the action of an agent that is cancer causing, and they make it easier and quicker in smaller doses.

Mr. FARNSLEY. A little bit like a catalyst.

Dr. HUNDLEY. A little bit along the same line, yes, sir.

The CHAIRMAN. Now the components in a tobacco leaf as such would not present a necessary hazard to health if it were not for the manner in which it were being taken?

Dr. HUNDLEY. Burned, yes. It certainly would present far less of a hazard, sir, if it were not for the manner in which it is used.

The CHAIRMAN. Well, this old boy by the name of Nicot, how do you pronounce that?

Dr. HUNDLEY. Nicot.

The CHAIRMAN. Jean Nicot, he is a Frenchman.

Dr. HUNDLEY. I believe he is the one who discovered nicotine, sir.

The CHAIRMAN. You say tobacco is a herb which man has smoked for over 300 years. The plant was given the generic name nicotina after Jean Nicot, French Ambassador to Portugal, who in 1560 publicly extolled the virtue—and this is the statement that caught me—"that the virtue of tobacco as a curative agent." What did they cure?

Dr. HUNDLEY. Oh, tuberculosis, lots of things I can even remember in my childhood tobacco was looked upon as a very good poultice for boils. This is one of the old home remedies.

Mr. ROGERS of Texas. Would the gentleman yield?

The CHAIRMAN. If you can contribute to this I would be glad to.

Mr. ROGERS of Texas. They used tobacco smoke in my youth for the earache. It cured it. I got over it.

Dr. HUNDLEY. There have been throughout history many medicinal uses of tobacco or tobacco-smoking products extolled or claimed, but I don't know of any that have survived in modern times.

The CHAIRMAN. Well, I think I will not try to read the characters which are given as the structure of smoke on page 56 that you refer to. Even a compound is a little bit beyond my ability to pronounce, so I will just let that, insofar as this record is concerned, be referred to as such. But it does present to me a very interesting picture of how to take a product such as this, with the components in it we have mentioned, and the method of its use presents what has been described

here as a hazard to the health of the individual, and particularly in reference to its relationship to cancer of the lung.

I want to personally thank you, Dr. Terry, and your associates here for your presentation and your further explanation of the report, and what you sincerely and honestly believe that is involved with this very difficult problem. We regret that we have kept you longer than we should.

I don't know how long this hearing is going to go on, but I have assured everyone who is interested, particularly the members of the committee who recognize this as a very great problem—it is a problem for all of us, and we welcome the full discussion and the views from whatever source that might contribute to it.

Your report of 1964, of course, is what kicked this whole thing off, and I would suspect that if you had been in the position to make your recommendations beyond the report at the time you and I conferred in my office just prior to the Federal Trade Commission's announcement of its proposal, that we might have had an easier time resolving this thing.

Now we have got the Federal Trade Commission problem with it and we have got your problem. There is a little overlapping problem here that ought to be resolved and I hope we can resolve it. I do fully recognize there is a responsibility from your standpoint of the Public Health Service.

I also recognize the responsibility of the Federal Trade Commission as it got into this deal rather early. They have been studying it a long time too, and were just about to make a pitch at this problem when the whole thing broke.

But we do welcome the views of your department as well as others who are interested in it, and if it develops that we need further advice and counsel from you, we will certainly call on you. Thank you very much for your testimony and for your presentation here today.

Dr. TERRY. Thank you, Mr. Chairman. My associates and I certainly appreciate the interest which the committee has taken and the thoroughness with which you have gone into the subject, and we are all at any time always available to be of any assistance we may, sir.

Mr. CARTER. Mr. Chairman, will you yield for just a statement?

The CHAIRMAN. Yes.

Mr. CARTER. The Surgeon General has certainly been quite eloquent in his efforts I think today, and although I have disagreed with him on the causal relationship of smoking to lung cancer, I think that we are in agreement on one thing, and that is as an old mountain lady-friend of mine said: smoking is a little bit pleasuresome. Thank you, sir.

The CHAIRMAN. Thank you very much.

I had hoped to get to some of these other witnesses here. I had assumed there are some who are in the committee room today who are probably from out of town.

In view of the time, unless some of you have very short statements to present, we are simply going to have to go over until next Tuesday. Is there anyone who cannot come back on Tuesday?

(Discussion off the record.)

The CHAIRMAN. Come around, Dr. Dalrymple. You have heard the questions, and you know what is in the minds of a lot of these members.

STATEMENT OF WILLARD DALRYMPLE, M.D., DIRECTOR OF UNIVERSITY HEALTH SERVICES, PRINCETON UNIVERSITY

Dr. DALRYMPLE. I do, sir; and the experience has been educational, if I may say so.

The CHAIRMAN. Would you identify yourself. I am sorry, Dr. Dalrymple, but we have been so late getting to you.

Dr. DALRYMPLE. I quite understand.

The CHAIRMAN. But the Public Health Service and the Federal Trade Commission represented have been deeply involved in this problem.

Dr. DALRYMPLE. I have learned from their testimony. Mr. Chairman, gentlemen, I am Willard Dalrymple, M.D., director of the University Health Services, Princeton University in the Honorable Frank Thompson's district. I am also chairman of the Section on Clinical Medicine of the American College Health Association, and Health Association is the professional organization of physicians, nurses, and others responsible for the health of the Nation's college youth, now 4 million strong.

On the 28th of April 1962, our association adopted a resolution which, in brief, says that they concluded that there was an association relationship and a causal relationship between cigarette smoking and some diseases, and urged all the members of the association to take ways considered most suitable to discourage cigarette smoking by college students and future alumni. The association has not had an opportunity to take an official position on these bills, but I have talked with our president, Dr. Leona A. Yeager, about it, and we both feel that the spirit of the resolution which was adopted before lends itself to taking a position on the bills now before the Congress.

The CHAIRMAN. Is Dr. Yeager here with you?

Dr. DALRYMPLE. She was not able to be here, I am sorry to say, sir. In general we support rather strongly those provisions now before the Congress which require effective labeling of cigarette packages as a possible hazard to health, and which authorize Federal regulation of cigarette advertising. We oppose those provisions which inhibit the Federal Government in one way or another from regulating advertising as in H.R. 4007, section 6.

Our reasons in brief follow. I will not go over the scientific material which was presented so ably by Dr. Terry and his associates. In general I would say, just to rephrase one concept, that it has been proved beyond a reasonable doubt that cigarette smoking does cause cancer and is important in causing other diseases even though it has not been proved which of the components of cigarette smoke are the effective agents.

I would like to mention the fact that several experimenters have demonstrated the presence of Polonium 210, a radioactive component in cigarette smoke.

Less known is the fact that cigarette smoking adversely affects the health of young people. A colleague of mine in Princeton has studied students in a preparatory school, and I have taken a survey of Princeton undergraduates, both of which surveys showed appreciably more respiratory disease in smokers than in nonsmokers, nine times as much lower respiratory disease such as bronchitis and pneumonia in the smokers than in the nonsmokers.

The feasibility of labeling of cigarette packages to discourage smoking cannot be demonstrated with such facility, of course. We can call upon what your lawyers, I believe, call res ipsa loquitur. If cigarette advertising and packaging design do not attract smokers, then why do cigarette companies indulge in them?

More important, however, is the fact that the percentage of nonsmokers entering Princeton has gradually risen over the years. In the class entering in 1948, only 58 percent were nonsmokers, but this gradually rose to 80 percent of the entering class in 1963 being nonsmokers. This gradual rise we believe has been due to the constant exposure to the fact, the effect of cigarette smoking on health by these students.

The constant reminder of prospective or actual smokers of these facts by appropriate labeling and by statements included with advertising will similarly help to reduce smoking, and therefore the incidence of disease among our young people. These are our reasons for urging legislative action.

(The complete statement of Dr. Dalrymple follows:)

I am Willard Dalrymple, M.D., director of the University Health Services, Princeton University in the Honorable Frank Thompson's district. I am also chairman of the section on clinical medicine of the American College Health Association, and appear to represent the Association. The American College Health Association is the professional organization of physicians, nurses and others responsible for the health of the Nation's college youth, now 4 million strong.

On April 28, 1962, the American College Health Association adopted the following resolution:

"Whereas a preponderance of the scientific evidence (with scant counterevidence) indicates an association relationship and suggests a causal relationship between cigarette smoking and some diseases, and

"Whereas the cigarette smoking habit often is acquired now by young people either not long before they commence, or while they are attending college, and

"Whereas colleges and universities are in a particularly advantageous position to undertake an effective educational effort to stop and to prevent cigarette smoking by college students: Therefore be it

"*Resolved*, That the American College Health Association, recognizing the above-mentioned relationship between cigarette smoking and some diseases, urges its entire membership—both institutional and individual—to attempt, in whatever ways considered most suitable, to discourage cigarette smoking by college students and future alumni."

The association has not had the opportunity to take an official position on the so-called labeling bills now before the Congress. Nevertheless, the president of our association and I strongly favor those provisions which require effective labeling of cigarette packages as a possible hazard to health and which authorize Federal regulation of cigarette advertising; we oppose those provisions which inhibit the Federal Government, in particular the Federal Trade Commission, from regulating advertising, as in H.R. 4007, section 6. In this stand we believe that we are following the spirit of the resolution already adopted by our association.

Our reasons follow: The testimony of medical investigators over the years has overwhelmingly implicated cigarette smoke as an important factor in the development of several incapacitating and fatal diseases. The common type of lung cancer, coronary artery disease, and pulmonary emphysema seem the most important of these. There is no need to summarize this evidence again here.

Less well known is the fact that cigarette smoking adversely affects the health even of young people. My colleague, Dr. William Haynes of Princeton, observed 196 students at a preparatory school; half of them were smokers. The smokers had nine times as much lower respiratory disease, such as bronchitis and pneumonia, than the nonsmokers. They had 2½ times as much upper respiratory disease, such as the common cold and the sore throat, than the nonsmokers.

Dr. Lawrence Pervin and I surveyed 278 Princeton undergraduates; 40 percent of the smokers had current cough, but only 8 percent of the nonsmokers; 46 per-

cent of the smokers, shortness of breath, but only 8 percent of nonsmokers; 28 percent of the smokers, chest pains and only 2 percent of nonsmokers.

The ability of labeling of cigarette packages and of cautionary statements with advertising to discourage smoking cannot be demonstrated with such facility, of course. We can call upon what the lawyers call "res ipsa loquitur," of course. If advertising and package design do not attract smokers why do cigarette companies indulge in them? More important than that argument, however, is the fact that the percentage of nonsmokers entering Princeton has gradually risen over the years. Of the class entering in 1948, 58 percent were nonsmokers, but by 1963, 80 percent of the entering class were nonsmokers. This gradual rise has been due to the constant exposure to the facts of the effect of cigarette smoking on health. The constant reminder of prospective or actual smokers of these facts by appropriate labeling and by statements included with advertising will similarly help to reduce smoking among our young people.

These are our reasons for urging legislative action. Thank you for hearing me.

The CHAIRMAN. Doctor, thank you very much for your statement. How long have you been at Princeton?

Dr. DALRYMPLE. I have been there for 3½ years, sir.

The CHAIRMAN. Are you on the faculty?

Dr. DALRYMPLE. My title is director of the university health services with the rank of professor.

The CHAIRMAN. Do you find that the boys at Princeton smoke occasionally?

Dr. DALRYMPLE. Yes; as I have mentioned, there are 20 percent who arrive as cigarette smokers. Some 20 to 25 percent start smoking while they are in college, and we are doing our best to discourage this.

The CHAIRMAN. I was interested in the statistics that 15 percent arrive as smokers.

Dr. DALRYMPLE. Yes, sir. This is a remarkably small percentage when you compare it to the much higher incidence in the average high school. However, the students or young people who are very much motivated toward the future thinking of their careers, their ambitions, and so forth, seem to think also very strongly in terms of their health for the future. This is my explanation.

The CHAIRMAN. I had thought that the percentage of smoking boys entering college would be much higher than 20 percent.

Dr. DALRYMPLE. It is at some colleges, and it is much higher in most high schools, but our percentage has been falling and has reached this remarkably low level.

The CHAIRMAN. That is very interesting indeed. Are there questions?

Mr. ROGERS of Texas. Just one question.

Doctor, you say you have concluded beyond a reasonable doubt that smoking does cause lung cancer?

Dr. DALRYMPLE. I have, sir.

Mr. ROGERS of Texas. And you are for some legislation that will require labeling on the package, but you also want that labeling included on the advertising?

Dr. DALRYMPLE. I would like to see it, sir.

Mr. ROGERS of Texas. Well, then you wouldn't be for just prohibiting cigarette smoking altogether?

Dr. DALRYMPLE. Well, I understand that when I was a small boy this country had a period of experimentation with the prohibition of alcohol, which was not entirely successful. I have the feeling that maybe some of the same problems might arise if we tried to prohibit cigarette smoking.

Mr. ROGERS of Texas. But you think that if the taxpayers foot the bill to put on a propaganda campaign to offset this campaign you say the cigarette people are putting on, that that would do the job?

Dr. DALRYMPLE. This, only time will tell. I would certainly agree with Dr. Horn that the evidence is in favor of this doing the job over a period of time.

Mr. ROGERS of Texas. And you would prefer that method even though you know it causes lung cancer, you would prefer that method? I say "know," even though you say you know that it causes lung cancer, you would prefer going into this propaganda campaign against cigarette smoking rather than just prohibiting it?

Dr. DALRYMPLE. In view of the possible complications of prohibition, I would.

Mr. ROGERS of Texas. Thank you.

The CHAIRMAN. Mr. Satterfield, any questions?

Mr. SATTERFIELD. I only have one question.

You stated, sir, that to your way of thinking it has been proved beyond a reasonable doubt. I want to know on what you base this conclusion.

Dr. DALRYMPLE. Particularly on the seven prospective studies of lung cancer. In essence, man unfortunately has turned himself into the laboratory animal that Dr. Carter refers to. He has conducted the experiments on himself, the "null" hypothesis that there is no difference between smokers and nonsmokers——

Mr. SATTERFIELD. Have you conducted experiments of your own?

Dr. DALRYMPLE. No, sir.

Mr. SATTERFIELD. I have no other questions.

The CHAIRMAN. Do you recall the statistics on how many people participated in this that died due to cancer of the lung?

Dr. DALRYMPLE. I don't have the figure on that.

The CHAIRMAN. I have some figure of 18,000. I don't know how that got into my mind.

Dr. WILLIAMS. 47,000 this year.

The CHAIRMAN. You say 47,000. Time did not permit me to go into this with Dr. Terry. I did think of it at one time. Do you happen to know how many people lost their lives each year from the use of alcohol?

Dr. DALRYMPLE. I do not have that figure on that. It is obviously substantial.

The CHAIRMAN. We will try to get that information. Do you know how many people lose their lives every year from automobile accidents on the highways?

Dr. DALRYMPLE. It is pretty close to 50,000 a year now.

The CHAIRMAN. I think it had gone up above 40,000.

Mr. FARNSLEY. It is even worse than I thought.

The CHAIRMAN. I merely mention this to raise a question as to why we don't do something about some of these other hazards.

Dr. DALRYMPLE. No doubt we should, sir. There is, however, one difference between alcohol and tobacco. I think the evidence is that even the minor use of cigarettes, as long as they are inhaled is harmful while the moderate use of alcohol, assuming that the individual can control it, which is not necessarily correct, is not——

The CHAIRMAN. We are talking about the degree now as to what to do to get to the real problem. How many people die because of it. That is what has got a lot of people excited over smoking cigarettes, lung cancer.

But I am sure that there are a lot more people that smoke in this country, very likely, more people that smoke than even drive automobiles, aren't there?

Dr. DALRYMPLE. I would imagine that is so, yes.

The CHAIRMAN. It does raise a problem, a pretty serious question. Mr. Farnsley.

Mr. FARNSLEY. Doctor, you don't have the complications of problems of many of these administrative agencies. If you had your druthers, if you could write the law or write the book, I know this is an unfair question, but off the top of your head, graduates are not a cross section, you are with young people, what would you do about these various things? In cigarettes you would go just as far as the Surgeon General recommends and no further?

Dr. DALRYMPLE. Yes.

Mr. FARNSLEY. In whisky you would leave it as it is?

Dr. DALRYMPLE. Well, education, I think, of course, is important in this area. I do not have a specific proposal.

Mr. FARNSLEY. Now, we just got through doing the equivalent of a national prohibition for goofballs. You could get whisky on a doctors' prescription during prohibition. Some people say cigarettes aren't parallel because a doctor would never prescribe them, although there is something about the psychiatric benefit. My doctor says nobody gets pleasure out of cigarettes. Would you be in favor of outlawing goof balls completely except on prescription.

Dr. DALRYMPLE. I think so.

Mr. FARNSLEY. You could be satisfied with all these problems if the Government put labels on cigarettes and warnings on the advertising, or wouldn't you?

Dr. DALRYMPLE. I think the Government might well want to do something as far as automobile safety is concerned. I would agree with you, Mr. Farnsley.

Mr. FARNSLEY. Do you have any theory about the use of narcotics, cocaine, and whatever?

Dr. DALRYMPLE. It would take much more than 5 minutes. I have just finished writing an informal article on this also.

Mr. FARNSLEY. Would you change that system if you had the chance, the present marketing system? Does your article mention this?

Dr. DALRYMPLE. Recommending no changes as far as labels or legal prohibitions are concerned, no.

Mr. FARNSLEY. Thank you. Your paper was excellent.

Dr. DALRYMPLE. Thank you, sir.

The CHAIRMAN. Doctor, do you have any information, since you are in a health program and at the great institute of Princeton, do you have any information on the effects of automobile fumes on people?

Dr. DALRYMPLE. No further than what was presented by Dr. Terry. I certainly agree that this is important.

The CHAIRMAN. You have not made a study of that field?

Dr. DALRYMPLE. No, sir.

Mr. ROGERS of Texas. Will the gentlemen yield?

The CHAIRMAN. Yes.

Mr. ROGERS of Texas. Don't you think it is important, though, Doctor, that you go into that more? I mean what I can't understand is why so much time has been devoted to cigarettes and not devoted to this other. I would rather smoke 10 cigarettes than follow one of these buses for 10 blocks. It seems like my breathing apparatus becomes clogged up by just following them. Maybe it is psychological.

Dr. DALRYMPLE. Of course, the cigarette is immediately under the control of the individual who smokes it. The fumes are the problem of society as a whole.

Mr. ROGERS of Texas. But I mean both of them get into the public health situation.

Dr. DALRYMPLE. Well, you recognize that I am an administrator. I do what research I have time for, such as the survey that I referred to briefly. I am never going to do extensive research myself.

Mr. ROGERS of Texas. Are you associated with the Cancer Society?

Dr. DALRYMPLE. No, sir; just with the University Health Services at Princeton. I am here representing the American College Health Association.

Mr. ROGERS of Texas. Thank you, sir.

The CHAIRMAN. Doctor, thank you very much. We understand your problem. We welcome you to this committee with your views and we appreciate the contribution you have made to this record.

Dr. DALRYMPLE. Thank you very much, Mr. Harris.

The CHAIRMAN. Dr. Williams. I believe, Doctor, that you have with you Dr. Auerbach. We are sorry that we have detained you gentlemen. You have been here all day, probably all week, I don't know. I hope you got something out of the discussion.

Dr. WILLIAMS. We have learned a great deal.

Dr. AUERBACH. Mr. Chairman, may I say that I have a statement and material with me that is going to take much longer than 10 minutes. What I have to say is independent of Dr. Williams. I think the Chair should be so informed. Dr. Williams has a 10-minute statement, but mine will be much longer than 10 minutes.

The CHAIRMAN. Doctor, we will have to have you come back at another time.

Dr. AUERBACH. I will be very happy to come back on Tuesday.

The CHAIRMAN. I think under the circumstances it will be unfair to you and to the committee, since the others necessarily had to leave, it being so late, and it would not be practical to stay here all through the night for this, just you and me.

Dr. AUERBACH. I will be more than happy to return.

The CHAIRMAN. Proceed, Doctor.

STATEMENT OF ASHBEL C. WILLIAMS, M.D., CHAIRMAN OF THE MEDICAL AND SCIENTIFIC COMMITTEE, BOARD OF DIRECTORS, AMERICAN CANCER SOCIETY

Dr. WILLIAMS. Mr. Chairman, I think I can present my testimony in less than 10 minutes, sir.

I am Ashbel C. Williams, M.D., a surgeon from Jacksonville, Fla., and I am chairman of the Medical and Scientific Committee of the Board of Directors of the American Cancer Society. I am a member of the Cancer Committee of the American College of Surgeons and a diplomate of the American Board of Surgery.

For many years, I have done thoracic surgery, as well as general surgery. I have been chief of thoracic surgery at St. Vincent's Hospital in Jacksonville and consultant in thoracic surgery to the veterans' hospital at Lake City, Fla. I emphasize this aspect of my experience since I want to make it clear that I have operated on many patients with lung cancer and I am thoroughly familiar with the disease.

As a volunteer, I have served as president of the Duval County unit of the American Cancer Society and as president of the Florida division of the Society.

The American Cancer Society is a national voluntary health agency, with 2 million volunteers, organized into 59 divisions and composed of 3,000 units throughout the United States. Since 1948, the society has been deeply concerned with the problem of lung cancer, its sharp increase, and the relationship of cigarette smoking to health. We have conducted major epidemiological studies in this field and have supported laboratory, clinical, and pathological research.

In 1960, our board of directors took the position that "evidence presented by the many studies reported in recent years indicates beyond reasonable doubt that cigarette smoking is the major cause of unprecedented increase in lung cancer." We began an intensive program of education, aimed at two groups: At teenagers who either had not begun to smoke or had not yet been firmly gripped by the habit, and at physicians, who we felt were the key educational influence on health in the United States.

During my work with the society I have served on the committees concerned with policy on cigarettes and lung cancer and I have played a part in our educational program aimed at teenagers.

As you may know, the American Public Health Association estimated that, if smoking patterns of 1962 continue, 1 million children now in school will die of lung cancer before they are 70. When we add the additional millions who will be lost—if cigarette smoking continues—to heart disease and emphysema, we have some idea of the magnitude of this health problem.

It has been argued that the relationship between cigarette smoking and lung cancer has not been established. There is rarely, if ever, completely unanimous agreement on any subject whether it is scientific or economic, in politics or any other field. In medicine there are many areas of disagreement: about how to treat certain forms of cancer; about how to use anticoagulants in coronary heart disease; whether to treat stomach ulcers by surgery or by hypothermia. Nevertheless, there is more nearly uniform agreement on the conviction that cigarettes are the principal cause of lung cancer than on many other subjects. The fact that an especially large percentage of doctors have stopped smoking or changed from cigarettes to pipes or cigars is highly significant. It is even more significant that the specialists who deal most with lung cancer—the thoracic surgeon, radiologist, chest physician, and pathologist—now have the fewest cigarette smokers.

The Surgeon General's Advisory Committee Report of January 11, 1964, produced a deep impression on the public and it was recognized as the voice of authority. It is time now for the Congress to take "appropriate remedial action" as recommended by the Surgeon General. No single action or crash program will solve this problem. However,

a cautionary label on cigarettes and in advertising will be an official demonstration by the Congress of its concern about this health hazard.

Our society in its work with teenagers has organized many State conferences of student leaders to discuss the question of cigarettes. Again and again, these youngsters have raised the question: If a cigarette is dangerous to my health, why doesn't the Government require a warning on the package? There are such warnings on a variety of dangerous products, from iodine up and down the spectrum. There should be a warning on cigarette packages. I cannot see how we can expect success in our efforts to build sound behavior on cigarette smoking among the young unless the Congress takes this step—and shows the Government's recognition of the danger of cigarette smoking.

For 5 years the American Cancer Society has urged that the tar and nicotine content in the mainstream of tobacco smoke be labeled. Our thinking is as follows: Unfortunately, there are many people now so strongly addicted to cigarette smoking that they find it impossible to give up the habit even though they earnestly desire to do so. These people wish to smoke the least harmful cigarette available on the market. At the present time there is no satisfactory way for the consumer to judge the relative merits of different brands of cigarettes from the point of view of tar and nicotine.

However, there is evidence from the Cancer Prevention Study of the American Cancer Society, in which we are following 1,100,000 persons for 6 years, that people who smoke cigarettes low in nicotine and tar content cough less than people who smoke cigarettes high in nicotine and tar. A continued cough, we have found, is a danger signal that may point to lung cancer. A number of scientists feel that it is likely that low tar, low nicotine cigarettes may be less seriously harmful than other cigarettes. I can see no sound reason for not requiring cigarettes to give the tar and nicotine content, and I see possible advantages. We require labeling of content on a great variety of products, why not on cigarettes?

However, the label on packages is not enough—it is imperative that every radio and television commercial, every advertisement carry a statement like this: "Caution—Habitual Cigarette Smoking Is Hazardous to Health."

Such a protective advertising label will put the individual on the alert, reminding him again and again of the serious threat to health in cigarette smoking. The warning message will not prohibit advertising of cigarettes—as has been done in Great Britain and in Italy—but it will make clear to all consumers the serious risk that they run in smoking cigarettes.

However, candidly, I do not see that an advertising warning will immediately reduce the consumption of cigarettes by those who smoke. Its main value—like the label on a package—will be to alert those who are not cigarette smokers, particularly the boys and girls on whom there are so many pressures to take up cigarette smoking.

Now, while I have been interested in the concept of the new cigarette code, I cannot see how anything short of an advertising warning to smokers will provide adequate protection for young people. It is encouraging that professional athletes no longer advertise cigarettes. The tobacco industry now emphasizes that cigarette smoking is an

adult habit—we recognize good intentions here—but the fact remains that young people's greatest wish is to become adults. If cigarette smoking is a sign of maturity, of adulthood, it will have a strong appeal. We can help counteract that appeal, I think, by our educational programs but we need also the warning tag on advertising and cigarette packages. Hence, may I put myself firmly on record as opposing those measures that would directly or indirectly prevent the Federal Trade Commission from acting to protect the public by the supervision of advertising?

The cigarette problem is different from many other potential threats to life and health. As Senator Maurine Neuberger has pointed out, automobiles and alcohol may be dangerous, but only when they are abused. Cigarettes on the other hand are hazardous when they are used just as the advertising now recommends. Even the moderate cigarette smoker runs a health risk.

When this habit is formed in childhood and youth, it becomes firmly fixed and then in the most productive adult years of family responsibility from 50 to 65 (35 to 50 years after the habit was started) the penalty is too often paid in the form of rapidly fatal lung cancer, disabling heart disease and crippling emphysema.

With all due respect, I urge that you be guided in your deliberations not by a distinct minority of physicians and scientists but by the leaders of medicine, by the opinions of men and women whose lives have been devoted to research and who are best qualified to pass judgment on the scientific problems involved in the cause of disease. I want to repeat and emphasize that there is no question but that the vast majority of physicians today accept the findings of the Advisory Committee to the Surgeon General.

The problem of the cigarette in our society is a thorny one, with many complex aspects to it. On thing is clear, however: It is a cause of death and disease on a frighteningly massive scale. The old Roman doctrine of caveat emptor—let the buyer beware—may have been excusable in an earlier day and age; but in the enlightened society of today, the motto should run, "Let the buyer be warned."

There is an appendix to this, sir, which is just a summary, and I will skip that.

The CHAIRMAN. Do you wish it to be included as a part of your presentation?

Dr. WILLIAMS. I would like it to be included if it may.

The CHAIRMAN. Let it be included at this point.

(The appendix to Dr. Williams' statement referred to follows:)

In conclusion, Mr. Chairman, I would like to add the following points to my written testimony:

1. That the American Cancer Society strongly endorses and supports the recommendations of the U.S. Public Health Service, the Federal Trade Commission, and the National Interagency Council on Smoking and Health that cigarette packages and cigarette advertising carry warnings of the health hazards of cigarette smoking.

2. That we agree with the Surgeon General that the type of warning could well be left to the regulatory agencies of our Government charged with these responsibilities; namely, the Food and Drug Administration for warnings on packages and the Federal Trade Commission for warnings on advertising.

3. That the American Cancer Society urges Congress not to enact legislation that will prevent these Federal agencies or appropriate State or local agencies from carrying out their responsibilities concerning health warnings on cigarette advertising.

Dr. WILLIAMS. I also, sir, have resolutions from various medical associations that if I may, I would like to have included with my testimony.

The CHAIRMAN. Will you identify them for the record and let them be included.

Dr. WILLIAMS. Thank you, sir. Do you wish me to read them?

The CHAIRMAN. No, just to identify who they are.

Dr. WILLIAMS. Well, there is the American Association for Thoracic Surgery; American Cancer Society; National Tuberculosis Association; Public Health Cancer Association; American Public Health Association; the American Heart Association; American Medical Association—the reference committee on public health recommended the resolution which was then passed by the house of delegates making it the official position of the American Medical Association; the American College of Chest Physicians; the American College Health Association; the American School Health Association; the Society of Thoracic Surgeons; American Association for Thoracic Surgery; Society of State Directors for Health, Physical Education, and Recreation; Surgeon General of the U.S. Air Force; President's Commission on Heart Disease, Cancer, and Stroke; Surgeon General of the U.S. Public Health Service.

The CHAIRMAN. Let that be included in the record.

(The material referred to follows:)

CIGARETTE SMOKING: A SERIOUS HEALTH HAZARD?

Positions of Medical and Scientific Organizations

Certain physicians have testified before committees of the U.S. Senate and House of Representatives that they are unconvinced that cigarette smoking is harmful. These physicians have a right to disagree with majority opinion but they represent a very small segment of medical and scientific opinion and they speak only as individuals, not as representatives of any medical organization. In fact, every medical and health organization in this country and abroad that has studied this subject has agreed with the conclusions of the U.S. Public Health Service that cigarette smoking is a serious health hazard. And no medical or public health organization has stated that cigarette smoking is not injurious to health.

The attached statements are evidence that the view expressed by these "unconvinced physicians" are in conflict with the positions of major professional organizations in this country—organizations of which some of these physicians doubtless are members.

The issue is: Are the health policies of our Nation to be determined by overwhelming scientific evidence or by the contrary view of a few individuals?

American Association for Thoracic Survey

"Whereas there is irrefutable evidence associating cigarette smoking with such lethal and disabling disorders as cardiovascular disease, pulmonary emphysema and cancer of the lung; and

"Whereas this evidence has accumulated largely from the observations of physicians and surgeons concerned with pulmonary and cardiovascular diseases; and

"Whereas the overwhelming evidence of alarming increase of cigarette-caused death and disability is most apparent to thoracic surgeons; and

"Whereas the other branches of medicine and the public look to thoracic surgeons for leadership in dealing with this vast public health problem: Therefore be it

"*Resolved*, That the American Association for Thoracic Surgery urge all its members to intensify an educational campaign directed toward the public in general, and youth in particular, relative to the health hazards of smoking; and be it further

"*Resolved*, That the American Association for Thoracic Surgery recommend to the Congress of the United States the passage of legislation that will regulate advertising and require a warning label on merchandise as a necessary and important step in leading the citizens of the United States and the world toward an eventual understanding of this dangerous habit; and be it further

"*Resolved*, That copies of this resolution be presented to the congressional committees which are involved with legislation in this field."

Resolution passed at the 45th annual meeting, in executive session, March 30, 1965, New Orleans, La.

STATEMENTS AND RESOLUTIONS ON CIGARETTE SMOKING AND LUNG CANCER

In the United States

Health agencies and professional societies

Public Health Cancer Association

"*Resolved*, That there is sufficient evidence available of a relationship between smoking and lung cancer to justify advising the public to stop smoking cigarettes as a means of eventually lowering the incidence and to advise the youth of America to ponder well the question whether the risk entailed is worth the pleasure derived."

Resolution as reported in the Chicago Daily Tribune, October 12, 1954.

American Cancer Society, Inc.

"*Resolved*, That the American Cancer Society emphasize to the American people that the presently available evidence indicates an association between smoking, particularly cigarette smoking, and lung cancer, and to a lesser degree other forms of cancer * * *."

Adopted by the national board of directors of the American Cancer Society, Inc., October 22, 1954.

"The board now believes that it has a * * * responsibility both to the medical profession and the general public to state that in its judgment the clinical, epidemiologic, experimental, chemical, and pathologic evidence presented by the many studies which have been reported in recent years indicates beyond reasonable doubt that cigarette smoking is the major cause of the unprecedented increase in lung cancer. The board further believes that all organizations and agencies concerned with cancer have a responsibility to formulate programs of action based upon this information in order to reduce the incidence of this largely preventable disease."

Action of the National Board of Directors of the American Cancer Society, Inc., January 21, 1960.

National Tuberculosis Association

"The National Tuberculosis Association warns all persons that: there is an alarming increase in deaths from lung cancer—cigarette smoking is a major cause of lung cancer—the risk of lung cancer increases with the number of cigarettes smoked. Giving up smoking reduces the risk of lung cancer. Recent studies show that cigarette smoking is a factor in such crippling lung diseases as chronic bronchitis and emphysema. There is no single cause for all lung cancers. Breathing polluted city air may also add to the risk of lung cancer. No present method of treating tobacco or filtering the smoke has been proved to reduce the harmful effect of cigarette smoking; up to now, these harmful effects can be avoided only by not smoking cigarettes. All persons should be given these facts. Parents, teachers, and physicians have a special opportunity and a duty to warn our youth of these facts before the cigarette smoking habit has become established."

Approved by the National Tuberculosis Association Board of Directors, February 27, 1960.

American Public Health Association

"Whereas lung cancer is a rapidly increasing fatal disease * * *; and

"Whereas scientific evidence has established that excessive cigarette smoking is a major factor in the disease; and

"Whereas public health officials in the United States and many other countries have pointed out the relationship between cigarette smoking and lung cancer: Therefore, be it

"*Resolved*, That the American Public Health Association call upon health authorities to undertake a broad educational effort, especially among young people, to prevent cigarette smoking; and be it further

"*Resolved*, That the American Public Health Association urge health authorities to collaborate with voluntary health organizations and with educational authorities in this effort."

Adopted by the American Public Health Association, 87th annual meeting, October 21, 1959.

Urge APHA members to provide leadership in educational activities to indicate that the present level of smoking constitutes a serious health hazard.

Offer APHA support to the Public Health Service, other official and voluntary health agencies, and professional health organizations; and to schools and other community agencies in initiating, planning, and implementing an educatioal program, and support of other measures that may be devised to deal with this problem.

Urge the tobacco industry, advertising services, and the National Association of Broadcasters to continue to take voluntary steps to control cigarette advertising, particularly that directed at young people.

Urge legislative bodies and bureaus so empowered to regulate cigarette advertising.

Call for continued research and demonstration of educational and action programs based on research in methods of deterring young people from beginning to smoke and of encouraging adults to give up or cut down on smoking.

Adopted October 1963 by governing council, 91st annual meeting.

The American Heart Association

"The 1963 ad hoc committee on smoking and cardiovascular diseases reported * * * on May 11, 1963 * * * that there is sufficient evidence of the harmful effects of cigarette smoking on health to warrant discouraging teenagers from developing the habit of smoking. The primary evidence of the harmful effect of cigarette smoking remains the statistical relationshhip between smoking and mortality from coronary artery disease, but a number of ancillary features are also recognized, including effects in emphysema, peripheral vascular disease, and not to be overlooked, the relationship to carcinoma of the lung. Accordingly, the committee recommends that the national office of the American Heart Association, as well as affiliate and chapter heart associations, be permitted to join with other voluntary and official health agencies in educational programs for teenagers relative to cigarette smoking. The committee further recommends that strong encouragement to stop smoking, under physician supervision, be given people who have a high risk of death and illness from coronary artery disease and myocardial infarction; namely, those with high blood pressure, high blood cholesterol, overt signs of hardening of the arteries, a family history of heart attacks and strokes in middle age, or a combination of any of these.

"Finally, the committee recommends that expanded biological and medical research be conducted on the relation of smoking to the cardiovascular diseases * * *."

Full report adopted by the American Heart Association Board of Directors on June 8, 1963.

American Medical Association Reference Committee on Public Health and Occuptional Health

1. Having reviewed the actions of the house of delegates of the American Medical Association, available printed information, and very excellent testimony before the reference committee, it became evident to your committee that the American Medical Association is on record and does recognize a significant relationship between cigarette smoking and the incidence of lung cancer and certain other diseases, and that cigarette smoking is a serious health hazard.

2. The AMA recognizes the contribution of the Surgeon General's committee in its comprehensive report. In keeping with one of the recommendations of this report, the American Medical Association and the National Education Association, through their Joint Committee on Health Problems in Education, have adopted a resolution urging elementary and secondary schools to include programs on smoking and health in their health education curriculums. We recommend that programs be developed to disseminate this vital health education material on the hazards of smoking to all age groups through all available means of communication.

3. Included in the material available to your committee was an AMA pamphlet entitled "Smoking: Facts You Should Know" prepared for public distribution. Your reference committee critically reviewed the initial edition of this pamphlet

and believes that, in the light of accumulating knowledge, the pamphlet is in need of modification in its revision.

4. The American Medical Association House of Delegates, in a policy statement of June 1963, recognized the deleterious effects of tobacco on human health and indicated that extensive research is necessary to clarify its exact relationship to health. Because of this, your reference committee believes that the AMA House of Delegates and the Board of Trustees should take great pride in the establishment of the research program that is being carried out by the American Medical Association Education and Research Foundation under the direction of a committee of five scientists, three of whom were members of the Surgeon General's committee.

Mr. Speaker, in the opinion of your reference committee, the above statement constitutes a concise and accurate statement of policy by the AMA with reference to tobacco as a health hazard.

Unanimously approved by the house of delegates, June 1964.

The American College of Chest Physicians

"Whereas the weight of scientific evidence distinctly indicates that cigarette smoking and the inhalation of other atmospheric pollutants have an association relationship which strongly suggests a cause and effect connection with chronic bronchitis, pulmonary emphysema, cor pulmonale, cardiovascular disease, and cancer of the lung, and

"Whereas there is increasing scientific evidence that viruses and other agents still to be defined may play a role in the etiology of cancer: Therefore, be it

"*Resolved*, That the Board of Regents of the American College of Chest Physicians urge all of its members and the medical profession in general to intensify their educational campaign directed toward the public in general and the youth in particular relative to the health hazards of smoking. * * *"

From a resolution approved by the board of regents, June 22, 1962.

The American College Health Association

"Whereas a preponderance of scientific evidence (with scant counterevidence) indicates an association relationship and suggests a causal relationship between cigarette smoking and some diseases; and

"Whereas the cigarette smoking habit often is acquired now by young people either not long before they commence college, or while they are attending college; and

"Whereas colleges and universities are in a particularly advantageous position to undertake an effective educational effort to stop and to prevent cigarette smoking by college students: Therefore be it

"*Resolved*, That the American College Health Association, recognizing the above-mentioned relationships between cigarette smoking and some diseases urges its entire membership—both institutional and individual—to attempt, in whatever ways considered most suitable, to discourage cigarette smoking by college students and future alumni."

Adopted by the council of the association, April 27, 1962.

American School Health Association

The practice of the endorsement of tobacco and smoking by outstanding athletes in public media advertising, with its obvious connotations regarding health and physical fitness, undoubtedly affects the attitudes and behavior of impressionable school-age youth.

The American School Health Association, recognizing the evidence linking tobacco with impaired performance, health and longevity, considers the use of tobacco advertising in the athletic setting and/or by athletes of renown as grossly misleading and a hindrance to the proper health education of our youth. The association condemns the practice and urges athletes to refrain from the ethically indefensible use of their names.

Approved by the governing council, at annual meeting, Kansas City, Mo., on November 10, 1963.

Society of State Directors for Health, Physical Education, and Recreation

"*Resolved*, That the Society of State Directors of Health, Physical Education and Recreation go on record as encouraging the voluntary health agencies and the Public Health Service to continue and intensify their efforts to educate young people about smoking, utilizing all appropriate methods, including the wide distribution of materials; and be it further

"*Resolved*, That the Society of State Directors of Health, Physical Education, and Recreation go on record as favoring an intensive program of education to acquaint young people with such scientific information as will help them understand the harmful effects of cigarette smoking and will lead them away from the use of tobacco."

Adopted at the 35th annual meeting of the society, March 17, 1961.

American Association for Thoracic Surgery

"*Resolved*, That the American Association for Thoracic Surgery take official cognizance of the increasing hazards of bronchogenic carcinoma, pulmonary emphysema and their relationship to cigarette smoking; and

"*Resolved*, That notice of this action be sent to the Surgeon General of the U.S. Public Health Service and the American Medical Association; that the medical profession be informed through appropriate publications and that the lay public be informed through the lay press."

Passed by the American Association for Thoracic Surgery, April 10, 1963.

Society of Thoracic Surgeons

"Whereas scientific evidence strongly indicates a relationship between cigarette smoking and such disorders as chronic bronchitis, pulmonary emphysema, cardiovascular disease and cancer of the lung; and

"Whereas the bulk of this evidence has accumulated from the observation of physicians specializing in pulmonary and cardiovascular disease; and

"Whereas the overwhelming evidence of the alarming increase of cigarette-caused diseases and disability is most apparent to thoracic surgeons; and

"Whereas the other branches of medicine and the public look to thoracic surgeons for leadership in dealing with this vast public health problem: Therefore be it

"*Resolved*, That the Society of Thoracic Surgeons urge all of its members, especially the elected officers, to support an educational campaign directed toward the public in general, and youth in particular, relative to the health hazards of smoking; and be it further

"*Resolved*, That a copy of this resolution be presented to the house of delegates of the American Medical Association and to the Surgeon General of the U.S. Public Health Service."

Passed by Society of Thoracic Surgeons, January 25–27, 1965.

Surgeon General of the U.S. Public Health Service

"* * * the weight of evidence is increasingly pointing in one direction; that excessive smoking is one of the causative factors in lung cancer."

From Public Health Reports. Volume 72, No. 9, page 786, September 1957.

"The weight of evidence at present implicates smoking as the principal etiological factor in the increased incidence of lung cancer."

From the Journal of the American Medical Association—a weekly publication. Volume 171, pages 1829–1837, 1959.

"* * * On the basis of prolonged study and evaluation of many lines of converging evidence, the Committee makes the following judgment:

"Cigarette smoking is a health hazard of sufficient importance in the United States to warrant appropriate remedial action."

From "Smoking and Health: Report of the Advisory Committee to the Surgeon General of the Public Health Service." Accepted as the official position of the Public Health Service, 1964.

Surgeon General, U.S. Air Force

"1. The ever-increasing evidence linking cigarette smoking with lung cancer, pulmonary diseases, cardiovascular diseases, etc., can no longer be ignored. The Surgeon General, U.S. Air Force, has taken a firm stand on this issue and has informed the tobacco companies that gift cigarettes are no longer acceptable.

"2. To allow the free distribution of cigarettes in our hospitals and in flight lunches suggests to our personnel that the Air Force Medical Service, in effect, condones cigarette smoking. To do so is to repudiate the overwhelming evidence of many medical research teams working independently on a worldwide basis.

"3. Henceforth, gift cigarettes will not be accepted for free distribution to patients in U.S. Air Force hospitals, nor will they be placed in flight lunch boxes."

From an order of R. L. Bohannan, major general, U.S. Air Force Medical Corps, Chief of Staff, September 17, 1962.

President's Commission on Heart Disease, Cancer, and Stroke

"* * * The Commission strongly endorses the conclusions and recommendations of the Surgeon General's Advisory Committee on Smoking and Health which, in addition to confirming previous reports, stated that smoking is a serious hazard to health and indicated the need for more aggressive programs in this area.

"It seems apparent that the reduction of cigarette smoking offers great possibilities for the prevention of illness, disability, and premature death in this country, with regard to both cancer and cardiovascular disease * * *."

From report, volume 1, page 46.

The CHAIRMAN. Does that conclude your presentation?

Dr. WILLIAMS. Yes, sir.

The CHAIRMAN. Thank you very much. Mr. Rogers?

Mr. ROGERS of Texas. Doctor, you have heard all of these discussions today. I noticed you sitting in the audience. You were quite attentive. I am sorry you had to wait so long. But you feel that all of these activities outlined by the Surgeon General, that they were participating in this area, that they are proper activities for the Federal Government?

Dr. WILLIAMS. I certainly do, sir.

Mr. ROGERS of Texas. Even the educational program that Dr. Terry testified they were getting into, in these analytical marketing reports and things of that kind?

Dr. WILLIAMS. I do. I don't believe we can carry out an effective program without the educational aspects, especially for children.

Mr. ROGERS of Texas. You think it is a proper area for the Federal Government to be operating in?

Dr. WILLIAMS. I think the Federal Government can point the way and help us in local activities. They are not going to do it alone. They are going to do it in cooperative ventures with States and with local organizations I would assume.

Mr. ROGERS of Texas. Doctor, I gather that you feel that the labeling and the activities of the Federal Government in assuming the requirement of labeling and doing all of this will do a better job of stopping this than just a straight prohibition?

Dr. WILLIAMS. I am a practical person, and I don't believe prohibition would work.

Mr. ROGERS of Texas. But you do think that smoking ought to be prohibited?

Dr. WILLIAMS. Ideally, yes, but we have to accept what we think we can get here, and I think we can accomplish a great deal of good over a long period of time if we keep nibbling at this thing and accomplishing it in a way that will eventually succeed. I don't think prohibition would be accepted, and I don't think it would work.

Mr. ROGERS of Texas. What I am talking about, Doctor, is whether it would be accepted or not, you feel in your own mind, I believe you said beyond a reasonable doubt, that smoking causes lung cancer, so I would conclude that you would think it ought to be prohibited either by force or by persuasion?

Dr. WILLIAMS. I would take persuasion. I will go with that, yes.

Mr. ROGERS of Texas. Now Doctor, have you make any inquiries or do you have any evidence with regard to the effect of exhaust fumes in causing lung cancer?

Dr. WILLIAMS. Personally I have not. I am in the clinical practice of surgery, but there are many such studies being made over the country.

Mr. ROGERS of Texas. What I am thinking about, do you have in your own mind or have you been furnished in connection with your duties in the Cancer Society with information indicating as to where the incidence of cancer might be more prevalent or more numerous, say like in an industrial area where they have a lot of smoke fumes or in an area where there is heavy traffic congestion?

Dr. WILLIAMS. Well, the studies that have been done strangely enough have not indicated any great preponderance of cancer in that area. There is a slight increase.

In New Orleans, for instance, there is a higher incidence of lung cancer than there is in either Pittsburgh or Los Angeles, and you can't blame that on the atmosphere.

Mr. ROGERS of Texas. That is interesting. I didn't know that. But you say there is. Does that mean there are more people smoking in New Orleans?

Dr. WILLIAMS. Dr. Alton Ochsner says it is the picayune cigarette, I am not sure.

Mr. ROGERS of Texas. But do you feel, Doctor, that the inhalation of these fumes from your standpoint and your expert knowledge as a doctor, that the inhalation of these exhaust fumes does contribute basically to the increase in cancer?

Dr. WILLIAMS. I am sure it has some effect, sir, but it has not been measurable in any of the studies that have been done. It has been relatively minute, the difference that you would encounter in New York City or Chicago, as compared with a rural community. It is more related to the number of smokers and the intensity of their smoking habits than it is the atmosphere.

Mr. ROGERS of Texas. Then I gather from your testimony, Doctor, that you have concluded in your own mind that cigarettes are actually almost the causa sine qua non in this situation.

Dr. WILLIAMS. About 85 to 90 percent. I think that is the constant figure in the experience of those of us in this field.

Mr. ROGERS of Texas. You feel like even reaching that conclusion on the dangers it presents, that there ought not to be a prohibition?

Dr. WILLIAMS. I think it will be ideal if there could be, but I repeat I don't think it is obtainable now.

Mr. ROGERS of Texas. Do you think we ought to educate the people to stop. You feel then, Doctor, that the tobacco business as such should be destroyed?

Dr. WILLIAMS. No, sir, I don't think that. I don't think anyone in this field thinks that.

Mr. ROGERS of Texas. Don't misunderstand me. I am not looking at this from the standpoint of you just going out and trying to destroy something, but I mean from the standpoint of what you have said, you feel like in the final analysis tobacco ought not to be grown?

Dr. WILLIAMS. I would like to see over a period of years a transition made to other crops, and I think that is what actually will occur, regardless of what we here today think, this is inevitable in view of the information which we have.

Mr. ROGERS of Texas. Doctor, you made a statement here in which you said that you thought you were against all measures that would put any restrictions on the Federal Trade Commission in doing what they were attempting to do:

> Hence may I put myself firmly on record as opposing those measures that would directly or indirectly prevent the Federal Trade Commission from acting to protect the public by supervision of advertising.

Now, Doctor, did you ever study law?

Dr. WILLIAMS. No.

Mr. ROGERS of Texas. What I want to point up, I think the main issue here is who is going to put the reins on the situation involving an industry that is very important in this country at the present time from an economic standpoint, if reins are needed.

Now the Federal Trade Commission is a creature of the Congress of the United States. The Surgeon General's department is a division of the executive branch of the Government, and it is my position, my bill was introduced for the purpose of laying down a situation that the Congress of this country, made up of the duly elected representatives under the Constitution, are still the ones who are supposed to set policy in this field.

I think that the testimony of Mr. Dixon might indicate that he thought the Congress might be encroaching upon his domain, but I think it should be pointed out here and now that the Federal Trade Commission does not have any powers unless we give them to them. Now they may end up with them.

They are taking a lot they don't have. They may get away with it, but if they do then it will be a change in our form of government, and I don't think you want that. I think the Congress ought to make this decision, and I think that the Federal Trade Commission should confine itself to the offices for which it was set up, and that is to administer whatever law the representatives of the people make. Thank you very much, sir.

The CHAIRMAN. Mr. Satterfield?

Mr. SATTERFIELD. I have no questions.

The CHAIRMAN. Mr. Farnsley?

Mr. FARNSLEY. Doctor, your paper is very persuasive. I have got a Bromo Seltzer bottle which says, they warn against excessive use. Am I about right? If it is worse than cigarettes, we prohibit it, and you can only get on a doctor's prescription goofballs and narcotics, and if it is not quite so bad, we warn against excessive use, and then on cigarettes we just warn against it as a health hazard?

I am not trying to trick you or anything. I am trying to see what you believe. You see, you don't have the pressures that these agency people do. You don't have the pressures that we do. You can take an absolutely cool view of the thing.

Dr. WILLIAMS. I would say that the actual wording of it we would leave up to the good judgment of you gentlemen, whichever agency is going to be charged with that responsibility.

As far as I am personally concerned in the American Cancer Society, we would like to see the product labeled as hazardous to health.

Mr. FARNSLEY. Everybody that comes in advocating that, defends automobiles and whisky. They make cigarettes, automobiles, and whisky all in my district, so I don't know what view to take.

You are happy about automobiles, aren't you? You quoted the lady Senator that they can be made all right if used carefully and whisky can be used carefully. Bromo Seltzer can be used carefully, but it says excessive use is dangerous, keep away from children, and all that.

Dr. WILLIAMS. I think all of us today who think at all are concerned about alcohol and automobiles. However, in this day of specialization we can't all be specialists in everything, and I don't set myself up as being any authority in the field of alcohol and automobiles. A great deal is being done in those fields as I understand it, to regulate the use and abuse.

Mr. ROGERS of Texas. Will the gentleman yield for one question?

Mr. FARNSLEY. Yes; but I want to congratulate the nice doctor. He is one of a few men I have ever seen who wasn't an authority on everything.

Mr. ROGERS of Texas. Doctor, do you think it would help if the Congress required a fume arrester on the exhausts of all motor vehicles?

Dr. WILLIAMS. I certainly do.

Mr. ROGERS of Texas. Thank you, sir. Thank you, Mr. Farnsley.

Mr. FARNSLEY. Is alcohol a narcotic?

Dr. WILLIAMS. Not so regarded, not to my knowledge.

Mr. FARNSLEY. My Americana Encyclopedia said so, and I never heard of that before. If it is not, you have answered my question. Thank you so much, Doctor. I am through.

The CHAIRMAN. Does the gentleman's district produce Bromo Seltzer, too?

Mr. FARNSLEY. If it is bad we do. We have got everything.

The CHAIRMAN. Doctor, thank you very much. We are grateful to you for your patience in waiting and for the opportunity you have given us to hear your presentation.

Dr. WILLIAMS. Mr. Chairman, I thank you, because I know you have been at it very hard all day too. I appreciate it, sir.

The CHAIRMAN. Thank you very much. The committee will adjourn these hearings until Tuesday next. I think probably the first witness that we will have on Tuesday will be the chairman of the National Interagency Council on Smoking and Health, Mr. Emerson Foote.

We hope to proceed with these hearings just as expeditiously as we can, but apparently it is going to be some time before we conclude if we hear all of those who have indicated they want to be heard. The committee will adjourn until Tuesday at 10 o'clock in this room.

(Whereupon, at 5:25 p.m. the committee recessed, to reconvene on Tuesday at 10 a.m., April 13, 1965.)

CIGARETTE LABELING AND ADVERTISING—1965

TUESDAY, APRIL 13, 1965

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to recess, at 10 a.m., in room 2123, Rayburn House Office Building, Hon. Oren Harris (chairman) presiding.

The CHAIRMAN. The committee will come to order.

This morning the first witness will be Mr. Emerson Foote.

Mr. Foote, you may take the witness chair.

Mr. Foote is chairman of the National Interagency Council on Smoking and Health.

Would you please present your statement?

STATEMENT OF EMERSON FOOTE, CHAIRMAN, NATIONAL INTERAGENCY COUNCIL ON SMOKING AND HEALTH

Mr. FOOTE. Thank you, Mr. Chairman.

First I would like to express my appreciation to you and to the members of your committee for being allowed to appear here.

The National Interagency Council on Smoking and Health of which I am chairman was organized and is sponsored by the following agencies: American Association for Health, Physical Education & Recreation; American Association of School Administrators; American Cancer Society, Inc.; American College Health Association; American Dental Association; American Heart Association; American Pharmaceutical Association; American Public Health Association; American School Health Association; Association of State & Territorial Health Officers; Department of Classroom Teachers of the NEA; National Congress of Parents & Teachers; National Tuberculosis Association; U.S. Children's Bureau; U.S. Office of Education; and U.S. Public Health Service.

By action of its board of directors, taken week before last the National Interagency Council has decided to present to this committee a petition rather than to submit medical or scientific statements.

This petition, which I now present to you, represents the unanimous conviction of the board of directors of the National Interagency Council on Smoking and Health and was unanimously approved by its board of directors on April 1, 1965.

It follows:

A PETITION TO THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE OF THE HOUSE OF REPRESENTATIVES

We urge with all emphasis at our command, indeed we entreat this committee to report legislation which will at least demonstrate the continuing concern of the National Government and hopefully will begin to arrest the tragic and unnecessary loss of life due to cigarette smoking.

We believe that this can best be accomplished by an adequate warning in cigarette advertising, as well as on the cigarette package.

We are deeply convinced of one central fact: that cigarette smoking is a serious health hazard.

This fact is also recognized and has been clearly expressed by: The Surgeon General of the U.S. Public Health Service; the Surgeon General's Advisory Committee on Smoking and Health; the Department of Health, Education, and Welfare—which has accepted and adopted the report of the Surgeon General's Advisory Committee on Smoking and Health; the Federal Trade Commission; the President's Commission on Heart Disease, Cancer and Stroke; the American Medical Association—which by the unanimous action of its house of delegates in June 1964, unequivocally recognized cigarette smoking as a serious health hazard; the American Cancer Society; the American Heart Association; the National Tuberculosis Association; the American Public Health Association.

Indeed, we know of no organized medical or scientific body anywhere in the world which states that cigarette smoking is not a serious health hazard; and the recognized medical and scientific bodies which have stated emphatically that cigarette smoking is a serious health hazard are numerous and well known.

The National Interagency Council and its member organizations recognize that a large number of citizens of this country are dying tragically and unnecessarily every day from the effects of cigarette smoking—never having had effective and continuous warnings from their Government of the dangers to which they were exposing themselves.

It is now 1 year 2 months and 21 days since the report of the Surgeon General's Advisory Committee on Smoking and Health called for remedial action—and nothing effective has yet been done.

Are we indeed to wait until there is unanimity of medical opinion about the hazards of cigarette smoking? If this is the case, we will wait for a hundred years. And millions upon millions will die before their time. For there will probably never be unanimity on this matter, as there is not unanimity on most medical and scientific questions.

If those responsible for protecting by law the health of the American people had waited for unanimity of medical opinion, there would not have been laws requiring vaccination for smallpox. And there would not have been laws requiring the pasteurization of milk.

There can be no question whatever that the overwhelming majority of medical opinion—in the entire world today—is that cigarette smoking causes and contributes to a huge amount of death and suffering.

We believe laws to protect the health of the American people should be enacted upon the basis of majority medical and scientific opinion—especially when it is a totally overwhelming majority.

It seems to us unwarranted and unthinkable for there to be further delay in protecting the health of the American people from hazards of cigarette smoking because of the contrary opinions of a relatively few individuals who go against the official and public position of their own professional organizations.

The time for action is long overdue. We deeply believe that the American people should be subjected to no further delay in being given protection from this terrible and unique peacetime health hazard which is represented by cigarette smoking.

We urge the speedy enactment of legislation requiring health warnings in cigarette advertising and on cigarette packages.

We most particularly petition this committee not to approve any legislation which will prevent the Federal Trade Commission from carrying out its reaffirmed intention of requiring health warnings in cigarette advertising—a conclusion the Federal Trade Commission reached after the most intensive study and after holding public hearings.

Respectfully submitted.

NATIONAL INTERAGENCY COUNCIL ON SMOKING AND HEALTH.

By order of its Board of Directors, April 1, 1965.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Mr. Foote.

Mr. Rogers, any questions?

Mr. ROGERS of Texas. Mr. Foote, first let me find out—now, this Interagency Council on Smoking and Health—who supports that financially? Where do you get your money to operate?

Mr. FOOTE. Well, we don't use very much money, Mr. Rogers, strangely enough, except indirectly.

For example, the American Cancer Society contributes the services of Dr. Harold Diehl, who is sitting over here. He is their medical and scientific director. He puts quite a bit of time on it. They pay his expenses when he goes around. The Public Health Service gives us two or three secretaries who type letters. I pay my own expenses, pay my own secretary, all my own traveling expenses.

Mr. ROGERS of Texas. You mean out of your personal funds?

Mr. FOOTE. Yes, indeed.

Mr. ROGERS of Texas. There are no contributions or things of that kind coming in to pay your expenses or pay you a salary?

Mr. FOOTE None whatsoever. As a matter of fact, Mr. Rogers, I took this job—first of all, it was offered me as a nonpaying job, and I took it with the further condition that I could at all times pay my own expenses. This may seem eccentric, but I——

Mr. ROGERS of Texas. This is very interesting, Mr. Foote. What is your background?

Mr. FOOTE. I was an advertising man, and a businessman, I believe. I was chairman of the board of McCann-Erickson, and I resigned in September, effective November 30. And I took this job the following day, December 1.

Mr. ROGERS of Texas. Now, I presume that you are generally interested in the health of the people as a whole, and in prevention of cancer from any source.

Mr. FOOTE. Oh, yes, indeed, sir.

Mr. ROGERS of Texas. But the thing that I was wondering about was why you tied in with smoking and health, when there are other things that cause cancer, too.

Mr. FOOTE. Well, the best I can say about that, sir, is this: I used to make my living many years ago selling cigarettes. That was 17 years ago. At that time I had no knowledge or no thought of a health hazard—I thought they were fine. I smoked two or three packs a day myself. As time wore on, I began to see the other side of it.

Now, I am glad you raised this question. I don't want you to think that I think I am any more ethical than the next advertising man. I just happened to be exposed to more information.

As far back as 21 years ago, I was chairman of the executive committee of the American Cancer Society. I was an early director of the American Heart Association. And I have been sort of surrounded by doctors for so many years, that this smoking thing began to become a big problem to me.

Mr. ROGERS of Texas. Well, the thing that pushes me, Mr. Foote is that they single out cigarette smoking, and all of these groups you name here devote all of their efforts toward the question of cigarette smoking, when we know there are a lot of other causes of cancer and lung cancer.

Mr. FOOTE. Mr. Rogers, may I say, sir, the American Cancer Society, by no means, singles out smoking. They are devoting—for example, the American Cancer Society has up to this moment contributed $500 to this interagency council. They raised over $40 million last year, most of which was applied to research, education, treatment, on things having nothing to do with smoking.

Mr. ROGERS of Texas. Well, now, then I would gather from that that you are interested, and the American Cancer Society is interested, in attacking all of these matters which you feel contribute to cancer and to bad health on an individual basis?

Mr. FOOTE. Indeed so, sir.

Mr. ROGERS of Texas. One at a time?

Mr. FOOTE. Yes, sir.

Mr. ROGERS of Texas. Then you would feel that everything ought to be done to help out, to stop the spread of cancer, or getting cancer, by an individual, no matter how little that would be?

Mr. FOOTE. Indeed so; yes, sir.

Mr. ROGERS of Texas. Then I presume that your council and your group would underwrite a measure to require all automobiles to have exhaust arrestors?

Mr. FOOTE. No, sir; we are only working—the council itself is the agency of these other agencies which are working in the smoking and health field, and we have—as far as the interagency council is concerned, we have no jurisdiction, you might say, in the automobile or the air pollution field. The American Cancer Society——

Mr. ROGERS of Texas. Well, where did you get your jurisdiction in the smoking field? You just took it, didn't you?

Mr. FOOTE. Perhaps I used the word loosely. But our field of interest is smoking.

Mr. ROGERS of Texas. Well, that is the question I am getting at. Why is it confined to smoking? Why don't you interest yourself in these other things, too?

Mr. FOOTE. Well, Mr. Rogers, if I may say so, sir, one can only do so much. You cannot be a jack of all trades, master of none. In my own case, I happen to share the feeling of many of the scientific people in the cancer field, though I am not a scientist, that cigarette smoking—that lung cancer, for example, which is one of the products of cigarette smoking, is the most preventable form of cancer. So we are working on something we think we can do something about.

Mr. ROGERS of Texas. But you have not devoted any effort or time to exhaust fumes from automobiles, or exhaust from, we will say, smokestacks, or diseases associated with lungs such as silicosis, and that sort of thing, where people are working in an area where their lungs are subjected to things that cause cancer, or other diseases?

Mr. FOOTE. The interagency council itself, sir, is not. And the reason I personally am not is that I have been assured by my scientific friends in the American Cancer Society that people in Los Angeles, where I was last week, quite a smoggy city—that the nonsmokers don't seem to get lung cancer there, either, compared to the cigarette smokers.

Mr. ROGERS of Texas. In Los Angeles?

Mr. FOOTE. In other words, sir, I don't wish to be drawn into a scientific discussion, but all of the scientists that I know feel that air pollution is a relatively very minor factor in lung cancer compared to cigarette smoking.

Mr. ROGERS of Texas. But it is an admitted factor, air pollution.

Now, we are not going to attack the cancer problem, are we, Mr. Foote, on the fact that unless you belong to a group that gets the most lung cancer, we are not going to help you.

Mr. FOOTE. No, Mr. Rogers. But if we can help prevent anywhere from 125,000 to 250,000 deaths a year, we think we will have done more than we have ever expected to do.

Mr. ROGERS of Texas. But you are going to confine your activities, now, to cigarette smoking?

Mr. FOOTE. I, myself, am, sir; yes, sir.

Mr. ROGERS of Texas. What about cigar smoking?

Mr. FOOTE. Our council is interested in cigar and pipe smoking, also, but the members—the scientific members of the council believe that the big health problem is cigarette smoking. We are not advocating any restrictive measures on pipe and cigar smoking at all, sir.

Mr. ROGERS of Texas. You are not doing what?

Mr. FOOTE. I am not advocating any restrictive measures, such as a label or warnings in advertising on pipes or cigars.

Mr. ROGERS of Texas. What about snuff dipping or chewing?

Mr. FOOTE. You don't smoke snuff, and you don't smoke chewing tobacco, so we don't interest ourselves in that.

Mr. ROGERS of Texas. But aren't the component parts of the tobacco—haven't the scientists found out that if you keep a cud, or whatever they call it, of tobacco in your jaw or your cheek somewhere, that the continual aggravation there will cause cancer?

Mr. FOOTE. I have read that, sir, but not being a scientist, I don't think I am the proper one to ask about that.

Mr. ROGERS of Texas. But you are confining your activties, then, solely to cigarette smoking?

Mr. FOOTE. Solely, sir, to trying to do anything we can that we think is legal and reasonable and American to reduce cigarette consumption.

Mr. ROGERS of Texas. To reduce cigarette consumption?

Mr. FOOTE. Yes, sir.

Mr. ROGERS of Texas. Well, now, if you are so sure that cigarette smoking is the cause of lung cancer—I gathered from your remarks you are pretty well sold that it is the primary cause—why don't you advocate the banning of cigarettes?

Mr. FOOTE. Well, sir, I have to answer you somewhat philosophically on that point. I would be as strongly opposed to the prohibition of cigarettes as the tobacco industry would be. I think it would be wholly unreasonable, because there are large numbers of people who smoke cigarettes with no apparent ill effects to their health. And I think they have a complete right to buy cigarettes if they wish to buy them. I would think it would be an infringement on our personal rights and liberties to have such a ban.

Mr. ROGERS of Texas. Then there is a question as to whether or not cigarettes affect some people and don't affect others?

Mr. FOOTE. I don't know any physician in America who has ever said that cigarettes kill off or injure the health seriously of everyone who smokes them, by any means. We know that there are many people who smoke cigarettes that get along fine, apparently, and many people who don't.

Mr. ROGERS of Texas. Actually, there is a large majority that smoke cigarettes that is never affected.

Mr. FOOTE. Sir, that is a scientific question, but I would say my scientific friends don't agree with that. They believe that most people who smoke cigarettes and keep on smoking them injure their health in some way, but by no means all.

Mr. ROGERS of Texas. Some of my scientific friends gave me the statement I just made, that a great majority of the people are not affected by them.

But you do feel then because many people are not affected by them, there ought not to be anything done with regard to banning them?

Mr. FOOTE. I also feel, Mr. Rogers—I lived through one prohibition, and I would not want to live through a second prohibition. I think it is wrong and an un-American way of handling the problem.

Mr. ROGERS of Texas. Then your statement boils down to the proposition, Mr. Foote, that you feel that the Congress ought to require cautioning in advertising of a product that may or may not hurt your health?

Mr. FOOTE. That may or may not hurt the health of a given individual: sir, yes.

Mr. ROGERS of Texas. Yes, that is right. You feel—do you feel, now, to go a little further, that this ought to be the province of the Congress of the United States, elected by the people, or of the Federal Trade Commission?

Mr. FOOTE. Well, if I had my druthers, I would rather have the Congress do it.

Mr. ROGERS of Texas. You believe in our form of government, don't you, Mr. Foote?

Mr. FOOTE. Of course I do, sir.

Mr. ROGERS of Texas. And the legislative processes by duly elected representatives of the people? And that is the reason I have some cause for alarm in your statement, where you say that you hope Congress will not pass any bill to prevent the Federal Trade Commission from doing something.

Now, you understand the issue is to some extent as to who has the authority to pass laws in this country. And we are getting challenged more every day by these bureaus and boards.

Mr. FOOTE. What I meant, Mr. Rogers—we say here we urge the speedy enactment of legislation requiring health warnings in both the advertising—but what we mean to say, and I think it is rather clear, sir, is if you do not choose to enact a warning legislation, a warning in the advertising, at least you won't pass a law to block somebody else from doing it, like the FTC.

Mr. ROGERS of Texas. Well, you don't take the position, then, that the FTC has a right to pass laws, do you?

Mr. FOOTE. No. We are not trying to take a legal position. We know what the FTC has done. And we would much rather have Congress do it—possibly not for the same reason that you would, sir, we know if you pass a law, it will go into effect. If the FTC issues a regulation, as Mr. Dixon said last week, it might be 4 years in the courts.

Mr. ROGERS of Texas. Mr. Foote, you say, then, that according even to your scientists and yourself, that it would be wrong to ban cigarettes, because there is a great number of people whose health is not affected, and it would not give them lung cancer.

Mr. FOOTE. What I said, Mr. Rogers, is a substantial number of people whose health apparently is not affected—yes.

Mr. ROGERS of Texas. Yes. But you want to require the people who sell that product to put a statement in their advertising—and as I understand the Federal Trade Commission, they want that statement to be that if you smoke cigarettes, you are liable to die of lung cancer or some other disease.

Mr. FOOTE. Well, I understood Mr. Dixon to say that the wording was rather general. If you wish to know, sir, the type of wording we prefer is not like that.

Mr. ROGERS of Texas. Well, what kind do you prefer?

Mr. FOOTE. There have been a number of different suggestions made. The one that we currently favor is rather a simple one. "Warning. The continued smoking of cigarettes is a serious health hazard."

Mr. ROGERS of Texas. Is a serious health hazard?

Mr. FOOTE. Yes.

Mr. ROGERS of Texas. Or may be a serious health hazard?

Mr. FOOTE. No, it is a hazard. We don't say it will injure you. A hazard is something that may or may not injure you—something that is dangerous.

Mr. ROGERS of Texas. Well, but there are a lot of people not too well educated, you know, and they don't know this play on words. You have to spell it out. Actually, what you ought to say is that the inhalation of cigarettes may be hazardous.

Mr. FOOTE. No, I don't think so, sir, may I tell you why?

Mr. ROGERS of Texas. Yes, sir.

Mr. FOOTE. When the American Medical Association meets in San Francisco, met last year, and their house of delegates unanimously said that cigarette smoking is a serious health hazard—period—paragraph. That is good enough for me. And I would not want to say anything less than that. And that is what they said.

Mr. ROGERS of Texas. Well, the American Medical Association—now, you want to turn this Government over to them?

Mr. FOOTE. No.

Mr. ROGERS of Texas. I don't understand this, now—why didn't they say cigar smoking was? As I understand it, their testimony is, and the Surgeon General's testimony is, and everybody else's testimoney is, that it is the inhalation of the cigarette itself that they claim causes the damage.

Mr. FOOTE. In their resolution, sir, they did not go into that detail. They said it is a serious health hazard—period—paragraph.

They also said they advised all M.D.'s to make the fact known by every available means of comunication.

Mr. ROGERS of Texas. Yes. Well, now, don't you think if we find they have left out something, we ought to correct it?

Mr. FOOTE. After consultation with trained scientists, I would think so, yes.

Mr. ROGERS of Texas. And you think that if they left out cigars and pipe smoking, then they ought to include that in this?

Mr. FOOTE. I am sure, sir, the house of delegates did not leave that out by accident. I am sure that was thoroughly considered.

Mr. ROGERS of Texas. I have never been able to satisfy my own mind, Mr. Foote, on this situation—you asking that the cigarette people

advertise and say that "We are advertising a product that is a serious health hazard," but those same people can advertise pipe tobacco, or they can advertise cigars that are smoked in the same manner that cigarettes are, yet you are not asking for any reference to health on that.

Mr. FOOTE. It is all a matter of degree, sir. Pipes and cigars, according to this document (holding up Surgeon General's report), which we believe in, injure nothing like the proportion of people that cigarettes do.

Mr. ROGERS of Texas. Wouldn't that, though, be like saying that you have three businesses all dealing in the same basic product, and you are asking one of them to buy a rope to hang himself with?

Mr. FOOTE. I don't think so, sir.

Mr. ROGERS of Texas. You don't think so?

Mr. FOOTE. No, because I think the business—it will be in existence a long time anyway. If I may say—in our council, we believe that the tobacco people have certainly a legal right to advertise, but not a moral right to advertise cigarettes in this day and age.

Mr. ROGERS of Texas. Well, then, following out your conclusion, you would then require the people who sell sleeping pills to also have a caution on their advertising that if you take too many of these pills, you might sleep too long?

Mr. FOOTE. Sir, I know nothing about sleeping pills. I would simply say if sleeping pills were killing off around 250,000 American people a year, I think all kinds of things might happen.

Mr. ROGERS of Texas. Around what?

Mr. FOOTE. Around 250,000. That is what many experts believe.

Mr. ROGERS of Texas. 250 million?

Mr. FOOTE. Thousand.

Mr. CARTER. Will the speaker yield? I would like to hear the basis of that information.

Mr. FOOTE. The basis of what information?

Mr. CARTER. 250,000 people a year.

Mr. FOOTE. Well, Doctor, this should not come as too great a surprise to you.

Dr. Wendell Scott testified last year before this committee, and said 600 deaths a day were due to cigarette smoking. That is 219,000 a year. Dr. Morton L. Levin, in his testimony, which has been submitted here, had a figure of close to a quarter of a million. Dr. Louis Katz, speaking for the American Heart Association, used a figure of 250,000, in the Senate Commerce Committee testimony. And so did Dr. Carlisle for the American Cancer Society, sir. No one said they can tell you an exact number. That is a range used by the American Cancer Society and certain spokesmen for the American Heart Association.

Mr. CARTER. These are all just estimates without any actual basis. If you want to read the real figures, we have them right here on our statistics report. You can see from that, in 1962 at least, there were 18,000 deaths due to primary lung cancer attributed by some to cigarette smoking. Those are facts. Here they are. I will be glad to submit them to you.

Mr. FOOTE. I know them very well, Dr. Carter. And nobody in the American Cancer Society takes it seriously.

Mr. CARTER. Well, I am sorry they don't take the records of the U.S. Public Health Service seriously.

Mr. FOOTE. Not as a total number of deaths, sir, produced by cigarette smoking.

Mr. CARTER. Well, this is stated here—this what you are stating is an assumption or estimate by some individual who has no accurate way of knowing.

That is all.

Mr. ROGERS of Texas. You are saying the American Cancer Society uses only figures it agrees with?

Mr. FOOTE. No, sir. The American Cancer Society has spent maybe millions of dollars doing research into these matters, and they have figures which they believe to be correct. They are not casual assumptions. They——

Mr. ROGERS of Texas. Well, do they support this proposition to require all automobiles to have fume arrestors?

Mr. FOOTE. Of course not.

Mr. ROGERS of Texas. They don't support it—the American Cancer Society?

Mr. FOOTE. Automobiles what?

Mr. ROGERS of Texas. To have arrestors of the fumes.

Mr. FOOTE. I beg your pardon. I thought you meant a warning label. I misunderstood you, sir.

The CHAIRMAN. The Chair would like to suggest that since the next witness we are going to have is from the American Cancer Society, instead of arguments with the witnesses, we might get on with the hearings.

Mr. ROGERS of Texas. I will withhold the questions.

The CHAIRMAN. Mr. Younger?

Mr. YOUNGER. Thank you, Mr. Chairman.

Mr. Foote, I notice on page 2 you use the expression "unnecessary loss of life due to cigarette smoking," and then you use the expression that it is a serious health hazard, and then on page 3 again you use "dying tragically and unnecessarily every day from the effects of cigarette smoking."

Now you use the expression of a health hazard, and then the death from cigarette smoking. Are they synonymous?

Mr. FOOTE. Well, we think it is the health hazard, sir, that causes the deaths and the disability. This is the view of all of the organizations we represent.

Mr. YOUNGER. Well, I know.

But I mean you use one expression one time and then another expression. Now, which do you mean?

Mr. FOOTE. I mean both of them, sir. This is a serious health hazard, which causes much tragic unnecessary loss of life, and much suffering.

Mr. YOUNGER. You want to use a warning, then, that cigarette smoking will cause death?

Mr. FOOTE. We are perfectly content to say what the American Medical Association says—that it is a serious health hazard.

Mr. YOUNGER. But not any reference to death.

Mr. FOOTE. I personally—we haven't debated that, sir, in our council. We have no strong convictions. I think it is our general feeling

that if the public understands it is a serious health hazard, that that is adequate in the foreseeable future, sir.

Mr. YOUNGER. Do you think that warning will decrease cigarette smoking?

Mr. FOOTE. A warning in the advertising; yes, sir.

Mr. YOUNGER. In the advertising?

Mr. FOOTE. Yes, sir.

Mr. YOUNGER. You think that a warning there will be more effective than on the carton and the package?

Mr. FOOTE. As a man who has spent his life in advertising. I feel very sure of that, sir.

Mr. YOUNGER. In the last issue of U.S. News & World Report, there is a lengthy interview with Dr. Horsfall, who is president and director of the Sloan, Kettering Institute for Cancer Research.

Mr. FOOTE. Yes; I know, Dr. Horsfall.

Mr. YOUNGER. I do, too. I watched him grow up from a boy in Seattle, I knew his father well.

Yet, all through that interview, cigarette smoking is not used, and when he was asked a question, "What causes cancer?" he said:

> Well, we are almost certain that there is not a single cause of cancer. We are quite confident that it can be induced, can be led to occur and develop by a variety of different causes, or I would prefer to say a variety of primary inciters.

But nowhere in that entire interview does he even mention cigarette smoking.

Can you account for that?

Mr. FOOTE. No; I cannot, sir. But I might tell you this, if I may.

Dr. Horsfall and I served together on the President's Commission on Heart Disease, Cancer, and Stroke, and he told me at lunch that he agreed with my point of view on the cigarette warning matter. If you ask him, I am sure he will tell you that. Why he didn't mention it in this article, I haven't the slightest idea. But he was also a member of the Commission which voted this strong endorsement of the conclusions of the Surgeon General's report, saying that smoking is a serious hazard to health and there is indicated the need for more aggressive programs in this area. Dr. Horsfall signed his name to that statement, sir.

He also signed it to this—

> It seems apparent that the reduction of cigarette smoking offers great possibilities for the prevention of illness, disability, and premature death in this country, with regard to both cancer and cardiovascular diseases.
>
> FRANK M. HORSFALL, JR., M.D.,
> *Commission Member.*

Mr. YOUNGER. It is rather strange, though, that in this entire interview, when he had an abundant opportunity of really striking a blow for liberty, he didn't strike the blow.

Mr. FOOTE. I only know what he said here, sir.

The CHAIRMAN. Mr. Kornegay.

Mr. KORNEGAY. I believe you testified you were the president of the National Interagency Council on Smoking and Health.

Mr. FOOTE. Yes, sir.

Mr. KORNEGAY. And have listed some 15 various organizations.

Mr. FOOTE. Sixteen; yes, sir.

Mr. KORNEGAY. That are members of the Interagency Council, is that right?

Mr. FOOTE. Not only members, sir. They organized it.

Mr. KORNEGAY. They organized it?

Mr. FOOTE. The Interagency Council; yes.

Mr. KORNEGAY. All of them are charter members, then, you might say.

Mr. FOOTE. Yes.

Mr. KORNEGAY. Whose idea was it to organize the Interagency Council on Smoking and Health?

Mr. FOOTE. Well, first of all, it wasn't mine, because I was not around. The history goes like this.

The American Cancer Society, the American Heart Association, the National Tuberculosis Association, the American Public Health Association, and the U.S. Public Health Service had a meeting more than a year ago and discussed the possibility of it. And it grew out of that. And they got the others to go along with them, and they formally went into business July 9, 1964.

I didn't have any connection with it until December 1, 1964.

Mr. KORNEGAY. In other words, you say that the Heart Association, the Cancer Association, Public Health, and maybe others?

Mr. FOOTE. And the U.S. Public Health Service. These were the original instigators, you might say, and the others quickly came along with them.

So, they are all charter members.

Mr. KORNEGAY. The Public Health Service was in on the ground floor of it, wasn't it?

Mr. FOOTE. Yes, sir.

Mr. KORNEGAY. And where is the office of the Interagency Council?

Mr. FOOTE. We have a mailing address in Bethesda, Md., the Library of Medicine.

Mr. KORNEGAY. The National Library of Medicine?

Mr. FOOTE. Yes, sir.

Mr. KORNEGAY. That is a Government agency?

Mr. FOOTE. Yes, sir. I might say I have never been there. I maintain an office in New York City at my own expense.

Mr. KORNEGAY. You have another office in New York?

Mr. FOOTE. I maintain one; yes, sir.

Mr. KORNEGAY. Where are these two secretaries?

Mr. FOOTE. They work in the Bethesda office.

Mr. KORNEGAY. The Public Health Service?

Mr. FOOTE. Yes, sir. The Public Health Service agreed to furnish the secretarial help.

Mr. KORNEGAY. Do they send those secretaries to New York?

Mr. FOOTE. No. But we burn up the lines talking back and forth. And I come to Washington, to the Public Health Service offices frequently.

Mr. KORNEGAY. Where do you have the use of those secretaries?

Mr. FOOTE. They get out letters and memorandums to members of the council and other organizations.

Mr. KORNEGAY. Yes, I understand that.

But where does this take place?

Mr. FOOTE. In Bethesda, Md., sir.

Mr. KORNEGAY. Out at the——

Mr. FOOTE. Library of Medicine. I also do a great deal of the secretarial work with my own secretary in New York, on my payroll.

Mr. KORNEGAY. Do you dictate the letters over the phone?

Mr. FOOTE. Frequently over the phone, and back and forth. Sometimes I mail them things. Sometimes I come down here to Washington, and we go over things in Dr. Guthries' office. He is the secretary of the council. We have good communication.

Mr. KORNEGAY. He is a member of the Public Health Service?

Mr. FOOTE. Yes, sir, and he is secretary of the council.

Mr. KORNEGAY. Secretary to the interagency——

Mr. FOOTE. Yes, he is one of the three officers; Dr. Diehl and Dr. Guthrie and myself.

Mr. KORNEGAY. And of all the times you have been to Washington in connection with your duties as chairman of the interagency council, you haven't been to the office out in Bethesda, Md.?

Mr. FOOTE. No, because that is a mailing address, it is a place where we do the routine clerical work. It is not where we do whatever basic planning we do, sir.

Mr. KORNEGAY. Where do you have your board meetings?

Mr. FOOTE. We have them frequently at the Public Health Service. We have them also in hotels in Washington, like the Madison Hotel. We had one there recently. I have been living almost at that hotel the last year. But we have them frequently at the Public Health Service.

Sometimes at the National TB Association in New York.

Mr. KORNEGAY. How often do you meet?

Mr. FOOTE. The board meets formally only every 2 or 3 months. The executive committee meets much more frequently. We are in touch with each other by phone all the time.

Mr. KORNEGAY. Now, as a group, you don't carry out any research, do you?

Mr. FOOTE. No, sir. Not as a group.

Mr. KORNEGAY. Or any study or actual study of the problems of smoking and health?

Mr. FOOTE. No; but you see, many of the member organizations do carry out a great deal, and we have the benefit of that. For example, Dr. Diehl is a medical and scientific director of the American Cancer Society.

Mr. KORNEGAY. I understand they do. But I am talking to you now as chairman of the National Interagency Council on Smoking and Health, and I ask you, Does your group, your interagency council, have any capacity for doing scientific research?

Mr. FOOTE. No, sir.

Mr. KORNEGAY. The purpose, of course, of the organization of this interagency council is to circulate information.

Mr. FOOTE. To do what, sir?

Mr. KORNEGAY. Circulate information, is that correct, on smoking and health.

Mr. FOOTE. I never looked at it that way. That is one of the purposes, yes. The basic purpose is to organize and to develop and implement effective plans and programs dealing with smoking as a health hazard.

That includes the circulation of information, certainly.

Mr. KORNEGAY. And one of the reasons you are the chairman of it is of course, your background in advertising.

Mr. FOOTE. I imagine so.

Mr. KORNEGAY. And you were in the advertising business for many years.

Mr. FOOTE. Thirty-three and one-half years.

Mr. KORNEGAY. Thirty-three and one-half years?

Mr. FOOTE. Yes, sir.

Mr. KORNEGAY. I believe you stated before you sold a lot of cigarettes in your day.

Mr. FOOTE. I tried awfully hard.

Mr. KORNEGAY. Yes, sir. And there is an article in Advertising Age, Mr. Foote, in which you are reported as saying:

I am not a scientific authority. I am a propagandist.

Mr. FOOTE. Yes, sir.

Mr. KORNEGAY. Is that right?

Mr. FOOTE. I said that.

Mr. KORNEGAY. And I assume, as I indicated before, that one of the reasons that you are chairman of the Interagency Council is that you are a propagandist, and the purpose is to send propaganda throughout the country in connection with smoking and health.

Mr. FOOTE. Yes, sir. I also think, Mr. Kornegay, I wouldn't have gotten the job if I hadn't had these posts with the American Cancer Society and the American Heart Association. That wasn't my whole life's story. I think I am a businessman.

Mr. KORNEGAY. Yes.

Well, now, Mr. Foote, do you believe that the Government should take steps to prohibit all cigarette advertising by law?

Mr. FOOTE. No, sir.

Mr. KORNEGAY. Are you in favor of legislation that would require cigarette companies to include a health warning in cigarette advertising?

Mr. FOOTE. Yes, I am, Mr. Kornegay. I have said publicly many times that what I believe, while it may seem very ingenuous to you. is that the ideal thing would be for the companies to stop advertising voluntarily. Failing that, we favor legislation requiring a health warning, but not prohibition of the advertising.

Mr. KORNEGAY. Well, now, as an advertising man, a man who is a real eminent expert in the field, what, in your opinion, would be the result if the Congress, the Federal Trade Commission, or any other agency of Government were to insist that the cigarette industry place a warning such as has been suggested by Mr. Rand Dixon of the FTC, on each and every piece of advertising?

Mr. FOOTE. I honestly don't know. I have read Mr. Bowman Gray's statement that there might not be any advertising. I don't think anyone could tell, until such a law was passed, Mr. Kornegay.

Mr. KORNEGAY. Well, haven't you been of the opinion that it would be self-defeating?

Mr. FOOTE. Yes, I think it woud be, and that is why we are for it.

We don't believe it is morally right for cigarettes to be advertised because of the great death and health toll they take.

Mr. KORNEGAY. It is difficult for me to understand, Mr. Foote, why you take that position. You feel it is morally wrong for anybody to advertise cigarettes—yet you say you do not oppose the advertising, if they would use a warning.

Mr. FOOTE. I don't believe in a prohibition of the advertising, Mr. Kornegay—it doesn't fit my idea of how we run this country. I don't think the manufacturer should be told he cannot run an ad. But I think when there is a very alarming situation like this, I think that it justifies special circumstances.

Mr. KORNEGAY. Well, in other words, you believe in approaching the problem—you prefer a slow death rather than instantaneous death, is that it?

Mr. FOOTE. Well, there is going to be no instantaneous death, I assure you.

Mr. KORNEGAY. I am speaking in terms of coming in with a law and saying that henceforth and from now on cigarettes shall not be advertised on radio, television, newspapers, magazines, or any other way, as opposed to this business of saying it is all right to go ahead and advertise but you are going to have to use such terms as are completely inconsistent with the principle of advertising—that is putting your best foot forward.

Mr. FOOTE. That is right, that is our position. We don't believe in a law against advertisnig. We believe in a law—we think the smoker should know what he is getting into.

Mr. KORNEGAY. That is what I can't understand. If you think cigarettes are as bad as you seem to think they are, or say they are, and are so detrimental to the health of this Nation, why are you not up here advocating not only a ban on advertising but on making it a criminal offense to have, possess, smoke, or transport cigarettes?

Mr. FOOTE. Because I think that our liberties are worth more than anything else, and I think it would be an infringement upon vital American principles to have such law, and I would take the stump against it.

Mr. FARNSLEY. Would the gentleman yield?

I keep hearing about un-American and invasion of liberties to prohibit cirgarettes. But we just got through prohibiting goofballs. Were we un-American and invading the liberties of people?

Mr. FOOTE. No. It must have been, sir, there was unanimous medical opinion that these had some other effect I don't know about.

As I have said before, we are the first to concede that there is a substantial number of people who apparently have no ill effects from smoking cigarettes, and we think they should be allowed to purchase the cigarettes without harassment. We just think that since there is a large number of people, a very large number, that are adversely affected, we think they should be properly warned.

Mr. FARNSLEY. Doctors prescribe goofballs all the time. Are they doing something wrong?

Mr. FOOTE. I don't know anything about goofballs, sir, I am sorry.

Mr. KORNEGAY. Now, Mr. Foote, let me ask you this question, about advertising.

Is it not your opinion that a warning requirement, as a practical matter. is really equivalent to the prohibition of cigarette advertising?

Mr. FOOTE. As a practical matter?

Mr. KORNEGAY. Yes. Now, you are a practical man, you have had practical experience in the area of advertising. I assume you not only have drawn the ads, you not only have suggested what ought to go in them, but you know business. You have had a great deal of experience in practical matters of advertising.

Mr. FOOTE. I think the net effect, sir, would closely approximate a prohibition of advertising.

Mr. KORNEGAY. In other words, if you ever in your experience had a client who came in and said, "Mr. Foote, I want to do some national advertising over TV, I want to run one of these pretty ads in Life magazine," or any other national periodical. After using the terms that are most favorable for their products—and that is what they want to use, isn' it?

Mr. FOOTE. Mr. Kornegay, getting back to your point, I think the net effect might approximate it. But I think it is a very different principle.

Mr. KORNEGAY. Have you ever had anybody who comes in and wanted to advertise, first state all the good qualities, appealing characteristics, and then come right along and say but if you use them, they will kill you?

Mr. FOOTE. I never had such a client; no, sir.

Mr. KORNEGAY. And I know you would never have one either.

Did you ever advertise anything else in your experience as an advertising man or as a propagandist that you felt was morally wrong?

Mr. FOOTE. Offhand, I cannot remember it. I am not saying all of my acts were morally right by any means. But I don't think of it offhand.

Mr. KORNEGAY. I was using your words.

Mr. FOOTE. No. When I advertised cigarettes, I thought they were great. No, I don't think I did, sir.

Mr. KORNEGAY. So cigarettes are the only ones right now?

Mr. FOOTE. The only ones I know of in the history of our country.

Mr. KORNEGAY. Now, Mr. Foote, you have used the figure, I believe, 250,000 deaths, this morning.

Mr. FOOTE. Yes, sir.

Mr. KORNEGAY. Caused by cigarette smoking.

Mr. FOOTE. Resulting from, produced by, attributable to.

Mr. KORNEGAY. In other words, if the people didn't smoke, if there was no smoking of cigarettes in this country, then 250,000 people who died in 1964 would be living now?

Mr. FOOTE. My associates and I believe it is in that neighborhood, sir.

Mr. KORNEGAY. You also used other figures, have you not?

Mr. FOOTE. I used the figure supplied by the U.S. Public Health Service, which fits in with this.

Mr. KORNEGAY. You have used the figure of 125,000, haven't you?

Mr. FOOTE. I did, sir, but in this way. I said that the range was between 125,000 and 300,000. In my testimony before the Senate, I said——

Mr. KORNEGAY. That is a right broad range, is it not?

Mr. FOOTE. It is, sir.

Mr. KORNEGAY. A difference of 175,000, to be mathematically correct.

Mr. FOOTE. That is right, sir.

Mr. KORNEGAY. Better than 100 percent, in other words.

Mr. FOOTE. That is right.

Mr. KORNEGAY. And you finally, though, narrowed it down to 250,000.

Mr. FOOTE. May I restate that, sir. I said—and I will repeat—that the private health organizations with which I have worked for a great many years, believe that the number of deaths—number of premature deaths is in that range. As I said in my January 11 talk in Washington, not even the most expensive computer can tell you exactly how many deaths are caused by cigarette smoking. But most of the scientists that I know and work with believe it is 250,000, in that range, maybe higher, sir.

Mr. KORNEGAY. In other words, your information, and your estimate of the number of deaths, is based on what you say to be scientific evidence.

Mr. FOOTE. I never made up any figures on these things at all. I got them from scientists.

Mr. KORNEGAY. You are familiar, of course, with the report of the Committee of the Surgeon General on Smoking and Health.

Mr. FOOTE. Yes, sir.

Mr. KORNEGAY. I assume you have studied it carefully.

Mr. FOOTE. Yes, sir.

Mr. KORNEGAY. And you are in agreement with it?

Mr. FOOTE. With most of it.

Mr. KORNEGAY. Pardon?

Mr. FOOTE. With most of it; yes.

Mr. KORNEGAY. What part of it are you not in agreement with?

Mr. FOOTE. Well, no very significant part, sir.

Mr. KORNEGAY. No very significant part?

Mr. FOOTE. I think it was a rather conservative document.

Mr. KORNEGAY. Conservative document?

Mr. FOOTE. Yes, sir.

Mr. KORNEGAY. Would you say the people on the committee were qualified and experts in their field?

Mr. FOOTE. I am all for the document, sir.

Mr. KORNEGAY. Now, let me refer to page 31, the effects—under this heading—"The effects of smoking principal findings." I assume they mean principal findings of the Surgeon General's Committee.

It says, and I read from the first paragraph, under that heading:

> The total number of excessive deaths causally related to cigarette smoking in the U.S. population cannot be accurately estimated.

Mr. FOOTE. We haven't tried to. When we range it from 125,000 to 300,000 that is not trying to accurately estimate, sir. That is trying to broadly approximate.

Mr. KORNEGAY. Well, they didn't use any figures like you are using.

Mr. FOOTE. A great many scientists have, sir, and you are going to hear testimony——

Mr. KORNEGAY. Well, this is supposed to be a compilation of all the scientific knowledge and information collected up to the time of the publication of the report.

Mr. FOOTE. You heard Dr. Luther Terry say last week that hundreds of thousands of people had died from the effects of smoking in the last few years. He was using a figure.

Mr. KORNEGAY. You say that the Surgeon General's report, or the report to the Surgeon General is conservative since they did not use the figures you are using of 250,000 deaths a year?

Mr. FOOTE. Not at all, sir.

I will tell you why I said that, to clear it up.

I am admittedly out of my area here because I am not a scientist. But the scientists do feel that in not attributing a causal relationship to emphysema or cardiovascular matters—it was on the conservative side.

Mr. KORNEGAY. Do you know any scientists who disagree with you on this matter?

Mr. FOOTE. No, sir.

Mr. KORNEGAY. Do you personally know any scientists who disagree with the conclusions you have formed?

Mr. FOOTE. I don't know any personally, sir; no.

Mr. KORNEGAY. You know, of course, there are a great number of outstanding scientists throughout the United States who have taken issue with the Surgeon General's report, and with the position that cigarette smoking causes lung cancer.

Mr. FOOTE. Would you tell me how many, sir?

Mr. KORNEGAY. I couldn't tell you how many, but Dr. Carter had a list. I believe it was 64—the other day. I will tell you that last year we held hearings in this committee, and some who it appeared to me that based on their pedigree they were outstanding men. One of them said, for example that he was a thoracic surgeon, that he had personally operated on 4,000 lung cancer cases, and in his considered opinion, cigarette smoking was not the cause of lung cancer.

Mr. FOOTE. Dr. Burford also said it was not any health hazard.

May I say, sir, that 64 seems like a very small number to me, considering the fact that the AMA says there are 285,000 physicians in the United States, and the survey that Dr. Horn mentioned last week showed that 94.8 percent of physicians thought it was a health hazard, and 2.8 thought it was not. So, if anybody looked long and hard enough, he ought to be able to get around 7,500, not 64.

Mr. KORNEGAY. Well, let me say this, now. I am not a physician, I am not a scientist. But I have had some exposure to medical training. I am a lawyer by profession. I hope I am not stepping on any doctor's toes.

But based on my experience in my profession, I would say that the problem is the average doctor in the United States is not an expert in this particular area. I think you have got to go to those who practice in this area. There are many things about law I don't know, for example. Medicine, like law, is an immense field. And in order to know what you are talking about, you have got to be an expert in that particular field. And I say to you, sir, that certainly we had some experts in this area of thoracic surgery, in the area of the lungs, to testify before this committee, and to raise serious questions about the conclusions that were taken in the Surgeon General's report.

Mr. FOOTE. I am aware of that, sir. But in our petition, we pointed out—we have done a little bit of research—that there would never be any law for vaccination against smallpox, if you waited until all the experts said it was the right thing to do.

Mr. KORNEGAY. Now, in the conclusion of your statement you say that you hope—you petition this committee not to approve any legislation that will prevent the Federal Trade Commission from carrying out its affirmed, or reaffirmed intention of requiring health warnings on cigarette advertising.

Mr. FOOTE. Yes, sir.

Mr. KORNEGAY (reading):

> A conclusion the Federal Trade Commission reached after the most intensive study, and after holding pubic hearings.

and you, of course, are aware of the fact that the Federal Trade Commission held only 3 days of public hearings on this question, is that right, sir?

Mr. FOOTE. I said most intensive study. Their record shows——

Mr. KORNEGAY. Shortly after those hearings, within a matter of 2 to 3 months, I would say, at the most, they came out with their trade rules.

You say that that was time to give this matter the most intensive study?

Mr. FOOTE. Well, that is what Mr. Dixon says, and I am inclined to believe him, sir.

Mr. KORNEGAY. Well, now, Mr. Rogers has introduced a bill here—he specifies a label here to be placed on all packages of cigarettes, cartons of cigarettes, things of that sort, which says, "Caution, cigarette smoking may be hazardous to your health." And then he goes on over in section 8 of his bill and says:

> Any person who violates a provision of this Act shall be guilty of a misdemeanor, and shall on conviction thereof be subject to a fine of not more than $10,000.

Now, the FTC, the only power they have to control or to enforce an edict of that body is what we call an order to cease and desist. That is an order that says you have got to stop what you are doing. And if they continue to do it, the Federal Trade Commission has no authority, as I understand it, to do anything other than to go into the courts, to enforce the cease-and-desist order which they heretofore rendered in the case.

Now, wouldn't it appear to be quicker, more effective, and certainly far more deadly to take Mr. Rogers' approach to the problem than it would the Federal Trade Commission's approach?

Mr. FOOTE. Well, Mr. Kornegay, as I read Mr. Rogers' bill, it prevents the Federal Trade Commission from doing anything about advertising, does it not, sir? And that——

Mr. KORNEGAY. I think it does that.

Mr. FOOTE. Well, we would rather——

Mr. KORNEGAY. We are talking about labeling right now.

Mr. FOOTE. We would rather Congress would handle the whole thing, sure.

Mr. KORNEGAY. Then let us talk about labeling here. Let me have your views on Mr. Rogers' bill, with reference to labeling.

Mr. FOOTE. Our view is, Mr. Kornegay, sir, that the advertising matter so far overshadows——

Mr. KORNEGAY. You have some thoughts on labeling, don't you?

Mr. FOOTE. We will be very happy to see a label go on the package; yes, sir.

Mr. KORNEGAY. I assume from your statement you didn't want to put a label on the package.

Mr. FOOTE. Yes, sir; we do.

Mr. KORNEGAY. What do you think about the provisions of Mr. Rogers' bill, which would make it up to a $10,000 fine for anyone not to put a label on a package?

Mr. FOOTE. It seems like a good regulation to me.

Mr. KORNEGAY. In other words, the FTC cannot fine anybody. They cannot put anybody in jail.

Mr. FOOTE. You know, maybe I am absolutely not a very good listener. I understood from the testimony last week that the FTC was going to handle the advertising part, and that the labeling was going to be handled some other way.

Mr. KORNEGAY. They want to handle the whole thing, I assure you of that.

Mr. FOOTE. Well, we would rather Congress would handle the whole thing.

Mr. KORNEGAY. You would rather Congress would?

Mr. FOOTE. The whole business, yes. Labeling and advertising. I thought this was clear here.

Mr. KORNEGAY. So am I to understand that you feel that it ought to be also a label and in advertising?

Mr. FOOTE. Yes, sir.

Mr. KORNEGAY. And in that regard you disagree with Mr. Rogers' bill?

Mr. FOOTE. Yes, sir; we do.

Mr. KORNEGAY. But as far as the labeling part is concerned, you feel like that would be a sufficient fine to enforce the provisions of the act?

Mr. FOOTE. You know, Mr. Kornegay, I am not exposed to this area. I would think that if a law were passed by Congress—the tobacco people always follow the law very closely. I don't think there would be any great trouble with law enforcement.

But I think that is a good provision.

Our objection to Mr. Rogers' bill, respectfully, was its exclusion of advertising, and also the wording of the label doesn't seem quite strong enough to us.

Mr. KORNEGAY. You would like——

Mr. FOOTE. "Is hazardous" rather than "may be hazardous."

Mr. KORNEGAY. But don't you agree, as a practical matter, and as a practical man, that it would be far more expeditious in carrying out the policies which you espouse to have the enforcement of any law or regulation in the courts, rather than in some administrative agency?

Mr. FOOTE. Yes, sir.

Mr. KORNEGAY. Thank you very much, Mr. Foote.

The CHAIRMAN. Mr. Nelsen?

Mr. NELSEN. Thank you, Mr. Chairman, I will be very brief. I think we have another witness.

The CHAIRMAN. We have three other witnesses, I would like to say to the gentleman, who are here to be heard.

Mr. NELSEN. I want to thank the witness for his very patient and enduring qualities. I would point out that there are those of us who will hold to the idea that the Congress should enact some legislation

in the way of labeling a pack of cigarettes. I think our hope is that with the young people of our country, they should be fully advised that they may be a health hazard.

Now, I think expert testimony would indicate some difference of opinion. But the point is that we are trying to advise them of the possibility of a hazard.

Now, as I understand it, you would agree that if the Congress would act, it would be preferable in your judgment?

Mr. FOOTE. Yes, sir.

Mr. NELSEN. Now, as to advertising, there are those who feel that there is some danger and some precedent involved as far as a regulatory agency in concerned, and the precedent would be to move into the field of advertising.

I have here, for example, an ad that appears in the U.S. News & World Report on credit cards. It depicts the "profile of a card-carrying capitalist," and here is this very distinguished gentleman with a cigarette, talking on the telephone, and he has a ring on his finger, a watch on his wrist. He looks very prosperous.

Now, how would you regulate an ad like that—because this, obviously, depicts a man of stature and position. My question, of course, is how do you move in the field of advertising to correct the use of a picture such as this which I think is intended to show a man of stature? Yet the cigarette is involved.

Mr. FOOTE. But that is not an ad by a tobacco company, is it?

Mr. NELSEN. Absolutely not, but it has the same effect.

Mr. FOOTE. I haven't given that any thought. I don't know how you would do that. I think in a free country they can do it as long as they feel like it.

Mr. NELSON. I might say this to the witness. My only reservation about any of this legislation as far as the Federal Trade Commission is concerned is do we place in the hands of the Federal Trade Commission a responsibility that I think belongs in our hands? I am in agreement with you that something should be done, and I think the Congress will do it.

I have no further questions, Mr. Chairman.

I thank the witness.

The CHAIRMAN. Mr. Van Deerlin?

Mr. VAN DEERLIN. Mr. Foote, in addition to being a three-packs-a-day smoker yourself, you were an account executive for a cigarette account?

Mr. FOOTE. I worked my way up from being assistant account executive on the Lucky Strike account, until I finally got to be president of the agency that handled it, Foote, Cone & Belding.

Mr. VAN DEERLIN. That Lucky Strike account, if I remember correctly, was the largest and the first and most important among all cigarette accounts, was it not?

Mr. FOOTE. At the time we handled it, it was not. R. J. Reynolds was spending more money at that time. It was a very important account. But I handled not only Lucky Strike. I also handled Pall Mall, an American Tobacco brand.

Mr. VAN DEERLIN. Clearly, your appearance today on behalf of an interagency council to regulate cigarette advertising would seem to mark the most remarkable conversion since St. Paul was struck blind at the gates of Damascus.

Mr. FOOTE. May I say, Mr. Van Deerlin—thank you for the comparison—but that happened all at once. My conversion took 17 years. I haven't worked on a tobacco account since 1948.

Mr. VAN DEERLIN. I know you considered the full spectrum of the cigarette menace, and I wonder if you think that the Government itself is in a somewhat contributory position, guaranteeing, as it does, the raw tobacco prices that are paid to growers in this country, a program for which the American taxpayer is currently indebted to the extent of $40 million, and for which he finds himself with a billion-pound surplus in raw tobacco at this very moment.

Mr. FOOTE. I think it is somewhat inconsistent, sir, but I think a successful democracy often finds itself in such position. I think it is part of the price of having our kind of a government. I don't see how you can do much about it.

Mr. VAN DEERLIN. Except that on the one hand, we are being asked to take steps to reduce smoking, which can only have the effect of reducing cigarette sales, while at the other end we are putting up taxpayers' money to support the industry.

Mr. FOOTE. Sir, I have made no study of the agricultural problem. I know broadly what is going on. But as I say, I just think that is the way a democracy is. I think you could find many other comparable situations. We would have to change our form of government to not have things like that, I think, sir.

Mr. VAN DEERLIN. I should think that perhaps after achieving some success in its first campaign, the Interagency Council might—after separating itself, of course, from the Government support which it now enjoys—might consider this other end of this vicious habit.

Mr. FOOTE. Well, I don't know, sir. We have never thought about it. It could come up on the agenda. It seems a little bit foreign. But we can discuss anything.

Mr. VAN DEERLIN. Although mine is not on the advertising side, I, too, have been involved in the industry of selling cigarettes through advertising. And I wonder if you could give the committee some idea of the steps you think should be taken to implement your recommendations in regard to broadcast advertising.

Mr. FOOTE. Broadcast advertising?

Mr. VAN DEERLIN. Well, feeling, as I am sure you must, that whereas the printed page can handle a warning in very subdued type, as a warning on a cigarette package, that the spoken message would surely present different problems.

Mr. FOOTE. Well, sir, if it is a short message, I think it could be flashed on the screen at the end of the commercial and read rather quickly. The one we are talking about—for example. Out in Utah, I proposed, with the sanction of my directors, a bit of legislation that didn't go through, but that would have required the phrase "Warning, the continued smoking of cigarettes is a serious health hazard" to be flashed on the screen not less than half the size of the screen at the end of the commercial, for not less than 2 seconds, and read audibly, when not disruptive of the program. I think if you had a national law, you could take 3 or 4 seconds, and I don't think from the standpoint of mechanics it would wreck anything. It might have another bad effect.

Mr. VAN DEERLIN. It probably means that the 10 second spot or station break would hereafter be lost to cigarettes.

Mr. FOOTE. Would probably be lost to it, yes, sir, I would think so, sir.

Mr. VAN DEERLIN. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Curtin?

Mr. CURTIN. Thank you, Mr. Chairman.

Mr. Foote, I am somewhat curious about this council of which you are chairman.

Who set it up?

Mr. FOOTE. Well, it was set up before I became chairman, so I would have to quote my understanding of the history. It was set up at the suggestion originally of the American Cancer Society, the American Heart Association, the National T.B. Association, the American Public Health Association, and the U.S. Public Health Service. They got going, and then they got these other organizations listed here to join them as charter members and sponsors.

Mr. CURTIN. Is it connected with the Federal Government in any way—is it a Government agency?

Mr. FOOTE. Only that 3 of our 16 members are Government agencies. It is rather—I have not found anything else quite like it, because we have 16 directors, 13 represent private agencies, and 3 represent Federal Government agencies.

Mr. CURTIN. But did the Government in any way, or any of its agencies, set up this Council?

Mr. FOOTE. They participated in setting it up—one of an early group of 5, and then as 3 out of 16.

Mr. CURTIN. But it is a purely private council, so far as you know, except that there are three governmental agencies who are participants?

Mr. FOOTE. Yes. For example, I didn't show my statement to Surgeon General Terry before giving it, because we just didn't feel that was necessary.

Mr. CURTIN. Do you have a budget?

Mr. FOOTE. Well, we don't use very much money. Would you like to know the figures?

Mr. CURTIN. I presume you are on a salary?

Mr. FOOTE. Oh, no, sir. I draw no salary, and I pay my own expenses.

Mr. CURTIN. Where do you get any money that you may use—from what source?

Mr. FOOTE. You mean that the council may use?

Mr. CURTIN. Yes. Do you get that from the Federal Government?

Mr. FOOTE. No, the Government has not given us any cash. The Government gives us the time of two or three girls who type letters. Dr. Guthrie, who is secretary, puts a fair amount of time on it. But that is a very small part of his time. And the American Cancer Society, for example, paid for our stationery.

I have said somewhat in jest that our council is long on influence but short on cash. We have totally collected to date $2,850, of which we still have on hand $2,400, sir.

It shows what you can do without money.

Mr. CURTIN. You say that your council has two secretaries?

Mr. FOOTE. Two to three—it depends on the workload.

Mr. CURTIN. Out of what office do they work?

Mr. FOOTE. They work out of the Bethesda office of the Library of Medicine—8600 Wisconsin Avenue.

Mr. CURTIN. That is a Government agency?

Mr. FOOTE. Yes, sir. And the U.S. Public Health Service agreed, when this was set up, that they would supply a certain amount of clerical and secretarial work.

Mr. CURTIN. Who pays the salaries of those three secretaries?

Mr. FOOTE. I believe the Public Health Service does, sir.

Mr. CURTIN. They, then, are paid from Government funds.

Thank you.

The CHAIRMAN. Mr. Pickle?

Mr. PICKLE. Thank you, Mr. Chairman.

Mr. Foote, I agree we ought to have a reasonably strong labeling provision on a package of cigarettes. Now, with respect to advertising, I think our problem is how can you practically prevent or have a warning on cigarette advertising?

Now, generally speaking, cigarettes come in a package.

Everybody who smokes takes the cigarette out of the package. So everybody in America is warned that cigarette smoking is or might be hazardous to your health.

In you opinion, do you think that any cigarette smoker in these United States is not aware of the Surgeon General's findings, and that they might be risking their health by smoking?

Mr. FOOTE. I think there are a great many smokers, Mr. Pickle, who feel that since the Government seems to be a little ambivalent about this matter, that they don't worry too much about it. I think until the Government takes a firm stand, they won't know for sure.

Mr. PICKLE. Well, now, I think you are begging the question, there. The fact that the Government comes out and strongly says this might kill you is not going to affect their smoking? They either agree with the Surgeon General's opinion or not.

I think the public generally surely must know there is a possible danger here.

Now, unless you want to just try to scare people, or unless you are just trying to put somebody out of business, or to throw up a bugaboo constantly, I think you would admit that the real danger is how can you practically regulate it? How can you on a 30-second or a 10-second spot, or a 2 by 10 or 4 by 12 ad, or just a little one-column ad?

You are an advertising man. I am a former advertising man. The ability to put in a practical warning on all phases of advertisement, by the FTC, is going to be hard to regulate.

Why couldn't you give the industry the responsibility of, through a series of educational ads, or however they feel best to handle it, working with the Federal Trade Commission and the Government, putting on a campaign that would fairly and honestly point out the possible dangers of smoking? But let the industry and the Government try to work it out, instead of the FTC trying to set up a broad rule that requires negative advertising? That is an almost impossible job. It would be hard to enforce. Would you admit that?

Mr. FOOTE. I don't think it would be, sir. I think it would be very easy to enforce. If you had the simple health warning we are talking about, I think it could be enacted by Congress. I think it would be a cinch. Respectfully, sir.

Mr. PICKLE. That is an interesting observation of a former advertising man.

I thank you, Mr. Chairman.

The CHAIRMAN. Dr. Carter?

Mr. CARTER. Mr. Foote, you have been a smoker, I take it.

Mr. FOOTE. Yes, sir.

Mr. CARTER. You are no longer a smoker?

Mr. FOOTE. No, sir.

Mr. CARTER. I want to congratulate you on that. You are one of the first scientists who has testified in favor of this bill who is not a smoker.

Mr. FOOTE. First of all, I am not a scientist.

Mr. CARTER. Well, first man, we will say.

It is rather amazing to me that so many men in favor of labeling have appeared here and testified to the dangers of smoking and yet when asked, they say, they admit that they still use tobacco.

Mr. FOOTE. Who is that?

Mr. CARTER. Some of the scientists.

Mr. FOOTE. I see.

Mr. CARTER. Some of the scientists who have appeared here—and admit they still use tobacco. The record will show that.

Mr. FOOTE. Yes, I know.

Mr. CARTER. Now, I just wanted to correct one statement which I made awhile ago, and that was to the effect that 18,749 people in the United States die of cancer of the bronchus and lungs. That is not necessarily from the use of tobacco. We know that many other things cause cancer of the lung—inhalation of polluted air, for instance. And in fact, the only cancer which has been experimentally produced in the lungs of animals has been caused by ozonized gasoline, I believe, and other substances. It has never been produced by tobacco smoke. Is that not correct?

Mr. FOOTE. Well, sir, that is what I had heard. As you know I am not a scientist, and I don't propose to act like one. But I understand that is true.

Mr. CARTER. Thank you very kindly.

That is all.

The CHAIRMAN. Mr. Rooney?

Mr. ROONEY. I have one brief question, Mr. Foote.

Aside from the dissemination of propaganda about the hazards of smoking, what are the other aims or objectives of your organization?

Mr. FOOTE. Well, should I read them to you?

Mr. ROONEY. No; overall, generally, give us a general description of what the Interagency Council on Smoking and Health actually does, besides disseminate propaganda about the hazards of smoking.

Mr. FOOTE. Well, for example, I went out to California about 10 days ago to confer with the California Interagency Council on Smoking and Health, at their request. We had meetings in San Francisco and Los Angeles to talk about ways of getting out educational programs, what volunteers could do, all sorts—you see, there are 29 State interagency councils which are not bound to us by any regulation, but we have a good working agreement.

We are working generally, trying to improve the health of the people by reducing cigarette consumption.

Mr. ROONEY. You stated earlier that you agreed with the bill that was submitted by Mr. Rogers, I believe, with one exception—you said it should extend into advertising, the control of the television and radio advertising of cigarettes.

Mr. FOOTE. I said, sir, that we disagreed on two counts. One was the wording of the message, and the second was the fact that as I read the bill, it seemed to prevent the Federal Trade Commission from doing anything.

Now, as we tried to make very clear in this, we would like Congress to do the whole thing. But if it doesn't want to act on advertising, we hope it won't pass a law to stop the FTC.

Mr. ROONEY. As a former executive of advertising, don't you think the cigarette industry, the tobacco industry, has done an exemplary job of policing their own advertising in recent years?

Mr. FOOTE. In what way policing it, sir?

Mr. ROONEY. Well, misleading advertising, like Chairman Dixon talked about Crazylegs Hirsch sitting in the coliseum in California saying his many years of greatness in football was due to smoking Winstons or some other cigarette. Don't you think by discontinuing that form of advertising, by contributing millions of dollars to the American Cancer Society, don't you think they have done an exceptional job in this respect?

Mr. FOOTE. I cannot say that I do, sir, no.

Mr. ROONEY. No further questions.

The CHAIRMAN. Mr. Callaway?

Mr. CALLAWAY. Thank you, Mr. Chairman.

Mr. FOOTE. I would like to pursue the advertising factor a little further.

Suppose that Congress should pass some sort of law which would require warning in advertising, and suppose that what you expect might happen did happen, that the industry just quit advertising, and there were no cigarette advertisements of any kind. In your opinion what would this lead to in regard to sales of cigarettes in this country?

Mr. FOOTE. I think it would lead to a gradual reduction, Mr. Callaway. We know that in Italy, where there was a law, the kind we don't like, that banned advertising, sales which had been increasing 6 percent a year increased only 1½ percent a year.

It certainly would not lead to any quick demise of this very large industry.

Mr. CALLAWAY. Was there some experience in England?

Mr. FOOTE. I don't believe the ban has yet gone into effect. If it has, it hasn't been long enough to prove anything. I think it would bring about a gradual reduction, and I think it would make the educational efforts on smoking more effective.

Mr. CALLAWAY. My main concern, and the main concern of most of the Members of Congress I have talked to is with young people. With older people they can take their choice.

Now, would you say the major way to get at the problem with young people would be through advertising or labeling, or would they be equally important?

Mr. FOOTE. Not through labeling, sir. I think it is a good thing to have it on the label from our standpoint. But I don't think it will make much difference in sales.

Mr. CALLAWAY. You feel with the young people, the advertising is more important?

Mr. FOOTE. Vastly so, yes, sir.

Mr. CALLAWAY. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Satterfield?

Mr. SATTERFIELD. Thank you, Mr. Chairman. I just have a couple of questions.

I believe a few moments ago, in answer to a question by the gentleman from Texas, Mr. Pickle, you did not agree with the statement he posed that almost all smokers know of the Surgeon General's report and possible hazards of smoking.

I notice on page 3 of your report you referred in two places to what you apparently conceive to be a lack of effective information or effective action in this area.

How do you or how would you measure the effectiveness of action that might be taken in this area?

Mr. FOOTE. How would you measure it?

Mr. SATTERFIELD. Yes, sir.

Mr. FOOTE. Well, the most pragmatic measurement, I think, sir, would be the effect on sales.

Mr. SATTERFIELD. And the fact that there has not been a decrease in sales leads you to the conclusion, then, that the effective remedial action has not been taken?

Mr. FOOTE. I think it is like this, sir. I think the effective action has not been taken—right.

Mr. SATTERFIELD. At what point would you feel that action becomes effective?

Mr. FOOTE. When fewer people were dying from the effects of cigarette smoking.

Mr. SATTERFIELD. And how would you measure that?

Mr. FOOTE. There are many ways of measuring that. Dr. Morton Levin of Roswell Park Institute would have ways of measuring it. Many other people would. It would show up in many ways, sir.

Mr. SATTERFIELD. Well, you apparently are advocating, and I think I am correct, what you would like to see is any time an advertisement pertaining to cigarettes occurs, that there be something along with it to show that cigarettes are hazardous.

Mr. FOOTE. Yes, sir.

Mr. SATTERFIELD. In other words, you feel that it is proper at this time to go into what might be called counteradvertising.

Mr. FOOTE. Yes, sir.

Mr. SATTERFIELD. I take it, from your testimony, that you feel it is the proper province of the Federal Government in our type of democracy, to impose counteradvertising and make the advertiser pay the cost of it?

Mr. FOOTE. Not ordinarily, sir. I think this is a very extraordinary case. I think that—that is why I think it is justified. As I said in my testimony in the Senate, it goes very much against my grain to recommend this kind of regulation because I don't believe in the big brother philosophy more than most people do. But I think that the death and disability toll is so great that Congress must do something about it.

Mr. SATTERFIELD. Notwithstanding the fact that we are creating a precedent here that might come back to haunt us later?

Mr. FOOTE. Whenever the death toll gets as high as this, sir, on something else, I think you might well consider it.

Mr. SATTERFIELD. I have no further questions.

The CHAIRMAN. Mr. Mackay?

Mr. MACKAY. I have no questions, Mr. Chairman.

The CHAIRMAN. Mr. Farnsley?

Mr. FARNSLEY. Mr. Foote, I want to thank you for your excellent presentation and thank you for performing a public service.

It is a little disheartening to hear how bad this is, and then to have such a minor plan for doing something about it.

How long has that been in effect in Italy?

Mr. FOOTE. Two-and-a-half years, I believe.

Mr. FARNSLEY. It hasn't reduced the total consumption—just has slowed down the rate of growth, am I correct?

Mr. FOOTE. Yes, sir. I think it would be more appreciable here, sir, because I think advertising is a bigger factor here than it was in Italy.

Mr. FARNSLEY. Your guess is that most advertising will stop?

Mr. FOOTE. Well, you know, I cannot be sure. I think that—I imagine what they would do is test it in certain cities and areas and see what happened.

Mr. FARNSLEY. I have a short statement I would like to put in the record. Maybe you would want to take it up with your people.

SADNESS IS LINKED TO CANCER

NEW YORK.—Psychologists are turning up an apparent link between cancer and human emotions.

They find that many men and women had suffered periods of sadness and hopelessness months or years before the disease appeared.

Some of their findings were described this week to a conference on psychophysiological aspects of cancer sponsored by the New York Academy of Sciences.

STATISTICS BEAR OUT

Among one group of 700 patients, 72 percent had a pattern in their life histories that was typical of only 10 percent of other people without known disease, said Dr. Lawrence L. LeShan, psychologist at Trafalgar Hospital and the Institute of Biology in New York City.

All these cancer patients had undergone a feeling of despair before their cancers appeared, he said. There was "a bleak hopelessness about ever attaining any meaning, zest or validity in life."

Is this something new—have your people talked about it?

Mr. FOOTE. They haven't talked about it to me.

Mr. FARNSLEY. This is the New York Times, April 12. I won't read everything, because I know it is late.

ANIMALS THOUGHT TO BE FREE OF ALL GERMS SPONTANEOUSLY DEVELOP VIRUS-CAUSED CANCER

ATLANTIC CITY, April 11.—The sponstaneous development of virus-caused cancer in animals that were thought to be free of all germs was reported for the first time here today. The new finding appears to bear strongly on:

The ultimate question of what causes cancer.

The validity of certain conclusions that have been based on animal experiments.

Understanding of the way in which cancer occurs naturally in humans.

The report also suggests that all animals—including man—are born with viral infections, which may have meaning for se eral afflictions, ranging from serum hepatitis to leukemia and other forms of malignancy.

The discovery was reported to the 49th annual meeting of the Federation of American Societies for Experimental Biology by Dr. Morris Pollard, B. A.

Teah, and Dr. M. Kajima, of the Lobund Laboratory at the University of Notre Dame.

In another report, scientists from the Sloan-Kettering Institute for Cancer Research reported that the herpes simplex virus that causes cold sores not only enhances the ability of chemicals to cause benign tumors but also increases the conversion of those growths into malignant cancers far more than other viral cocarcinogens do.

I will just put these in the record.
(The articles referred to follow:)

[From the Courier-Journal, Louisville, Ky., Apr. 8, 1965]

SADNESS IS LINKED TO CANCER

NEW YORK (AP).—Psychologists are turning up an apparent link between cancer and human emotions.

They find that many men and women had suffered periods of sadness and hopelessness months or even years before the disease appeared.

Some of their findings were described this week to a conference on psychophysiological aspects of cancer sponsored by the New York Academy of Sciences.

STATISTICS BEAR OUT

Among one group of 700 patients, 72 percent had a pattern in their life histories that was typical of only 10 percent of other people without known disease, said Dr. Lawrence L. LeShan, psychologist at Trafalgar Hospital and the Institute of Biology in New York City.

All these cancer patients had undergone a feeling of despair before their cancers appeared, he said. There was "a bleak hopelessness about ever attaining any meaning, zest or validity in life."

Their life histories consisted of three stages, he added:

"A childhood and early adolescence marked by feelings of inadequacy and a sense that emotional relationships were dangerous, and should only be invested in cautiously.

"A period of later adolescence or adulthood in which an intense relationship was made and became the major focus of the patient's life.

"And a third stage in which the relationship was lost and no acceptable substitute could be found."

[From the New York Times, Apr. 12, 1965]

ANIMALS THOUGHT TO BE FREE OF ALL GERMS SPONTANEOUSLY DEVELOP VIRUS-CAUSED CANCER

By John A. Osmandsen

ATLANTIC CITY, April 11.—The spontaneous development of virus-caused cancer in animals that were thought to be free of all germs was reported for the first time here today.

The new finding appears to bear strongly on:

The ultimate question of what causes cancer.

The validity of certain conclusions that have been based on animal experiments.

Understanding of the way in which cancer occurs naturally in humans.

The report also suggests that all animals—including man—are born with viral infections, which may have meaning for several afflictions, ranging from serum hepatitis to leukemia and other forms of malignancy.

The discovery was reported to the 49th annual meeting of the Federation of American Societies for Experimental Biology by Dr. Morris Pollard, B. A. Tesh, and Dr. M. Kajima, of the Lobund Laboratory at the University of Notre Dame.

According to their report, all seven strains of "germ free" mice that have been tested so far have developed viral leukemias.

Significant numbers of animals in six of the strains developed the blood cancer after they had beeen exposed to X-rays, the scientists said. Leukemia viruses were then found in the animal tissues.

Mice in the seventh strain, however, came down with viral leukemia spontaneously—without any apparent intervention by some other carcinogenic, or cancer-causing agent.

All of the strains had been grown for several generations in total isolation. Their surroundings were kept completely sterile, and all of the young were delivered by cesarean section. The early generations were weaned on sterilized formula through a stomach tube to preclude even minimal contamination by their mothers.

Previous reports of the development of tumors in animals raised under such conditions tended to be interpreted as meaning that cancer could develop in the absence of viruses.

That position was contrary to one taken by a growing number of scientists who believe that viruses—alone or in conjunction with other factors—are at the root of all cancers.

The new finding indicates that the possibility that cancer is, in essence, a viral disease cannot yet be ruled out.

Moreover, the discovery of viruses in animals from which all germs presumably had been banished suggests that possible effects of viruses—whether the agents are detectable or not—on the outcome of animal experiments must now be taken into consideration.

In fact, Dr. Pollard said that he would "not be surprised if all mouse strains (at least) were infected with leukemia viruses, and this could be a very serious complication in the study of cancer."

The Notre Dame scientists do not know for certain how the "germ free" mice became infected with leukemia viruses. They believe, however, that the infection was congenital, transmitted from mother to offspring.

Such a mechanism of congenital viral infection has been speculated upon for a long time, but the Notre Dame experiments seem to establish that it does occur.

In addition, the new findings suggest that the presence or absence of other germs, such as bacteria, does not influence the spontaneous development of viral leukemias and that a hereditary factor of some sort is involved in the process.

This conclusion came from the scientists' observations that spontaneous tumors developed with different frequencies in different strains of mice. This, they said, meant that heredity had apparently made some more susceptible to the carcinogenic action of viruses than others.

In another report, scientists from the Sloan-Kettering Institute for Cancer Research reported that the herpes simplex virus that causes cold sores not only enhances the ability of chemicals to cause benign tumors but also increases the conversion of those growths into malignant cancers far more than other viral cocarcinogens do.

This was interpreted by Dr. T. Arata and Dr. Chester Southam as meaning that the hereditary material of the virus had a special effect of its own or either initiating or maintaining the cancerous growth. They are now trying to determine what the special effect is.

Mr. FOOTE. Thank you.

The CHAIRMAN. Mr. Gilligan, any questions?

Mr. GILLIGAN. Just a brief question.

Mr. Foote has had advertising experience. I am interested in the observations made by some of my colleagues about the impact of including warnings in advertising.

In my State of Ohio, and I suspect it is true throughout the country, all political advertising is required to carry a disclaimer, saying that this is a paid political advertisement issued by so and so, which has the general effect of saying that all you have heard and have seen up to this point ain't necessarily so, because this guy is a politician, and, therefore, not to be trusted. And yet I don't know of any politicians who eschews political advertising in his campaigns for office.

Do you see any relationship between a disclaimer of that type and the kind of warning that might go into tobacco advertising?

Mr. FOOTE. Yes; I do, sir. That is why I have said in answer to a question, I don't know what they will do. I think they might experiment, and they might well keep on advertising—the tobacco interests. I don't think it is curtains for advertising.

Mr. GILLIGAN. Thank you, sir.

No more questions.

The CHAIRMAN. Mr. Foote, thank you very much for your appearance here and your testimony on this subject.

Mr. FOOTE. Thank you very much, sir.

The CHAIRMAN. Dr. Oscar Auerbach.

Will you identify yourself and proceed?

STATEMENT OF OSCAR AUERBACH, M.D., SENIOR MEDICAL INVESTIGATOR OF THE VETERANS' ADMINISTRATION HOSPITAL, EAST ORANGE, N.J.

Dr. AUERBACH. I am Dr. Oscar Auerbach, pathologist and a senior medical investigator at the Veterans' Administration Hospital, East Orange, N.J.

Mr. Chairman, may I first say that I am not appearing in behalf of the American Cancer Society, but I am appearing at the request of the American Cancer Society to show our findings that have been studied for years in the human lungs.

Second——

The CHAIRMAN. What is the distinction?

Dr. AUERBACH. Well, I am appearing—I am not employed by the American Cancer Society. I am not part of the American Cancer Society. I am an independent investigator.

The CHAIRMAN. Are you speaking at their request?

Dr. AUERBACH. Yes, sir; at their request.

The CHAIRMAN. In other words, you are speaking for them.

Dr. AUERBACH. On behalf of what they are speaking; yes, sir.

Also that as a member of the Veterans' Administration, I am appearing as an investigator; the opinions that I express are my own. The Veterans' Administration has given me complete academic freedom.

For the last 12 years I have been engaged in research to determine the effects of smoking upon the lungs of human beings. My colleagues in these studies are Dr. Arthur Purdy Stout, formerly professor of pathology at the College of Physicians and Surgeons of Columbia University, Dr. E. C. Hammond, director of statistical research and Mr. Lawrence Garfinkel, Statistical Section, American Cancer Society.

Our studies have been conducted on persons who died in the Veterans' Administration Hospital, East Orange, N.J., and in 11 other hospitals in upstate New York. At autopsy, their lungs were removed for microscopic examination. The examinations were carried out without knowledge on my part of the smoking habits of the subjects. Independently, smoking habits were ascertained from the family of the deceased by trained interviewers. Later, the microscopic findings were compared with smoking habits.

We have been primarily concerned with three diseases: Lung cancer, chronic bronchitis, and emphysema. I will briefly describe our finds on each of these.

The technical name of lung cancer is bronchogenic carcinoma since it develops in the lining of the bronchial tubes of the lungs. This is a normal lung of a nonsmoker. This is the lung of an individual with bronchogenic carcinoma, cancer; the cancer arising in the bronchus, and spreading to the surrounding tissue. Bronchitis, another disease of the bronchial tubes, is characterized by chronic coughing, together with heavy mucus coming from the lungs. Because of interest in these two diseases, we dissected the bronchial tubes out of each pair of lungs. Each set of tubes was divided into 208 portions and a section for microscopic study was prepared from each portion.

Here are the sections from the bronchial tubes of one man. During the course of our investigation I have personally examined over 100,000 sections of this sort under the microscope and recorded the findings in detail. Dr. Stout has independently examined samples of the sections and our finds closely agree.

Mucus glands are located in the walls of the bronchial tubes. By microscopic examination, we found that sometimes these glands become much enlarged, with evidence of an unusually high excretion of mucus. When the microscopic examinations were completed, we compared what we had seen with the smoking habits of the subjects as reported by the interviewers. In nonsmokers, the bronchial glands were almost always normal, while in cigarette smokers, the glands were usualy enlarged. The greatest degree of changes in the glands occurred in heavy cigarette smokers. The glands of ex-cigarette smokers tended to be like the glands of men who had never smoked.

Thus our microscopic findings were in complete agreement with findings in many clinical and epidemiological studies. Chronic bronchitis is highly associated with cigarette smoking. This is not surprising since tobacco smoke contains irritating chemicals, and irritants typically stimulate the activity of glands. For example, the eyes water when exposed to irritating smoke. While tears are not harmful, the filling of bronchial tubes with excessive mucus is harmful; and in extreme cases can lead to death.

Now let us turn to lung cancer, that is, bronchegenic carcinoma.

Microscopic examination of a cancer (such as I showed you earlier) reveals that it is composed of a large mass of cells with very atypical nuclei. It is the appearance of the nucleus by which a cancer cell can be distinguished from a normal cell. With one exception, every person in our autopsy series who died of lung cancer turned out to have been a regular smoker. The one exception was an occasional cigarette smoker who worked with asbestos.

We examined the remaining bronchial tubes of the people who died of lung cancer and found large numbers of cells with atypical nuclei. These cells looked just like the cells in the main tumor mass. Furthermore, here and there we found little collections, lesions, composed entirely of cells with atypical nuclei. These were located in the lining of the tubes and had not yet penetrated the underlying tissue. Such lesions are usually called carcinoma-in-situ (precancerous lesions) since it is believed that they represent an early, noninvasive stage of the disease.

We never found any lesions of this sort (precancerous) in the bronchial tubes of persons who had never smoked. However, we did find such lesions in the bronchial tubes of cigarette smokers who had died

of causes other than lung cancer. The number of precancerous lesions increased greatly with the amount of cigarette smoking. However, even in light smokers without precancerous lesions, we found many cells with atypical nuclei. Most interesting of all, we found far less atypical cells in the bronchial tubes of excigarette smokers than in the bronchial tubes of men who used cigarettes up to the time of their death.

Thus, these microscopic findings are in complete agreement with findings in a great many epidemiological studies (sometimes called statistical studies.) Epidermoid lung cancer rarely, if ever, occurs in nonsmokers (except those who have inhaled certain substances such as radioactive material, asbestos dust or dust containing chromates or nickel). The incidence of lung cancer increases greatly with amount of cigarette smoking. Fortunately, the risk declines if an erstwhile cigarette smoker gives up the habit. This has also been verified by our microscopic findings.

Up till now I have been speaking of the bronchial tubes. These tubes merely serve to take air laden with oxygen to the active portion of the lungs and take away air laden with carbon dioxide. Now I will turn attention to the lung parenchyma which consists of thousands of little air sacs called alveoli. It is through the walls of these sacs that oxygen is exchanged for carbon dioxide in the blood. This vital function becomes less efficient if some of the air sacs are destroyed. The major symptoms of this are shortness of breath and a tendency to become fatigued easily. If a great many of the air sacs are destroyed, the symptoms are severe and the patient is said to be suffering from a disease called emphysema. While emphysema is often fatal its importance lies in the fact that it is the cause of a great many cases of disabling diseases and reduced ability to work. In advanced stages the individual becomes a lung cripple.

In order to study the early stages of the disease, we took microscopic sections of lung parenchyma from four parts of the lungs of each subject. This is what we found:

In nonsmokers, regardless of age, the lung parenchyma was almost always normal, or nearly so, regardless of the age of the subject (except, of course, for subjects who had some infective disease such as tuberculosis). In cigarette smokers, the lung parenchyma invariably showed signs of damage to the air sacs. The degree of such damage increased greatly with amount of cigarette smoking. Furthermore, among cigarette smokers the degree of the damage increased with advancing age, that is to say the damage is progressive with time so long as a person continues to smoke cigarettes. Unfortunately, it appears that the body is unable to repair this type of damage if a smoker gives up the habit. If a smoker gives up the habit he may avoid further damage to his air sacs, but that which has been done is not undone.

In even moderately advanced cases the destruction of lung tissue is so extensive that it can be readily seen without a microscope. I have brought two examples to show you.

Our technique is to fill a lung (removed at autopsy) with formalin, a chemical which hardens and preserves the tissues without distorting the shape. When the formalin is removed and the lung is dried, it has much the appearance of a dry sponge. Actually, it is much like

one of the new synthetic sponges which have a great many little air spaces of fairly uniform size.

Mr. Chairman, may I demonstrate these? I brought my own illuminator.

Mr. ROGERS of Texas. Yes. How long will that take?

Dr. AUERBACH. One second.

This is a section of a lung, the whole lung, of a nonsmoker.

This is the section of a heavy smoker. And one doesn't have to be a pathologist to see that the lung is greatly destroyed, big large air sacs, as a result of the destroyed lung tissue, in a heavy smoker. And from another case, quickly, here is another one showing the big sections, the big spaces, emphysema, great destruction following cigarette smoking.

I would just like to demonstrate quickly, in pictures, what our study has shown. This is the bronchial epithelium of a nonsmoker, and you will note there are only two rows of cells.

This is the bronchial epithelium of an individual who has been exposed to smoke, and here you see the variation in the size, shape, and staining character of the cells, the cells that are going on to be atypical, abnormal, and are the precancerous cells.

Here is another photograph to show the tremendous increase in the number of cells. All of them are irregular, all of them are abnormal, all of them are precancerous. We call it precancerous because it has not yet invaded into the underlying tissue.

Here is another such lesion in a heavy smoker, tremendous increase in the thickening of the epithelium, and all with abnormal cells.

Here is another one now showing the invasion, the early invasion, where in the region of the precancerous lesion there is now the beginning of lung cancer. Here is another one showing again the invasion of the bronchus by the early cancer.

And here is the normal bronchial gland, thin, in a nonsmoker. Here is the gland, showing the great increase in cells, the great increase in mucus, in a heavy cigarette smoker.

And here you can see the changes—the black line represents those who died of lung cancer. These are those who died of causes other than lung cancer.

And you can see in the nonsmoker the least number of changes and the progressive increase of these changes as the smoking habits increase.

In another one, you see again the great increase in the number of changes as the smoking habits increase, with the greatest number being present in those who die of lung cancer.

The interesting one is this, precancerous lesions, none in a nonsmoker, none in the occasional smoker, and increases as smoking habits increase, and in this individual, the black line representing those who died of lung cancer, showing the greatest number.

Now, when an individual gives up the habit, this is what we see. We see these atypical precancerous cells disintegrate and disappear. And then we see what happens when you compare those who never smoke with those who have given up the habit, with those who still continue to smoke the same number of cigarettes, and you notice here there is a 40 times greater difference between the individuals who continue to smoke than the individuals who gave up the habit.

The same thing goes in these areas. The tremendous drop when individuals give up the smoking habit.

Now I will save these for later. This is the lung of a normal individual, nonsmoker. This is the lung of a heavy smoker—the tremendous thinning of the alvoli, the enlargement of the air sacs. Here is the blood vessel of a nonsmoker. As the smoking habits increase, the vessel becomes thickened, and so thickened as a matter of fact that hardly any blood can get through into these areas.

In conclusion, our microscopic studies fully confirm the findings in many epidemiological studies. Cigarette smoking is extremely harmful to the lungs. Indeed, we have found at least some damage in the lungs of every single cigarette smoker we have studied. It appears that no one is completely immune.

In my opinion, this fact should be called strongly to the attention of the public. Individuals may thus decide for themselves whether the pleasure is worth the cost which he will inevitably pay in terms of damage to his lungs.

Because of the grave risks in cigarette smoking, I strongly support the American Cancer Society's position that cigarette packages should carry a warning label and that all cigarette advertising should include a similar warning.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you, Doctor.

Mr. Rogers, any questions?

Mr. ROGERS of Texas. Doctor, just one or two questions. Is it your statement that there are no nonsmokers who have lung conditions like you have shown here?

Dr. AUERBACH. Mr. Rogers, I would like to tell you an interesting story in that regard.

Seven years ago I was in a debate—it was not a debate—I was asked after a debate, and I said I had never seen a man who died of squamous or oat cell carcinoma who was not a smoker. I would like you to know I have repeated this statement to well over 150 medical meetings.

Mr. ROGERS of Texas. There are a lot of people who have not died——

Dr. AUERBACH. I am only talking of those who came to autopsy, where the proof was absolute.

Mr. ROGERS of Texas. In other words, you are comparing a healthy lung where there isn't any question about with lungs you have taken out of people who smoke?

Dr. AUERBACH. No, no. There are individuals who die of every cause, and there are individuals in this series that have never smoked So we studied all groups.

Mr. ROGERS of Texas. And who had the same lung condition.

Dr. AUERBACH. I have not seen squamous or oat cell carcinoma myself in an individual who has not been a cigarette smoker—a smoker. let me say.

Mr. ROGERS of Texas. That does not mean there are none, though.

Dr. AUERBACH. It may not mean there aren't any, but we will have to agree they are very rare indeed.

Mr. ROGERS. of Texas. And with a lot of people who smoke cigarettes there would never have been an occasion for you to know

whether their lungs were healthy or not, or what effect it would have on them.

Dr. AUERBACH. Well, let us say this: In our experience, based on a large segment of material that comes to autopsy, we have not found any evidence to the contrary.

Mr. ROGERS of Texas. Now, the American Cancer Society works at length on all forms of cancer, do they not?

Dr. AUERBACH. Yes, sir.

Mr. ROGERS of Texas. Do they pay more attention to cigarette smoking than anything else?

Dr. AUERBACH. I do not know what the American Cancer Society pays attention to. I do know that they support research activities in every form of cancer.

Mr. ROGERS of Texas. Can we expect the recommendation from the American Cancer Society that all advertising that has even a remote association with cancer carry a label, whether it be automobile fumes or whatever it may be?

Dr. AUERBACH. Mr. Rogers, I made a preliminary statement about my just appearing as an individual who has worked with these things. As far as I am concerned, I think the nicest thing that would happen would be if we could find the agent that causes cancer and remove it. This would be the finest thing. But beyond that, it is not within my province.

Mr. ROGERS of Texas. I would agree if we could do that by passing a bill through Congress, I would have done that a long time ago.

Thank you very much.

The CHAIRMAN. Mr. Younger?

Mr. YOUNGER. Thank you, Mr. Chairman.

Dr. Auerbach, you say you are a senior medical investigator for the Veterans' Administration hospital?

Dr. AUERACH. Yes, sir.

Mr. YOUNGER. Are you on the payroll of the hospital?

Dr. AUERBACH. As I said, I am a full-time employee of the Veterans' Administration hospital in East Orange, N.J.

Mr. YOUNGER. In other words, you are paid today by the Government to come and testify?

Dr. AUERBACH. Yes, sir.

Mr. YOUNGER. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Kornegay?

Mr. KORNEGAY. Dr. Auberbach, I appreciate your coming in today. As I get it, you speak for the Veterans' Administration and also the American Cancer Society, is that right?

Dr. AUERBACH. No, sir; I am speaking for myself, as an individual. I am senior medical investigator for the Veterans' Administration. That is my position. For the last 12 years I have been engaged in research and my findings are well known to the American Cancer Society. They asked me if I would appear before this committee.

Mr. KORNEGAY. You are here at the behest, then, of the American Cancer Society?

Dr. AUERBACH. Yes, sir; I am.

Mr. KORNEGAY. Now, Doctor, did anybody assist you in your studies from the American Cancer Society?

Dr. AUERBACH. In the anatomic findings, that is examining them under the microscope; no. In the evaluation of the findings, record-

ing them from the IBM—putting them on IBM cards from the sheets that we made our observations, recording them, and evaluating them; yes. Dr. Hammond and Mr. Garfinkel.

Mr. KORNEGAY. Dr. Hammond is associated with the American Cancer Society.

Dr. AUERBACH. Dr. Hammond is; yes, sir.

Mr. KORNEGAY. He is not a medical doctor, but a statistician, is that correct?

Dr. AUERBACH. He is an epidemiologist; yes, sir.

Mr. KORNEGAY. And he is responsible for the statistical analysis of the study.

Dr. AUERBACH. He is responsible for that, yes, sir.

Mr. KORNEGAY. Now, did you personally obtain the smoking histories of the dead persons which you studied?

Dr. AUERBACH. No, sir, I did not.

Mr. KORNEGAY. Pardon?

Dr. AUERBACH. I did not.

Mr. KORNEGAY. I believe Dr. Hammond did that, or it was done under his direction and supervision, is that correct?

Dr. AUERBACH. Yes, sir.

Mr. KORNEGAY. Now, your studies dealt with autopsy material.

Dr. AUERBACH. Yes, sir.

Mr. KORNEGAY. That is to say, these were the lungs from dead people, is that right?

Dr. AUERBACH. Yes, sir.

Mr. KORNEGAY. And you concluded that these changes that you found in these lungs, the precancerous conditions, or changes, would progress to cancer on the basis of your studying the lungs of these dead people, is that correct?

Dr. AUERBACH. Yes, sir.

Mr. KORNEGAY. Is that based on the assumption they continued smoking, or that they stopped smoking, and had they not died from other causes?

Dr. AUERBACH. It is not based on anything except objective observation made. We had no knowledge of the smoking history at the time we made our observations.

Mr. KORNEGAY. Now, these cases that you examined, and some of which you showed here today, they were selected by Dr. Hammond, is that correct?

Dr. AUERBACH. Well, they were selected only after the smoking histories were evaluated. He only selected——

Mr. KORNEGAY. They were selected and based on the smoking histories which he collected on these people.

Dr. AUERBACH. Which had been collected; yes, sir.

Mr. KORNEGAY. Well, did he get these histories, if you know, before or after they died?

Dr. AUERBACH. The smoking histories were obtained after the individuals died.

Mr. KORNEGAY. Pardon?

Dr. AUERBACH. They were obtained after the individuals died.

Mr. KORNEGAY. Then you did not get them from the individuals, but from other people.

Dr. AUERBACH. They came from the nearest kin.

Mr. KORNEGAY. You took slides from each dead person and examined the slides, did you not?

Dr. AUERBACH. The study was done in the following way.

I have no knowledge where these slides came from. They were renumbered. The autopsy number did not appear on these slides. The slides were randomized by a system of numerical rotation.

Mr. KORNEGAY. Let me interrupt you here.

Did you perform the autopsies?

Dr. AUERBACH. The autopsies were performed by my staff. I did not personally——

Mr. KORNEGAY. Did you personally perform the autopsies?

Dr. AUERBACH. No.

Mr. KORNEGAY. But you are a pathologist.

Dr. AUERBACH. I am a pathologist and capable of doing them.

Mr. KORNEGAY. They performed the autopsies?

Dr. AUERBACH. Yes, sir.

Mr. KORNEGAY. Made the slides?

Dr. AUERBACH. No. What they did was this: The autopsy was performed, the lungs were inflated with formalin, they were sectioned. Then the lung tissue was stripped away from the tracheobronchial tree, and these were then put into bottles, and 208 slides were made from each of these cases.

Mr. KORNEGAY. Did you make the slides?

Dr. AUERBACH. Technicians made the slides.

Mr. KORNEGAY. And the first thing you did in this whole operation was to examine the slides after they had been made.

Dr. AUERBACH. No. I supervised the entire process. I taught residents how to do the autopsies. When they were capable of doing them, they did them by themselves. I went over their descriptions. It is a little bit too much for one—

Mr. KORNEGAY. What did you actually do yourself, insofar as these cases that you have presented to us here are concerned?

Dr. AUERBACH. All I did was examine 208 slides at the beginning from each of these cases, and over a period of time over a hundred thousand slides.

Mr. KORNEGAY. But in connection with this study, and the cases you presented to us today, you examined 208 slides, is that right?

Dr. AUERBACH. That's right.

Mr. KORNEGAY. The findings and statistics in your published report are not based on the total number of slides made from all of the cases, though, are they?

Dr. AUERBACH. From all of the cases used in the study.

Mr. KORNEGAY. Well, but they were selected slides, were they not?

Dr. AUERBACH. No, sir; they were not selected. There was a design of the study, and the slides were put in random order by a design, as is every scientific study.

Mr. KORNEGAY. 208?

Dr. AUERBACH. 208 in the first two studies, and then in subsequent studies 55 slides, so that we could do more cases.

Mr. KORNEGAY. They were all the slides dealing with these particular cases?

Dr. AUERBACH. There were several studies. One of the studies included 22,000, another study included 39,000 slides. Those statisticians who reviewed our material felt we had ample material.

Mr. KORNEGAY. In other words, the statisticians actually selected the slides which you used?

Dr. AUERBACH. No. In order to make this a scientific study, a design was set up. I raised the questions—as a matter of fact, Dr. Stout and I raised the questions of what we wanted to study. The statisticians chose the sufficient number of cases so that the questions could be answered with sufficient material. I would like you to know that no one has criticized, among professionals, either the design of the study or the method.

Mr. KORNEGAY. Well, we just want to get it all on the record.

Dr. AUERBACH. Yes.

Mr. KORNEGAY. The statisticians selected first the autopsies to be made. When they were actually made, they selected the slides which you had under investigation.

Dr. AUERBACH. No, sir; that's wrong.

The autopsies were done in the routine fashion. Smoking histories were then obtained. Then when all of the questions were to be answered, the material was then selected—those with the proper smoking histories, all of them were used where smoking histories were available—there was no selection.

Mr. KORNEGAY. You looked at them all.

Dr. AUERBACH. I looked at every single one of them, and sometimes two and three times.

Mr. KORNEGAY. You did not eliminate any of them.

Dr. AUERBACH. No, sir. Once you start a study, nothing can be eliminated.

Mr. KORNEGAY. Now, you have had a great deal of experience in the area of tuberculosis also, have you not?

Dr. AUERBACH. Yes, sir.

Mr. KORNEGAY. Is there any relationship between smoking and tuberculosis?

Dr. AUERBACH. No, sir.

Mr. KORNEGAY. People who have tuberculosis are encouraged not to smoke, though, are they not?

Dr. AUERBACH. Yes, sir, for other reasons.

Mr. KORNEGAY. Well, that is a condition of the lung, though, is it not—tuberculosis?

Dr. AUERBACH. Well, tuberculosis is an area of disease within the lung tissue per se, and only infrequently involves the bronchi. On the other hand, lung cancer is a disease process of the bronchi first.

Mr. KORNEGAY. That is all, thank you very much.

The CHAIRMAN. Mr. Nelsen.

Mr. NELSEN. No questions. I just wish to thank the witness for a very informative presentation. Thank you.

The CHAIRMAN. Mr. Van Deerlin.

Mr. VAN DEERLIN. No questions.

The CHAIRMAN. Dr. Carter.

Mr. CARTER. Why does lung cancer occur more frequently in urban areas rather than rural areas?

Dr. AUERBACH. Dr. Carter, we made a study of this in an attempt to answer these questions—this was a multiple factor study, in which there were about 13 questions to be answered. One of the things with which we were greatly interested was, does urbanization play a role?

In order to answer that, women who lived in rural areas 30 years apart were compared. No. 1, we found that in no case of a rural area—if they did not smoke, they did not develop lung cancer. But we found that comparing urban and rural areas, we found no differences in the tracheobronchial tree.

Mr. CARTER. I believe that the findings of our blue ribbon committee admit that there was an increased amount of lung cancer in urban areas, and almost all physicians agree that that is true. They also agree that there is a reason for it, do they not?

Dr. AUERBACH. What they believe is their opinion, Dr. Carter. All I can say to you is that in my experience, finding an individual with lung cancer, squamous or oat cell, whether he lives in an urban or rural area, is a rare occurrence indeed.

Mr. CARTER. Regardless, we must admit there is more lung cancer in urban areas. I think that's a pretty well accepted fact.

Dr. AUERBACH. Has smoking been taken into account in those areas?

Mr. CARTER. I think the fact that accounts for that—the accepted fact—is air pollution. I do not think we should deny that air pollution is one of the causes of this.

Dr. AUERBACH. One of the causes for what, sir?

Mr. CARTER. For lung cancer. As we know, in experimental animals the only type of lung cancer which has been produced has been produced by inhalation of ozonized gasoline and other materials, but not by cigarette smoke.

Dr. AUERBACH. We are in the midst of an experiment now, and we have been able to smoke animals, and we have an answer for that. I would like to refer you, sir, to the work of Dr. Rockey who painted tar on the tracheobronchial tree and produced cancer of the bronchus.

Mr. CARTER. I have never seen that work. I know it was done on the skin of various animals. Of course you can paint almost anything on the skin of animals that will produce cancer.

However, as far at the literature which I am conversant with, it is the only type of lung cancer which has been produced—has been by inhalation of ozonized gasoline and so on.

Mr. AUERBACH. I have seen his slides, Dr. Carter. He has produced it.

Mr. CARTER. Yes, sir. Thank you, sir.

The CHAIRMAN. Mr. Satterfield.

Mr. SATTERFIELD. I have only one question, sir.

You said you had seen the slides where they have produced cancer by painting the tar on the skin. Were you able to ascertain, or do you know what relationship this amount of tar would bear to the number of cigarettes one would have to smoke to reproduce an equivalent amount of tar?

Dr. AUERBACH. No, sir, I do not.

Mr. SATTERFIELD. You don't have any idea?

Dr. AUERBACH. No, sir, I have none at all. This is the biochemical field, and it is far beyond me.

Mr. SATTERFIELD. It could be a million, could it not?

Dr. AUERBACH. I don't know.

Mr. SATTERFIELD. Not knowing, you would have to say it could be.

Dr. AUERBACH. To say anything more than I don't know would be going far beyond what I should.

Mr. CARTER. Will the gentleman yield for a question?

I am afraid I didn't understand what you said a minute ago. Did you say that you had seen where cancer had been produced by painting the bronchial tubes?

Dr. AUERBACH. Dr. Rockey had painted tobacco tar on the tracheobronchial tree and had produced an infiltrating cancer of the lung.

Mr. CARTER. He painted it with tobacco tar, you say?

Dr. AUERBACH. Yes. I do not know any more of the details. I do not know them at this time. But I am sure he could produce this evidence without any difficulty.

Mr. CARTER. This could have been produced by many, many other materials, without doubt, since this has been produced on the skin of animals experimentally, is that not so?

Dr. AUERBACH. He produced those by painting the bronchial mucosa of this animal.

Mr. CARTER. I understand that. But it is not just one agent—you would not limit that to the causative agent of just one thing.

Dr. AUERBACH. I do not know what it is in the tobacco smoke that causes it. All I know is what happened when he painted the animals with this substance.

Mr. CARTER. Well, I am sorry that has not been published. I would like to see that written up, because all of the proof at the present time, so far as I can find out or read, is to the effect that lung cancer has never been produced experimentally by inhalation of tobacco smoke. However, it has been produced by inhalation, as I told you, of ozonized gasoline.

Thank you, sir.

The CHAIRMAN. Mr. Gilligan.

Mr. GILLIGAN. No questions.

The CHAIRMAN. Mr. Farnsley.

Mr. FARNSLEY. Doctor, have you any figures as to what percent of autopsies conducted in your hospital have been on smokers?

Dr. AUERBACH. I do not know the exact number. But we are a Veterans' Administration hospital and as you probably know we have a large number—have had a larger number of smokers in this group.

Mr. FARNSLEY. We have been told a quarter of a million people died from cigarette smoking a year, and the things that are recommended that we do, put warnings in advertising, might reduce gradually the sales of cigarettes, although it might wipe out advertising and it might not.

I tried to get it clear as to what we are trying to do—stamp out advertising or stamp out cigarettes.

I know you are not trying to wipe out advertising. You are horrified by the things you have seen in lungs of people that smoke.

Do you have any suggestions as to something else that could be done or should be done about this terrible thing?

Dr. AUERBACH. One of the things that I think is tremendously important is to educate the people on what is taking place. How you do it and how you as a committee do it I am in no position to know.

Mr. FARNSLEY. Thank you.

The CHAIRMAN. Mr. Callaway.

Mr. CALLAWAY. No questions.

The CHAIRMAN. Do you have a question, Mr. Kornegay?

Mr. KORNEGAY. Yes, Mr. Chairman. May I ask a couple of questions?

Dr. Auerbach, how do you account for the fact that the incidence of lung cancer is higher in males who smoke than in females?

Dr. AUERBACH. This has been so, and whether it will continue to be so will have to be seen in another decade.

Mr. KORNEGAY. How do you account for it?

Dr. AUERBACH. There are two possibilities: One, that up until this period of time—it will just take around 20 years or more before the lung cancer develops—it was not very fashionable to smoke, for women to smoke, about 20 years ago, so that they started to smoke later in life. Sscondly, women did not inhale as deeply or as much as men did. Now, whether—we will have to wait now for a number of years when the women smokers catch up with the men smokers and see how that holds.

Mr. KORNEGAY. There is also a biological difference in men and women that would account for the fact?

Dr. AUERBACH. I have seen none anatomically that I could say.

Mr. KORNEGAY. But how about pipe smokers? Were any of the lungs that you have examined there cigar or pipe smokers?

Dr. AUERBACH. I have, Mr. Kornegay, two very interesting charts along those lines. During one of the studies—there were 13 questions we wanted to answer. The reason we wanted to answer it is that many people ask us—

Well, is it harmful to smoke a cigar, or is it better to smoke a pipe, are there differences?

Well, all of these slides were intermingled, and there were certain questions to be answered. All of the slides had a new number put on, and they were serialized 1 to well over 37,000. In this group were several comparisons. One was comparing nonsmokers to cigar smokers and cigarette smokers. Everything was held even, held similar, except the smoking habits. In other words, if it were a 38-year-old white man who lived in Albany and worked as a clerk, he was compared with a 38-year-old white man who worked as a clerk in Albany. So that everything was held as even as could be.

What is interesting is this: The green bar represents the nonsmoker. The yellow bar represents the cigar smoker. The orange bar represents the cigarette smoker.

I think you will agree with me that in all categories the nonsmoker shows the least number of changes.

What is extremely interesting is that in the cells that go on to form lung cancer, the precancerous cells, there is much less in the cigar smoker than there is in the cigarette smoker—and even more dramatically is that the precancerous lesions are much less in the cigar smoker than in the cigarette smoker.

Making the same comparison between the nonsmoker, a pipe smoker and a cigarette smoker, we find an even more interesting contrast in that there are many less changes in the pipe smoker and we find no precancerous lesions in the pipe smoker. So that we find that the changes in the tracheobronchial tree are much less in cigar and pipe smokers.

Mr. KORNEGAY. Well, then, your findings back up the Surgeon General's report, do they not, when it says on page 112:

> Death rates are about the same as those for nonsmokers for men smoking less than five cigars a day.

Dr. AUERBACH. Well——

Mr. KORNEGAY. It leaves you with the impression that it would have no effect on your health, is that correct?

Dr. AUERBACH. Mr. Kornegay, I appeared before the Surgeon General's Committee with these findings on six or seven occasions and they had all of these findings available to them.

Mr. KORNEGAY. Then they go on about pipe smoking and say that the death rate for current pipe smokers was little, if any at all, higher than for nonsmokers.

Dr. AUERBACH. That would fit in with the findings I have just presented.

Mr. KORNEGAY. That is all.

The CHAIRMAN. Doctor, you have dealt primarily with the results of cigarette smoking here today. What do you think is the answer?

Dr. AUERBACH. Mr. Harris, I think the answer is education. How do you do it, I don't know. But I think it is important, terribly important, for people to know the maladies resulting from smoking.

The CHAIRMAN. Well, do you think that legislation such as proposed here or action such as proposed by the Federal Trade Commission is an appropriate way?

Dr. AUERBACH. If as a result the people will be educated; yes. But I do not think anyone can predict or forecast what effect it will have.

The CHAIRMAN. Do you doubt that a warning will have much effect?

Dr. AUERBACH. I would say this, Mr. Harris. Warning is a form of education. If people realize that smoking a cigarette is not an innocuous procedure; yes, this is a form of education.

The CHAIRMAN. Are you taking the position that—as the gentleman before you did—that a warning on cigarette labels and adequate warnings on advertising should be required so that the people who advertise obviously for the purpose of sales will also have to pay for educating the general public?

Dr. AUERBACH. Well, this is far beyond my scope. Anything that will educate. I don't know—that is a legislative procedure, and I certainly am no authority on that, Mr. Harris.

The CHAIRMAN. Doctor, thank you very much. We appreciate your appearance here and your testimony.

Dr. AUERBACH. Thank you.

The CHAIRMAN. The committee will adjourn until 2 o'clock, at which time we hope to be back and proceed with the witnesses who are here today.

(Whereupon at 12:25 p.m. the committee stood in recess until 2 p.m. of the same day.)

AFTERNOON SESSION

The CHAIRMAN. The committee will come to order.

Mr. Svestka, we are glad to have you here, and you may proceed.

STATEMENT OF MIROSLAV J. SVESTKA, WASHINGTON, D.C.

Mr. SVESTKA. Mr. Chairman and members of the committee, may I express my appreciation for the privilege of being heard on a matter of such great importance to the Nation's health.

I am Miroslav J. Svetska. I live at 1724 Taylor Street, NW., Washington, D.C., and I am representing myself.

I recently completed a study of approximately 280 pages entitled "Death, Smoking, and Reason," a labor of more than a year. An abstract of the study is attached to this statement.

This work was done on a voluntary basis, for the benefit of my fellow man. I have no affiliation with any organization. Nobody paid for my time and expenses.

I am a cigarette smoker myself for about 48 years. My wife does not smoke nor do our four children smoke. They range in age from 15 to 22 years. I stopped smoking several times. The longest period was for 9 months. Evidently, I did not succeed in this effort to stop smoking definitely. When I stopped smoking, I felt uneasy. I was worried, nervous, and not able to work as usual. These were the reasons why I resumed smoking. Frankly, this was done on the advice of my wife. I realize that smoking does not serve the health, that it is an evil, and this problem has occupied my mind for many years. I have discussed and studied literature and health problems for decades with experts and friends, as time permitted. These discussions and studies, of course, included smoking.

I have made two main observations about myself. First, if I oversmoked, I felt the same uneasiness, worry, and nervousness as when I stopped smoking. Second, when I did not oversmoke and had enough exercise in fresh air (brisk walking), I could smoke a daily ration of cigarettes and feel fine.

I like to make observations, probably going into many details, more than the average person. The above observation concerned myself. Where other people are concerned, other questions arise: What is the correct daily ration of cigarettes for other people? Do they exercise in fresh air? To what extent? Et cetera.

How many people have the same trouble with smoking as I had? Statistics show that there are about 70 million smokers in the United States.

On January 11, 1964, the "Report to the Surgeon General" was published. I bought this book and studied it. This report inspired me to write my study. This book is a unique assembly of knowledge about the subject of smoking.

I had three motives in working on the smoking problem:

First, the "Report to the Surgeon General" did not offer a solution for the "stubborn smoker"—let us say an "old" smoker, like myself—and the only advice was to stop smoking.

Second, I doubted that the report would make all or at least the majority of smokers stop smoking, even when a health hazard is involved.

Third, I wondered whether my own experience would prove to be a positive and satisfactory answer to other smokers.

I continued my observations. After the publication of the report, many people stopped smoking cigarettes, or turned to cigars or pipe. I made inquiries about how these people felt. A majority said they

gained weight, usually as much as 10 to 20 pounds during several weeks. To gain weight in this manner may prove to be unhealthy—and another reason for my work was found.

After a period of several months, my skepticism proved to be right. Cigarette consumption, after a short decrease, again was on the rise—and still is.

To tell people in a straight way about my personal experience—"How To Smoke and Feel Fine"—would not be too successful. It would not help the stubborn smoker. Things are not as simple as they look at first, and such a recital would not find many open ears.

Armed with my own experience and basic observations on th e subject, which were assembled together with my European friends, I realized that substantial work must be done to help people. I went to work, and have done extensive research in the tobacco smoking area. The "Report to the Surgeon General" was of great help, as was the Bibliography on Smoking and Health, 1958–63, published with this report. Another help was the large Larson et al. monograph, and Reports of Dr. C. C. Little, scientific director of the Council for Tobacco Research—U.S.A. Other references and literature, most of them received through the National Library of Medicine, also were of substantial assistance. I have not undertaken practical or laboratory research as this would exceed my means and time. However, I have recorded a number of observations on myself.

There was no other way to study many pertinent questions and related problems, analyze them, and find a logical answer. I am aware that if my work is to be useful to other people proof must be presented. If this is not possible, supporting evidence for offered observations must be presented in a definite form.

Therefore, I started to work, to study problems, data, effects, statistics, and consequences. After analysis, a logical buildup was formed, leading to a solution for the stubborn smoker. This had to include the central nervous system, possible toleration for smoking, et cetera. Mortality data had to be taken into consideration, urban versus rural living, occupation, et cetera.

I arrived at a solution which would considerably—in my opinion and as a result of my work—reduce the health hazard in smoking and inhaling cigarette smoke. Such a solution must be demonstrated for the stubborn smoker in an open, easy-to-understand way, then let him decide which way he will choose.

It may be the way of reason, or he may be unreasonably exposed to serious hazards in smoking. This "reason" must be stated. Why and how to apply it also must be given. In addition, smokers must have an easy way to check whether the advice is fact or fiction. The solution must have a basis and documentation of other scientific work. There are more than 63 references cited in my study.

I believe that the American smoker is health minded. I see proof of this in the enormous rise of filter tip cigarette consumption in the last 15 years. These cigarettes may be called "health minded" cigarettes. However, in my analysis of the use of filter tip cigarettes, I found certain circumstances, which may be misleading, permitting the introduction of more noxious tars and gases into the body.

In your hands is an abstract of my study.

I must point out that the solution for the stubborn smoker still has a hypothetical status, but only for as long as it takes new research to

confirm or correct it. In part III of the abstract, there is a summary and definitions or suggested research.

In the course of my work about the components of tobacco smoke, I found that in the incomplete combustion of tobacco a gas is generated. This gas is a straight poison—a dangerous poison. It is inhaled with the tobacco smoke. Many other researchers found this, and there is no dispute or controversy about it. This gas is carbon monoxide, a well-known and potent poison for man. In my opinion, it is astonishing that more attention was not paid to this poisonous gas since there is proof of its highly dangerous properties. The report to the Surgeon General pays attention to this. Therefore, I was, let us say, "forced" to impute to carbon monoxide gas in tobacco smoke, when inhaled, highly noxious qualities. As to the amount in the cigarette smoke, please turn to page 60 of the report to the Surgeon General.

Under page 2 of the attached abstract are many details in point No. 2.

Carbon monoxide gas is readily absorbed into the blood hemoglobin, and with high probability causes impaired metabolism and much health damage. The only way to get rid of this poison—to eliminate it from blood—is the application and inhalation of massive doses of oxygen. However, I found a certain toleration for this gas in human beings. Details may be found in my abstract and in the study. Elimination of this inhaled poison, to restore normal metabolism, is a pivotal requirement.

Let me conclude this part by briefly answering the so often asked question: "Why do people smoke?" The answer is given in the study, but not in the abstract.

People smoke because of the nicotine content of the tobacco smoke. The proof of this? No other herbs are smoked.

Nicotine is an alkaloid. When it gets into the bloodstream as it does quickly after smoke is inhaled, it has the effect of releasing epinephrine into the bloodstream. Epinephrine, also called adrenaline, is a powerful hormone produced by the adrenal glands, located over the kidneys. Epinephrine also acts on the liver and other tissues to release fuel sugars into the bloodstream. These fuel sugars, when burned by oxygen in the body's cells, produce energy, which is needed to live and work. The report of the Surgeon General speaks about it on page 70, speaking also about carbon monoxide.

With a high degree of probability, the release of these fuel sugars into the bloodstream is the reason why people smoke. This gives the smoker a satisfying effect. The urge to smoke is a demand for these fuel sugars, realized by the autonomic nervous system. In contrast to the voluntary system, the autonomic nervous system controls these endocrine secretions. Such impulses to smoke come more often in sedentary occupations, due to possibly slowed-down—even sluggish—blood circulation. Therefore, a deficiency of these fuel sugars in the blood is very plausible, producing a tired feeling. Hence, the demand for a lift, a stimulant. But to really enjoy such an effect of stimulation, a number of conditions must exist. Here are only some of these conditions:

The adrenal glands must produce epinephrine and release it. The fuel sugars must be at hand in the liver and other tissues and must be

released. There must be enough oxygen in the blood to burn the fuel sugars into energy.

However, these are only some of the necessary conditions. If one of these conditions is missing, the effect of lift and stimulation cannot take place. It does not take place always, even when the smoker, out of his past experience, believes it does. The difference lies in the expected effect versus the real effect.

Usually and plausibly, a sedentary occupation is accompanied by slowed-down blood circulation and consequently a certain oxygen deficiency. Oxygen is indispensable for life and it may be said: "Less oxygen, less life." Smoking brings carbon monoxide into the bloodstream, just at the time when more oxygen is needed. This is the reason why oversmoking cannot help, but has a depressing effect.

But what is oversmoking? Many times we hear the admonition to smoke moderately. What is this moderation? What is meant by toleration to smoking? How does it work? How does one get massive doses of oxygen into the bloodstream? Should filter tip cigarettes be smoked? How many?

There are many other very important questions that will arise. Some are answered in the attached abstract, more in the study itself.

Permit me now to go to the proposed legislation.

H.R. 3014, introduced by Representative Rogers, cited as the "Federal Cigarette Labeling and Advertising Act," and practically identical H.R. 4007, introduced by Representative Nelsen, cited as the "Federal Cigarette Labeling and Advertising Act."

1. Permit me to suggest that added is a new point (c), which reads:

> The yield of nicotine, tars, and carbon monoxide gas in the smoke of one smoking unit contained in the package * * *.

There also should be the following additional language:

> Also to be printed in the same manner are whatever additives added in the manufacturing process to the natural tobacco; e.g., menthol, and/or into the body of the smoking unit, or into the filter of a filter tip cigarette, or cigar with holder, and the yields of such additives in the smoke of one smoking unit.
>
> If tobacco is sold loose in a package, the same yields per 1 ounce of weight must be printed on the package. Indications concerning these yields must be the result of standard testing methods and set forth in common denominators, as regulated by the Federal Trade Commission, which is entrusted with enforcement of this act.

Reason A. Carbon monoxide gas is generated in the burning of tobacco, as in other incomplete combustion of organic materials. This gas is a highly dangerous poison.

For details as to this point, please see page 2, point 2, of the enclosed abstract.

Public attention should be directed to this inhaled poison in the smoking process. There also should be adequate information about how to eliminate this gas from the bloodstream. There are no other means or antidotes than the application of massive doses of oxygen. However, in the future, certain chemicals may be added to tobacco or to the filter of a filter tip cigarette which may reduce—and even eliminate—the carbon monoxide content of the tobacco smoke. The public should be informed about this and about the eventual side effects of all additives.

B. The menthol additive so far has practically escaped public attention. It is suspected of being another burden for cardiovascular func-

tions. It seems to be a useless burden. People do not smoke because of menthol. People smoke only because of the nicotine content of the tobacco smoke. The cooling sensation of menthol in tobacco smoke is imaginative and not real. Studies and knowledge about the menthol additive and its effects when it reaches the bloodstream directly through the lungs are scarce and insufficient to permit a final decision to be reached.

C. When the smoker buys a tobacco product, he should be given a quick and simple orientation about the yield of nicotine, tars, carbon monoxide, and whatever additives are introduced into the natural tobacco—specifically the smoke in one unit of such product. The smoker should have—he is entitled to have—an opportunity to evaluate and direct his smoking and his consumption of all tobacco smoke components, particularly those which are noxious and particularly those in larger quantities.

Studies and literature available today make it very difficult to determine conclusively quantitative data as to the components of tobacco smoke. Available data vary widely. Please see page 5 and point 4 of the enclosed abstract; see also the report to the Surgeon General, page 50.

As stated earlier, indications as sought must be the result of standard testing methods and stated in common denominators. There must be differentiation between "yield" and "absorption" in the human body's air passages.

2. Permit me also to suggest that the proposed warning (sec. 3(a)) that "cigarette smoking may be dangerous to health" be postponed, pending the results of suggested new research, as cited on page 16, part III, of the enclosed abstract. Or, the new bill should have facility enough to take into account results of new, future research.

Reason: Should the suggested research confirm or correct the noted observations, the labeling on cigarette packages could bear the following text:

Warning—Cigarette Smoking May Be Dangerous to Your Health. Smoking Not Over 12 Cigarettes Per Day May Reduce This Health Hazard When Exercising Daily for 40 Minutes (e.g., brisk walking) in Fresh Air to the Full Capacity of the Lungs.

With your consent, the bill H.R. 4244, the same provisions are suggested as those which have been written now. However, may I ask that this text be incorporated into the record.

Considering the bill H.R. 2248, introduced by Representative Udall, permit me to suggest to incorporate into it the same already mentioned provisions—no matter who will be entrusted with the enforcement of the future law.

Other information for the suggested legislative additions are represented mainly by three chapters in the following attached abstract of my study: First, "Summary of Resulting Requirements"; second, "Summary and Definitions of Suggested New Research"; and, third, "Remarks and Suggestions for Pending Legislation."

Therefore, I consider these chapters to be important.

May I ask that these chapters be put into the record—if not the abstract as a whole.

Permit me to call special attention of this committee to the cited research, as stated in the attached abstract on page 16. It means nothing more or less as to put order into the tobacco area household. When the

House of Representatives appropriates money, it is made in exact figures in dollars and cents. I wish we could go ahead in the same manner, that is in the mere and simple quantitative data of tobacco smoke components. Today, this is not possible. All what can be said is that we don't have the exact data or even that we don't know.

To show what is meant please turn to page 60 of the report to the Surgeon General. There you find that the content of carbon monoxide in the gas phase of the tobacco smoke is 4.2 percent of mole, which means molecules. On the same page in table 4, data in p.p.m., that is corresponding data of the above cited percent data, carbon monoxide is noted with the figure 42.000 p.p.m., and the safe level is noted as 100 p.p.m., that is parts per million. When you turn now to page 296 of the report to the Surgeon General, in the fifth paragraph from the top you will read:

> The relative magnitude of each type of exposure cannot be accurately calculated at present. Insight may be gained, however, into the relative magnitude of exposure of two components, carbon monoxide and the oxides of nitrogen, common to cigarette smoke and atmospheric air pollution. The smoking of 30 cigarettes per day is estimated to provide a 20- to 25-fold greater exposure to carbon monoxide than would be experienced in the ambient air of Pasadena by nonsmokers. The effect of smoking on carboxyhemoglobin levels in man has been determined in studies utilizing carbon monoxide in air expired by cigarette smokers and nonsmokers with similar high level community atmospheric air pollution exposure. The effect of cigarette smoking on carboxyhemoglobin levels in man was more than five times greater than the effect of atmospheric pollution, even when the studies were performed in a relatively heavily polluted area.

You find there a No. 76 in parenthesis referring to the Special Report to the Surgeon General's Advisory Committee on Smoking and Health, executed by J. R. Goldsmith. This report was not at my disposal, but I have the study of John R. Goldsmith, M.D., and others, "Evaluation of Fluctuating Carbon Monoxide Exposures," a very valuable study, confirming together with the above-cited paragraph from the report of the Surgeon General, what I have found about the exposures to the highly poisonous gas, carbon monoxide, in the tobacco smoke.

However, on page 650, this Goldsmith and others study finds "* * * the carbon monoxide content of cigarette smoke as it comes from the cigarette, about 4,200 parts per million * * *" et cetera—this exposure is 10 times less as noted in the report to the Surgeon General on page 60, as cited above.

I would like to say that many people in California are very much concerned about carbon monoxide exposures, the smog, and the oxides of nitrogen. I have here a letter from Prof. A. J. Haagen-Smit, from the California Institute of Technology, Division of Biology, in Pasadena, Calif.

> I read with a great deal of interest your condensed abstract on smoking hazards. There is no reasonable doubt that smoking damages our biological system. Everyone should know that the concentration of the harmful chemicals, carbon monoxide, and oxides of nitrogen in tobacco smoke, are a hundred to a thousand times higher than generally accepted health standards. Apparently the concentration of these chemicals is quite similar to exhaust gases of automobiles (three to four CO percent) and the smoke of a cigarette, on page 8 of your condensed abstract, the figures are given for tobacco smoke, 42,000 parts per million, which is 4.2 percent and 1.4 percent.
>
> In the literature, values from 0.6 to 7 percent CO have been recorded."

I am citing these figures deliberately because we just do not have data which are needed and necessary to outline some kind of a correct and exact program.

When it comes to tars, please turn to page 50 of the report to the Surgeon General. In the first paragraph of this page you will read:

> The amount of tar from the smoke of 1 cigarette is between 3 and 40 mg., the quantity varying according to the burning and condensing conditions, the length of the cigarette, the use of a filter, porosity of paper, content of tobacco, weight and kind of tobacco.

Of course these conditions must be taken into account. But these figures together with the conditions point clearly to the high necessity to have reliable and so far as possible accurate data of the mere and simple tobacco smoke components. Only new research can give us these necessary answers—as for example, required on page 16 of the attached abstract, point No. 3, and in the way as said in point No. 2, "to establish standard testing methods" for this purpose. The statement of the Surgeon General Dr. Luther L. Terry before this committee has to say to it on page 6: "However, there now is a standardized method of measuring tar and nicotine yield which can be duplicated." This is a very important progress to be warmly saluted.

It seems, consequently, that in the near future there will be no difficulties to print on the cigarette packages the contents of the smoke, that is nicotine, tars—and for the reasons stated above and cited in the report to the Surgeon General—also the content of carbon monoxide, also as you will find other reasons to do so in the paper you have in hand.

What concerns additives to the natural tobacco, as for example, menthol, my study asks to print the content of them also on the cigarette packages. On page 7 of the statement of the Surgeon General Dr. Luther L. Terry, is found a similar recommendation:

> We would further recommend that the regulatory agency be authorized to require the manufacturers to provide the agency with continuing information as to the ingredients (including additives) in cigarettes.

Turning to the "stubborn smokers," the Chairman of the Federal Trade Commission, Mr. Paul Rand Dixon asked this committee a very logical and commonsense question. I hope I repeat it correctly: "What is the safe number of cigarettes to smoke?" The only answer is that today nobody knows at least not with high degree of accuracy. My data are estimations, even when supported by evidence. Point 5 on page 16 of the attached abstract asks to determine the "maximum tolerable dosages of nicotine, tars, carbon monoxide, and other gases for an average adult person" with other details. And, here again, we see the high necessity of new research to be performed.

Therefore, allow me to plead strongly to use all powers of this committee that this and other research be done, and provisions for it should be incorporated into the new bill. It is only an exclusively knowledge which can bring us forward and clear the way. Many details and arguments are found on other pages of the paper in your hand, for example, mortality data of varied occupations, also data for sedentary occupations, as are ours here, I presume.

I have not made specific representations concerning cigarette smoking and cancer. The reason is that there exists a bitter controversy whether or not cigarette smoking and inhaling causes cancer. In

the coming days this committee may see the report to the Surgeon General as unfounded and you may hear about statistics which have little causative and documentary value. In my opinion, however, the collection of many data in the report to the Surgeon General warrant the intended legislative steps.

But as you have realized, I stand somewhere in the middle of the road. I would speak against the prohibition of smoking, if asked. For the so-called stubborn smoker, I am positively and specifically for reasonable smoking, and people have to be explained what this is. There is no question, very probably, that the real trouble and greatest health hazard is in chainsmoking and oversmoking. In my opinion a chainsmoker is a person who smokes over 12 cigarettes per day and does not exercise on fresh air for 40 minutes to the full lungs capacity. This is the basis of a solution for the stubborn smoker which cannot quit smoking, a solution respectfully submitted for the time being—to be confirmed or corrected by new research.

Mr. ROGERS of Texas. Does that conclude your statement?

Mr. SVESTKA. Yes, sir.

Mr. ROGERS of Texas. Are there any questions?

Mr. JARMAN. Mr. Svestka, do the conclusions you have reached apply to cigarette advertising as well as the labeling of cigarette packages?

Mr. SVESTKA. Sir, I did not expressly speak about advertising. It applies surely to the packages. There is a big controversy about advertising, and all that I can say—if the tobacco companies are compelled to put the warning in advertising, it is a self-defeating proposition, because the basis of advertising is to praise somehow, the advertised product. And therefore it would be self-defeating. It is a bitter question. If you look at the basis of those things—what is advertising for? To sell more. There is no question about it. And anything else would not correspond with the recognized facts—except announcements of new achievements.

Mr. JARMAN. Are you concluding then that such a warning should be required in advertising as well as on packages?

Mr. SVESTKA. Sir, I would not like to be the judge. But if you take the things as they are, and I will take it from the simple business standpoint—let us say I am a tobacco manufacturer, which I am not. I would not fear to not advertise in consequence of such a provision, because people will smoke anyway, with or without advertising. That is my modest opinion. I don't know if it is right or not, but that is my opinion.

Mr. JARMAN. Thank you very much.

Mr. ROGERS of Texas. Mr. Younger.

Mr. YOUNGER. No questions.

Mr. ROGERS of Texas. Mr. Kornegay.

Mr. KORNEGAY. I have no questions.

Mr. ROGERS of Texas. Mr. Carter.

Mr. CARTER. No questions.

Mr. SATTERFIELD. No questions.

Mr. CALLAWAY. No questions, Mr. Chairman.

Mr. FARNSLEY. No questions.

Mr. ROGERS of Texas. Thank you very much, Mr. Svestka for your contribution to the record.

(The abstract referred to in Mr. Svestka's testimony is as follows:)

I. Condensed Abstract From the Unpublished Study "Death, Smoking, and Reason"

(By Miroslav J. Svestka)

1. Nicotine

Is the only real cause for people to smoke tobacco. No other herbs are smoked.

Chemically, nicotine is an alkaloid. It is habit forming, a fact which all smokers know very well. It is metabolized without substantial difficulties.

As an alkaloid, nicotine acts principally on the central nervous system. In small doses, it may act as a stimulant. In large and continued doses,it acts as a serious depressant. See "Report to the Surgeon General," RSG, pages 69–75 and 349–356, and in the study, "Death, Smoking, and Reason," DSR, chapters 18 and 19, "Nicotine's Effects on the General Nervous System," and "Physical Effects of Nicotine."

Efforts must be made to determine what is meant by a "small dose," or a "large dose," or an "overdose" of nicotine for an average, healthy adult. Moreover, RSG says on page 70 that "wide gaps of information exists in the area." A definition about this requirement is given in point 4 of this paper. Point 8 of this paper also provides more details about this subject.

It has been observed that nicotine in large doses and in overdoses—as is the case with the chain smoker—may cause a disorder in the endocrine glandular secretion and reduce the cilia activity. These problems are complex. For many important pertinent details, see the references cited above.

An abundant intake of nonalcoholic liquids may be helpful in the excretion of nicotine from the body. Nicotine's metabolites are excreted by the kidneys, which benefit from the extra liquids in performing their proper function. Tap water usually is adequate for this purpose.

Dried tobacco leaves contain from 1.5 to 8 percent nicotine. This is a very wide range. The smoker has no way of knowing and determining the nicotine content of the tobacco he's smoking, except through flavor and taste. Labels such as "mild" are meaningless. Flavor and taste are individual sensations and do not represent objective data. Consequently, the smoker is unable to direct his smoking and nicotine consumption, especially in relation to its effects on the important central nervous system. Moreover, the consumption of nicotine is tricky, as is usual with all alkaloids, and real effects may differ greatly from expected effects.

But the smoker should be able to direct his smoking.

> When the public is consuming an alkaloid—nicotine—it has a logical right to know how much is contained in the smoke of the tobacco unit.

Indications as to how much nicotine is contained, for example, in the smoke of one cigarette are given only by exception—and not as a rule.

Alcoholic and drug products must be labeled as to their content of dangerous ingredients. This is not the case with nicotine.

Resulting requirement.—The smoker is entitled to the opportunity to evaluate and direct his consumption of nicotine, an alkaloid. All tobacco products should be labeled as to the content of nicotine in their smoke.

New research and measurements are strongly suggested to determine an average and easily tolerated daily dose for an average, healthy adult. Commonly used denominators should be used to indicate this dosage level.

2. The gases phase and carbon monoxide poison gas

A number of gases are generated when incomplete combustion takes place. This is the case in the slow pyrolysis of tobacco. Many of these gases are irritants with minor adverse effects, but one, carbon monoxide, is a dangerous poison. There is no question as to its presence in tobacco smoke or as to its poisonous properties. The facts are known.

In the RSG study, on page 60, there is a list of gases found in tobacco smoke. Carbon monoxide is listed as 42,000 parts per million, when the safe level for industrial exposure is listed as 100 parts per million. As to its percentage in tobacco smoke, carbon monoxide is approximately 1.4 percent.

While it is true that tobacco smoke is not inhaled solely and constantly—but were this true coma and death would follow soon—the inhalation of even 1 percent carbon monoxide in air represents a serious potential danger. Therefore, the content of carbon monoxide in tobacco smoke deserves special attention.

When a smoker inhales, carbon monoxide is introduced directly and rapidly into the blood circulation via the lungs. It combines readily with the blood's hemoglobin, the affinity of hemoglobin for carbon monoxide being 200 to 300

times greater than its affinity for oxygen. Hemoglobin is part of the red blood corpuscles. It carries indispensable oxygen to all cells of the body. Carbon monoxide reduces the blood's capacity to carry oxygen and thereby exerts its deterimental effect.

If less oxygen is supplied to the body's cells, it may be said there is less life. This may be the case particularly in sedentary occupations. The blood circulation of people in such occupations may have a lower, even sluggish level. Inhaled carbon monoxide gas may result in a substandard metabolism, especially in the case of oversmoking "chain smokers."

The air passages of an individual generate phlegm as part of a natural cleansing process. In an inhaling smoker this phlegm is laden with tars containing the carcinogenic substances. That these substances are able to start and promote cancer has been proved in laboratory animals. A substandard metabolism may cause the phlegm to stay longer in the air passages and, in this way, increase the danger of cancer. Moreover, the inhaled smoke contains substances such as acrolein, which decrease the cilia activity. Cilia are tiny hairlike processes in the air passages working against gravity to help excrete phlegm and the impurities picked up and carried by it.

When expectant mothers inhale tobacco smoke, carbon monoxide is absorbed and is felt to predispose the tendency for such mothers to give birth to underweight infants. There is no controversy about this phenomenon. (See RSG book, p. 343. Also see Dr. Clarence Cook Little's report for 1963–64, p. 25, the tobacco manufacturers scientific organization, the Council for Tobacco Research, USA.)

Carbon monoxide is also incriminated as a possible cause of premature births and for abortions. (See RSG, p. 343. Also see DSR, ch. 24, "Toleration," and its references.)

As a result of these and other effects, carbon monoxide probably deserves the No. 1 place among the villians in tobacco smoke.

Carbon monoxide is a poison which cannot be metabolized. The only weapon and antidote is oxygen, administered in relatively massive doses into the blood to replace as much of the hemoglobin bound carbon monoxide as possible. The body can get rid of carbon monoxide only in the same way it was introduced and absorbed. The carbon monoxide attached to hemoglobin must be replaced by oxygen and excreted through the lungs.

However, my DSR study points out a certain toleration to carbon monoxide. (See ch. 24, "Toleration," and its 24 references (altogether more than 63 references are quoted in the DSR study).) But in the sense of good and sensible health care, carbon monoxide must be eliminated from the body of an inhaling smoker as soon as possible, at least the same day. How to achieve this is shown in this DSR study, ch. 31, "The Package of Reasonable Smoking," and in point 8 of this paper in a brief description.

However, no exact data can be offered as to the degree of toleration of the human body to carbon monoxide at this time. In this relatively new field of studying the habit of tobacco smoking, new research is badly needed to determine exact data, as to permit working with exact figures insofar as possible.

Resulting requirements.—Tobacco smoke contains approximately 1.4 percent of carbon monoxide. This gas is a well-known poison. When tobacco smoke is inhaled, it is readily absorbed by the hemoglobin portion of the blood. It may cause substandard metabolism, primarily in those sedentary occupations. It may cause phlegm laden with carcinogens to stay longer in the body's air passages by decreasing the cilia activity. When expectant mothers smoke and inhale, there is a tendency to give birth to lower weight babies, to premature birth, and to abortions. Carbon monoxide cannot be metabolized. The only antidote is oxygen in massive doses. A toleration to carbon monoxide has been observed, but there is an urgent need for exact data as to the degree of such toleration. New research on this question is badly needed.

Carbon monoxide must be eliminated from the body as soon as possible—at least the same day. (See point 8 of this paper.)

3. The tars segment in the tobacco smoke and cancer

Tars are understood to be the components of inhaled tobacco smoke which are condensed along the way into brown-yellow liquids. It has been observed that these tars contain, among other noxious ingredients, the dangerous carcinogens and cocarcinogens. Under certain conditions, these substances are able to start and promote cancer, principally cancer of the lungs. This has been proved in laboratory animals.

The incomplete combustion of cigarette paper also generates potent carcinogens. (See RSG, pp. 141–148, and DSR, ch. 20, "The Tars Segment of Tobacco Smoke," and ch. 21, "Tars, Cancer and Logical Deductions." Other pertinent details are found in DSR, ch. 12, "Cancer, Cardiovascular, and Other Diseases.")

While the causative agent or agents of cancer are not known as yet it is strongly suspected that viruses play an important role. If this is so, these viruses evidently need certain conditions to succeed. Such conditions are called the "third factor" or "factor X." In the DSR study, the expression "climate" is used. Such conditions may be created by inhaling tobacco smoke, which among other things causes phlegm laden with carcinogenic substances to remain in the body's air passages. Much pertinent, interesting material is found in the cited chapter 21, which concludes:

"This would also explain why people in mobile professions have a lower mortality rate compared with people in sedentary professions, or rural versus urban residents—a logical deduction."

Another important fact is that not all smokers contract cancer. However, the incidence of cancer is on a threatening rise, especially among smokers. These and other observations prompt a search for means to counteract these detrimental effects. On the basis of other chapters, a hypothetical solution is found in chapter 31, "The Package of Reasonable Smoking." This will stay hypothetical just so long as new research is required to confirm or correct it. In the meantime, it may serve as a means to eliminate these substances from the body's air passages, together with a reduction in the number of smoking units and the uses of filters.

Resulting requirements.—Inhaled tobacco smoke contains tars which in themselves contain carcinogenic substances. It is highly desirable to reduce the intake of tars and to eliminate them as soon as possible from the body's air passages. This can be achieved by reducing the number of cigarettes inhaled, or by using filters, and by improving both tobacco and filters to yield smaller amounts of harmful tars.

In the incomplete combustion of cigarette paper potent carcinogens also are generated. Research is suggested which would delve into the question of whether the usual type of paper used in cigarettes could be replaced with other materials whose slow pyrolysis would be less harmful.

4. Quantitative data of smoke components

It is extremely difficult to determine—conclusively or even with a relatively high degree of probability—quantitative data as to the components of tobacco smoke. Of concern are the content of nicotine, carbon monoxide, and tars. Available data vary widely and little attention is paid to the length of a cigarette and to filter tip cigarettes. As a basis for further work, the DSR study found it necessary to make estimations of the quantitative data of smoke components. (See ch. 25, "Today's Smoker Is in the Dark.")

To quote these data in various studies and our estimations:

Nicotine content of cigarette tobacco smoke is said to be 1 to 2 milligrams of absoorbed nicotine per one cigarette in the large RSG book. In the voluminous Larson et al monograph, the finding is approximaately 5 milligrams absorbed per cigarette when results of varied studies are related to a common denominator of milligram. Other studies have found even a great range—from 1 to 8 milligrams. The DSR estimation is 2.5 milligrams for a 70-millimeter cigarette, 3 milligrams for an 85-millimeter cigarette, all without a filter. (See cited chapter.)

Carbon monoxide data vary also, and varied methods and denominators are used. The DSR study uses the findings of Goldsmith et al., that each cigarette of 70-millimeter length represents an exposure of 475 parts per minute of carbon monoxide for 6 minutes. For a cigarette 85 millimeters long, 7.2 minutes. No observations were made as to filters, which probably do not retain any of the gases found in tobacco smoke.

Tars yield data are subject to an even greater variation. The RSG book, page 50 cites the yield of tars from one cigarette of 70-millimeter length as varying from 3 to 40 milligrams, from results obtained on a smoking machine. The DSR study estimation is 20 milligrams for a cigarette 70 millimeters long and 24 milligrams for a cigarette 85 millimeters long, both without filters.

These wide ranges can be explained by the varied and complex conditions in smoking. These conditions are listed on page 74 of the RSG book and more details are found in chapter 25 of the DRS study.

However, this changes nothing as to the logical requirement that a smoker is entitled to know what he is exposing himself to when smoking. The smoker cannot depend only on the flavor and taste. These are individually perceived and are unrealistic and unreliable sensations. The smoker is entitled to have an opportunity to consult objective data on these questions. Only then would he be able to direct his smoking and not find himself in a vague and meaningless labyrinth based on his own or other individuals' subjective sensations. Today, scanty and incomplete data are given, and this only by exception.

For the sake of the health of approximately 70 million smokers in the United States efforts should be made to determine a "small, tolerable dose" of the three cited smoke components. This should be based on the amount that could be consumed per day by an average, healthy adult. This requirement would apply to nicotine, the reason why people smoke. Concerning carbon monoxide and tars, any evaluation of this "dose" should consider points 7 and 8 of this paper.

In point 8, efforts are made to outline means that would counteract the noxious effects of carbon monoxide and tars. In the sense of this paragraph, new research should confirm these recommendations or correct them.

Resulting requirements.—The smoker is entitled to an opportunity to evaluate and direct his smoking and consumption of all noxious tobacco smoke components. All tobacco products should be labeled with indications as to the content of nicotine, carbon monoxide, tars, and additives in the smoke of one unit. Such indications must be the result of standard testing methods and must be stated in common denominators.

For the sake of smokers and their health, a "small and tolerable dose" of nicotine, carbon monoxide, and tars should be established by competent authorities. This "dose" would indicate what could be consumed per day by an average, healthy smoker, without causing serious health damage. Such data should repeatedly be brought to the attention of the public.

5. Additives to tobacco or to the filter of filter tip cigaretes

The menthol additive to tobacco in cigarettes has practically escaped the attention of both the public and experts. Studies about menthol additives to tobacco are scarce. Menthol enjoys wide usage externally. It also has some internal application where it is administered by way of the stomach. However, when menthol is administered by means of inhaled smoke it reaches the blood circulation directly and rapidly through the lungs. This represents a significant difference.

The DSR study maintains that inhaled menthol in tobacco smoke is another burden for the heart and possibly for the blood vessels. It seems to be a useless burden. People do not smoke because of the menthol additive, but because of nicotine. Menthol does not cool the air passages behind the mouth, because there are no nerves ending there to perceive such a sensation. The so-called cooling sensation is only imaginative and not real.

The menthol additive to cigarete tobacco deserves attention and new research should be undertaken to confirm or correct these observations.

In the future, other additives to tobacco or to the filter in filter tip cigarettes may be found. This may occur in efforts to reduce the health hazard in smoking. (See ch. 23, DSR, "Carbon Monoxide," which discusses eventual catalytic effects of certain chemicals in reducing the carbon monoxide content in tobacco smoke.)

However, many other means may be developed in the future. (See ch. 27, DSR, "What's Wrong With Filter Tip Cigarettes?" An ideal filter is discussed.)

Resulting requirements.—The smoker is entitled to know if any additives, and in what quantities, have been added to tobacco or a smoking instrument. Such additives should be listed on the package in common denominators. Effects of any tobacco additives on human health should be confirmed by competent authorities and this information made available to the public.

The menthol additive in cigarette tobacco deserves special attention and research to confirm or correct the observation that it is another and useless burden for the heart and possibly blood vessels.

6. Filter tip cigarettes

The use of filter tip cigarettes is on the rise—a substantial rise. It seems reasonable to explain this phenomenon by saying that people apparently have become more health-minded.

It has been estimated that in 1950, only 0.6 percent of all smoked cigarettes had a filter tip. By 1962, 54.5 percent of all cigaretes smoked had filter tips.

This is noted in the RSG book, on page 46. Details are given in the DSR study, in chapter 27, "What's Wrong With Filter Tip Cigarettes?"

While it is made clear that the use of filter tip cigarettes is recommended, there may be some misleading circumstances.

What does a filter on a filter tip cigarette actually filter out? Nobody knows. And pertinent data are given only by exception. Descriptions such as "mild" are meaningless and vague.

There is an area where the use of filter tip cigarettes becomes confusing. The smoker yearns for nicotine—nothing else. If there is less nicotine in a filter tip cigarette, he may have to smoke more to get his usual "quota" of nicotine. Thus, he may be exposing himself to the detrimental effects of increased quantities of other components of tobacco smoke, such as tars and carbon monoxide. The smoker, not understanding these relationships, may unknowingly be damaging his health. This would take him by surprise, because he is health-minded and smokes health-minded cigarettes—or at least cigarettes chosen because of a health motivation.

Resulting requirement.—The consumption of filter tip cigarettes is on a steep rise, because people have become more health-minded and therefore are using much more of these health-minded cigarettes. This phenomenon may result in an increased health hazard to the smoker in that it may cause him to smoke more units to get his usual dose of nicotine. By so doing he is introducing more tars and the poisonous carbon monoxide gas into his body.

This is another reason why all tobacco products should be labeled as to their yield of nicotine, carbon monoxide, tars, and additives in commonly understood denominators. This would assist the smoker in managing his habit.

7. Occupation, residence, and mortality data

Various types of occupations tend to predispose to significant differences in deaths from (1) cancer and (2) cardiovascular diseases. Deaths from these diseases are on a substantial rise.

It has been shown statistically that people with indoor occupations have a much higher mortality rate than people with outdoor occupations.

Here are some related data. They are on the basis of all deaths, represented by the figure 100. Consequently, the figure can easily be compared with the figures given for occupations. The following lists occupation, figure for cancer deaths, the figure for cardiovascular disease deaths:

Lumbermen, loftsmen, and woodchoppers: 51, 90.
Authors, editors, and reporters: 136, 107.
Outdoor mail carriers: 82, 74.
Farmers: 80. 88.
Managers, officials, and proprietors: 100, 112.
College presidents, professors, and instructors: 48, 66.

The last category, an indoor occupation, represents an exception, enjoying as it does a very low mortality from the diseases in question. This large difference may be explained by a credible circumstance. When teaching there is practically no chance to smoke and there might also be an effort made to provide a good example to the students in not smoking. Mortality figures continue:

Mine operators and laborers: 166, 150.
Taxicab operators and chauffeurs: 151, 155.
Busdrivers: 76, 81.

These phenomena may be explaining by noting that air in mines is polluted and the presence of carbon monoxide gas is not uncommon. Taxicab drivers can smoke practically at will. No explanation is offered for chauffeurs, except that both taxicab drivers and chauffeurs are usually older ages. Deaths would be more frequent in such categories than in those in which there was a representation of younger men. As for busdrivers, they are prohibited from smoking while they are on duty.

There are other interesting mortality figures, such as those for lung cancer and place of residence, urban versus rural. The lung cancer ratio, in 1958, for men in urban areas is 91.3; for rural areas only 58.4.

These and other pertinent data are found in the DSR study. See chapter 25, "Other People's Deadly Experiences, Intriguing Observations and Logical Deductions," which uses official statistical materials and cites varied other studies.

While statistics are not generally recognized as conclusive, mortality data, by occupation and residence, indicate differences too great to be disregarded.

Looking at fundamentals, the question arises: Is the human body made for smoking? Certainly not. There is no evidence that Neanderthal man smoked.

The few centuries that man has smoked mean nothing in terms of the total human development. Since the dawn of civilization, natural work for man has entailed considerable, outdoor, physical activity—hard work, with plenty of movement in fresh air, and consequent ample intake of oxygen.

In this sense, another important phenomenon must be recorded. On page 100 of the RSG book, table 18 shows age-adjusted death rates per 1,000 men, without disease, nonsmokers and cigarette smokers, with and without a certain degree of exercise. The border line data are:

No smoking and no exercise death rate is 23.8; when smoking the rate is 34.1.

When the degree of exercise is heavy and there is no smoking, the death rate is 9.5; when there is smoking it is 19.7.

Chapter 26 in the DSR study concludes with a summary of seven points:

1. Cancer deaths are on a frightening rise.
2. Persons living and working in fresh air have a lower death rate from cancer.
3. Persons living in large cities (urban areas) have a much higher mortality rate in comparison with people living in rural areas (this may be related to sedentary occupations).
4. More males die from cancer than females do (more men smoke than women).
5. Lung cancer deaths are in direct proportion to quantity of smoking and the type of smoking (more smoking—more deaths; cigarette smokers have the highest death rate, with the probable cause being inhalation).
6. Lung cancer deaths are on the rise.
7. Persons who exercise have a lower mortality rate than those who do not (the greater amount of exercise, the lower the mortality rate; persons who exercise and do not smoke have the lowest mortality rate of all).

Resulting requirements.—It is most urgent that people who smoke tobacco be encouraged to exercise, especially in fresh air. This is particularly true for those people with sedentary occupations and for those smokers who inhale. They have a much higher mortality rate. It is suspected that people in sedentary occupations who live in large cities do not exercise at all, or if at all, to a very limited extent. Extensive use of automobiles is a major contributing factor in the overall picture.

There are many indications pointing to the credible fact that a smoker's life can be substantially prolonged through exercise in fresh air. This permits some hope for stubborn smokers.

8. To reduce the smoking hazard

It seems that me must live with the fact that many people cannot quit smoking for some reason. This applies particularly to adults, in whom the smoking habit has taken deep roots. Also to be considered is the problem of weight. When a smoker stops smoking, there usually is a substantial increase in body weight. This is an undesirable, but not insurmountable, problem. Approximately every fourth person in the United States is now overweight already.

People who cannot quit smoking must therefore be considered and ways to help them should be found. The importance of this problem is documented by cigarette consumption, which again is on the increase.

The second part of the DSR study is devoted to this problem and efforts have been made to offer a workable solution. The first part contains directions on how to quit smoking.

Chapter 30 of the DSR study, entitled "Summary," shows how the study was developed. It did not just happen accidentally. Pertinent problems were analyzed and as a result facts or supporting evidence developed in a logical way and formed the basis of the study. Some of its deductions are included in the paper. One point describes how people lived in 1900 in comparison to how they live today, when said diseases are on a steep rise. Another chapter discusses the "tools" and how they should be used to prolong the life of a stubborn, inhaling smoker, particularly those in large cities and with sedentary occupations, who have the highest mortality rates.

A brief definition is given in the following section, "Resulting Requirements":

These recommendations are hypothetical and they must stay hypothetical until they are confirmed or corrected by new research.

A researcher can work only on the basis of material available. That is the reason why the need for new research, as outlined, is highly important and pressing. Also, it might be that the "stubborn" smoker is that way because of reasons beyond his control. He deserves normal care and attention.

As for our young we have to insure that no new stubborn smokers are developed. See chapter 36, "Your Children and Smoking," in the DSR study.

Some of the study's observations are supported by the highest authority, the President of the United States. Convinced that people should exercise more, the President appointed a Council on Adult and Youth Physical Fitness. Besides, it has been pointed out that some Americans have reached the point of "hypokinesia," the cause of soft, flabby, and weak muscles, as a result of substandard movement and exercise.

Resulting requirements.—To reduce the health hazard in tobacco smoking and inhaling, the number of cigarettes smoked must not exceed 12 units per day, each with a miximum length of 85 millimeters or less. Filter tip cigarettes are recommended, but individuals should not be misled into believing that they can smoke more of them with impunity because of the filter.

To counteract the effects of inhaled noxious tobacco smoke components, massive doses of oxygen must be administered. This can be achieved by the daily exercise of a brisk walk in fresh air, irregardless of weather. While walking, deep breaths, to the full capacity of the lungs, must be taken. This should be done for a minimum of 30 minutes a day and in excess of usual activities. Outdoor sports involving equal conditions may be substituted.

If the smoker is unable to do this deep breathing, he must extend his walking time proportionately.

This is valid for an average, healthy person. Others must reduce the number of smoked cigarettes, and/or increase the time of the indicated exercise in fresh air—or stop smoking—to enjoy a prolonged life.

Drinking great amounts of nonalcoholic liquids may help in the excretion of nicotine metabolites from the body. For this purpose, tap water is adequate.

People suffering from Buerger's disease, emphysema of the lungs, cancer, certain cardiovascular diseases, and peptic ulcers must stop smoking. To quit is usually the "ordre du jour" for them. In any event, a physician should be consulted.

II. Summary of Resulting Requirements

1. Nicotine

The smoker is entitled to the opportunity to evaluate and direct his consumption of nicotine, an alkaloid. All tobacco products should be labeled as to the content of nicotine in their smoke.

New research and measurements are strongly suggested to determine an average and easily tolerated daily dose for an average, healthy adult. Commonly used denominators should be used to indicate this dosage level.

2. The gas phase and carbon monoxide poisonous gas

Tobacco smoke contains approximately 1.4 percent of carbon monoxide. This gas is a well-known poison. When tobacco smoke is inhaled, it is readily absorbed by the hemoglobin portion of the blood. It may cause substandard metabolism, primarily in those in sedentary occupations. It may cause phlegm laden with carcinogens to stay longer in the body's air passages by decreasing the cilia activity. When expectant mothers smoke and inhale, there is a tendency to give birth to lower weight babies, to premature birth, and to abortions. Carbon monoxide cannot be metabolized. The only antidote is oxygen in massive doses. A toleration to carbon monoxide has been observed, but there is an urgent need for exact data as to the degree of such toleration. New research on this question is badly needed.

Carbon monoxide must be eliminated from the body as soon as possible—at least the same day. See point 8 of this paper.

3. The tars segment in the tobacco smoke and cancer

Inhaled tobacco smoke contains tars which, in themselves, contain carcinogenic substances. It is highly desirable to reduce the intake of tars and to eliminate them as soon as possible from the body's air passages. This can be achieved by reducing the number of cigarettes inhaled, or by using filters, and by improving both tobacco and filters to yield smaller amounts of harmful tars.

In the incomplete combustion of cigarette paper potent carcinogens also are generated. Research is suggested which would delve into the question of whether the usual type of paper used in cigarettes could be replaced with other materials whose slow pyrolysis would be less harmful.

4. Quantitative data of smoke components

The smoker is entitled to an opportunity to evaluate and direct his smoking and consumption of all noxious tobacco smoke components. All tobacco products should be labeled with indications as to the content of nicotine, carbon monoxide, and tars in the smoke of one unit. Such indications must be the result of standard testing methods and must be stated in common denominators.

For the sake of smokers and their health, a small and tolerable dose of nicotine, carbon monoxide, and tars should be established by competent authorities. This dose would indicate what could be consumed per day by an average, healthy smoker, without causing serious health damage. Such data should repeatedly be brought to the attention of the public.

5. Additives to tobacco or to the filter of filter tip cigarettes

The smoker is entitled to know if any additives—and in what quantities—have been added to tobacco or a smoking instrument. Such additives should be listed on the package in common denominators. Effects of any tobacco additives on human health should be confirmed by competent authorities and this information made available to the public.

The menthol additive in cigarette tobacco deserves special attention and research to confirm or correct the observation that it is another and useless burden for the heart and possibly blood vessels.

6. Filter tip cigarettes

The consumption of filter tip cigarettes is on a steep rise, because people have become more health minded and therefore are using much more of these health-minded cigarettes. This phenomenon may result in an increased health hazard to the smoker in that it may cause him to smoke more units to get his usual dose of nicotine. By so doing, he is introducing more tars and the poisonous carbon monoxide gas into his body.

There is another reason why all tobacco products should be labeled as to their yield of nicotine, carbon monoxide, tars, and additives in commonly understood denominators. This would assist the smoker in managing his habit.

7. Occupation, residence, and mortality data

It is most urgent that people who smoke tobacco be encouraged to exercise, especially in fresh air. This is particularly true for those people with sedentary occupations and for those smokers who inhale. They have a much higher mortality rate. It is suspected that people in sedentary occupations who live in large cities do not exercise at all or, if at all, to a very limited extent. Extensive use of automobiles is a major contributing factor in the overall picture.

There are many indications pointing to the credible fact that a smoker's life can be substantially prolonged through exercise in fresh air. This permits some hope for stubborn smokers.

8. To reduce the smoking hazard

To reduce the health hazard in tobacco smoking and inhaling, the number of cigarettes smoked must not exceed 12 units per day, each with a maximum length of 85 millimeters or less. Filter tip cigarettes are recommended, but individuals should not be misled into believing that they can smoke more of them, with impunity, because of the filter.

To counteract the effects of inhaled noxious tobacco smoke components, massive doses of oxygen must be administered. This can be achieved by the daily exercise of a brisk walk in fresh air irregardless of weather. While walking, deep breaths, to the full capacity of the lungs must be taken. This should be done for a minimum of 30 minutes a day and in excess of usual activities. Outdoor sports involving equal conditions may be substituted.

If the smoker is unable to do this deep breathing, he must extend his walking time proportionately.

This is valid for an average, healthy person. Others must reduce the number of smoked cigarettes, and/or increase the time of the indicated exercise in fresh air—or stop smoking—to enjoy a prolonged life.

Drinking great amounts of nonalcoholic liquids may help in the excretion of nicotine metabolites from the body. For this purpose, tap water is adequate.

People suffering from Buerger's disease, emphysema of the lungs, cancer, certain cardiovascular diseases, and peptic ulcers must stop smoking. To quit is usually the "order du jour" for them. In any event, a physician should be consulted.

III. Summary and Definitions of Suggested New Research

1. To establish denominators which will be used in the tobacco area in order to unify and facilitate research methods and measurements of a specific substance or action. (E.g.: yield, absorption following inhalation, milligram, gram, percent, parts per million, exposure plus time, millimeter oxygen tension, "dry" plus tolerated humidity of tobacco and leaves.)

2. To establish standard testing methods by which it will be possible to determine the components of tobacco and tobacco smoke.

3. To secure, in established denominators, quantitative data as to the yield of nicotine, tars, carbon monoxide and other gases from varied smoking units on the market.

4. To determine, so far as possible, the amounts of tobacco smoke components which are absorbed into the blood circulation from inhaled smoke, and/or amounts of these components which are deposited along the airways of the body. It is anticipated that difficulties encountered in attempting these determinations will be substantial.

5. To determine, in common denominators, "maximum toleratable dosages" of nicotine, tars, carbon monoxide and other gases, for an average adult person. This should be accomplished through the use of standardized testing methods, with age, state of health and smoking habits—inhaler or noninhaler, being taken into consideration.

6. To determine effects of carbon monoxide gas, inhaled with the tobacco smoke, on the human body. Points which would receive special attention are:

A. The carbon monoxide content of tobacco smoke, as per point 3 of this chapter—difference between a 70 millimeter and an 85 millimenter cigarette, with and without a filter tp. This should also be extended to cigars and pipes.

B. If any artificial filter on the tip of a cigarette retains any carbon monoxide. Efforts should be made to discover a filter which will retain a certain portion of this gas, and/or act as a catalyst to change it to carbon dioxide.

C. The carbon monoxide content of blood before smoking and inhaling the smoke, and after these acts. This should be determined on the basis of number of cigarettes smoked and time interval of smoking. Many new techniques and types of equipment, including gas chromatography, which give much more reliable and rapid results, have been developed and should be employed to perform these tests. Results obtained should be checked on hemoglobinometer, by hematocrit reading and analysis of oxygen tension taking into consideration oxyhemoglobin, reduced hemoglobin, carboxyhemoglobin and eventually methemoglobin if any.

D. To determine if smokers in large cities, where they are exposed to a certain degree of polluted air, have a decreased toleration to smoking and inhaling—that is if their toleration has already been "used" and to what degree. An aid that can be used in these studies in the observation that the body reacts with an increase in the amount of red blood corpuscles when low doses of carbon monoxide are inhaled over extended periods of time.

E. To determine, on the basis of observed measurements to point C., the best type of exercise, and optimum time for accomplishing this exercise, designed to free the body of carbon monoxide—walking exercise with deep breathing, to the full lungs capacity, taken into consideration.

F. Determine if and to what degree the inhaled carbon monoxide in the tobacco smoke causes a substandard metabolism. Varied occupations and rural versus urban residence should be considered. The effect of carbon monoxide on the natural cleansing process in the airways should be studied carefully—is the cleansing process retarded, allowing carcinogenic substances to remain in the airways for longer periods of time?

7. To determine which smoke components, both from tobacco and additives, are retained and filtered out by various artificial filters on the tip of cigarettes and to determine extent of natural filtration accomplished by the tobacco in a cigarette. How much of a cigarette might one smoke and still expect harmful agents to be filtered out—if they are?

8. To determine, through analytic research, the effects of human health or various additives to natural smoking tobacco. To be taken into consideration are factors such as inhaling or not inhaling the tobacco smoke and whether or not additives undergo pyrolysis with the tobacco. Special attention should be paid to the effects of the menthol additive.

9. To determine if a greater than normal intake of nonalcoholic liquids, e.g. tap water, may help to excrete nicotine and other smoke component metabolites from the body, and if so, to recommend quantities which should be used to achieve this.

IV. Remarks and Suggestions for Pending Legislation

I respectfully request permission to make the following remarks and suggestions concerning smoking in regard to pending legislation before the U.S. Congress. These remarks and suggestions are made as a consequence of work done and observations made in the previous pages of this paper.

A. QUANTITATIVE DATA OF TOBACCO SMOKING COMPONENTS

Every smoker should have an opportunity to objectively evaluate and direct his smoking. This concerns the noxious material he is introducing into his body when smoking, especially when he inhales the tobacco smoke.

We have to do away with meaningless expressions now used in the area of tobacco smoking such as: "mild, moderate, etc." Instead the smokers should be able to say: "Today I have smoked so many units and consumed so much nicotine, carbon monoxide and tars." A smoker will be able to do so, when he finds, on every package of a tobacco product, exact data.

What is the content in the smoke of—

Nicotine,
Carbon monoxide and gases,
Tars,
Additives to the natural tobacco and/or into the body of a smoking unit, (into the filter of a filter tip cigarette or cigar with holder),
When sold loose in a package like pipe tobacco, the same contents per 1 ounce.

These data should be stated in commonly recognized denominators, and should be the results of uniform standard testing methods agreed upon by the tobacco industry in cooperation with the U.S. Government authorities, as determined by the law.

B. WARNING ABOUT THE HEALTH HAZARD IN SMOKING

There is no question that tobacco smoking, especially when the smoke is inhaled, is a health hazard. It may stay a health hazard in the foreseeable future unless steps are made to correct this problem.

The ability to quit smoking seems to be beyond the control of many people, especially those who have smoked for many years. This is documented by the newly, again rising, consumption of cigarettes. There are about 70 million people smoking in the United States, and these people deserve attention and care—when they still smoke in defiance of involved health hazard.

It must be said that the important factor in this health hazard is the degree of it.

In the endeavor to postulate a means of bringing smoking under control and to reduce the smoking health hazard, I have engaged in extensive study and literature research. I believe that I have found a means whereby this health hazard can be considerably reduced; see point 8 in this paper, and chapter 31, "The Package of Reasonable Smoking," in my DSR study, for more details.

Nevertheless these observations and recommendations, even though well founded and supported, are hypothetical, and will remain so until they are confirmed or corrected by new research and measurements. The scope of this research is stated in part III of this paper.

"Consequently, I respectfully submit for consideration, the suggestion that legislation concerning the said warning of health hazards involved in smoking should not be delayed until such time that the results of the proposed research or other is forthcoming."

Such a delay may take not too much time.

The need for new research is also supported by remarks, found in the report to the Surgeon General, "Smoking and Health," that a lack of information exists on various aspects of smoking and related influencing factors; see page 70 and other. With the eventual results of this new research at hand, the U.S. Congress could act with an even higher authority and possibly with regard to the last paragraph in this chapter.

"However, if there is a necessity, for some reason, that such warning must be put into a law now, I will support it."

I recall that a decade, perhaps more years ago, the expression "constitutional" was heard—in connection with walking, taking a walk for the benefit of one's health. If I recall correctly, former President Harry S. Truman so described his daily habit of taking a walk along streets of the Nation's Capital and wherever he chanced to be—New York City or remote hamlet.

However, the expression seems to have more or less disappeared from common usage and taking a walk for exercise seems to be indulged in by fewer and fewer people.

We all know that former President Dwight D. Eisenhower likes to play golf—an exercise which, no doubt, helped his recovery from illness.

President Lyndon B. Johnson evidently likes horseback riding, also an excellent exercise. President Johnson smoked—but gallantly stopped.

It's worthy to note that none of them smoked, a habit also scorned by President John F. Kennedy, to whom the Nation owes—among other things—the establishment of the President's Council on Adult and Youth Physical Fitness.

If I may, I would like to strongly plead for a call to the public extolling the benefits of exercise and fresh air—which to my observation and opinion—Americans indulge in insufficiently, especially those in sedentary occupations. This can be easily documented by a comparison of the life of today with the life of a mere 60 years ago. In addition to other circumstances, the extensive use of automobiles deprives people of the use of their legs as a means of transportation.

Mr. ROGERS of Texas. Our next witness is Mr. Bowman Gray, chairman of the board of directors of the R. J. Reynolds Tobacco Co. of Winston-Salem, N.C.

Mr. Gray, if you will come forward, you will be recognized.

STATEMENT OF BOWMAN GRAY, CHAIRMAN OF THE BOARD, R. J. REYNOLDS TOBACCO CO.; ACCOMPANIED BY H. H. RAMM, VICE PRESIDENT AND GENERAL COUNSEL

Mr. GRAY. Mr. Chairman, and members of the committee, I should like first of all to express my appreciation to the committee for giving me this opportunity to testify.

I am chairman of the board of the R. J. Reynolds Tobacco Co., and I am here as a spokesman for the manufacturers of virtually all cigarettes produced in this country. These companies have asked that I present to the Congress their views with respect to the pending bills relating to cigarette labeling and advertising. The names of these companies are the American Tobacco Co., Brown & Williamson Tobacco Corp., Larus & Bro. Co., Inc., Liggett & Myers Tobacco Co., P. Lorillard Co., Philip Morris, Inc., R. J. Reynolds Tobacco Co., Stephano Bros., Inc., and U.S. Tobacco Co.

I believe it is fair to say that the pending bills rank among the most important legislative proposals with respect to the tobacco industry ever to be considered by a congressional committee. These bills, if enacted, will have a profound impact upon this great industry. Unwise legislation in this field could produce repercussions which would be felt throughout the country's economy. I am confident that the Congress will exercise great care before taking any action which could seriously disrupt this important industry.

Bills before this committee, and the Senate Commerce Committee, are pointed at the merchandising practices of the cigarette industry—specifically, they provide for regulation, in one way or another, of cigarette labeling and advertising. It is proposed in a number of bills that a caution notice as to the health implications of smoking be placed on cigarette packages by the manufacturer. One of the pending bills—H.R. 4244—would require cigarette manufacturers to state tar and

nicotine yields on the package. A Senate bill—S. 547—would compel a warning notice to be placed in all cigarette advertisings.

We are strongly opposed to these bills. We do not believe that any governmental action is necessary or called for with respect to cigarette advertising or labeling. However, if any such action is to be taken, we believe it should be taken by the Congress—and by no one else. State and municipal governments are certainly not the agencies which should take action in this matter. The problem is national in scope; it is clearly not local. Cigarettes are advertised to a large extent on national media—over network television and network radio, and in magazines which circulate throughout the country. Cigarettes are sold in every State of the Union. A multiplicity of State or municipal laws in this field would produce chaos.

Similarly, we do not believe that a single Federal administrative agency is the proper body to take such action. A great diversity of interests is involved in this matter. Any legislation or regulation affecting cigarette advertising or labeling has far-reaching repercussions for farmers and growers, other suppliers, processors, distributors, and retail merchants, as well as the cigarette manufacturers. The tax revenues of the Federal Government and practically all of the States are seriously affected. Any such legislation has important implications for the country's mass advertising media. It is wholly inappropriate, therefore, for a decision of this scope to be made by the Federal Trade Commission, or by any other single Federal administrative agency whose judisdiction and expertise are confined to one particular phase of this complex problem. I repeat: This matter should be handled by the Congress and by no one else.

Let me summarize at the outset—very briefly—the premises which govern what I shall say.

First, the tobacco industry is profoundly conscious of the questions concerning smoking and health.

At the beginning of 1954, most of the cigarette manufacturers as well as a number of organizations representing growers of leaf tobacco, formed the Tobacco Industry Research Committee—now named the Council for Tobacco Research, U.S.A., to finance research in matters relating to tobacco and health. Through its scientific advisory board, composed of eminent and independent medical scientists, grants for research have been made totaling over $7 million to some 240 scientists in more than 100 hospitals, universities, and research instiutions across the country. In addition, companies individually have been given substantial support to other research in the area of smoking and health.

Further, in January 1964, the six largest cigarette manufacturers pledged $10 million to the American Medical Association Education and Research Foundation for research into the possible relationship between smoking and health. As of the end of January of this year, this foundation has approved 35 grants for research involving estimated expenditures of over $2,900,000.

I am neither a doctor nor a scientist, and I am, therefore, not qualified to participate in a debate on the medical or scientific questions relating to tobacco and health. Many distinguished scientists, however, are of the opinion that it has not been established that smoking causes lung cancer or any other disease. I understand that some of

these experts will appear before this committee during the course of the present hearings. I believe that nearly everyone familiar with these difficult problems will agree that there are large and basic areas where knowledge is lacking, that there is a very high degree of uncertainty, and that a great deal more research is necessary before definitive answers can be given.

Second, I think it is important to bear in mind that the majority of men and women in this country are cigarette smokers. Millions of persons throughout the world derive pleasure and enjoyment from smoking—and have done so for centuries.

The Advisory Committee to the Surgeon General recognized that there are "significant beneficial effects of smoking primarily in the area of mental health." However, the Advisory Committee felt that it could not measure these benefits, and it did not accord them any weight in reaching its overall conclusion with respect to the medical issue. I think it is obvious, however, that no action should be taken by the Congress with respect to the regulation of cigarette labeling and advertising without giving just and appropriate weight to the "beneficial effects of smoking."

Third, it is unnecessary for me to dwell at length before this committee upon the importance of the tobacco industry to the whole Nation's economy. The tobacco business is this country's oldest industry, and millions of persons depend, directly or indirectly, upon tobacco for their livelihood. In 1964, some 500,000 farms—approximately 700,000 farm families—produced tobacco which had a cash value of over $1.3 billion. The importance of tobacco to our foreign commerce and to our balance of trade has been pointed out frequently. Exports of leaf tobacco and tobacco products totaled more than $544 million in 1964. Indeed, the value of tobacco exports is equal to almost one-fifth of this country's balance-of-payments deficit. Federal, State, and local governments derived about $3.3 billion in tax revenues from cigarettes in fiscal 1964. The tobacco industry is clearly a vital sector in this country's economy.

My point simply is that all these factors point unmistakably to this conclusion: Extreme care should be exercised before any action is taken which could seriously disrupt this important industry.

With these factors in mind, I should like to discuss the specific legislative proposals pending before the committee.

We do not believe that a caution notice is necessary either on cigarette packages or in advertising.

I assume that the principal purpose of a caution notice is to alert the consumer to possible hazards associated with the use of a product. With respect to cigarettes, however, the public has been inundated for more than a decade with reports that smoking may be injurious to health. The report of the Advisory Committee to the Surgeon General was intensively publicized in all media. The smoking and health issue receives continuing publicity. It is a rare day when the matter is not discussed in the daily newspapers. I doubt that any person who can read or listen has not been made aware of the contention that smoking may be injurious to the health of some persons. In these circumstances, a caution notice would appear to be unnecessary.

If—in spite of these considerations—the Congress should conclude that a caution notice on the package would serve a useful purpose, I hope it will consider the following points:

First, any such legislation should make absolutely clear that the congressional statute preempts the field. It would be intolerable if the States and Federal agencies were to remain free to pass conflicting laws or to impose conflicting regulations on this subject. If there is to be a caution notice, its exact terms should be prescribed by the Congress, and the caution should be uniform among all manufacturers and nationwide in scope.

Second, the required caution should be phrased in a fair and factual manner. It certainly should not reflect an extremist and doctrinaire viewpoint. It should be stated in a way which reflects the lack of definitive clinical and laboratory scientific evidence of the relationship between smoking and health.

Third, if a warning is to be required on the package, it should not be required in cigarette advertising. As I have indicated, the public is aware of the charges that smoking may be injurious to health. This knowledge—plus a caution notice on every package, should this be required—would make any further warning in advertising totally unnecessary.

The insistence upon a warning in advertising, in addition to the demand for a warning on labels, is punitive in nature. The right to advertise—an essential commercial right—is virtually destroyed if a manufacturer is required in every advertisement to disparage the product. As a practical matter the requirement of a warning in advertising could well result in elimination of all cigarette advertising. There is little doubt that some persons advocate a warning in cigarette advertising precisely because they feel it will result in putting an end to such advertising. One of the industry's severest critics has publicly achnowledged that a warning message in cigarette advertising is expressly designed to "make the advertising self-defeating."[1]

Obviously, no businessman will spend his company's money for a "self-defeating" purpose.

I have no doubt that a straightforward proposal to prohibit all cigarette advertising would receive short shrift in the Congress; the same result should not be permitted by indirection. I am confident that the Congress will reject this extreme proposal.

I am, of course, aware that the British Labor Government recently took steps to prohibit cigarette advertising on the commercial television network in Great Britain. But that action furnishes no valid precedent for the proposals pending before this committee. I do not think it inappropriate to observe that views concerning the role of government with respect to mass advertising media; such as, television, and the proper relation of government to business, differ in the two countries in important respects. For example, until recently, radio and television were Government monopolies in England, and the Labor Government's action must be considered in light of that fact.

With respect to advertising in this country, the industry itself has taken affirmative action to meet criticism voiced by various persons. The companies have agreed to adhere to a cigarette advertising code which became effective at the beginning of this year. I have a copy of the code with me, and I should like to request that it be incorporated in the record.

---

[1] Statement of Emerson Foote, transcript of hearings before Senate Commerce Committee on S. 559 and S. 547, 89th Cong., 1st sess., p. 261 (Mar. 22, 1965).

This code prescribes certain standards for cigarette advertising. The standards relate primarily to two areas: advertising which has an appeal to young people, and advertising which contains health representations. For example, the code prohibits cigarette advertising in school and college publications. It bans testimonials from athletes or other celebrities who might have special appeal to young people. In addition, the code provides that no representation may be made with respect to health unless it is significant and is based on adequate, relevant, and valid scientific data.

Under the code, all cigarette advertising must be submitted to the administrator before it is used. The administrator is fully empowered to determine whether advertising complies with the standards of the code. If it does not, he will veto its use. Any company which violates the administrator's ruling may be required to pay up to $100,000.

The former Governor of New Jersey, the Honorable Robert B. Meyner, is the code administrator. The selection of a man of his stature and abilities—a man who has never had any connection with the industry—is evidence of the intent and desire of the industry to have a meaningful code. Governor Meyner, in commenting upon his selection, stated:

> They have asked me to serve as an impartial, objective administrator of a strict code regulating all advertising in the industry. I consider myself, in this sense, a duly appointed judge. I will do my utmost to enforce this code honestly and fairly.

The code represents a sincere attempt by the industry to respond to criticism, which has been voiced in some quarters, of the industry's advertising. It is an earnest effort at industry self-regulation.

May I comment briefly on the proposal, embodied in H.R. 4244, that cigarette manufacturers be required by law to state tar and nicotine yields on the package. This issue has scientific implication which I do not feel competent to discuss, but which I understand will be presented to the committee by qualified experts. I should like, however, to state the position of the cigarette industry concerning this proposal.

We are firmly opposed to any such requirement. There appears to be a considerable amount of misunderstanding and confusion about this subject but I believe that, if the evidence is viewed objectively and in a fairminded way, it will be clear that there is no legitimate reason for a law requiring a statement of nicotine and tar yields.

With respect to nicotine, the report of the Suregon General's Advisory Committee points out that:

> There is no acceptable evidence that prolonged exposure to nicotine creates either dangerous functional change of an objective nature or degenerative disease—

and the report goes on to state that nicotine—

> probably does not represent a significant health problem.[1]

In these circumstances, we believe that it is not only pointless but would be misleading to require a statement as to nicotine on the package.

Similarly, we believe there is no valid scientific basis for requiring a statement on the label with respect to "tar." The word "tar" is an unfortunate one to use since there is no tar as such in cigarette smoke.

---

[1] Report of the Advisory Committee to the Surgeon General on Smoking and Health, pp. 74–75 (1964).

Cigarette smoke has been described as "a heterogeneous mixture of gases, uncondensed vapors, and liquid particulate matters."

What is meant by the word "tar" in all probability is the condensate or solids collected from smoke by laboratory methods. I understand that there are many hundreds of compounds in smoke, many of which have not even been identified. Even those persons who maintain that smoking has adverse effects have not been able to establish that any particular ingredient or compound in cigarette smoke is the cause of illness. However, the implications of a statutory requirement that any particular element be stated would be that such element has been scientifically established as a cause of disease. I respectfully submit that it would be wrong for the Government to take a step which would lead the public to believe that the reduction or absence of a particular ingredient in cigarette smoke has health significance when conclusive scientific proof of that fact is lacking.

In this connection, I should like to point out that, contrary to the impression created in various quarters, the cigarette advertising code does not prohibit a statement on the label concerning "tar" or nicotine. The code provides that a representation as to the quantity of an ingredient present in the smoke may be made if either (*a*) the code administrator determines that such representation is significant in terms of health and is based on adequate, relevant, and valid scientific data, or (*b*) if a disclaimer as to significance in terms of health is set forth in the advertisement in substance and form satisfactory to the administrator.

The provisions of the code in this regard are very similar to a rule proposed by the Federal Trade Commission in its release dated January 18, 1964. The Commission stated, and I quote:

> A quantitative disclosure of cigarette-smoke ingredients is a claim concerning the health consequences of smoking the advertised brands.

The proposed rule, in the absence of a disclaimer as to health significance, would have prohibited such disclosure prior to substantiating evidence as to the significance of the statement in terms of health. This is in substance what the code provides. The members of this committee will agree, I believe, that the provisions of the code in this regard are not only reasonable but are in the public interest.

Finally, I should like to say just a word about the trade regulation rule with respect to cigarette labeling and advertising which was announced by the Federal Trade Commission last June.

This rule, which is presently scheduled to become effective July 1, 1965, would require a statement—

> in all advertising and on every pack, box, carton, or other container in which cigarettes are sold to the consuming public that cigarette smoking is dangerous to health and may cause death from cancer and other diseases.

Our attorneys have advised us that the Commission does not have authority to issue this trade regulation rule. We opposed its issuance during the course of the Commission's proceedings. If necessary, we shall oppose the rule in the courts. We oppose it because we believe the Commission acted without statutory authority. We oppose it because we believe this matter should be resolved by the Congress and not by a Federal agency. We oppose it because we believe—as Chairman Dixon has acknowledged to this committee—the Commission's rule would not have preemptive effect, and the industry would accord-

ingly be exposed to the possibility of diverse State and municipal laws. We oppose it because we believe the Commission's warning requirement is unwise, unwarranted, and is not a fair factual statement of the present state of scientific knowledge.

With this background, our legislative recommendations are as follows:

First, because we believe that in all the circumstances no requirement of a warning concerning cigarettes is necessary or appropriate in advertising or on labels, we strongly urge the Congress to take appropriate legislative action to countermand the proposed Trade regulation rule of the Federal Trade Commission.

Second, if this committee concludes that some regulatory action is necessary, I trust it will recognize that the nature of the problem requires that it be dealt with exclusively by the Congress, and by no one else. A congressional statute should make clear that no other regulatory action—State, local, or Federal—will be permitted in this area. It should preempt the field.

Third, if the Congress concludes that a caution statement should be placed on cigarette packages—a conclusion I very much hope it will not reach—the warning required should be factual and specific as to size and placement. The statute should make it absolutely clear that a further warning in advertising shall not be required. Specifically, we believe that section 4 of S. 559, which deals with preemption, should be amended by the addition of a sentence which would make clear that no Federal, State, or local authority may impose a warning in advertising for cigarettes packaged in conformity with the labeling provisions of the act.

Fourth, because there is no scientific basis for implicating any specific ingredient in cigarette smoke, we think it would be misleading to the public for Congress to require the quantity of any ingredient in the smoke to be stated on cigarette packages.

In closing, I urge that this entire question of the regulation of cigarette labeling and advertising be approached in a spirit of commonsense. I am confident that the Congress will reject any other approach.

Thank you, sir.

The CHAIRMAN. Thank you, Mr. Gray.

Your request for the cigarette advertising code may be included in the record at this point.

(The code referred to follows:)

ROBERT B. MEYNER, ADMINISTRATOR, CIGARETTE ADVERTISING CODE, INC., NEW YORK, N.Y.

CIGARETTE ADVERTISING CODE

STATEMENT OF PURPOSES

The purposes of this code are to establish uniform standards for cigarette advertising and to provide means whereby compliance with this code can be ascertained promptly and fairly and on a consistent basis.

ARTICLE I

DEFINITIONS

SECTION 1. "Advertising":

(a) Means all forms of advertising in, or primarily directed to, the United States, Puerto Rico, any territory or possession of the United States, or any

military installation of the United States, including, but not limited to, radio, television, and cinema commercials of all types, newspaper and magazine advertisements, billboards, posters and signs, subway and rail or bus car cards, automobile and truck decals, posters and signs, calendars, pamphlets, handbills, matchbook advertising, and point-of-sale display material of all types;

(b) Includes any written material or article or excerpt therefrom, not otherwise advertising, when used for promotional purposes;

(c) Includes labeling, namely, the display of written, printed, or graphic matter upon any portion of the package, carton, or other container in which cigarettes are packaged or shipped by the manufacturer; but

(d) Does not include the entertainment portion of any television or radio program.

SEC. 2. "Cigarette" means any roll of tobacco wrapped in paper or in any substance other than tobacco.

SEC. 3. "Representation" means any statement, reference, or claim, express or implied, direct or indirect, whether in oral, written, printed or graphic form, or in any combination of such forms.

ARTICLE II

THE CODE ADMINISTRATOR

SECTION 1. There shall be a code administrator who shall be a person of recognized independence, integrity, and intellectual achievement to the end that decision by him shall command public confidence and respect. The administrator shall have all of the powers and authority necessary and proper to enable him to discharge effectively the responsibilities entrusted to him by this code.

SEC. 2. The administrator shall have complete and final authority to determine whether cigarette advertising complies with the standards of this code and to enforce this code in all other respects.

SEC. 3. The administrator shall appoint a staff adequate and competent to assist him in discharging his duties.

SEC. 4. Neither the administrator nor any member of his staff shall be an officer, director, employee, or stockholder of any manufacturer of tobacco products, nor shall any such person have any financial interest in the business of any such manufacturer.

SEC. 5. The administrator is authorized to convene scientific advisory panels to enable him to carry out his duties. Persons selected for such panels shall be of independence, integrity, and competence in their particular areas of scientific discipline. In selecting such persons, the administrator may consult with appropriate governmental and private agencies such as the U.S. Department of Health, Education, and Welfare; National Academy of Sciences; National Research Council; American Medical Association; Scientific Advisory Board of the Council for Tobacco Research—U.S.A.; medical and scientific societies; colleges and universities; and nonprofit research institutes.

SEC. 6. The administrator shall by regulation establish procedures for the administration and enforcement of this code including, without limitation, procedure for—

(a) The submission to him of proposed cigarette advertising which, together with any supporting data or documents, shall be kept confidential, except as otherwise provided in article IV, section 4, of this code are as agreed to by the submitting party;

(b) The submission of protests by parties subject to this code concerning any determination by him;

(c) Hearings in connection with all submissions and protests; and

(d) Reconsideration by him of any of his determinations.

ARTICLE III

ADVERTISING CLEARANCE

SECTION 1. No cigarette advertising shall be used unless such advertising shall first have been submitted to the administrator and determined by him to be in compliance with the standards of this code; provided that by regulation promulgated by the administrator specified advertising may be excepted from the requirement of such submission but not from the requirement of compliance with the standards of this code.

ARTICLE IV

ADVERTISING STANDARDS

SECTION 1. All cigarette advertising and promotional activities shall be subject to the following:

(a) Cigarette advertising shall not appear—

(i) On television and radio programs, or in publications, directed primarily to persons under 21 years of age;

(ii) In spot announcements during any program break-in, or during the program break immediately preceding or following, a television or radio program directed primarily to persons under 21 years of age;

(iii) In school, college, or university media (including athletic, theatrical, and other programs);

(iv) In comic books, or comic supplements to newspapers.

(b) Sample cigarettes shall not be distributed to persons under 21 years of age.

(c) No sample cigarettes shall be distributed or promotional efforts conducted on school, college, or university campuses, or in their facilities, or in fraternity or sorority houses.

(d) Cigarette advertising shall not represent that cigarette smoking is essential to social prominence, distinction, success, or sexual attraction.

(e) Natural persons depicted as smokers in cigarette advertising shall be at least 25 years of age and shall not be dressed or otherwise made to appear to be less than 25 years of age. Fictitious persons so depicted in the form of drawings, sketches, or any other manner shall appear to be at least 25 years of age in dress and otherwise.

(f) Cigarette advertising may use attractive, healthy looking models, or illustrations or drawings of persons who appear to be attractive and healthy, provided that there is no suggestion that their attractive appearance or good health is due to cigarette smoking.

(g) No cigarette advertising shall contain a picture or an illustration of a person smoking in an exaggerated manner.

(h) Cigarette advertising shall not depict as a smoker any person well known as being, or having been, an athlete.

(i) Cigarette advertising shall not depict as a smoker any person participating in, or obviously having just participated in, physical activity requiring stamina or athletic conditioning beyond that of normal recreation.

(j) Testimonials from athletes or celebrities in the entertainment world, or testimonials from other persons who, in the judgment of the administrator, would have special appeal to the persons under 21 years of age, shall not be used in cigarette advertising.

SECTION 2. No cigarette advertising which makes a representation with respect to health shall be used unless—

(a) The administrator shall have determined that such representation is significant in terms of health and is based on adequate relevant and valid scientific data; or

(b) If the administrator shall have determined it to be appropriate, a disclaimer as to significance in terms of health shall be set forth in such advertising in substance and form satisfactory to the administrator; or

(c) The administrator shall have determined that the representation with respect to health in such advertising is not material.

SECTION 3. The inclusion in cigarette advertising of reference to the presence or absence of a filter, or the description or depiction of a filter, shall not be deemed a representation with respect to health unless the advertising including such reference, description or depiction, shall be determined by the administrator to constitute, through omission or inclusion, a representation with respect to health. If the administrator shall have determined that such advertising constitutes a representation with respect to health, the provisions of section 2 of this article shall apply.

SECTION 4. No cigarette advertising shall be used which refers to the removal or the reduction of any ingredient in the mainstream smoke of a cigarette, except that it shall be permissible to make a representation as to the quantity of an ingredient present in the mainstream smoke or as to the removal in toto of an ingredient from the mainstream smoke, or as to the absence of an ingredient normally present in the mainstream smoke, if—

(a) The administrator shall have determined that such representation

is significant in terms of health and is based on adequate relevant and valid scientific data; or

(b) A disclaimer as to significance in terms of health shall be set forth in such advertising in substance and form satisfactory to the administrator; or

(c) The administrator shall have determined that a disclaimer is unnecessary for the reason that the representation in such advertising has no health implication or that such implication is not material; and

(d) The quantity of such ingredient is determined and expressed in accordance with uniform standards adopted by the administrator for measuring the quantity of the ingredient present in the mainstream smoke, provided that, until such uniform standard is so adopted, the quantity of such ingredient may be determined and expressed in accordance with any recognized scientifically valid method disclosed to the administrator without any requirement of confidential treatment.

SECTION 5. Any advertising determined by the administrator to be in conformity with the code may include the following legend: "This advertising (label) conforms to the standards of the Cigarette Advertising Code."

ARTICLE V

PROCEDURES IN EVENT OF VIOLATION OF CODE

SECTION 1. Any person, firm, or corporation subject to this code, who violates any provision of this code, shall, in the discretion of the administrator with respect to each such violation, pay to the office of the administrator as liquidated damages, and not as a penalty, a sum, not to exceed $100,000, as determined by the administrator after consideration by him of all relevant facts. The administrator shall establish regulations for the determination of such violation and for the assessment and payment of such damages. No sanction shall be imposed without affording a hearing to the alleged violator. Upon written request from the administrator, an alleged violator of the code shall promptly deliver to the administrator any material and documents in its possession which are relevant and material to a determination by the administrator as to whether the code has been violated.

SECTION. 2. Nothing herein contained shall be construed to give any person, firm, or corporation, other than the administrator, any cause of action.

SECTION 3. In the event of a violation of this code, the administrator in his discretion may make public the fact of such violation in such manner as he may deem appropriate.

The CHAIRMAN. Do you know if Governor Meyner plans to come down and testify?

Mr. RAMM. The latest I heard——

Mr. GRAY. This is Mr. Ramm, general counsel of our company.

The CHAIRMAN. I beg your pardon?

Mr. GRAY. Mr. Ramm, who is general counsel of the Reynolds Tobacco Co., and I will turn it over to him.

The CHAIRMAN. Identify yourself.

Mr. RAMM. My name is H. H. Ramm, vice president and general counsel of R. J. Reynolds Tobacco Co.

Mr. Chairman, the latest information that I had was the the Governor would be glad to come if the committee desired his appearance here. He did not think it would be proper for him to come without a request.

The CHAIRMAN. The committee always leaves it to the discretion of the people who may have an interest in legislation whether or not they should come. We do not require anybody to come before this committee on legislation. There may be some other circumstances under which we require people to come but we do not, as a matter of policy, do it in the case of legislation. I should think, however, a man with

the tremendous responsibility that he has, and in view of the fact that the code has only recently been adopted—what was the date of it?

Mr. RAMM. It went into effect officially on the 1st of this year.

The CHAIRMAN. It would appear to me, speaking just as one individual, that without complete information on the self-regulatory program that is proposed the committee record will be incomplete. We had the same kind of a situation in the television code of 1952, I believe.

Mr. RAMM. Mr. Chairman, if I may say so——

The CHAIRMAN. If anyone with far-reaching responsibilities as we have here and with a program that has been proposed such as this, or does not feel his testimony should be in the record so that we might have the benefit of it, I am not too sure what can be expected if such a program and whether it should be considered to be too effective.

Mr. RAMM. If I may say so, Mr. Chairman, I will convey these remarks to him, and I am quite sure he will be happy to attend.

The CHAIRMAN. Mr. Gray, I am not altogether sure just what you have recommended, if you will pardon me for putting it this way. I suppose I have a right to be a little fuzzy right now in mind. You say, if there is anything done, you want the Congress to do it but you are against the Congress doing anything. Now, we are facing the situation here where the Federal Trade Commission has already taken action. The Chairman of the Commission has made it pretty clear to the committee in the last few days that they intend to go ahead.

I wonder if I would be stating your position correctly that you would prefer for the Congress to consider this matter and to prohibit the Federal Trade Commission from doing what it is attempting to do. As an alternative, if that is not done, being faced with the proposition of the Federal Trade Commission going ahead, then you would want the Congress to take some action requiring a specific warning on the label but not in advertisements?

Mr. GRAY. I am sorry; I did not, Mr. Chairman, make myself clear in my thinking on this.

The CHAIRMAN. I think you have made yourself clear as to what you would like to be done. But to me, we have a paradox. That is what has me a little confused.

Mr. GRAY. I think it would be only natural, sir, for me to—may I put it this way: If we are faced with the question not of whether, but of which, is this getting into the area that you are talking of here now, sir? If the question is not whether we are to have a labeling enactment or trade rule regulation put on us, but rather that if it is going to be required, then I have said, sir, and I repeat: This is a matter, in my opinion, to be handled by the Congress and the Congress alone and in handling the matter, Congress should make it clear that its action preempts the field, that the label required should be spelled out by the Congress as well as its location and size and so forth, on the packages upon which the statute would require the label to be carried.

Now, I am not trying to confuse you, sir; this is my position. This is not a time to tell funny stories—I just thought of one which would be applicable.

The CHAIRMAN. We will let you go off the record if it will give us a little levity at this time. [Laughter.]

(Discussion off the record.)

Mr. GRAY. It seems fairly obvious, sir, I am back with you now, if I may be, that there is great pressure from many areas for some kind of label to be placed on packages of cigarettes being of a cautionary notice in the area of possible injury to the health of some people.

Assuming that this is something which has to be or is going to be, now I will say that I greatly prefer—and I am certain it is a position shared by the other members of our industry—I say that this is such a serious matter that it should be handled by the Congress, determined by the Congress, spelled out by the Congress, and preempted from all other people by the Congress.

Is that an answer, sir, that I may make to you? Does that clarify the situation?

The CHAIRMAN. Well, I would get from that the implication that being faced with the situation of the announcement of the Chairman of the Federal Trade Commission, you would recommend that the committee try to work out some kind of legislative approach in order to clear the matter up.

Mr. GRAY. This is correct, sir.

The CHAIRMAN. Mr. Rogers?

Mr. ROGERS of Texas. Are you a lawyer?

Mr. GRAY. No, sir.

Mr. ROGERS of Texas. The reason I asked that is this: In reading your statement and in listening to it, it occurred to me that probably in view of the situation that has developed, though you did not anticipate that the subject would ever come up, in view of what has occurred, you should probably anticipate the possible "alligator in the bathtub" if we can refer to it that way insofar as State governments or municipalities are concerned in the future. As I understand Mr. Rand Dixon's position, it is this: That although he is moving into the area of adopting trade rule regulations, which to me is legislating but which to him is not, that whatever he does in this respect does not invoke the doctrine of preemption insofar as other agencies of the Government are concerned in making rules and regulations.

Hence it would occur to me that if you take the position that no statute should be passed on this, you can find yourself in a situation of running a very great risk of having some of these things happen to you that you do not want to happen.

Mr. GRAY. This, sir, I had hoped I had covered in the third recommendation on pages 16 and 17. That the statute should make it specific, we believe, that section 4, which deals with preemption, section 4 of S. 559, which deals with preemption, should be amended by the addition of a sentence which would make clear that no Federal, State, or local authority may impose a warning in advertising for cigarettes packaged in conformity with the labeling provisions of the act.

Earlier I asked—I suggested that the statute, if written, preempt the field so far as labeling of any kind either on packages or advertising is concerned, and the matter should be handled entirely by the Congress.

Mr. ROGERS of Texas. But, as I understand you, you are asking—you are saying that no statute needs to be passed and that you are in opposition to the bills that have been offered requiring a labeling on the package.

Mr. KORNEGAY. Would the gentleman yield?

Mr. ROGERS of Texas. Yes; I would be happy to.

Mr. KORNEGAY. I draw the attention of the gentleman to page 2:

We do not believe that any governmental action is necessary or called for with respect to the cigarette advertising or labeling.

I might just suggest Mr. Gray means there any type of Government action by the FTC, Congress, or anybody else rather than anticipating Congress to act.

Mr. ROGERS of Texas. What I am going back to is the point raised by the chairman is the situation the Congress is faced with at the present time is that there has been a statement by the Federal Trade Commission announcement that they intend to move into this field. If they do not move into this field or if they do move into this field, it occurs to me that the municipal corporations and the States could move in, whether either of these Federal bodies moved in.

Hence it occurs to me, Mr. Gray, that to put it very bluntly, the Congress of the United States is being challenged insofar as their legislative powers are concerned, and that is one of the very deep issues that I have in mind in introducing legislation of this kind and in trying to see that it is brought into bearing.

I do not smoke. It does not make any difference to me one way or the other, I mean. I just wanted to clear that point, that I think we have here a situation that goes much deeper than the question of economics or actually of health.

Mr. GRAY. Do I understand you correctly, sir, that the challenge is from these other agencies?

Mr. ROGERS of Texas. Yes, sir. So I am simply pointing out, Mr. Gray, that I think it would be to the interest of everyone—and I am not talking about cigarette smokers or cigarette manufacturers—but I think it would be to the interest of every citizen of the United States that this matter be cleared up and this challenge to the legislative powers of the Congress, however you put it, ought to be answered and answered at this time.

That is all I have. Thank you, Mr. Gray.

Mr. GRAY. Thank you indeed, sir.

The CHAIRMAN. Mr. Younger.

Mr. YOUNGER. Thank you, Mr. Chairman.

Mr. Gray, in view of the fact we are confronted with an action that has already been taken and the date set, is it your idea that you might contest the action of Congress in the court better than you could contest the action of the Federal Trade Commission?

Mr. GRAY. I don't believe I have been in that area at all, sir. I have no ideas of doing that.

Mr. YOUNGER. You never discussed in your organization whether or not you would contest the action if Congress did nothing and that you would allow the Federal Trade Commission order to stand and not go into court?

Mr. GRAY. I misunderstood your question, sir. I thought you asked me had we planned to contest an action of Congress and it had me off base a bit. I have already stated if the Federal Trade Commission does put into effect this trade regulation rule we will oppose it and oppose it in the courts, yes, sir.

I was confused as to what you asked.

Mr. YOUNGER. You haven't decided whether you would oppose the congressional action if Congress acts?

Mr. GRAY. I have not heard it even discussed, sir.

Mr. YOUNGER. I thought maybe that in view of the, some of the Supreme Court actions against Congress that you might feel that you would stand a better chance in the Supreme Court against Congress than you would against the Federal Trade Commission?

Mr. GRAY. That honestly is one that never has occurred to me.

Mr. YOUNGER. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Jarman?

Mr. JARMAN. Mr. Gray, my concern is particularly in the field of the youth of the country and the need for protection and education in that field as to all aspects of smoking when they come to the time of deciding whether to start smoking or not.

I am particularly interested in that part of your statement where you say that tobacco companies have agreed to adhere to the cigarette advertising code. In looking over the code it sets out under advertising standards under article 4, cigarette advertising shall not appear on television and radio programs or in publications directed primarily to persons under 21 years of age.

Have Governor Meyner and others who have the responsibility of enforcing the code, have they as yet come up with any list of programs that would fit that category?

Mr. GRAY. I think, sir, that the Governor's actions so far, and I believe his plans in the future, are to review, to look at, to judge, to assess each program, each advertisement, each promotional advertising of each company prior to the time it is allowed to be printed or shown, and that there is no, as far as I know, there are no broad bases or specifications that govern this.

You know, of course, that certain programs—I am sorry, I don't look at the younger ones very much, Lassie, for example, would not be a proper, in my opinion, I don't know the Governor's opinion, I have never discussed it with him, a proper program for us to sponsor.

I think each one must be judged as to its content and so forth, and where it seems to be directed, what type of audience it seems to be directed toward.

Mr. JARMAN. One great difficulty I can see in trying to enforce an effective standard in that field, particularly with these words "directed primarily to persons under 21 years of age" being, would be, in so classifying programs on television and radio. I know Chairman Dixon at page 9 of his statement referred specifically to one program, the "Beverly Hillbillies," as having an audience of children 2 to 12 years of age equal to 12.6 million or about 28.8 percent of the children of the United States of that age group.

And yet with reference to that program and nearly every other, the westerns, the variety shows, I would think a very clear-cut argument could be made that the program itself has a widespread audience of all ages, and does not come under the prohibition of the code because it is not directed primarily to persons under 21 years of age.

I would think, to put it another way, that a very limited number of programs would come within the definition of the code.

Mr. GRAY. I have not seen, I suppose it is available, Mr. Jarman, the information available of breakdowns of audiences by all the shows on television, and I guess I should not make uneducated guesses here, should I, this is not the place for that. But when an advertiser looks at a pilot film, perhaps in December or January, of a show that is pro-

posed to go on the air in September, and he makes his judgment as to whether this is something that he thinks will be a good show, and this is the judgment which he has to make, and he contracts for a portion or all of that show, he is taking a chance on a lot of things as to what will eventually turn out.

The program to which you refer, it happens to be one of ours, and this in indicative of how infallible a man's knowledge—judgment—can be. When I found out that we had bought this show and I saw the pilot, I was not a very happy man—not from the reasons you ascribe to it but because I thought it was a terrible show. I just thought it was awful, and it went on that year as you may know turned out to be the No. 1 show.

There isn't any slide rule to get at it, I am sure.

Mr. JARMAN. Just one other question at this time, Mr. Gray.

Since the adoption of the code by the tobacco companies has there been time enough for the code to have any effect on the television programing of the companies?

Mr. GRAY. If by that you mean have any of us gotten off any shows as a result of this, no. I think, here may I speak for my own company, I don't know about the other companies—I know the intent—I know their honor and integrity. I don't know the actual mechanics about how they go about these things.

Naturally all of us knew this code was coming. We were hopeful it could be gotten into operation as soon as possible and I know we and I believe my competitors, each were looking all through last year at our programs, at our projections and our plans with the code in mind and, as a result of that, prior to its implementation a number of changes in our approaches toward advertising had already taken place.

Further, if I could say, in the area of our participation in this code effort, this is a serious and wholehearted attempt by the industry and by each individual member of the industry, to do this job right. This is our intent and we plan to continue in that—on that basis.

Mr. JARMAN. I said a final question a moment ago, this will be the final question for me, sir: Do you know whether Governor Meyner in administering the code has in the field of advertising enforced this provision as to a television or radio program directed primarily to persons under 21 years of age?

Has there been occasion since the adoption of the code for him to enforce the code in that area?

Mr. GRAY. I can speak to only one company here, sir. Perhaps the way we communicate with the Administrator might be somewhat clarifying in this situation. I am the head of one company. I have shaken hands with the Administrator one time so I could put a name with a face. I have made no visits to his office, he none to mine. This is handled through the lawyers and through the advertising managers.

So far as we are concerned we have had many ads which we submitted for approval, which after consultation we decided we wanted to make changes ourselves. We have not been told, that I know of, "You shall get x program off the air," or "Don't buy something that is contemplated." It may have occurred. I have no direct knowledge of it. I believe it would have been reported to me but I have

no such report. I think it is better for the heads of companies not to be yakking at the Governor's heels every day.

Mr. JARMAN. Thank you.

Mr. GRAY. Thank you, sir.

The CHAIRMAN. Mr. Carter?

Mr. CARTER. Certainly I think the tobacco industry is to be congratulated for the money which they have given to many scientists throughout our country to conduct research regarding tobacco smoking and health. It amounts to many millions of dollars. I think that it should be applauded for that.

Mr. GRAY. Thank you, sir.

The CHAIRMAN. Mr. Kornegay.

Mr. KORNEGAY. Thank you, Mr. Chairman.

First, I would like to give welcome to my fellow North Carolinian here today. I personally thank you very much, Mr. Gray, for coming and for the fine statement which you presented to the committee. I think you have very ably pointed out the facts to the committee that this is a rather big, broad, and serious matter that we have under consideration here and that it involves a good deal of people, not just in North Carolina—but throughout the country, from the standpoint of employment, from the standpoint of jobs, from the standpoint of taxes going into the Federal, State, and local treasuries. In light of this, certainly the Congress should exercise every ounce of wisdom it has in approaching the matter.

Now, Mr. Gray, I would like to ask you several questions.

First, I would like for you to amplify a little bit on the amount of money and the effort that the tobacco industry itself has put into the area of research insofar as cigarettes and smoking are concerned.

Mr. GRAY. To amplify on this, sir?

Mr. KORNEGAY. Yes.

You made reference to it here in your statement concerning the council.

Mr. GRAY. The Council for Tobacco Research which is supported by the manufacturers, most of the funds come from the manufacturers.

Mr. KORNEGAY. The funds that are used by the council come exclusively from manufacturers; do they not?

Mr. GRAY. Practically entirely, sir; yes, sir. I know of no other contributions of any size that it has received. That is, as you know or as has been stated given to the council for use by or awards being made by the scientific advisory board to the researchers, scientists, qualified medical and scientific researchers throughout the country. They are free to publish what they find, are requested to publish what they find.

There are no strings on these grants, there have not been any from the beginning.

I do not know of any time when the scientific advisory board has been turned down on a request for funds from this group.

In addition to that I have mentioned the grant by the six major cigarette companies of $10 million to the Education and Research Foundation of the American Medical Association. This was without strings.

Additionally, many companies, I suppose all of them, have over the past few years made individual grants to Sloan-Kettering, Damon

Runyon Cancer Fund, and the specific projects that may be presented to these companies for research into this field.

These are beyond the figures I have mentioned. Several of us, again perhaps all, have continuously given moneys to medical schools for research and for medical education.

I do not have any total figures on this. It goes well into many millions of dollars more than we have talked about this morning. We feel this is proper, a proper use, of such moneys as we have in that area.

Mr. KORNEGAY. In addition to the money that you described going to actual research on tobacco programs, what other philanthropies, other areas of support of education, and cultural life has the tobacco industry participated in over the past years?

Mr. GRAY. Sir, getting into that in detailed fashion would take quite a long time. The various companies each individually are, have been for years, I think generous, proper in their contributions to education at the university, at the college level. It is difficult for me to talk about all the companies because I am not as familiar with what they do as I am with our own. If I am not hurting anybody's feelings by talking about Reynolds a little bit and I will include them by reference, there are just so many things that you can and do do. The opportunities are great.

For example, in our own State, Mr. Kornegay, we have a joint college appeal, as you know, for church-related colleges each year. This is a combined effort, I believe it is 22 colleges—24 colleges now—to which we, and I think the other tobacco companies, in some relationship to the activities in the State, give money each year. I believe our contribution for the past 3 or 4 years has been a hundred thousand dollars a year.

This doesn't seem like much, but in these—in these halls but in North Carolina it is quite a few dollars.

Mr. KORNEGAY. Let me pinpoint two or three points, Mr. Gray. No. 1, the Reynolds family has endowed Wake Forest College, is that correct, sir? Certainly assisted in it.

Mr. GRAY. A large portion of the endownment of Wake Forest College came from the Reynolds family.

Mr. KORNEGAY. Came from the family.

Mr. GRAY. This is right, from the family.

Mr. KORNEGAY. The Wake Forest medical school which up to 1940 I believe was a 2-year medical school is now honored by having your name, the Bowman Gray School of Medicine, is that right, sir?

Mr. GRAY. That was named for my father.

Mr. KORNEGAY. Yes, sir; it is now certainly one of the finer medical schools in the country. I will direct your attention to Duke University which was endowed by another company but still a tobacco company; is that not right, sir?

Mr. GRAY. That is correct, sir, and has been supported by more than one company since then.

Mr. KORNEGAY. Yes, sir.

Mr. GRAY. More than one company.

Mr. KORNEGAY. The University of North Carolina gets a considerable amount of money from the tobacco companies.

Mr. GRAY. There are grants being made all the time from manufacturers to the North Carolina State College and its extension work

that they are now doing. I am talking all the way about North Carolina, and I am trying to figure out something we do in Virginia. We do give something to the Virginia Association of Church Colleges, too. There are just many of these.

Mr. KORNEGAY. My point was that for nearly over a week now we have heard people talking about tobacco and some of the sins they contend it is guilty of, and I thought it was time maybe to bring out some of the very fine things the tobacco companies have done.

I want to thank you again, sir, for coming up and being with us today.

Mr. GRAY. Thank you, sir.

Mr. KORNEGAY. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Callaway.

Mr. CALLAWAY. Mr. Gray, I want to join Mr. Kornegay in pointing out some of the notable contributions of the tobacco industry in Georgia. It is agricultural more than commercial.

I would like to go back to the point Mr. Jarman was making, and this is the problem of our youth. I think there are a great many people in this country who are convinced and extremely worried because they believe genuinely that tobacco is a serious hazard or there may be a serious hazard in smoking tobacco. The people I am talking about are not so concerned about adults. Adults can read the record, they can read the Surgeon General's report. They can decide for themselves if they want to take this risk, they can evaluate it.

Most people are worried more about their children. Certainly the best way to solve this is with a voluntary code. But it seems to me this code may not go far enough for people who are concerned about their children.

My children just love the Camel sign and it seems to me—and I would like to ask this in all fairness, because I would like your reaction—how can you as a tobacco industry take any position except the position you have got to get the youth of today smoking tomorrow, and no matter what this code says and no matter what you do, how can you do anything except see to it that a large majority of today's children smoke tobacco.

It seems to me that this is your obligation as a businessman running the R. J. Reynolds Tobacco Co. How can you advertise without showing cigarettes to youth and without attempting to get youngsters to smoke?

Mr. GRAY. Sir, we are not for getting the youth to smoke, I want to make that plain right now. It has always been our feeling that smoking, the decision to smoke or not to smoke, is one for an adult, a person of adult stature, and it is his decision or her decision and theirs alone at that time.

I would agree with you if this is part of your thinking that there is little likelihood that any advertising that any manufacturer of any commodity might do not being seen, the likelihood of not being seen by just about everybody in the country who reads or looks at television. I know of no way that you can blackout this reaching, people being reached by it or people seeing it.

However, the appeals in the advertising the cigarette manufacturers are doing today are directed toward the adult mind and the adult population. Today the posture of advertising with us, the use of advertising, the meaning of advertising, the reason you spend your dollars in

it, is not now to increase the number of people smoking. Millions, more than half the people, I suppose, in the country today, adults, do smoke. I know what my intent, our company's intent is, which is to try to get some more business away from some of these guys we are fighting, and this is where we are going. This is basically where we have to get our growth.

Our competitors are very nice people, but they still are competitors, and I want to get every dime's worth of business away from them that I can. They understand that, this is nothing now. [Laughter.]

But I suppose that—golly, you are getting down into psychological evaluations here, Mr. Callaway, that I have had little experience and little training in.

What does an advertisement do to a 3-year-old? I do not know. I am sure—well, when he is 6 he can read, can he not?

Mr. CALLAWAY. Well, yes. My main confusion in this concerns your approach to any kind of advertising program which is bound to be predicated on the premise of "let us sell more cigarettes—of course you would like to take sales from your competitors, you would like to take them anywhere you can. It is a competitive business, but based on the premise "let us sell more cigarettes," which is certainly the premise of your advertising or you would not be doing it, how can it not be appealing to the 14-, 15-, 16-year-old?

This seems to be the purpose of it, and I do not see how with any voluntary code we are going to solve this dilemma. It seems to me you are always going to do this with your advertising.

Mr. GRAY. I will agree with you there is no prohibition of anybody reading our advertisting as to age or as to sex, and I do not think there can be, and if that is where you are going, I think I will have to go with you.

Mr. CALLAWAY. Let me ask you one final question if I may. We have had some testimony and you mentioned the fact if we take some kind of action requiring you to state in the advertising the fact that it may be hazardous, this kind of thing, it might be self-defeating and might in effect say there would be no cigarette advertising.

If this happened, in your judgment what would be the effect on the sales—how drastic would it be, how dramatic if there were no more cigarette advertising in the United States?

Mr. GRAY. It would, No. 1, have a tendency—and I think here you are going against the philosophy of equal competition. It seems to me that if a man does not have an opportunity to advertise his product in an effort to increase his share of that market which exists, it would possibly and very likely have a tendency toward freezing the sale by brands very much in the area where it is today, and this would mean that the man who had less business, his opportunity for getting more business away from the guy who had more, is greatly diminished. This stifles or restricts competition and the opportunity for competition.

As to what overall impact it might have on the sale of cigarettes immediately or over the long term, I guess I would have to say that I remember a man named William Wrigley who made—he is dead now—he founded a business making a now very famous consumer product. He was asked one time "What would happen to your business if you stopped advertising?" And, as I recall, his answer was "Did you ever think what would happen to a railroad train if you took the locomotive off?" This happens.

I said in my statement that advertising is an essential commercial right. Whether you do it by prohibition or by forcing the advertiser to so stultify, negate, disparage what he is trying to do is not too much different. In any of these events you put a businessman who is spending his money for advertising into a situation where I think his judgment must be "I cannot spend this type of money advertising if this is the kind of advertising I am going to have to have."

You see, sir, a large amount of money spent in consumer goods advertising today, whether it is tobacco or any other kind, goes into network television. This is a tremendous medium for us all. In television you have generally three types of commercial announcements. We all started out initially, I suppose, with the 60 second, which was the longest you had. This is what you had, 60 seconds, and then as the pressure for time and mentions and impacts became greater, they got down to 30 seconds, now 20 seconds, now 8 seconds or identification situations which you have seen on television.

In the case of a cigarette we use lots of the 8 second, we use lots of the twenties, and the sixties. I have not timed it, but I wonder how many seconds would be left in an 8-second or even in a 20-second spot for saying you will like Salems if meanwhile you had to read into this same 8 seconds the language which has been proposed in the various bills that are here.

I think it would destroy the need for, the opportunity for, and the reason for our using this kind of advertising, and when you begin destroying the value of it, I think you destroy the interest in or the usefulness of or the intent or desire of a manufacturer to pay for it.

Mr. CALLAWAY. Thank you, sir.

Mr. GRAY. You are welcome.

The CHAIRMAN. Mr. Satterfield.

Mr. SATTERFIELD. I have no questions, Mr. Chairman.

The CHAIRMAN. Mr. Farnsley.

Mr. FARNSLEY. Thank you, Mr. Chairman.

All this money has been given to researchers, but I am sure you have given the mouse population a hard time. But this is a secondary effect.

Mr. GRAY. I read a little bit about it this morning or was it yesterday.

Mr. FARNSLEY. I have been getting one almost every day in the paper. I have been trying to find out what happens to the warnings you put on the product. The only information I have got from my psychiatric friend who testified for Bromo Seltzer some years ago, and they made them—the Bromo Seltzer people said "What do you want us to do?" Well, they said "Cut down the amount of bromine," they can but a warning label. They may have played it smart. It says new improved formula on that bottle, and then it has got the warning, but my information is that their sales went up so much that their stock doubled in value in a year.

Have you all got any dope, has anybody ever tried selling cigarettes with a warning label on it? Has it been done by law anywhere in the world?

Mr. GRAY. No, sir, not to my knowledge. I think not. And we have no firsthand knowledge of what would happen, because we have not tried it either.

Mr. FARNSLEY. You have not tested the market of whether it is going to.

Mr. GRAY. No, we have not.

Mr. FARNSLEY. Shucks, I do not want to tell you how to run your business, but I have some psychologist's background?

Mr. GRAY. I did not, sir.

Mr. FARNSLEY. Experience, excuse me.

Mr. GRAY. I have had no training in psychology whatsoever.

Mr. FARNSLEY. Excuse me. I thought you said you had.

I understand in Italy they have stopped advertising, we were told this, they cut down the rate of growth from 6 percent to 1 percent. Do you know anything about that situation?

Mr. GRAY. There are some figures available, sir. I do not have them here, sir; I think they are available at the Department of Agriculture on just what did happen there. I have seen them. I was not aware that any such slowdown had taken place; at least the figures I saw would indicate that.

Mr. FARNSLEY. Could you send us some figures that you know about without too much trouble?

Mr. GRAY. I will see we get those from Department of Agriculture and get those to you.

Mr. KORNEGAY. Would the gentleman yield? I have those somewhere, and I understood they just label the imported cigarettes in Italy. The tobacco monopoly did not advertise, anyway.

Mr. GRAY. They do not label anything, I believe, sir, as to health there.

Mr. KORNEGAY. No, I am talking about the advertising.

Mr. GRAY. Well, the history of that I can give you. I have the figures. I do not know. The history is that some years ago the monopoly—and you understand the cigarettes legally in Italy at least are sold through a Government monopoly——

Mr. FARNSLEY. I did not know that.

Mr. GRAY. Manufactured and sold. They also sell a lot of cigarettes there that are not made there but are imported by the monopoly for sale in Italy and manufactured in other areas. The monopoly discontinued advertising on its own brands, and the figures show that their own brands did decrease but that was more than made up by splendid increases enjoyed by foreign manufacturers who were selling their cigarettes in Italy, and of course still advertising and so then they ruled that nobody could advertise cigarettes hoping that this—I assume hoping that this would cut down on the foreign ones, but I believe these figures—if Mr. Kornegay has them—will show that the sale of the foreign-made cigarettes has continued to increase even though the advertising on them was forced to stop some years ago.

Mr. FARNSLEY. Which would indicate that a new brand could penetrate the market.

Mr. GRAY. No, these were brands already on the market.

Mr. FARNSLEY. I see. But they have increased their share of the market with no advertising.

Mr. GRAY. As against others with no advertising. There you get into quality. I do not think—I am talking about my competition again.

Mr. FARNSLEY. Go ahead.

Mr. GRAY. There is a great difference in the quality of cigarettes in some of the foreign countries that are for sale. I personally think

all the cigarettes that are manufactured in the United States and offered for sale here are good. Some are just better than others, but they are all good.

Mr. FARNSLEY. Everything manufactured in the United States is good.

Mr. GRAY. No doubt about it. I think that is all I want to say about it. They do still have a great deal of smuggling going to there, that is another phase of this business.

Mr. FARNSLEY. I talked with the Surgeon General with an idea there were many problems that the social sciences could address themselves to. Maybe you are getting visits from these people. It might be interesting and it might be fun. It looks to me as if all of us are flying blind. I am not fussing at you, but thank you so much.

Mr. GRAY. Thank you.

Mr. KORNEGAY. Mr. Chairman, if the gentleman would yield, I have found those figures, and I can put them in the record if you desire, for the years fiscal 1961 through 1964, the percentage of increase in imports, domestic—Italian-made cigarettes, and the percentage increase in the sale of domestic cigarettes.

Mr. FARNSLEY. Put them in the record.

Mr. KORNEGAY. Mr. Chairman, I ask unanimous consent that they be placed in the record.

The CHAIRMAN. They will be included.

(The document referred to follows:)

1. The Italian advertising ban affected only foreign made cigarettes which were imported into Italy because the Italian tobacco monopoly was not engaging in advertising of Italian-made cigarettes.

2. Figures provided by the Foreign Agricultural Service of U.S. Department of Agriculture on Italian cigarettes sales are as follows. Figures cover the fiscal year, from July of the preceding year through June of the year stated. (The advertising ban on imported cigarettes went into effect in May 1962.)

	Imported	Percentage increase over previous year	Italian made	Percentage increase over previous year
Fiscal 1961	1,292,000,000		50,571,000,000	
Fiscal 1962	1,403,000,000	8.60	54,423,000,000	7.6
Fiscal 1963	1,976,000,000	39.40	55,178,000,000	1.4
Fiscal 1964	2,207,000,000	11.69	56,392,000,000	2.2

These figures make clear that there was an increase in imported cigarettes, the only ones actually affected by the ban. The decline in rate of increase came in Italian-made cigarettes, which were not affected by the ban since they were not being advertised.

Mr. FARNSLEY. How much does your industry spend on advertising here in the United States, approximately?

Mr. GRAY. Mr. Congressman, I don't think any of us ever published exact figures on it. It has been variously estimated from two to—I think the last figure I saw was $240 million for the industry.

Mr. FARNSLEY. Innocent bystanders very rarely get shot but in that case, if the industry decided to quit the innocent bystanders might be shot—newspapers and radio.

Mr. GRAY. I said there are many endeavors, many walks of life in this country which are affected by this industry.

Mr. FARNSLEY. Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Gray, concerning this estimate of $240 million, do you know what year that was?

Mr. GRAY. I don't think I have seen the figures yet for 1964. I believe this was 1963, sir.

The CHAIRMAN. Would you say that it would be about that or more in 1964?

Mr. GRAY. If I may judge from my own company's expenditures they were up in 1964 as compared with 1963 due to two reasons primarily.

One, that the costs of advertising, like other costs in this country, have been going up steadily for a number of years, so that even though you buy the same number of commercials or newspaper ads, magazine ads, the cost of that same number is greater each year than it had been in the prior year.

Secondly, in our own company we introduced a new brand last year, and this added several million dollars to our expenditures for advertising as is usual when you bring a new brand out.

It might be interesting here to know there were 14, I believe, new brands introduced in the market from the 1st of January 1964, through the recent, well, through last month.

I believe each one of them had advertising on it which would be, I would guess, in addition to the normal expenditures on the existing brands.

The CHAIRMAN. Fourteen new brands from how many companies?

Mr. GRAY. We had one, at least four—four at least, sir. I am not certain of the other two because of the timing element. They have brands which are new in the recent few years but whether these others were since January 1964, I am not certain.

The CHAIRMAN. There are a total of six companies in the United States.

Mr. GRAY. Major companies, sir.

The CHAIRMAN. That is what I mean.

Now, could you give the committee an estimate of what part of the estimated $240 million or more last year was spent on broadcasting?

Mr. GRAY. Again, judging from my own company only, sir, it would be more than 50 percent of the moneys we spend on network—on television.

The CHAIRMAN. More than 50 percent of the total on television.

Mr. GRAY. More than 50 percent of our total was spent in the medium of television; yes, sir.

The CHAIRMAN. What percent on radio?

Mr. GRAY. I don't have the figure, Mr. Chairman. I would prefer not to guess. If you want me to provide you with this I will try to get it.

The CHAIRMAN. I think it would be advisable if you could give us an estimate of what the whole industry is.

Mr. GRAY. I might point out that some of the publications in the advertising field publish estimates on these things each year. I am reasonably certain the one which is the most widely quoted has not come out for last year. I think it was due yesterday. But it did not appear. Perhaps it may appear next week. May I send you that as an authoritative source which gives you not only the tobacco industry but all other industries using the media?

The CHAIRMAN. I wish you would give us the best information you have as to the total sums spent by the tobacco industry in advertising in 1964, how much of it went to broadcasting, what part for television and what part for radio, what part for newspapers and what percentage of magazines, if you can get that information.

Mr. GRAY. I will give you the best I can find on it, sir, or come up with.

(The information referred to follows:)

R. J. REYNOLDS TOBACCO CO.,
Winston-Salem, N.C., April 29, 1965.

Hon. OREN HARRIS,
Chairman, House Committee on Interstate and Foreign Commerce, Rayburn House Office Building, Washington, D.C.

DEAR MR. HARRIS: I have now been able to assemble the published estimated figures on advertising expenditures for companies in the cigarette industry for 1964. These are from figures published or prepared by Advertising Age; Rorabaugh; Radio Advertising Bureau; and the Bureau of Advertising, American Newspaper Publishers' Association.

Television	$184,938,450
Magazines	32,429,677
Farm papers	509,745
Supplements	3,122,804
Radio	19,765,000
Total	240,765,676

The figure given for expenditures in radio is for 9 months, this being the only one available at this time.

No figures have been published as to estimated expenditures in newspapers. However, the total of such expenditures in 1963 was estimated at $17,414,827 by the Bureau of Advertising, American Newspaper Publishers' Association. On the basis of our own experience, I would assume that the expenditures in newspaper advertising for the industry were approximately the same in 1964 as in 1963.

I think I should point out to you that the above figures include moneys spent for other items than cigarettes, since most of the companies in the industry advertise other products.

All good wishes.

Sincerely,

BOWMAN GRAY.

The CHAIRMAN. Can you tell us whether or not in the broadcasting field that the greater part of the advertising was on spot announcements?

Mr. GRAY. No, sir. The larger costs are on the regularly scheduled shows.

The CHAIRMAN. Sponsored programs?

Mr. GRAY. This is right, sir.

The CHAIRMAN. How can you give a warning on a radio program unless you just announce that smoking cigarettes is a health hazard and they will kill you by cancer.

Mr. GRAY. Are you asking me to tell you how that might be done, sir?

The CHAIRMAN. Yes.

Mr. GRAY. I think I have made it pretty clear I don't think it can be done or will be done. I think you would just have to quit.

The CHAIRMAN. In other words, if such restrictions were placed on the radio industry it would have virtually have the effect of drying up cigarette advertising on radio.

Mr. GRAY. Drying up the participation or the use of that medium by a company such as ours.

The CHAIRMAN. That is what I said. That is the way it appears to me.

Mr. Farnsley?

Mr. FARNSLEY. Mr. Chairman, let me ask one more question.

It is none of my business to tell you how to run your business but I can't help having ideas. But it looks to me like you ought to test some market, I know it is a horrible thing to think about, to see what happens, and then talk about it, you are worried that if there was no advertising some guy who didn't have a brand couldn't start one. He might run around giving out samples. It looks to me as if you are paying a terrible price to have the Surgeon General and Mr. Dixon and Mr. Foote chasing you all around the United States, $240 million is a lot of money, that is it is in my part of the world.

Mr. GRAY. Mr. Congressman——

Mr. FARNSLEY. You don't have to answer that.

Mr. GRAY. I take that as a statement, not as a question.

Mr. FARNSLEY. All right.

That is a statement, and I quit.

The CHAIRMAN. What was the method they used in Canada? Didn't they have some requirement in Canada on cigarettes?

Mr. GRAY. I have heard of none, sir.

The CHAIRMAN. You don't know of it.

Any further questions?

Mr. Gray, on behalf of the committee let me thank you very much for your appearance and your testimony.

Mr. GRAY. Thank you for your courtesy, sir.

The CHAIRMAN. The Chair had hoped very much that this hearing could be concluded this week. I am not sure just how many more witnesses we have left to be heard but we are going to undertake a meeting tomorrow afternoon at 2 o'clock or at such time after that as the schedule of the House will permit.

The committee has an executive session in the morning and, therefore, will not be able to have a hearing in the morning.

The committee will adjourn until tomorrow afternoon.

(Whereupon, the committee at 4:30 p.m., adjourned to reconvene Wednesday afternoon, April 14, 1965.)

CIGARETTE LABELING AND ADVERTISING—1965

WEDNESDAY, APRIL 14, 1965

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to recess, at 2:50 p.m., in room 2123, Rayburn House Office Building, Hon. Oren Harris (chairman) presiding.

The CHAIRMAN. The committee will come to order.

Is Dr. Thomas Moran here?

I think in view of the time element, Doctor, and in view of the fact that you are here waiting, that we will proceed. There will be other members along right away.

STATEMENT OF DR. THOMAS J. MORAN, PATHOLOGIST, DANVILLE, VA.

Dr. MORAN. First of all, Mr. Chairman, I should like to thank you for the opportunity of appearing before this committee.

I am Dr. Thomas J. Moran, a pathologist, of Danville, Va. I was born near Pittsburgh, Pa., and received my education at Langley High School in Pittsburgh and at the University of Pittsburgh. I received my M.D. degree from the University of Pittsburgh School of Medicine in 1936. I interned at the Mercy Hospital in Pittsburgh and took my residency in pathology at the Pittsburgh city hospital. I have been in the practice of pathology for about 26 years. During this time I have also been director of the tumor clinics of the hospitals with which I have been associated. I was professor of pathology at the University of Pittsburgh School of Medicine and Directory Laboratories at the Presbyterian-University Hospital of the University of Pittsburgh Medical Center until August 1962, when I accepted the position of director of laboratories at the Memorial Hospital in Danville, Va. I am a diplomate of the American Board of Pathology and a member of six professional pathological societies in this country as well as the International Academy of Pathology, the Pathological Society of Great Britain and Ireland, and the College of Pathologists (Great Britain). I have been president of the Pittsburgh Pathology Society, the Pennsylvania Association of Clinical Pathologists, and vice president of the Virgina Society of Clinical Pathologists. I am a member of the publications committee of two medical journals, Gerontology and the Gerontologist.

I have published approximately 40 articles in medical journals, most of them dealing with lung pathology. Several of my recent articles

have dealt specifically with the reaction of the lung to various chemical injuries, including the comparison of the changes observed to the malignant changes seen in animal or human lung cancer. This research has been supported for a number of years by grants from the National Institutes of Health. Several other of my research projects have also been supported by the National Institutes of Health as well as by other health agencies. I have supervised for a number of years trainees of the National Cancer Institute and fellows of the American Cancer Society. I have recently been invited to participate in an International Conference on Lung Tumours in Animals in Perugia, Italy, in June 1965, at which time my experimental work in this field will be presented.

My research work has dealt essentially with the reaction of the lung to various injected irritants; such as, food, milk, gastric juice, alcohol, and weak hydrochloric and nitric acid solutions. In many of these experiments, striking changes were observed in the bronchial epithelium. Some of these changes were so severe that they looked like tumors and many areas closely resembled human cancer of the lung. They also resembled the changes described by Auerbach and his coworkers in autopsies from lungs of heavy smokers. We then attempted to produce lung cancers by injecting nitric acid and studying the animals for long periods of time. We also modified the experiment by giving cortisone to the animals, in some cases after the injection of the chemical into the lung, in other cases by beginning cortisone treatment at different time intervals before the injection of the chemical into the lung. In many animals a picture resembling human lung cancer was produced. However, in animals studied for long periods of time, both the lesions resembling cancer and those resembling the picture in human lungs of heavy smokers, gradually disappeared.

In connection with the question of a possible causal relationship between cigarette smoking and cancer of the lung, I should like to submit the following three conclusions and a brief discussion of my reasons for arriving at these conclusions:

(1) Statistical evidence accumulated thus far is strong enough to suggest the possibility of a connection between cigarette smoking and cancer of the lung. This possibility should be investigated further by all available scientific methods including further clinical studies, statistical data, chemical analysis, and animal experiments.

(2) The evidence submitted thus far by proponents of the theory that lung cancer is caused by smoking (including the Committee appointed by the Surgeon General to analyze available data on the subject) does not constitute scientific proof of this theory. Acceptance of this theory is not only unscientific but dangerous since acceptance of this theory will lead to complacency concerning the etiology of this disease and might well prevent fruitful investigation along other lines.

(3) Existing research programs should be continued and new ones developed in an attempt to determine the cause or causes of all cancers including those of the lung. Among some of the possible causes of lung cancer needing further study are viruses, industrial or occupational exposure, atmospheric pollution, and chronic inflammation and scarring of the lung such as occurs after influenza, bronchitis, bronchiectasis, and many other benign lung conditions.

My reasons for conclusion No. 2, that it has not been scientifically proven that cigarette smoking causes cancer of the lung, can be summarized as follows:

The evidence quoted by proponents of the "cigarette-smoking lung-cancer theory" is generally of three types: (1) Statistical or epidemiological; (2) animal experiments; and (3) human clinical and autopsy studies. It is my belief that the only strongly suggestive evidence that smoking may be a factor in lung cancer lies in the field of epidemiology; in other words, the statistical evidence. There are a number of widely quoted studies suggesting that people with a history of prolonged and excessive cigarette smoking have a higher incidence of lung cancer than the general population. However, even among epidemiologists and statisticians there are numerous differences of opinion and various interpretations of these studies. In a recent analysis of 1,229 lung cancers at the University of Bonn in West Germany by Poche, Mittman, and Kneller, the authors found no connection at all between smoking and cancer of the lung. They divided the patients with lung cancer into three groups—nonsmokers, light smokers, and heavy smokers—and found the same incidence of lung cancer in all three groups and the average age of occurrence of the cancer in all three groups was exactly the same. Of the different factors they studied, occupation was the only important positive factor, suggesting to them that industrial exposure may be related to lung cancer. This study dealt with all forms of lung cancer but especially with the squamous cell or epidermoid type, which is the one most frequently cited in the reports by proponents of the smoking lung-cancer link. Since I am not an epidemiologist or statistician I will not attempt to analyze the statistical evidence critically or in detail. I will list, however, some of the more important general objections to the statistical conclusion that smoking is a cause of lung cancer. These objections have been recognized in many statistical studies.

(1) Over 95 percent of smokers, including heavy smokers, do not develop lung cancer.

(2) Lung cancer of all types including squamous cell (or epidermoid type) occurs in nonsmokers.

(3) There is relatively little cancer of the mouth, nose, throat, or trachea, although these areas are more exposed to cigarette smoke than the lungs, and the incidence of cancer in these organs is not increasing.

(4) Lung cancer occurs much more frequently among men than women, and the disparity is growing, although smoking among women has been common now for about 40 years and smoking among women has been increasing rapidly during that period.

(5) The incidence of lung cancer varies widely between different localities, as, for example, between the States of New York and Idaho and the cities of New Orleans and Atlanta. There is also a higher incidence of lung cancer in urban populations as compared to rural.

(6) There is more lung cancer in England than in this country, despite the fact that heavy smoking is more common in this country.

Many other criticisms, both of methodology and interpretation of the statistical surveys, have been made by qualified statisticians and epidemiologists.

The second type of evidence quoted by those who believe that cigarette smoking causes lung cancer is animal experimentation. To me the experimental evidence presented thus far has little or no application to the problem of human lung cancer. It is true that some skin cancers have been produced by application of the so-called tobacco tar to the skin of tumor susceptible animals. However, similar cancers can be produced in the skin of sensitive animals by painting the skin with a variety of substances including some common foods.

No one has produced lung cancers in experimental animals by exposing them to cigarette smoke, although this has been tried by many research workers and many animals have been kept in an atmosphere filled with cigarette smoke for prolonged periods. These animals develop certain changes in the bronchial epithelium similar to those seen in the lungs of heavy smokers at autopsy. However, none of the animals with these changes have developed lung cancer and when the animals are removed from the cigarette smoke the changes gradually disappear. On the other hand cancers of the lung have been produced in animals by inoculation of viruses (Rabson) and by inhalation of viruses and aerosols of hydrocarbons, which are substances present in high concentration in gasoline fumes (Kotin).

Changes similar to those seen in human lungs of heavy smokers and changes even more suggestive histologically of cancer can be produced in a variety of ways in experimental animals. For example, in my own experiments which I have mentioned in which rabbit lungs were damaged by a chemical agent such as gastric juice, hydrochloric acid, alcohol, or nitric acid and especially in several groups which were pretreated by administration of cortisone, there were striking changes in the bronchial lining similar to but more severe than those described in human smokers' lungs. However, none of these animals developed lung cancer, and although the animals were studied for long periods of time after exposure to the chemicals the changes gradually disappeared. The importance of these observations is that it is not always possible to predict biologic behavior from histologic appearance, and in the case of the changes described in human smokers' lungs I do not believe it is proper to call these malignant or premalignant lesions. They occur in too many benign conditions. In brief, animal experiments have contributed nothing directly applicable to the problem of cigarette smoking and human lung cancer.

The third type of evidence quoted by proponents of the "cigarette smoking causes lung cancer" theory is in a general group of clinical and autopsy studies. Here again the clinical evidence is statistical and the statistics are subject to the same defects and objections already described. The autopsy evidence quoted is confined largely to several studies carried out by Auerbach and others in which certain changes in the lining epithelium were described in the lungs of heavy smokers. These changes have been interpreted as premalignant or as leading to lung cancer. There is no solid evidence to support this claim. The changes are not specific for smokers; they may be seen in a variety of benign conditions, and they may be produced experimentally both in lungs of animals exposed to cigarette smoke and a variety of other materials without ever leading to lung cancer. In experimental animals, they can be shown to disappear after the irritant has been re-

moved. This, as far as I am concerned, eliminates the application of these observations to human lung cancer.

I propose to show a few slides today which I hope will explain some of the things I have said. I have mentioned there are three principal types of evidence used by those who believe cancer of the lungs is caused by cigarette smoking—that is statistical, human autopsy studies, especially the studies of Auerbach, and animal experiments.

The observations and slides that I propose to show are concerned primarily with the second type, Auerbach's report, but also involve some experimental observations.

Auerbach's thesis briefly is in his studies of human autopsies certain changes were consistently demonstrated in the lungs of smokers, and that these changes showed a progressive development to cancer through the following stages: hyperplasia, metaplasia, carinoma in situ, and invasive cancer. Other pathologists have also found an increased incidence of squamous metaplasia among smokers, but have not found the incidence of carcinoma in situ cited by Auerbach, and do not agree with his conclusions.

The slides will show several things. First, normal lung, and bronchial epithelium, second, squamous metaplasia of the type described by Auerbach, in people who have never smoked. And, then, the resemblance of cancer of the lung in a nonsmoker to cancer of the lung in a smoker, and the resemblance of each of these to a cancer of the larynx in a nonsmoker. Fourth, metaplastic changes in animal lungs, resembling the changes described by Auerbach, except that they appear histologically even more malignant, in which long-term experiments have shown that these changes do not progress to cancer.

I will try to show the slides.

For purpose of orientation, I have here a normal lung from a 10-month-old baby who died of meningitis. But the lung is not involved in the disease. This is just to try to give you an idea of the pattern of the lung, so you can see the comparison with the slides I show later which show tumors.

Slide 1: This is the normal air space. This is a blood vessel here. This is the breathing space of the lung.

In the next slide, I will show this under a little higher power.

Slide 2: This is the actual air space. The air comes into this space, and this is where the oxygen passes through the lining of the alveolor wall and gets into the red blood cell.

These orange-stained bodies—here and here—are red blood cells. This is where the carbon dioxide passes out into this air space, and the oxygen passes into the bloodstream.

Slide 3: This slide shows the air passage itself—in other words, the bronchial tube, or bronchus, and shows the structure with which we are concerned. Most of the changes we talk about—squamous metaplasia, lung cancer, and so forth, occur in this particular area.

This is the muscular wall of the bronchial tube, and this is the epithelium. You can see the lining of the epithelium here contains these structures which are called cilia. We hear a lot about the cilia, because the cilia help in the mechanism of clearing out any foreign material that gets in the lung.

This is the normal appearance, then, of the epithelium lining the bronchial wall.

This is all in the same 10-month-old baby and there is no change in this epithelium at all.

Slide 4: This slide is from a woman 53 years old who had never smoked, but who had a condition called bronchiectasis. And this change, squamous metaplasia, in this woman corresponds to the change described by Dr. Auerbach.

Over here we have the normal epithelium. Here is the cilia. And this is the normal lining up to here. And then we have this peculiar change in appearance of the cells. You see that these cells in this area look different from this other area. And that is referred to as squamous metaplasia. But this occurred in a woman who had never smoked and who was 53 years old.

The next slide, please.

Slide 5: Now, this is a lung cancer, a squamous cell cancer, or epidermoid cancer, occurring in a 51-year-old man who was known to be a heavy smoker.

I think you can see by comparison with the previous slides that there has been a complete loss of pattern or the architecture of the lung. The normal lung is gone. And here we see these nests and sheets of cells. I think in the next slide we have a higher magnification.

Slide 6: This again is from a lung cancer from a heavy smoker, showing a little higher power. You see these cells which are rather pink staining, and arranged without any definite pattern into sheets and nests. And this is what is called a squamous cell or epidermoid cancer.

The next slide, please.

Slide 7: This comes from a 54-year-old man who had never smoked—had never smoked a cigarette in his life. This case came up several months ago at one of our tumor clinic meetings in our hospital. The man was still alive—the lung has been removed at surgery. We had several doctors go up and take independent histories. All doctors reported that this man stated very firmly he had never smoked, and no one had ever seen him smoking.

This is a squamous cell carcinoma of the same kind as the previous one shown. It could not be distinguished by any pathologist from a squamous cell cancer occurring in a smoker.

This same day that we were discussing this case at the tumor clinic, there was a young doctor present who said that that did not surprise him, because his father had just had a squamous cell cancer removed in a New York hospital and his father, because of religious reasons, had never smoked anything.

The next slide, please.

Slide 8: This is a higher power from this same man who had never smoked at all, showing these same large pink-staining cells, and the nests and sheets of cells which have completely replaced the lung structure.

So this is an example, then, of a squamous cell carcinoma in a man who had never smoked.

The next slide, please.

Slide 9: Now, this is another squamous cell cancer. This cancer occurred in the larynx. And this was from a 53-year-old man who had

never smoked at all—cigarettes, pipes, or anything else. This shows the resemblance again to the appearance we saw first in the cancer of the man who smoked and, second, in the cancer of the lung of the man who did not smoke.

In these last slides we have shown three examples of squamous cell cancer—two of the lung and one of the larynx. One occurred in the lung of a smoker, one in the lung from a man who had never smoked, and the cancer of the larynx was in a man who had never smoked.

The next slide, please.

Slide 10: Now, this is an example of what is called squamous metaplasia, rather severe squamous metaplasia, in a 63-year-old woman who had a disease called scleroderma. That is a disease which involves the connective tissue of the body, and often involves the lungs. And here are similar appearing cells, or similar cells—they are not the same, but they are similar appearing cells all through here. You see the loss of the pattern of the lung. It does not have the normal breathing space arrangement. And this is called squamous metaplasia. But this is in a benign condition and is not malignant at all.

This change occurred in a nonsmoker. This woman had never smoked.

Slide 11: This is another example of severe squamous metaplasia in a 45-year-old woman. This woman had never smoked. She had severe rheumatoid arthritis, and these changes here, all through here, are similar in appearance to the cells that we saw in the squamous cell cancer, and they are similar to what Dr. Auerbach has described in his studies as squamous metaplasia, or even carcinoma-in-situ, and yet this lesion is essentially benign—it does not progress to cancer.

Next slide, please.

Slide 12: This is a slide from a 14-year-old boy who died of a disease called Cushing's disease. This boy had never smoked. And here is an example of another area of metaplasia that might on casual inspection look like a malignant gland or like a cancer. This is not malignant at all.

Next slide, please.

Slide 13: This is a nodule in a rabbit lung. We had given these rabbits cortisone for a week, and then injected a weak solution of nitric acid into the lung. This is a week later, showing this nodular appearance, the loss of a pattern of the normal lung, and an appearance resembling tumor. I think this could easily be mistaken for a cancer.

Now, beginning at this point we will deal with experimental slides. These are rabbits and all of this material, by the way, is from my own material, and I have done all this work, including studying the slides and taking the pictures.

The next slide.

Slide 14: This is another area from the rabbit lung, showing a large nodule of these atypical cells. There are some features that look like a malignant tumor in some of these. In fact, some of these slides were examined by pathologists who thought they were malignant. But on long-term studies, and careful observation, all of these changes disappeared over a period of months.

The next slide.

Slide 15: This is a higher magnification, from one of these rabbits in a similar area, showing the loss of pattern.

This cell here shows what is called a mitotic figure. Ordinarily this is considered an indication of malignancy. An increase in the number of mitotic figures is one of the characteristic features of cancer.

This slide also shows large atypical cells. These red-staining bodies are called nucleoli. They are prominent here and they are also prominent in cancer.

So just looking at this pattern alone, you could easily call this a cancer when, in fact, it is not.

The next slide, please.

Slide 16: This is another area from the rabbit lung, showing the loss of normal pattern, and this is an area in which the apearance could be mistaken for what is called an adenocancer, a glandular-type cancer, in contrast to the others, which look more like a squamous cell cancer.

This is the last of the slides.

The CHAIRMAN. Doctor, the practical observation——

Dr. MORAN. Mr. Chairman, could I interrupt you just a minute? I have a few sentences more in my prepared statement.

The CHAIRMAN. Very well.

Dr. MORAN. The following conclusions may be drawn from the slides presented.

(1) Cancers of similar type such as squamous cell cancer or adenocancer look and behave alike regardless of the site of origin in the body (lung, larynx, esophagus, uterus, and so forth) and regardless of whether the patient had a history of smoking or not.

(2) Changes of squamous metaplasia such as those described in lungs of smokers are also seen in many people who have never smoked. These changes are associated with a large variety of inflammatory and reparative changes in the lung and are not to be considered as malignant or premlignant or as part of a series of changes which eventually lead to lung cancer. Dr. Auerbach's thesis, then, of a progression of changes in smokers' lungs leading to invasive cancer is not substantiated.

In summary, I wish to submit my opinion that there exists enough evidence of a statistical association between cigarette smoking and lung cancer to justify considerable additional research in this area, but that the cause or causes of lung cancer, as all human cancer, has not yet been scientifically established and research into its causation along all possible avenues of approach is urgently needed.

(The attachments to Dr. Moran's statement follow:)

CURRICULUM VITAE—THOMAS J. MORAN, M.D.

Born: October 14, 1912, Rennerdale, Pa.

Residence: Creekside, Danville, Va.

Degrees: B.S. University of Pittsburgh, February 1936; M.D. University of Pittsburgh, School of Medicine, June 1936.

Rotating internship: Mercy Hospital, Pittsburgh, Pa., 1936-37.

Resident in pathology, assistant pathologist, and director of laboratories at Pittsburgh City Home and Hospitals, Mayview, Pa., from September 1937 to April 1942.

U.S. Navy, April 1942 to January 1946.

Pathologist, Welborn Memorial Hospital, Evansville, Ind., January 1946 to December 1946.

Pathologist, the Memorial Hospital, Danville, Va., December 1946 to September 1950.

Pathologist, St. Margaret Memorial Hospital, Pittsburgh, Pa., September 1950 to November 1954. Also, director, John C. Oliver Memorial Research Foundation, Pittsburgh, Pa., and assistant professor of pathology, University of Pittsburgh School of Medicine.

Associate professor of pathology, University of Pittsburgh, School of Medicine, and director of laboratories, Presbyterian, Woman's, and Eye and Ear Hospitals of the University of Pittsburgh Medical Center, November 1954 to July 1958.

Professor of pathology, University of Pittsburgh School of Medicine and director of laboratories, Presbyterian, Woman's, and Eye and Ear Hospitals, July 1958 to August 1962.

Director of laboratories, the Memorial Hospital, Danville, Va., August 1962 to present.

Member: American Medical Association; American Association of Pathologists & Bacteriologists; American Society for Experimental Pathology; American Society of Clinical Pathologists; College of American Pathologists; Pennsylvania Association of Clinical Pathologists; International Academy of Pathology; Pathological Society of Great Britain and Ireland; College of Pathologists (Great Britain).

Diplomate: American Board of Pathology (pathologic anatomy and clinical pathology).

BIBLIOGRAPHY—THOMAS J. MORAN, M.D.

Chromophobe Pituitary Adenoma with Simmonds' Disease: Case Report with Autopsy, J. Lab. and Clin. Med. 26:1289, 1946, with Dr. George H. Fetterman.

Anomalies of the Circle of Willis in Relation to Cerebral Softening, Arch. Path. 32:251, 1941, with Dr. George H. Fetterman.

Food Aspiration Pneumonia, Pennsylvania M. J. 45:810, 1942, with Dr. George H. Fetterman.

The Cold Agglutination Test, U.S. Naval Medical Bulletin, 1944, with Dr. George H. Fetterman and William B. Hess.

Rapid Method of Staining Tubercle Bacilli with Tergitol No. 7, Am. J. Clin. Path. 17:75, 1947, with Merle L. Radcliffe and Isabelle H. Tevault.

Pulmonary Embolism in Nonsurgical Patients with Prostatic Thrombosis, Am. J. Clin. Path. 17:205, 1947.

Necropsy Incidence of Tuberculosis in a Hospital for the Mentally Ill, Diseases of the Chest, 14:132, 1948.

Relapsing Febrile Nodular Nonsuppurative Panniculitis, Report of Case Treated with Penicillin, Ann. Int. Med. 29:958, 1948, with Dr. Alfred J. Niedermayer.

Autopsy Incidence of Pulmonary Embolism in Coronary Heart Disease, Ann. Int. Med. 32:949, 1950.

Autopsy Incidence of Pulmonary Embolism in Tuberculosis, Diseases of the Chest, 18:171, 1950.

Experimental Food Aspiration Pneumonia, AMA Arch. Path. 52:350, 1951.

Rhabdomyosarcoma with Fatal Hemorrhage from Intestinal Metastases, Am. J. Clin. Path. 22:461, 1952, with Dr. Frederic C. Lechner.

Congenital Goiter with Death from Milk Aspiration Pneumonia, AMA Arch. Path. 54:213, 1952.

Milk Aspiration Pneumonia in Human and Animal Subjects, AMA Arch Path. 55:286, 1953.

Pulmonary Edema Produced by Intratracheal Injection of Milk, Feeding Mixtures, and Sugars, AMA Am. J. Dis. Child, 86:45, 1953.

Fibro-anthracosis of the Lungs in Elderly Individuals in a Smoky City, Diseases of the Chest, 24:558, 1953.

Experimental Aspiration Pneumonia III. Pneumonia Produced by Intratracheal Injection of Carbohydrate Solutions, AMA Arch. of Path. 57:194, 1954.

Granulomas of the Stomach 1. Granulomatous Reaction to Damaged Smooth Muscle and Fibrous Tissue of the Human Gastric Wall. Am. J. Clin. Path. 24:415, 1954, with Dr. Frank E. Sherman.

Granulomas of the Stomach 2. Experimental Production by Intramural Injection of Foreign Material Including the Animal's Gastric Juice, Am. J. Clin. Path. 24:422, 1954, with Dr. Frank E. Sherman.

Experimental Aspiration Pneumonia, Am. J. Path. 31:579, 1955, Abstract.

Experimental Aspiration Pneumonia. IV. Inflammatory and Reparative Changes Produced by Intratracheal Injections of Autologous Gastric Juice and Hydrochloric Acid, AMA Arch. Path. 60:122, 1955.

Experimental Aspiration Pneumonia. V. Acute Pulmonary Edema, Pneumonia, and Bronchiolitis Obliterans Produced by Injection of Ethyl Alcohol, Am. J. Clin. Path. 27:300, 1957, with Dr. H. Richard Hellstrom.

Studies on Ochronosis, Am. J. Path. 33:591, 1957, Abstract.

Studies on Ochronosis. I. Report of Case with Death from Ochronotic Nephrosis, AMA Arch. Path. 64:46, 1957, with Dr. Jeanne A. Cooper.

Xanthomatous Biliary Cirrhosis, Tr. A. Am. Physicians 70:243, 1957, with Drs. J. D. Myers, Jessica Lewis, and Robert Olson.

Pseudoxanthoma Elasticum. J. of Gerontology 12:429, 1957, Abstract, with Dr. A. I. Lansing.

Studies on the Nature of the Abnormal Fibers in Pseudoxanthoma Elasticum. AMA Arch. Path. 65:688, 1958, with Dr. A. I. Lansing.

Asian Influenza and Mitral Stenosis. Report of a Case with Autopsy. JAMA 166:1467, March 1958, with Drs. J. A. Rock, and A. I. Braude.

The Histology of "Farmer's Lung." Am. J. Path. 34:585, 1958, Abstract with Dr. R. S. Totten.

Farmer's Lung: Report of Two Cases with Lung Biopsies. Am. J. Med. 25:803, 1958, with Drs. R. S. Totten, D. H. S. Reid, and H. D. Davis.

The Pathogenesis of Experimental Bronchiolitis Obliterans. Am. J. Path. 34:600, 1958, Abstract, with Dr. H. R. Hellstrom.

Bronchiolitis Obliterans. An Experimental Study of the Pathogenesis and Use of Cortisone in Modification of the Lesions, AMA Arch. of Path. 66:691, 1958, with Dr. H. R. Hellstrom.

Studies on Endogenous Lipid Pneumonia and Blood Lipid Levels in Cortisone-treated Rabbits. J. Clin. Path. 11:551, 1958, Abstract.

Familial Muscular Subaortic Stenosis: An Unrecognized Form of "Idiopathic Heart Disease", with Clinical and Autopsy Observations, Circulation 21:167, 1960, with Drs. L. B. Brent, A. Aburano, D. L. Fisher, J. D. Myers and W. J. Taylor.

Effects of Cortisone on Atypical Cellular Proliferation in Rabbit Lungs. Proc. Am. Assoc. Cancer Res. 3:157, 1960, Abstract, with Dr. R. S. Totten.

Cortisone and Atypical Pulmonary "Epithelial" Hyperplasia. Effects of Pretreatment with Cortisone on Repair of Chemically Damaged Rabbit Lungs, Am. J. Path. 38:575, 1961, with Dr. R. S. Totten.

Studies on Ochronosis II. Effects of Injection of Homogentisic Acid and Ochronotic Pigment in Experimental Animals. Am. J. Path. 40:359, 1962 with Eduardo J. Yunis, M.D.

Diabetic and Cortisone-Induced Renal Lesions. A Morphologic and Immunohistochemical Study, Lab. Invest. 3:240, 1962, with Drs. Stanley M. Kurtz, and J. J. Vazquez.

Cortisone-Induced Alterations in Lipid Metabolism. Morphologic and Serologic Observations in Rabbits. Arch. of Path. 73:300, 1962.

Villous Tumors of the Rectosigmoid Colon with Severe Electrolyte Imbalance. A Cause of Unexplained Morbidity and Sudden Mortality, with Dr. C. L. Wells and Dr. W. M. Cooper. The Am. J. of Cl. Path. 37:507, 1962.

Weight Loss in Cortisone-Treated Rabbits—Effects of Streptomycin and Penicillin. AMA Arch. of Path. Sept. 1963, Vol. 76, pp. 330–332.

Dr. MORAN. Thank you.

The CHAIRMAN. Doctor, thank you for this interesting presentation. I suppose we probably could consider this a graduate study course. It has been very revealing and interesting to me.

I was about to ask earlier—as an ordinary layman—what you have shown here demonstrates the failure of the lung to take sufficient oxygen to supply the body because of the condition which you have stated to the committee; is that true?

Dr. MORAN. If the process involved enough of the lung. Usually in the ordinary lung cancer there is not enough of the lung involved at least at the beginning to cut off oxygen to the entire lung, so the patient may live a long time with a lung cancer, unless it becomes so extensive that almost all of the lung tissue is lost.

The CHAIRMAN. I had reference to cancer as well as the other conditions you showed.

Now, you showed a picture of a lung that was affected, these pockets—the pockets where air was taken in were closed up with the cells that you showed.

Dr. MORAN. Yes, sir.

The CHAIRMAN. And the more of those—I guess with the understanding I have, I call them cells—the more of those cells that fill up those pockets, the less room there is for oxygen to go into that lung; is that right?

Dr. MORAN. That is correct.

However, in the animal slides which I showed, these nodules are not present everywhere. They occur irregularly in some parts of the lung. The animals are still able to breathe. And the animals that do live—a few of them die. But the animals that do live, then lose these nodules, and the changes disappear. In other words, it is not a uniform process involving the entire lung structure.

The CHAIRMAN. I realize that.

We talk about the cause and so forth. Would this indicate that the man who has an enormous chest expansion has a very fine lung that is capable of taking in a lot of oxygen, and a man who doesn't have much of a chest expansion better get his lung analyzed?

Dr. MORAN. I think this would be a difficult question to answer. I don't think chest expansion alone would be a complete index. I am afraid my chest has been expanding some, and yet it doesn't mean that I can breathe any better.

The CHAIRMAN. Well, it is a very interesting analysis. I personally want to thank you for it.

Mr. Rogers?

Mr. ROGERS of Texas. Thank you, Mr. Chairman.

Doctor, I am sorry I was not here earlier, because I looked forward to your testimony. But there seems to be a great deal of concern insofar as the legislative processes are concerned, that the words "may"—"may be detrimental to health," or hazardous to health, is not sufficient. The people who have come in and undertaken to press this matter, including the Federal Trade Commission, take the position—and the scientists and some of the doctors—that they must have the word as a definitive straight statement that cigarette smoking is hazardous to your health.

Now, after listening to the last part of your testimony, which was very interesting, it came to my attention some of the things that are in these summaries cost the taxpayers of this Nation apparently quite a bit of money to find out.

Now, I notice in this booklet on smoking and health, by the Department of Health, Education, and Welfare, on page 376—I read a statement the other day which we thought was a great find. It says:

> Although smokers are different from nonsmokers psychologically and socially, there are many differences among smokers and among nonsmokers, so that some smokers may be like some nonsmokers.

Would you agree then that finding was true?

Dr. MORAN. I am afraid I cannot pass on that particular statement. I just don't know enough about the psychology of either smokers or nonsmokers.

Mr. ROGERS of Texas. I think it is important in that they have used the words "some smokers may be like some nonsmokers," but I don't

think it required a lot of taxpayers' money to find this out. I could have told them this before they went to all this trouble.

Now, in No. 4 they say smoking appears to be not one behavior, but a range of psychologically diverse behaviors, each of which may be induced by a different combination of factors and may serve different needs. Therefore, no single explanation can suffice.

Then, on No. 6 they say:

There is suggested evidence that early smoking may be linked with self-esteem and status needs, although the nature of this linkage is open to different interpretations.

Well, now, that was a profound finding if I ever heard one. But yet this same group of people came in, after all of these statements—and they are all through the book.

Here is another one:

Increased mortality of smokers from cirrhosis of the liver has been shown in the prospective studies. The data are not sufficient to support a direct or causal association.

Now, those kind of statements are all through here.

Yet those same people came in here and stated as a definite, fixed conclusion, many of them, that every person who smokes cigarettes is affecting his health.

What would be your opinion on it, sir?

Dr. MORAN. Well, I can only say that I do not agree with those who have reported that it is proven, that smoking causes cancer of the lung. I disagree with this viewpoint.

I, too, have observed through the text, through the body of the report, that there are many qualifying statements in it, such as "may be," "presumably," "presumptive" and that sort of thing, which do not appear in the conclusions which have been pretty widely publicized.

While I think in general the report is a very fair one, I have noticed that it did not include those qualifying statements in the conclusions. And I think this is one thing about the report that I would disagree with.

Mr. ROGERS of Texas. Now, Doctor, in some of the conclusions they say they have testified here that there is a definite connection between emphysema and smoking.

Now, the conclusion stated in this booklet, on page 302, says:

A relationship exists between pulmonary emphysema and cigarette smoking, but it has not been established that the relationship is causal.

Now, what does that mean?

Dr. MORAN. Well, I think it just means that a certain number of people have emphysema, and a certain number of people smoke, and the statistics do not show clearly whether this is just coincidence of an occurrence of emphysema in people who smoke, who may have something else which is really causing the emphysema or whether the cigarette smoking presumably causes it. In other words, they just don't know.

Mr. ROGERS of Texas. Isn't it a fact, Doctor, that if one man had emphysema and also smoked, there would be a relationship because all of the activities are occurring in one body, although there might not be any association at all between the two?

Dr. MORAN. I think that is correct; yes, sir.

Mr. ROGERS of Texas. So actually the finding that they have said there is a relationship means nothing, insofar as the issue involved here is concerned.

Dr. MORAN. I would agree with that; yes, sir.

Mr. ROGERS of Texas. I think that is all the questions I have.

Mr. Younger?

Mr. YOUNGER. Thank you.

I think, Doctor, you have made a very good contribution. But for a layman, it only adds confusion and compounds it, because we have very good doctors come in with reports that they are very positive that smoking does cause lung cancer—and we have a number of other doctors who testify as you do, from the wealth of their experience. This puts us in a bad position of trying to reach a decision—when the experts all disagree.

That is one of the most confusing things that we have. And yet the Federal Trade Commission just took one side of the question.

You didn't testify before the Federal Trade Commission, did you?

Dr. MORAN. No, sir.

Mr. YOUNGER. Do you know anything about the hearings they held?

Dr. MORAN. No, I do not, sir.

Mr. YOUNGER. You don't know whether they were generally advertised, or—the doctors were notified so they could testify?

Dr. MORAN. I don't know a thing about it.

Mr. YOUNGER. Thank you very much.

Mr. ROGERS of Texas. Mr. Kornegay?

Mr. KORNEGAY. Thank you very much.

First I want to thank you, Doctor, for coming before the committee with your great knowledge of the subject matter. It is very helpful to have this information and the benefit of your many and long years of experience.

At the risk of showing the extent of my ignorance, I have two or three questions.

Dr. Moran, you testified that there is a cancerous cell called the squamous cell, or squamous carcinoma, or whatever you term it, that is found in the lung—is that correct, sir?

Dr. MORAN. Yes, sir.

Mr. KORNEGAY. Is that the most common type of carcinoma found in the lung?

Dr. MORAN. Yes, I think squamous cell cancer would be the most common type.

Mr. KORNEGAY. Well, now tell the committee whether or not that same type of carcinoma or cancer is found in other areas of the body.

Dr. MORAN. Yes, it is very commonly found in many other areas. it is particularly——

Mr. KORNEGAY. Are these areas such that they could have no possible relationship between that area and cigarette smoking?

Dr. MORAN. They are areas that certainly could have no possible exposure to cigarette smoking, the most common being cancer of the cervix of the uterus in women.

Mr. KORNEGAY. This is the same type of cancer that is most common in the lungs, is that correct?

Dr. MORAN. Yes, sir.

Mr. KORNEGAY. Now, you also state on page 4 of your statement that lung cancer occurs much more frequently among men than women, and the disparity is growing. By that I take it that you mean that the distance between the two, or the differential in the incidence of cancer between men and women is increasing each year.

Dr. MORAN. Yes, sir.

Mr. KORNEGAY. Is there any scientific reason for that, or do you have any idea as to why men are more susceptible to lung cancer than women?

Dr. MORAN. No, I do not have, and I don't think anybody knows. We know that men are more susceptible to a number of diseases, and this happens to be one of them. The average life expectancy of men is approximately 5 years less than for women.

Mr. KORNEGAY. If you relate that to the percentage of men and the percentage of women who smoke, how does it stand, or what is the comparison in that case?

Dr. MORAN. I do not have the figures. I really don't know how many people in the country or how many people in any given area of the country smoke—men or women. I think this is one of the hard things to evaluate in any of the statistical studies. I believe that many more people smoke than do not smoke, and this makes it hard to evaluate the figures.

Mr. KORNEGAY. Now, the work that you have done and shown us here in the area of lung cancer—did you, as a pathologist, perform the autopsies?

Dr. MORAN. Yes, sir.

Mr. KORNEGAY. Did you make the slides?

Dr. MORAN. I did not cut and stain the slides. That is done by technicians. But I have read all the slides—that is, I have looked at them personally under the microscope in all cases, selected the areas for photographs, and took the photographs.

Mr. KORNEGAY. And who collected the histories?

Dr. MORAN. I collected the charts and reviewed the histories given by the doctors, and in some of the cases—in the one case in particular which I showed the slides of, the patient was still alive. This was a surgical specimen. And we had several doctors go up and check on the history there.

Mr. KORNEGAY. You have personally done a considerable amount of work going into the process of the operation, the autopsy, the history taking, and the reading of the slides?

Dr. MORAN. Yes. All the pictures that I showed I went over the slides personally and reviewed them myself, and took the pictures.

Mr. KORNEGAY. I don't know whether this is a fair question or not, Doctor. If it is not, you just tell me so. The question is—would it be extremely difficult for a medical man, assuming even that he is an expert in this area, simply to take the slide, without having done any of the procedures before staining, and come to any accurate conclusions about what the slide showed, what were the results and what condition was depicted in the slide?

Dr. MORAN. Well, I am not sure that I can answer that question. I would say it would depend on the circumstances, it would depend on who was handling the rest of the material, who selected the slides, and who did the autopsies.

Mr. KORNEGAY. Put another way—would you be in a much better position to come to some accurate conclusions if you were exposed to the case and had knowledge of the case from the standpoint of the history of the individual involved, the autopsy, and all the way down the line?

Dr. MORAN. Well, you would be in a better position, yes. But I would not want to say that it is always possible to do it that way. I think in a large study you have to rely—certainly for the histories—on somebody else. The pathologist has to, anyhow.

Mr. KORNEGAY. Now, you said that it is very easy to make a mistake in the appearance of some of the conditions of the lung—that is, to call them precancerous. I believe that was the term that Dr. Auerbach, who was here yesterday, used—precancerous lesions. Could one mistake a benign condition for a precancerous lesion?

Dr. MORAN. Yes; I think this is a very easy mistake to make, and it is one of the areas in which there is the greatest difference of opinion among pathologists.

Mr. KORNEGAY. As I gather from your statement here today, based upon your experimentation with animals particularly, that inhalation of smoke may change the appearance of the lung, but when that inhalation is removed, then the change goes away.

Dr. MORAN. That is correct; yes, sir.

Mr. KORNEGAY. And it resumes its original appearance.

Dr. MORAN. Yes, sir.

Mr. KORNEGAY. Now, Dr. Moran, are you familiar with and have you studied the report of the Advisory Committee to the Surgeon General on Smoking and Health?

Dr. MORAN. Yes, sir, I have.

Mr. KORNEGAY. Now, based upon that report, Dr. Moran, in your opinion is there sufficient evidence to link cigarette smoking with lung cancer and to justify and warrant the labeling of every package of cigarettes with a warning which has been proposed by the Federal Trade Commission to the effect that cigarette smoking is dangerous to health, and may cause death from cancer or other diseases?

Dr. MORAN. Well, I think this is the problem that you gentlemen have to decide. I have given my opinion to the best of my ability, which is that it is not proven that smoking causes cancer of the lung, and other people have testified otherwise. And I think this is the problem that Congress has to decide. I really cannot say on that. I can just give my opinion.

Mr. KORNEGAY. Yes, sir; I understand. All I am asking for is your opinion—whether or not this report of the Advisory Committee of the Surgeon General on Smoking and Health is sufficient proof that smoking—cigarette smoking causes cancer of the lung and that cigarette packages should be labeled.

Dr. MORAN. No, sir; I do not believe that.

Mr. KORNEGAY. Thank you very much. I am very grateful to you, Doctor, for coming here.

Thank you, Mr. Chairman.

The CHAIRMAN. Mr. Satterfield?

Mr. SATTERFIELD. No questions.

The CHAIRMAN. Mr. Farnsley?

Mr. FARNSLEY. Thank you, Mr. Chairman.

Doctor, the nearest I can figure out, giving the benefit of the doubt to the report of the Surgeon General—which is 18 months old—has there been much research in the field since then, publications available?

Dr. MORAN. I think there has been a great deal of research in the area. I don't think there have been any significant contributions to the understanding of the problem, or any further additional experimental or clinical work which would help one way or the other.

Mr. FARNSLEY. You feel that the facts were in at that time, and they have not changed, is that right—the best knowledge in the field?

Dr. MORAN. I feel that the information that was available to them then is the same information that is available now to anyone who tries to evaluate the situation.

Mr. FARNLSEY. I brought a clipping in the other day—it is in the record—psychologists saying they thought—one group of 72 percent that had had cancer had had a history of depression when they were young. And they felt there was a correlation. Had you ever heard of that theory?

Dr. MORAN. Well, I have heard of such, yes. I cannot say I am very enthusiastic about them. But I cannot deny them, either.

Mr. FARNSLEY. Do you feel you are competent to have an opinion in that field?

Dr. MORAN. No, sir, I do not.

Mr. FARNSLEY. I found another one.

Another one is that some of them think it may be virus that may be the cause. Is this a new theory? Has this been going on a long time? How do you hold with that one?

Dr. MORAN. The virus theory of causation of cancer is not a new theory. It is an old theory. It was dropped for some years or partially dropped. But there has been a revival of it, and at the present time there is considerable evidence that at least some cancers are caused by viruses. Experimentally cancers can be produced by viruses. There has been some recent research work in human cancers now that indicate that viruses are probably responsible for certain human cancers. So I personally feel that the virus study is a wide-open field. I think this is shown by the development of interest in this field by some very outstanding scientists. For instance, the men who developed the polio vaccines—Dr. Salk and Dr. Sabin—they are both working now on the relationship, or a possible relationship, between viruses and cancer, and both feel strongly enough that this may be the cause that they are doing experimental work in this field.

Mr. FARNSLEY. You say this theory is old and it was dropped and then has been taken up again. When would you say it was taken up again?

Dr. MORAN. Well, I probably shouldn't have said that it was dropped. All I can say is that probably for a period of about 15 years or so, there was no additional evidence to help support it, and in the last 4 or 5 years, a number of things have developed which have revived interest in it, and now many people are working on the relationship of viruses to cancer.

Mr. FARNSLEY. More now than any time in the last 20 or 30 years?

Dr. MORAN. Yes, sir.

Mr. FARNSLEY. All I can find is clippings. I don't have the learned journals you have.

I found another one. Somebody thought male hormones were mixed up in this thing. How do you feel about that?

Dr. MORAN. Well, this is one of the theories that has been advanced, and I think there is no question that the hormones affect certain types of cancers. Sometimes favorably, sometimes unfavorably.

As far as the relationship to cancer of the lung, I don't know whether there is any evidence to indicate a hormone relationship. It has been discussed. But I don't know what the answer is.

Mr. FARNSLEY. Can one man keep up with the literature in this field?

Dr. MORAN. No, sir; I am sure of that. At least I cannot.

Mr. FARNSLEY. That is what has been going through my mind, with the smattering of social science I have got. We are told—I do not know—98 percent of the members of the AMA agree with the Surgeon's report. I do not know if they agree or disagree.

Dr. MORAN. I would say first of all I doubt very much that 98 percent of the members of the AMA agree with the Surgeon General's report. I doubt this very strongly. I do not know what percentage agree. But I think many of the men, for instance, who are not keeping up with the specific literature in cancer of the lung have to accept something like the Surgeon General's report.

The fact that a certain number of men who are in practice of surgery or general practice, or internal medicine, may accept this does not necessarily prove that they know anything about it, any more than a person who reads it in the newspaper.

Mr. FARNSLEY. You have an interest in this field, obviously. You have testified well, and you work in the field of cancer of the lung. And you say you are unable to keep up with the literature. Or is that all cancer literature, or just cancer of the lung?

Dr. MORAN. Well——

Mr. FARNSLEY. I am not trying to trap you. I am just trying to learn.

Dr. MORAN. I was thinking specifically of cancer in general, all aspects of it—the experimental aspects of viral studies, the experimental aspects of chemical studies. I try very hard to keep up with all the literature on cancer of the lung. But even there I have difficulty. And I resort to not only a great number of pathology journals which I read all the time, but certain abstract journals which are published which deal with abstracts of the cancer literature.

Even then I find it impossible to keep up with all of it.

Mr. FARNSLEY. How many scientists—that is scientists in the health sciences—would you say try as hard as you do to keep up with the literature on cancer of the lung? Would you want to guess on that?

Dr. MORAN. I think it would depend on the interest of the individual. A man who is interested in lung cancer specifically would certainly make the same effort that I do to keep up with it. A man who may be interested in diabetes or pneumonia or some other disease probably would only read occasional articles dealing with cancer of the lung.

Mr. FARNSLEY. I know we cannot get exact figures. But as a layman I do not know whether it would be 10,000 or 10 or 100 that might keep up with the literature on cancer of the lung.

Dr. MORAN. I would guess not more than 1 percent of the doctors in the country keep up with all the literature on cancer of the lung.

Mr. FARNSLEY. In the social sciences some men talk of a cultural lag, and getting a vested interest—they might feel some people get a vested interest in theories and reports and so forth. But you reassured me if there was a new committee to study this thing with a completely open mind that you do not feel a significant change of philosophy since the Surgeon General's people studied it?

Dr. MORAN. I said I did not think there was any additional information that might help any. Now, if you choose an entirely new committee, I think it would depend upon the members you happened to choose what conclusion they might draw. But I do not think that is the important thing that we need to do. I think we have had enough committees, and what we ought to do is develop the research programs and find out what the facts are.

Mr. FARNSLEY. I agree with that. I am not proposing another committee. I am just trying to find out how valid the information before us is.

Are there any other theories as to what causes cancer or lung cancer that we have not mentioned?

Dr. MORAN. Well, I mentioned in the text the possibility of atmospheric pollution.

Mr. FARNSLEY. How do you feel about that one?

Dr. MORAN. I just do not know the answer. I think it is a good possibility. Some of the experimental work, work by Dr. Kotin and Dr. Wisely, where they have combined viruses and oxidized gasoline, and have producer lung cancers in animals, I think may be a substantial step along this direction.

I certainly do not feel that smoke, industrial smoke, is any better for us than cigarette smoke.

Mr. FARNSLEY. How about automobile fumes?

Dr. MORAN. Well, I just do not know. I think that is a possibility, but I do not know the answer.

Mr. FARNSLEY. Any other theories running around loose in your profession as to what causes cancer?

Dr. MORAN. I think I have touched on all the important ones.

Mr. FARNSLEY. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Doctor, I presume your grave concern about this problem is that if what has been proposed in the so-called Surgeon General's report is taken with full faith and credit—I do not indicate that you are taking any position but what there is some substantial credibility in the report—but as I gather from what you have said, this is only one of the probable causes of cancer, and if we proceeded, or if this is carried out, that it will no doubt relax efforts to try to overcome the other causes which you feel exist.

Am I correct in that?

Dr. MORAN. I think you have expressed it very well.

My feeling is that if everyone accepts the idea that cancer of the lung is caused by cigarette smoking, and that all we have to do is to put on a big campaign to stop smoking, that we will not make any further progress on what really causes cancer of the lung. And I think that research should be continued along all lines—further investigation of the possibility that cigarette smoking does cause cancer of the lung should be carried on. But also research into viral causes, chemical causes, or anything else that might be worth while.

I do not think we should stop at this point because of a committee report which says that there is an association.

The CHAIRMAN. Well, now, would you disagree with this statement? "As a matter of fact," as laymen we understand this a little bit better than we do these highly technical problems that you have mentioned here, "cigarette smoking is dangerous to health and may cause death from cancer and other diseases."

Dr. MORAN. Well, I cannot see any objection to a statement that cigarette smoking may cause cancer of the lung. I think this is one of the things that we are investigating as a possibility. I do not object to that statement. That is, that part of it.

The CHAIRMAN. Would it not be more factually stated—I am asking if this would be correctly or not—that cigarette smoking, among other causes, is dangerous to health.

What I have in mind, to see if I do understand it correctly—you are not sure that in a given case that the causation of that condition is due to cigarette smoking or something else.

Dr. MORAN. That is correct; yes, sir.

The CHAIRMAN. And do I understand you correctly that there is no way now, with the research that you have, that you can tell whether it is caused from cigarette smoking or something else.

Dr. MORAN. That is correct; yes, sir.

The CHAIRMAN. I believe it was the Chairman of the Federal Trade Commission who objected to using the language in a so-called warning that it may be dangerous to your health, and he stuck with the firm conviction that cigarette smoking is dangerous to health.

In other words, there is no question about the—it is just a matter of fact, according to him.

I am not trying to argue one way or the other on the thing myself. I am merely trying to make a record and get from you—you seem to have made such an outstanding contribution in this field, and I along with other people hope you are able to continue your very fine work and your research and experimentation, because I feel it would be very valuable down the road. And I hope whatever happens here, it does not in any way relax our efforts, through research, to get to the facts. I hope someday we may know.

Have you ever discussed this with the committee of the American Medical Association that has given thought to this problem?

Dr. MORAN. No, sir, I have not.

The CHAIRMAN. I think it would be an interesting thing if people such as yourself did have a conference or a meeting for the purpose of discussing this whole matter.

I must agree with you. I think we are trying to arrive at a point where we hope by passing a law or a rule down in the Federal Trade Commission we can do away with cancer of the lung—just by saying that cigarettes are the cause of all of it. I agree with you. I think probably cigarette smoking does cause some difficulties. That is my own suspicion, shall I say. That is about all I can depend on. That is the way I feel about it.

Dr. MORAN. I did not quite hear what you said about what you agreed with me, sir. On what?

The CHAIRMAN. I agree with you that I think some cigarette smoking in some cases does cause some difficulties.

Dr. MORAN. The most I am willing to say is that cigarette smoking may cause cancer of the lung. I cannot say that it causes it in some cases, or it does not cause it in some cases. I think it is a possibility in some cases. But I cannot say for sure that it causes it.

Mr. ROGERS of Texas. Would the gentleman yield?

Doctor, there are a great number of people who smoke cigarettes who are healthy, are there not?

Dr. MORAN. Yes, sir.

Mr. ROGERS of Texas. And there are great numbers of people who are unhealthy who smoke cigarettes and would be just as unhealthy if they did not smoke cigarettes?

Dr. MORAN. I think that is true, yes, sir.

Mr. ROGERS of Texas. Thank you.

Mr. SATTERFIELD. Doctor, I would like to ask you one question. In listening to your statement and your answers, you indicated that the phrase "may cause lung cancer" would be acceptable. Would this be the more acceptable way to phrase it, or would it be more acceptable to say that it may be a cause of lung cancer?

Dr. MORAN. Well, I have not actually said, as far as a warning label—I have not even thought very much about that. I would certainly say it would be more acceptable and more scientific to say it may be a cause of lung cancer than it is to say it is a cause of lung cancer.

Mr. SATTERFIELD. Or that it may cause lung cancer?

Dr. MORAN. I think that that is a statement I would be willing to make—that it may cause lung cancer. But I would not be willing to say it is a cause or the cause of lung cancer.

Mr. SATTERFIELD. Would you say it may be more accurate to say it may be a cause of lung cancer than that it may cause lung cancer?

Dr. MORAN. I think either of those statements would be all right. May be a cause of lung cancer would probably be the best statement.

Mr. SATTERFIELD. Thank you.

Thank you, Mr. Chairman.

The CHAIRMAN. Doctor, thank you very much. We appreciate your presentation.

Dr. MORAN. Thank you, sir.

The CHAIRMAN. Dr. Douglas Sprunt.

STATEMENT OF DR. DOUGLAS H. SPRUNT, PROFESSOR OF PATHOLOGY AND CHAIRMAN OF THE DEPARTMENT OF PATHOLOGY, UNIVERSITY OF TENNESSEE

Dr. SPRUNT. My name is Douglas H. Sprunt. I am professor of pathology and chairman of the department of pathology at the University of Tennessee. I received my undergraduate degree at the University of Virginia and my M.D. at Yale University. I also received a master of science degree from Yale University, and stayed on at Yale on the faculty as an assistant, then instructor and then a Sterling research fellow. Thereafter, I was on the staff at Rockefeller Institute and, in 1932, I went to Duke University School of Medicine as an associate professor of pathology, before coming to the University of Tennessee in Memphis in 1944. In addition to my positions at the University of Tennessee, I have been chief of the laboratories of the city of Memphis hospitals.

During World War II, I was consultant to the Secretary of War on epidemic diseases and for several years I was consultant in medicine to the Oak Ridge Institute for Nuclear Studies. I served for 4 years on the Committee on Growth of the National Research Council.

I am a member of all five national pathology societies and have served as an officer for four of them, including the presidency of two of them, The Association of Pathologists & Bacteriologists and the American Society for Experimental Pathology. I am a member of many other professional societies, all of which are listed in the attached curriculum vitae. I have published 93 articles on the subject of pathology, many of which dealt with cancer. A list of my publications is also attached.

I have been interested in cancer of the lung for many years. Some of my early work involved studying the respiratory epithelium and its reaction to various infectious agents and, in addition to my continuing work in this field, I have followed the literature and the work of others in the field.

There is a considerable amount of statistical data which show an association between smoking and cancer of the lung. Statistical data is extremely valuable. I have used such data extensively in my own work and we have in our department at Tennessee a ful-time statistician and several workers trained in the use of computer and other electronic equipment to aid us in analyzing clinical and experimental data.

Statistical data, showing a high association between two factors, however, does not necessarily mean that there is a causal relationship between them. A statistical association may mean one of three things. It may be the result of chance, it may mean that the two related factors may both be the result of some third factor or the relationship may be that one causes the other.

To determine the meaning of a statistical association, it is necessary to go beyond the statistical evidence to the laboratory and clinical experience. In the laboratory, we do not accept statistical evidence alone, but believe that if statistics show a close association of two factors, we must show that one can cause he other in the experimental animal before we can be certain a causal relationship exists between the two. To date, no one has produced cancer of the lung in an experimental animal with tobacco smoke or with condensates extracted from tobacco smoke. Thus, laboratory confirmation of the statistical association is still lacking.

It is true that cancers have been produced on the skins of animals by various condensates of tobacco smoke, but skin cancer in experimental animals can also be produced by a number of innocuous substances, such as sugar, beef, et cetera. I do not think one can attach any great significance to this work.

The clinical data likewise do not support the suggestion that cigarette smoking causes lung cancer. There are many observed inconsistencies in the pattern of lung cancer incidence, which cannot be explained by any presently known facts relating to cigarette smoking or, for that matter, other suspected causal agents. The geographical discrepancies in lung cancer incidence do not follow observed differences in cigarette consumption. For example, even though the annual consumption of cigarettes in England is less than in this country, the in-

cidence of lung cancer in England is approximately double that in the United States.

Also, lung cancer seems to strike more than often among poor people, although there is no proof that poorer people smoke more than those who are relatively more affluent. If anything, it seems that more affluent people smoke more. It is interesting that the same relationship appears in cancer of the cervix. In a study of more than 500,000 women, we have observed that this particular cancer of the reproductive organs occurs about 2 to 3 times as frequently in the lower socioeconomic group as it does in the upper.

Cancer of the lung seems to be more common among people who have never married than among married people and likewise among those who have been divorced. We do not have any explanation for these findings; I am not able to explain them by cigarette smoking patterns.

It has been stated by one group of investigators—Dr. Auerbach—that histological changes in the respiratory epithelium occur in smokers more frequently than in nonsmokers. These changes range from simple changes in the respiratory tract epithelium (called hyperplasia and metaplasia—meaning either an increase in the number of cells or a change in the type of cells) to a more striking change which has been called intraepithelial carcinoma or carcinoma in situ. This lesion is thought by some pathologists to always progress to cancer and by others to be a misnomer as it can revert to normal epithelium. In our studies we have never seen intraepithelial carcinoma of the lung either in smokers or nonsmokers except where there was also already a definite cancer of the lung. Other pathologists concur in this point of view. The other changes, hyperplasia and metaplasia, are found not only in smokers but also in people with a variety of other conditions such as acute and chronic infections. Another interesting feature about these lesions is that they occur in the trachea quite commonly while cancer is almost unheard of in this location.

To summarize:

1. The same changes as described in smokers are also seen in persons who do not smoke.

2. These changes have been produced in experimental animals by inducing both acute and chronic infections, without the use of any tobacco smoke or condensate at all.

3. They are more commonly found in the trachea and in parts of the lung where cancer is rare.

4. We have not been able to find carcinoma in situ except where real cancer was also present.

5. No one has shown that cigarette smoking causes these changes.

In the study I mentioned previously of the epithelium of the cervix of uterus, which is similar to the respiratory epithelium, in more than half a million women, we have observed that, in many instances, hyperplasia and metaplasia frequently return to normal and that carcinoma in situ probably sometimes reverses to a normal epithelium. We are still studying the exact relationship of these changes in the cervix to cancer of the cervix. Our experience with the cervical epithelium, however, dictates caution in coming to any conclusions regarding the significance of the changes in the lung.

For some years now, I have been studying the various types of lesions which can be made to occur in the respiratory tract in the experimental animal. In particular, I have been very interested in the relationship

of previous infection, especially multiple previous infections, to cancer. While there is not any persuasive evidence that a single previous infecton, such as influenza, would play any significant part in lung cancer causation, there have been indications that multiple previous infections, involving multiple damage to the respiratory system, may be important.

To study this possibility, I have begun experiments with rabbits over the past few years. Lung cancer in the rabbit is extremely rare and, in fact, I do not know of any case where it has been reported as arising spontaneously. For this reason, the rabbit was a useful starting point for this study.

In the course of our study, we have repeatedly infected the respiratory system of rabbits with substances known not to be cancer causing when used individually in experimentation. By repeated exposure to these substances (bacterial toxins, cow pox virus, and dilute acids), we have produced cancers of the lung in two rabbits. Our work is continuing, and we have just begun the study of the effect of repeated experimentally produced pneumonia in the mouse on the incidence of lung cancer in this animal.

I am hopeful that this work in the rabbit and in the mouse will cast further light upon the problem of lung cancer causation in humans. Many persons who formerly died of pneumonia now recover because of antibiotic therapy, and these people may have pneumonia several times. There have been reports of a relationship between cancer of the lung and repeated incidence of pneumonia. Other reports have linked cancer of the lung to various other previous respiratory infections. Much more work needs to be done in this area before any conclusions can be reached; and our work should provide an experimental test in the laboratory for these observations.

At this stage, we do not know enough about the basic biological mechanisms of cancer to come to any conclusions based upon statistical observations of populations. Thus, while cancer of the lung has been increasing in recent years, cancer of the stomach—which was the commonest form of cancer in the male when I graduated from medical school almost 40 years ago—has been decreasing. We do not know the reason or reasons for these observed trends. Much work on the biological mechanisms involved is presently being done and the outlook for major contributions to our knowledge in the near future is bright.

In summary, before we can come to any conclusions concerning the causation of lung cancer, we need much more research both in the nature of cancer generally and in the study of lung cancer in the laboatory. Statistics undoubtedly can play an important part in this study, but we should be careful not to draw extensive conclusions on the basis of statistical associations unless we can support them with experimental data. Although laboratory findings in animals cannot be directly translated to man, before we accept claims of identification of causal factors, we should see these claims tested, and the causal efficacy of the factors demonstrated in the laboratory. This has not been done in the case of cigarette smoking and cancer of the lung.

For all of these reasons, I do not believe that cigarette smoking has been proved to be causally connected with lung cancer.

48-824—65——22

(The attachments to Dr. Sprunt's statement follow.)

CURRICULUM VITAE

Sprunt, Douglas H. (Hamilton) : Pathologist, Born: Wilmington, N.C., August 2, 1900. Son: William Hutchison and Bettie Massie (Hamilton) Sprunt. B.S., U. Va., 1922. M.D., Yale 1927. M.S. Yale 1929. Married: Edith Charlescraft Lucas, Oct. 17, 1933. Children: Alice Hamilton S., b. Nov. 4, 1937: Edith Lucas S., b. March 27, 1940. Asst., 1927–28, Instruc. 1928–29—Yale U. Sch. Medicine. Sterling Research Fellow, 1929–30. Acting Resident in Path., 1927–28; Resident in Path., 1928–29—New Haven, Conn. Hosp. Asst. Hosp. Rockefeller Inst. for Med. Research, 1930–32. Assoc. Prof. Path., Duke U. Sch. of Medicine, 1932–44. Professor of Path., U. Tenn., 1944– . Chief of Laboratory, City of Memphis Hospital, Memphis, Tenn., 1944– . Consultant to Sec'y of War for Epidemic Diseases, W.W. II. Consultant in Med., Oak Ridge Inst. Nuclear Physics, Inc., 1945–55. Member; Pathology Section of USPHS, 1949–53; Cancer Control Com., Nat'l. Cancer Inst., USPHS, 1955–1960. Member; Com. on Growth, Nat'l Research Council, 1947–50. Member: Am. Soc. Expt'l Path. (Pres., 1947–58) : Am. Soc. Clin. Path.; Am. Assn. Path. & Bact. (Mem. Council, 1955–1962; Vice-President, 1959, Pres. 1960, Sec. 1961) ; Assn. of Immunologists, Soc. Expt'l. Biol. and Med.; A.M.A.; A.A.A. S.; So. Med. Assn. (Chairman, Sect. on Med. Educ. and Hosp. Training, 1945–46) ; Tenn. Society of Path. (Sec.-Treas., 1957–59) ; Memphis and Shelby County Med. Society. Fellow: Am. Col. Physicians; Fellow: Col. Amer. Pathologists (Bd. of Gov., 1948–51). International Academy of Path. (Member Council, 1947–53). Chairman: 2d Teaching Institute, Pathology, Microbiology, Immunology & Genetics, A.A.M.C., 1954. Chairman: Parke-Davis Award Com., Am. Soc. Expt'l. Path. 1958–59. Member: Lederle Medical Faculty Award Committee, 1954– . Chairman Nat'l Research Council Coordinating Committee for International Intersociety Committee on Pathology, 1950– . Vice-Chairman International Committee on Pathology, 1960– .

Fraternities: Kappa Alpha (South). Nu Sigma Nu.

Religion: Presbyterian.

Clubs: Memphis Country; Cosmos (Washington, D.C.) ; University (New York City).

Author: Articles in science journals on viruses, toxins, endocrines, antibiotics and gerontology.

Home: 191 E. Parkway S., Memphis, Tenn.

Office: Institute of Pathology, University of Tenn., 858 Madison Ave., Memphis, Tenn.

PUBLICATIONS OF DOUGLAS H. SPRUNT, M.D.

Underhill, F. P., and Sprunt, D. H.; Influence of Amytal upon Blood Sugar Content. Proc. Soc. Exper. Bio. & Med., 25: 137, 1927.

Sprunt, D. H.; Carcinoma and Tuberculosis of the Stomach, Surg. Gyn. & Obs., 51: 245, 1930.

Sprunt, D. H.; Renal Damage Following Administration of Merbaphen (Novasurol). Arch. Ind. Med., 46: 393, 1930.

Rivers, T. M., Berry, G. P., and Sprunt, D. H.; Psittacosis: I. Experimentally Induced Infection in Parrots. J. Exp. Med., 54: 91, 1930.

Wakeman, A. M., and Sprunt, D. H., and others; Metabolism and Treatment of Blackwater Fever; Am. J. Trop. Med. 12: 407, 1932.

Sprunt, D. H.; Influence of Roentgen R ys on Acid-base Quilbrium. J. Biol. Chem., 92: 605, 1931.

Sprunt, D. H.; Infectious Myxomatosis (Sanarelli) in Pregnant Rabbits. J. Exper. Med., 56: 601, 1932.

Rivers, T. M., Sprunt, D. H., and Berry, G. P.; Observations on attempts to Produce Acute Disseminated Encephalomyelitis in Monkeys. J. Exper. Med.; 58: 39, 1933.

Sprunt, D. H., Martin, D. S., and Williams, J. M.; Interstitial Bronchopneumonia; I. Similarity of a Toxin Pneumonia to that Produced by the Viruses. J. Exper. Med., 52: 73, 1935.

Sprunt, D. H., Martin, D. S., and Williams, J. M.; Interstitial Bronchopneumonia: II. Production of Interstitial Mononuclear Pneumonia by the Bordet-Gangou Bacillus. J. Exper. Med., 62: 449, 1935.

Smith, S. G. and Sprunt, D. H.; Pathological Skin Changes in the Tail of the Albino Rat on a Diet Deficient in Vitamin G. J. Nutrition, 10: 481, 1935.

Sprunt, D. H. and McBryde, A.; Morbid Anatomic Changes in Brucella Infection in Man with Report of a Necropsy. Arch. Path., 21: 217, 1936.
Amoss, H. L. and Sprunt, D. H.; Tularemia—Review of the Literature of Cases Contracted by Ingestion of Rabbit and the Report of Additional Cases with a Necrophy. J. Am. Med. Assoc., 106: 1078, 1936.
Sprunt, D. H., and Berry, G. P.; Psittacosis—A Review of the Literature of the Lesions in the Central Nervous System with a Report of a Case. J. Inf. Dis., 58: 120, 1936.
Sprunt, D. H., and McDearman, S.; Effect of Iodides on Interstitial Mononuclear Pneumonia. Arch. Path., 22: 273, 1936 (Abstract).
Sprunt, D. H.; Part of a Round Table Discussion on Pulmonic Alveolar Epithelium. J. Thoracic Surg., 6: 83, 1936.
Sprunt, D. H., Martin, D. S., and McDearman, S.; The Results of Intratracheal Injection of Bordet-Gengou Bacilli in Monkeys and Rabbits. J. Exper. Med., 67: 309, 1938.
Sprunt, D. H., McDearman, S., and Raper, J.; Studies on the Relationship of the Sex Hormones to Infection. I. The Effect of the Estrogenic and Gonadotrophic Hormones on Vaccine and the Spreading Factor. J. Exper. Med., 67: 57, 1938.
Sprunt, D. H.: Simple Atrophy of the Liver. Its Relation to Increased Resistance. Arch. Path., 24: 738, 1938.
Sprunt, D. H.; The Significance of Interstitial Mononuclear Pneumonia. So. Med. J., 31: 362, 1938.
Hamblen, B. C., and Sprunt, D. H.; Fatal Functional Uterine Bleeding. Endocrinology, 21: 553, 1937.
Sprunt, D. H.; The Part Played by Age and Female Sex Hormones in Resistance to Infection. Endocrinology, 25: 625, 1939.
Sprunt, D. H., and McDearman, S.; Studies on the Relationship of the Sex Hormones to Infection. II. The Effect of Pseudopregnancy on the Spread of India ink in the Skin of the Rabbit. Endocrinology, 25: 308, 1939.
Sprunt, D. H., and McDearman, S.; Studies on the Relationship of the Sex Hormones to Infection. III. A Quantitative Study of the Increased Resistance to Vaccinal Infection Produced by the Estrogenic Hormone and Pseudopregnancy. J. Immunol., 38: 81, 1940.
Sprunt, D. H., and McDearman, S.; Studies on the Relationship of the Sex Hormones to Infection. IV. A Study of the Dispersion or Concentration of India ink in Skin by Certain Sex Hormones. Endocrinology, 27: 893, 1940.
Sprunt, D. H.: Effect of Varying the Volume of Injection in Calculating Number of Infections Particles of Vaccinia. Proc. Soc. Exp. Bio. and Med., 42: 718, 1939.
Sprunt, D. H., Marx, W. W., and Beard, J. W.; Studies on the Infectivity of Vaccinial Elementary Bodies, J. Infect. Dis., 66: 53, 1940.
Sprunt, D. H., Hooke, C. W., and Raper, J. S.; Relationship of Spermatogenesis to the Factor in the Testis Which Increases Tissue Permeability. Proc. Soc. Exp. Bio. and Med., 41: 398, 1939.
Sprunt, D. H., The Effect of the Female Sex Hormones on Infection and Inflammations. So. Med. J., March 1941.
Sprunt, D. H.; The Effect of the Virus-host Cell Relationship on Infection with Vaccinia. J. Exper. Med., 74: 81, 1941.
Sprunt, D. H.; The Effect of Undernourishment on the Susceptibility of the Rabbit to Infection with Vaccinia. J. Exper. Med., 75: 297, 1942.
Sprunt, D. H.; Reduction of Pulmonary Resistance to Infection by Circulating Toxins. Arch. Path., 34: 801, 1942.
Sprunt, D. H.; Inhibiting Effect of Methionine Choline and Betaine on Rabbits' Susceptibility to Infection with Vaccinia. Proc. Soc. Exp. Bio. and Med., 51: 226, 1942.
Sprunt, D. H.; Invivo Neutralization of Pertussis Toxin with Pertussis Antitoxin. Am. J. Path., 19: 255, 1943.
Taylor, H. M., and Sprunt, D. H.; Increased Resistance to Viral Infection as a Result of Increased Fluid in Tissues. J. Exper. Med., 78: 91, 1943.
Sprunt, D. H.; Increased Susceptibility of Mice to Swine Influenza as a Result of Methinonine Injections. Proc. Soc. Exper. Bio. and Med., 67: 319–321, 1948.
Sprunt, D. H.; The Role of the Pathologist in Medical Education So. Med. J., Vol. 40, August, 1947.
McVay, L. V., Guthrie, F., Michelson, I. D., and Sprunt, D. H.; Isolation of Brucella from Apparently Healthy Individuals. Soc. for Exp. Bio. and Med., 69: 607–608, 1948.

Sprunt, D. H.; Effect of Malnutrition on the Infection of Mice with Influenza Virus. Fed. Proc., March 1949.
McVay, L. V., Guthrie, F., and Sprunt, D. H.; Septicemia due to Bacteriodes, Aureomycin Hydrochloride Therapy in Two Cases Due to Bacteriodes Funduliformis. J. A. M. A., August 1949.
McVay, L. V., Laird, Flanagan, Sprunt, D H., The Treatment of Trichomonas Vaginalis Vaginitis with Aureomycin. Proc. Soc. Exp. Bio. & Med., 1949.
Sprunt, D. H.; Evaluation and Application of Tests for the Diagnosis of Cancer. Presented at Cancer Day, December 12, 1950, Puerto Rico Medical Association.
McVay, L. V., Laird, Sprunt, D. H.; The Treatment of Amebiasis with Aureomycin. So. Med. J., April 1950.
McVay, L. V., Dunavant, D., Guthrie, F., and Sprunt, D. H.; Treatment of Actinomycosis with Aureomycin; J. A. M. A., 143:1067–1068, July 1950.
McVay, L. V., Guthrie, F., Michelson, I. D., and Sprunt, D. H.; The Isolation of Brucella Organisms from Apparently Healthy Individuals. Yale J. of Bio. & Med., Vol. 22, No. 6, July 1950.
Sprunt, D. H.; The Ground Substance in Infection. Annals of the N.Y. Acad. of Sciences. 52:1052–1060, Art. 7, May 1950.
Sprunt, D. H., Rogers, W., Dulaney, A. D.; Autoantibodies to in vivo Damaged Kidney. Relationship to Nephrotoxin. Fed. Proc., Vol. 9, March 1950.
Sprunt, D. H., Kyle, J. W., and Richmond, S. G.; The Reproducibility of the Iodoacetate Index in the Huggins' Test. Cancer Research, Vol. 10, No. 4, April 1950.
McVay, L. V., and Sprunt, D. H.; Streptokinase and Streptodornase in the Treatment of Diabetic Gangrene. A. M. A. Arch. of Int. Med. 87:551–559, April 1951.
McVay, L. V., Evans, Larey, and Sprunt, D. H.; Concentration of Aureomycin in the Intenstine. Vol. 10, No. 1, March 1951. Fed Proc.
Sprunt, D. H.; Effect of Autolytic Changes on Antigenic Properties of Kidney Preparations. Fed. Proc., Vol. 10, No. 1, March 1951.
McVay, L. V., Guthrie, F., and Sprunt, D. H.; Aureomycin in the Treatment of Actinomycosis. New Eng. J. of Med., 245:91–96, July 1951.
McVay, L. V., and Sprunt, D. H.; Aureomycin in Male Trichomoniasis. So. Med. J., 44:1122–1125, 1951.
McVay, L. V.; and Sprunt, D. H.; A Study of Moniliasis in Aureomycin Therapy. Proc. of the Soc. for Exper. Bio. & Med., 78:759–761, 1951.
McVay, L. V., Evans, Larey, and Sprunt, D. H.; A New Method of Treatment of Trichomonas Vaginalis Vaginitis. Surg. Gyn. and Obs., 93:177–184, August 1951.
Sprunt, D. H.; Pathology and the Pathologist in Relation to the Clinician in a Tumor Program. Assoc. Medica De Puerto Rico. Vol. KLII, No. 1, 1951.
Sprunt, D. H., Kyle, J. W., and Richmond, S. G.; Comparative Study of Severa Tests which May be useful as Health Clearance Tests, Cancer Research, 2:282, 1951.
Sprunt, D. H., Dulaney, A. D., and Conger, R.; Methods of Preparation and Antigenic Activity of Estrogen Protein Conjugates. Cancer Research, 2:282, 1951.
McVay, L. V., and Sprunt, D. H.; Bacteroides Infections. Annal of Int. Med., Vol. 36, No. 1, January 1952.
McVay, L. V., and Sprunt, D. H.; A Long Term Evaluation of Aureomycin in the Treatment of Amebiasis, S. M. J., Vol. 45, No. 3, March 1952.
Sprunt, D. H., Wood, J. L., and Schuman, H. L.; Action of Methionine in Viral Infections, Fed. Proc., No. 1. Vol. II, March 1952.
Sprunt, D. H., Sands, S., Effect of Low Protein Diet on Rous Sarcoma in Chickens. Fed. Proc., Vol. 12, March 1953.
McVay, L. V., and Sprunt, D. H.; A Long Term Evaluation of Aureomycin in the Treatment of Actinomycosis, Annals of Int. Med., Vol. 38, No. 5, May 1953.
McVay, L. V., and Sprunt, D. H.; Treatment of Actinomycosis with Isoniazid. J. A. M. A., Vol. 153, September 1953.
McVay, L. V., and Sprunt, D. H.; A Long Range Study of the Use of Broad Spectrum Antibiotics in Elderly People, Antibiotics Annual, 1953–54 Medical Encyclopedia, Inc.
McVay, L. V., and Sprunt, D. H.; Antibiotic Prophylaxis in Chronic Respiratory Disease. A. M. A. Arch. of Int. Med., Vol. 92, December 1953.
McVay, L. V., and Sprunt, D. H.; Aureomycin in the Prophylaxis of Rheumatic Fever. New Eng. J. of Med., Vol. 249, No. 10, September 1953.

McVay, L. V., and Sprunt, D. H.; Antibiotic Prophylaxis in Chronic Congestive Failure. Am. J. of Med. Sciences, 226:491–503, November 1953.
Richmond, S. G., and Sprunt, D. H.; The Need for Properly Trained Medical Technologists in the Office Laboratory. Tenn. St. Med. J., November 1953.
Kyle, J. W., Richmond, S. G., and Sprunt, D. H.; Evaluation of Several Cancer Tests. USPHS Monogram, No. 12, 1953.
McVay, L. V., Sprunt, D. H., Stern, T. N., Tatum, F. E., and Lipscomb, A., Antibiotic Prevention of Intercurrent Infections in Diabetes Mellitus. Annals of Int. Med., Vol. 40, No. 2, February 1953.
Sprunt, D. H.; Present Day Concepts of Pneumonia. J. So. Med. Assoc., 47:484–486, No. 5, May 1954.
Sprunt, D. H., and Chang, F. C.; Seroflocculating Steroids. I. Ethyl 3 Beta-Chloro-Delta''-Cholenate, J. of the Am. Chem. Soc., 76:3213, 1954.
A Method of Evaluating Cancer Tests, Sprunt, D. H. and Hale, Wm., Proc. Amer. Asso. for Ca. Res., Vol. 2, No. 1, April 1955.
Sprunt, D. H., Hale, Wm., Chang, F., Richmond, S. G., Erickson, C. C., Present Status of Cancer Tests. Science, 122:273–274, No. 3163, August 12, 1955.
Dunn, John E., and Sprunt, Douglas H., Uterine Cancer Case Finding by Vaginal Cytology, Public Health Report, 70:341–346, No. 4, April 1955.
Sprunt, D. H., The Ground Substance of the Mesenchyma and Hyaluronidase.
Sprunt, D. H., Dougas, J. M., Sanford, C., Clinopathologic Conference.
Mathes, Gordon, Richmond, Sara Grace, Sprunt, Douglas H., The Use of L-Tartrate in Determining "Prostatic" Serum Acid Phosphatase—A Report of 514 Cases, J. of Urology, 75:143–150, January 1956.
Packer, Henry, Arnonlt, M. Blake, Sprunt, Douglas H., A Study of Hemolytic Streptoccal Infections in Relation to Antistreptolysim O Titer Changes in Orphanage Children, J. of Ped., 48:545–562, No. 5, May 1956.
Erickson, C. C., Everett, Bennett, Graves, Lloyd M., Kaiser, Raymond, Malmgren, Richard A., Rube, Irma, Schreier, P. C., Cutler, Sidney, Sprunt, Douglas H., Population Screening for Uterine Cancer by Vaginal Cytology; Preliminary Summary of Results of First Examination of 108,000 Women and Second Testing of 33,000 Women, J. of the A. M. A., 162:167–173, September 15, 1956.
Sprunt, D. H., Flanigan, Clyde C., The Effect of Malnutrition on the Susceptibility of the Host to Viral Infection, J. of Ex. Med., 104:687–706, No. 5, November 1956.
Song, Y. S. and Sprunt, D. H., Nonbacterial Diffuse Myocarditis Associated with Interstitial Pneumonia, A. M. A. Arch. of Path., 65:666–674, June 1958.
Coleman, Sidney A., Rube, Irma F., Caroll, Phil C., Schreier, Sprunt, D. H. Kaiser, Raymond F., Erickson, C. C., An Evaluation of the Sensitization Response as a Method for Determining Radiation Sensitivity, Am. J. of Clinical Path., 33:20–29, No. 1, January 1960.
Kaiser, Raymond, Erickson, C. C., Everett, Bennett, Gilliam, Graves, Lloyd M., Walton, Mary, Sprunt, Douglas H., Initial Effect of Community Wide Cytologic Screening on Clinical Stage of Cervical Cancer Detected in an Entire Community. Results of Memphis-Shelby County, Tenn. Study, J. of Nat. Can. Inst., 25:863–881, No. 4, October 1960.
Chang, Frederic C.; Blickenstaff, Robert T.; Feldstein, Aaron Gray, Jane Ransom; McCaleb, George S., and Sprunt, Douglas H.; Seroflocculating Steroids, III, Chloro and Other Bile Acid Derivatives, J. of the Am. Chem. Soc., 79:2164, 1957.
Chang, Frederic C.; Feldstein, Aaron; Gray, Ransom, Jane; McCaleb, George S.; Sprunt, Douglas H.; Seroflocculating Steroids, IV. Unsaturated Bile Acid Esters; J. of Am. Chem. Society, 79:2167, 1957.
Sprunt, Douglas H. and Flaingan, Clyde C.; The Effect of Nutrition of the Production of Disease by Bacteria, Rickettsiae, Viruses: Advances in Veterinary Medicine VI, pp. 69–110, Academic Press, New York—1961.
Sprunt, Douglas H., The Autopsy in Training of "Clinical" Pathologists, Bull. of the Am. Path. XIV:141–142, No. 11, November 1960.
Coleman, Sidney A., Rube, Irma F., Sprunt, Douglas H., and Erickson, Cyrus C. Abnormal Vaginal Cytology with Exceptional Pathologic Correction. Am. J. of Clinical Pathology. 37:268–278. No. 3, March, 1962.
Smith, James F. and Sprunt, Douglas H. The Early Diagnosis of Cancer of the Oral Cavity. Southern Medical Journal. 55:502–509, No. 5, May 1962.
Sprunt, Douglas H. and Berton, William M. The Relationship of Socio-Economic and Racial Factors to Carcionoma of the Cervix as Indicated by a Mass Screening Program. Acta: Unio International is contra Cancrum (Louvain). 16:1768–1770, 1960.

Lyons, Jones, Quinn and Sprunt. Protein-Polysaccharid Complexes of Normal and Herniated Human Intervetebral Discs. Proc. Soc. Exp. Biol. & Med. 115:610-614, 1964.

Cannon, Bland, Picaza, Jorge A. and Sprunt, D. H. (by invitation). Study of the Relationship of Blood Uric Acid and Herniated Intervertebral Disc. Presented at the Eighteenth Annual Meeting of the Neurosurgical Society of America. San Juan, Puerto Rico, January 26-30, 1965.

The CHAIRMAN. Doctor, thank you very much.

Mr. ROGERS of Texas. I want to compliment the doctor on his statement. I think it is very clear, concise, and easily understood. I have no questions.

Mr. YOUNGER. I have no questions other than to congratulate the doctor.

Mr. KORNEGAY. I want to compliment the doctor also on a very fine statement and say that he put this statistical proposition in a good light which well explains a lot of the things we have heard here—the fact that you just cannot take two factors and automatically come up with a third. This is like the story I heard the other day.

Statistically speaking, since they put Smoky Bear posters in the New York subways, they have not had a single forest fire in Manhattan.

Thank you very much, Doctor.

The CHAIRMAN. Mr. Farnsley.

Mr. FARNSLEY. Thank you, Mr. Chairman.

Doctor, we have only had one man that I can remember who was competent in any of the social sciences before us; a psychologist working for the Surgeon General. He said he had made no studies, but he had read the literature, and, in his opinion, the warning on the package would cause the sale of cigarettes to be reduced. And a gentleman with great experience in the advertising field thought the same thing. He thought it would virtually eliminate cigarette advertising, although he later said maybe this would not happen. I am convinced a study ought to be made as to the effect of the labeling, as to whether it would cause consumption to go up or down.

However, it seems almost certain that if the warning on the advertising is passed by the Congress, we will be presenting a windfall of almost a quarter of a million dollars a year to the tobacco companies.

Have you found anything in the studies to the effect they are entitled to that?

It is a trick question. Do not answer it.

Dr. SPRUNT. I would like to say the labeling seems to me might be the old fable—if you call attention of the public—like the shepherd boy that yelled wolf so many times, and the people came out to help him, and there was not any wolf. And finally when there was a wolf, he got ate up.

It seems to me if you start labeling things now with no more proof than we have now, you may get in the same thing when something really comes along.

I do not think the proof is here now.

Mr. FARNSLEY. We used to say familiarity breeds contempt. The first time the Surgeon General told us to quit, a lot of us did. If he tells us several hundred times, it may lose its effect.

Dr. SPRUNT. I think we ought to spend more money on research—we should get more facts.

Mr. FARNSLEY. Thank you, Doctor. I have no further questions.

The CHAIRMAN. Doctor, thank you very much. We appreciate your presentation.

The committee will adjourn until 10 o'clock in the morning. We have at least four witnesses that we hope we can get to in the morning. I know these people, because of the positions they hold, are anxious to get back to their daily chores.

(Whereupon, at 4:25 p.m., the committee recessed, to reconvene at 10 a.m., Thursday, April 15, 1965.)

CIGARETTE LABELING AND ADVERTISING—1965

THURSDAY, APRIL 15, 1965

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to recess, at 10 a.m., in room 2123, Rayburn House Office Building, Hon. Oren Harris (chairman) presiding.

The CHAIRMAN. The committee will come to order.

We are pleased this morning to have as our first witness in connection with the cigarette hearings, Dr. William Ober.

Dr. Ober, will you come around, please.

Dr. Ober, I believe you are also a pathologist from the Knickerbocker Hospital in New York.

Dr. OBER. That is right, sir.

The CHAIRMAN. You may proceed.

STATEMENT OF DR. WILLIAM B. OBER, PATHOLOGIST, AND DIRECTOR OF LABORATORIES, KNICKERBOCKER HOSPITAL, NEW YORK

Dr. OBER. With your permission, it is a very great privilege to appear before this committee which has given such excellent attention to this interesting problem. I will read my prepared statement, and I may digress from it as the occasion warrants.

The CHAIRMAN. Thank you, Doctor. We are pleased to have you. You may proceed as you desire.

Dr. OBER. Thank you very much.

I am Dr. William B. Ober, of Tenafly, N.J., and New York. I am a doctor of medicine specializing in pathology. I am director of laboratories at Knickerbocker Hospital in New York, assistant professor of pathology at the Albert Einstein College of Medicine, associate professor of pathology at New York Medical College, and consulting pathologist to the 1st U.S. Army Medical Laboratory in New York. My curriculum vitae and list of publications are attached to my statement and will be filed with the committee.

I have been interested in a number of problems relating to cancer ever since 1948–50 when I was a research fellow at the National Cancer Institute. As a pathologist I have had the opportunity to examine about 10,000 cases of cancer in one organ or another over the past 18 years. I have probably examined about 1,200 cases of lung cancer both as surgically removed specimens and at autopsy. I am conversant with a reasonable proportion of the published literature regarding cancer of the lung. I should like to direct my statement to the question of the relationship of smoking to cancer of the lung.

With regard to smoking as a possible cause of lung cancer, I do not feel that the evidence which has been accumulated to date has anything more than a limited statistical value to indicate that excessive smoking may have a statistical association with lung cancer. It is one thing to say that if one analyzes the smoking history of a great many patients with cancer of the lung one finds that a large proportion of them have been heavy cigarette smokers for 20 or 30 years or longer. It is quite a different matter to say that a large proportion of those people who smoke heavily will develop cancer of the lung. Yet the proponents of the "smoking causes lung cancer" theory who have made the first statement would have us all believe that the second statement is true and that they have proved it.

If I may digress for a moment, I think what these people are trying to do is to imply there is a clear and present danger to excessive smoking. I think they have singularly failed to prove this, and I do not think there is any clear and present danger. I think the entire situation is very unclear indeed.

I remain skeptical and unconvinced by this sort of reasoning. As a matter of fact, the vast majority of people who smoke cigarettes heavily do not get cancer of the lung nor do they seem to be prone to develop other lung diseases to any greater extent than people who smoke moderately, occasionally, or not at all.

It is axiomatic that any scientific theory which attempts to explain any natural phenomenon must take into account all the known facts, both pro and con. A scientist is not permitted to choose the facts which support his theory and then disregard the ones which do not fit. To do this is tantamount to suppressio veri, a suppression of the truth, a type of illogic pardonable in electioneering speeches but not permissible in reasoned scientific statements. For example, in such countries as Holland, Switzerland, and Great Britain which have as accurate vital statistics as our own country the per capita consumption of cigarettes is significantly lower than in the United States, yet the mortality from lung cancer is significantly higher, almost twice as high in Great Britain as here. From this one observation alone it is apparent that some other factor or group of factors is operating to produce lung cancer. Nonetheless, the proponents of the "cigarette smoking" school have studiously avoided taking this well-documented fact into account.

Another item which is rarely mentioned by the anticigarette adherents is the distribution of cancers throughout the entire oral and respiratory tract. If we limit this point to squamous carcinoma, that is, a variety of cancer which is claimed to be induced by such inhalants as cigarette smoke, we rapidly discover that those areas which are exposed to the highest concentration of cigarette smoke are not the most frequent sites for squamous carcinoma to develop. Cancer of the larynx is much less common than cancer of the lung, and cancer of the trachea (windpipe) is extremely rare; yet both those structures receive a greater volume of smoke than the bronchi. Actually, the major bronchi are direct branches of the trachea and their histologic and cytologic structures are identical, yet the trachea which receives twice as much smoke as either major bronchus develops squamous carcinoma so rarely that many experienced chest surgeons and pathologists have never seen a case of it. Actually, it is truly a medical curiosity.

As one goes farther along the bronchial tree, the proportion of smoke gets less and less, as the air passages continue to subdivide and ramify.

Also, there is conflicting opinion regarding the site of the usual squamous bronchogenic carcinoma in the bronchial tree within the lung. When I was a student in the 1940's, I was taught that most bronchogenic carcinomas arose in secondary branches of the bronchial tree; i.e., fairly centrally within the lung, near the hilus, or the root of the lung. However, more recent studies, notably by Dr. L. Henry Garland, of San Francisco—Dr. Garland is professor of radiology at the University of California—and Dr. Averill A. Liebow, of New Haven, have shown that a much greater number of bronchial carcinomas arise peripherally; i.e., in the outermost parts of the bronchial tree. This is the part of the lung which receives the least exposure to smoke.

Over the past 15 or 20 years there has been a slow but steady decline in the occurrence of squamous carcinoma of the mouth, pharynx, and nasopharynx, yet these tissues also are in contact with as much of the inhaled smoke as the larynx and trachea. I do not think it unreasonable to ask that the anatomic distribution of lesions conform to the distribution of exposure to a suspected causative agent before one concludes that such an agent has a real causative relationship. It is not mere Humean empiricism which makes me deny cause and effect relationships in this question; what I expect of the proponents of a scientific theory is that their proposed cause bear a rational relation to the effect they claim it produces, not merely a statistical association. The proponents of the "smoking causes lung cancer" theory have been conspicuously weak in explaining the mechanism whereby cigarette smoke allegedly produces these lung cancers.

One piece of evidence that proponents of the smoking theory rely on heavily is that they have been able to extract certain chemical compounds from cigarette smoke which they have applied to the skin of certain inbred strains of mice and actually produce a few small epidermoid cancers. They haven't been able to produce lung cancer in these mice. It is always dangerous to extrapolate data from one species to another, even when the same organ in involved. There is almost no histologic similarity between the skin of a mouse and the bronchial lining of a human being. The argument is very much like the old saw, "A drop of this fluid on the tongue of a dog will kill a man."

What is more, if one is interested in the relationship of cigarette smoking to skin cancer in general, I can only observe that the index finger and third finger of a cigarette smoker's hand are exposed to heavy concentrations of tobacco smoke. Yet one almost never sees cancer arising in the skin of the fingers. In fact, almost all of the epidermoid cancers of the skin of the hand arise on the back of the hand which is hardly exposed to cigarette smoke at all. In fact, cancer of the skin of the hand is quite uncommon.

Historically, our knowledge of lung cancer in relation to possible external causes developed from exposure to industrial inhalants. The classical example came from central Europe where it was noted that there was a high incidence of lung cancer in the miners of Schneeberg and Joachimsthal. It took a number of years to ascertain the facts, but the consensus of medical opinion now is that the lung cancers were

probably due to inhaling radioactive dust from the ore in these mines.

I would emphasize that because a very high proportion of the miners so exposed did develop lung cancer this seems to be a reasonable cause-and-effect relationship. By way of contrast, not even the strongest opponent of cigarette smoking has claimed that anything but a small percentage of cigarette smokers develop lung cancer.

Likewise, in the United States there have been several well documented reports of a high incidence of lung cancer among men working in certain parts of the chromate-processing industry. The matter has been investigated with thoroughness by the U.S. Public Health Service, and I believe it is generally agreed that men who are exposed to the ore in a certain stage of the refining process have a high lung cancer risk. Again, I would emphasize that this is a situation in which a high proportion of the men exposed developed lung cancer, considerably in contrast to the cigarette smoking situation. I might also add that some support was obtained for this high rate of association in humans by animal experiments; some animals similarly exposed developed cancer of the lung.

I would like to digress at this point to read a sentence from a report by Dr. Hueper. This is a report that comes out of a Public Health Service monograph called "A Quest Into the Environmental Causes of Cancer of the Lung" and Dr. William C. Hueper is, I think, this country's leading authority on occupational cancer and the cause of cancer due to external causes in general. The last sentence in his report on page 45 is as follows:

> Finally, it may be noted that the evidence on hand justifiies the viewpoint that in arriving at a judgment in any medico legal dispute requiring the assessment of liability for the development of a respiratory cancer, any evidence incriminating specific occupational factors should be given preference over that possibly provided by a cigarette smoking history.

I think that is a very cogent statement and one very well worth remembering.

Even long before people got agitated about cigarette smoking in relation to lung cancer, it was well recognized by cancer epidemiologists that lung cancer was much less common in the rural population than in the urban population. This is as true today as it was 40 years ago. It is reasonable to believe that there is just as much cigarette smoking per capita in rural areas of this country as in cities. One obvious point to be investigated is atmospheric pollution.

The most promising angles, of course, are automobile exhausts and chimney smoke. A number of studies have already been carried out, and most people would agree that it would be a good idea to reduce air pollution, not only in terms of possible cancer prevention, but for general esthetic reasons as well. However, control of air pollution lacks the emotional appeal of an anti-cigarette-smoking drive. In any event, air pollution has certainly been increasing in the United States for the past 40 years or more, and I think it would probably yield useful results if further study was undertaken and preventive measures adopted. Simple justice would dictate that we approach air pollution first. The person who may get lung cancer from polluted air is exposed willy-nilly, the cigarette smoker has his choice of smoking or not.

The last point I shall make about cigarette smoking and lung cancer is this: I have examined many hundreds of lungs from smokers and nonsmokers. I cannot tell the difference grossly or microscopically between the lungs of a smoker and a nonsmoker. Even when I examine the lungs of a patient with lung cancer who was known to be a very heavy smoker, I cannot see any changes in the other lung or in the cancer-bearing lung which would point to the fact that he smoked.

Some studies have been made of the bronchial lining of the lungs of smokers as contrasted with nonsmokers. It has been stated that a lesion known as squamous metaplasia of the bronchial epithelium is more common in smokers than in nonsmokers, and the view has been presented that squamous metaplasia is a "precancerous change" in the epithelium, and that somehow this supports the idea that cigarette smoking causes lung cancer. Unfortunately for those who lean strongly on this sort of evidence, it cannot be taken at its face value. Squamous metaplasia is found in the lining of the trachea just as it is in the bronchi, yet cancer of the trachea is among the rarest cancers of the respiratory tract.

The term "precancerous change" in a segment of epithelium is very much like the small lesions that Dr. Moran showed you yesterday, I think it is a scientifically unjustified term. It puts the supposition into the conclusion, and I think this flies in the face of logic. I think the neutral term "squamous metaplasia" is much more appropriate. There is no proof that this squamous metaplasia does with any degree of regularity progress inevitably into invasive carcinoma. As a matter of fact, squamous metaplasia is observed very frequently at autopsy if you take enough sections of lung, as very small patches in the bronchial lining, a few cells here and few cells there, usually fairly well-separated in the bronchial tree. Their detection in lung tissues from autopsied subject depends, as Dr. Auerbach pointed out, on taking a large number of sections. That was an excellent study by Dr. Auerbach.

If I may digress for a moment, Dr. Auerbach, and I are both members of the Department of Pathology at the New York Medical College and I have a great deal of respect for him as a colleague. He is a very diligent and hard-working man, and he and I have looked at very much the same sort of material, although in slightly different places and we have come to completely opposite conclusions. I can say this without intending any professional disrespect for a learned colleague. Considering the present state of scientific knowledge regarding cancer of the lung and its relation to any sort of possible cause, it is perfectly permissible and perfectly reasonable to expect that two men of approximately the same age and same type of general interest could have completely different views and still maintain a good deal of professional respect and even affection.

If one takes just a few routine random sections from lungs at autopsy, one can miss the occasional patch of squamous metaplasia since over 80 or 90 percent of the lung is entirely normal in both smokers and nonsmokers. I hope no one will get the idea that this change is diffuse or that a single high-powered photomicrograph of squamous metaplasia represents the bronchial lining as a whole. I am sure Dr. Auerbach did not intend to give that sort of impression at all.

As I have said one finds occasional minute fields of squamous metaplasia in the lungs of nonsmokers with some frequency. They may represent the healing stage of a chronic pulmonary inflammation or infection.

In essence these changes are a form of healing rather than an inherently neoplastic change. They may be the result of exposing the bronchial lining to any number of air pollutants, industrial toxins, or infectious processes. There is no real proof that any given focus of squamous metaplasia will inevitably progress and develop into cancer.

As a matter of fact, if you look at Dr. Auerbach's studies, you will have to bear in mind they were all done on autopsied patients, and it is quite a different thing from the putting together the picture which some people would have you believe. You don't take a look at the bronchial epithelium of a man in 1950 and say, "Aha, there is squamous metaplasia," and then sew him up again and take a look in 1954 and say, "Oh, there is more squamous metaplasia and it looks worse," and then 4 years later open up the same piece of bronchus and say, "My God, this is going to turn into cancer any minute," and then 3 years later, "See, here is the cancer."

It isn't like this at all. It is an observation on this dead body and that dead body and another dead body; this is not the remorseless and inevitable progression of a minor change into a greater change then to a major change into a real cancer. It is quite a different type of observation. They are separate and distinct individual observations.

I do not think you can add these up and gain any great degree of cumulative weight from such an addition because they are not inherently and necessarily related by a logical or a biological nexus.

Also, there seem to be a number of lung cancers developing in lungs of known smokers without squamous metaplasia, and of course there are many instances where a few small patches of squamous metaplasia are found but no cancer.

By the same token we also see squamous metaplasia in the bronchial lining of patients who have had chronic lung infections but no evidence of cancer; we even find squamous metaplasia surrounding areas of lung tissue which have been damaged by having a blood clot or embolus squamous metaplasia, I do not think one can say with any assurance lodge in a nearby vessel, thereby producing a so-called pulmonary infarct.

As a matter of fact, I think one of Dr. Moran's slides yesterday showed just a lesion, a very active area of squamous metaplasia which was a healing phenomenon.

In view of the diversity of circumstances which may give rise to squamous metaplasia, I do not think one can say with any assurance that its presence indicates that a man has been a heavy smoker. As for the precancer aspect of squamous metaplasia, it seems to be a metaphysical and epistemological problem rather than a scientific one, as very few people can agree what the term means and implies.

I do not believe that cigarette smoking could be anywhere near so important a possible cause of lung cancer as recent reports indicate. I do not exclude it as a possible cause in certain highly susceptible individuals, but I do not think it wise or accurate to generalize this into a scientific rule. Naturally, one can never entirely exclude any inhalant as a possible cause of lung cancer. However, I can only point out that there may exist a multiplicity of possible etiologic agents or

causes which may induce a morphologically similar lesion by means of a pathogenetic mechanism common to them all. Put more simply, a given tumor in a given organ in one patient may look very much like a tumor in the same location in a different patient, look so much alike that one cannot tell them apart grossly or microscopically, yet may have developed from different causes. If one examines 100 cases of bronchogenic squamous carcinoma, most of the specimens will look pretty much like one another. There will be differences among them, to be sure, but they are no greater than the differences among human beings which enable us to recognize each other as individuals, yet we all look reasonably human. I don't think anyone is smart enough to be able to sort out of that group of 100 bronchogenic carcinomas those which he would claim could be attributed to radio-active mine dust. Chromate ore being refined, automobile fumes, cigarette smoke, a hypothetical virus, or Lord knows what. The tumors look so much alike that one can't tell them apart. I lose patience with people who pretend they can.

Lastly, I submit that there is a psychology peculiar to many of the sincere adherents to the "cigarette smoking causes lung cancer" theory. They belong to what I call the Puritan school of carcinogenesis. They tell us that smoking causes lung cancer, sexual intercourse causes cancer of the cervix, and drinking causes cancer of the throat. Lord help us all! What will they find next? I think if one starts off with the notion that anything a man does which gives him pleasure is probably sinful, it is only one step to think it is harmful, and the next thing to do is pass a law against it or to ask Congress to pass a law against it. It is all very well and good to be against sin, but I wish they would define it better.

The only really scientific statement one can make at the present time is that no one really knows what causes lung cancer. There are many external influences and inhalants which could possibly cause lung cancer, but the evidence that cigarette smoking does so is rather weak. The cigarette is only one of the numerous items present at the scene of a crime; that does not prove guilt. In fact, the proponents of the cigarette smoking theory are only trying to prove guilt by association, a phrase as distasteful to me as a scientist as must be to figures in public life.

Thank you very much for your kind attention.

The CHAIRMAN. Doctor, thank you very much.

The information to which you refer will be included in the record along with your statement.

Dr. OBER. Thank you.

(The information referred to follows:)

WILLIAM B. OBER, M.D.

CURRICULUM VITAE

Born: Boston, Mass., May 15, 1920.

Education Brookline, Mass., Public Schools; Harvard College, A.B. 1941 cum laude; Boston University School of Medicine, M.D. 1946.

Training: Intern in pathology, Beth Israel Hospital, Boston, 1947–48; assistant resident pathologist, Boston Lying-In Hospital, 1948; research fellow, National Cancer Institute, 1948–50; assistant pathologist, Armed Forces Institute of Pathology, 1950–52.

Positions: Chief, Division of Research and Training, American Registry of Pathology, Armed Forces Institute of Pathology, 1952–53; pathologist, Boston Lying-In Hospital, 1953–55; pathologist, Hackensack Hospital, 1953–55; director of laboratories, Knickerbocker Hospital, 1957–date.

Teaching: Instructor in pathology, Howard University, 1952–53; instructor in pathology, Harvard Medical School, 1953–55; instructor in surgery (surgical pathology), Columbia University College of Physicians and Surgeons, 1955–60; assistant professor of pathology, Albert Einstein College of Medicine, 1957–date; associate professor of pathology, New York Medical College, 1961–date.

Consultant: Sloane Hospital for Women, 1957–60; First U.S. Army Medical Laboratory, 1958–date; National Cancer Institute, 1960–date; Bronx Veterans' Administration Hospital, 1960–date; Margaret Sanger Research Bureau, 1960–date; New York Fertility Institute, 1962–date.

Diplomate: National Board of Medical Examiners, 1947; American Board of Pathology, 1952.

Societies: American Association of Pathologists and Bacteriologists; American Society of Clinical Pathologists; International Academy of Pathology; College of American Pathologists; Fellow, Royal Microscopical Society; Fellow New York Academy of Medicine; New York Academy of Sciences; New York Cancer Society; New York Pathological Society; New England Pathological Society; Washington, D.C. Society of Pathologists; New Jersey Society of Pathologists; The Harvey Society; Sigma Xi.

Licenses: New York, New Jersey, Massachusetts, California.

WILLIAM B. OBER, M.D.

LIST OF PUBLICATIONS

1. Boas, N. F. and Ober, W. B.: Hereditary exophthalmic goiter; report of eleven cases in one family. J. Clin. Endocrinol. *6:* 575–588, 1946.
2. Ayres, W. W., Ober, W. B., and Hamilton, P. K.: Post-traumatic subcutaneous granulomas associated with a crystalline material. Am. J. Path. 27: 303–315, 1951.
3. Morrison, H., Mixter, C. G., Schlesinger, M. J., and Ober, W. B.: Tuberculosis localized in the vermiform appendix. New England J. Med. *246:* 329–331, 1952.
4. Blumberg, J. M. and Ober, W. B.: Carcinoma in situ of the cervix: recurrence in the vaginal vault. Am. J. Obst. & Gynec. *66:* 421–425, 1953.
5. Ober, W. B. and Jason, R. S.: Sarcoma of endometrial stroma. Arch. Path. *56:* 301–311, 1955.
6. Ober, W. B., Palmer, R. E., and Glassy, F. J.: Rhabdomyosarcoma of the vulva and vagina. Arch. Path. *56:* 364–373, 1953.
7. Ober, W. B. and Edgcomb, J. H.: Sarcoma botryoides in the female genital tract. Cancer 7: 75–91, 1954.
8. Ober, W. B. and Reiner, L.: Cancer of the cervix in Jewish women. New England J. Med. *251:* 555–559, 1954. (Reprinted as part of Transaction 5th Meeting Intl. Soc. Geog. Path. in Schweiz. Ztsch. allg. Path. u. Bakt. *10:* 774–780, 1955.)
9. Ober, W. B. and Black, M. B.: Neoplasms of the subcoelomic mesenchyme, Arch. Path. *59:* 698–705, 1955.
10. Ober, W. B. and Moore, T. E., Jr.: Congenital cardiac malformations in the neonatal period. New England J. Med. *253:* 271–275, 1955.
11. Ober, W. B., Velardo, J. T., Greene, R. C., and Taylor, R. J.: Desmoid tumor of the popliteal space occurring during pregnancy: report of a case with bioassys. J. Nat. Cancer Inst. *16:* 569–577, 1955.
12. Ober, W. B. and Bernstein, J.: Observations on the endometrium and ovary of the newborn. Pediatrics *16:* 445–460, 1955.
13. Ober, W. B. and LeCompte, P. M.: Acute fatty metamorphosis of the liver associated with pregnancy. Am. J. Med. *19:* 743–758, 1955.
14. Jewett, J. F. and Ober, W. B.: Primary pulmonary hypertension as a cause of maternal death. Am. J. Obst. & Gynec. *71:* 1335–1341, 1956.
15. Roby, C. C., Ober, W. B., and Drorbaugh, J. E.: Pregnanediol excretion in the urine of new born male infants. Pediatrics *22:* 877–881, 1956.
16. Ober, W. B. and Wharton, R. N.: On the "Phrygian Cap." New England J. Med. *255:* 571–572, 1956.
17. Ober, W. B., Reid, D. E., Romney, S. L., and Merrill, J. P.: Renal lesions and acute renal failure in pregnancy. Am. J. Med. *21:* 781–810, 1956.

18. Ober, W. B., Grady, H. G., and Schoenbucher, A. K.: Ectopic overian decidua without pregnancy. Am. J. Path. *33:* 199–217, 1957.
19. Brown, D. E. and Ober, W. B.: Sickle-cell thalassemia (microdrepanocytic disease) in pregnancy. Am. J. Obst. & Gynec. *73:* 773–784, 1958.
20. Ober, W. B. and Kaiser, G. A.: Hamartoma of the parathyroid. Cancer *11:* 601–606, 1958.
21. Ober, W. B., Smith, J. A., and Rouillard, F. C.: Congenital sarcoma botryoides of the vagina. Cancer *11:* 620–625, 1958.
22. Ober, W. B.: Uterine sarcomas: Histogenesis and taxonomy. Ann. N.Y. Acad. Sci. *75:* 568–585, 1959.
23. Ober, W. B. and Tovell, H. M. M.: Mesenchymal sarcomas of the uterus. Am. J. Obst. & Gynec. *77:* 246–268, 1959.
24. Ober, W. B.: The Endocrine Pathology of the Female Reproductive Tract. Ch. 10 in Essentials of Human Reproduction, ed. J. T. Velardo, Oxford Univ. Press, 1959.
25. Ober, W. B., Bruno, M. S., Simon, R. M., and Weiner, L.: Hemoglobin S–C disease with fat embolism. Am. J. Med. *27:* 647–658, 1959.
26. Ober, W. B.: Historical perspectives on trophoblast and its tumors. Ann. N.Y. Acad. Sci. *80:* 3–20, 1959.
27. Ober, W. B. and Tovel, H. M. M.: Malignant lymphoma of the uterus. Bull. Sloane Hosp. for Women. *5:* 65–75, 1959.
28. Ober, W. B.: Solid ovarian teratoma with struma ovarii, theca lutein reaction, and endometrial hyperplasia. J. Obst. & Gynec. Brit. Emp. *67:* 451–454, 1960.
29. Ober, W. B., Berg, P., Tuchman, M., and Redner, W. J.: Acute trichinosis, Festschrift, Rudolph Virchow Soc., pp. 320–362, 1960.
30. Ober, W. B., Bruno, M. S., Jones, F. M., Jr., and Weiner, L.: Fatal intravascular sickling in a patient with sickle-cell trait. New England J. Med. *263:* 947–950, 1960.
31. Bailey, O. T., Ober, W. B., and Bruno, M. S.: Central pontine myelinolysis. Am. J. Med. *29:* 902–906, 1960.
32. Ober, W. B. and Fass, R. O.: The early history of choriocarcinoma. J. Hist. Med. & Allied Sci. *16:* 49–73, 1961. See also: Proc. Rudolph Virchow Soc. *19:* 124–129, 1960.
33. Ober, W. B. and Kaiser, G. A.: Pregnanediol: Methods, limitations, and applications. Am. J. Clin. Path. *35:* 297–318, 1961.
34. Narasimhan, P. and Ober, W. B.: Sarcoidosis: report of a fatal case with myocardial involvement. Indian Pract. *14:* 205–213, 1961.
35. Ober, W. B. and Grady, H. G.: Subinvolution of the placental site. Bull. N.Y. Acad. Med. *37:* 713–730, 1961.
36. Ober, W. B.: Sarcoidosis. GP *24:* 88–89, 1961.
37. Ober, W. B.: Seminar on Obstetrical and Gynecological Pathology. Armed Forces Institute of Pathology, Washington, D.C. 1961.
38. Janovski, N. A., Schulenfrei, R., and Ober, W. B.: Adenocarcinoma of the endometrium: Report of a case developing after pelvic irradiation associated with ovarian hilus cell hyperplasia. Am. J. Obst. & Gynec. *82:* 1186–1191, 1961.
39. Cutler, A., Ober, W. B., Epstein, J. A., and Kupperman, H. S.: The effect of 1–(*p*–2–diethylaminoethoxyphenyl)–1–phenyl–2–*p*–anisyl ethanol upon rat pituitary and uterine response to estrogen. Endocrinology *69:* 473–482, 1961.
40. Ober, W. B.: Guest Editorial: Information for the pathologist. GP *25:* 80–81, 1962.
41. Ober, W. B.: Embryonal carcinoma of testicular type arising in the gonad of a true hermaphrodite. Bull. Jewish Memorial Hosp. *6:* 94–102, 1962.
42. Berg, P. and Ober, W. B.: Endocardial fibroelastosis associated with hypoplasia of the right coronary artery in an adult. New England J. Med. *266:* 863–866, 1962.
43. Salomon, M. I., Narasimhan, P., Bruno, M. S., and Ober, W. B.: Renal lesions in essential hypertension: The problem of correlation between renal biopsy and clinical parameters. Angiology *13:* 216–225, 1962.
44. Buckingham, J. C., Hetz, H., and Ober, W. B.: Carcinosarcoma of the endometrium. Am. J. Obst. & Gynec. *83:* 1534–1539, 1962.
45. Berg, P., Tuchman, M., Redner, W. J., and Ober, W. B.: Acute trichinosis. GP *26:* 82–90, 1962.

46. Bruno, M. S., Ober, W. B., Kupperman, H.S., and Epstein, J. A.: Coexistent Addison's disease and thyrotoxicosis. Arch. Int. Med. *110:* 155–161, 1962.
47. Ober, W. B.: Gynecologic biopsies in office practice. GP *26:* 112–120, 1962.
48. Ober, W. B.: The endometrial biopsy in office practice. GP *27:* 108–112, 1963.
49. Ober, W. B., Pollak, A., Gerstman, K. E., and Kupperman, H. S.: Krukenberg tumor with androgenic and progestational effects. Am. J. Obst. & Gynec. *84:* 739–744, 1962.
50. Salomon, M. E., Bruno, M. S., and Ober, W. B.: Percutaneous renal biopsy: Its importance in research and clinical medicine. New York State J. Med. *62:* 3248–3254, 1962.
51. Baron, H. C. and Ober, W. B.: Parotid gland atrophy. Arch. Surg. *85:* 1042-1044, 1962.
52. Janovski, N. A., Weiner, L., and Ober, W. B.: Soap intoxication following criminal abortion. New York State J. Med. *63:* 1463–1487, 1963.
53. Daino, J. A., Tchertkoff, V., Akhavan, T. H., and Ober, W. B.: Leydig cell tumor of testis in male pseudohermaphrodite with testicular feminization. New York State J. Med. *63:* 2258–2262, 1963.
54. Roland, M. and Ober, W.B.: The endometropic effects of Provest in ovulatory and anovulatory patients. Internat. J. Fertil. *8:* 619–634, 1963.
55. Roland, M. and Ober, W. B.: Los progestagenos sinteticos en la infertilidad endocrina y en los trastornos menstruales. Memoria 4e Cong. Mex. di Gin. y Obst. 359–363, June 1963.
56. Bruno, M. S., Grier, W. R. N., and Ober, W. B.: Spontaneous laceration and rupture of the esophagus and stomach. Arch. Int. Med. *112:* 574–583, 1963.
57. Ober, W. B.: Endocrine Pathology. Ch. 33 in Kupperman, H. S. Human Endocrinology, 3 vol. F. A. Davis Co., Philadelphia, 1963.
58. Ober, W. B. (unsgined): Editorial. The Boerhaave syndrome. J.A.M.A. *187:* 57, 1964.
59. Roland, M., Clyman, M. J., Decker, A., and Ober, W. B.: Classification of endometrial response to synthetic progestagen-estrogen compounds. Fertil. & Steril. *15:* 143–163, 1964.
60. Ober, W. B., Clyman, M. J., Decker, A., and Roland, M.: Effects of synthetic progestagens on endometrial morphology. Internat. J. Fertil. (In press.)
61. Ober, W. B., Bruno, M.S., and Rankow, R.: Congenital pharyngeal pouch malformation with hyperparathyroidism. (In preparation.)
62. Ober, W. B., Price, E. B., Jr., and Hertz, R.: The pathology of choriocarcinoma. (In preparation.)
63. Ober, W. B.: Luteinization: Notes toward a critical definition. (In preparation.)

The CHAIRMAN. We observe your background with a great deal of interest, and, of course, appreciate having that along with the information in order to make this record.

I must confess with all of these outstanding people like yourself testifying on both sides, and, as you so appropriately said a moment ago, since great minds and able people can disagree and honestly so, I am afraid our task is not made any easier.

I do want the record to be made as clear as possible.

Now, in view of this scientific controversy over the exact causal relationship between smoking and certain diseases, as an example, cancer, heart disease, and so forth, would you say that there is presently enough information to warrant putting people, that is, individuals, on notice that some hazard does exist?

Dr. OBER. No, sir. I would not think so.

The CHAIRMAN. You would not think so?

Dr. OBER. I would think that there is sufficient scientific doubt so that it would not be a good idea to transform the doubts of scientists into legislative action.

As you say, the scientific doubts do not make the tasks of legislators easier, they make them more difficult. What you have to do and what you have been doing with great patience and great interest is to listen

to a succession of scientists presenting divergent views. Your responsibility is to absorb it, assimilate it, and make legislative sense out of it, which is a very difficult task and which I, for one, would not be able to do. But I think in an atmosphere of such doubt and indecision and with so many conflicting opinions to come out with a statute is not a very meaningful legislative act.

In the first place, if you will put people on notice, what would you be warning them against? Not very much, if anything, as far as I can see.

The CHAIRMAN. Would I be correct in saying that, and I am asking for an opinion now, from your own knowledge and background and experience, which is rather extensive, should the Congress require some kind of notice on the label or in advertising that a hazard does exist, do you think that that would be a legislative requirement that could not be sustained by the facts and, therefore, would be a legislative immorality?

Dr. OBER. I wouldn't say it would be legislative immorality, because immorality depends largely upon the intents of the legislator, and I am sure that the people here intend well.

I hope at least to be able to offer an opinion which is meaningful in terms of what is known and what is not known, and I don't think we know enough to urge Congress, our elected representatives, to pass any sort of law because I don't think the medical profession can make any really firm declaratory statement about the cause of lung cancer or of the relationship of smoking to it. There are, of course, many doctors who do not share this point of view. They will advise you to the contrary. On the other hand, I might point out that if a doctor really believed that smoking cigarettes caused lung cancer, he shouldn't just ask you to put a label in small type of a package. He should ask for a law to outlaw the sale, manufacture, and distribution of cigarettes. They don't do this. They come with this weak-kneed little business of putting a label on a package of cigarettes. This is so inconsistent——

The CHAIRMAN. I posed that very question to Dr. Terry, and his reply was that he didn't think that people would accept it, indicating that that was the reason why he didn't advocate it.

Dr. OBER. Well, I think most people are reasonably intelligent; at least most of the American public is accustomed to making up its own mind about things. In view of the fact that doctors disagree, I think the public is going to say, well, until they straighten the matter out, we are going to do as we choose.

I don't think that is an unreasonable point of view for a lay person to adopt. I think it is a very sensible one.

The CHAIRMAN. Thank you very much.

Mr. Rogers?

Mr. ROGERS of Texas. I reserve my time to you, Mr. Kornegay.

Mr. KORNEGAY. Thank you.

The CHAIRMAN. Mr. Kornegay?

Mr. KORNEGAY. Dr. Ober, I want to first thank you very much for coming here and for the splendid formal statement you made on a very difficult subject.

Now, do you see any danger, any social danger, Doctor, in pursuing a course of, say, stamping guilt on cigarette smoking and saying that causes lung cancer?

Dr. OBER. Well, I don't think it would be an accurate——

Mr. KORNEGAY. Let me restate the question: Suppose your view in the matter would not prevail, and that the view that it does cause lung cancer prevailed. What could be the scientific results of that sort of proposition?

Dr. OBER. I am not sure that I follow your thought.

Mr. KORNEGAY. Let me put it to you another way. Suppose that the Congress and most of the people agreed that cigarette smoking causes lung cancer. Then, wouldn't scientists and many other people and the general public supporting research programs into the area of lung cancer perhaps conclude that the answer had been found?

Dr. OBER. Yes.

Mr. KORNEGAY. Is that a realistic danger, this idea?

Dr. OBER. You mean if you decide once and for all that smoking is the major cause of lung cancer?

Mr. KORNEGAY. That is right.

Dr. OBER. To some extent, yes, research would be diverted.

Mr. KORNEGAY. I am prompted to ask you that question because we had quite a good expert to testify last year at these hearings and he was a statistician and he said back many years ago in Europe when pellagra was a very common disease there was a great deal of evidence, statistical in nature, that that was caused by eating corn. Of course, it was later found out, and I guess everybody knows now that eating corn does not cause pellagra. But if that principle had been accepted at that time by the people, and no further inquiry had been made into the cause, then we would never have found out what caused pellagra, would we?

Dr. OBER. Now, I see your point very clearly, and I think that is quite true. I think if there were a law passed which says that the major proportion of the medical profession thinks smoking causes lung cancer, Congress agrees, and passed this law, and there is no point in investigating further.

We would lose out on all our studies of air pollution and industrial exposure and all our pursuits and all of our virologic research, I wouldn't say suffer, but would be directed into different sections, because virologic——

Mr. KORNEGAY. If there was an answer to that problem, it would cause people to drop research in that problem, isn't that right?

Dr. OBER. Yes; I think it would be a net loss to society.

Mr. KORNEGAY. Your answer prompts me to the next question: You pointed out very beautifully in your statement the incidence of lung cancer varies from country to country and from rural areas to city areas. Let me ask you, doesn't it also vary or the incidence of lung cancer vary from city to city in the United States?

Dr. OBER. Oh, yes; it does, quite considerably. As a matter of fact, this is one point which is so clear to me because I live there, and it may not be so clear to you gentlemen, I live right beside New York City in Tenafly, N.J., which is just across the Palisades. Dr. Auerbach's hosiptal is 20 or 30 miles south of me in East Orange, and if you have ever driven up the New Jersey Turnpike approaching New York City, and you drive through that industrial zone, you will see the dense pall of smoke that hangs over it, something like Pittsburgh used to be before they cleared up the atmosphere. It is really a dreadful

air. And this, I think, would account for much of the squamous metaplasia that he sees in the patients in that particular area. Also, he is at a veterans' hospital and many of these patients are workers in the industrial plants. Not many of his subjects work out in the rural areas of Sussex County and up in Middlesex County. They work in and around the heavily populated area of Essex County and that is an area of great smoke density and also an area where there is a great deal of lung cancer.

This is also true in New York City, in which the atmospheric pollution is very high.

There was a time you know when you used to be able to drive down the West Side Highway and see all the way down on a sunny day. You can do this if you get up early in the morning. But if you leave your house by 8:30 as most people do, there is a faint haze over the city and by 10 o'clock you can't see downtown too well. I think that is one reason why there is an awful lot of lung cancer in New York City. But if you go to a place like Columbus, Ohio, or you go to a city like Washington, D.C., which I know somewhat better, the air here is quite a good deal cleaner and purer as there is very little heavy industry in and around Washington, as you all know. And I think there is less lung cancer in Washington than there is in New York.

Mr. KORNEGAY. Based upon that statement in your findings there is some relationship between the incidence of lung cancer and the smog.

Dr. OBER. Yes.

Mr. KORNEGAY. Atmospheric conditions.

Dr. OBER. I think that is a very important point to investigate.

Mr. KORNEGAY. I agree with you, and I have been somewhat surprised and disappointed at the same time that many of the experts, some of them anyway, wanted to push that aside and not give it any consideration.

Dr. OBER. Well, I return to a basic point of morality. With air pollution or atmospheric pollution, the entire population is exposed willy-nilly. They have no choice in the matter except giving up their jobs and moving to another community.

Whereas, a person who smokes, like myself or any number of other people, we do this out of our own free choice. I think it is more important to protect the public at large and to investigate air pollution than to concentrate on the fairly narrow issue of cigarettes.

Mr. KORNEGAY. Dr. Ober, if a person inhales cigarette smoke, assuming that he, the health of a person in that his chest and his body is normal, wouldn't the smoke go into each lung with approximately the same density?

Dr. OBER. Yes; that is quite true.

Mr. KORNEGAY. Now, when we find cancer of the lung, do we find it in both lungs?

Dr. OBER. Well, cancer of the lung may be found, of course, in either lung.

Mr. KORNEGAY. Yes.

Dr. OBER. It is uncommon, very, very uncomon, and I must say that I don't think I have ever personally seen a case in which a man had two separate primary cancers, one in each lung.

Mr. KORNEGAY. That is the point.

Dr. OBER. What you usually see is that a man will have one cancer here, and that the other lung will be essentially normal. By the time you get it at autopsy there may be a little secondary pneumonia in it or something else that killed a man in a debilitated state. But it is certainly not a cancerous lung and there is nothing in it that will enable you to tell that he smoked or he was likely to get cancer. He might have a few areas of squamous metaplasia the same as other people do.

Mr. KORNEGAY. Don't you find squamous metaplasia in people who do not smoke?

Dr. OBER. Yes, indeed.

Mr. KORNEGAY. I think Dr. Auerbach, who was here the day before yesterday, described that condition as a precancerous lesion.

Dr. OBER. That is right. That is what he said.

Mr. KORNEGAY. But as I understand you, you do not agree with that theory at all?

Dr. OBER. Let me put it this way: I don't think the theory is so well established that I could agree with it. It is, of course, conceivable that in some cases squamous metaplasia does go on and get worse and turn into cancer; that could happen.

Mr. KORNEGAY. But it is not the natural and irrevocable conclusion?

Dr. OBER. That is right. I don't think it is the usual course of events. I don't think it is inherent in the nature of the lesion. Squamous metaplasia is a healing process and the place where we first began to learn about squamous metaplasia was not in the lung but in the neck of the uterus. It is such a common lesion that any woman who has borne children is going to have some form of squamous metaplasia, be it mild or fairly extensive. But most of these women don't develop cancer of the cervix.

Mr. KORNEGAY. Almost to the contrary, isn't it true that the incidence of cancer is greater in women who have not borne children than those who have?

Dr. OBER. No, with regard to the cervix, this is not true, sir.

Mr. KORNEGAY. It is not?

Dr. OBER. Cancer of the cervix is characteristically more common in women who have borne children, but it is not necessarily related to the fact that they have squamous metaplasia. The cervix, of course, is exposed to any number of possible insults and is actually exposed to the bacterial flora of the vaginal canal. It does develop low-grade chronic infections which heal automatically, I shouldn't say automatically, but they heal without symptoms. Almost any time you take a biopsy of the cervix for one reason or another, there is a mild degree of inflammation and you sign it out in your pathology report as chronic cervicitis with squamous metaplasia. Very few of these women develop anything resembling cancer; as a matter of fact, the death rate from cancer of the cervix has fallen very sharply during the past 20 years, all over the country.

Mr. KORNEGAY. Are you acquainted with Dr. Hueper?

Dr. OBER. Yes, sir; yes indeed.

Mr. KORNEGAY. Is he not an outstanding recognized scientist in this area?

Dr. OBER. Yes; I think he is one of the outstanding scientists in the world in this field, and I have the greatest respect for his opinions. He is the gentleman I quoted from.

Mr. KORNEGAY. Yes. I had occasion to read one of his latest volumes. Have you seen the latest book?

Dr. OBER. No; I haven't had an opportunity to examine it.

Mr. KORNEGAY. I think that is all.

Thank you very much.

Mr. ROGERS of Texas. Mr. Younger?

Mr. YOUNGER. Thank you very much.

Dr. Ober, you are familiar with this report "Smoking and Health" by the Advisory Committee of the Surgeon General?

Dr. OBER. Yes; I have looked at it in the past.

Mr. YOUNGER. Were you asked at all or were you advised of the hearing or given an opportunity to testify before that Committee when they investigated?

Dr. OBER. No, sir; I was not advised that hearings were being held. I did not know that this report was in preparation until approximately a few days or a week before it was distributed by mail to, I think, every physician in the country as well as a large number of other interested people.

Mr. YOUNGER. In other words, the medical profession was not notified at all that the Surgeon General and his committee was conducting this investigation?

Dr. OBER. I can only speak for myself. I was not informed. Maybe other people were. I don't know. I don't know how they went about it, and I don't know how the Commitee operated.

Mr. YOUNGER. Now, how about the President's Committee on Cancer and Stroke?

Dr. OBER. I knew about that Committee, yes; because certain of the physicians who were involved are known to me personally. Knowing them, I felt no great compulsion to coming down to testify because they all knew my views, anyhow.

Mr. YOUNGER. But they didn't follow them.

Dr. OBER. They are entitled to their opinion, sir. This is what I have told many of my residents. "You are entitled to your opinion, young man, but you are wrong."

Mr. YOUNGER. I notice the conclusion here in regard to cancer—where, No. 1, cigarette smoking is causally related to lung cancer in men. The magnitude of the effect of cigarette smoking far outweighs all other factors. The data on women, though less extensive, point to the same direction.

You have used examples of other factors that come into the cause of cancer. Do you believe cigarette smoking far outweighs?

Dr. OBER. No, sir; I do not. I think that the statement which you have read is a statement which reverses my conception of proper proportion in this matter. I think other things are much more important than cigarette smoking.

On the other hand, you know, the person who attacks cigarette smoking has a very intellectually easy task. He stands there, and it is a very nice stance to be able to adopt, pointing an accusing finger at a cigarette. "This does it, this is the culprit," and then the rebuttal is, the sort of mild rebuttal, "it is very interesting to hear you say that, Doctor, but I am not so sure of your evidence," and this never sounds so convincing as the prosecution. I am sure many of you gentlemen have legal experience, and you know the difficulty of the neutral

stance and the sort of dispassionate sort of weighing of evidence, "well, that was a fine speech and certainly an area worth studying, but is it as convincing as he makes it out to be?"

I frankly don't think it is. I have to adopt this sort of neutral attitude. It reminds me of a cartoon I once saw that dealt with two people coming back from some demonstration. They were carrying their picket signs at half-mast and they arrived at their home or apartment and the woman was there to greet them, "How did it go?" "Oh, we were doing fine until cooler heads prevailed."

Well, what I am trying to do is present the attitude of a cooler head. I hope I am right.

Mr. YOUNGER. Another conclusion which they make is rather interesting to me: "The casual relation of the smoking of pipes to the development of cancer of the lip appears to be established." Yet nothing is said about pipe smoking. There is no recommendation at all about putting a label on pipe tobacco. But in their conclusion they say that it appears to be a cause of cancer of the lip.

Dr. OBER. Well, you see this is characteristic of that Puritan type of mind. They have got a culprit. They really believe in it. It is like burning a heretic. They are not interested in minor things like cancer of the lip and pipe tobacco. They have got their culprit and they are fixed on it. It has really become a symbol with many of these people, and they get very emotional about it, in faculty meetings, and department proceedings. Instead of presenting it with a view to rational and normal logic and the necessary steps of a logical chain of events, their emotions override their scientific judgment.

Mr. YOUNGER. Thank you very much, Doctor.

Mr. ROGERS of Texas. Mr. Van Deerlin?

Mr. VAN DEERLIN. Thank you, Mr. Chairman.

I hope, Doctor, that no one reading the penultimate paragraph of your testimony will judge that Congress is about to move against all sinful lusts of the flesh, and I'm sure I speak for my colleagues.

Dr. OBER. That is a very encouraging note. I will carry it home with me.

Mr. VAN DEERLIN. Just to keep the record straight, Doctor, inasmuch as earlier witnesses have been asked questions regarding their sources of support, and I imply nothing by putting the question, have you received fees for, performed research for, or have you shared in grants provided by any element of the tobacco industry?

Dr. OBER. No, sir.

Mr. VAN DEERLIN. This would cover honorariums for lectures or fees for written articles or anything along this line?

Dr. DBER. That is correct. I have received no fees.

Mr. VAN DEERLING. Now, there is some suggestion in some of the testimony offered here this morning that a law placing labels on cigarettes, or labeling advertising with warning of health hazards, would somehow result in a cessation of research into air pollution and other possible sources of lung cancer. You don't suggest that this would be true, do you?

Dr. OBER. Yes; I think that could happen. You see, research people have to be supported by funds. You just can't go out and do research without basis of support. If the etiology of lung cancer becomes a legislative fixed point, funds for research into the possible

causes of lung cancer will inherently diminish because the available funds will be diverted into other fields, such as cancer of the stomach, the liver, the intestine, the cervix, corpus uteri, all of which are very important, very interesting and certainly useful. I wouldn't say that people who go into research do so because they are trying to wheedle money out of people, but if it becomes very difficult to get research funds for a given project, the same technique is often directed at an organ or disease which is more attractive to the granting agency. There are a good many people who are doing research on cancer of the lung because it is an important thing and there are funds available for it. But they are really interested not in the fact that it is lung cancer per se; they would just be as happy as working on cancer of the stomach or salivary glands or whatever. Let us say they are virologists or cytogeneticists and they are interested in breaking up nuclei into their component parts and studying chromosones and they are really interested in their own particular discipline, whatever it happens to be, and the object of study is merely the field of operations, and they are perfectly willing to choose another field, if another field is more attractive, but not for the sake of their discipline.

Now, somebody raised yesterday a very interesting point which is something we all know about, and that is the distribution between males and females of lung cancer and it is much more common in men. Everybody knows this, and there was a vague hint in the background yesterday afternoon that this might have some endocrinologic basis, and this, of course, is something which should be studied.

There has been little work done on endocrinology in relation to lung cancer because the endocrinologists have found other areas which are more interesting to study, such as the adrenals, such as the ovaries—a great deal of work has been done on them. Such as in the field of human fertility; as a matter of fact, animal fertility as well, because there is a good deal of money available from agricultural colleges and institutions and a great deal of endocrinologic knowledge has come from this source.

If the problem of fertility were discontinued or if some miracle were to happen and we could suddenly unravel all the tangled processes involved in human reproduction, these endocrinologists would then have to look for something else to apply their discipline to. It might be lung cancer. But that is not their primary concern at the moment.

If you pass a law which sort of resolves in the public mind the issue of lung cancer you will divert these people to studying cancer of some other organ, which may be a very important thing to do. But it may stop them from studying air pollution and industrial toxins and things of that sort. That is where the loss will be. It will be a diversion of interests.

Mr. VAN DEERLIN. Of course people in urban centers like Los Angeles that are suffering heavily from smog and air pollution are going to want to keep alive pretty effective research into all aspects of this problem.

Dr. OBER. Yes, but you see it lacks the drama of the cigarette smoking. These people get up and say that the little white cylinder does it all. It is something so very real and tangible whereas air pollution is so vague—a little haze over the city—and people don't pay much attention to it.

Mr. VAN DEERLIN. Of course we, as Members of Congress, except for one member of the committee, who is an M.D.—he is not here today—can't really pass judgment on the fine points of medical testimony. We have to judge these people who are offering it to us. I gather that your regard is not high for the men who made up the panel of the Surgeon General's Advisory Committee.

Dr. OBER. Oh, I wouldn't say that. No; I have a very high personal regard for those particular members with whom I am acquainted. I just don't happen to agree with their scientific results or the way they formulated them.

Mr. VAN DEERLIN. Well, you have offered testimony which suggests an opinion that they are bluenoses.

Dr. OBER. Well, I come from Boston originally, so I am quite used to that. [Laughter.]

Dr. OBER. I grew up with such people. That is why I know them. I don't think any the less well of them. They just can't help it.

Mr. VAN DEERLIN. It is not my view of holding high regard.

Just one final question: Would you, as a doctor, advise any nonsmoking patient to take up smoking?

Dr. OBER. No; I don't advise patients about smoking. I think that is the sort of thing that every man ought to be able to decide for himself.

Mr. VAN DEERLIN. Well, as a pathologist, you don't usually reach them until after they have passed to their reward, anyhow.

Dr. OBER. This is not entirely true. Although I do a fair number of autopsies, I also do a fair amount of nonautopsy work, and one of the things I have been doing lately is working with some patient in regard to a certain specific problem, so I do see some patients, although I don't see them as private patients in the accustomed sense of the word, but I do deal with them as living human beings.

Mr. VAN DEERLIN. Do you know any physician, doctor, who would consider smoking beneficial?

Dr. OBER. No; I think that my attitude and the attitude of most of the people who agree with me, is that it is a matter of indifference.

Mr. VAN DEERLIN. It can't help you or hurt you?

Dr. OBER. That is right.

Mr. VAN DERRLIN. Thank you.

Mr. ROGERS of Texas. Mr. Callaway?

Mr. CALLAWAY. We did have some testimony by Dr. Auerbach who tried to point out some specific things that smoking does. You disagree with his testimony and certainly I am not qualified to judge that. I can only listen to both of you.

But most of the testimony has been, as you said, statistical. I wonder, is your main objection to the statistical evidence itself or do you agree with the statistics, but object to the conclusion.

Dr. OBER. I challenge two points: One, the use to which it has been put; and second, the general matter of scientific logic. A statistical association merely defines an area to be investigated more fully and more carefully and I think dispassionately. No scientific theory of cause and effect is complete without some statement as to mechanism, be it a physical mechanism, a chemical mechanism, a biochemical mechanism, a physiological mechanism. To magnify statistical association to the proportions which it has been done in the report which is before

you, the Surgeon General's report, and in the published reports of similar nature, I think, is doing a disservice to the cause of scientific reasoning.

Mr. CALLAWAY. I understand your objection on that basis but do you have any objection to the actual figures that a certain percent of these people did smoke cigarettes, a certain percent did smoke cigars and a certain percent did get lung cancer, do you know of any objection to the statistics themselves?

Dr. OBER. You mean were the facts correctly and accurately gathered good so far as you know? I have no opinion on it because I wasn't there when the facts were gathered.

Mr. CALLAWAY. But you have no reason to doubt them?

Dr. OBER. I have to abide by my faith in the integrity of my colleagues. I can merely criticize them on the more general grounds of their interpretation.

Mr. CALLAWAY. A statistician likes to get into what is called a statistical significance which means under the law of chance it is unlikely that such a relationship would happen. As large as these statistics are, you can almost rule out a chance relationship between lung cancer and smoking.

If you feel it hasn't been shown scientifically that cigarette smoking does relate to lung cancer, what are your suggestions as to the cause. since it can hardly be chance.

Dr. OBER. That is one of the troubles of statistics, and I think you are probably better at them than I am, sir, because I am not good at them at all. I read these tables and I look at them and there are a lot of numbers, but they are not terribly meaningful except in this business of defining an area and that is as far as I can go.

Mr. CALLAWAY. These figures, as I understand them, show that a certain percent of people who smoke cigars get cancer, and a certain higher percentage smoking cigarettes get cancer. There is no cause and effect shown by these statistics—it could be something else but apparently it has got to be something—it is not likely to be chance.

Dr. OBER. Let me put it this way. Let me give you an analogy. Many years ago there was a thing known as a miasma which we now recognize as malaria. It was noted that it occurred chiefly in people who lived in the swampy areas. If you are familiar with the Roman marshes, you know the elaborate system of drainage they developed many, many years ago during the time of the Roman Empire. They tried to drain these areas because they gave off offensive odors but the miasma persisted through the Middle Ages and persisted through Renaissance medicine until all of a sudden in the 19th century a chap by the name of Sir Ronald Ross discovered the malarial parasite.

It was not because of people living in the swampy area but the mosquito that lived in the area. All of the statistical associations about where these people lived and plotting out a map of Rome as to high lands, wet lands, low lands was nonsensical.

It merely defined an area to be investigated scientifically and when the scientific investigation was done they did find the reason and you could have all the residential statistics and all the barometric determinations, and so forth, but it was meaningless; the problem had to do with mosquitoes.

Mr. CALLAWAY. I would hope if we could find some mosquite in the cigarettes, we could get it out of cigarettes. Large scale research is

now being conducted on this. But if these people in Italy cleaned up the swamps, although they didn't know anything about mosquitos, it would help clean up malaria.

By the same token it seems logical that anything we do to cut down on cigarette smoking will probably cut down our mosquito, whatever it turns out to be, and should logically cut down on lung cancer.

Dr. OBER. I don't think a legislative act is likely to induce people to stop smoking. I think the desire to smoke or to stop smoking has to come from within. I don't think it is the sort of thing you can impose on a population by medical edict or by legislative edict.

Mr. CALLAWAY. How about limiting advertising?

Dr. OBER. I don't know. We certainly don't advertise reefers for sale but in the area around Harlem where I work there are certainly an awful lot of reefers being smoked.

Mr. CALLAWAY. Thank you, Mr. Chairman.

Mr. ROGERS of Texas. Mr. Satterfield.

Mr. SATTERFIELD. I have no questions at this time Mr. Chairman.

Mr. ROGERS of Texas. Mr. Farnsley?

Mr. FARNSLEY. I told one of the witnesses, you have shown, a high insight into the social sciences by pointing out the possibility Puritans were mixed into this. I think that probably has a lot to do with it. Does a doctor get any training in the scientific method or does anybody for that matter? I don't know. I have heard about it all my life.

Dr. OBER. That is a very good point.

As a matter of fact, a point which has come up in curriculum committee meetings a good bit more in recent years than in past years.

We all pay lipservice to scientific methodology and we try in our daily life to adopt methods which are proved, which are carefully chosen, and which are accurate.

But if you look in the curriculum of a medical school or a graduate school in any department of science, there is no real seminar or course or list of books on scientific methodology as such.

I think that is one of the defects in our curriculum.

Mr. FARNSLEY. Thank you, Doctor.

Mr. ROGERS of Texas. Doctor, I want to express my appreciation for your participation in these hearings. I am sorry I was late but I read your statement with a great deal of interest and especially in its reference to the questions on statistics.

I listened with great interest to the statements on statistics which I don't think are borne out in the findings, in the publication on smoking and health. I think that if there was a method fixed that lung cancer was the result of smoking cigarettes and the mechanization as you have stated was determined, I think both you and I would be leading the fight to ban the sale of cigarettes or perhaps the growing of tobacco if it had to go that far.

But I think that the statistics that we have are somewhat like the story of the scientist who supposedly was making some determination and he pulled half the legs off a grasshopper and said, "Hop." And the grasshopper hopped with what he had left. He pulled the other legs off and said to the grasshopper, he said, "Hop." And the grasshopper, of course, couldn't move.

Another scientist said, "Well, what does this prove?"

He said, "It proves when a grasshopper doesn't have any legs he can't hear."

Dr. OBER. I think that is a very good analogy. I like that analogy.

Mr. ROGERS of Texas. I appreciate your paper on it and your contribution. You did say that you did not feel that a law should be passed by the Congress on this subject. I presume you were basing your conclusion in that respect on the question of the scientific basis for need for such law. Of course, this is out of your field, but when we get out of the scientific field into the political field, there has been a development over the past few years that attempts have been made to encroach upon the domain of Congress, made up of the duly elected representatives of the people, and sometimes we have to act in self-defense, and I think that this is a matter that is more the basic issue before this committee right today, as to whether or not this is a matter to be determined by the people's representatives or by an appointed bureau, and I think it is a matter we have to face.

Dr. OBER. I place my faith in the people's representatives. I have always done so and they have very rarely failed me.

Mr. ROGERS of Texas. Thank you very much.

(The following letter was later received from Dr. Ober:)

KNICKENBOCKER HOSPITAL,
New York, N.Y., April 26, 1965.

Congressman OREN HARRIS,
Committee on Interstate and Foreign Commerce,
House of Representatives,
Washington, D.C.

DEAR MR. HARRIS: Let me take this opportunity to thank you and the other members of your committee for the courtesy which which I was received. It was a great pleasure to see at first hand the intellect and hard work that goes into the legislative process.

There are two points I would like to make which I did not think of when appearing before you. One often has afterthoughts.

First, I think there is solid medical evidence that circumcision at birth will eliminate carcinoma of the penis and materially reduce the incidence of carcinoma of the cervix uteri. The evidence is much stronger than that which alleges that cigarette smoking causes lung cancer. Yet no one to date has proposed that Congress pass a law in the interest of public health that all male infants be circumcised. Apparently, the puritanical mind can only go so far. I would like to see a little more intellectual consistency on the part of the people who disagree with me.

Second, regarding the matter of labeling: I understand that somebody has suggested that cigarette packages and cartons be labelled with words to the effect that excessive or prolonged use will cause cancer of the lung (or will be injurious to health). I don't think that "will" is a valid word at all in this context. Even stacking the statistical cards against me, the evidence is that 99.5 percent of smokers will not develop lung cancer. An alternative suggestion for the label would use the word "may" instead of "will." Technically, this is not an incorrect statement. However, in view of the considerable uncertainty that any considerable number of lung cancers are actually caused by excessive cigarette smoking, and in view of the probability that many other factors may also cause lung cancer, I suggest that the only semantically correct statement which could be made at the present time is: Excessive or prolonged use may or may not cause lung cancer.

I do not think the anticigarette faction would be happy about including the negative. Their emotional bias prevents them from looking at both sides of the coin. Nonetheless, a true scientist must always take negative observations and negative results into account. We must look to our legislators to maintain the balance and equitable judgment that characterizes the legislative process at its best.

Sincerely yours,

WILLIAM B. OBER, M.D.,
Director of Laboratories.

Mr. ROGERS of Texas. Our next witness is Mr. William J. E. Crissy, professor of marketing and associate dean of the Graduate School of Business Administration of Michigan State University of East Lansing, Mich. Mr. Crissy.

STATEMENT OF WILLIAM J. E. CRISSY, PROFESSOR OF MARKETING AND ASSOCIATE DEAN OF THE GRADUATE SCHOOL OF BUSINESS ADMINISTRATION, MICHIGAN STATE UNIVERSITY

Mr. CRISSY. Mr. Chairman, my name is William J. E. Crissy. I am a professor of marketing and associate dean of the Graduate School of Business Administration, Michigan State University. I joined the faculty at Michigan State in 1960.

Like most of my professional contemporaries, I did not receive my own university training in the field of marketing. When I attended college and graduate school, marketing was not recognized as a distinct academic discipline as it is today. My master's degree, which I received from Harvard in 1937, is in the field of education; my doctorate, from the University of North Carolina in 1942, is in psychology.

Psychology has alawys been of great interest to me, even apart from its application to business and marketing. I am a licensed psychologist and a fellow of the American Psychological Association.

During World War II, I served in the Navy as a line officer on both submarines and destroyers. I am currently a commander in the United States Naval Reserve.

In the years since World War II, I have divided my time between teaching, writing and consulting in the fields of psychology and marketing. I was an associate professor of psychology at Queens College, in New York, from 1947 to 1956. During this period I also lectured at Fordham, New York University and Columbia.

I have written extensively in the field of marketing and have published more than 50 articles. I am the coauthor of two series of sales and management booklets—one entitled "The Psychology of Selling," the other "The Psychology of Management."

From 1954 to 1960 I served as the head of my own consulting firm in New York, known as Personnel Development, Inc.

As someone who has devoted much of his professional life to the study of marketing, I am deeply interested in the subject matter of the hearings which this committee is now holding in connection with proposed tobacco legislation. Among the questions before this committee is whether cigarettes sold in interstate commerce should be required to bear some kind of warning with respect to the possible risk to health in smoking.

As I view it, this question resolves itself into three subquestions: First, as a matter of medical science, is there a significant health risk in smoking? Second, if there is such a risk, does the public interest require that manufacturers be required to state this fact in connection with the sale of cigarettes? Third, if the public interest does so require, what should be the nature of the required notice and where should it appear?

Medicine is not my field, and I am therefore not competent to testify with respect to the first question.

Nor can I offer much that would aid this committee in dealing with the second question it may have to face: Whether, if it should be concluded that smoking may involve a risk to health, the degree of that risk and what is known about it warrant requiring cigarette manufacturers to warn of the risk. This is a policy question for Congress.

I would note, however, that there are a great many products and services on the market which involve some risk to users but which are not required to bear any kind of warning statement at all. The explanation, I assume, is that consumers are believed to have, from general knowledge, adequate information to protect themselves from unanticipated injury.

Evidence exists from which Congress might conclude that this is the case with respect to cigarettes. There are frequent and repeated references in the public press to the various health charges that have been made against cigarettes. Whether some kind of warning notice should be required, however, is again a question on which professors of marketing have no special competence to advise this committee.

The third question—in what manner cigarette manufacturers should be required to warn of health risks in smoking, assuming Congress determines that manufacturers should be so required—falls into a somewhat different category. It is a question which has important marketing implications, and on which I should imagine most persons who have devoted their lives to the study of marketing might be expected to have rather definite opinions. I certainly do, and I am grateful for this opportunity to present them.

First, let me address myself to the question of where any warnings that might be required should appear.

In my opinion, there is only place for such warnings, and that is on cigarette packages; that is, on the label. Labeling is where consumers expect to find warnings, if at all. The expectation comes from conditioning, the conditioning from tradition, the tradition from commonsense—the commonsense of providing information where it will be most useful.

The Federal Trade Commission has issued a "Trade Regulation Rule" which would impose a requirement that warning statements appear not only in cigarette labeling but in cigarette advertising as well. A bill which would have this effect has been introduced in the Senate.

In my judgment, it is inappropriate to ask that cigarette manufacturers include in cigarette advertising a statement with respect to the possible health risks in smoking.

First of all, if warnings should be required in labeling, there would be no need for them in advertising. I am assuming that the purpose of warnings whether in labeling or advertising, would be to remind cigarette smokers, or potential smokers, of possible health risks in smoking.

A warning on cigarette packages would certainly perform this cautioning and reminder function adequately. A pack-a-day smoker, such as myself, would be confronted with the caution notice 20 times a day. It is difficult to believe that anything further would be necessary to communicate to smokers the message that smoking may be harmful to health, if indeed that message is one which Congress concludes ought to be communicated.

Of course, if mandatory warnings are looked upon not really as a way of informing smokers of possible health risks in smoking but as a way of rendering cigarette advertisements so unappealing as to drive them out of existence, then we are talking about a different problem. But while some might welcome mandatory warnings in advertising as an indirect way to abolish all cigarette advertising, I cannot believe that the majority of persons would sympathize with such an undertaking, either as a means or an end.

To my knowledge, there is no responsible body of opinion in favor of prohibiting the manufacture or sale of cigarettes. Moreover, I think most persons would agree that the right to do business should carry with it the right to employ in the conduct of that business normal, everyday business techniques, including advertising. Certainly no advertising embargo should be emposed in an indirect, covert manner and without full awareness of what is really being attempted.

Assuming then that the purpose of mandatory health warnings would be to warn and to remind consumers, not to punish cigarette manufacturers, the lack of need strikes me as a controlling argument against requiring their inclusion in advertising, particularly if a warning should be required to appear on the label. Beyond that, however, I cannot help but view mandatory warnings in advertising as basically incongrous and at odds with the traditional and accepted role of advertising in our economy. This role is to remind consumers of the advertised product's virtues and benefits, whether tangible or intangible. In the case of cigarettes, of course, the benefits are intangible: taste and psychological satisfaction.

The fact that advertising's long-accepted role has been to remind consumers of the advertised product's attributes, not its possible drawbacks, does not mean that advertising is not subject to important legal and moral standards. It is. Advertising is expected to be honest; it is expected to be in good taste.

Advertising is not, however, expected to be impartial.

What the consumer expects from advertising is vitally important in distinguishing it from labeling. I believe that an understanding of consumer expectation leads inescapably to the conclusion that it would be inappropriate to require cigarette advertising to contain health warnings. For one thing, because consumers do not expect to find warnings in advertising, they do not interpret the absence of a warning as an assurance of safety. Certainly there could be no doubt on this score if cigarette packages contained warnings.

In this connection, I understand that proponents of mandatory cigarette health warnings have sought to justify them on the grounds that they would symbolize governmental concern with the problem of smoking and health and would stand as evidence of an authoritative governmental determination that smoking may be a health hazard. I do not entirely dismiss this argument, but it seems to me that a mandatory warning in labeling would be just as significant a symbol of governmental concern and just as unambiguous evidence of an official determination that cigarettes may be dangerous to health as mandatory warnings in advertising.

Moreover, it would be a symbol that was consistent with consumer expectation—the expectation of finding warnings, if anywhere, on the label, not in advertising.

This leads me to a slightly different but related point. One who would attempt administratively or legislatively to reshape the role of cigarette advertising in relation to the marketing of this product should ask himself what the impact of such a reshaping could be on the marketing of other products. In my judgment, mandatory warnings in cigarette advertising would constitute a significant step toward encouraging consumers to relax the healthy, self-protective skepticism with which they now regard all advertising. Consumers would be invited to reason as follows: The Government requires warning statements in certain advertisements because it has concluded that the product may carry some risk to health; failure of the Government to require warnings in the advertising of other products must reflect an official judgment that use of those products involves no health risks.

Such reasoning could be dangerous.

The problem is not merely that a precedent would be established whereby liquor manufacturers could be required to warn in advertising of the dangers of drunkenness and alcoholism, whereby airlines could be required to warn in advertising of the ever-present threat of crashes. Rather, a situation would be created whereby the Government could find itself forced to require such warnings—forced to do so to prevent misunderstanding where misunderstanding did not previously exist.

In short, I think this is a case where an inch of "remedy" could easily produce a foot of need.

There is another quite different reason why I think it would be a serious mistake to require cigarette manufacturers to include health warnings in advertising. I think it is entirely possible that the combined effect of warnings in labeling and advertising could be such as to undermine the basic purpose of the warning.

There are many persons who, for one reason or another, react to warnings or admonitions in a contrary or perverse fashion. This group includes young people who are rebelling against authority; it also includes those who may have some subconscious wish to cause injury to themselves. It is my view that persons of this type would actualy smoke more if health warnings were required to appear in cigarette advertising.

I think health warnings in advertising would have a significantly greater backlash effect of this type than health warnings in labeling. This is because health warnings in labeling would not constitute a deviation in principle from current commercial practices. Though informative, they would be less likely to trigger a perverse reaction.

This leads to my final observation, which is directed to the language of any required warning statement. It seems to me axiomatic that any statement should accurately reflect the known scientific facts. It should not, however, be unduly inflammatory. In this connection, I am familiar with the Federal Trade Commission's proposed warning requirement, with its reference to "death from cancer and other diseases." In my judgment, a warning expressed in such language would, by virtue of its distastefulness and intended shock effect, precipitate a far greater backlash reaction that a quieter, more restrained warning statement.

48-824—65——24

On the other hand, I believe that a warning statement like that apparently prescribed by the FTC would have no greater or offsetting effectiveness among persons not given to the type of perverse reaction I have described. This is because, generally speaking, those persons who react rationally in the face of possible risks need only be informed of the risks; they do not need to be beaten over the head with them.

I appreciate the opportunity to present these views, Mr. Chairman.

Mr. ROGERS of Texas. Thank you, Mr. Crissy, for your statement.

The Chair recognizes the gentleman from North Carolina.

Mr. KORNEGAY. Thank you, Mr. Chairman.

Mr. Crissy, I want to thank you very much for a very fine statement and say I have only one regret about it and that is that my good friend, Mr. Dixon, was not here to hear it. I know he is bound to be very much impressed with it because based upon your background and experience, as a psychologist, it points out some things very graphically which I had thought existed in this area and in this problem for some time.

Mr. CRISSY. Thank you.

Mr. KORNEGAY. The fact that you put a label on the package, particularly as you point out, in advertising, it seems to me you may be presenting a problem to the people, and particularly the young people, the people who the opponents of smoking want to get to—they say—to try to stop them from smoking.

Mr. CRISSY. Yes, sir.

Mr. KORNEGAY. I read the newspaper, and I see these ads about movies, you know, the midnight movie, a scary movie, not for the weak at heart, not for the scared; it is a come-on effect, and I don't know but what this is, as you say, calling it a backlash; that is, would it not be a come-on—particularly for young people?

Mr. CRISSY. Yes, sir.

Mr. KORNEGAY. That maybe you—not me because I am big and strong, and I am not afraid. I believe that is an excellent point that you made. And, I want to also comment on one other one that I think is very valid and that is when the Government starts, through legislation or edict, putting labels of this nature on any product, that it would tend to relax the consumers' feeling of caution about other products.

Mr. CRISSY. Yes, sir.

Mr. KORNEGAY. Because you read every day and see on the TV that this product is the best. We understand, as you so well pointed out, I think the public understands, it is the seller's puff. A manufacturer of a product, regardless of what it is, wants to put his best foot forward.

Mr. CRISSY. Yes, sir.

Mr. KORNEGAY. That is understood, and expected, and I don't think too many people are disappointed if it may not be the best coffee in town. We may prefer another brand, but it is a matter of opinion, and I think that was a very good point.

I take it, also, Mr. Crissy, that you are familiar with advertising, that is the advertising of tobacco companies on television, radio, and newspapers and magazines, and as a psychologist?

Mr. CRISSY. Yes, sir.

Mr. KORNEGAY. What would be your thinking as to whether or not they would continue to do that type of advertising if the Government,

through legislation, or through edict of the Federal Trade Commission said, "Now it is all right to advertise but you are going to have to put in a very prominent position in any ad you put in the magazine or the newspaper or you are going to have the announcer on radio or television say at the conclusion that "cigarette smoking is dangerous to your health and may cause death by cancer or other disease." How much advertising do you think they are going to do?

Mr. CRISSY. Well, sir, first, I think that advertising would be lessened. Warnings would be so incongruous with the objective of advertising that they would surely cut it down. Also, it is significant to me as a student of marketing that the cigarette market is a mature industry, and what they are after is selective demand. No one says, "Take up smoking." They say, "Smoke Winston, smoke this, smoke that." If warnings should be required, they should be on the label, which is informational, and not invade the persuasive domain of advertising. And it certainly should be done uniformly lest unwittingly there be some alleged discrimination toward one company. But in a mature market, I don't think the purpose of any of the marketing effort is primary demand; it is selective demand, preference of one brand over another.

To come back to your question, it is so incongruous that I would suppose you would find a lessening, and you might—again this is hypothetical—freeze the existing market or tend to freeze it.

Mr. KORNEGAY. Would you feel that the cigarette companies—I can't speak for them, it is a matter of opinion for you just as it is to me, do you feel if you were doing—would do any advertising?

Mr. CRISSY. Well, putting myself into the shoes of an executive in this industry, or any other industry, I don't think I would want to advertise where legislatively or administratively I am prevented from putting my best foot forward. For example, I am concerned with attracting young men and women to the Naval Reserve. I can tell you this, that our spot commercials on radio and television don't contain the death toll in South Vietnam and they don't tell the fellow he may have to swab a few decks.

Now, the presumption is before he holds up his hand he understands that he is serving his country in a domain of risk.

But in our advertising we try to put our best foot forward.

Mr. KORNEGAY. You don't consider that unfair advertising?

Mr. CRISSY. I don't. I would do everything I can to present an attractive image of the Naval Reserve, as many as we can use.

Mr. KORNEGAY. The FTC hasn't approached you or served notice on you that you are going to have to say something else?

Mr. CRISSY. No, sir. As a matter of fact we are doing very well in our unit. We are No. 1 in the 9th Naval District.

Mr. KORNEGAY. As I understand the testimony came out during the Senate hearings last week or the week before in this matter that the top 10 TV shows in this country were sponsored by cigarette companies. I don't know whether that is right. I just heard that. Do you have any knowledge of it?

Mr. CRISSY. I don't know. Of course there, again, you have so many different ways of ranking them.

Mr. KORNEGAY. There is. As a marketing expert would you venture the opinion if labeling went on advertising to the point that it made

it prohibitive for the cigarette companies to advertise on TV, and I understand about $150 to $250 million a year go into advertising that is about the quickest way I know of to bring around, get us around to pay TV—do you have any thoughts on this? In other words, if this great source of revenue is suddenly cut off in order to get quality programs, isn't it sort of reasonable that we would be confronted with a situation that would compel the development of pay TV?

Mr. CRISSY. It could be. I think the general problem is that it would set a precedent for disrupting established business practice in our private economy generally. It is incongruous. Advertising persuades. Labeling informs. I think there is an important difference there.

Mr. KORNEGAY. Yes, sir. There is, and you put it exceptionally well.

We had before the committee the other day an erstwhile advertising man who has recently dedicated himself to stamping out smoking, and he said he was opposed to prohibiting the advertising of cigarettes on TV but that he wanted to place such severe restrictions upon the advertising that it would be self-defeating.

Does that make sense to you?

Mr. CRISSY. Not as a businessman, not as a professor of business; no, sir. I think that is an inconsistency. I don't know how anyone could arrive rationally at that position.

Mr. KORNEGAY. Is that consistent with the American principle of free enterprise and freedom of choice, and the right to advertise?

Mr. CRISSY. It is contrary, it seems to me.

Mr. KORNEGAY. Thank you very much for a very fine statement and I appreciate it.

Mr. CRISSY. Thank you, sir.

Mr. ROGERS of Texas. Mr. Younger?

Mr. YOUNGER. Thank you, Mr. Chairman.

Mr. Crissy, do you know Dr. John Hoagland, of your faculty?

Mr. CRISSY. Yes, sir. He is a very dear friend of mine, Mr. Younger.

Mr. YOUNGER. I watched him grow up as a youngster.

Mr. CRISSY. We are very proud to have him at MSU, I can tell you that.

Mr. YOUNGER. A very able man.

I notice that you are a member of the U.S. Naval Reserve. The Secretary of Defense hasn't shot your unit out from under you yet, has he?

Mr. CRISSY. No, sir. We have the best recruiting record and the third best retention record in the Ninth Naval District. We are going to be No. 1 on both counts by June.

Mr. YOUNGER. The one up here on the Hill, they shot it out from under the Naval Reserve officers.

Mr. CRISSY. Maybe we are too far away to get under fire.

Mr. YOUNGER. The order hasn't reached you up there yet?

Mr. CRISSY. No, sir. [Laughter.]

Mr. YOUNGER. Are you familiar with the advertising code of the cigarette manufacturers?

Mr. CRISSY. Yes, sir; I am.

Mr. YOUNGER. Do you think it is a good code? Do you think they have covered the field pretty well?

Mr. CRISSY. I think, not only that it is spelled out fairly and in good taste, but I think it is always part of our private enterprise way of doing business to encourage self-policing if we can. I think that has been the stance of our Government, without being at all remiss in any responsibility, to try to encourage business to keep house itself. It seems to me that the code and the very able person they have to administer it, who happens to be an acquaintance of mine, Governor Meyner, whom I met years ago, when he was Governor of New Jersey—that the combination of an able administrator and a well-conceived code is excellent.

Mr. YOUNGER. Were you consulted in connection with the preparation of the code?

Mr. CRISSY. No, sir; I was not.

Mr. YOUNGER. Have you been employed by the tobacco people at all?

Mr. CRISSY. Yes, sir.

Mr. YOUNGER. In advertising or what?

Mr. CRISSY. Yes, sir; years and years ago when I operated my firm I had the privilege of a major company as a client. We related to their marketing group on strategy of advertising and packaging, test marketing, that sort of thing.

Mr. YOUNGER. That is all, Mr. Chairman.

Mr. ROGERS of Texas. Mr. Van Deerlin?

Mr. VAN DEERLIN. Thank you, Mr. Chairman. You have no present ties of any kind to the tobacco industry?

Mr. CRISSY. No, sir. I am speaking here freely as a professor of marketing. Let me add, lest there be any misconception, that I was consulted in anticipation of these hearings, and I get a normal per diem for such time, as I do with any other client.

Mr. VAN DEERLIN. Travel?

Mr. CRISSY. But I am speaking as Crissy interested in marketing both from a practitioner and scholarly standpoint.

Mr. VAN DEERLIN. But your appearance here is on a per diem, and you receive travel from East Lansing, and so forth?

Mr. CRISSY. Yes, sir.

Mr. VAN DEERLIN. From the industry?

Mr. CRISSY. Yes, sir.

Mr. VAN DEERLIN. Dr. Crissy, you are familiar with the Advertising Council, the work that it does in promoting as a public service on funds supported by the advertising profession various public interest causes?

Mr. CRISSY. Yes, sir.

Mr. VAN DEERLIN. Causes like the sale of savings bonds, the prevention of forest fires, the antilitter campaigns?

Mr. CRISSY. Yes, sir.

Mr. VAN DEERLIN. Do you think there is a peril there as suggested by your testimony that advertising campaigns in which Smokey the Bear warns you to put out the campfire or which you are urged not to throw banana peels and beer cans along the Nation's highways; do you think this has a perverse effect and encourages people to mar the countryside?

Mr. CRISSY. I think that such campaigns have been pretty carefully conceived and are not really advertising so much as mass media information sharing.

I suppose, however—and I am speculating only, for I have no research evidence—that even with those noninflammatory informational warnings, some of which, as you know, have utilized a kind of a humor, live cartoon kind of thing, might even trigger off a few people perverse enough to say, "Well, there is something to do."

But they have been pretty much informational.

I would drawn analogy between those and what we would speak of in marketing as institutional advertising, as distinguished from selective demand cultivation.

Mr. VAN DEERLIN. Well, as an offhand opinion, do you think that maybe if Congress acted on labeling, as you have suggested, and left advertising alone that it might be a worthwhile enterprise for the Advertising Council itself to carry some advertising campaign as a public service keeping alive the inquiry into the menace of smoking and calling attention of the public to the possibility of a health hazard?

Mr. CRISSY. Well, as I tried to say in my statement, my judgment as a layman in the medical field makes it difficult for my opinion to be worth much. Even on that policy issue, whether after Congress weighs the evidence it should take a stand, I can't be very helpful. I would rather stay in my own professional field where I can speak with a little more confidence. There is commercial precedent, based on commonsense and tradition, that if labeling is needed it ought to be on the package. Advertising has a mission, particularly selective demand advertising, of persuading you about the benefits that will accrue to you if you buy this brand instead of another.

So that is getting to a kind of a policy domain where I haven't done enough thinking. Even if I did I would still only be a layman, a citizen offering an opinion.

The thing that triggered off my interest in this whole thing was this invasion of advertising, frankly. I am not taking a stand that there ought to be a label. You have to weigh the medical evidence. But I feel very strongly, and I suspect most marketing people feel very strongly, that invading advertising runs contrary to everything that we know from our research, everything that we teach, everything that we see in commercial practice.

Mr. VAN DEERLIN. Well, in the light of the information that has been provided by the Advisory Council, the Advisory Committee on Smoking and Health in this fat book, do you think Congress could do anything less call for labels?

Mr. CRISSY. Well, I have had the privilege of hearing some of this medical testimony that was presented yesterday and today. As an interested layman I felt, as one Congressman said, I received an education by being in the audience.

It would seem to me that you have to weigh out this wide spectrum of medical opinion and medical research and draw your own conclusions. It is a pretty awesome task, but I would not want to step in on that one.

Mr. VAN DEERLIN. Thank you, Mr. Chairman.

Mr. ROGERS of Texas. Mr. Calla way?

Mr. CALLAWAY. Mr. Crissy, I want to commend you for a most outstanding presentation. I am getting an education not only from medical testimony but from yourself today.

Mr. CRISSY. Thank you, sir.

Mr. CALLAWAY. And I certainly share with you a love for free enterprise and a love for everything that has made this country great with voluntary participation and I am concerned as you are about the invasion of advertising but I wonder if you would agree with me we are really speaking more of a question of degree rather than a black and white principle.

For example, I recall a number of years ago, I believe there was a hair tonic called "West Point" hair tonic and I saw in the advertisement "not affiliated with the U.S. Military Academy." I assume they were required to do this. Only a day or two ago, I heard an advertisement on the radio for "Government Employees Insurance Company" and even on the radio there was a disclaimer "not affiliated with the U.S. Government."

Is this not a matter of degree?

In other words, these were not statements for putting the best foot forward, the best foot forward would require leaving these statements out but they were put in I assume by Government regulation.

Mr. CRISSY. Well, sir, I think that is an example of where failure to be explicit, from the standpoint of your reaction as a rational human being, or mine, would constitute fraud and deception. The very name, like "West Point," would connote for us—it would for me—in the absence of that exclusion, that there was this hookup.

That is why I say, I think advertising must be honest, it has to be in good taste. But it is inherently a persuasive kind of communication rather than an objective informational kind.

Now, you are right, there are examples where the possible deception would be so likely that they may have to put something in the ad to prevent deception.

On the other hand, I would have to say this, I don't know what your observation has been, Mr. Congressman, but since this report came out from the Surgeon General's office, I have scarcely picked up a daily paper that didn't convey some aspect of it. I think that through public media almost every person must have been exposed to this, and this is good. If this encourages increased research, increased concern, fine. But I think that this eliminates the need to put it in the ad.

Silence is not something which is inherently deceptive.

Mr. CALLAWAY. Well, I certainly agree with most of your contentions but I don't agree with you on the lack of need. It has been brought out by almost every witness that our concern, and certainly my concern, is not with the adult who can evaluate, who can read or not read, or can smoke or not smoke. My concern is with children. Advertising people from the tobacco industry have admitted there is no way of keeping children from seeing the advertising. Now, assume we did have proof that cigarette smoking was extremely dangerous to children. Do we have no responsibility here?

Cigarette advertisers are certain to show advertisements of obviously healthy people having a good time smoking cigarettes. Is there any deception here? Assume that we feel that smoking is dangerous,

and is a genuine health hazard. We know that we are showing these advertisements to 14-year-old children who cannot be expected to read the newspapers and really evaluate the health hazard. Is there some deception in showing these attractive things happening in a very appealing way to this young mind? As a marketing man you certainly advise your clients to make advertising as appealing as possible.

Is this gray, or black, or white? Is this perhaps deception?

Mr. CRISSY. If I can, sir, make two statements.

First, one of the significant things to me in the Surgeon General's report—I believe it was in chapter 14, I am not sure, where they had a lot of data from psychology, from behavioral scientists, where they stated many causes for a youngster starting to smoke.

But you know the interesting exclusion? They didn't find advertising as one of those causes. They find imitation of parents, they saw people in status positions smoking, and so on. But not advertising.

Now, that is one datum.

The other is that, in a mature industry such as cigarettes, you are aiming at selection demand. There is no statement that I have ever heard on the air or on the television screen or printed media saying, "Smoke cigarettes."

On the contrary, it is always selective demand. So, I am not so sure that the point is too valid a one. Take the Surgeon General's pretty carefully compiled report, which summarizes the psychological studies and the sociological studies. There was a notable absence of advertising as an influence on youngsters commencing to smoke.

Mr. CALLAWAY. Well, as a marketing expert, would you tend to agree that this sophisticated advertising, the best that Madison Avenue knows how to produce, has significant influence on getting people to smoke?

Mr. CRISSY. I would say it is selective demand advertising. And under this code, which the industry has, there certainly is not going to be any encouragement of anyone to commence smoking. But if you are going to smoke cigarettes, smoke brand X or brand Y.

Mr. CALLAWAY. I understand they always say smoke Winston or smoke Luckies, never just smoke cigarettes. But certainly it is their job to make it as attractive as they possibly can while smoking Winstons or smoking Luckies.

But did I understand you to say in your judgment you feel that with very attractive ads being put out on the very large scale they are—well-conceived, well-planned advertising every single day to children—did I understand you to say in your opinion this would not have a significant effect on whether these children start smoking or not?

Mr. CRISSY. I would just go by the research evidence on this, which I read with some care, and I am sure you did, that in these studies about children's inception of the smoking habit, the habit was attributed to a whole host of causes, but no one mentioned advertising.

Mr. CALLAWAY. And you would tend to agree with that?

Mr. CRISSY. I would take those research data at face value; yes, sir.

Mr. CALLAWAY. I thank you.

Mr. ROGERS of Texas. Mr. Satterfield?

Mr. SATTERFIELD. Thank you, Mr. Chairman.

Doctor, I notice that one technique in advertising involves the utilization of seals of approval. In your opinion is this to give a specific product just a little bit more boost to make it more appealing to people?

Mr. CRISSY. Yes, sir.

For example, Good Housekeeping's seal of approval on an appliance used in the home or something; yes, sir.

Mr. SATTERFIELD. Do you know of any previous instance in which there have been seals of disapproval?

Mr. CRISSY. No, sir; I do not.

Mr. SATTERFIELD. That is what we are talking about here, are we not?

Mr. CRISSY. I think you put it very well. I hadn't thought of it in those terms but that is correct. Yes, sir.

Mr. SATTERFIELD. Isn't it being advocated that we approve a system of counteradvertising; isn't this really what we are talking about?

Mr. CRISSY. Yes; I think so.

Of course, again, I come back to the image I get, which really horrifies me, of a complete shift in commercial practice that is implicit should advertising be invaded.

Mr. SATTERFIELD. Well, what is being suggested here flies squarely in the teeth of the whole nature and purpose of advertising itself; isn't that correct?

Mr. CRISSY. Yes, sir; that is why I am here, as a matter of fact. It runs counter to marketing theory and marketing practice. And I would suspect you would hear the same from any marketing scholar or practitioner in the United States.

Mr. SATTERFIELD. Do you know of any incident which has occurred in the past or any precedent which would be similar to this approach in advertising?

Mr. CRISSY. No, sir; I do not.

Mr. SATTERFIELD. From your standpoint as an expert, analyzing advertising as we see it today particularly pertaining to cigarettes, would you say that the basic pitch of advertising is to encourage people to smoke or is it more in the nature of encouraging people to shift brands?

Mr. CRISSY. Brand shifting. That is a characteristic of a mature market. We could cite many others. The automobile, I suppose, is one. Again I am not saying that there might not have been a period in the pioneering stage of the development of this market where it was otherwise. But today I would say no one in marketing would describe this market as other than a mature market where selective demand is the marketing key.

Mr. SATTERFIELD. Analyzing all that we have talked about, if these warnings are used in advertising it would constitute counteradvertising and the net result would be that advertising in this area would disappear, would it not?

Mr. CRISSY. Well, I would think that it would because you would be asking businessmen in effect to misuse a business tool.

Mr. SATTERFIELD. You are being asked to use it differently from the way it was intended?

Mr. CRISSY. Yes, sir.

Mr. SATTERFIELD. That is all I have, Mr. Chairman.

Mr. ROGERS of Texas. Mr. Farnsley.

Mr. FARNSLEY. I am the low man on the totem pole. The bells always start ringing when they get to me, so try to answer as fast as you can.

Mr. CRISSY. Yes, sir.

Mr. FARNSLEY. The only direct evidence we have had on the effect of requiring labels, I brought in a bottle of Bromo-Seltzer, which a psychiatric consultant told me about when he was consulted as an expert witness some years ago, where the Government wanted them to put warning labels on. They said, "We will do what you want," and my friend was told that a year later the value of that stock had doubled because their sales had gone up so fast.

Have you any experience in this or do you have any knowledge of what has happened where the warning labels were put on products?

Mr. CRISSY. No, sir; except that there is some evidence, not of the kind of warning we are talking about, but about prohibitions generally——

Mr. FARNSLEY. What?

Mr. CRISSY. Of prohibitions generally. When you start telling people, "You must not do something," there are x number that will think creatively of ways to do exactly what you told them not to do.

I remember when my youngster was growing up, the surest way to get her to misbehave was to tell her not to do something. She would think creatively of a way to outsmart me and my wife. I do not mean that is everybody, but I think there are a fair number that will react that way.

Mr. FARNSLEY. That is, in fact, what you were talking about in your paper.

Mr. CRISSY. Yes, sir.

Mr. FARNSLEY. One other man in the behavioral sciences has been before us, a full-time psychologist in the Surgeon General's Department. He said he thought this warning would cause the sales to go down, and I asked him what he based that on, and he stated that, well, the literature in the last 10 years has contained articles to that effect. Are you familiar with any of those? Have you seen anything like that?

Mr. CRISSY. Yes, sir. I keep reasonably abreast of research and articles related to these kinds of issues.

Mr. FARNSLEY. Warning?

Mr. CRISSY. Both marketing and psychology.

Mr. FARNSLEY. This article says that these warnings would cause sales to drop, or they had. Have you found anything like that?

Mr. CRISSY. I have heard allegations, but I think the possible flaw in that speculation—and it is speculation only——

Mr. FARNSLEY. There is not any experimental work?

Mr. CRISSY. No, sir. But the speculation is that people will always behave completely rationally. Well, I think there is an abundance of evidence that there are other forces that will influence——

Mr. FARNSLEY. They do not show ads to mice or rub them on their backs or anything. They just thought about them. You say that maybe the warning on the label will cause the sales to go up; I think so, too. Of course, I think the labeling in the advertising might cause the sales to go up, in which case the advertiser would not quit. They might even advertise more. There are only three things that can hap-

pen if they put the warnings in the ad. Things do not change so far as sales are concerned or the sales go down or the sales go up. Of course, if sales go down, the tobacco people, being reasonable people, I guess reasonable and rational men, they would quit advertising, but has anybody ever experimented with this? Don't tell me what some guy thought about it. Tell me about some research, even if it is on mice, I do not care.

Mr. CRISSY. I know of no firsthand empirical investigation, for a very good reason, that a business would not knowingly jeopardize its position by that kind of an experiment. They would follow the best possible practices.

Mr. FARNSLEY. They will try new brands, all kinds of things in a small market, but they won't even try labeling in a small market; it is too horrifying for them to think about.

If this thing did cause it, the man who is promoting it most thinks it will cause advertising virtually to disappear, in which case the cigarette people, of course, would be getting a windfall, a quarter of a billion dollars a year, which is not hay.

What is your opinion as to what would happen then to the sale of their cigarettes, if they quit advertising altogether?

Mr. CRISSY. Well, again, I can reason from a marketing theory.

Mr. FARNSLEY. Has anybody tried this?

Mr. CRISSY. No, sir.

Mr. FARNSLEY. No business has ever—it would have to be all of them. In other words, the Government would pass a law. When I was a boy the retail merchants in Louisville got the State to pass a law that they could not give away trading stamps.

Suppose the tobacco boys got really on us to pass a law that they could not advertise. What would happen to the market if we prohibited advertising?

Mr. CRISSY. I would speculate there would be a frozen market, with about the same segmentation, market shares, if you please, that now exists. I could give you a rationale of why I would think that.

Mr. FARNSLEY. I think so, too. The only experiment we have got on that is in Italy where the proponents of this legislation say advertising was not such a big factor. They say it caused the rate of growth to drop, and other people say it did not cause it.

Mr. CRISSY. I was in Italy after such legislation, and here you have another factor which, fortunately, we do not have, and that is a Government monopoly in the cigarette industry. There are some private brands. But I think there is danger from extrapolating from one country, one culture, where there is a Government, a big Government share, against ours, which is a private enterprise kind of structure.

Mr. FARNSLEY. My contention is that the industry, the Government, and the Surgeon General's office are flying blind as far as knowing what effect the recommendations will have.

Mr. CRISSY. Yes, sir.

Mr. FARNSLEY. Guys are willing to guess, you are willing to guess. Is this the kind of thing to experiment with? I am not advocating delay, but is this the kind of a thing that can be explored by the social and behavorial scientists, and come up with recommendations?

Mr. CRISSY. Yes, sir. It would be amenable to research and test markets.

Mr. FARNSLEY. Excuse me for interrupting. You have answered my questions. We have to work fast. The bells have rung on us.

My contention is the people who say we should do this, say that we are killing a quarter of a million of people a year. I say, with a smattering of social science, that all the evidence of what they are asking me to do indicates that the sales will increase. I do not want to kill 250,000 people. If we kick up the sales, we are going to kill a lot more people. I say we ought to find out. I do not want to delay things, but I say these are valid questions that ought to be answered. There are a lot of aspects of puritanism in these findings we have been getting. But so far as you know, nobody—there has been no experimental evidence except one thing in the Surgeon General's report, where the social and behavorial science people did not offer advertising as one of the things that caused children to smoke.

Mr. CRISSY. Yes, sir.

Mr. FARNSLEY. If you are right, this perverse effect would apply, I am repeating, to labeling on cigarettes, then it could apply to warnings in advertisements, could it not?

Mr. CRISSY. Even more so, Mr. Farnsley, because I think by tradition, you see, we have looked at labels as information-sharing, how properly to use the product, and so on. You see, it is informational and it is descriptive very often. In fact, some legislation requires full description, et cetera. But if you start getting into advertising you are in a different kind of area, because that is demand cultivating, selective demand cultivating. If you start invading that, I will tell you, you have opened Pandora's box, it seems to me.

Mr. FARNLSEY. I thank you.

Mr. CRISSY. Yes, sir.

Mr. ROGERS of Texas. Mr. Crissy, with regard to advertising, I presume you are well founded in that as a marketing analyst and expert, is not it a fact that a lot of information going to sell a product does not always come from the commercial itself? What I am referring to is what we have heard called in this committee, I believe, as piggybacking where, we will say that they have a show, take "Gunsmoke," for instance, and the beer advertisements get a lot of free advertising when Matt Dillon walks up to the bar and says, "Give me a beer."

Mr. CRISSY. Yes, sir.

Mr. ROGERS of Texas. He does not say what brand, but he says, "Give me a beer."

I have been told, I do not know whether this is true or not, because I am not a marketing specialist, that that same thing is true with regard to whiskey and is one reason why the whiskey people do not find it necessary to advertise, that cocktail parties are so frequent in most of the shows on television that everybody gets the point without interrupting the show.

Mr. CRISSY. Yes, sir.

Mr. ROGERS of Texas. Is there anything to that theory?

Mr. CRISSY. Well, sir, certainly one demand-cultivating force which is pretty difficult to nail down, as compared to knowing how many ads you are running and so on, is this general use of the product in an entertainment situation, in your own home, and so on.

Of course, people are observing, and again going back to the Surgeon General's report, if I construe the data correctly in that one chapter, children tend to do what parents do, what they see friends of their parents doing in the home, et cetera.

I would, yes, sir; there is a general impression that all of us get from people around us.

Mr. ROGERS of Texas. My experience with children has been that they pay a lot more attention to shows than they do the commercials. As a matter of fact, we did not let them testify in this controversy as to whether or not the Federal Communications Commission should cut down on commercials. I think we would have gotten a lot of testimony to let them regulate them further.

Mr. CRISSY. Yes, sir.

Mr. ROGERS of Texas. But, for instance, we have had some reference made here to the show, the "Beverly Hillbillies" that children watch. If you get into this advertising field and undertake to try to brand every product with something that is good or bad about it in order to get away from deception would not you in the ordinary situation be required that every time grandpappy or whoever it is lights his pipe that you would have to flash a sign under him during the show, "Not recommended for children."

Mr. CRISSY. That is a possibility; yes, sir.

Mr. ROGERS of Texas. Or if the grandmother gets out the wine which, I think, she has done two or three times in the show—I do not see it very much—you would have to say, "Not recommended for anyone under 21."

Now, the fact is that it is a violation of the law in most States at the present time to sell beer to minors, is it not?

Mr. CRISSY. Yes, sir.

Mr. ROGERS of Texas. And is not that same thing true about cigarettes?

Mr. CRISSY. Yes, sir. It is in my State, I know; yes, sir.

Mr. ROGERS of Texas. Thank you very much, Mr. Crissy.

Mr. FARNSLEY. Mr. Chairman, can I ask one more question? Now that we have adjourned, I have a couple of more questions.

Mr. CRISSY. Yes, sir.

Mr. FARNSLEY. Doctor, I think it has been said with some validity, that by putting on a white coat a man does not get away from his socioeconomic background. It is a factor, and I think maybe as rigorous a scientist as you are, you may be getting into this trap a little bit, and I think the cigarette magnates may be. You have been sitting around telling each other it is right to advertise. It is a noble thing that we will fight for the right to advertise, and if we cannot advertise some poor guy won't be able to start a new brand. I think this is just not true.

I think a guy could start a new brand. I submit that the chances are, from the evidence available, that the cigarette companies are willing to spend a quarter of a billion dollars a year to advertise, and the main thing they get out this is the doubtful privilege of having Mr. Foote and the Surgeon General and a lot of people go around and call them bad names, and I do not think this is an admirable reaction. What do you think?

Mr. CRISSY. I agree with you, Mr. Congressman.

It just seems to me, as I said, that you have three interrelated questions that are going to bother you and bother the Senate committee, and it is an awesome responsibility with your public trust to resolve them.

On those first two, I cannot be of any service.

Mr. FARNSLEY. Which are the first two?

Mr. CRISSY. One is, is there in reality a proven causal——

Mr. FARNSLEY. That is not your problem. That is somebody else's.

Mr. CRISSY. That is right. And the second one is uniquely yours, that is, depending on your answer to the first, does the public interest require legislative enactment?

That is a tough one.

Mr. FARNSLEY. Wait a minute. It is worse than you think. They have got surveys that show 2 to 1 the public wants legislative enactment. We can vote it politically without being convinced that it is going to do anybody any good, or could we, or is that a violation of our moral duty?

Mr. CRISSY. Yes, sir.

Mr. FARNSLEY. It is beyond your province.

Mr. CRISSY. Yes, sir. It is only on this third question that I have a potential contribution, and that is, if the first two are answered affirmatively, yes, there is a threat and we ought to do something, then it gets right down to what.

Well, in terms of sound business practice, precedents, et cetera, if a warning is to be given there is only one place for it, on the label; and there is one place I would exclude, the advertising. It is just incongruous.

Mr. FARNSLEY. But you just admit either one might cause the sales to go up.

Mr. CRISSY. This is speculation; yes, sir.

Mr. FARNSLEY. If you had to guess, which way would you guess, up, down, or sideways?

Mr. CRISSY. I just would hesitate to stick my marketing neck out.

Mr. FARNSLEY. That is a good answer. I will tell you who are menaced by all this, the television and radio stations, and the mice. I do not see where it is going to hurt these cigarette companies.

Mr. CRISSY. I do not know.

Mr. FARNSLEY. You answered that, you do not know. I quit.

Mr. CRISSY. Yes, sir.

Mr. ROGERS of Texas. Thank you very much, Mr. Crissy.

Mr. CRISSY. Thank you, sir.

Mr. ROGERS of Texas. Without objection, the record will include at the appropriate place a letter from Dr. John B. Hickam; a letter from the American Newspaper Publishers Association; a statement of the National Tuberculosis Association; a statement of the American Public Health Association; a statement by Mr. John K. Herbert, president of Magazine Publishers Association, Inc.; and a statement by Dr. George James, commissioner of health of New York City Health Department, New York City.

Without objection those will be included.

(The documents referred to follow:)

INDIANAPOLIS, IND., *April 8, 1965.*

Hon. OREN HARRIS,
Chairman, House Interstate and Foreign Commerce Committee, U. S. Congress, Washington, D.C.

DEAR REPRESENTATIVE HARRIS: It has been brought to my attention that testimony before your committee dealing with the proposed legislation on labeling tobacco products has indicated that I may have changed my mind about the findings of the Surgeon General's Committee on Smoking and Health since that report was published.

I wish to respectfully request that it be made a part of the record of the committee hearings that I agreed completely with the report of the Surgeon General's committee at the time it was issued and that I continue to agree completely with the findings of the report.

Sincerely,

JOHN B. HICKAM, M.D.

AMERICAN NEWSPAPER PUBLISHERS ASSOCIATION,
New York, N.Y., April 28, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
House Office Building, Washington, D.C.

DEAR SIR: The American Newspaper Publishers Association desires to express its views for inclusion in the record of hearings on certain bills now under consideration by your committee relating to cigarette advertising and labeling. Our concern is with restrictions on advertising.

ANPA is a membership association of daily newspapers published in cities and communities throughout the United States and Canada. Its members include more than 930 daily newspapers with approximately 90 puercent of the total daily newspaper circulation in the United States.

As we understand it, your committee has now under consideration the following bills: H.R. 2248 by Representative Udall; H.R. 3014 by Representative Rogers; H.R. 4007 by Representative Nelson; H.R. 7051 by Representative Rooney; and H.R. 4244 by Representative Fino.

As for bills H.R. 3014, H.R. 4007, and H.R. 7051, these would require that all packages and cartons of cigarettes sold in the United States bear a warning label to the effect that cigarette smoking may be injurious to health. At the same time, they would preclude the Federal Trade Commission from requiring warnings in cigarette advertising and would also foreclose the imposition by State or local governments of warnings in either cigarette labeling or advertising.

Bill H.R. 2248 would make cigarettes subject to certain provisions of the Federal Food, Drug, and Cosmetic Act, including provisions relating to adulteration and misbranding. The bill would leave the Federal Trade Commission free to proceed with its announced intention to enforce its cigarette "Trade Regulation Rule" in the absence of an unambiguous congressional directive not to do so. That rule would require warnings in cigarette advertising as well as labeling.

Bill H. R. 4244 would require a warning on cigarette packages and in addition a quantitative statement with respect to tar and nicotine. Like bill H.R. 2248, this bill would leave the Federal Trade Commission free to require warnings in cigarette advertising in accordance with its announced intention.

Two additional bills have just recently been introduced and referred to your committee. They are bill H.R. 7393 by Representative King of Utah, and H.R. 7560 by Representative Corman of California. These bills would direct the Federal Trade Commission, with the cooperation of the Secretary of Health, Education, and Welfare, to establish standards and requirements for the labeling and advertising of cigarettes. In the case of advertising, the standards would require a health warning and also "provide for the elimination of all advertising which tends to make cigarette smoking attractive to children."

The measures now in your committee which would impose special restrictions on the advertising of cigarettes raise serious constitutional and public policy questions.

First and foremost, this association wishes to emphasize that it takes no position as to the merits or demerits of cigarette smoking. The association

recognizes and appreciates the legitimate interest of the Federal Government in matters which may be found to affect the health of citizens.

If cigarette smoking is found to be a national health hazard, we think that the problem should be attacked directly.

It is difficult to follow the logic or the precise reasons for the proposed advertising restrictions. The Government would be placed in a strange position. It subsidizes the farmers who grow tobacco, then it taxes not only the growers but also the tobacco manufacturers, wholesalers, and retailers, then imposes additional taxes on the smokers themselves. To follow that with a Government requirement that every advertisement state affirmatively that smoking is injurious to health puts the Government in the untenable position of simultaneously subsidizing and taxing an item which the Government says will destroy its citizens' health.

When the U.S. Surgeon General early in 1964 issued his report on smoking and health, newspapers and other media gave that report the widest possible dissemination. No claim can be made that there has been an information failure. The general conclusions of the Surgeon General's report were widely disseminated to the public by newspapers and other media.

Since then a national cigarette advertising code sponsored by the Nation's major cigarette manufacturers has been adopted. The code provides that advertising may not be used in any media, including newspapers, unless it has been submitted to the administrator and determined by him to be in compliance with the code. The code also bars the use of testimonials or endorsements from athletes or celebrities, if such use would have a special appeal to young people, and categorically prohibits all advertising designed to appeal to persons under 21.

This association believes that the code is praiseworthy in that it provides self-policing by an important taxpaying segment of American industry. The code should be given an opportunity to prove its worth.

Now as to the questions of constitutional law.

It is a fundamental belief of our association that it should be legal to advertise truthfully any product or service it is legal to sell. No instrumentality of Government should adopt any law or rule to prohibit or curtail dissemination of information through truthful advertising.

Cigarettes are legitimate articles of commerce. The tobacco industry is an important segment of our economy. We respectfully submit that fundamental questions of constitutional law as well as of public policy are raised when Government seeks to regulate the right to publish truthful advertising concerning legitimate articles of commerce. We believe each publisher has not only the right but the duty to determine individually the content of his newspaper. This applies as much to the advertising content as to the news content.

The ANPA takes no position on bills relating to labeling requirements. But we do believe that restrictions on advertising such as are proposed in the bills mentioned above invade areas of individual choice of expression which are protected under the Constitution. Those bills offer a dangerous precedent.

We are living in a complex society and all of us are subject to many risks every day.

People die in automobile accidents. Should the automakers be required to insert warnings in their advertisements?

Airplanes crash. Should we force the airlines to include warning statements in their ads to that effect?

It is said to be harmful to eat too much rich food. Should we require food producers and sellers to mention this fact in their advertisements?

Many doctors say that it is hazardous to some adults to drink milk or to eat eggs. Perils are associated with liquor and beer, electric light sockets, gasoline, engaging in athletic activities, using products in aerosol containers.

All these may be dangerous. Yet it can hardly be required that advertisements for these products must contain warning statements.

If the advertising legislation now proposed should be enacted, the precedent would be established that could lead to totalitarian restrictions on the right of businessmen to advertise their products and the right of newspaper and other media to decide independently their policies as to the content of advertisements which they will accept for publication.

Please let us emphasize the obvious. Our association does not condone misleading or untruthful advertising. The members of our Association have a long and praiseworthy record of rejecting advertisements which are not truthful

and responsible or which misrepresent the product advertised. Many publishers prefer not to advertise particular products. But we cannot agree that Congress or any governmental agency should determine the contents of advertisements of legitimate articles of commerce.

If there is any further information this association can supply, please let us know.

With high esteem.

Sincerely yours,

STANFORD SMITH,
General Manager.

STATEMENT OF THE NATIONAL TUBERCULOSIS ASSOCIATION IN SUPPORT OF LEGISLATION RELATING TO THE LABELING AND ADVERTISING OF CIGARETTES

(Presented by Daniel E. Jenkins, M.D., Houston, Tex.)

The National Tuberculosis Association and its medical section, the American Thoracic Society, are increasingly concerned by the effect of cigarette smoking on health, particularly on the respiratory system. Our emphasis on the respiratory system is not intended to ignore the damage that smoking may—and does—do to other organs. We stress the respiratory system because control of respiratory diseases is the target of the NTA and ATS.

Before we get into the question of whether smoking is related to certain diseases of the respiratory tract, perhaps we might refresh our memory regarding the physiology of our breathing system.

As you know, the respiratory system contains the organs responsible for breathing air into and out of the lungs. The traches, or windpipe, and its branching extensions, the bronchi, and the lungs might be considered the chief organs of the system. Inspired air passes down the main bronchus into its branches and still finer subdivisions, known as bronchioles, whence it reaches the air sacs of the lung. These are the alveoli and there are literally hundreds of millions of them in the lungs. It is in the air sacs that occurs what we call gas exchange; that is, oxygen from the air is diffused into the small blood vessels known as capillaries and carbon dioxide is expelled from the lungs. The capillaries carry the oxygen to the larger blood vessels which distribute it to tissues throughout the body.

The respiratory system has its own cleaning apparatus which, on the whole, operates quite efficiently.

An important component of this cleansing machinery is the mucous lining of the bronchial tree. Attached to the mucosa are very small hairs, called cilia, which normally are in constant motion, pushing upward with a rhythmic beat extraneous matter that might clog the airways.

With this brief review, we should like to discuss some of the most serious chronic diseases of the respiratory tract which, we believe, are adversely effected by cigarette smoke, whether or not causally related to the smoking habit.

You have all read "Smoking and Health," the report of the Advisory Committee to the Surgeon General of the Public Health Service. You will recall that the report states unequivocally: "Cigarette smoking is the most important of the causes of chronic bronchitis in the United States, and increases the risk of dying from chronic bronchitis" (p. 38).

What is chronic bronchitis?

Chronic bronchitis has been defined by the American Thoracic Society as "a clinical disorder characterized by excessive mucous secretion in the bronchial tree. It is manifested by chronic or recurrent productive cough." Certain specifics relating to the period of time over which coughing occurs follow but need not concern us here now.

Chronic bronchitis is caused by prolonged irritation to the mucosa, by infection, or, most commonly, by both. Such irritants as heavy smoking, air pollution, and long-term inhalation of dust damage the delicate mucosa-ciliary mechanism, thus weakening an important defense of the respiratory tract. Under stress of the irritants, the cells responsible for producing mucus become overly active, the membrane becomes thickened, and some of the cilia are injured. With the defenses down, bacteria find lodging in the airways and infection sets in. Through the years inflammation flares up during acute episodes of infection. There is a chronic cough and the amount of phlegm raised tends to increase with the years. Frequently chronic bronchitis progresses to pulmontary emphysema and heart failure.

And this leads us to another disease of the respiratory system to which we want to call your attention. This is pulmonary emphysema which has far too rapidly become a major health problem in this country, particularly among men.

Emphysema does not lend itself to easy definition. The etiology is unknown. In fact, many factors are probably involved in its pathogenesis. The beginning is insidious and the condition may not be recognized clinically until it is well advanced. It is characterized by difficulty in breathing that becomes so acute that the patient literally gasps for breath. Anyone who has ever heard the labored, rasping breathing of the patient in the late stages of emphysema will never forget it.

Emphysema may be preceded by chronic bronchitis, but this is not always the case. An anatomical change may take place in the lung because of factors not as yet identified. The organ loses its elasticity. A breakdown of normal mechanism causes unexpelled air to become "trapped" in the air sacs, which then become overdistended and their strained walls break down. The small blood vessels collapse. Waste carbon dioxide clogs the lung. Breathing becomes more and more difficult. Death ensues from suffocation or heart failure.

This is a pulmonary condition that was given as the first cause of death on 1,914 death certificates in 1952.

It was given as the primary cause of death on 12,368 death certificates in 1962.

These deaths are in addition to approximately 3,000 deaths due to chronic bronchitis and to deaths to which chronic bronchitis and emphysema were contributing causes.

The Surgeon General's committee had this to say about the relationship between cigarette smoking and emphysema: "A relationship exists between pulmonary emphysema and cigarette smoking but it has not been established that the relationship is casual. The smoking of cigarettes is associated with an increased risk of dying from pulmonary emphysema" (p. 38).

Please note the latter sentence—"The smoking of cigarettes is associated with an increased risk of dying from pulmonary emphysema." We do not know what causes emphysema. Many of us suspect that smoking is a cause, but we do not know. However, it is doubtful whether there is any doctor in this country who has ever treated an emphysema patient and who has not, the very first thing, precribed that his patient stop smoking.

No, we do not know that smoking is a cause of emphysema, but we do know that rarely does a death from emphysema occur among a nonsmoker.

The National Tuberculosis Association and its medical section are deeply concerned by the increase in chronic respiratory diseases and the close connection between this increase and cigarette smoking. The NTA and its 1,900 affiliated associations throughout the country are engaged in health education activities to call to the attention of the American people the importance of early recognition of the symptoms of respiratory distress and of appropriate action to prevent serious disease. The NTA is sponsoring basic reearch in the field of respiratory diseases. It has initiated a series of seminars to keep science writers, an important segment of the press, up-to-date regarding respiratory diseases.

The American Thoracic Society, our medical group, has recently sponsored an independent study on the relationship between smoking and health. The findings have not as yet been published, but in all particulars they corrobate those of the Surgeon General's committee.

Conscious of its responsibility as a health organization, the NTA is working in close collaboration with other agencies to warn our people, particularly young people, of the threat to health represented by cigarette smoking.

Our efforts may well be in vain unless the Federal Government acts. We look to the Federal Government to take appropriate action to protect future generations from the dangers inherent in cigarette smoking.

CURRICULUM VITAE OF DANIEL E. JENKINS

Born: Omaha, Nebr., July 19, 1916.

Education: B.A., University of Texas, 1936; M.D., University of Texas Medical Branch, 1940.

Graduate hospital clinical experience: Intern, University of Michigan Hospital, 1940–41; resident, University of Michigan Hospital, 1941–45.

Academic positions: Instructor in medicine, University of Michigan Medical School, 1944–46; assistant professor in medicine, University of Michigan Medical School, 1946–47; assistant professor in medicine, Baylor University College of Medicine, 1947–49; associate professor in medicine, Baylor University College of Medicine, 1949–56; professor in medicine, Baylor University College of Medicine, 1956 to present.

Hospital appointments: Chief, pulmonary disease section, Jefferson Davis Hospital; consultant in pulmonary medicine: Veterans' Administration hospital, Houston; Veterans' Administration hospital, Temple; consultant in medicine, Brooks Army Hospital.

Licensure: Texas, 1940; Michigan, 1941.

Certification: Internal Medicine, 1947.

Membership in societies: Alpha Omega Alpha Honor Medical Society, 1940; American Medical Association and Harris County Medical Society, 1948; American Thoracic Society, 1945 (president, 1958 to 1959); American College of Physicians (fellow) 1951; American College of Chest Physicians (fellow in 1950) (president, southern chapter, 1959); American Association for the Advancement of Science, 1946; American Federation for Clinical Research, 1951; New York Academy of Sciences, 1951; Houston Society of Internal Medicine, 1947; Texas Club of Internists, 1952; Texas Society of Internal Medicine, 1951; American Clinical and Climatological Association, 1958; International Union Against Tuberculosis, 1958; and Association of American Medical Colleges, 1959.

Positions on editorial boards: American Review of Tuberculosis, 1955–56.

Special committee appointments: Ad Hoc Committee on Smoking and Health, American Thoracic Society, chairman; Committee on Policy, National Tuberculosis Association; Governor's Committee on Eradication of Tuberculosis in Texas, 1964–65.

PUBLICATIONS

(1) Benedryl in the Treatment of Hay Fever and Asthma (with E. O. Schreiber and J. M. Sheldon), Univ. of Mich. Hospital Bulletin, *12:* 30–31, April, 1946.

(2) Tuberculosis Control in the University Hospital (with W. H. Shull), Univ. of Mich. Hospital Bulletin, *13:* 30–31, April, 1947.

(3) The Effect of Streptomycin on Early Tuberculous Pulmonary Lesions; A Preliminary Report (with W. M. Peck, J. J. R. Reid, and H. S. Willis), Amer. Rev. of Tuberc. *56:* 387–395, November, 1947.

(4) The Effect of Streptomycin on Early Lesions in Pulmonary Tuberculosis (with W. M. Peck, J. J. R. Reid, H. S. Willis, and S. A. Yannitelli), Chapter in "Streptomycin and Dihydrostreptomycin in Tuberculosis," Pages 176–184, National Tuberculosis Association, 1949.

(5) The Early Tuberculous Pulmonary Lesion and Its Management, Texas State Journal of Medicine, *44:* 571–580, December, 1948.

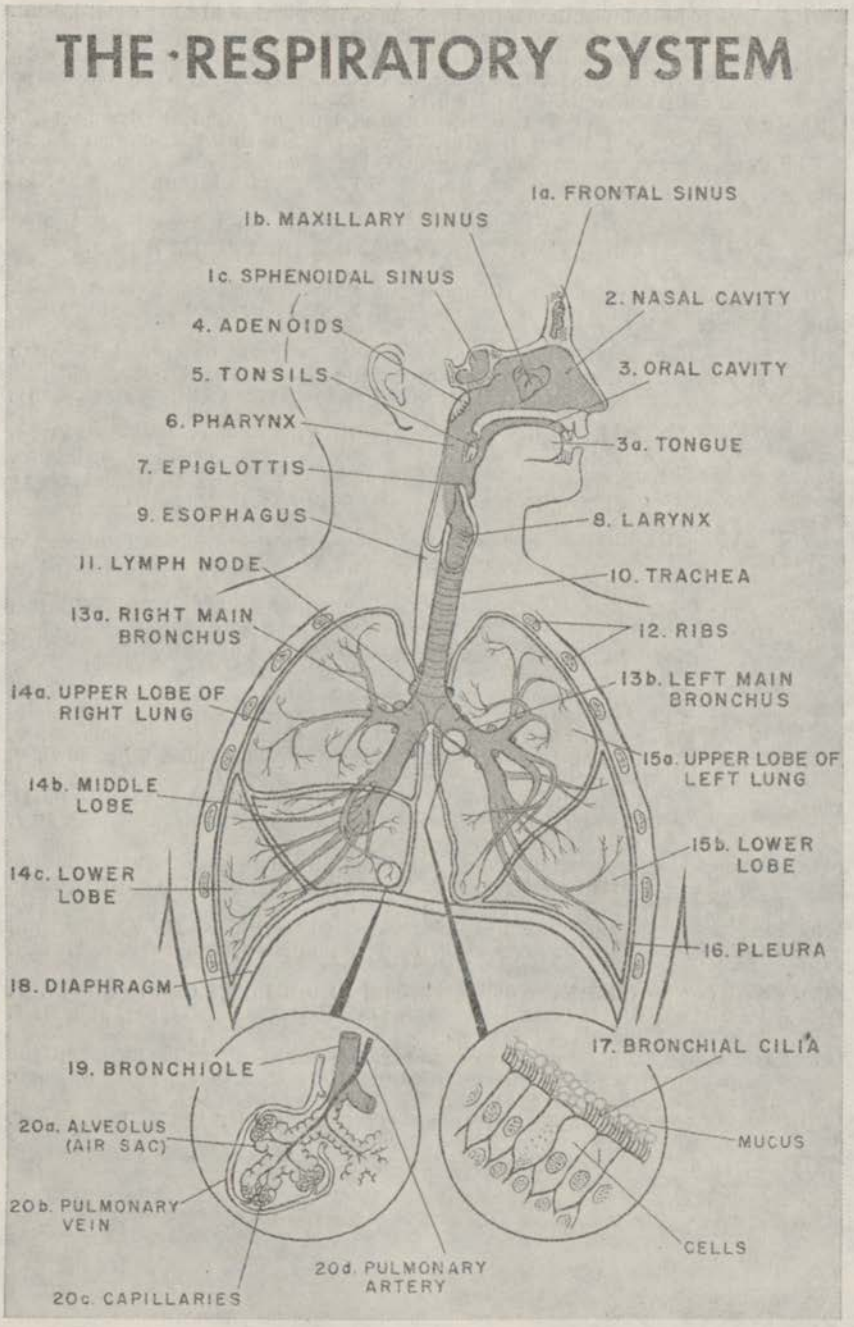
(6) Inefficacy of Prophylactic Stremptomycin in an Outbreak of Salmonella Gastro-enteritis (with J. J. R. Reid and C. R. Owen), Amer. Jour. of Med. Sciences 218–145–148, August, 1949.

(7) Mycomycin, A New Antibiotic with Tuberculostatic Properties, Jour. Lab. and Clin. Med., *36:* 841–842, November, 1950.

(8) Mycomycin, Its Present Status in Tuberculosis, Transactions of the Ninth Streptomycin Conference, Veterans' Administration, Army, Navy, 179–186, April, 1950.

(9) Recent Advances in the Treatment of Tuberculosis, Texas State. Jour. Med., *47:* 803–809, 1951.
(10) A Progress Report on Mycomycin, Transactions of the Tenth Streptomycin Conference, Veterans' Administration, Army, Navy, January, 1951.
(11) Amithiozone Treatment of Pulmonary Tuberculosis, a Pilot Study of 21 Patients (with H. S. Sandhaus, K. L. Burdon, and Bela Halpert), Amer. Rev. Tuberc. *64:* 170–181, August 1951.
(12) Blood Volume and Extracellular Fluid in Tuberculosis (with E. B. Hay and C. R. Hay), J. Thor. Surg., *21:* 42–47, January, 1951.
(13) Laboratory and Clinical Studies on Terryamycin (with E. M. Yow, H. Mendell, R. H. Skaggs, and H. Hipp), American Practicioner, *2:* 689–693, August, 1951.
(14) Current Status of Antimicrobial Therapy in Tuberculosis—Report of the Clinical Subcommittee of the Committee on Medical Research and Therapy (with W. B. Tucker et al), Amer. Rev. Tuberc. *63:* 617–623, May, 1951.
(15) Mycomycin, A Final Report. Transactions of the Eleventh Conference on the Chemotherapy of Tuberculosis Veterans Administration, Army, Navy, January, 1952.
(16) The Effects of an Intermittent Dosage Schedule of Viomycin on Renal Function and on Plasma Electrolytes (with J. H. Moyer, P. O. Jones, R. M. Ford, and L. C. Mills), Amer. Rev. Tuberc., *68:* 541–547, October, 1953.
(17) Cultural Properties of M. Tuberculosis in Resected Pulmonary Lesions of Patients Treated with Streptomycin and Para-aminosalicylic Acid (with G. E. Granville, D.A. Cooley, M. E. DeBakey, F. C. Whitcomb, and B. Halpert), Amer. Rev. Tuber., *68:* 727–733, November, 1953.
(18) The role of Isonicotinic Acid Derivatives in the Treatment of Tuberculosis, Southern Medical Journal, *46:* 1052–1057, November, 1953.
(19) Changing Concepts and Modern Treatment of Tuberculosis (with W. B. Tucker et al), Amer. Rev. Tuberc., *70:* 930–948, November, 1954.
(20) Treatment of Empyema, Current Therapy, 86–88, 1953, W. B. Sanders and Co., Philadelphia, Pa.
(21) Changes in Composition of Pneumoperitoneum Air in Human Subjects Following Injection of Ambient Air (with H. G. Boren and Clark Silverthorne), Jour. Lab. and Clin. Med., *42:* 788, November, 1953.
(22) A Pilot Study of the Thiocarbanilide SU–1906 in Human Pulmonary Tuberculosis (with P. O. Jones and S. C. Yin), Amer. Rev. of Tuberc., *74:* 468–470, September, 1956.
(23) In Vitro and In Vivo Studies of the Anti-Tuberculosis Activity of Cyanactic Acid Hydrazide (with P. O. Jones and S. C. Yin), Amer. Rev. of Tuberc., *74:* 417–427, September, 1956.
(24) Treatment of Atelectasis, Current Therapy, 73–76, 1958, W. B. Sanders & Co., Philadelphia, Pa.
(25) The Need for Augmentation of Tuberculosis Case Finding, Transactions of the Commonwealth Chest Conference, London, England, July 1958, Pg. 357–359.
(26) Tuberculosis in the Unexpected Areas. Bulletin of the National Tuberculosis Association, *44:* 163–165, December, 1958.
(27) Review of Recent Clinical Studies in the United States on Atypical Acid-fast Bacilli. Bull. of the Internat. Union Against Tuber., *29:* 295–308, 1959.
(28) Patterns of Disease Associated with Atypical Mycobacteria in Texas (with D. Bahar, I. Chofnas, M. Foster, E. Jones, and M. McGee), Amer. Rev. of Tuberc. & Pul. Dis., *79:* 822, 1959.
(29) Exhibit: The Lung in Three Dimensions, A Technique of Formaldehyde Fume Fixation (with H. S. Boren, B. Blumenthal, and E. Erickson), Exhibited at Annual Meeting of National Tuberculosis Association, May, 1959.

(30) Summary of Symposium on the Problem of Atypical Acid-Fast Bacilli, Bull. Internat. Union Against Tuberc., *29:* 76, October-December, 1959.
(31) The Clinical Problem of Infection with Atypical Acid-Fast Bacilli (with D. Bahar, I. Chofnas, R. Foster, and H. T. Barkeley), Transact. Amer. Clin. and Climatol. Association, *71:* 21–33, 1959.
(32) Current Concepts of Pulmonary Disease Due to Atypical Mycobacteria (with I. Chofnas and D. Bahar), Transact. of the 19th V.A.-Armed Forces Conference on the Chemotherapy of Tuberculosis, 224–233, 1960.
(33) Present Concepts About Atypical Acid-Fast Bacilli. Bull. of the Nat. Tuberc. Asso., *46:* 11–12, April, 1960.
(34) Comparison of Wet and Dry Inflation Techniques for Fixing, Staining and Mounting Lung Specimens (with D. Bahar and H. G. Boren), Amer. Rev. Resp. Dis., *84:* 120–121, 1961.
(35) Variations of Disease in Humans Caused by Scotochromogens (with M. Hunsaker, I. Chofnas, E. Whitcomb, K. H. K. Hsu, and D. Bahar), Amer. Rev. Resp. Dis., *86:* 114, 1962.
(36) The Tuberculin Reactions Associated with Tuberculous Infections (with K. H. K. Hsu and L. Soriano), Amer. Rev. Resp. Dis., *86*: 121, 1962.
(37) The significance of Low-Grade Tuberculin Sensitivity (with K. H. K. Hsu), Canad. J. Pub. Health, *53:* 313, 1962.
(38) The Tuberculin Reaction Associated with Tuberculous Infection (with K. H. K. Hsu and L. R. Soriano), Amer. Rev. Resp. Dis., *87:* 493, 1963.
(39) Scotochromogen Mycobacterial Disease in Man (with S. D. Greenberg, D. Bahar, K. H. K. Hsu, M. Hunsaker, and R. J. Jones), Texas State J. Med. *59:* 949, 1963.
(40) Various Lung Inflation-Fixation Techniques in the Study of Pulmonary Tuberculosis (with S. D. Greenberg, and D. Bahar), Amer. Rev. Resp. Dis. *88:* 109, 1963.
(41) Chapter 8. Mycobacterial Diseases of the Lung and Bronchial Tree. Clinical and Laboratory Aspects of Tuberculosis, Chapter 9. Treatment of Tuberculosis, Chapter 10. Tuberculosis-like Diseases Caused by Other Mycobacteria (all with E. Wolinsky). In a Textbook of Pulmonary Diseases, edited by Gerald Baum, M.D., Boston, Mass.: Little, Brown and Co., 1964.
(42) Surgical Experiences in the Management of Atypical Mycobacterial Infections (with S. W. Law, I. Chofnas, D. Bahar, Frances Whitcomb, H. T. Barkley, and M. E. DeBakey), J. Thorac. and Cardiovasc. Surg. *46:* 689, 1963.
(43) Coexistence of Carcinoma and Tuberculosis of the Lung (with S. D. Greenberg, D. Bahar, H. I. Schweppe, Jr., and H. Block, Jr.) Amer. Rev. Resp. Dis. *90:* 67, 1964.
(44) A Rapid Method of Inflation-Fixation for Morphologic Study of Chronic Pulmonary Disease (with S. D. Greenberg, and R. M. O'Neal), Tech. Bull. Registry Med. Technol. *34:* 82, 1964.
(45) Studies on the Specific Tuberculin Reaction (with K. H. K. Hsu, and F. Jeu), Tuberculin Conversion in Tuberculosis Contacts. Amer. Rev. Resp. Dis. *90:* 36, 1964.
(46) Results of Needle Biopsy of the Parietal Pleura in 124 Cases (with N. V. Rao, P. O. Jones, S. D. Greenberg, D. Bahar, A. D. Daysog, and H. I. Schweppe), Archives Int. Med. Arch. Int. Med. *115:* 34, 1965.
(47) Treatment of Pulmonary Tuberculosis. A chapter in "Textbook on the Management of Tuberculosis". Editor, Carl A. Pfuetze, M.D., Chicago, Ill.. Amer. College Chest Physicians, 1965 (In press).
(48) Today's Concept of the Tuberculin Test. (with K. H. K. Hsu, A. T. Carreon, and F. Jeu), Dis. Chest, *46:* 648, 1964.


THE·RESPIRATORY SYSTEM
1a. FRONTAL SINUS
1b. MAXILLARY SINUS
1c. SPHENOIDAL SINUS
2. NASAL CAVITY
4. ADENOIDS
3. ORAL CAVITY
5. TONSILS
6. PHARYNX
3a. TONGUE
7. EPIGLOTTIS
9. ESOPHAGUS
8. LARYNX
11. LYMPH NODE
10. TRACHEA
13a. RIGHT MAIN BRONCHUS
12. RIBS
13b. LEFT MAIN BRONCHUS
14a. UPPER LOBE OF RIGHT LUNG
15a. UPPER LOBE OF LEFT LUNG
14b. MIDDLE LOBE
15b. LOWER LOBE
14c. LOWER LOBE
16. PLEURA
18. DIAPHRAGM
17. BRONCHIAL CILIA
19. BRONCHIOLE
20a. ALVEOLUS (AIR SAC)
MUCUS
20b. PULMONARY VEIN
CELLS
20d. PULMONARY ARTERY
20c. CAPILLARIES

THE RESPIRATORY SYSTEM

This chart of the respiratory system shows the apparatus for breathing. Breathing is the process by which oxygen in the air is brought into the lungs and into close contact with the blood, which absorbs it and carries it to all parts of the body. At the same time the blood gives up waste matter (carbon dioxide), which is carried out of the lungs with the air breathed out.

1. The sinuses (frontal, maxillary, and sphenoidal) are hollow spaces in the bones of the head. Small openings connect them to the nasal cavity. The functions they serve are not clearly understood, but include helping to regulate the temperature and humidity of air breathed in, as well as to lighten the bone structure of the head and to give resonance to the voice.

2. The nasal cavity (nose) is the preferred entrance for outside air into the respiratory system. The hairs that line the inside wall are part of the air-cleansing system.

3. Air also enters through the oral cavity (mouth), especially in people who have a mouth-breathing habit or whose nasal passages may be temporarily obstructed, as by a cold.

4. The adenoids are overgrown lymph tissue at the top of the throat. When they interfere with breathing, they are generally removed. The lymph system, consisting of nodes (knots of cells) and connecting vessels, carries fluid throughout the body. This system helps to resist body infection by filtering out foreign matter, including germs, and producing cells (lymphocytes) to fight them.

5. The tonsils are lymph nodes in the wall of the pharynx that often become infected. They are an unimportant part of the germ-fighting system of the body. When infected, they are generally removed.

6. The pharynx (throat) collects incoming air from the nose and mouth and passes it downward to the trachea (windpipe).

7. The epiglottis is a flap of tissue that guards the entrance to the trachea, closing when anything is swallowed that should go into the esophagus and stomach.

8. The larynx (voice box) contains the vocal cords. It is the place where moving air being breathed in and out creates voice sounds.

9. The esophagus is the passage leading from mouth and throat to the stomach.

10. The trachea (windpipe) is the passage leading from the pharynx to the lungs.

11. The lymph nodes of the lungs are found against the walls of the bronchial tubes and trachea.

12. The ribs are bones supporting and protecting the chest cavity. They move to a limited degree, helping the lungs to expand and contract.

13. The trachea divides into the two main bronchi (tubes), one for each lung, which subdivide into the lobar bronchi—three on the right and two on the left. These, in turn, subdivide further.

14. The right lung is divided into three lobes, or sections. Each lobe is like a balloon filled with spongelike lung tissue. Air moves in and out through one opening—a branch of the bronchus.

15. The left lung is divided into two lobes.

16. The pleura are the two membranes, actually one continuous one folded on itself, that surround each lobe of the lungs and separate the lungs from the chest wall.

17. The bronchial tubes are lined with cilia (like very small hairs) that have a wavelike motion. This motion carries mucus (sticky phlegm or liquid) upward and out into the throat, where it is either coughed up or swallowed. The mucus catches and holds much of the dust, germs, and other unwanted matter that has invaded the lungs and thus gets rid of it.

18. The diaphragm is the strong wall of muscle that separates the chest cavity from the abdominal cavity. By moving downward, it creates suction to draw in air and expand the lungs.

19. The smallest subdivisions of the bronchi are called bronchioles, at the end of which are the alveoli (plural of alveolus).

20. The alveoli are the very small air sacs that are the destination of air breathed in. The capillaries are blood vessels that are imbedded in the walls of the alveoli. Blood passes through the capillaries, brought to them by the pulmonary artery and taken away by the pulmonary vein. While in the capillaries the blood discharges carbon dioxide into the alveoli and takes up oxygen from the air in the alveoli.

(Published by the National Tuberculosis Association.)

STATEMENT OF THE AMERICAN PUBLIC HEALTH ASSOCIATION ON H.R. 4244, H.R. 3014, AND H.R. 4007

(Presented by Morton L. Levin, M.D., chief, department of epidemiology, Roswell Park Memorial Institute)

I am Dr. Morton L. Levin, of Buffalo, N.Y. I am here to testify on behalf of the American Public Health Association regarding H.R. 4244, H.R. 3014, and H.R. 4007.

I am a doctor of medicine with a postgraduate degree of doctor of public health. In 1939, I first became interested in and started a study of the relation of smoking to cancer. I was at that time assistant director, and subsequently director of the Division of Cancer Control of the New York State Department of Health. From 1947 to 1959, I was assistant commissioner of health in the New York State Department of Health, and since 1960 I have been chief of the department of epidemiology at Roswell Park Memorial Institute, which is the cancer research hospital and institute of the New York State Department of Health. I have published, as senior or associate author, 11 papers on the relation of smoking to cancer. A detailed list of my experience and publications is attached to my statement filed with the committee.

The American Public Health Association is a national organization comprised of professional workers primarily concerned with public health and the prevention of disease. The health hazards of continued cigarette smoking have long been the subject of study by members of the association. The association is comprised of public health officials and related personnel who are charged by law to evaluate new methods for the prevention of disease and to advise the public regarding the advisability and importance of adopting such methods.

In 1954, the Public Health Cancer Association, an affiliate of the American Public Health Association, adopted a resolution calling attention to cigarette smoking as the major cause of lung cancer and urging that the youth of America "count the cost" before starting to smoke. In 1959, the governing council of the American Public Health Association adopted a similar resolution, citing the probability that more than 1 million present schoolchildren would develop lung cancer during their lifetime if present trends continue. The resolution urged that health authorities undertake a broad educational effort "to prevent cigarette smoking." In 1963, the council called attention to the increased risk of other diseases, such as coronary artery disease and chronic respiratory disease associated with cigarette smoking and proposed that educational activities be conducted based "on the fact that the level of cigarette smoking in the United States constitutes a serious health hazard." The resolution also urged legislative bodies "to consider taking action to regulate the advertising of cigarettes." (Copies of these resolutions are attached, app. A and B.)

Since 1954, a large number of other professional health organizations, medical societies, voluntary and governmental health agencies, and research organizations in this country, Canada, and abroad, have reviewed the evidence on the effect of smoking on health (app. C). This evidence includes data gathered from chemical analysis of tobacco smoke, animal experiments on the cancer-producing effect of various chemicals contained in tobacco tar and of whole tobacco tar, the effect of smoking on human lung tissue, studies of persons ill with cancer and other diseases, studies of well persons to determine subsequent incidence of disease in relation to smoking habits and other characteristics, and vital statistics regarding changes in the mortality and incidence of disease. All the reviews of this evidence made by these health agencies have concluded that cigarette smoking is an important health hazard.

How great is this health hazard? One way of gaging its magnitude is by estimating the excess deaths among male cigarette smokers; i.e., the deaths among cigarette smokers in excess of the mortality experience of nonsmokers. Dr. Paul Sheehe and I have made such an estimate, taking into account the age distribution of the male population, the numbers of smokers and nonsmokers, and the number of deaths from various causes in 1962. Over 200,000 deaths, about 1 in every 4, are due to the excess mortality among cigarette smokers. Of the estimated 658,000 deaths among male cigarette smokers, over 33 percent were excess deaths. Lung cancer, oral cancer, laryngal cancer, chronic bronchitis, and coronary heart disease accounted for the largest number—131,000—of the excess deaths among cigarette smokers. These are the diseases designated by the Surgeon General's advisory committee as casually related or which should be considered as casually related to cigarette smoking. Allowing for approxi-

mately 20 percent over estimate due to nonresponse bias leaves a minimum estimate of over 100,000 deaths each year among males from diseases casually related to cigarette smoking. It is clear that the excess mortality among cigarette smokers today is one of our greatest health problems and, fortunately, one for which a great deal can be done in the future—if the proper public action is taken.

The most important practical aspect of the health hazard of cigarette smoking is in its preventive possibilities. Numerous studies have shown that persons who stop smoking cigarettes experience, within 5 years, a reduction of over 50 percent in the risk of developing lung cancer. Recent studies reported by Doyle and his associates (Journal of the American Medical Association, Dec. 4, 1964) show that whereas moderate to heavy cigarette smokers observed over an 8- to 10-year period experience three times as many attacks of coronary artery disease, persons who had stopped smoking had no greater incidence of heart attacks than did nonsmokers.

At present there is little that can be offered medically to counteract the effect of cigarette smoking other than prevention, by stopping smoking, smoking less, or by reducing the amount of tar intake. To achieve this requires widespread public education in order to provide individuals with sufficient motivation to change their smoking habits or not to acquire them. Enactment of the proposed legislation now under consideration would tend to provide such motivation.

Reasons for adopting health warning and tar and nicotine labeling

1. Animal studies conducted at the Roswell Park Memorial Institute by Dr. Fred Bock and others have shown that the cancer producing effect on animals is directly proportional to the amount of tar contained in each brand of cigarette. A reduction of 30 to 60 percent in tar content resulted in an equivalent reduction in the percentage of animals (mice) which developed skin cancer as a result of application. We do not, however, have direct evidence of any differential effect on humans.

2. The proposed labeling would remind the consumer of the health hazards of smoking, in relation to tar intake, and encourage the use of cigarettes with lower tar content.

3. The proposed legislation would indicate to the general public the extent of governmental concern over the health hazards of cigarette smoking. In Buffalo, N.Y., we have been conducting smoking clinics for almost 2 years to help smokers who want to stop smoking and educational activities among schoolchildren. One of the most frequently asked questions has been: Since smoking is a serious health hazard, why doesn't the Federal Government do something about it? Enactment of the proposed legislation would provide at least a partial answer to that pertinent question.

4. The cost of a broad-scale public educational program regarding smoking on a scale comparable to the expenditures for cigarette advertising would be great; the type of labeling proposed in these bills would be an effective, less costly, although partial substitute for such an educational program.

It is our view that enactment of the proposed legislation would constitute a moderate, even minimal, but nonetheless effective response of the Congress in attempting to counter the continued drain on our human resources resulting from the widespread use of cigarettes by our population. The American Public Health Association accordingly urges favorable consideration of the proposed legislation which will require labeling cigarette packages with a warning as to the potential injury to health, the tar and nicotine content, and which will regulate advertising which portrays cigarette smoking as a wholesome or safe activity.

APPENDIX A

LUNG CANCER AND CIGARETTE SMOKING

Whereas lung cancer is a rapidly increasing fatal disease which now kills more than 25,000 people in the United Staes each year and if present trends continue will claim the lives of more than 1 million present schoolchildren in this country before they reach the age of 70 years; and

Whereas scientific evidence has established that excessive cigarette smoking is a major factor in the disease; and

Whereas public health officials of the United States and many other countries have pointed out the relationship between cigarette smoking and lung cancer: Therefore be it

Resolved, That the American Public Health Association call upon health authorities to undertake a broad educational effort, especially among young people to prevent cigarette smoking: and be it further

Resolved, That the American Public Health Association urge health authorities to collaborate with voluntary health organizations and with educational authorities in this effort.

Adopted by the APHA Governing Council on October 21, 1959.

APPENDIX B

CIGARETTE SMOKING AND HEALTH

The size of the lung cancer problem in this country at the present time is such as to warrant urgent implementation of any and all preventive measures that have reasonable prospects of success. Evidence indicates that cigarette smoking is an important factor in the etiology of squamous carcinoma of the lung, and that the most reasonable explanation for the increase in the frequency of this form of cancer since 1920 is the increase in cigarette smoking that has occurred in the same period. Moreover, the desirability of public health action in relation to cigarette smoking is augmented by evidence that cigarette smoking is associated with increased risk of other disease states, in particular coronary heart disease, chronic respiratory disease and cancer of the urinary bladder.

Additional information is needed on the mechanism or mechanisms whereby cigarette smoking increases susceptibility to these disorders. But until these mechanisms are identified and are shown to be susceptible to manipulation, preventive action can be directed only at reduction of the total amount of cigarette smoking prevalent in the population.

Believing that the above considerations require immediate and serious action to reduce cigarette smoking by the American people, the American Public Health Association:

1. Urges its members, in their professional activities and by private example, to provide leadership in the Nation, the States, and in their individual communities in educational activities on the fact that the level of cigarette smoking in the United States at the present time constitutes a serious healh hazard.
2. Offers to the Surgeon General of the U.S. Public Health Service, to other official and voluntary health agencies and professional health organizations, to schools and other community agencies, the support of the association in initiating, planning and implementing an educational program, and other measures that may be devised to deal with this problem.
3. Urges the tobacco industry, their advertising services, and the National Association of Broadcasters to continue taking voluntary steps for the control of cigarette advertising in print media and on television and radio, particularly but not exclusively that directed at young people.
4. Urges those legislative bodies and bureaus that have appropriate functions to consider taking action within their legal powers to regulate the advertising of cigarettes that by its content or implications portrays cigarette smoking as being a wholesome or safe activity.
5. Urges continued research and demonstration of educational and action programs in schools and communities based on research in methods of deterring young people from beginning the smoking habit and/or encouraging adults to give up or cut down on their smoking.

Adopted by the APHA Governing Council on November 13, 1963.

APPENDIX C

SOME SCIENTIFIC BODIES AND GOVERNMENTAL AUTHORITIES WHO HAVE MADE STATEMENTS LINKING CIGARETTE SMOKING WITH LUNG CANCER AND OTHER HEALTH HAZARDS

STATE MEDICAL SOCIETIES

1. California State Medical Society, 1963
2. Connecticut State Medical Society
3. Medical Society of Delaware
4. District of Columbia Medical Society
5. Florida State Medical Society, 1963
6. Hawaii Public Health and Medical Society
7. Idaho State Medical Society

8. Maine Medical Society
9. Michigan State Medical Society
10. New Jersey Medical Society
11. New Mexico Medical Society
12. New York State Medical Society, 1963
13. North Dakota State Medical Association
14. Pennsylvania State Medical Society
15. South Dakota State Medical Association
16. Utah State Medical Society, 1963
17. Vermont State Medical Society
18. Washington State Medical Association

NATIONAL AGENCIES

United States:

1. American Association for Thoracic Surgery
2. American Cancer Society
3. American College of Chest Physicians
4. American Heart Association, 1963
5. American Public Health Association, 1959, 1963
6. Commissioner of Health, New York State, Herman E. Hilleboe, 1958
7. Commissioner of Health, New York State, Hollis S. Ingraham, 1963
8. Director, Department of Public Health, California, Malcolm Merrill, 1963
9. Michigan State Department of Health
10. National Tuberculosis Association, 1960
11. Ohio State Dental Association
12. Oregon State Board of Health
13. Public Health Cancer Association, 1954
14. Study Group on Smoking and Health, sponsored by the American Cancer Society, American Heart Association, National Cancer Institute, 1957
15. Surgeon General of the United States, Leroy E. Burney
16. Surgeon General of the United States, Luther Terry, 1964
17. Surgeon General's Advisory Committee on Smoking and Health, 1964
18. Surgeon General, U.S. Air Force, R. L. Bohannon, 1962
19. U.S. Public Health Service
20. U.S. Veterans' Administration
21. World Health Organization Expert Committee, 1959

Foreign:

1. British Medical Research Council, 1957
2. British Ministry of Health, 1954
3. Canadian Cancer Society
4. Canadian Heart Association
5. Canadian Medical Society, 1963
6. Canadian Minister of National Health and Welfare
7. Canadian Public Health Association
8. Canadian Thoracic Society
9. Danish Cancer Society
10. Danish Medical Association
11. Finland Medical Association
12. Government of Italy
13. Health Council of Holland
14. Iceland Cancer Society
15. International Union Against Cancer, Subcommittee on Tobacco and Air Pollution
16. Joint Tuberculosis Council of Great Britain
17. Medical Research Council of Great Britain
18. National Cancer Institute of Canada
19. Netherlands Ministry of Social Affairs, 1957
20. Pacific Northwest Radiological Society
21. Research Council of Sweden
22. Royal College of Physicians, London, 1962
23. Scotland Department of Health
24. Swedish Medical Research Council, 1958
25. World Health Organization, Special Study Group, 1960

APPENDIX D

CURRICULUM VITAE, MORTON L. LEVIN, M.D., D.P.H.

Born: 1903.

Educated at Johns Hopkins University, 1920–22; University of Maryland, Ph. G., 1922–24; M.D., 1930 (Summa Cum Laude); Johns Hopkins School of Hygiene and Public Health, M.P.H., 1933; D.P.H., 1934; interned at Sinai Hospital, Baltimore, 1930–31; assistant resident, 1931–32; assistant dispensary physician, Johns Hopkins Hospital, 1932–33; fellow, Johns Hopkins University School of Hygiene and Public Health, 1932–34; Commissioner of Health, Ottawa, Mich., 1934; instructor, Department of Epidemiology, Johns Hopkins University School of Hygiene and Public Health, 1935–36; associate physician, Roswell Park Memorial Institute, Buffalo, N.Y., 1936–39; associate director, New York State Legislative Cancer Survey Commission, 1938–39; assistant director, Division of Cancer Control, New York State Department of Health, 1939–46; research consultant (1946), medical director (1947), New York State Legislative Commission To Formulate a Long-Range Public Health Program; assistant commissioner for medical services, New York State Department of Health, 1947–50; director, commission on chronic illness, 1950–51; assistant commissioner for medical services, New York State Department of Health, 1951 to November 1959; chief, Department of Epidemiology, Roswell Park Memorial Institute, November 1959 to present (Charles Hayden Foundation-American Cancer Society): assocate research professor, Department of Preventive Medicine, University of Buffalo, School of Medicine, 1959 to present.

Memberships: Delta Omega; American Medical Association; American Public Health Association; American Association for the Advancement of Science (council 1955 to date); Public Health Cancer Association (president, 1947); American Epidemiological Society; New York State Epidemiological Society, president, 1948; American Statistical Association; American Association for Cancer Research.

Appointments: Associate professor of preventive medicine, Albany Medical College (1952–59); Statistics Committee, American Cancer Society (vice chairman, 1958); Committee on Etiology of Cancer, American Cancer Society (1956–60); Subcommittee on Carcinogenesis, Food Protection Committee, National Research Council, 1957; consultant, World Health Organization, Cancer Research, January–February 1959; member and rapporteur, World Health Organization, Study Group, Lung Cancer, November 1959; Subcommittee on Geographic Pathology, National Research Council—Academy of Science, 1961; consultant, President's Commission on Heart Disease, Cancer, and Stroke, 1964.

STATEMENT ON PROPOSED CIGARETTE ADVERTISING AND LABELING LEGISLATION

(By John K. Herbert, president, Magazine Publishers Association, Inc.)

The Magazine Publishers Association is an association of 109 magazine publishers of the United States publishing over 300 different magazines of general interest, most, of which accept advertising. The Magazine Publishers Association appreciates the opportunity to testify because among the questions before this committee is that of the proper role of advertising in our Nation and the appropriate relationship which should exist between Government and advertising.

As carriers of advertising, magazines are interested in legislation which affects advertising. I hope to convey to you our views on the role of advertising in the business community, the extent of industry self-regulation which now prevails, and the need for restraint in imposing new and novel advertising requirements.

In our view the role of advertising in our Nation is that it promotes the economic goals of our free enterprise by—

1. Stimulating product competition and improvement;
2. Reducing consumer prices through competition over a nationwide market;
3. Helping the growth of the economy, in terms of more jobs and greater national productivity, keep pace with the growth of population; and
4. Providing the economic foundation for essential communications media.

Advertising is a vital instrument in our whole competitive process. The regulation of avertising to require it to meet its obligations to the public is a legitimate aim of Government. The advertising industry recognized this need and played a significant role in the establishment of the Federal Trade Commission which, in accordance with traditional judicial-type procedures, has the authority and responsibility to prevent false and misleading advertising.

The media which depend in varying degrees on advertising for support exercise their judgment as to the propriety of any advertisement. Where they have deemed a proposed advertisement or line of advertising to be detrimental to the public interest in either taste or truthfulness, those advertisements have been refused. These decisions are based on the assumption that the function of advertising is to persuade informatively without misinforming. Some magazines have established policies against accepting any advertising of certain products. These are business decisions, which stem from social consciousness. As business decisions, we would submit they should not be replaced lightly by governmental regulaiton. The substitution of governmental judgment for business judgment has been accepted only as a last resort, where the business involved has proved itself unwilling or unable to serve the interests of the public.

Last year the tobacco industry established a voluntary code which sets standards of advertising for cigarettes. This code is under the administration of former Governor Meyner, of New Jersey. Penalties of as much as $100,000 can be imposed under the code for violations. These penalties are substantially more than those which may be imposed under other regulatory codes. The code appears to be a substantial effort by the tobacco industry toward self-regulation and correction of abuses. It has already resulted in changes in packaging design and advertising, both as to content and appeal.

The code has been in effect less than a year. We believe that the tobacco industry should be given an opportunity to prove that self-regulation can be effective. Last year an Advertising Advisory Committee of the Department of Commerce, on which I was pleased to serve, issued a report entitled "Self-Regulation in Advertising" which discussed many of industry's efforts at self-regulation and commended those industries which participated in the programs. The report indicated the need for such programs and stated:

"The entire structure of advertising self-regulation, and of the business self-regulation of which it is only a part, reflects a desire to stimulate honor and respect, and to guide our society by principles of social and moral responsibility."

The question for this committee is how best to protect the public interest. All consumers have an opportunity to read or identify markings on the package or container of a commodity which indicate whether its use involved a risk and what precautions to observe. Thus, the best way to reach the consumer with a warning message, if such is deemed necessary, would seem to be the label itself. Whether a given commodity needs a warning label is a subject requiring the most careful assessment of scientific evidence, statistical projections, psychology, and judgment. This is the wise type of action that Congress has taken regarding flammable products, woolens, and drugs.

A requirement that advertising contain such a warning would unjustifiably project the Government over the threshold into an entirely new area involving the regulation and writing of advertising copy. We believe that an advertising warning requirement is based on a misinterpretation of the function of product advertising as distinct from the function of product labeling. Accordingly, we urge that, whatever may be decided with respect to labeling, Congress make clear that it does not sanction mandatory warnings in advertising.

On behalf of the Magazine Publishers Association, I want to thank you for the privilege of presenting our views to this committee.

TESTIMONY OF GEORGE JAMES, M.D., COMMISSIONER OF HEALTH, NEW YORK CITY HEALTH DEPARTMENT, CONCERNING H.R. 4244, 3014, AND 4007

I am Dr. George James, commissioner of health and chairman of the board of health of the city of New York. A detailed review of my training and experience has been given to the committee. In general, I have been in the public health field for 25 years and have been a member of the teaching faculty of schools of medicine or public health at Harvard, Yale, Columbia, and Albany, and have held visiting lectureships at a dozen others. I have published about 100 papers dealing with subjects in the field of epidemiology and public health.

I have held positions in local and State public health work for the States of Tennessee, Ohio, Maryland, and New York. I am pleased to have this opportunity to testify before this distinguished committee on a subject of such great importance to the public health.

During 1964 there were 2,761 deaths from lung cancer in New York City. This represents nearly 100 more than occurred the year before. At the most conservative estimate now available, at least 70 percent of these deaths can be charged to cigarette smoking. This means that cigarettes killed nearly 2,000 of our citizens from lung cancer alone. If we consider the excess mortality from the other diseases associated with cigarette smoking, this means that cigarettes were one of the major agents causing death in our city last year.

I am pleased to see that efforts are being made to solve the cancer-cigarette problem by Federal enactment, since a multiplicity of State and/or local laws is not advisable. Since the cancer-cigarette problem is of such great immediacy and urgency for us all over the country, I hope and urge that the Congress continue its efforts and enact legislation which will insure that every cigarette user is fully and unequivocally made aware that cigarette smoking is endangering his life and health. While we are very much concerned with older individuals who are long-term users of cigarettes, we have directed our educational activities in the city of New York primarily toward young boys and girls who are beginning to be exposed to the cigarette-smoking habit.

I therefore urge immediate action on legislation providing for warnings on cigarette packages and cigarette advertising. In recent studies of cigarette smokers it has been reported that by the time they reach the 12th grade, 50 percent of schoolchildren have already become habitual smokers and even 10 percent of seventh graders have begun smoking habitually. Since the duration of smoking increases the risk of lung cancer, postponement of the age when the habit begins could be a major step toward prevention of this highly fatal disease.

With specific reference to H.R. 3014, 4007, 4244, I believe that both the health warning and the tar and nicotine content yield per cigarette should be on the label. A statement of the average tar and nicotine yield is useful for the consumer for the following reasons:

1. It indicates that the tar and nicotine content is of importance to the health of the consumer.

2. It puts pressure on the industry to develop cigarettes of increasingly lower tar and nicotine content. Substantial lowering of the content of these substances would be equivalent to a reduction of cigarette smoking, which in turn would reduce the health hazards of cigarette smoking.

I would urge that the Federal Trade Commission be specifically empowered to establish standards for the measurement of tar and nicotine content of cigarettes and publish data periodically on the tar and nicotine content of brands of cigarettes used in the United States. This would permit the consumer to know which brands are rated lowest in tar and nicotine content.

I preside over the Board of Health of New York City. This board has broad lawmaking powers. We are the legislative agency responsible for passing laws to protect the health of 8 million citizens in this largest city of our Nation and of the millions of other Americans who pass through it either as commuters, travelers, or visitors. We, as individual members of this responsible body, do not always know the correct answers to the latest scientific developments, but we do know how to find out what they are. We rely on the overwhelming weight of expert opinion. We must also always be aware of the implications of our actions on industry, commerce, and the freedom and legal rights of our citizens. In meeting these responsibilities our mission for 8 million people appears to be similar to yours for 200 million.

Various reputable physicians and other scientists have testified before the Congress that cigarette smoking does not present a serious health hazard. I believe these men are sharing their considered opinions honestly. We are quite familiar with differences in expert opinion. But if we waited for a unanimous opinion on health matters among the 18,000 physicians in New York City, we would have no health program at all.

Within my own professional lifetime I can recall a famous medical school professor who believed that poliomyelitis was caused by a certain strain of streptococcus, and another who published extensive research studies proving that the disease was due to cyanides in the soil. One year ago we held an open hearing in our city on the desirability of adding fluorides to our water supplies in order

to prevent dental caries. A number of noted physicians and scientists testified against this procedure. A Nobel Prize winner sent a letter indicating that he, too, had reservations. Yet this is a chemical that has been added both safely and successfully to the water supply of this city of Washington for the past 13 years and is piped into every tap within the very building where we are now meeting.

A few chest physicians have testified against the findings of the Surgeon General's report, but the thousands who make up the membership of the American College of Chest Physicians have passed and maintained on their books a firm resolution on the health hazards of cigarettes. A few chest surgeons have also testified in opposition, yet the many who make up the Society of Thoracic Surgeons and the American Association for Thoracic Surgery have passed resolutions indicating the danger to health of cigarettes. Certain heart disease specialists have testified on the harmlessness of cigarette smoking to the heart, but thousands of cardiologists are members of the American Heart Association which has officially indicted cigarettes as a danger to health. Individual physicians have testified that cigarettes are safe, but 37 State medical societies and the American Medical Association, representing 200,000 physicians, disagree with them and have said so. One of the strongest resolutions is that of the American Medical Association, passed unanimously by its house of delegates last June.

There is now available no more reliable or effective method of weighing the testimony of experts than by the jury of their own peers.

The overwhelming weight of scientific opinion has agreed that cigarette smoking is hazardous to health. We must no longer be diverted from our task of saving lives by decreasing and, as far as children are concerned, preventing or at least postponing, the cigarette habit. The lack of action against cigarettes now as a cause of disease is really effective action in favor of lung cancer and the other deadly diseases caused by cigarette smoking.

The youth of our Nation are constantly bombarded by advertising in the press, radio, television, billboards, and magazines with what they consider to be the desirable and attractive features of cigarette smoking. It is therefore essential that such advertising include a warning of the undesirable features as well. The recent Federal drug legislation and Food and Drug Administration regulations have provided safeguards on the advertising of drugs, and such warnings of adverse reactions are now being included. Cigarettes present a danger at least comparable if not greater than that associated with the vast majority of drugs now advertised in compliance with these new regulations. Cigarette advertising should include such warning statements prominently displayed. The impressionable youth of our Nation, not yet mature enough to understand the hazards of smoking must be constantly reminded of them whenever they are confronted by advertising strongly suggesting that smoking is a pleasurable, desirable, adult type of sophisticated activity.

Those who oppose the warning labels on cigarettes and cigarette advertising suggest that such a program would be similar to requiring health warnings on a host of common substances whose use may on occasion be hazardous. Frequently listed are such items as whisky, automobiles or household chemicals. First of all, many of these items are well regulated both by law and by industrial code with particular emphasis on prevention of their use by children. This has not happened with cigarettes. I know of no instance where a family has been penalized severely by a court for offering cigarettes at a teenage party similar to the recent Connecticut episode relating to alcoholic beverages. Yet cigarettes are responsible for more deaths in this Nation than alcohol. Even more important is the fact that these other things are safe in normal use. Usual social drinking, safe driving, and the proper use of household chemicals are the rule and do not offer risks anywhere as great as those of cigarette smoking. The key hazard of cigarettes is the great risk they provide in ordinary use. The usual cigarette smoking habit in the vast majority of instances leads quickly to the dangerous level of at least one pack per day, with millions smoking two or more packs per day. Advertising the pleasant features of smoking, therefore, without at the same time indicating the dangerous aspects of the ordinary habit is like describing the beautiful markings on a rattlesnake to a group attracted to them without at the same time mentioning the deadly fangs—even if the group is supposed to know this.

The New York City Department of Health has used labeling, and in a way has also used advertising effectively to drive home the dangers of certain commonly used substances when the dangerous side of their use has been largely

ignored by the population. The labels on lead paint must indicate that they be used only on the outside portions of the home. More recently when plastic bags became common playthings for children, with serious results, we required not only that these bags be labeled as hazardous but also mounted, with the aid and support of the industry, an extensive campaign of public education about their dangers. I am pleased to report that this campaign has been effective. Thousands of ordinary household chemicals bear the label, "Keep away from children" and other appropriate warnings.

Another comment of the opponents of regulation notes that the great majority of persons who smoke cigarettes do not get lung cancer, therefore it is foolish to warn everyone about the hazard. This is a completely spurious argument. If this logic were followed we would have no regulation at all. In 1812, its peak year as our No. 1 cause of death, tuberculosis killed only 700 persons per 100,000 population per year in New York City. Since 99,300 people out of each 100,000 failed to succumb to tuberculosis even during its worst year, does that negate our vast public programs for tuberculosis control, our pasteurization of milk, our expensive isolation and treatment of infected persons? How many of those who travel above the speed limit on the highway end up as fatal accidents? In a study done in New York State we found that 50 percent of the driving population admitted exceeding the speed limit. Would that suggest that we abandon all speed control regulations? Thalidomide caused serious difficulty among only a tiny fraction of those persons who took the drug. In this instance we did not label, we did not add warnings to advertisements—we banned the drug entirely.

In 1906 tuberculosis was the leading cause of death in New York City. At that time our department found that 75 percent of the dairy herds supplying the city with milk included cows infected with tuberculosis and 10 percent of routine milk samples collected in the city contained live tuberculosis germs. Here, too, the agent (contaminated milk) was not the only cause of the spread of the disease—but it was an important one. Our department pressed the milk industry to accept pasteurization and the industry reacted violently. They stated that it would bring ruin to the entire industry, put millions of employees and dairy farmers out of work, put the price of milk beyond the reach of most consumers, and lead to the starvation of thousands of babies dependent upon this perfect food. All of this is rather similar to the comments being made today about the harm which cigarette regulation will bring to the tobacco industry.

The city of New York put pressure upon this industry—stern pressure. Milk was not priced out of the market, farmers were not ruined, pasteurization was established, babies did not starve, milk-borne tuberculosis has vanished from the city. Yes, industry adopted codes too, but not until Government acted and acted strongly and continuously.

This is not an isolated example—it is the rule in public health, and it is becoming more so. A similar experience has occurred with the restaurant industry, now cooperating so well with enhanced health safety design and self inspection programs. Air pollution control, the control of the drug industry, and of ionizing radiation are all examples of the control of health hazards by the cooperative efforts of industry and government—but such cooperation has required stern, forceful, and effective Government action.

The cigarette industry has promulgated a code under threat of Government action which does represent a step forward. But the provisions of these bills (H.R. 3014 and H.R. 4007) preempt the control of advertising to the Federal Government and then fail to provide a mechanism to regulate it. This would be similar to passing a law that no governmental agency except the Congress can control restaurant sanitation and then relying solely upon the restaurants themselves and their trade associations to do the job. The history of health hazard regulation proves that this does not work.

A leader among the Nation's experts in environmental health noted that it is amazing how industry learns how to adapt to changes even while fighting them. Industry apparently must have something to fight, or it will not adapt adequately to health progress. Evidence relating to cigarette smoking as hazardous to health has been accumulating for nearly two decades, and the cigarette industry advertising code was created only after the threat of direct governmental action last year.

We have reached that stage in the cigarette smoking problem when for a time there should be a major shift of effort away from advertising and toward greater research to produce a cigarette with less and less tars. I urge that your honorable committee create pressures for this by strengthening the ability of the

Federal Trade Commission to regulate the advertising of cigarettes and provide for the inclusion of health warnings in all advertising.

I and my colleagues on the New York City Board of Health have sworn to uphold the public health of our citizens. With at least 2,000 lung cancer deaths per year caused by cigarettes we must be permitted to take action. We have been awaiting Federal action requiring health hazard warnings on cigarette packages and advertising because this would be the most uniform and effective method of control. If, however, such Federal action is not forthcoming our board of health should not be thwarted by Federal legislation from taking action on a local level to control the one-sided advertising which helps to make our youth believe that smoking is a pleasurable, adult, sophisticated, friendly, and ordinary habit of life.

Therefore, until the routine, commonly practiced habit of smoking one pack or more per day of cigarettes begins to show a dramatic decrease in this Nation, until our youth proves by actual practice its real understanding that this habit is dangerous to life, you and we who are guardians of the public health must strive to achieve the greatest possible connection at all times in the public's mind between the pleasures and the dangers of smoking. The American Cancer Society has estimated that 1 million American children now in school are doomed to develop lung cancer from cigarette smoking, and that every day 5,000 more children start this deadly habit. New York City's share of this million doomed children is approximately 40,000. Warning statements on all cigarette packages and on all advertising can help save these children and millions more to come.

Mr. ROGERS of Texas. The subcommittee will stand in recess until 1:30 this afternoon.

(Whereupon, at 12:25 p.m. the subcommittee recessed to reconvene at 1:30 the same day.)

AFTERNOON SESSION

Mr. ROGERS of Texas. The Committee on Interstate and Foreign Commerce will come to order for a further consideration of the pending business. I believe our first witness this afternoon is Mr. K. A. Brownlee, professor of statistics, University of Chicago.

Mr. Brownlee, if you will come forward, the Chair will recognize you.

STATEMENT OF K. ALEXANDER BROWNLEE, PROFESSOR OF STATISTICS, UNIVERSITY OF CHICAGO, CHICAGO, ILL.

Mr. BROWNLEE. I wish to express my appreciation to this committee for the opportunity to appear before it.

I am K. Alexander Brownlee. Since 1956 I have served as associate professor of statistics at the University of Chicago. From 1952 to 1956 I was research associate (assistant professor) at that institution. I received the M.A. degree from the University of Cambridge in England in 1943. I was technical assistant to the Director of Ordnance Factories (Explosives) of the Ministry of Supply of Great Britain in 1943–45, statistician with the research department of the Distillers Co. Ltd. of Great Britain in 1945–48, biometrician with the Squibb Institute for Medical Research, New Brunswick, N.J., in 1949–51, and Chief, Test Design Branch, Dugway Proving Ground of the Army Chemical Corps in 1951–52.

I am a member of the Institute of Mathematical Statistics, a member of the Biometric Society, a fellow of the Royal Statistical Society of London, and a fellow of the American Statistical Association. I have acted as a statistical consultant in many areas of science, and served on the Statistical Advisory Panel to the Highway Research

Board of the National Academy of Sciences in 1955–61. I have written two widely used statistical textbooks. "Industrial Experimentation," published by the British Government's His Majesty's Stationery Office, ran through four editions in 1946 to 1948. The second text, "Statistical Theory and Methodology," was published in 1960 and a second edition has appeared in 1965.

I have had 16 papers published in 10 different scientific journals. These include two review articles invited by the editor of the Journal of the American Statistical Association, one on the "1954 Polio Vaccine Trials" and another on the "Final Report of the Advisory Committee on Weather Control." A third review article invited by that journal but not yet published, is on "Smoking and Health," the Report of the Advisory Committee to the Surgeon General of the Public Health Service.

The report "Smoking and Health," (1) the Report of the Advisory Committee to the Surgeon General of the Public Health Service, appears to be receiving acceptance as a final resolution of the controversy over the association between smoking and numerous diseases, including cancer of the lung. I wish to present to this committee a number of considerations that indicate that any claim to a solution of these questions is grossly premature.

It is 12 years or so since statisticians generally became aware of the possibility of an association between cigarette smoking and lung cancer, and 10 years since this was extended to virtually all causes of death. The sampling procedures used to establish this association were by no means as rigorous as statisticians like to see as a basis for scientific inference. The main difficulties were that in those studies in which there was a clearly defined population the percentage nonresponse was seriously high, of the order of 30 percent, and in those studies in which there was no clearly defined population there was clearly selectivity. It is notorious that these defects can, and usually do, produce serious biases, and therefore delicate and speculative calculations of the probable bounds of these possible biases are necessary. The consensus appears to be that though the association between cigarette smoking and increased death rate is probably overstated as regards the general population, nevertheless it does exist.

This association between cigarette smoking and lung cancer has been interpreted by many, including the authors of "Smoking and Health," as indicating a causative relationship. One might have expected that this brilliant and important discovery would have been widely acclaimed by the statistical profession as an example of the power and utility of their techniques. It is therefore curious that the statistical profession have been largely silent on this issue. For example, J. O. Irwin (2) in his 1962 presidential address to the Royal Statistical Society of London commented on the existence of the controversy, and the difficulties in resolving it, but expressed no opinion on it.

Likewise, J. Neyman (3) in a paper in "Science" pointing out possible fallacies in this area emphasized that he was dealing only with the methodological issues and not expressing any opinion on the substantive question. Very few papers have been published on this topic in the "Journal of the American Statistical Association," or the "American Statistician," and noteworthy among them are contribu-

tions by Dr. Joseph Berkson, of the Mayo Clinic, vigorously disputing the alleged establishment of a causative relationship (4), (5).

I think that this abstention from comment on the part of the statistical profession is due to the fact that experienced statisticians are well aware of the difficulty well expressed 40 years ago by one of the most distinguished statisticians of his generation, G. Yudney Yule (6):

"You can prove anything by statistics" is a common gibe. Its contrary is more nearly true—you can never prove anything by statistics. The statistician is dealing with the most complex cases of multiple causation. He may show that the facts are in accordance with this hypothesis or that. But it is quite another thing to show that all other possible hypotheses are excluded, and that the facts do not admit of any other interpretation than the particluar one he may have in mind.

Sir Ronald Fisher 30 years ago expressed the same idea (7):

For the logical fallacy of believing that a hypothesis has been proved to be true, merely because it is not contradicted by the available facts, has no more right to insinuate itself in statistical than in other kinds of scientific reasoning.

These remarks of three and four decades ago bear on the weakest point of the report "Smoking and Health." It is clear that the authors of the report recognized that to establish the hypothesis that smoking causes lung cancer they had to eliminate competing hypotheses, in particular that put forward by Sir Ronald Fisher (8):

that cigarette smoking and lung cancer, though not mutually causative, are both influenced by a common cause, in this case the individual genotype.

There are several items of information that make the genetic hypothesis plausible.

(1) Several workers, Fisher (9), Friberg et al. (10), and Raaschou-Nielsen (11), have independently assembled data showing that identical twins more frequently have the same smoking habits than do nonidentical twins. To date the data are not very extensive, but are certainly suggestive of the hypothesis that the taste for tobacco in its various forms is genetically linked.

(2) Data assembled by Seltzer (12) suggests that nonsmokers, cigarette smokers, etc., differ in several morphological indices. Seltzer measured young men, Harvard undergraduates, and then ascertained their smoking habits more than 15 years later. He found that smoking habits in the midthirties were associated with physical build at 20. The natural inference is that they are linked genetically.

(3) Foreign-born immigrants to the United States differ in their cancer death rates in many ways from native-born U.S. citizens. It may be contended by some that some of the differences might be due, for example, to malnutrition in early life, but this does not seem a plausible explanation for such a disease as cancer.

(4) This indication is strongly reinforced by the observation in the report:

The several ethnic groups in the United States display their own characteristic patterns of successes and deficits in risk by site.

(5) Data of Eysenck (13) shows that smokers and nonsmokers differ psychologically. Very significantly, a dose response relationship was observed, heavy smokers being more extroverted than medium smokers, and also pipe smokers resembled nonsmokers in being least extroverted. These relationships are the same as those observed between smoking and death rates. Again, it could be that smoking in-

fluences the personality, or that the personality influences the smoking habits, but they are probably jointly associated with a genetic trait.

(6) It is well known that certain cancers have very strong genetic association in some laboratory animals.

(7) Yerushalmy (14) has presented data showing that whether or not the husband smokes is associated with the incidence of premature births in the wife. This might be caused by smoke in the air around the home, but seems much more likely to be a genetic trait.

(8) Hammond (15) gives data showing many odd features that can best be interpreted in terms of the genetic hypothesis. For example, his data show that the increase in age adjusted death rate for males associated with the use of tranquilizers is almost as great as that associated with cigarette smoking. Furthermore, the two apparent effects are approximately additive. The obvious interpretation of this is that people in such shape that they need cigarettes or tranquilizers are going to have an increased death rate, and it does not make much difference which they turn to, and if they are in such shape that they need both cigarettes and tranquilizers then their death rate increases still further. Hammond's data also show a very strong association of death rate with the eating of fried foods. Rather suprisingly, those who abstain have a much higher death rate than those who eat fried foods about four times a week. This could be interpreted causatively: I suppose that one could hypothesize that those who abstain from fried foods suffer from some unknown nutritional deficiency. But I regard it as unlikely that nutritional deficiencies are at all appreciable in Hammond's population, because this was largely middle and upper class people selected by volunteer workers of the American Cancer Society from among their acquaintances. This association of death rate with fried-food eating I regard as a surface manifestation of some genetic property of the human organism.

(9) Hammond's data also shows the well-known difference in death rates between married, single, widowed, and divorced persons. Attempts have been made in the past to interpret these phenomena causatively; for example, bachelors may be subjected to greater stress than married men because they have no wife to cook dinner for them, or something. But no matter how plausibly these attempts at constructing causative hypotheses start out, they always end in a tangle of absurdities.

(10) Hammond's data also show a marked association of death rate with height, which is most probably a genetic effect.

(11) Hammond's data show marked association between death rate and longevity of parents and grandparents, obviously a genetic effect.

In my opinion, therefore, the genetic hypothesis is perfectly plausible, and we must examine the report "Smoking and Health" to see on what grounds they reject it. On my reading of the report, it gives only two substantial alleged reasons.

The first is that the genetic hypothesis has to be complicated to explain differences between nonsmokers, moderate cigarette smokers, heavy cigarette smokers, pipe and cigar smokers, cigarette smokers who discontinue the habit, et cetera.

I grant the necessary complexity but dispute the inference. I believe that the genetic hypothesis has to explain general hereditary differences in death rate, in death rates for specific diseases such as diabetes, in rates for, if one may call it a disease, baldness, in height,

intellectual ability of various forms, the obvious genetic traits such as color of skin, hair, etc., and an absolute myriad of other properties of the human organism. The genetic code is most certainly incredibly complex and I do not see why amongst the many thousands of traits that it carries it does not include the various forms of taste for tobacco.

The second reason the report gives for rejecting the genetic hypothesis is that it is unlikely that the genetic pool has changed sufficiently in the past 40 years to account for the observed increase in lung cancer. This argument has two weaknesses which render it unconvincing.

(1) In the past 40 years there has been a tremendous increase in accuracy of diagnosis due to the invention and introduction into widespread use of new diagnostic techniques. Fashion and habit of diagnosis will also play a large part. Forty years ago very probably many cases of lung cancer were diagnosed as tuberculosis. Therefore, a large part of the apparent historical increase is probably an artifact of the reporting.

(2) I believe comparisons of death rates between different eras are subject to a classic fallacy. The generation born in 1880 reached the age of 20 in 1900, and a substantial fraction, 24 percent, had died by this time, presumably largely on account of the traditional infectious diseases of childhood. The generation born 20 years later, in 1900, reached the age of 20 in 1920, and a lesser fraction of these had died by that age; namely 15 percent, this fraction being smaller presumably because the traditional childhood diseases were more under control. Therefore, the 1900 cohort at the age of 50 represents a significantly different population from the 1880 cohort at the age of 50, since the former cohort—that is the 1900 cohort—includes the "weaklings" who were eliminated from the latter cohort, that is, the 1880 cohort.

The relatively large number of cases of lung cancer observed in the 1900 cohort can be merely largely those who would not have survived to run the risk of lung cancer if they had been born 20 years earlier. On this model, the alleged historical increase in age adjusted lung cancer rate can be easily accounted for.

I cannot accept, therefore, the rejection of the genetic hypothesis by the report "Smoking and Health."

I would also like to point out that the hypothesis that cigarette smoking causes lung cancer, which the report accepts, has certain nontrivial difficulties.

(1) The report quotes one of the criteria of what it calls the epidemiologic method as "Specificity." It uses two definitions of "Specificity." The first is—

> **the precision with which one component of an associated pair can be utilized to predict the occurrence of the other.**

The report admits that the association of cigarette smoking with lung cancer has extremely low specificity in this sense. In other words, enormous numbers of people smoke cigarettes and never develop lung cancer. The second definition of specificity is similar to that of Yerushalmy and Palmer (16):

> **The basic assumption of such a test for specificity is that if the characteristic is not related to the disease in a causal way, then the relationship should not**

be restricted to the disease under study but should also be present with other disease entities. If the characteristic can be shown to be related only or mostly to the disease under study and not to many other disease entities, then our confidence that it is a cause-carrying vector for that disease is greatly increased.

The report "Smoking and Health" states (p. 185):

The number of diseases in which the ratios remain significantly high, after consideration of the nonresponse bias, is not great enough to cast serious doubt on the casual hypothesis.

This is really a preposterous statement. Table 26 of the report (pp. 109–110) tabulates the mortality ratios for 25 causes of death for the 7 major prospective studies, and they are all consistent in showing that the mortality ratio is greater than one for virtually all causes of death. In the light of the consistency of the seven studies there is virtually no doubt that in almost every instance the mortality ratio is "significantly high." It is true that for 1 out of the 25 causes of death the mortality ratio is less than 1, being 0.9, but this is for a cause of death with relatively small expected number of deaths and hence with a high sampling error. We therefore see that the association between cigarette smoking and lung cancer is monumentally nonspecific, yet the report "Smoking and Health" states that it has a "high degree of specificity." My only comment on this is that it is a splendid example of the technique of flatly denying the existence of an inconvenient fact if you cannot explain it away.

It is perfectly clear, in my opinion, that the association between cigarette smoking and virtually all causes of death has to be explained on physical-chemical and biological grounds if the causative hypothesis is to be accepted. The protagonists of the causative hypothesis have had at least 10 years to wrap up this part of the problem but have so far failed, even as regards lung cancer.

The most potent carcinogen identified in cigarette smoke is benz(a)pyrene and "it is present in much larger quantity than any of the other carcinogens." Cigar smoke has almost 4 times as much benz(a)pyrene, and pipe smoke about 10 times as much benz(a)pyrene as cigarette smoke, yet pipes and cigars have been pretty well exonerated by the Surgeon General's Advisory Committee of any charge of causing lung cancer.

Apart from the above measurements on smoke, the difference between cigarettes on the one hand and cigars and pipes on the other is a puzzling and unexplained feature of the indictment of tobacco. It could be, of course, that the variety of tobacco used differs significantly, that the tobaccos are cured differently, that cigars and pipes may burn at different temperatures from that of cigarettes, that pipes and cigars do not include paper, or that some cigarette smokers are supposed to inhale whereas few pipe or cigar smokers do. But if inhalation was the crucial factor, then analyses differentiating between inhalers and noninhalers of cigarettes should have disclosed this, whereas these analyses have reached very inconsistent results and have been very confusing.

The hypothesis that cigarette smoking causes lung cancer would be substantially more convincing if experiments to induce lung cancer by cigarette smoke in laboratory animals had proved successful, but so far only negative results have been reported.

While explanations for a causative relation between cigarette smoking and lung cancer are still totally unsatisfactory after a decade of research, the situation is even emptier for the other causes of death.

The report "Smoking and Health" uses the apparent historical increase of lung cancer and the historical increase in cigarette smoking as an argument to buttress its conclusion of causation. However, all statisticians know that the presence of a positive, zero, or negative correlation between two variables observed over time has been the basis of more ludicrous nonsense than any other statistical technique. For example, the incidence of cancer of the stomach has been declining for many years, but only a madman would infer from this that the increased smoking has caused the decreased cancer of the stomach.

The report "Smoking and Health" also attempts to use correlations between different countries in the same way, and this is equally absurd.

To sum up, firstly there are quite a few difficulties currently present to bedevil the hypothesis that cigarette smoking causes lung cancer. Future research may clarify the situation and dispose of them, but this remains to be seen.

Secondly, the genetic hypothesis is very much in the running. Thirdly, the hypothesis that cigarette smoking causes lung cancer cannot be accepted as established, even if its own difficulties are disposed of, until the genetic hypothesis has been proven false. Therefore, to reach a decision at this time is completely unjustifiable. For the reasons I have given, I do not believe that the existing statistical evidence is sufficient to justify any scientific conclusion that cigarette smoking causes cancer.

(The attachments to Mr. Brownlee's statement follow:)

REFERENCES

(1) "Smoking and Health," report of the Advisory Committee to the Surgeon General of the Public Health Service. Public Health Service Publication No. 1103. Undated.

(2) Irwin, J. O., "The Place of Mathematics in Medical and Biological Statistics," Journal of the Royal Statistical Society, series A, 126 (1963), 1–45.

(3) Neyman, J., "Statistics—Servant of All Sciences," Science, 122 (1955), 401–6.

(4) Berkson, J., "Smoking and Lung Cancer: Some Observations on Two Recent Reports," Journal of the American Statistisal Association, 53 (1958), 28–38.

(5) Berkson, J., "Smoking and Lung Cancer," American Statistician, 17 (1963), 15–22.

(6) Yule, G. Y., "The Function of Scientific Method in Scientific Investigation," Industrial Fatigue Research Board Report, 28 (1924).

(7) Fisher, Sir Ronald, Letter to the Editor, Nature, 136 (1935), 474.

(8) Fisher, Sir Ronald, Letter to the Editor, British Medical Journal, 2 (1957), 297–8.

(9) Fisher, Sir Ronald, "Cancer and Smoking," Letter to the Editor, Nature, 182 (1958), 596.

(10) Friberg, L., Kaij, L., Dencker, S. J., and Tonsson, E., "Smoking Habits in Monozygotic and Dizygotic Twins," British Medical Journal, 1 (1959), 1090–2.

(11) Raaschou-Nielsen, E., "Smoking Habits in Twins," Danish Medical Bulletin, 7 (1960), 82–8.

(12) Seltzer, Carl C., "Morphologic Constitution and Smoking," Journal of the American Medical Association, 183 (1963), 639–45.

(13) Eysenck, H. J., Tarrant, M., Woolf, M., and England, L., "Smoking and Personality," British Medical Journal, 1 (1960), 1456–60.

(14) Yerushalmy, J., "Statistical Considerations and Evaluation of Epidemiological Evidence," in James, George, and Rosenthal, Theodore, "Tobacco and Health." Springfield: Charles C. Thomas, 1962, 208–30.

(15) Hammond, E. Cuyler, "Smoking in Relation to Mortality and Morbidity: Findings in First 34 Months of Followup in a Prospective Study Started in 1959." Statistical Research Section, Medical Affairs Department of the American Cancer Society.

(16) Yerushalmy, J., and Palmer, Carroll E., "On the Methodology of Investigations of Etiologic Factors in Chronic Diseases," Journal of Chronic Diseases, 10 (1959), 27–40.

K. A. BROWNLEE.

PUBLICATIONS OF K. ALEXANDER BROWNLEE

(1) BOOKS

"Industrial Experimentation." London: His Majesty's Stationery Office. First edition, 1946. Second edition, 1946. Third edition, 1948. Fourth edition, 1948. Also Brooklyn, N.Y.: Chemical Publishing Co., 1949.

"Statistical Theory and Methodology in Science and Engineering." New York: John Wiley & Sons. First edition, 1960. Second edition, 1965.

(2) PAPERS

With C. S. Delves et al.: "The biological assay of streptomycin by a modified cylinder plate method," Journal of General Microbiology, 2 (1948), 40–53.

With P. K. Loraine and J. Stephens: "The biological assay of penicillin by a modified plate method." Journal of General Microbiology, 3 (1949), 347–352.

With P. K. Loraine: "The relationship between finite groups and completely orthogonal squares, cubes, and hypercubes," Biometrika, 35 (1948), 277–282.

With B. K. Kelly and P. K. Loraine: "Fractional replication arrangements with factors at two levels," Biometrika, 35 (1948), 268–276.

"A plant-scale experiment in penicillin production," Annals of the New York Academy of Sciences, vol. 52, art. 6 (1950), 820–826.

With Dorothy Hamre: "Studies on chemotherapy of vaccinia virus, I: An experimental design for testing antiviral agents," Journal of Bacteriology, 61 (1951), 127–134.

With Dorothy Hamre and Richard Donovick: "Studies on the chemotherapy of vaccinia virus, II: The activity of some thiosemicarbazones." Journal of Immunology, 67 (1951), 305–312.

With D. N. Lapedes: "The effects of design upon the error of a microbiological assay for vitamin B_{12}," Journal of Bacteriology, 62 (1951), 433–444.

"Construction and use of statistical control charts on continuous variables," Industrial and Engineering Chemistry, 43 (1951), 1303–1310.

"Correlation methods applied to production process data," Industrial and Engineering Chemistry, 43 (1951), 2068–2071.

"Some examples of the use of the analysis of variance in interpreting chemical data," Fifth Annual Convention of the American Society for Quality Control, 75–82.

"A statistical analysis of the 1950 collaborative study on the USP method for vitamin B_{12} assay," Drug Standards, 20 (1952), 48–56.

With J. L. Hodges and Murray Rosenblatt: "The up-and-down method with small samples," Journal of the American Statistical Association, 48 (1953), 262–277.

"Experiments with many factors," Chemical Engineering Progress, 49 (1953), 617–621.

"Statistics of the 1954 Polio Vaccine Trials," Journal of the American Statistical Association, 50 (1955), 1005–1013.

"A note on the effects of nonresponse on surveys," Journal of the American Statistical Association, 52 (1957), 29–32.

"The Principles of Experimental Design," Industrial Quality Control, 13 (1957), 12–20.

"Statistical evaluation of cloud seeding operations," Journal of the American Statistical Association, 55 (1960), 446–453.

K. A. BROWNLEE.

Mr. ROGERS of Texas. Thank you very much, Mr. Brownlee.

Mr. Kornegay?

Mr. KORNEGAY. Thank you very much, Mr. Chairman.

Mr. Brownlee, I want to thank you for coming and giving us this splendid statement. I understand you are a member of the American Statistical Association and that you have been requested by that association to make a report.

Mr. BROWNLEE. More exactly by the editor of the journal.

Mr. KORNEGAY. How is that, sir?

Mr. BROWNLEE. More exactly by the editor of the journal.

Mr. KORNEGAY. Yes; by the editor of the journal to make a report on the document "Smoking and Health."

I take it, based on your statement, you made a rather detailed study of the Advisory Committee's report to the Surgeon General on "Smoking and Health."

Mr. BROWNLEE. Yes, sir.

Mr. KORNEGAY. And that your conclusion is that the report of the Advisory Committee to the Surgeon General fails to state a case against the hypotheses that cigarette smoking is the cause of lung cancer?

Mr. BROWNLEE. It states the case, a completely inadequate case.

I mean that it attempts to make a case but one completely unconvincing and unacceptable.

Mr. KORNEGAY. Unconvincing and unacceptable.

Mr. BROWNLEE. Yes.

Mr. KORNEGAY. Thank you very much, sir.

Mr. ROGERS of Texas. Mr. Younger?

Mr. YOUNGER. No questions.

Mr. ROGERS of Texas. Mr. Van Deerlin?

Mr. VAN DEERLIN. No questions.

Mr. ROGERS of Texas. Mr. Satterfield?

Mr. SATTERFIELD. No questions, Mr. Chairman.

Mr. ROGERS of Texas. Mr. Farnsley?

Mr. FARNSLEY. Have you seen any reports of warning on effect of sales? I have been trying to find out what happens when you put warnings on packages. The only evidence I have is on Bromo Seltzer. Do you have any information?

Mr. BROWNLEE. No information, sir.

Mr. FARNSLEY. Thank you.

Mr. ROGERS of Texas. Mr. Brownlee, thank you very much for your contribution to the record in this matter.

Our next witness is Mr. Frank M. Bass, professor of industrial administration, Purdue University, Lafayette, Ind.

Mr. Bass?

STATEMENT OF FRANK M. BASS, PROFESSOR OF INDUSTRIAL ADMINISTRATION, PURDUE UNIVERSITY

Mr. BASS. Mr. Chairman, members of the committee, my name is Frank M. Bass. I am professor of industrial administration at the Krannert School of Industrial Administration at Purdue University where I am principally concerned with the fields of marketing and quantitative methods. I appreciate this opportunity to present my

views on the probable effect of a warning in cigarette advertising upon cigarette consumption and competition in the industry.

I received a Ph. D. degree in business from the University of Illinois in 1954, and have studied at the University of Texas and Harvard University. I have taught at the Universities of Illinois, Texas, and at Ohio State, and since 1961 at Purdue. I am author with other of two books, "Frontiers of Marketing," "Thought and Science," Chicago (1958), and "Mathematical Models and Methods in Marketing," Homewood (1961), as well as numerous articles on marketing, advertising, and sales behavior in periodicals.

I am a member of the American Marketing Association, the American Economic Association, The Institute of Management Sciences, and the Operations Research Society of America. I consult on a regular basis with McGraw-Hill Book Co., serving as an editor of one of their technical series.

Congress has before it at least one bill which would impose a health warning in cigarette advertising. This bill is necessarily based on the premise that cigarette smoking constitutes a hazard to health. I understand that the Federal Trade Commission has issued a rule which would imposed such a warning on advertising. I am neither a medical doctor nor a scientist, and hence have no training permitting me to evaluate evidence related to cigarette smoking and health. Accordingly, I cannot assess the need for governmental action affecting cigarette smoking at this time. My testimony will be concerned solely with analyzing the probable effect of a health warning in cigarette advertising from the standpoint of a marketing expert.

Before discussing the effect of a warning in cigarette advertising, it may be helpful to mention briefly some basic principles governing the advertising of products such as cigarettes, including the influences which affect the demand for such a product. These principles do not represent merely my own point of view, but would, I believe, be generally accepted by marketing specialists and economists.

CIGARETTE ADVERTISING AND THE OVERALL DEMAND FOR CIGARETTES

The purpose of cigarette advertising is primarily competitive, in that it is designed to promote the sales of a particular cigarette brand rather than stimulate the demand for cigarettes in general. The cigarette industry itself sponsors no cigarette advertising. All such advertising is sponsored by individual companies and is focused on a particular brand of cigarettes. This is, of course, also true of the advertising of most other consumer convenience products.

This type of competitive advertising may, at an early stage of the development of a product, increase aggregate demand. For example, competitive advertising of synthetic detergents contributed to the overall acceptance of these products by housewives in the postwar period. Likewise, as Neil Borden has shown, competitive cigarette advertising during the 1920's undoubtedly influenced the demand for cigarettes, particularly among women during that period.[1]

[1] Neil Borden, "The Economic Effects of Advertising" (1947), p. 222.

When a product matures, however, marketing experts believe that competitive advertising has relatively little effect in stimulating overall demand. Thus, the competitive advertising of liquor at present probably does not induce a person to buy more of it, but rather to buy one brand rather than another.

It is also a fundamental principle in marketing that advertising cannot create a demand for a product. It can only serve to accelerate demand for a product which is desired by consumers for reasons independent of advertising; that is, advertising is more a response to social conditions than it is a shaper of them.[2]

The most massive and skillful advertising expenditures could not induce the public to buy the Edsel automobile, since the public at that point was not interested in cars of the Edsel type. This lack of interest was determined by social factors which could not be reached by the Ford Motor Co.'s advertising.

The decisions to begin to smoke and to continue smoking are similarly governed by factors independent of advertising which can be described as psychological or social in the most basic sense. While it is probably true that advertising may have some minor influence in today's cigarette market in inducing those who smoke to continue smoking and in attracting nonsmokers into the market, social attitudes about smoking are of far greater importance than advertising in determining these choices.

THE EFFECT OF A WARNING IN CIGARETTE ADVERTISING ON CIGARETTE CONSUMPTION

Applying these generally agreed upon principles, I believe that it is possible to make some predictions as to the effect of a health warning in cigarette advertising. There is a high degree of probability that the ultimate effect of a compulsory health warning in cigarette advertising on the demand for cigarettes generally would be so marginal that it could not be measured. This conclusion is supported by two basic premises:

(*a*) Most, if not all, smokers are aware of the alleged health hazards in cigarette smoking. The wide publicity given the Surgeon General's report and earlier reports in all media forms, including television, radio, magazines, and newspapers, insures a high degree of consumer awareness of this issue. Those consumers who are not aware of the issue are not likely to be informed by a warning in advertising, because they do not watch or read advertising, or if they do see it, they do not attend to it.

(*b*) An advertising warning would have little impact on consumers who would actually see it. As I will point out later in more detail, consumers do not expect to see health warnings in advertising. Consumers are highly selective in the advertising messages to which they pay attention, as many advertisers have found to their cost. Since the warning would be jarring and unpleasant, it would tend to be rejected or blocked out by the smoker. Also, the basic conflict between a positive advertising message and a negative warning would tend to neutralize the impact of the warning on the viewer.

---

[2] Borden, op. cit., supra, p. 434.

It follows that if a health warning is imposed in cigarette advertising in order to reduce cigarette smoking, it will have no measurable effect on the overall demand for cigarette products. Assuming that governmental action is indicated, it appears inadvisable to impose such a warning, since it would have no significant impact on smoking habits.

THE EFFECT OF A WARNING IN CIGARETTE ADVERTISING ON COMPETITION

A warning in cigarette advertising would not only be ineffective to reduce cigarette smoking, but it would have undesirable consequences which should be carefully considered by Congress before it imposes such a warning. I have already pointed out that competition among cigarette brands is maintained in large part through advertising. Compulsory inclusion of a warning in advertising would constitute a radical departure from existing advertising practices. The purpose of cigarette advertising is to stimulate demand for a particular brand of cigarettes. Since the purpose of a warning is presumably to diminish demand for that brand and for other cigarettes, it is obvious that a warning would be anticompetitive and at cross-purposes with the intent of the advertising. Advertising attempts to create a favorable impression for the brand, to induce the smoker to purchase that brand rather than other brands. A health warning would reduce the effectiveness of the individual advertisement because it contradicts this basic advertising message. Since the warning presumably would be uniform in each advertisement, its presence would tend to blur the product differences or advantages which the advertisement seeks to convey to the smoker. Hence, a health warning would tend to restrict, if not to nullify, the effectiveness of advertising as a competitive mechanism.

I cannot, of course, predict exactly what would be the effect of a compulsory health warning on the advertising of various brands or types of cigarettes. However, certain probable consequences can be deduced from the nature of the various media. The impact of a warning would be greatest in television and radio advertising, which is by far the most significant form of cigarette advertising. Radio might be eliminated as an advertising medium for cigarettes, since advertisers might not want to produce the warning in verbal form. Many television commercials might be eliminated since the warning would occupy a significant portion of the time of the commercial. Competitive effectiveness of other television advertising would undoubtedly be reduced.

It is probable that a compulsory health warning would have a smaller impact on printed media than on broadcast media. Obviously, however, the effectiveness of these media as advertising vehicles would be reduced by the existence of a warning.

Brand advertising is one of the principal competitive weapons in the cigarette industry. To the extent that imposition of a warning would reduce competition, existing market shares would tend to freeze. The leading brands in the industry would tend to retain their existing positions since they would be far less vulnerable to inroads on their markets through advertising of competitive brands. Companies would be handicapped in introducing new brands of ciga-

rettes. These results would be contrary to sound economic principles, and to principles of free competition embodied in the antitrust laws.[3]

Since I have already pointed out that there is a great deal of parallel evidence indicating that health warnings would not reduce cigarette demand in general, it would seem inadvisable to impose a requirement which would be ineffective, and at the same time, have such drastic anticompetitive effect in this industry.

WHAT CONSUMERS EXPECT TO SEE IN ADVERTISING

It has been argued that consumers are misled as to the safety of cigarettes because of the absence of a warning in advertising. Even assuming that cigarettes are proved to be hazardous, I believe that consumers are not misled by the absence of health warnings in cigarette advertising. This is because consumers do not expect to see health warnings in advertising. Consumers expect to see praise, or affirmative claims, in advertising. They expect to find warnings as to hazards, or limitations on use, in the instructions which accompany the product either on the label or in brochures.

It follows that the absence of a warning in advertising does not mislead a consumer as to any alleged health hazards in smoking cigarettes. That is, a smoker does not conclude from the absence of a warning in advertising, that there are no hazards in the use of the product.

Further, I believe that consumers read label warnings, and, in fact, pay more attention to them than they do to individual advertisements. Accordingly, if the object of a warning is to inform consumers of the possible danger to health from cigarette smoking, a label warning would be a more appropriate and possibly more effective place for such a warning than in advertising. A label warning would also have few or none of the undesirable effects which I have already described.

In conclusion, I would like to summarize the foregoing testimony as follows:

1. Cigarette advertising has little effect on the overall demand for cigarettes.
2. The effect of a health warning in cigarette advertising on cigarette demand generally in all probability would be so slight as not to be measurable.
3. A warning in advertising would reduce competition in the industry, tend to freeze market shares, and restrict product innovation.
4. Consumers are not misled by absence of warnings in advertising. They expect warnings on package labels. A label warning might possibly be more effective than one in advertising, and would have fewer disadvantages.

Thank you.

Mr. ROGERS of Texas. Thank you, Mr. Bass, for your statement in the record.

Mr. Kornegay is recognized.

Mr. KORNEGAY. Dr. Bass, I want to thank you for coming today and making a very fine statement.

---

[3] Report of Attorney General's Committee on the Antitrust Laws (1955), pp. 330–331.

You certainly made a good sound logical case against any law or regulation requiring warnings on cigarette advertising.

Thank you very much.

Mr. BASS. Thank you.

Mr. ROGERS of Texas. Mr. Younger?

Mr. YOUNGER. No questions.

Mr. ROGERS of Texas. Mr. Van Deerlin?

Mr. VAN DEERLIN. Dr. Bass, do you have any suggestion as to the manner in which cigarette labeling might be more effective, whether on the side panel or on the face of the package, and also what the wording might appropriately be?

Mr. BASS. Well, I think that with respect to the latter question first, the question of wording is something which involves two elements, one is medical and I am not qualified in that area, and the other is legal and I am not qualified there, either. So I don't think I could offer any useful information about the wording.

Now, with respect to the location on the package, I don't have an opinion, I just haven't thought about that very much. I think that clearly it should be some place, if the purpose is to convey information, which would accomplish that result. It shouldn't be buried some place, but some place which will be clearly evident to the smoker.

Mr. VAN DEERLIN. Of course, a package label will convey the conclusion by Congress that there is, at least, a potential health hazard in smoking, and I should think that as a man who is an expert in the field of merchandising and packaging, that you wouldn't have to have legal experience. How sharp a warning would it have to be?

Are we going to have to jolt them?

Mr. BASS. What is the purpose of the advertising warning- If the purpose is to convey information, that is one thing.

Now, if you are interested in affecting the demand for cigarettes, that may be something else again.

Mr. VAN DEERLIN. Well, surely one of the objectives is going to be to influence new smokers, to stop them before they start.

Do you have any advice that might be helpful to the committee in this regard?

Mr. BASS. Well I think there are other methods which would be much more effective than any advertising warning being proposed here to try to diminish the number of new smokers coming into the market, such as, for example, educational campaigns aimed at this group.

Mr. VAN DEERLIN. In schools?

Mr. BASS. Yes.

Films, brochures, that sort of thing, I think would be much more effective than the warning.

Frankly, I don't think any advertising warning which the Congress is likely to come up with is going to be very effective in terms of influencing people to smoke or not to smoke.

Mr. VAN DEERLIN. Thank you, Mr. Chairman.

Mr. ROGERS of Texas. Mr. Satterfield?

Mr. SATTERFIELD. I have no questions, Mr. Chairman.

Mr. ROGERS of Texas. Mr. Farnsley?

Mr. FARNSLEY. Thank you, Mr. Chairman.

Doctor, I appreciate your paper. This isn't based on research, is it? It is just based on your opinion, not that there is anything wrong with your opinion, I am grateful for it.

Mr. BASS. Well, it is based on a certain amount of research relating to behavior of sales of various products through time. I have done some research in this area on sales behavior through time; it is not based on any experimental evidence.

Mr. FARNSLEY. Any studies of products that have had warning labels put on them, the effect on sales, if any?

Mr. BASS. No. I know of no specific experiments.

Mr. FARNSLEY. As you probably know if you were here this morning I am one up on you. I have one product that they did put warnings on that doubled its value of stock.

What is your opinion, Doctor, what if the Congress passed a law prohibiting all advertising of cigarettes, let them give away samples, what do you think that would do to the total consumption of cigarettes in the United States?

Mr. BASS. I don't think it would be greatly affected.

Mr. FARNSLEY. Up or down or sideways?

Mr. BASS. I would think that over a long enough period of time it might have some small influence. I think if you look at the immediate impact, I think it would be very difficult to judge.

Let me put it this way, sir, if you looked at sales of cigarettes in time series data, and suddenly all advertising were abolished, and you brought in a person who didn't know when this had happened and you gave him the data and said, "Look at the data and tell me when the advertising was abolished." I don't think this person would be able to tell you when it was abolished by looking at the data.

Mr. FARNSLEY. You think in the long run it would go up, down, or sideways?

Not sideways, up, down, or have no effect?

Mr. BASS. Well, I believe it would have a marginal effect.

Mr. FARNSLEY. Which way?

Mr. BASS. Down.

Mr. FARNSLEY. Over a period of what?

Mr. BASS. Over a period of time.

Mr. FARNSLEY. Ten years?

Mr. BASS. Yes. Perhaps longer.

Mr. FARNSLEY. My information is that the industry spends a quarter of a billion dollars and maybe will this year in advertising. If they—how long would it take, how much would it have to drop before they would be even, in other words, if they save that much money and are ahead of the game, for how long, for how much of a drop?

Mr. BASS. Well, in general, I think cigarette companies, as is true for all convenience goods, firms, look at the advertising in this way: You do not expect to recover from the customers you induce to buy your brand this year the cost of the advertising, which you spend this year.

Let's look at that this way. Suppose you spend $10 for advertising, and suppose as a result of spending that $10 you induce, let's say, one customer to buy a brand, and suppose the profit per unit is, exclusive of the advertising cost, let's say, $2.50.

Well, you spent $10 to get $2.50. However, we have overlooked the average length of time that customer will stay with the brand.

Suppose he stays with the brand on the average for five periods. So now we have generated $12.50 worth of profit contribution for our $10 advertising expenditure. So, using this reasoning, it is clear that the profits of the cigarette industry would skyrocket if all advertising were abolished. It is so staggering it is hard to contemplate, but the profits in the industry would go up enormously if the cigarette advertising were completely eliminated. The market shares would tend to be frozen, the primary demand for cigarettes would not be greatly affected one way or the other, and the profits in the industry would be just enormous, and this is one reason, of course, for not interfering with the competitive practices in the industry.

For the same reason I would think you would want to interfere with the competitive practices in any industry unless the public interest is severely damaged; and usually we think of competitive activity as being beneficial to the public interest.

You see, it might be instructive to apply the logic which apparently the Federal Trade Commission has applied to cigarettes, to automobiles. Let's take a product where the emotional content is not quite as great. You might reason something like this: a great many people are killed in automobile accidents every year, a great many others are maimed and injured, more I should imagine, I don't have the statistics, but more I should imagine than is the case for lung cancer.

Mr. KORNEGAY. Let me interrupt you just a minute, sir.

Mr. BASS. Yes.

Mr. KORNEGAY. Following your logic a couple of steps further, that is a series of statements that you made, to stop advertising would freeze the markets, the money going into advertising would go into profits, the profits would become enormous, then wouldn't there also be an inclination to meet competition or to further the market or reduce the price of the individual companies, reduce the price and in reducing the price making cigarettes cheaper, and if they are cheaper they will sell more and, therefore, we will have more smoking?

Mr. BASS. Yes, sir.

Mr. KORNEGAY. Is that a possibility?

Mr. BASS. Yes, sir; I think there is. I think the price reduction would not be extremely great, though, because the advertising costs vary anywhere from two and a half cents to 7 or 8 cents a carton so I don't think you could count on any really great reduction in price. But I think that it is certainly true that if you try to circumvent one area of competition, the inevitable result of that is that the firm searches for other areas of competition, and so that would be a logical consequence, I think.

Mr. KORNEGAY. Thank you.

Mr. FARNSLEY. Is there any evidence that price decrease would increase sales?

Mr. BASS. The demand for cigarettes is generally regarded to be what economists call inelastic, which simply means that a change in the price either up or down produces a less proportionate inverse change in the quantity demanded.

So that a price reduction would, economists would think in general, other things being equal, increase the demand for cigarettes, but the increase would not be in proportion to the price reduction.

Mr. FARNSLEY. Well, now, when I was a boy we knew cigarettes were bad for you and we called them coffin nails and some of the doctors have caught up with us although they smiled at us at the time.

How many times have you read in the last 2 or 3 years that cigarettes are bad for you or cause cancer or kill you? How many times have you read it?

Mr. BASS. A great many times.

Mr. FARNSLEY. Just casually?

Mr. BASS. Yes.

Mr. FARNSLEY. You wouldn't have to be studying it?

Mr. BASS. Yes.

Mr. FARNESLEY. Why do you think somebody can put out a pamphlet that will convince young people after all that to do in the newspapers and television and radio, what makes you think—would there be some magic word you say to him?

Mr. BASS. I don't know, sir.

Mr. FARNSLEY. Have you got any ideas on how to slow up smoking a cigarette, any other ideas?

Mr. BASS. Well, I think one thing you could do is abolish the production and sale of cigarettes. I think that would slow it up.

Mr. FARNSLEY. It sure would.

Mr. BASS. I think that, as I said, if you don't want to go that far, educational campaigns would be in fact a more effective way to influence the demand for cigarettes than any direct or indirect interference with the advertising practices of the industry.

Mr. FARNSLEY. What real reason can you figure that the companies have for not wanting to pass the law to help the Surgeon General. He would be willing to go for a law to prohibit advertising.

Why do they fight that?

Mr. BASS. I am not privy to the thinking of the management.

Mr. FARNSLEY. What would you think?

Mr. BASS. I would guess it would be that they don't want interference in the competitive mechanism in the industry, and I would think that particularly the companies with smaller market shares would be especially mindful of the probable effects of any interference with competition in the industry, the tendency to freeze the market shares and that sort of thing.

Mr. FARNSLEY. You say the profits would be astronomical and it staggers the imagination. Maybe we have been going under the false impression that the profit factor is a big factor in the operation of the industry.

Mr. BASS. I think it has been overstated at times. I think that is right. There are a great many other factors which are important, other motives aside from immediate profits.

Mr. FARNSLEY. Thank you, sir.

Mr. ROGERS of Texas. Thank you very much.

Mr. BASS. Thank you, sir.

Mr. ROGERS of Texas. Thank you, Mr. Bass.

Our next witness is Dr. George L. Saiger, biostatistician, New York, N.Y.

Dr. Saiger, if you will come forward the Chair will recognize you.

Dr. SAIGER. Thank you, Mr. Chairman.

Mr. ROGERS of Texas. You may proceed, Dr. Saiger.

STATEMENT OF DR. GEORGE L. SAIGER, CONSULTANT IN MEDICAL RESEARCH, PALISADE (FORT LEE), N.J.

Dr. SAIGER. Thank you, Mr. Chairman. I should like to thank the members of this committee for allowing me the opportunity to appear before them to make a statement.

I am Dr. George Lewis Saiger of Palisade (Fort Lee), N.J. I hold a bachelor's degree in science, a doctor's degree in medicine, a master's degree in public health, and a doctor's degree in public health. At the present, I am a consultant in medical research on a full-time basis. From 1956 to 1964, I served on the faculty of Columbia University in New York City, first as assistant professor of biostatistics and later as associate professor of epidemiology. From 1963 to 1964, I also served as the Director of the Division of Research and Reference of the Food and Drug Administration in Washington, D.C. Briefly, my professional qualifications are those of a physician, epidemiologist, biostatistician, educator, consultant in medical research, and medical administrator. I also have training and experience in public health and preventive medicine.

A detailed curriculum vitae is attached to my written statement.

Gentlemen, the Surgeon General's Advisory Committee on Smoking and Health concluded in January 1964 that the following relationships were those of cause and effect:

1. The relationship between cigarette smoking and the occurrence of certain respiratory diseases, namely cancer of the lung, cancer of the larynx, chronic bronchitis and chronic bronchopulmonary disease. The relationship was specific for males with respect to cancer of the lung and cancer of the larynx. Sex was not specified with respect to the remaining two diseases.

2. The relationship between cigarette smoking and the occurrence of coronary heart disease. The relationship was specific for males.

The Surgeon General's Committee was not certain about the nature of the second relationship. It nevertheless did attach a causal significance to that relationship through specious reasoning, that is, by arguing that such a decision, if nothing more, was not without precedence as far as coronary heart disease was concerned. Consequently, one is led to believe erroneously that the first relationship is that of proved cause and effect. The Committee did not distinguish between causal sigificance and proof elsewhere in its report and, on one occasion, did use the terms interchangeably.

Are the conclusions justified?

The Surgeon General's Committee consisted of eight physicians, one statistician and one chemist. None of those persons had expressed an opinion publicly on the problem of whether or not smoking affects health before being called on to assist in weighing the evidence. It must be assumed, therefore, that the Committee was not biased. But conclusions cannot be justified on that basis alone. The manner in which they were arrived at must be examined as well.

The problem of whether or not smoking affects health is extremely complex. For the evidence is circumstantial, i.e., it was acquired by indirect means, and such evidence is difficult to weigh even when it is handled properly. We find instead that:

1. The Surgeon General's Committee organized the evidence poorly.
2. It did not use a systematic approach in investigating various aspects of the problem.
3. It failed frequently to offer reasonable definitions of statistical and epidemiological terms.
4. Its criteria for judging causation were not entirely realistic.
5. It was not altogether consistent in applying principles.
6. It engaged in a considerable amount of rationalization with respect to evidence that did not conform to the particular hypothesis that it had chosen to explore in detail.

There was no psychiatrist or psychologist on the Surgeon General's Committee. Yet two chapters of the report of the Committee were devoted to personality factors. There was no geneticist or radiologist on the Committee. Yet genetic and radiological evidence was considered. One wonders indeed what the Surgeon General meant when he intimated that all pertinent scientific disciplines were represented on the Committee. Finally, the number of articles and other sources of information which the Committee was reported to have reviewed exceeded 10,000, and most of the evidence contained in those articles and other sources of information was statistical in nature. The Committee completed its task on a part-time basis in less than a year. Was that sufficient time for the statistician to exercise properly his responsibility for ascertaining the value of all such evidence?

In appraising the report of the Surgeon General's Committee, one must realize that assumed hazards often are exploited by special interest groups and that the Committee may have had difficulty separating emotion from science in the mass of evidence before it.

The conclusions were based primarily on evidence acquired in—

1. Epidemiological surveys;
2. Animal experiments;
3. Pathology surveys.

Two variables are said to be correlated or associated if a change in one is accompanied systematically by a change in the other. For example, occupation is a variable, since there is more than one occupation. The occurrence of cancer of the lung is a variable, since not all persons have, or develop, the disease. Occupation and the occurrence of cancer of the lung would be correlated or associated if the disease occurred with a higher relative frequency in some occupations than in others.

A relationship may exist under the conditions of a given study. But, when those conditions are altered, the relationship may disappear. Suppose that there is a higher proportion of males in occupations in which the occurrence of cancer of the lung has a comparatively high relative frequency than in occupations in which the occurrence of cancer of the lung has a comparatively low relative frequency. Since sex is a known factor or source of variation with respect to the occurrence of cancer of the lung, we may find that, by controlling it, the relationship between occupation and the occurrence of cancer of the lung disappears. Often it is not feasible to conduct the crucial study that will force a relationship to disappear if it is not that of cause and effect. Under those circumstances or if the relationship does disappear after control measures are instituted, it would be regarded as apparent. It should be noted that the distinction being made here

is between an apparent relationship and a relationship of proved cause and effect.

Epidemiological studies on smoking and health have taken either of two forms, the retrospective survey or the prospective survey. What is the one factor that cannot be controlled in any survey regardless of form? It is self-selection. Self-selection may be characterized by the following hypothesis: Even if cigarette smokers, as a group, did not smoke, there still would be a higher proportion of persons with cancer of the lung, say, among them than among nonsmokers, as a group, since constitutionally they are more disposed to the disease. There is a scientific principle which states that, even if several independent studies, using diverse methods, indicate the same conclusion, that conclusion will not necessarily be correct if the same fundamental fallacy is present in each. In epidemiological studies on smoking and health, that fallacy may have been the inability to control the factor of self-selection. Briefly, cigarette smokers and nonsmokers may be self-selected groups, and one cannot be certain whether it is the practice of smoking or the constitution of the smoker that is a cause of the disease. In its present context, a cause can be defined as any characteristic or set of characteristics of the host that is influential in producing disease or in accelerating its appearance. A person's constitution may be determined by hereditary characteristics, environmental characteristics, or both. Most likely, it results from an interaction of both.

Consequently, one must be satisfied with something less than proof as far as epidemiological surveys are concerned and indeed as far as animal experiments and pathology surveys are concerned. In animal experiments, there is a problem of bridging the gap between the species. In pathology surveys, one still must cope with the factor of self-selection.

What would be the crucial study? The crucial study would be a human experiment, and, in a very general way, it would be conducted as follows:

One would start with a large number of male adolescents before they adopt the practice of smoking. Those adolescents would be divided into two groups, either by a random process or by careful matching. One group then would be persuaded to smoke cigarettes heavily and deeply, and the other group, not to smoke at all. After those groups are followed for a considerable portion of a lifespan in a controlled environment, they would be compared with respect to the relative frequency of occurrence of the disease in question.

It is hard to visualize how such an experiment could be conducted. There is a matter of ethics and the difficulty of maintaining long-term cooperation. The situation is not without remedy, however, since the evidence appearing in the report of the Surgeon General's Committee can be used to test provisionally the strength of one hypothesis against that of another. (Note: The evidence is not sufficiently comprehensive for a definitive test.) In the process of testing, the causal significance of a relationship, which is purely a matter of judgment anyway, may be dispelled.

There are arguments for and against the cigarette hypothesis and for and against the constitutional hypothesis. Either hypothesis can fit the evidence acquired in epidemiological surveys equally

well. The Surgeon General's Committee assumed that two distinct makeups were required to explore the constitutional hypothesis, one for cigarette smokers and one for nonsmokers. But that assumption is neither realistic nor consistent with other observations on constitution made by the Committee. For example, the Committee did not expect to find all males among cigarette smokers and no males among nonsmokers. Yet sex is a constitutional factor. In a similar fashion, it should not have expected to find all neurotics in one group and no neurotics in the other, nor even a much higher proportion of neurotics in one group than in the other.

The following observations, based on evidence acquired in epidemiological surveys and appearing in the report of the Surgeon General's Committee, are consistent with the constitutional hypothesis: Once a person's constitution is determined, so are his degree of disposition to the practice of cigarette smoking and his degree of disposition to the disease, and those degrees are highly correlated. Males, as a group, are more disposed to cigarette smoking and cancer of the lung than females, as a group. Persons who are highly disposed to cancer of the lung also tend to migrate to cities and to prefer the trades to a higher education. Not all persons who are highly disposed to cigarette smoking, smoke cigarettes. Other influences, primarily environmental, deter them from doing so. That may help to explain the estimated 10 to 20 percent of persons with cancer of the lung who do not smoke. Not all persons who are highly disposed to cancer of the lung develop the disease. Other causes of death may intervene, and there are many of them. That may help to explain the high proportion of heavy smokers who do not develop the disease.

A low degree of disposition to the practice is exemplified by the person who discontinues it after starting late in life and smoking two or three cigarettes a day for 2 years without inhaling.

The Surgeon General's Committee felt that the analyses threw little light on the observation that the difference in death rates between cigarette smokers and nonsmokers may be constitutional. As far as can be determined, those analyses pertained to single variables, and constitution more adequately would be represented by a combination of variables. Furthermore, some of the variables may not be definable or measurable. In fact, the Committee did go so far as to state that it knew of no way to make a quantitative estimate of the difference in death rates that might be attributed to constitutional factors.

The increase in the relative frequency of occurrence of cancer of the lung and in the per capita consumption of cigarettes during the past few decades does not have to be explained on the basis of an increase in the relative frequency of occurrence of an assumed responsible gene. (Note: The Surgeon General's Committee felt that an increase in the relative frequency of occurrence of an assumed responsible gene of the magnitude observed was preposterous.) In each age group, the increase in the probability of dying from cancer of the lung may be a reflection in part of a decrease in the probability of dying from other diseases, as it pertains to those who are highly disposed to cancer of the lung. In addition, it is conceivable that cigarette smoking is being adopted with an increased relative frequency by those who are highly disposed to the practice. It should be noted that, during the past few decades, cigarette smoking has become more acceptable socially, especially among females.

The constitutional hypothesis does not have to distinguish between cancer of the lung and cancer of the larynx as far as localization is concerned. Embryologically, the involved structures have the same origin, that is, the bronchi and the larynx both arise from a median longitudinal groove called the laryngotracheal groove. Consequently, if a person is highly disposed, he is highly disposed to both cancer of the lung and cancer of the larynx. The hypothesis does not conceive of a separate degree of disposition for each of those diseases. Since there is more epitheleal tissue in the bronchi than in the larynx, the bronchi would be affected more often than the larynx. It can be argued further that the difference between chronic bronchitis and cancer of the lung is one of degree of involvement and that the former can serve as a stage in the development of the latter. Apparently, the diagnosis "chronic bronchopulmonary disease" is a catchall for a group of nonspecific symptoms and signs relating to the respiratory tract in general and including chronic cough, sputum production, breathlessness, wheezing, and decreased pulmonary function.

What additional evidence do we have that cigarette smokers differ from nonsmokers constitutionally? There are indications that the average cigarette smoker drinks more alcohol and black coffee, is more neurotic, marries and changes jobs more often, engages more frequently in athletics, is more often hospitalized, and is more likely to have at least one parent with hypertension or coronary heart disease. Furthermore, his parents and grandparents do not live as long. Finally, the smoking patterns of identical twins reared apart are more nearly alike than those of fraternal twins reared apart, even when age and sex are controlled.

It is interesting to note that many of the characteristics mentioned above either are typical of, or predispose to, stress, and stress is believed by many to play an important role in the production of coronary heart disease.

I should like to add here that, by "stress," I mean nervous tension and overexertion.

To what extent can we find support for either hypothesis in animal experiments?

The production of bronchogenic carcinoma or cancer of the lung had not been reported by any investigator exposing experimental animals to cigarette smoke. That is a strong argument for the constitutional hypothesis. Of course, one always should exercise care in substituting the results of animal experiments for those of human experiments. But no investigator had been able to come any closer to simulating the practice of cigarette smoking in man and to approximating the tissue that might be affected.

To what extent can we find support for either hypothesis in pathology surveys?

To be convinced, if at all, that certain changes in the epithelium of the trachea and bronchi occur with a higher relative frequency among cigarette smokers than among nonsmokers is not to be convinced necessarily that cigarette smoking or not smoking is responsible for the difference in relative frequencies. For the presence or absence of the changes may be one of the many factors that differentiate cigarette smokers from nonsmokers constitutionally. It may be recalled that sex is such a factor. As the Surgeon General's Committee explained, "the nonspecificity of hyperplasia of the bronchial epithelium is uni-

versally recognized." That would indicate that more than one factor could be responsible for the difference in relative frequencies.

In exploring the cigarette hypothesis, the Surgeon General's Committee made a very interesting observation. It seems worthwhile at this point to refer to that observation. May I quote:

> This does not, however, preclude the possibility that such patients who, many years after the initiation of smoking are diagnosed as having lung cancer, may have had the primitive cellular changes or anlage (as postulated by Cohnheim) before the advent of their smoking.

In conclusion, gentlemen, there is strong reason to believe that the constitutional hypothesis fits the evidence appearing in the report of the Surgeon General's Committee at least as well as the cigarette hypothesis. That alone would suggest that a causal significance cannot be attached to the relationships mentioned at the outset of this presentation; that is, to the relationship between cigarette smoking and the occurrence of certain respiratory diseases and to the relationship between cigarette smoking and the occurrence of coronary heart disease. In no instance, was proof established by the Surgeon General's Committee. More research would be necessary to test definitively the strength of one hypothesis against that of the other.

Thank you very much.

(The curriculum vitae referred to follows:)

CURRICULUM VITAE, JUNE 1964—GEORGE LEWIS SAIGER

Date of birth: December 5, 1922.
Place of birth: Burlington, Vt.
Marital and family status: Married; no children.

Formal Education

Institution	Location	Dates in residence	Degree or certificate	Year
Burlington High School	Burlington, Vt.	1938–40		
University of Vermont	do	1940–43	B.S. (liberal arts)	1945
Stanford University	Palo Alto, Calif.	1943–44	A.S.T.P. certificate (premed).	1944
University of Vermont	Burlington, Vt.	1944–48	M.D.	1948
Columbia University	New York, N.Y.	1950–51	M.P.H. (public health and preventive medicine).	1951
Columbia University	do	1951–52 [1]	Dr. P. H.	1955
Medical Field Service School.	Fort Sam Houston, Tex.	1953	Certificate of completion.	1953
University of Aberdeen	Aberdeen, Scotland	July and August 1959.		

[1] Year in residence as a doctoral candidate with a major in medical statistics. Included extensive course work in mathematics and mathematical statistics. Work on thesis completed in Army.

INTERNSHIP

U.S. Marine Hospital, Cleveland, Ohio, 1948–49, rotating. Ward surgeon while on medical service.

CHRONOLOGICAL LIST OF POSITIONS

1949–50: U.S. Public Health Service, Washington, D.C.. Assistant county health officer. Field training and experience in public health, preventive medicine and administrative medicine with emphasis on chronic disease control. Supervised prenatal, child health and venereal disease clinics and diabetes detection program. Included tour of duty at Diabetes Detection Center at Jacksonville, Fla.

1952–53: Self-employed, Fort Lee, N.J. Consultant in medical research and part-time private practice. Affiliated with Columbia University.

1953–55: U.S. Army, Army Medical Research Laboratory, Fort Knox, Ky. Consultant in medical research, chief biometrician and assistant to the director.[1]
1955–56: Social Science Division, the Rand Corp., Santa Monica, Calif. Consultant in medical research—full time. Experience with electronic computers.
1956–57: Physics Division, the Rand Corp., Santa Monica, Calif. Consultant in medical research—full time then part time. Experience with electronic computers.
1956–59: Columbia University, School of Public Health and Administrative Medicine, New York, N.Y. Assistant professor of biostatistics.
1959–63: Columbia University, School of Public Health and Administrative Medicine, New York, N.Y. Associate professor of epidemiology. Acting division head, October 1, 1960, to April 1, 1961.[2]
1963: Bureau of Medicine, Food and Drug Administration, Washington, D.C. Medical consultant.
1963–64: Division of Research and Reference, Bureau of Medicine, Food and Drug Administration, Washington, D.C. Director. Established and organized the Food and Drug Administration Information Center on Adverse Reactions and Hazards. Its publications include the ARRB Monthly Report, the HSEB Monthly Report and the MRL Journal of Literature Abstracts.[3]
1964– : Self-employed, Fort Lee, N.J. Consultant in medical research.

MILITARY SERVICE

U.S. Army (1943–46): Medical aid man with basic training at Camp Berkeley, Tex. Army specialized training program student at Stanford University, Calif. Hospital corpsman, venereal disease clinic technician and laboratory technician at station hospital, Fort Devins, Mass. Army specialized training program student at University of Vermont, College of Medicine.
U.S. Public Health Service (1948–50): Assistant surgeon (Reserve).
U.S. Public Health Service (1950–53): Inactive Reserve.
U.S. Army (1953–55): Captain, Medical Corps.

LEARNED SOCIETIES, PROFESSIONAL SOCIETIES AND ALUMNI ASSOCIATIONS

Fellow of American Public Health Association, Statistics section.
Fellow of American Geriatrics Society.
Fellow of American Association for the Advancement of Science, Medical Sciences, and Statistics sections.
Member of American Statistical Association, National and New York area chapters.
Member of Biometric Society, Eastern North American Region.
Member of the Association of Teachers of Preventive Medicine.
Member of the United States Committee, Inc. of the World Medical Association.
Member of the Association of the Alumni of Columbia University, School of Public Health and Administrative Medicine.
Member of the University of Vermont Medical Alumni Association.
Former Member of American Osler Society, University of Vermont, College of Medicine.
Former Member of Prince Georges County Medical Society, Prince Georges County, Md.
Former Member of Association of Military Surgeons of the United States.

TEACHING EXEPRIENCE AND APPOINTMENTS

1951–52: Instructor in biostatistics, Columbia University, School of Public Health.
1952: Visiting lecturer in medical biometry, State University of New York, College of Medicine, Brooklyn, N.Y.
1952: Lecturer in biostatistics, University of California, Berkeley; unable to accept position because of imminent call to active duty with the Army.

[1] Activities included designing experiments; analyzing research data; teaching statistical methods and theory; editing scientific papers; doing research in epidemiology, physiology, and pharmacology; and assisting others in the execution of clinical and laboratory experiments. Established and organized the first biometry section of the Laboratory.
[2] Division head on sabbatical.
[3] The Food and Drug Administration Information Center on Adverse Reactions and Hazards was discussed on pp. 1 and 3–5 of the May 20, 1964, issue of Drug Research Reports, "The Blue Sheet," and on pp. 50 and 52 of the May 25, 1964, issue of Modern Medicine.

1955: Assistant professor of preventive medicine, Louisiana State University, College of Medicine; accepted position with Columbia University instead.
1956–59: Assistant professor of biostatistics, Columbia University, School of Public Health and Administrative Medicine; presented the following courses: Introduction to vital statistics; introduction to the analysis of experimental data; advanced statistical analysis (covariance and multivariate analysis); and statistical methods in biological assay; lecturer in medical biometry, public health statistics and statistical methods in human genetics, Columbia University, College of Physicians and Surgeons.
1959–63: Associate professor of epidemiology, Columbia University, School of Public Health and Administrative Medicine; administered or presented the following courses: Fundamentals of epidemiology; epidemiological methods and epidemiology in the solution of problems in hospital administration. Also conducted weekly seminars for epidemiology trainees.

PROFESSIONAL LICENSURE

New Jersey, 14144, 1952.

FELLOWSHIP AWARDS AND TRAVEL GRANTS

1951–52: National Foundation for Infantile Paralysis—to study at Columbia University
1959: Rockefeller Foundation—to study advanced statistical methods in biological assay at Department of Statistics, King's College, University of Aberdeen, Scotland. Also did research on the pharmacological basis of biological assay, tutored graduate students in mathematical statistics and visited Foresterhill Medical Center in Aberdeen and London School of Hygiene and Tropical Medicine.
1961: Social Science Research Council (International Conference Travel Grant) and Columbia University (delegate)—to attend 33d session of the International Statistical Institute in Paris, France.

RESEARCH ACTIVITIES (1949–)

Diabetes detection in Prince Georges County, Md., 1949–50.
Covariance techniques in medicine, 1951–52.
On the nature of a course in statistics for medical students, 1952.
Multivariate techniques in medicine, 1952–55.
Epidemiology of frostbite, 1953.
A study of vasodilator responses, 1953.
A study of personnel effects of nuclear weapons, with Fred Ikle, Social Science Division, the Rand Corp., 1955–56.
The statistical nature of life shortening processes, with Ray Mickey, Math Division, the Rand Corp., 1955–56.
Linear programing in human physiology, 1955–56.
Biological effects of chronic exposure to whole-body radiation, 1955–59.
The hypothetical nature of the dosage-response curve in biological assay, 1958– .
The effects of estrogenic substances in cerebral arteriosclerosis, with Dr. Nathan Kline, Rockland State Hospital, 1959.
Cervimetry—A study of the parturient cervix uteri, with Dr. Emanuel Friedman, Columbia, 1959–60.
Multivariate techniques in biological assay, 1959–60.
Smoking and lung cancer, a critical review of the literature, 1959– .
Metametric transformations in biological assay, 1959– .
A study of the philosophy, principles, and uses of epidemiology, 1959– .
A study of investigative epidemiology, 1960– .
Sequential testing procedures in long-term followup studies, 1960– .
The health-disease complex, 1960– .
Hospital morbidity reporting in community diagnosis, 1962– .
The toxicity in primates of low concentrations of methanol, with Dr. Frances W. S. Min, Food and Drug Administration, 1963–64.
The incidence of adverse reactions to drugs, with Dr. Joseph McEvilla, University of Pittsburgh, School of Pharmacy, 1963– .
The epidemiology of adverse reactions to drugs, with Dr. Burchard Wright, Food and Drug Administration, 1964– .
Adverse reactions to drugs in a selected area of the Province of Quebec, with Dr. Margaret Milliken, Food and Drug Administration, and Dr. Marcel Lemieux, Hôpital des Laurentides, Quebec, 1964– .

COMMITTEE MEMBERSHIP

Conference Committee on Prediction of Length of Life in Human Populations Following Exposure to Ionizing Radiation, sponsored by USAEC, Division of Biology and Medicine, Argonne National Laboratory, 1956.
Research Committee on the Epidemiology of Mental Disorders, Columbia University, School of Public Health and Administrative Medicine, 1958.
Epidemiology Planning Committee for Cardiovascular Disease, 1958–63.
Thesis Examining Committee, Departments of Obstetrics and Gynecology and Physiology, Columbia University, College of Physicians and Surgeons, 1959.
Advisory Committee, Model Prescription Recording System Study, University of Pittsburgh, School of Pharmacy, 1963–64.

PANEL DISCUSSIONS

Round Table on Medical Statistics, Eleventh Postgraduate Assembly, New York State Society of Anesthesiologists, New York, N.Y., 1957.
Fifth Annual Directors Meeting, Biostatistical Training Program, Pittsburgh. Pa., 1958.

CONSULTANT, RESEARCH AND STATISTICS

Experience includes designing studies, analyzing data, and interpreting results for researchers in the fields of anesthesiology, biochemistry, biophysics, dentistry, epidemiology, genetics, internal medicine, library science, microbiology, obstetrics and gynecology, occupational medicine, nursing, nutrition, pathology, pediatrics, pharmacology (including biological assay), physics, physiology, preventive medicine, psychiatry, psychology, public health practice, radiobiology, sanitary science, social science, and tropical medicine.
Serve as consultant to the editor of the Journal of the American Medical Association, the editorial board of the Medical Letter on Drugs and Therapeutics, public health statisticians, representatives of industry and members of the legal profession.

GUEST SPEAKER

Special Conference on Drug Information Services, American Society of Hospital Pharmacists, Lexington, Ky., February 24, 1964.
Annual meeting of the medical section, Pharmaceutical Manufacturers, Assotion, Clearwater, Fla., April 1, 1964.

PUBLICATIONS AND LECTURE NOTES

A Study of Vasodilator Responses in the Sequelae of Frostbite, with Walter Wildman, AMRL Report No. 98 (October 10, 1952).
Tables of the Normal, t, F and Chi-Square Distributions, AMRL (October 1953).
Components of Variance in Four-Factor Analysis, A Computational Guide, AMRL (October 29, 1953).
A Laboratory Manual of Biometry, Army Medical Research Laboratory, Fort Knox, Ky.:
Section I, Populations and Samples (November 1953).
Section II, The Normal Distribution (December 1953).
Section III, The t Distribution (January 1954).
Section IV, Tests of Some Statistical Hypotheses (December 1954).
Techniques in Multivariate Analysis as Applied to Medical Data, Doctoral Thesis, Columbia University (July 1955).
Evaluation of the Harvard Step Test With Respect to Factors of Height and Weight, with Jack Reedy, Arbeitsphysiologie 17:115–119 (1958).
Cell Volume, Plasma Volume, Total Blood Volume and F-cells Factor in the Rhesus Monkey, with M. I. Gregersen et al., Am. J. Physiol. 196:184–187 (January 1959).
Errors of Medical Studies, Clinical Science Section, J.A.M.A. 173:678–681 (June 11, 1960). Cited and discussed in editorial entitled "The Accuracy of Medical Studies," Canadian Medical Association Journal 83:1165–1166 (November 26, 1960).
Medical Research, Unsigned Editorial by Invitation, J.A.M.A. 173:685 (June 11, 1960).
The Biological Assay of Rauwolfia Schueli, with M. Cabut and J. C. Fasciolo, University of Mendoza, Argentina, Journal of Pharmacy and Pharmacology 12:557–561 (September 1960).

Book review: Elementary Statistics With Application in Medicine and the Biological Sciences, by F. E. Croxton, The American Review of Respiratory Diseases 82:581–582 (October 1960).
Statistical Methods in Human Genetics, The Journal of the Indian Medical Profession 7:3323–3325 (October 1960).
Ten Uses of Epidemology, Special Article, Canadian Medical Association Journal 85:992–995 (October 28, 1961). Abstracted in "References and Reviews," J.A.M.A. 178:187 (November 25, 1961). Cited in Tobacco and Health 5:4 (July 1962).
Obervations on the Probability of Error in Medical Diagnosis, Annals of Internal Medicine 56:860–864 (June 1962). Abstracted in "References and Reviews," J.A.M.A. 181:207 (July 21, 1962) and Biological Abstracts. Summario in Interlingua.
A Critique on the Methods and Scope of Epidemiology, A.J.PH. (October 1963).
The Food and Drug Administration Information Center on Adverse Reactions and Hazards, Food Drug Cosmetic Law Journal 19:232–236 (April 1964) and The Journal of New Drugs 4:75–78 (March–April 1964). To appear also in The American Journal of Hospital Pharmacy.
The "Ideal" Human Experiment on Cigarette Smoke and Lung Cancer, an Article in Preparation.
Fundamentals of Epidemiology, Lecture Notes for Students of Hospital Administration, Copyright February 1961.
Modern Concepts and Uses of Epidemiology, a Monograph in Preparation.
Some Useful Metametric Transformations in Biological Assay, an Article in Preparation.
Medical Biometory, A Course Outline for Medical Students, a Text in Preparation for the Macmillan Company.
Fundamentals of Biological Assay, a Text in Preparation. Designed for Use in Pharmacology, Nutrition, Physiology and Experimental Medicine.
Rodent Borne Diseases, Lecture Notes.
Probit Analysis, Lecture Notes.
Statistical Methods in Radiobiology, Lecture Notes.
Public Health Statistics, A Lecture Series for Medical Students.
A Parallel Line Assay of Rauwolfia Schueli, an Article in Preparation.
The Pharmacological Basis of Biological Assay, an Article in Preparation.
Pharmacogenic Diseases, an Article in Preparation with Dr. Osvaldo Ré.

INTERNATIONAL CONFERENCES

International Congress on Radiation Research, Burlington, Vt., August 11–16, 1958.
Delegate, 33d session of the International Statistical Institute, Paris, France, August 27 to September 7, 1961.
International Conference on Epidemiology and Medical Statistics, Hotel Lancaster, Paris, France, September 2, 1961. Panelists: Joseph Berkson, Rochester, Minn.; Lauren V. Ackerman, St. Louis, Mo.; Johannes Clemmesen, Copenhagen, Denmark; E. Cuyler Hammond, New York, N.Y.; G. Herdan, Bristol, England; M. J. Moroney, London, England; Jerzy Neyman, Berkeley, Calif.; P. Sadoul, Nancy, France; George L. Saiger, New York, N.Y.; F. William Sunderman, Philadelphia, Pa.; George F. Wright, Toronto, Canada; and Jacob Yerushalmy, Berkeley, Calif.
International Conference on Health and Health Education, Philadelphia, Pa., July 2–7, 1962.

FOREIGN TRAVEL

Canada, Mexico, Scotland, England, Portugal, Spain, France, Italy, Austria, Switzerland, West Germany, Holland, and Belgium.

RESEARCH AND TRAINING CORRESPONDENTS ABROAD

Mr. G. W. Lynch, Unit for Research on the Epidemiology of Psychatric Illness, Department of Psychological Medicine, University of Edinburgh, Scotland.
Dr. Martha Cabut, Rockefeller Foundation Fellow (1958–59), Department of Physiology, Faculty of Medicine, University of Mendoza, Argentina.
Dr. Zivko Kulcar, WHO Fellow (1958), Zagreb, Yugoslavia.

ORDER OF PROFICIENCY IN MODERN LANGUAGES

(1) English, (2) German, (3) Italian, (4) Spanish, (5) French, (6) Portuguese, (7) Dutch, and (8) Greek.

ORDER OF PROFICIENCY IN CLASSICAL LANGUAGES

(1) Latin, (2) Greek, and (3) Hebrew.

HOBBIES

Oil painting, traveling, carpentry, architecture, dramatics, creative writing, interior decorating, philately, numismatics, and hiking.

ADDITIONAL DATA

Listed in Who's Who in the East, volumes 7, 8, and 9.
Listed in American Men of Science, 10th edition.
As far as can be determined, biographee was the youngest person ever to have been a candidate for the doctor of public health degree.

BRIEF SUMMARY OF PROFESSIONAL QUALIFICATIONS

Physician, epidemiologist, biostatistician, educator, consultant in medical research, and medical administrator. Biographee also has training and experience in public health and preventive medicine and he has taken courses in organization and management.

Mr. ROGERS of Texas. Thank you, Dr. Saiger. That was an excellent statement.

Mr. Satterfield, do you have any questions?

Mr. SATTERFIELD. I have no questions at this time.

Mr. ROGERS of Texas. Mr. Younger?

Mr. YOUNGER. No questions.

Mr. ROGERS of Texas. Mr. Farnsley?

Mr. FARNSLEY. No.

Mr. ROGERS of Texas. Dr. Saiger, thank you very much for this contribution to the record in this matter.

Dr. SAIGER. Thank you.

Mr. ROGERS of Texas. Now, that concludes the witnesses listed to appear today, and if there is nothing further to come before the committee at this time, the Chair will adjourn the hearings until 10 a.m., Tuesday, May 4, at which time we expect to devote 1 more day to the public hearings and will close them at that time.

Hence the committee stands adjourned until that time.

(Whereupon, at 2:55 p.m., the committee adjourned, to reconvene at 10 a.m., Tuesday, May 4, 1965.)

CIGARETTE LABELING AND ADVERTISING—1965

TUESDAY, MAY 4, 1965

HOUSE OF REPRESENTATIVES,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The committee met, pursuant to recess, at 10 a.m., in room 2123, Rayburn House Office Building, the Honorable Oren Harris (chairman) presiding.

The CHAIRMAN. The committee will come to order.

In resuming the hearings this morning we are very pleased to welcome to the committee the Honorable Robert Meyner, presently the administrator of the cigarette advertising code. Mr. Meyner, as is well known, however, has served as Governor of his great State. When the committee indicated that it would like to have a report from him as to how the advertising code program was doing, he very cordially volunteered to come here to give the committee the benefit of his views and a status report on the program.

Governor, on behalf of the committee I want to thank you for your coming to Washington and being with this morning to give us a report on your program and just how it is working. It may be—I assume you have some others with you that you would like to bring to the table. We would welcome, of course, anyone you have with you.

STATEMENT OF HON. ROBERT B. MEYNER, ADMINISTRATOR OF THE CIGARETTE ADVERTISING CODE; ACCOMPANIED BY JOSEPH HOFFMAN

Mr. MEYNER. Mr. Chairman and members of the committee, I welcome the opportunity to appear here and I shall try to make a contribution to your very serious deliberations. I have with me an associate who has been in the office since I started with the code in September of 1964, Mr. Joseph Hoffman. We may have to rely on him to fill in some of the generalities that I will discuss.

I might say I am here as administrator of the cigarette advertising code, a position in which I have served since last July. Most of you, I know, are familiar with the code and its provisions, but copies of it are attached to this statement.

The code was drawn by the country's nine major cigarette manufacturers who compose its membership. The idea of a code was first broached in mid-1963. The code itself was completed and announced on April 27, 1964, and it took effect January 1, 1965. Thus, you see, we have been in operation effectively only a short period.

I agreed last June to become the administrator of the code and my staff began working in mid-September 1964. The code offices are in New York City.

I hold a strict conception of my job. The administrator is a judge, as it were, and the code is his statute. My assignment is to construe and enforce it, diligently and impartially. I do not see myself as an imagemaker for, or a detractor of, the industry nor is it my business to increase the sales of cigarettes or to depress them.

The job is a big one in point of quantity alone. You will note in article I of the code that the definition of advertising is very broad. It covers television, radio, and cinema commercials of all types; newspaper and magazine advertisements, billboards, posters and signs, and the so-called car cards you see in buses and subways and railroad cars. It includes the decals on automobiles and trucks and the signs and posters on autos and buses. It includes calendars, pamphlets, handbills, matchbook advertising, and the various and very numerous point-of-sale display materials.

Advertising under the code means the package of cigarettes itself and indeed the very cigarette itself. It means the carton and the shipping case. It means the decorative sleeves that dress up the cartons during the Christmas season. It means the giveaways like ballpoint pens and lighters—the cards to play the game and the pads to tally the score.

Advertising also embraces a variety of promotional letters, brochures and other literature. But you get the point. If I say that the code administrator and his staff have gone through a mountain of material, it is not far from the literal truth. It has been an instructive experience; I never realized before the sweep and penetration of advertising generally in our way of life. I didn't know that some cigarette commercials are translated into the Navajo language. The experience has been a vocabulary-builder of sorts, too. SFX is sound effects. ECU is extreme closeup, and a glissando is a special musical effect, best done, I am told, on a harp or piano.

The job has made me regret that I didn't take high school chemistry a lot more seriously. It has given me a peculiar mannerism, as well. In the distracted moments that overtake everybody now and then, some men doodle, some crack their knuckles, others twiddle their thumbs. Me, since this job—I find myself humming jingles.

If I refer to some of the lighter aspects of the work, it does not mean that I take the job lightly. I accepted this assignment because I saw a challenge in it. Personally, I vastly prefer industry self-regulation to Government control. I think industry self-regulation can work, and I recognize there are many suspicions and dissents on this point. There lies the challenge—to put a private conviction to a real test.

The code has two basic goals: (1) To prohibit appeals primarily directed to persons under 21 years of age, and (2) to prohibit health claims.

I would direct the committee's attention to a Federal Trade Commission report of June 22, 1964, entitled "Trade Regulation Rule for the Prevention of Unfair or Deceptive Advertising and Labeling of Cigarettes in Relation to the Health Hazards of Smoking and Accompanying Statement of Basis and Purpose of Rule." At pages 59 through 67 of this report, you will find a rather exhaustive compilation of cigarette advertising which was criticized by the Commission. Much of this advertising had been eliminated prior to the adoption of the code. I invite you to study this portion of the report and compare

advertising then with advertising now. Practically all the advertising cited by the report would fail to receive code approval today.

For instance, you will find that all claims respecting filters now refer to taste and flavor only. Along the same lines, all physical depictions of the filtration process have been eliminated.

Under the code, we have treated the use of charcoal in cigarette advertising in the same manner, that is, it is discussed only when limited to a taste or flavor claim.

Not all the changes have been mechanical or semantic. The administrator has broadly interpreted the word "health" as used in the code. Thus every effort has been made to avoid advertising which could be construed as representing that cigarettes provide relief from tension and fatigue. While cigarette smoking may be depicted in the context of pleasant situations, cigarettes may not be represented as the agents of transforming an unpleasant situation into a pleasant one.

Another action taken under the code authority bears discussion. Section 4 of article IV of the code prohibits representations as to the quantity of an ingedient present or absent in the mainstream of the smoke, unless the administrator determines that such representation is significant in terms of health and is supported by adequate, relevant, and valid scientific data; or unless it is accompanied by a disclaimer as to significance in terms of health which is set forth in accordance with uniform standards adopted by the administrator. In this connection, advertising of three brands which dealt with the amount of tars or nicotine was eliminated by the manufacturers. It is my view that the figures, standing alone, are meaningless. It is noteworthy that the Surgeon General, in view of the present state of knowledge, is not able to identify either tars or nicotine as the allegedly deleterious substances in cigarette smoking.

With respect to primary appeals to persons under 21, the following action has been taken: Cigarette advertising has been eliminated in school, college, and university media and in comic books and comic supplements to newspapers; sample cigarettes may not be distributed to persons under 21 years of age or in school, college, or university campuses and other facilities; nor may any promotional efforts be conducted in such facilities.

The code prohibits testimonials by all athletes, celebrities in the entertainment world, or other persons who in the judgment of the administrator have a special appeal to persons under 21. You may have noticed that in the current baseball season, sportscasters who are former athletes—like Phil Rizzuto, Richie Ashburn, and Ralph Kiner—are not delivering cigarette commercials. Even the sportscasters who are not former athletes but who have achieved celebrity status as figures in the sports world have their copy carefully circumscribed.

One area my office is looking into is section 1(a) of article IV of the code, which prohibits cigarette advertising on television or radio programs and in publications that are directed primarily to persons under 21 years of age. To assist in this undertaking, I have recently added to my staff a man experienced in the field of marketing and advertising research. We are now communicating with several of the leading suppliers of program monitoring and audience measurement data, with a view to obtaining information about both the television

advertising activity of member companies and the audience age composition of television programs on which, or adjacent to which, cigarette advertising appears. I also intend to have similar inquiries made in the field of print advertising and radio, although comprehensive audience age data appear to be less readily available in these media than in television.

We hope in the near future to be in a position to lay down guidelines to code members with respect to the enforcement of this section. There are many factors which complicate our work in this area, such as:

The fact that there are literally thousands of different publications, stations, and programs carrying cigarette advertising that have to be reviewed.

Doubts that have been raised regarding the accuracy of data furnished by audience measurement services.

The extreme difficulty of estimating the likely appeal and reach of programs and publications among young people—particularly in view of (1) frequent variations in the youth appeal of a program's or publication's content from one broadcast to another or one issue to another; (2) frequent fluctuations in a program's audience composition resulting from its being moved from one time slot to another; (3) substantial variations in audience age composition from one region of the country to another; and (4) the important, but often unpredictable, audience composition changes brought about by shifts in competitive programing schedules.

I am studying this entire question seriously and thoroughly.

I welcome your questions about my work as Administrator.

The CHAIRMAN. Governor, does that complete your formal statement?

Mr. MEYNER. Yes, it does, Mr. Chairman.

The CHAIRMAN. I observe that you have the code referred to attached to your statement. It is not a lengthy document and I think perhaps it would be advisable to have it included along with your statement in the record.

(The document referred to was submitted by Mr. Bowman Gray and appears on pp. 287–290.)

The CHAIRMAN. Governor, you have had occasion, I assume, and those with whom you are associated, to study and analyze the report of the Advisory Committee to the Surgeon General of the Public Health Service.

Mr. MEYNER. I have read the report, Mr. Chairman, and I have conferred with the Surgeon General and have made an effort to talk with a number of people who are interested in the overall subject.

The CHAIRMAN. Now, this report was filed about a year ago. I don't believe it has a date on it, does it? Approximately a year ago anyway. Is your advertising code a corporation?

Mr. MEYNER. The financing of the code's operations is through a corporation consisting of nine members, the nine principal companies, but I have exercised complete independence in the operation of the code. While there is reserved to the directors under the code the privilege of approval of certain types of employees whom I might appoint, that privilege has thus far not been exercised. I have therefore independence in seeing to it that this code is lived up to.

The CHAIRMAN. Was this code developed and your office as a result of the report or because of the announced action of the Federal Trade Commission or both?

Mr. MEYNER. It is my impression that there was a discussion among the representatives of the companies as to the need of a code as early as mid-1963. All I can say, more or less from hearsay, is that the Surgeon General's report may have hastened the adoption of the code. The code itself forbids health claims.

The CHAIRMAN. Governor, what I was leading up to is this: You have read the report and you are familiar with the fact that the Public Health Service endorses the report and says there is a very great health hazard. I think there they suggest that the hazardous substance bill be amended to give them certain authority. The Federal Trade Commission has announced its method of reaching the problem.

Now, do you feel that the advertising code which you are administering meets these problems which have been raised by both HEW and Federal Trade Commission.

Mr. MEYNER. I think Congress itself has to be the judge of what is most efficacious in the circumstances. All that I can say is that I have a code here which prohibits representations to people under 21 or special appeals to people under 21, and I have a code which says no cigarette advertising which makes a representation with respect to health shall be used unless the claim meets certain conditions.

Now, so far, I have been following this literally, so that we, in an informal way, have the company people come in with submissions, and I say, "Let's have no representations with respect to health" and in a way, we are prohibiting any representation in this area.

The CHAIRMAN. But you do not go so far as to require any statement in connection with advertising that there is a health hazard.

Mr. MEYNER. No, we do not. But we do prevent a positive assertion that there is a health virtue or a health value to cigarettes.

The CHAIRMAN. You think there is a health value in smoking a particular type of cigarettes?

Mr. MEYNER. I would like to reserve to myself the objective of looking at submissions in a confidential way. If some cigarette manufacturer comes along and says, "We have got a healthier cigarette" or "We have got a cigarette finally that isn't going to harm people" or "We can prove to you that it is a much better cigarette than someone else's," I would like to be able to read all of the testimony and arrive at an impartial and objective conclusion. I proceed on the theory that nobody, no manufacturer, can say that this cigarette is healthful because the code says he may not. But if someone does come along and has in improved cigarette, I have the right to bring panels in. The code specificially provides in section 5 of article II on page 2, that I am authorized to convene scientific advisory panels to help me carry out my duties. Persons for such panel shall be of independence, integrity, and competence in particular areas. The code entitles me to confer with U.S. Department of Health, Education, and Welfare, National Academy of Sciences, and other official agencies.

I say right now there is no advertising which assures anyone that it is healthful to be smoking any brand of cigarettes because the code says there shall be no representations with respect to health. That doesn't preclude someone from coming in because if you look at sections 2, 3, and 4 of article IV on page 5, it provides, "No cigarette

advertising which makes a recommendation with respect to health shall be used unless the Administrator shall have determined that such representation is significant in terms of health and is based on adequate, relevant, and scientific data." Then there are a number of other factors. If the companies want to say, "This cigarette is healthful," they have to submit the data and then I have to be in the position of being an objective and impartial judge. Then I might consult the Surgeon General's Advisory Committee Report or other authorities.

I take whatever they submit to me. I might even go out and confer with someone—let us say in the Surgeon General's office—and say, "Will you evaluate this testimony?"

This code provides that, if a better cigarette is built or constructed or devised, it could be approved, but up to now, I have been very careful to suggest in these informal conferences when they submit advertisements, "Let's be especially conservative and make no health claim at all."

Now, it seems to me the committee has on the one hand the choice of letting this method be adopted or it can say there ought to be a warning, but it seems to me that this is a position that the committee has to decide for itself.

The CHAIRMAN. In other words, you do not want to take a positive position at this time as to any health claims regarding the smoking of particular cigarettes in the advertising. And neither would you want to take a position that there should be a warning in advertisements that smoking will seriously affect health.

You want to be in a position to determine as each situation is presented to you what should be done about it.

Mr. MEYNER. That is correct. But under the code, up to now, I have not allowed any cigarette company to say it is healthy to smoke cigarettes. And, as a matter of fact, in conferring with people who have submitted advertising, I have been especially careful in scrutinizing the copy.

The CHAIRMAN. I suppose you have had no problem of preventing the industry from putting warnings on advertising up to this time.

Mr. MEYNER. No. I have found no vigorous advocates among the cigarette advertising companies.

The CHAIRMAN. I observed from a report submitted to us a few days ago that most of the advertising is on television.

Mr. MEYNER. This is correct. That is why I have become accustomed to jingles as I mentioned in my statement.

The CHAIRMAN. And then next but with a very small amount comparatively, come magazines, and then third comes radio. Then following that, newspapers.

What would happen if the cigarette industry quit advertising cigarettes? I know there would be an economic situation in the advertising business but what in your judgment would happen to the industry itself?

Mr. MEYNER. Well, I have talked to some radio and television people and I would judge that, so far as radio is concerned, you say so little in so short a time that maybe you would be eliminating all advertising on radio. You would probably be eliminating it on television.

Mr. FARNSLEY. Mr. Chairman, I don't think the witness answered the question. Excuse me.

The CHAIRMAN. Well, perhaps he didn't get the full import of the question.

If there were to be no advertising, say billboards or television, radio, would it reduce the consumption and use of cigarettes?

Mr. MEYNER. I haven't made a study as the administrator. All I can do is give the same educated guess as any member of this committee could give.

The CHAIRMAN. Some time ago, I think it was about 1950 or 1951, we had a problem with reference to the advertising of alcoholic beverages and particularly hard liquors. We conducted an investigation in 1950 and 1951 and out of that come the television code of March 1, 1952. Under the television code and the policy of the liquor industry, no liquor is advertised and they have constantly adhered to that policy. I think there were one or two stations that got off base maybe a couple or 3 years ago but in general the advertising of hard liquors has not been permitted as on radio and television.

Well, a claim was made at that time that if they did not engage in such advertising, that they would be penalized, and they would not be permitted to do what other industries are permitted to do in this country. Nevertheless it was worked out and it has been the practice since then. From all reports I get I think that there is a lot more liquor consumed now than there was in 1950. And I was just wondering if that is the case, how much does it mean to the industry from the standpoint of advertising if they have to forego radio and television advertising.

Now, I know the television industry probably would have a lot of things to say about it and squawk pretty loudly. One of the networks, I think, cigarette advertising accounts for about 11 percent and on another it accounts for about 9 percent, and for the third network I think approximately 10 percent. I may be off a bit but I believe those are about the percentages.

So long as we are giving attention to advertising practices—and it seems to be what everybody is doing—Congress, the Public Health Service, and Federal Trade Commission—I am just wondering if the industry feels that there might be some other way to get at this and try to meet the problem head-on with a proposal that would be somewhat similar to what has been done with regard to liquor.

Mr. MEYNER. In my own experience as a lawyer in New Jersey, I had occasion to check out the liquor situation and I think the statistics indicate that there is a pretty steady source of consumption. It doesn't vary widely.

And secondly, I think with respect to the liquor industry, the threat of this committee or the Senate committee with reference to the license holders is much more imminent in that area than it would be in this area, because the distiller or the manufacturer who is threatened with litigation is more likely to live up to the code. At least I think the Alcohol Tax Division of the Treasury Department has pretty much indicated this, that there is sort of a truce, a live up to the code or you are going to have some rather drastic regulation: I think that is the kind of regulation that has gone on from what I can observe in the liquor industry.

The CHAIRMAN. But I think public opinion is about the strongest force that we have got in this country. When we think of procedures,

and so forth, I think public opinion probably has the greatest influence, does it not? Well, I have taken too much time.

Mr. Devine?

Mr. DEVINE. Just along the lines the Chairman was talking about, the code, as far as alcoholic beverages is concerned, was there not, Mr. Chairman, some type of agreement with your beer advertisers? They do use the television media. I, however, think they voluntarily do not show anyone actually drinking the product.

The CHAIRMAN. I think just as Governor Meyner has indicated, through self-policing practices in history, the industry that he is responsible for, in administering the code, through self-policing practices they agreed to certain procedures and that was one objective.

Mr. MEYNER. Mr. Chairman, before I started as administrator of the cigarette advertising code, I met with the Metropolitan Brewers Institute in New York and then the National Brewers Institute and they have a rule to the effect that no one can be seen on television putting a glass of beer to his lips and they live up to that rule. And they have a rather strict code. And I have tried to learn about their practices and their method of procedure and have tried to adopt them in the practices of our office.

Mr. DEVINE. I have no questions. I think that your testimony has added immeasurably to the record, Governor.

Mr. MEYNER. Thank you.

The CHAIRMAN. Mr. Kornegay?

Mr. KORNEGAY. Thank you, Mr. Chairman. I have no questions to ask the Governor but simply would like to thank him for coming here and giving the committee the benefit of his testimony, and the work that he is doing as head of the cigarette advertising code.

Mr. MEYNER. Thank you.

Mr. KORNEGAY. It is nice to see you, Governor. I personally appreciate your accepting the challenge which you stated here earlier. I agree with you that self-regulation of business is much preferable to Government regulation, and I have confidence in the industry of this country and the fact that in most instances they will adhere to the code of good practice.

Thank you, very much.

Mr. MEYNER. Thank you.

The CHAIRMAN. Mr. Younger?

Mr. YOUNGER. Thank you, Mr. Chairman.

Just one question. It seems as though we are confronted not with something we would like to have but we are confronted and you are confronted with an order of the Federal Trade Commission which becomes effective on July 1.

The CHAIRMAN. Unless you get it postponed.

Mr. YOUNGER. It had one postponement for 6 months. Maybe you can get another one. But that is something which has yet to be done. Now, do you feel from your standpoint, representing the industry, that you would rather have Congress legislate on this subject than to have the orders come down through rulemaking by the Federal Trade Commission?

Mr. MEYNER. Mr. Congressman, I would like to take my position as being the interpreter and enforcer of this code, that is all.

Mr. YOUNGER. But, Governor, that isn't the question. You are going to be confronted with the order.

Mr. MEYNER. The cigarette manufacturers are to be confronted with the order and they act, not through the code, but as individual cigarette manufacturers. All I can be is a judge here, and under this code I have to prevent appeals to youth. I have to prevent cigarette advertising that represents smoking as essential to success or distinction. I have to prevent health claims.

Mr. YOUNGER. Is your code not going to have anything to do with the hazard label on the packages?

Mr. MEYNER. No. The code as it exists now is preventing anything being put on the package or anything being put in advertising which would hold forth to the public a claim or representation that it is healthful.

Mr. YOUNGER. That is all, Mr. Chairman.

The CHAIRMAN. Mr. Rooney?

Mr. ROONEY. I would like also to congratulate Governor Meyner on his excellent presentation here this morning and I, too, share with you, Governor, that the best way to approach this problem is through the self-regulation rather than Government regulation. It is nice to have you in Washington. We of Pennsylvania are very proud of you, Governor. We like to claim you as a Pennsylvanian, inasmuch as you only live just across the Delaware River in Phillipsburg.

Mr. MEYNER. I was born in your district.

Mr. ROONEY. That is right. You were born in Easton.

Governor, as a judge, as administrator of this association, have you found any misleading advertising thus far?

Mr. MEYNER. I might say—I might explain our method of procedure. I deal with the lawyers for the cigarette companies or the executives of the cigarette companies in charge of advertising. I don't deal with the advertising agencies directly or the broadcast people. I just deal with these people. They come in and submit advertising. They argue very vigorously about a certain point and then I say, "Well, now, this might be construed as a health claim. I think maybe we had better limit this area." We do it by negotiation. They fight vigorously. But after I make the decision, I have found a complete respect for my ruling and we move on.

I think that on the basis of what you see in advertising today, that there are no health claims. It is true that people are smoking under pleasant situations. It is true that situations are described where maybe children might think it is a nice situation, but how do you exclude adult influences—all the adult influences—from children? But we try to see to it that, on a very conservative and strict interpretation, there is nothing said about the cigarette that would lead people to believe that it is healthful.

Mr. ROONEY. If a company continued to or failed to discontinue false advertising, and they do not cease and desist from an order from you, what is the penalty?

Mr. MEYNER. All I do is start a complaint proceeding against them and I can assess as liquidated damages $100,000 for each and every offense.

Mr. ROONEY. You have the authority, then to penalize?

Mr. MEYNER. Yes, there is no appeal. But I will say this: as much as these people who come in to me with these submissions are emphatic in their claims, once I have said, "Well, we don't use that advertising;

you had better submit something else"—once I have made the decision, they will live up to it.

Mr. ROONEY. No further questions, Mr. Chairman. Thank you.

The CHAIRMAN. Mr. Broyhill?

Mr. BROYHILL. Thank you, Mr. Chairman.

Governor, I want to compliment you on the job that you are doing as administrator and judge, as you say, of this organization, and also to commend the industry for their initiative in setting up the cigarette advertising code. I just have one question.

On page 3 of your testimony you say:

> The code has two basic goals: No. 1, to prohibit appeals primarily directed to persons under 21 years of age, No. 2, to prohibit health claims.

My question is, To what extent have you been able to achieve those two goals?

Mr. MEYNER. I think, for instance, in most of the advertising which comes to us, we have ruled out situations where people under 25 were depicted as smokers. We have been very strict in the interpretation of testimonials. If you will observe, on page 5, article 4, section 1(j), testimonials from athletes or celebrities in the entertainment world, or testimonials from other persons who, in the judgment of the administrator, would have special appeal to persons under 21 years of age—we have been moving into that area.

Under article 4, section 1(d), we have been very strict in our interpretation of the provision that cigarette advertising shall not represent that cigarette smoking is essential to social prominence, distinction, success, or sexual attraction.

We have barred, or we have at least failed to approve some television copy and some print copy where people were made to appear—in our opinion, and this is a subjective judgment—under 25. You will see under article 4, section 1(e), that all persons depicted as smokers in cigarette advertising shall be at least 25 years of age and shall not be dressed or otherwise made to appear to be less than 25 years of age. We have been very strict in that area.

Mr. BROYHILL. One other question. Are all manufacturers of cigarettes members of the advertising code?

Mr. MEYNER. The statistics I have been exposed to indicate that these 9 companies produce over 99 percent of the cigarettes used in the United States.

Mr. BROYHILL. And over 99 percent of the advertising, too.

Mr. MEYNER. Yes. Well, there are six principal companies that are responsible for most of the advertising.

Mr. BROYHILL. No other questions, Mr. Chairman.

The CHAIRMAN. Mr. Murphy?

Mr. MURPHY. Thank you, Mr. Chairman.

I had better get Governor Meyner back in Warren County where he belongs rather than over in the Pennsylvania line.

Governor, as administrator of the cigarette advertising code, if we or if the Federal Trade Commission goes through with its rulemaking on July 1, do you feel that your office and your duties would probably be cut back by the industry with this health warning on cigarettes?

Mr. MEYNER. I can only speculate. It would seem to me if a health warning is put in advertising or in the labeling, there might be a

pressure to allow more claims to be made with respect to cigarette advertising. They might say, "Well, we can say this and this because at the end we are providing the warning. Up to now, my job is to limit affirmative statements with respect to health or to eliminate a positive approach to appeal to youngsters without a negative warning. Now, if there were a negative warning, I can only speculate. It might be that the advertisers would say, "Well, we are already saying we make no health claim" or "We are already repeating this," and they might endeavor to make a stronger—positive statement with respect to what a cigarette does.

Mr. MURPHY. But if a health warning was required on every package, do you feel that the advertising in the industry might revert to its former approach, say, to youth and forget the great strides which I think you have brought about in the advertising of cigarettes?

Mr. MEYNER. Well, I think many of these strides were made before they adopted the code in April and they lived up to the spirit of it to a degree until they had the administrator. Then, of course, once we put the effective date in, we carried on, but my own feeling is that I would still be obligated to live up to the terms of this code even if there were a change made either by Congress or by the Federal Trade Commission.

Mr. MURPHY. We might actually by having this warning be taking a step backward as far as advertising is concerned in the approach to the youth of the country.

Mr. MEYNER. I must confess the only partisanship in this whole thing I am willing to show is that I think this is an attempt at self-regulation and I am trying to do it. Now, whether it can be done or not only time will tell. I think it can be done.

Mr. MURPHY. Thank you, Governor.

The CHAIRMAN. Mr. Carter?

Mr. CARTER. I would like to congratulate the Governor on his excellent presentation. Certainly it is my humble opinion that the regulation of advertising by an industry is definitely the way it should be done if possible. Certainly we hate to see Government enter into that field. However, perhaps some—some intervention might be forthcoming but it seems that industry is doing a great deal to regulate itself and personally I think it should be given further opportunity. Thank you, sir.

Mr. MEYNER. Thank you, Mr. Carter.

The CHAIRMAN. Mr. Gilligan?

Mr. GILLIGAN. Thank you, Mr. Chairman. Governor, presumably the code you have been describing, and its practices you have been describing, are based on a belief, whether or not it exists among the manufacturers of cigarettes or in the general public it is not clear at the moment, but it is based on a belief that young people should not be encouraged or enticed to smoke.

Now, is that belief based upon the idea that smoking is injurious to the young or old people, or what—if there isn't anything wrong, in other words, with cigarette smoking, or anything injurious about it, why would any steps be taken to discourage the smoking among our youth?

Mr. MEYNER. I don't know all of the motivations of the cigarette manufacturers when they proposed the code but I do know that there

has been a good deal of discussion in the public press, even before the Surgeon General's report, and I think a good many people said, "Let's try to cut down smoking on the part of young people," and, "Let's try to limit health claims."

And it would seem to me—I wasn't a part of it—it would seem to me that the cigarette manufacturers recognized this as public opinion and said, "If we don't do it, maybe the Legislature will do it."

And they went out and formed a code. And here is the code which has these provisions. And I accept these provisions and I interpret them rather strictly.

Now, as to what was in their minds or what was in the mind of the public, I think I am a better administrator if I don't say what is good and what is bad. I know the code says you don't appeal to young people and I am going to cut down those appeals if I posibly can.

On the other hand, I am realistic enough to know that, from the day a child comes into the world, you are not going to deprive him of all experience with adults or you are going to shield him entirely from some of the temptations adults have, or keep from emulating adults to some degree.

Mr. GILLIGAN. I have three teenage children, Governor, and I recognize that problem.

Mr. MEYNER. I mean, after all, Congressman, it seemed to me while I was in State government that some people expected that you could shield a child until he got to be 18 and then you send him to the Army or Navy and suddenly he was going to be a man.

On the other hand, we do have to give them a certain amount of protection in this, I think, and I am trying to watch out for that protection.

Mr. GILLIGAN. One further question and I may be directing it to the wrong person.

You may not have the information available to answer.

Do you know if the cigarette companies or anyone else have any statistical estimate of the proportion of cigarette smokers who are less than 21 years of age?

What portion of the market is represented by young people? Do you know of the existence of any estimates of that?

Mr. MEYNER. I don't know but it would seem to me the cigarette companies could probably get estimates.

Mr. GILLIGAN. Thank you.

No more questions.

The CHAIRMAN. Mr. Farnsley?

Mr. FARNSLEY. Thank you, Mr. Chairman.

Governor, let me ask you a question I asked the Surgeon General.

Do you have any studies by anyone from the social or behavioral sciences as to the probable effect of the Surgeon General's proposal, of the FTC's proposal to require warning on packages, to require warning of advertising?

Mr. MEYNER. I do not, Mr. Congressman.

Mr. FARNSLEY. Of course, I was disturbed by the Surgeon General and the FTC because they are making their recommendations without such studies. I am not going to tell you how to run your business but I believe you are making a mistake in not having studies

made. I think if you get into it, probably you will find that the proposed warnings will cause young people to smoke more.

I believe that you will find the proposed warnings will not damage the industry, will not cause a drop in sales. They might make you all extremely rich.

One man testified here that the profit potentials of a cigarette industry that didn't advertise stagger the imagination. I realize that you all have been very noble in trying to protect—I don't know—whatever you said your were fighting for. I am convinced that good studies by good technicians would show that although a big part, a substantial percentage of television advertising is from cigarettes, They could recover over a year or two. Although the advertising share of the newspapers is not so great, I don't believe they could recover their losses. I think they would be badly damaged. All evidence is that they would be. So it is a right serious thing from the standpoint of the newspapers who, I think, are right important to the country.

Now, I wouldn't for a minute, support them with something that is going to hurt our people, cause people to die or suffer or be injured. But I find, the only evidence I find, is that these warnings to quit advertising would not reduce the consumption. And I have found no proposal to reduce consumption except complete prohibition, for which apparently there is no substantial support.

In fact, we are told it is an un-American way to prohibit, based on the experience, with which you are familiar, with liquor. Of course, this committee probably was involved in doing an un-American thing by prohibiting or recommending prohibition of goofballs. We prohibit narcotics. We prohibit many, many drugs except by doctors' prescription and people say that doctors wouldn't prescribe cigarettes.

I notice that your code goes beyond the Surgeon General's report in that the Surgeon General's report points out that there are mental health advantages in smoking and you apparently rule that out.

I am talking too long—apparently the whole thing boils down to one thing that really makes a difference, whether the newspapers are going to be badly damaged by something that is not going to help in terms of cutting consumption of cigarettes if we want to cut the consumption, and I do, I think it would help you to understand and all of us to understand—my family consider themselves southerners although we live just south of the Mason-Dixon line. In fact, I was enough of a southerner to be commander of a chapter of the Sons of Confederate Veterans. It is inactive now. I think it is interesting, and it will help people to understand the enthusiasm of the proponents of this legislation to realize that the Surgeon General is from Alabama, went to school in Alabama.

M. Foote, who has real zeal in this cause, is also from Alabama, went to school in Alabama, although not as long as the Surgeon General. Mr. Dixon, who is a dedicated public servant and has, no question about this, zeal and integrity and desire to serve humanity, Mr. Dixon is a Tennessee boy who went to school in Tennessee.

And then if you carry it further—don't misunderstand, I have nothing to do with the findings of the Surgeon General's Committee—I think you will find that a substantial number of his committee are southerners.

I am not saying it is a religious zeal but it is Calvinistic in terms of zeal for a cause without even stopping to find out if they are going to serve the cause by their recommendations.

One of the members of the Surgeon General's Committee is from Scotland which is strongly Calvinistic. Maybe half of the committee is from the southern part of the United States. There are many other groups with other backgrounds not represented or represented in a small way. I think this will help you to understand the situation. I know it has helped me to understand it.

I have talked too long.

Thank you.

Mr. MEYNER. Thank you, Mr. Congressman. You make a very good suggestion.

The CHAIRMAN. Governor, I assume from your response to the question of Mr. Younger a moment ago you are in no position or you do not desire to take any position with reference to the various legislative proposals before the committee?

Mr. MEYNER. That is correct, Mr. Chairman.

I might say that at least the code does offer a chance to get things done quickly. It is not in the nature of an adversary proceeding. It is a directive to the Administrator and he does have the opportunity of preventing positive affirmative statements in the areas that I have described. I appreciate the opportunity to appear.

The CHAIRMAN. Do you have the information as to how advertising expenditures break down on TV between program sponsorship and program participation on the one hand and spot announcements on the other?

Mr. MEYNER. All I know is what I have been reading in Advertising Age and Printer's Ink, and some of those magazines, and I know that the amount of television spot announcements as compared with actual programs, network programs, has been on the increase. I think Mr. Bowman Gray had testified and agreed to furnish some statements as to amounts.

The CHAIRMAN. He did furnish the statement to which I referred a moment ago as to the breakdown between the various media which, of course, is going in the record. But I had in mind whether you have any information as to further breakdown with reference to live entertainments, sports, and so forth.

Mr. MEYNER. No: I haven't, Mr. Chairman.

The CHAIRMAN. Governor, thank you very much for your appearance here this morning and the contribution you have made to this record. We appreciate it.

Mr. MEYNER. Thank you very much, Mr. Chairman, and I appreciate it—appreciate the courtesy the committee has afforded me and I must say I don't envy you in your task.

The CHAIRMAN. We wish you good luck in the discharge of your great responsibility.

Mr. MEYNER. Thank you, sir.

The CHAIRMAN. Mr. Fred Royster.

Mr. Royster, I believe you are of the tobacco growers, warehousemen, and processors organization in Henderson, N.C. Of course, the chairman of the committee is very happy to extend to you a cordial welcome but I assume that your very great and able Congressman

and our good friend and colleague, Mr. Kornegay, can give you a better welcome than even I could.

Mr. ROYSTER. Thank you, Mr. Chairman.

The CHAIRMAN. I shall be glad to afford him that opportunity.

Mr. KORNEGAY. Thank you, Mr. Chairman. I appreciate very much your affording me this opportunity.

It is always a pleasure to welcome Fred Royster to any group and particularly on this occasion.

Mr. Chairman and members of the committee, I would like to say that Mr. Royster is one of the most outstanding citizens in the State of North Carolina, that he has been identified with and participated as a grower and in other fashions with the tobacco industry all his life.

He, I am sure, was raised on a tobacco farm, although he has never told me that. I know his deep interest in the tobacco programs. He is the managing director of the Bright Belt Warehouse Association, is in the State Senate in North Carolina and has served in the legislature for many terms, and just to make it short, I have known him a long time and I might say: "Fred, it is nice to have you with us this morning. We are pleased with your fine work that you have done."

Thank you so much.

Mr. ROYSTER. Thank you, Mr. Chairman.

The CHAIRMAN. You may proceed as you desire, Mr. Royster.

STATEMENT OF FRED S. ROYSTER, MANAGING DIRECTOR, BRIGHT BELT WAREHOUSE ASSOCIATION

Mr. ROYSTER. Thank you, Mr. Chairman, and members of the committee.

I am grateful for this opportunity to appear before you here this morning to prevent the views of those whom I represent on the pending bills that are before the committee.

I am Fred S. Royster, of Henderson, N.C., I am a grower of tobacco and have been a grower all of my life. For 18 years I have been an executive, first the president and later the managing director, of Bright Belt Warehouse Association, a trade association of warehousemen selling bright leaf tobacco at auction in all belts where such tobacco is grown, namely, Virginia, North Carolina, South Caroline, Georgia, and Florida. I am very familiar with tobacco growers and their problems.

Shortly after the Federal Trade Commission announced its "Proposed Trade Regulation Rules for the Advertising and Labeling of Cigarettes," there were held meetings of representatives of the growers of tobacco. They had become very alarmed about those proposals and very alarmed about the whole subject of existing threats of extreme and emotionally hostile labeling. At those meetings there were representatives of 49 organizations of growers and of persons directly interested in growers. They formed a working group which they called the Committee of Growers of U.S. Tobacco. That group has continued to function and is now active. That group has requested that I speak for it and for its constituent organizations and for the growers of tobacco in all of the States in which tobacco is grown. That group has approved the statement which I make here today. They cover the tobacco growing field. They are unanimous and they are disturbed.

THE GROWERS

The growers of tobacco in the United States embrace more than 750,000 farm families and, therefore, several million people. Those people earn their bread by the sweat of their brows.

Tobacco is a very demanding crop. It requires much hand labor in the open fields. In the hot days of May, June, July, and August, it is frequently necessary for all of the working members of the family, father, mother, and teenage sons and daughters, to go to the fields. In the production of the crop, the sweat streams.

Tobacco is a very expensive crop to produce.

However, largely due to the tobacco program based on congressional action, tobacco sells for an average of more than 55 cents per pound. At that price, there is a fair profit for the capable grower.

For the great majority of the growers, tobacco constitutes by far the principal source of income. Upon the output of the tobacco crop, the livelihood of the family depends.

In the past 30 years, the economy of the tobacco growers has shown the greatest improvement in history. They have climbed from penury to self-sufficiency. You can ride through our farm country and see the paint on the houses, the electric wiring leading to the premises, the farm machinery in the yards, the look of independence on the faces of the farmers.

THE DEVASTATING EFFECT OF INTEMPERATE LABELING AND THE PARALYZING OF ADVERTISING THROUGH COMPULSORY WARNINGS

If the sovereign requires compulsory and intemperate warning labeling of the product by vendors and compulsory warning in the advertising by the vendors, those things would greatly lessen the sale of tobacco products and thereby greatly lessen the sale of tobacco by growers.

It is our considered judgment that action such as proposed by the Federal Trade Commission and such as may be contemplated by some of the bills to come before this committee would cause the price of the grower's leaf tobacco to go down below the cost of production—probably dropping by as much as 50 percent. That would mean economic ruin to millions of people, which would mean economic disaster in tobacco communities and States and would cause a depression in those communities and States. It might trigger a more widespread depression.

Let us look for a moment to the size of the subject in dollars. In North Carolina alone we produce nearly a billion pounds of tobacco annually. It sells for more than $500 million. It is the most important agricultural product of North Carolina, and North Carolina is primarily an agricultural State. Cut that income in half or more, and you have massive poverty, and that, too, at a time when we are making a great organized effort to abolish poverty. A similar situation exists in all States which produce tobacco.

It is the firm conviction of the group which I represent that the measures proposed by the Federal Trade Commission would destroy or cripple the tobacco industry, and that inevitably would destroy or cripple the growers of tobacco. It is our terrifying fear that the Federal Trade Commission program, if effected, would cut the income of the tobacco growers by one-half in a very short time.

FURTHER RESEARCH TO FIND THE TRUTH

Before saying more about grower positions, I wish to make it clear that growers do not hold the view that consideration of their economic need is paramount to consideration of the health of people. The persons for whom I speak favor and encourage further and extensive medical and scientific research. To such research they are now contributing and have been contributing generously of their money, time, and talent. We think that the truth should be sought and if there is a tobacco causal relationship it will be discovered. If scientists discover any such cause then scientists will provide the remedy.

SOVEREIGN JUSTICE AT THE HIGHEST LEVEL

What we do say, and with all the sincerity and force with which we are capable, is that the sovereign in dealing with this acute and tremendous problem should deal with it at the very highest level of sovereign policymaking. It should deal preemptively at the congressional level. Further, the sovereign, through its Congress, should give a very careful, conservative and fair consideration to all of the persons whose fate may be determined by the sovereign's action. We submit that the most fundamental foundation of a sound government is its dispensing of justice. I think that the most important thing which I will say today is to beseech that you, "the Congress," handle this matter and handle it with complete temperateness and fairness to the growers of tobacco as well as to all others.

I am not a doctor or a scientist or a statistician. Therefore, I have no expert opinion on the technical phases of the matters which are being presented to you. However, I have been informed that there is no satisfactory scientific proof of any connection between tobacco and cancer, and that the only conclusion of which we can be sure now is that there may be some danger in the continued excessive use of cigarettes. Even that conclusion, I am told, is based on statistics, Certainly there is a complete difference of opinion between reliable scientific men as to the causation of cancer and whether cigarettes constitute a threatening cause. That, I think is not sufficient evidence upon which to base a conviction of the product, and an economic death sentence against the growers and manufacturers.

But what I urge upon you is that any final conclusion as to any action with respect to labeling should be reached only after there has been a careful and judicious balancing of the good of tobacco against any danger of tobacco.

THE GOOD OF TOBACCO

I am sure that you have heard a great deal already, or will hear from others, more knowledgeable than I, about the economic benefits which our country has received from the tobacco business and the tobacco trade since colonial days—for example, the value of the exports, the assistance of tobacco in maintaining a balance of trade, the tremendous take by the Government from the tobacco tax and from other taxes indirectly flowing from the growing and manufacture and sale of tobacco. I have said something about putting ino the scales the economic devastation which would come to growers if tobacco is sentenced and executed. To all of that I would like now to add some-

thing about the good accomplished by tobacco, other than economic benefits.

We people who grow tobacco and our predecessors for many generations have believed that we were in an honorable business. We have believed that in important respects tobacco is beneficial to the user.

There seems to be no doubt but that the use of tobacco in its various forms is relaxing, is enjoyable, and is conducive to a measure of contentment.

In complete disagreement with those who attack tobacco most savagely as an evil thing, we growers believe that we have made a contribution to society by producing good tobacco.

There is something about the stress and strain and stark reality of war which spotlights certain truths. In our wars of the last half century, nearly every soldier coming out of battle reached for a cigarette. Nearly every sailor coming off watch went for a cigarette and a cup of coffee. When our soldiers were among foreign people, their most acceptable tokens of friendship were candy bars and cigarettes.

In World War I, in World War II, in the Korean war, the U.S.O., the Red Cross, the Salvation Army, the tobacco companies, thousands of citizens, and the United States of America, sent billions of cigarettes to our soldiers, to our allies and even to our defeated foes. We believed that we were doing good. We still so believe.

The growers of tobacco were told that they were contributing to the war effort. We believed that we were so contribting. We still so believe.

Let me give you an interesting illustration of what I am saying. I have here a recent issue, December 1964, of Blackwood's magazine, a very conservative Scotch and English magazine which has been issued continuously for much than 100 years and which apperently has changed its format and its conservatism very little. In this issue there is published an article containing the letters writen by a British soldier in World War I, on each of the five Christmas Days of the duration of the war. His letter dated Christmas 1917, and written from the front lines of the British Expeditionary Forces, contains the following interesting sentences on page 516 of that December issue:

> And there was the canteen. One might possibly win battles without canteens, but I much doubt it. The presence or absence of cigarettes in the canteen has decided the result of more than one scrap.

Pual V. McNutt, Chairman of the War Manpower Commission, during World War II, is credited with the following quotation:

> There is no question that tobacco and especially cigarettes, in time of war, contribute greatly to the comfort and morale not only of civilians but of the Armed Forces as well. Therefore, I have no hesitation in saying to the worker in a tobacco factory that he should feel free to stick on his job until his country calls him elsewhere.

During the same period, when the employees of the Wright Aeronautical Corp. collected a purse of $10,000 they wired General MacArthur and asked what his soldiers needed most. Here is his answer:

> The entire amount should be used to purchase American cigarettes which, of all personal comforts, are the most difficult to obtain here.

General John J. Pershing, Comander in Chief of the American Expeditionary Force in World War I, was also quoted as saying:

> You ask me what we need to win this war. I answer tobacco as much as bullets.

Tensions and moments of extreme satisfaction and happiness seem to call for a smoke. The consumption of cigarettes always increases most rapidly in war periods.

Today is a day of tensions as never before in peacetime. Who has tried to measure the relief from present day tensions which may be credited to tobacco? Who can predict what would be the explosion of tense people if there were no relaxing agents or avenues? We say that there is good in tobacco. It is much easier and much more exciting to denounce than to praise. We submit that there has been too much denouncing of tobacco and too little realistic balancing of the good of tobacco against the possible hazards of its abuse by excessive use. I speak for tobacco—in praise of tobacco.

For more than 3 centuries men and women have enjoyed the relaxation, the mental contentment, and the pleasure that they have found in smoking.

The compilers of the Surgeon General's report agree with me. They say (p. 32):

> The significant beneficial effects of smoking occur primarily in the area of mental health, and the habit originates in a search for contentment.

The Committee then spent some 387 pages in measuring the alleged hazards and basically by statistics.

Of one thing we are very sure. The life expectancy of our people has been increased greatly in recent years. Notably the Surgeon General's Committee has failed to mention that very increasing life expectancy of our people.

Yet the Ford Foundation in November 1963, said (Golden Years—p. 1):

> The average life expectancy is now 70 years, compared with 63 in 1943 and 57 in 1923. For the first time, the figure is over the generally accepted retiring age of 65. Never before have old people comprised such a high proportion—one-tenth of the Nation's total population.

It is possible that the relaxation and contentment and enjoyment produced by smoking has lengthened many lives.

At any rate, an ingenius statistician could present a very interesting chart showing the curve of cigarette consumption following the curve of longevity.

The decision to smoke or not to smoke, the decision as to how much to smoke, are decisions for each individual adult. Each must and does balance the considerations for and against smoking—balance the relaxation, contentment, and enjoyment he gets against the expense, the ashes, and any possible danger which may come from excessive smoking. That is a decision which is constantly being made. It is a decision which people numbering more than half of our adult population have made in favor of the benefit they get out of smoking. There can be no more convincing proof that there is some good—indeed much good—in tobacco.

So, we submit that the adult individual in this country should and will continue to have and to exercise his own judgment and make his own decision as to whether to smoke and how much.

It seems that neither the Surgeon General's Committee nor the Surgeon General nor the Federal Trade Commission made any effort to measure the good of tobacco or to use it in the balancing in reaching their conclusion to condemn tobacco. For the growers of tobacco I

submit to the policymaking Congress of our sovereign that careful and fair consideration should be given to that important element.

CAUTION NOTICES IN COMMERCIAL ADVERTISING ARE NOT JUSTIFIED

The growers heartily concur in what the spokesmen for the cigarette industry and for advertising media have said against requiring caution notices to accompany all cigarette advertising. A vendor should not be required to disparage his wares. To require such, it seems to us, is cruel and unusual punishment and would be intemperate and vindictive action. We submit that it would be so construed not only by those who are punished; namely, the grower and manufacturer and the advertising media, but also by all smokers and the general public. We fear that the tobacco industry, growers and manufacturers, could not long survive such punishment.

ADDITIONAL WARNING DOES NOT APPEAR TO BE NEEDED

Notwithstanding any consideration of economics or the good of tobacco, the growers admit that the users of tobacco are entitled to information based on sound scientific studies and conclusions. If it is finally concluded that continued excessive use of cigarettes may constitute a hazard to health, the smoker of cigarettes is entitled to that information and that warning. It has seemed to us that the smoker of cigarettes already has all of the information available and that additional warning is not needed. For the past year and more it appears that the matter has been given about as much publicity as it is possible to give a subject. But we, or course, concede that whether or not additional cautionary notice is desirable is a matter for Congress to decide.

If Congress should determine that a caution notice on packages of cigarettes is necessary, we hope that Congress will consider and we urge that you consider some very important points. The growers in this respect are in complete accord with the spokesman for the cigarette industry. I do not think that a better statement of those vital points can be made than was made for the cigarette industry by Mr. Bowman Gray, chairman of the board of R. J. Reynolds Tobacco Co., of Winston-Salem, N.C., in his appearance before the Committee on Interstate and Foreign Commerce of the House of Representatives on June 25, 1964, as reported in the published hearings of that committee on pages 137 to 141. The precise statement of points to consider to which I refer should, I think, be repeated here. So, I quote from page 140 of the published record of those proceedings.

> First, any such legislation should make absolutely clear that the congressional statute preempts the field. It would be intolerable if the States and Federal agencies were to remain free to pass conflicting laws or to impose conflicting regulations on this subject. If there is to be a caution notice, it should be uniform and again nationwide in scope.
>
> Second, the required caution should be fair and factual. It should be phrased in a way which reflects the lack of clinical and laboratory scientific evidence of the relationship between smoking and health. To put it another way, all that has been suggested to date is that smoking over a long period may be injurious to the health of a relatively small percentage of smokers.
>
> Third, if a warning is to be required on the package, it certainly should not be required in cigarette advertising. As I have indicated the public is aware of the charges that smoking may be injurious to health. This knowledge, plus a caution notice on every package should this be required, would make unnecessary any further warning in advertising.

Mr. Chairman and members of the committee, I appeal to your wisdom, to your sense of fairness and justice, and again I am grateful for the opportunity of making this presentation.

The CHAIRMAN. Mr. Royster, thank you very much for your direct presentation. Your statement is explicit. It is to the point. It presents your viewpoint and it covers some aspects that have not been covered before. We appreciate that. Since it is so explicit and pointed, I don't believe questions will be necessary and we will try to get to one or two other of these gentlemen who are from out of town here.

Unless there is some member that has a special question——

Mr. YOUNGER. One question, Mr. Chairman. Did you appear before the Federal Trade Commission when they held their hearings?

Mr. ROYSTER. I did not, Congressman Younger. I attended the hearings but I did not appear as a witness.

Mr. YOUNGER. Did they invite you or couldn't you have appeared if you had wanted to?

Mr. ROYSTER. Yes, sir; I could have appeared if I had so desired.

Mr. YOUNGER. Thank you.

The CHAIRMAN. Any other member have a question?

Mr. BROYHILL. Mr. Chairman, I would like to join my colleague, Mr. Kornegay, in welcoming Mr. Royster to the committee. He is certainly an outstanding citizen and legislator of North Carolina, and this certainly has been an excellent statement he has given to the committee.

Mr. ROYSTER. Thank you, Congressman Broyhill, for your very generous remarks.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much for your very fine statement.

Dr. John Mayer?

Dr. Mayer, I have observed that we also have Dr. Carr, of Memphis, Tenn., here, and Dr. Barrett. All three of you are thoracic surgeons.

Dr. MAYER. Yes, sir.

The CHAIRMAN. I wonder perchance if you have about the same presentation to make, if you know about that?

Dr. MAYER. I have not read theirs, sir. I can't say.

The CHAIRMAN. You may proceed, then. I am just trying to see how we can move along and not have you gentlemen come back. Time is catching up with us.

Off the record.

(Discussion off the record.)

STATEMENT OF JOHN H. MAYER, JR., M.D., THORACIC SURGEON

Dr. MAYER. I am Dr. John H. Mayer, Jr., thoracic and cardiovascular surgeon of Kansas City, Mo. I received my A.B. degree from Cornell University in Ithaca, N.Y. in 1936, and my M.D. degree from Cornell University Medical School in New York City in 1939. I then underwent 7 years of residency training in surgery and thoracic surgery at Barnes Hospital in St. Louis, Mo., under the late Dr. Evarts Graham, and began the practice of my specialty in Kansas City in 1948.

I am the Head of the Division of Thoracic Surgery in the Kansas City General Hospital and Medical Center and have been since 1948. I have held the teaching post of associate clinical professor of thoracic

surgery from the University of Missouri Medical School since the affiliation of that institution with the Kansas City General Hospital complex in Kansas City. I have been a consultant in thoracic surgery to the Veterans' Administration hospitals in Kansas City, Mo., Wadsworth, Kans., and Excelsior Springs, Mo. I am also on the staff of the following hospitals in Kansas City, Mo.; St. Luke's Hospital, Research Hospital, St. Mary's Hospital, St. Joseph Hospital, Baptist Memorial Hospital.

I am a member of numerous professional societies, including the American Medical Association, American College of Surgeons, American College of Chest Physicians, Central Surgical Association, Western Surgical Association, International Society of Surgery, and the American Association for Thoracic Surgery. I am a founding member of the Society of Thoracic Surgeons. I am certified by the American Board of Surgery and the American Board of Thoracic Surgery.

In the course of my training and 16 years of active specialty practice, I have had the opportunity to study and treat approximately 3,500 cases of bronchiogenic carcinoma and am deeply impressed by the problem that this disease presents. While I am not personally engaged in any research investigation, I am acutely aware of the importance of determining with all possible dispatch the cause and prevention of a disease whose discouraging resistance to cure is acknowledged by all familiar with it. For this same reason I have followed as closely as I have been able the voluminous literature that has appeared concerning its possible etiology, including the Surgeon General's Report on Smoking and Health.

You have undoubtedly heard many opinions as to whether or not cigarette smoking causes lung cancer. I speak as a practicing chest surgeon and believe, based on my experience and study, that the cause or causes have not yet been established. I would like to enumerate some of the reasons that have most impressed me in reaching this conclusion and which seem to be borne out as valid in my own experience.

There can be little doubt that a more acute awareness of the disease and improved techniques for its detection have contributed to the increased frequency with which lung cancer is reported. However, it seems to me that there has been some real increase in this disease over the course of this century. Part of this, of course, is due to our now having a higher proportion of older people in our total population than in earlier years. If the increase due to aging is not considered, it would be a big problem to determine how much of an increase, if any, there has actually been. The increasing number of reported cases must certainly be due, in part at least, to the fact that we have only in comparatively recent years developed and widely used in this country some of the better diagnostic tools and methods.

In Germany, where meticulous post mortem examinations have long been done, an increased incidence of lung cancer was reported to have been noticed before the turn of the century. This was before cigarette smoking became popular and is extremely difficult to reconcile with the cigarette smoking theory of lung cancer causation.

It is often urged by proponents of the cigarette theory that the frequency of cigarette smoking and of lung cancer have run parallel courses. This argument assumes that the reported increase in lung cancer is real and that little, if any, of it is due to improved diagnosis,

greater awareness, and other factors. The argument is further weakened by reports in recent years suggesting that the increasing incidence of lung cancer is tapering off and that this tapering off commenced during the time when cigarette smoking continued to increase. From these, it would appear that the rate of increase of lung cancer and of cigarette smoking may now be taking disparate courses.

Apropos of the question of the reasons for the increase of reported cases of lung cancer, a recounting of my own experience might be helpful. When I first began my practice in Kansas City it was the opinion of many of my fellow physicians that a surgeon limiting his practice to surgical chest disease might not be able to find enough cases requiring his services to justify practicing this specialty alone. During my first 2 years in practice this opinion seemed to me, at times, to be almost too true. I can recall very vividly a conversation I had with one of my friends in radiology in 1950 in which I myself, based on the number of lung cancers I was seeing, wondered whether I could survive in Kansas City as a person devoting full attention to surgical chest disease.

As I look back on it now, it is perfectly apparent to me that the cases were in the community and it was only a matter of bringing them to the attention of my colleagues, and indeed to the attention of the community itself. When it was recognized that lung cancer occurred more frequently than was formerly believed, the index of suspicion for this disease rapidly developed. Thereafter the tendency to mistakenly diagnose lung cancer as chronic pneumonia, lung abscess, chronic bronchitis, and other benign conditions began to wane and the reported incidence of lung cancer naturally increased.

All studies with which I am familiar and my own experience as well indicate that the peak age for the development of lung cancer is 55 to 60 years of age. More important for the purpose of this discussion, this age peak persists regardless of how much or for how long or whether or not the patient had been smoking. If cigarette smoking actually causes lung cancer, it should act in a manner similar to that of other exogenous or external agents which are the cause of a particular disease or condition. That is, the stronger the agent and the more often applied, the sooner the result should appear. This is the so-called dosage factor. When persons who develop lung cancer can be expected to get it at the same age regardless of whether they smoke at all and regardless of the duration and amount smoked, if they do, then it would seem reasonable to question whether smoking has any role in its causation.

It is well established that over half of lung cancer originates in the more distant reaches of the lung where the concentration of smoke is far less than in the main bronchi. Cancer of the windpipe or trachea, where the concentration of smoke is greatest, is not even associated statistically with smoking, even though the epithelial cells are the same as in the lungs. Indeed, cancer of the windpipe is a medical rarity. If smoking were a factor in cancer causation, one would certainly expect the greatest amount of cancer at the points of greatest exposure to smoke. Yet, the exact opposite seems to be true.

Lung cancer has always had a predilection for the male, according to every study known to me. This predilection is certainly borne out in my practice. I cannot believe that the male-female ratio is

accounted for by cigarette smoking. Not only does lung cancer's affinity for the male predate cigarette smoking, such affinity also is consistent with the fact that men generally have more cancer at some body sites and women have more at others.

For example, although the stomach is exposed to tobacco condensate swallowed by a smoker, "no relationship has been established between tobacco use and stomach cancer," according to the Surgeon General's Report, page 38. One reason for this conclusion, certainly, is that gastric cancer is reportedly declining (p. 135). Yet, the male-female ratio for gastric cancer is more than 2 to 1 (p. 133). Why? Cigarette smoking is not, in my opinion, the answer to the sex predilection of cancer. Rather, these observations raise the question of important and unknown hormone influences in the etiology of this disease.

My study of the published reports of animal experiments with cigarette smoke condensate leads me to the conclusion that experimentation has contributed little to providing an answer to the question of causation of human lung cancer. The changes produced in animal bronchi by prolonged application of cigarette smoke have not resulted in the development of lung cancer. Conversely, cancer of the lung has been produced by virus instillation into the lung and even by matter contained in the polluted air of cities. It is my understanding that the mice that have been used in animal experimentation have been of a strain highly susceptible to cancer. Since the cause of cancer in man is still so much a mystery, it seems to me to prove little, if anything, that a susceptible mouse will develop a cancer when its back is shaved and painted regularly over long periods of time with a high concentration of tobacco tar, particularly when similar results can be achieved with such innocuous substances as glucose.

In my opinion, the evidence to date is inconclusive to establish the etiology or cause of cancer of the lung. Serious consideration needs to be given to such possible factors as viruses, hormones, air pollution, and perhaps to other things not presently even being considered.

I am quite willing to accept the statistical association between cigarettes and lung cancer, but it is a long step from this position to accepting a true causal relationship. Nor does this difference in posture represent a quibbling exercise in semantics; it is a real and far-reaching distinction.

With the deficiencies in the evidence now extant, it would be unfair and premature to draw such a conclusion. Far more important, such prematurity might interfere with the agressive pursuit of other avenues of approach to an admittedly serious and perplexing problem. Certainly further study is urgently needed in all these areas. This, in essence, is my basic reason for being here at all.

The CHAIRMAN. Dr. Mayer, thank you very much for your very enlightened statement.

We are going to have to conclude this session because it is almost 12. Are there any questions of Dr. Mayer from any member of the committee?

Mr. YOUNGER. Point of information for the record. You are not in the employ or paid by the cigarette industry?

Dr. MAYER. Oh, no. No.

The CHAIRMAN. Doctor, thank you very much. We appreciate your appearance here, and your testimony.

We will now hear our distinguished colleague from North Carolina, the Honorable Horace R. Kornegay.

STATEMENT OF HON. HORACE R. KORNEGAY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF NORTH CAROLINA

Mr. KORNEGAY. Mr. Chairman, during the course of these hearings, we have had presented to us a vast mass of information in several very complex fields. The issues involve questions of law, the intent of Congress, the authority of a regulatory agency, and medical and scientific questions.

The Chairman of the Federal Trade Commission has told us that he believes his agency now has the authority to formulate binding rules for an entire industry. And, these rules are prospective in nature. If the industry does not comply, the Commission can then charge a violation of the law.

The Federal Trade Commission is an arm of the Congress. It has no power or authority beyond that granted by the Congress. In this instance, I believe the Federal Trade Commission is attempting to go beyond the power granted to it by Congress.

While the Commission obviously has the authority to prevent false and misleading advertising, it does not have—and never has had—the authority to legislate.

As a matter of fact, the Commission operated from 1914 to 1962 without even suggesting that it thought it had such authority. Then, in what Chairman Dixon described to this committee as a "radical new" departure (transcript, p. 62) the Commission suddenly decided it had this authority in 1962—after 48 years of operation.

Chairman Dixon called this change more of a "procedural step." I call it a legislative step, and a rather large one. And I believe the Congress should prevent the Federal Trade Commission from issuing its trade regulation rule.

If there is to be any requirement for a warning either on cigarette packages or in advertising, this action should be taken by Congress—not by an administrative agency.

Moreover, I would like to remind the committee that Mr. Dixon acknowledges that his trade regulation rule would not preempt the field (transcript, p. 91). And, he acknowledged that—

> it would be quite a problem to merchandise a product with 50 separate laws and multiply that problem by many municipalities (transcript, p. 92).

Mr. DIXON, in fact, encouraged Congress to resolve this question (transcript, p. 93).

Beyond this, I would call to the attention of the committee that the basis for the Federal Trade Commission's rule in this instance is based on the report of the Surgeon General's Advisory Committee, as Mr. Dixon acknowledged (transcript, p. 168).

This committee has heard a number of outstanding doctors and scientists question the validity of the conclusions of the Advisory Committee's report. The names of a number of other scientists who question the Surgeon General's report have been read into the record by our colleague, Dr. Carter.

The basic fact of the matter, as the record shows, is that questions regarding smoking and health are still in controversy among scientists.

Most of the evidence associating smoking with disease is merely statistical.

Therefore, I hope that this committee will proceed with caution. The livelihood of hundreds of thousands of Americans who grow, manfacture, and sell tobacco is at stake. The personal habits of some 70 million Americans who smoke cigarettes is involved in whatever we may do.

I believe this committee should firmly reject the suggestion that cigarette advertising should be required to include warning notices, and should prevent the Federal Trade Commission from requiring such warnings.

It is my belief that the scientific situation is so unsettled that warning notices even on packages are not needed. However, if this committee should conclude otherwise, any warning on packages should be consistent with the lack of definite scientific proof, and we should make it absolutely clear that congressional action preempts the field in order to prevent action by the Federal Trade Commission or by individual States or cities.

Thank you, Mr. Chairman.

The CHAIRMAN. We appreciate your interest in this legislation, Mr. Kornegay, and thank you for your testimony.

Mr. KORNEGAY. I appreciate the opportunity, Mr. Chairman.

The CHAIRMAN. Dr. Carr? Is Dr. Carr here?

Dr. Carr, you are a thoracic surgeon too. And Dr. Barrett. We are going to—off the record.

(Off the record.)

The CHAIRMAN. If you gentlemen would want to file a statement we will be glad to accept it for the record or if there are any witnesses who want to be heard we will try to figure out a day in the future for you to come back.

I don't want to inconvenience you or anyone else by having to come back.

Dr. CARR. Thank you, Mr. Chairman.

The CHAIRMAN. Our time has run out. The House is going into session at the moment. We have got a very important appropriation bill that will require our being present on the floor of the House and this committee has got two bills scheduled for this afternoon too. So that is our dilemma.

Dr. CARR. I understand.

The CHAIRMAN. We will be glad to have you come back some time later or file a statement, whichever you prefer.

Dr. CARR. Well, whatever you wish, Mr. Chairman.

The CHAIRMAN. Well, suppose under the circumstances that we permit anyone who desires—we have a good many witnesses left—we do not want to inconvenience you too much. You come from long distances. Anyone who desires may have 5 days to file a statement and if there are any witnesses here or others who wish to be heard, will you please notify the clerk and if so, I will try to find a day later. We have got a good many other things scheduled.

These hearings have gone on longer than I had anticipated. But we want to give everybody an opportunity to be heard. So any witnesses who desire may have permission to file their statement for the record and any who want to be heard, we will endeavor to set another day when the schedule of the committee will permit.

Dr. CARR. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much, and the committee will adjourn subject to the call of the Chair.

(The following material was submitted for the record:)

STATEMENT OF ROBERT CASAD HOCKETT, PH. D.

My name is Robert Casad Hockett. I am associate scientific director of the Council for Tobacco Research—U.S.A. and have held this position with the council and its predecessor, the Tobacco Industry Research Committee, since 1954.

For the past 40 years I have specialized in the fields of organic chemistry and biochemistry. These sciences are concerned with the chemistry of all life processes, including normal and abnormal life processes. After graduating from Ohio State University in 1925 in organic chemistry and biology, I served there as a graduate assistant in analytical chemistry for 2 years. I received a master's degree in organic chemistry and biochemistry from Ohio State University in 1928, and the degree of doctor of philosophy in these same subjects in 1929. After spending a year and a half with the U.S. Public Health Service at the National Institutes of Health as a National Research Council fellow in chemistry, I became an associate technologist on the National Institutes of Health staff. I remained there 4½ years engaged in biochemical research relating to medical problems. I became assistant professor of chemistry at the Massachusetts Institute of Technology in 1934 and associate professor of organic chemistry in 1940. I have also served as visiting professor at the Universities of Illinois and North Carolina. From 1944 to 1952 I held the position of scientific director of the Sugar Research Foundation, Inc. My duties in that capacity were to supervise sponsored research in nutrition, food technology, and related chemical and medical problems. I have authored more than 60 search papers published in chemical journals and have also written numbers of papers for medical societies and health associations on problems of fundamental research in science and medicine.

I have been invited to speak at the International Conference on Lung Tumors in Animals, to be held June 24–29, 1965, in Perugia, Italy. I have served as officer in a variety of positions with the American Chemical Society. I am a fellow of the American Public Health Association, the American Academy of Arts and Sciences, the New York Academy of Sciences, and the Royal Society of Arts, and a member of the American Society of Biological Chemists and the Royal Society of Health, among other professional technical societies.

The council has filed a statement outlining its history, scientific program and research.

As that statement shows, the Tobacco Industry Research Committee was first established in 1954 by representatives of the tobacco manufacturers, growers, and warehousemen for the purpose of encouraging scientific study into the relationship between tobacco use and health.

Shortly after its establishment a number of doctors and scientists, well known for their work in various fields of research, were invited to serve on a scientific advisory board to the committee. The scientific advisory board was asked specifically to plan and direct the committee program of grants-in-aid of research, and was assured complete freedom of action in every respect. This was and is still the case. The advisory board established the policies of the grants-in-aid program and invited applications for research support. The board has met at least quarterly over these 10 years to consider each application on its merits as a proposal, and on the basis of the qualifications of the individual scientists and their institutions for undertaking the work described.

The advisory board has established a policy of insuring investigators full freedom. This applies to the conduct of research, the results of the study and publication of those results. The board, like other granting agencies, asks that each of its grantees submit regular reports.

We have been fortunate in the fact that this program has been guided by independent scientists of the very highest caliber. Today the membership of the Scientific Advisory Board to the Council for Tobacco Research includes the following: Dr. Howard B. Andervont, scientific editor of the Journal of the National Cancer Institute; Richard J. Bing, M.D., professor and chairman, Department of Medicine, College of Medicine, Wayne State University; McKeen Cattell, M.D., professor emeritus, Department of Pharmacology, Cornell Univer-

sity Medical College; Leon O. Jacobson, M.D., professor and chairman, Department of Medicine, University of Chicago; Paul Kotin, M.D., Associate Director for Field Studies, National Cancer Institute; Kenneth M. Lynch, M.D., chancellor, Medical College of South Carolina; Stanley P. Reimann, M.D., director emeritus, the Institute for Cancer Research; William F. Rienhoff Jr., M.D., professor emeritus of surgery, School of Medicine, the Johns Hopkins University.

These members of the board are men who retain their independent institutional affiliations and do not have any connection with the tobacco industry.

The Council for Tobacco Research does not operate any laboratories of its own. It has felt that its greatest contribution to scientific research and to increased knowledge is through the medium of grants and other types of financial aid to individual investigators in independent institutions.

The scientific advisory board has, since 1954, been in receipt of over 469 applications for research support. After careful consideration, grants and fellowships totaling $7,450,000 have been awarded by the scientific advisory board to more than 240 scientists in more than 100 medical schools, hospitals, and laboratories throughout the country. Through 1964, grantees with acknowledgments of council support have published over 396 research papers in scientific journals.

My purpose is to briefly describe some of the council's achievements and findings over the last 10 years. The council's chief output, of course, takes the form of scientific papers and reports by a large number of individual independent investigators in many different medical and scientific journals, and covering a wide range of subjects. A bibliography of all these papers is appended to the statement filed by the council.

In addition to published papers, these individual investigators and their colleagues have presented their findings from the platforms of scientific and medical society meetings too numerous to tabulate, and have participated in many symposia, panels, and roundtable discussions. The Council for Tobacco Research has cooperated with other agencies in the planning and support of public symposia on topics pertinent to its interests. A list of such symposia also is attached to the statement filed by the council.

Besides these public symposia, which have been published and widely disseminated for information of the scientific community and the general public, the council has sponsored a large number of smaller informal private conferences for planning purposes. A list of such informal conferences and their participants is appended to the statement filed by the council.

The council has annually made available to every medical school in the United States, a fellowship for assisting at least one degree candidate in each school to spend a summer term or other "off-term" period in research under the direction of a senior staff member. The total number of fellowships awarded through 1964 is 731. The institutions that have received these predoctoral research training fellowships are included in the list of institutions which have been recipients of council grants which is attached to the statement filed by the council.

RESEARCH FINDINGS

Obviously only the briefest description of the council's research program can be attempted.

Tests for tumor-producing activity

A major difficulty with attempts to deduce a causal connection from the statistical association between cigarette smoking and the incidence of various types of cancer, especially carcinoma of the lung, is that there are a number of other noncausal reasons for the existence of such an association which can be postulated and must be excluded before any judgment can be reached.

Because the explanatory hypothesis originally advanced was the possibility that tobacco smoke might have activity as a direct contact carcinogen, a large number of studies have been sponsored in the effort to develop reliable and quantitative methods for assessing such possible activity in comparison with that of other substances and mixtures that are common in the environment and whose tumorigenic action is better known.

After selecting suitable mechanical devices for production of cigarette smoke condensates, and standardizing conditions, we sponsored studies of more than a dozen different bioassay systems for assessing any biological activity of such condensates and of whole smoke.

The overall impression gained from these many studies is that tobacco smoke is inactive or of very marginal activity in these several artificial systems, none of which of course actually measures human response under realistic conditions.

The results fail to support the hypothesis that cigarette smoke can act as a direct contact carcinogen in the human lung. Study is continuing with respect to other hypothetically possible modes of action.

Ciliary activity and mucus flow

A council study undertook to evaluate the relative importance of the activity of the cilia in the total machinery of lung clearance in intact animals because it had been reported that cigarette smoke, like many other gases and aerosols, diminished the activity of these hair-like appendages which coat the upper respiratory tract and which normally propel upward the blanket of mucus which carries inhaled dust and debris out of the lung and it had been suggested that delayed elimination of inhaled dust and debris containing carcinogenic material from any source might conceivably increase the hazard of lung carcinoma.

A method of measuring rates of overall clearance of radioactive tagged dusts from the lungs of intact rabbits showed that inhalation of cigarette smoke had no measurable effect on total clearance rate. Hence if one clearance mechanism was slowed by smoke exposure, another must have been speeded commensurately, even though the internal balance among the mechanisms may have been altered.

While several investigators have apparently confirmed the activity of cigarette smoke in depressing ciliary motility in isolated tissue from several animal species, and have traced this activity to specific components of the smoke, it appears quite uncertain at present whether the depression of ciliary activity can play any role, even indirectly, in the complex pattern of lung cancer pathogenesis.

Lung pathology studies

In 1954, the council sponsored a descriptive study of human lung pathology in which 12 pathologists in different locations, both urban and rural, participated. About 3,000 lungs of patients coming routinely to autopsy were investigated, yielding 8,590 sections from males and 3,661 from females. The study illustrated many difficulties in defining lung abnormalities and in interpreting their possible significance in relation to malignant disease.

Cardiovascular research

The council has allocated a substantial grants fund for studying the cardiovascular system in health and disease and for investigating any short- or long-term effects of smoking and of nicotine upon this system.

A great deal of the work sponsored in this field by the council was reported in a public symposium held at the New York Academy of Sciences on March 24, 25, 26, 1960, and published in a monograph entitled, "Cardiovascular Effects of Nicotine and Smoking" (Annals of the New York Academy of Sciences, 90, art. 1, pp. 1–344, Sept. 27, 1960).

Though many transient effects have been more fully measured and described in our program, no evidence of any significant contribution by smoking or nicotine to causation, aggravation, or precipitation of any cardiovascular disease that contributes importantly to mortality has emerged.

Chronic respiratory diseases

The council's studies of such chronic diseases as the various forms of bronchitis, asthma, and emphysema are directed toward better defining the various clinical entities involved, developing reliable methods for differential diagnosis and studying the natural history or course of development of each individual disease. These problems must be solved before real progress in the study of causative factors can be expected.

Smoking and body weight

In a council study comparison of cigarette smokers and nonsmokers in a middle-aged group of business men have shown that the nonsmokers tend to be heavier than the smokers. Individuals who voluntarily stopped smoking without having any illness which prompted them to do so or without adopting any other special regimen of living, showed a substantial gain in weight within the ensuing 2-year period. The mean gain was 8.2 pounds.

Since overweight is itself associated statistically with increased risk of certain diseases, this increased weight of nonsmokers and stopped smokers would seem to merit further evaluation.

Birth weight of infants

A council-sponsored study of 16,226 cases in three different types of hospitals explored reports of a lower average birth weight for infants of mothers who smoked during pregnancy as compared to those of mothers who refrained from

smoking during the prenatal period. The birth weights of the infants of smoking mothers were in general a little lower than those of nonsmoking mothers, but there was no significant difference in the rates of stillbirth, abortion or birth complications.

Psycho-physiological studies

A key problem that pervades the whole effort to study smoking and health is the question whether the types of persons who choose to smoke cigarettes are basically different in constitution, personality or life patterns from the types who choose not to smoke them. Such basic differences might themselves influence life expectancy and susceptibility to disease.

A series of studies have been sponsored by the council as a beginning toward solving the complex problem of inherent differences between nonsmokers and smokers of various types. The findings suggest that constitutional factors do play a role in determining whether and in what form people use tobacco.

GENERAL COMMENTS ON THE STATE OF KNOWLEDGE

This commentary draws upon information gained from studies other than those sponsored by the council, as well as upon the results of council investigations, and is confined to the broadest aspects of the subject.

The number of diseases associated with cigarette smoking is a stumbling block to acceptance of a causal hypothesis. To many this lack of specificity is an obstacle suggesting that something, somewhere, is amiss in the findings.

A very basic problem remains unsolved. Do cigarette smokers really die earlier, from more than a score of different diseases, because they smoke? The answer to this question is all-important, but it probably extends beyond the reach of investigation through human health statistics into areas that can only be approached through other types of research.

The smoking or nonsmoking of cigarettes are parts of different patterns of living that develop over many years. Would we expect cigarette smokers and nonsmokers to be the same kinds of people and to live similar lives in all respect other than in their smoking habits? Is it justifiable to compare these two groups as if they were identical except for their smoking habits? It has been pointed out by a number of scientists that nonsmokers in our society are actually a self-selected minority of the adult male population. Are many of these nonsmokers rather self-protective in their total life patterns? If nonsmokers do tend to live more cautions lives, their greater longevity may be due rather to the general life pattern than to the mere fact that they do not smoke.

There have been several animal studies in which one group of rodents, randomly selected, was made to inhale cigarette smoke at frequent intervals and at high levels during the entire life span after weaning and in some studies, the life spans were recorded. In such cases, the smoking animals have lived as long as the controls or longer.

If cigarette smoking can actually contribute to earlier deaths in humans in 20 or more different ways, we might expect it to contribute to earlier death in rodents through one or more diseases which are common to these animals. This animal experimentation, limited though it has been, does not support the inferences that are being drawn from the human statistics.

There are many strange observations among those reported in the human health statistics. One of the strangest is the low mortality rates of cigar and pipe smokers. Pipe smokers in particular do not show any excess mortality over nonsmokers. They may, of course, be quite different constitutionally. There are hints of this. However, in the past, most investigators have seized upon two hypotheses by way of explanation.

One assumption, that the cigarette paper might be implicated, has been pretty well disproved.

Another popular hypothesis, now beclouded, was that pipe and cigar smokers do not inhale the smoke while cigarette smokers do. Recently, epidemiological investigators have asked smokers whether they inhale or not, and elaborate correlations of disease incidence with degree of inhalation by cigarette smokers have been made. Of course it has been questioned whether smokers actually know or can judge whether they inhale or not, or the extent to which they inhale.

Because of the uncertainties of questionnaire methods in getting information about the degree of inhalation, studies have now been undertaken by the council to develop blood and urine tests that may give a more accurate measure of "true physiological smoke exposure."

It is interesting to learn that 18 percent of cigar smokers, in one survey cited by the Surgeon General's Committee, replied that they did inhale, as did also 28-percent of pipe smokers.

Pipe smokers who inhale have exactly the same mortality rates as nonsmokers. Pipe smokers who do not inhale, or say they do not, showed a lower mortality rate than nonsmokers. Noninhaling cigar smokers also show a lower mortality rate than nonsmokers, while inhaling cigar smokers are reported to have slightly higher, but still low rates.

There has been much speculation over the possible role of nicotine in causing or aggravating human disease. Hence it is most interesting to note that pipe and cigar smoke generally contains considerably more of this alkaloid than cigarette smoke. Several studies suggest that even a pipe smoker or cigar smoker who does not inhale may absorb amounts of nicotine comparable to the amounts absorbed by cigarette smokers who do inhale. Pipe and cigar smokers who inhale must often absorb greater quantities. But smokers of these forms of tobacco do not show significantly higher mortality than nonsmokers. These facts make it difficult to see how nicotine could play any role in producing or aggravating the diseases which are said to be more prevalent among cigarette smokers.

And, indeed, it is the considered conclusion of pharmacologists who have studies the accumulated information about the physiological effects and rapid metabolism of nicotine that it has no known chronic or cumulative effects.

By metabolism we mean the chemical changes by which one substance is transformed into others in the body. Nicotine is rapidly absorbed and rapidly changed by the human body into other simpler substances such as cotinine which have low pharmacological activity and are speedily excreted, chiefly by way of the urine. There is no evidence that any of the numerous metabolites of nicotine has any toxic effects. It has never been seriously suggested that nicotine has any carcinogenic properties.

There is a very large body of well-documented pharmacological and biochemical material establishing these facts. The Report on Smoking and Health of the Surgeon General's Advisory Committee arrived, of course, at the same conclusions:

"The rapidity of degradation to nontoxic metabolites, the results from chronic studies on animals, and the low mortality ratios of pipe and cigar smokers when compared with nonsmokers indicate that the chronic toxicity of nicotine in quantities absorbed from smoking and other methods of tobacco use is very low and probably does not represent a significant health problem" (p. 75).

In the face of this quite general consensus, it is difficult to see any truly scientific purpose to be served by legislated labeling of cigarette packages with some nicotine content figure. Equal logic would require a label on every potato, for example. Potatoes contain an alkaloid substance, solanine, which in sufficiently large dosage can cause vomiting, diarrhea, headaches and depression. But of course there is no basis for any legislative requirement of a label on each potato setting forth the solanine content, since the tiny amounts in potatoes do not result in any known practical pharmacological effect.

Scientific scruitiny of legislative proposals to label the so-called tar content of cigarette smoke discloses that they would be even less meaningful.

Uncritical use of the inaccurate term "tar" has caused much misunderstanding and confusion of thought. The term began to come into general usage a decade ago through widespread publicity in lay publications during an early period of rather primitive experiments aimed at discovering the effects of prepared condensates of cigarette smoke on the skins of animals. It is unfortunate enough for the public to place undue reliance upon lay publications that endeavor to report scientific developments in nontechnical language. Certainly Congress should base legislation on nothing less than professional evaluation of the most recent and sophisticated medical and scientific research.

Smoke from cigarettes, pipes, or cigars is alike in having two parts: an invisible phase consisting of gases and vapors, and the visible part consisting of microscopic liquid droplets. In total weight the invisible phase is the greater of the two. When such smoke is trapped the droplets coalesce into a dark liquid, and, depending upon the degree to which the temperature is lowered, more and more of the vapors are condensed and become a part of the total condensate. This condensed part of the smoke has come commonly to be called "tar" though this is obviously a misnomer. The situation would be better expressed by speaking not of "tar" but of the "conglomerations obtained by catching and condensing cigarette smoke in various ways." The droplets

themselves contain considerable water and a large fraction of the vapor phase is water. The amount of this water is sometimes determined and deducted from the total weight, the water-free fraction being designated as "tar."

The "tar" is actually just the condensate of particulates and vapors from the total smoke (minus the amount of water). It does not make much sense to speak of the "tar content" of a cigarette, for this is zero. More properly, one could speak of "the smoke production capacity" though this phrase would ignore the relation between particulates, gases, and vapors. "Capacity to produce condensable particulates and vapors" would be a little better but would still neglect the matter of water content and the important matter of condensation temperature, which will determine what part of the total vapors and gases condense. Indeed, it is quite difficult to coin any simple phrase that conveys just the right meaning.

It must be emphasized that smoke condensate is not smoke. It contains only those ingredients which can be condensed under the particular conditions of collection. The gases and usually some of the vapors are missing. The physical properties are entirely different from those of smoke since condensate is a liquid instead of an aerosol of tiny particles. No tars or condensates can be expected to give an analysis representative of the actual chemical constituency of the aerosol as it is taken in by the smoker. Chemical and physical alterations take place, some rapidly, in smoke following its formation and these continue in the condensate after collection—for example, condensations, polymerizations, oxidations, pairing or disproportionation of free radicals. In fact, two "tars" or condensates of equal weight obtained from different blends of cigarettes are not chemically uniform in ingredients or proportions of ingredients.

A false sense of the biological significance of so-called tars has grown up out of some of the earlier animal skin-painting experiments. At one time some investigators seemed to feel that the responses of animals to such skin painting with condensates might serve as a direct measure of the human risk from contact with cigarette smoke. On the contrary, however, subsequent study of many bioassay methods has made it clear that there are no such simple relationships.

For example, experiments with mice have shown that condensates of pipe tobacco smoke are more active in producing skin tumors in these animals than cigarette smoke condensates, though both are marginal in activity. The apparent innocuousness of pipe smoking in human experience therefore suggests that the mouse-skin painting studies are probably not any more directly relevant to the human cancer problem than is the production of cancers by injecting egg white subcutaneously into rats. These latter observations, of course, are not considered to suggest that it is dangerous for humans to eat eggs.

There has also been much talk about benzpyrene, a polynuclear hydrocarbon which is detectable in tiny traces in tobacco smoke. At one time it was speculated that this hydrocarbon might play a role in producing human lung cancer since, in sufficiently large doses, it can produce tumors in various organs of several species of animals. It is interesting to note in this connection that pipe smoke is reported to contain about nine and a half times as much benzpyrene as cigarette smoke, although this is still an infinitesimal amount. Cigar smoke is intermediate, with about four times the level reported for cigarette smoke. Since pipe and cigar smokers show no significant increase in mortality over nonsmokers (even if they inhale) either from lung cancer or any other important disease, it appears questionable whether benzpyrene in tobacco smoke has any real bearing upon human health problems.

It may turn out that the extreme sensitivity of our modern chemical and physical analytical methods has produced a "red herring" by detecting traces of this substance and its relatives, all being below the level of biological significance.

It has become increasingly evident that to study the effect of tobacco smoke on animal tissues the whole, fresh, normal smoke needs to be used. This is rather inconvenient in many ways, but it is important. More animal studies using this technique are now being designed and carried out.

There have already been a considerable number of experiments involving the frequent and long-term inhalation of cigarette smoke by several animal species. In the words of one investigator, these have added up to a "striking negative result." Several of the experimenters have refrained from reporting their experience in the scientific literature. None of these studies can be described as the "last word" in design, since no accurate method of measuring exactly how much smoke the animals inhaled had been perfected. Even so, the experience has failed to support any notion that cigarette smoke is a strong, direct-acting con-

tact carcinogen. If cancers had been obtained, a campaign to isolate and identify the responsible ingredients could then have been undertaken. This did not happen.

The notion, once widely held, that a direct-acting contact carcinogen in tobacco smoke might be involved in producing human lung cancer has long since been abandoned by most investigators. Instead, far more subtle and intricate hypotheses involving the possible contribution of ciliastatic agents, inhibitors, promoters or nonspecific irritants through complex and indirect mechanisms are being put forward.

It remains true that there has so far been a general failure by investigators to identify any particular ingredient or group of ingredients in cigarette smoke that is specifically responsible for causing or aggravating any fatal human disease. In the absence of knowledge as to the nature or identity of any guilty ingredient or as to where it occurs in smoke if it exists, any proposal to label cigarettes with their capacity to produce so-called tars under some set of arbitrary conditions is meaningless and fruitless, as well as anachronistic. Reviving and perpetuating a scientifically outmoded and naive concept would be a giant step backward, and one which could stifle a type of inquiry and investigation that holds promise for the progressive improvement of cigarettes.

There has been much new technical progress in the decade since the word "tar" had its main vogue. Much of this has been directed toward the identification and quantitative determination of individual smoke ingredients, condensable or noncondensable. Elimination of some of these that can be presumed to be unnecessary or undesirable, even though there is no real evidence that they contribute to the production or aggravation of disease, has been sought by filtration or otherwise. Though the council does not participate in such technological research because of the more basic medical nature of its interests, there seems no good reason why such research should suffer discouragement through scientifically anachronistic labeling requirements.

One of the most important development of the past few years has been the production of lung cancers of the prevalent human type in mice by a combination of virus damage with subsequent long-term inhalation of a sufficiently potent carcinogenic smog. This may open the way, experimentally, to productive study of many other factors as they may contribute, directly or indirectly, to the final result. Among such are the possible effects of hormone excesses or deficiencies, dietary deficiencies, liver damage, composition and abundance of mucus, activity of phagocytes and many others.

More important probably is the implication of this animal work that host factors are probably important also in preparing the way for human lung cancer. Whatever external factors may be implicated, it appears quite evident from the statistics themselves that only some small fraction of the total population is really susceptible to this disease while the great majority seem to be quite resistant. Animal studies along the lines mentioned may guide us to recognition of such factors in human susceptibility and even suggest some methods of prevention.

Statisticians agree that causation cannot be inferred reliably from association. Corroboration is essential. In the absence of corroboratory clinical and experimental evidence, judgments that cigarette smoking is a major factor contributing importantly to mortality would seem to go beyond the realm of scientific conclusions, and to contain a considerable element of guess and gamble. At this level, judgments differ even among the best minds.

The statement that more research is needed has been repeated many times. Indeed there have been intimations that this demand is becoming a "repetitive stock phrase" used chiefly by recalcitrants.

I hope that these remarks have served to show, if only in part, why more research is urgently needed, and to point out some of the directions that such research must take.

STATEMENT OF DR. HENRY EASTON MCMAHON

I am Dr. Henry Easton McMahon, a practicing specialist in heart disease in New York City. I was formerly chief of the cardiac clinic of St. Clare's Hospital, New York, and have been associated with cardiac clinics at Bellevue, St. Luke's, and New York Polyclinic Hospitals. For the past 25 years I have served as cardiac consultant for a number of business firms and industrial unions, which has given me the opportunity to examine and treat people from a wide range of occupations from sandhogs and miners to Madison Avenue executives.

During World War II I served in the U.S. Navy and was in charge of the cardiac service at the U.S. Naval Hospital, Brooklyn, N.Y., the U.S. Naval Hospital and U.S. Marine Corps Base, San Diego, Calif., and aboard the U.S. naval hospital ship *Consolation* (now the *Hope*).

Following my release from duty with the Navy, I became the first medical director of the United Nations.

I am a fellow of the American College of Chest Physicians and American College of Cardiology; past president and present chairman of the New York Cardiological Society, charter member of the World Health Organization, vice chairman of the Council on Cardiovascular Diseases of the American College of Chest Physicians, and chairman of the Committee on Rehabilitation in Cardiovascular Diseases.

I have been associate clinical professor of cardiology at the New York Medical College and am presently lecturer in cardiology at the New York Polyclinic Medical School, one of the oldest postgraduate medical schools in the country.

As a physician with more than 30 years of experience, I have developed some opinions concerning the importance of various factors in a patient's life history in relation to cardiovascular disease and, particularly, coronary sclerosis. I think it is well agreed among physicians in my specialty that the cause of arteriosclerotic heart disease is unknown. Based on my clinical experience and my interpretation of the medical literature, I would also say that there is no acceptable evidence that a causal relationship exists between cigarette smoking and coronary heart disease. I do not believe that by discouraging cigarette smoking we shall reduce the incidence of this disease. It is my further opinion that it is misleading to inform the public that they may avoid or minimize their chances of developing heart disease by avoiding or discontinuing smoking.

Those who contend that smoking is an important factor in the development of cardiovascular disease, relate its effects principally to coronary artery disease, the most frequently fatal form of heart disease. However, it must be remembered that this disease has long been considered a part of aging and that there is a recognized age group in which arteriosclerosis and coronary sclerosis are prone to occur. Arteriosclerosis is a general arterial condition usually manifested throughout the system of the subject, but more advanced or marked in some parts of the body than in others. Thus, in some people arteriosclerosis is manifested by symptoms referable to the brain, in others by symptoms of the legs and in still others by involvement of the kidneys. Coronary sclerosis, therefore, is only an anatomically small part of the overall, generalized arteriosclerotic picture. Now I do not think we have any evidence that cigarette smoking causes hardening of the arteries throughout the entire body. Unless it is established that cigarette smoking has this effect, it is difficult to understand the basis for any assertion that smoking is responsible for coronary sclerosis.

There are a number of conditions or factors which are statistically associated with the development of coronary sclerosis. Among these, it seems to me that a family history of heart disease appears to be the most outstanding. It does seem plausible that a person's future health pattern, as regards constitutional diseases, may be "built in" on his arrival into this world because of his inherited constitution, body structure, familial tendencies to certain diseases and so forth. Clinical research has confirmed that high blood pressure, high blood cholesterol and various other disorders of the blood and circulatory system tend to run in families.

Lack of exercise has also been statistically associated with coronary sclerosis. Studies of men in particular occupation groups indicate that those who are sedentary develop coronary disease more frequently than those who are physically active.

Another characteristic which is statistically associated with coronary disease is overweight or obesity. I find that when hypertension is present, weight reduction is usually followed by a lowering of the blood pressure.

A great deal of attention has been called to the statistical association between cholesterol in the diet derived from eating meat fats and dairy products and coronary sclerosis. I am uncertain of the relationship between hypercholoresterolemia and arteriosclerotic heart disease, but I have found that patients with high cholesterol levels feel better when their cholesterol is brought back to normal.

Based on my experience, stress seems to be the most important precipitating or triggering factor in the development of a coronary heart attack. This would include the stress of hard physical labor as well as stress of the mind, nervous system, and emotions. In my practice, stress has been the common factor in

nearly all cases of coronary thrombosis that I can recall. While the use of tobacco may be a symptom of stress, in my judgment smoking is not causally related to coronary thrombosis. I have not observed any difference in the clinical course of a patient with myocardial infarction which I can relate to previous smoking habits.

One of the principal difficulties in attempting to study coronary sclerosis is that its manifestations are not always apparent. It has been referred to as an "iceberg disease" because its clinical signs are often only minor evidence of the underlying condition which may be of great magnitude. Some people are hardly aware of the pain and other symptoms of coronary insufficiency; indeed, some people may even have a marked myocardial infarction and be unaware of it. I can recall half a dozen of such cases in laborers picked up by electrocardiographic study on the occasion of a periodic health examination. Because of the difficulty in diagnosing coronary disease, findings based on surveys of the incidence of coronary disease among various segments of the population are of questionable significance.

I think that many worthwhile efforts have been made in searching for the cause or causes or arteriosclerotic heart disease by clinicians, research physiologists and chemists, pathologists, roentgenologists and statisticians, but we have yet to find the cause or causes of this disease. I find no reason from the evidence at hand why we should at this particular point in time act to discourage cigarette smoking on the presumption that this one factor has been discovered to be of importance in respect to heart disease. The evidence to date does not furnish any sound basis for such a conclusion, but rather indicates a need for continuing the research effort with the best resources available.

Statement of The Council for Tobacco Research, U.S.A.

HISTORY AND ORGANIZATIONS

The Council for Tobacco Research, U.S.A., was first established in 1954, under the name Tobacco Industry Research Committee, by representatives of the tobacco manufacturers, growers, and warehousemen.

The organizations which today support the work of the council include the following: The American Tobacco Co., Bright Belt Warehouse Association, Inc., Brown & Williamson Tobacco Corp., Burley Auction Warehouse Association, Burley Stabilization Corp., Burley Tobacco Growers Cooperative Association, Imperial Tobacco Co., Ltd., Larus & Bro. Co., Inc., Liggett & Myers Tobacco Co., P. Lorillard Co., Inc., Maryland Tobacco Growers Association, Philip Morris, Inc., R. J. Reynolds Tobacco Co., Peter J. Schweitzer, Stephano Bros., Inc., Tobacco Associates, Inc., United States Tobacco Co.

These various companies and organizations established the committee for the purpose of encouraging scientific study into the relationship between tobacco use and health. The council has, to date, made grant awards of $7,450,000 for this purpose.

Since its beginning the council particularly has sought to support research which would identify and define the factor or factors which may be involved in the causation of certain chronic diseases that have been statistically associated with cigarette smoking among other factors. The council has necessarily, therefore, been especially concerned with the etiology of cancer, cardiovascular diseases, and chronic respiratory diseases.

Shortly after the formation of the Tobacco Industry Research Committee in 1954 a number of doctors and scientists, well known for their work in various fields of research, were invited to serve on a scientific advisory board to the committee. The scientific advisory board was asked specifically to plan and direct the committee program of grants-in-aid of research, and was assured complete freedom of action in every respect. This was and is still the case. The advisory board established the policies of the grants-in-aid program and invited applications for research support. The board has met at least quarterly over these 10 years to consider each application on its merits as a proposal, and on the basis of the qualifications of the individual scientists and their institutions for undertaking the work described.

The advisory board has established a policy of insuring investigators full freedom. This applies to the conduct of research, the results of the study, and publication of those results. The board asks, like other granting agencies, that each of its grantees submit regular reports to the board.

The council has been fortunate in the fact that this program has been guided by independent scientists of the very highest reputations. Today the membership of the Scientific Advisory Board to the Council for Tobacco Research includes the following: Dr. Howard B. Andervont, scientific editor of the Journal of the National Cancer Institute; Richard J. Bing, M.D., professor and chairman, Department of Medicine, College of Medicine, Wayne State University; McKeen Cattell, M.D., professor emeritus of pharmacology, Cornell University Medical College; Leon O. Jacobson, M.D., professor and chairman, Department of Medicine, University of Chicago; Paul Kotin, M.D., associate director for field studies, National Cancer Institute; Kenneth M. Lynch, M.D., chancellor, Medical College of South Carolina; Stanley P. Reimann, M.D., director emeritus, the Institute for Cancer Research; William F. Reinhoff, Jr., M.D., professor emeritus of surgery, School of Medicine, the John Hopkins University.

These members of the board are men who retain their independent affiliations and do not have any connection with the tobacco industry.

There is no doubt that the program of the scientific advisory board has been productive of a real increase in knowledge, not only of the biochemical and physiological effects of smoking, but also of basic science, of the diseases with which the council is concerned, and of the processes of human life.

PROGRAM OF GRANTS-IN-AID

The Council for Tobacco Research does not operate any laboratories of its own. It has felt that its greatest contribution to scientific research and to increased knowledge is through the medium of grants and other types of financial aid to individual investigators in independent institutions.

The scientific advisory board has, since 1954, been in receipt of over 469 applications for research support. After careful consideration grants totaling $7,450,000 to date have been awarded by the scientific advisory board to more than 240 scientists in over 100 medical schools, hospitals, and laboratories throughout the country. A list of the institutions which have been recipients of council grants is attached. This program has resulted in the publication of 396 papers by the independent grantees in various scientific journals.

Research approved by the scientific advisory board over the past 10 years has concerned itself with a considerable range of human diseases and research areas, including not only lung cancer but also cancers of various other sites, a wide range of distinct cardiovascular diseases, and chronic respiratory diseases including emphysema and bronchitis, work in the field of gastrointestinal ailments, studies at the cellular level, lung physiology and anatomy, psychophysiological studies, as well as investigations into chemistry, biochemistry, and pharmacology. The council has also sponsored the study and development of basic laboratory and research techniques, and has helped to underwrite basic reviews of research literature in specific areas.

The council acted as cosponsor on many research projects, cooperating with other granting agencies such as the U.S. Air Force, American Heart Association, American Cancer Society, U.S. Public Health Service through a number of the National Institutes of Health, the Rockefeller Foundation, the U.S. Atomic Energy Commission, the Veterans' Administration, the Damon Runyon Fund, to name but a few.

To encourage new research ideas and endeavors, the scientific advisory board has, since early in the program, followed a policy of conducting informal conferences of research scientists with common interests to explore research progress and future needs.

Out of such conferences have come a number of new research projects which scientists believed would help advance knowledge in their respective fields. One or more such conferences have been held on problems such as: lung pathology, bioassay and carcinogenesis, virology, cardiovascular diseases, atherosclerosis, effects of nicotine, cell and tissue culture, chronic lung diseases, psychophysiological aspects of smoking.

These conferences have proved to be of great value in arriving at an understanding of the current status of knowledge in various fields, in exchanging information on research techniques, and in eliciting ideas for future research projects.

CHARACTERISTICS OF THE COUNCIL'S PROGRAM

To recapitulate, the following are characteristics of the council's research program:

1. It is determined by a group of distinguished scientists who are entirely independent of the industry.

2. Its grantees have complete freedom to report and publish the results of their research.

3. It is and has been entirely and completely divorced from industry research on the modification, marketing or any other commercial phase of the production or sale of tobacco products.

4. It is directed toward acquiring still absent and greatly needed knowledge of the origin and development of such diseases as cancer, cardiovascular disease, and chronic respiratory disease.

5. It is based on the belief that successful research which provides such knowledge is the only way in which these diseases and their causes will come to be understood.

This concludes an outline of the organization, method of operation, objectives and philosophy of approach of the council.

SCIENTIFIC PROGRAM OF THE COUNCIL

The actual effects of the program of the council can best be understood through the following description of some of its achievements and findings over the last 10 years.

The council's chief output, of course, has taken the form of scientific papers and reports by a large number of individual, independent investigators in many different medical and scientific journals, and covering a wide range of subjects. A bibliography of all these papers, including abstracts of their contents, is appended to this statement.

In addition to published papers, these individual investigators and their colleagues have presented their findings from the platforms of scientific and medical society meetings too numerous to tabulate, and have participated in many symposia, panels and roundtable discussions. The Council for Tobacco Research has cooperated with other agencies in the planning and support of public symposia on topics pertinent to its interests. A list of such symposia is attached.

Besides these public symposia, which have been published and widely disseminated for information of the scientific community and the general public, the council has sponsored a large number of smaller informal private conferences for planning purposes. These have been attended by grant recipients for presentation of their plans, methods and tentative results and by other experts in similar fields for presentation of new available techniques, comparison of results, constructive criticism, definition of unsolved problems, and consideration of possible approaches to their solution. A list of such informal conferences and their participants is appended.

The council has recognized the need, not only for specific research on defined problems relevant to tobacco use and human health, but for the training of young scientists and physicans in research. In order to assist in meeting this need, the council has annually made available to every medical school in the United States, a fellowship for assisting at least one degree candidate in each school to spend a summer term or other "off term" period in research under the direction of a senior staff member. No restriction of any kind has been placed on the subjects of study that can be elected by such predoctoral fellows. The total number of fellowships awarded through 1963 is 640. The institutions that have received such fellowships are included in the list of institutions which have been recipients of council grants.

In order to make experimental and clinical literature on tobacco and its effects more accessible to investigators everywhere, The council sponsored a project for collection, evaluation, and compilation of such material into a monograph. A book entitled "Tobacco: Experimental and Clinical Studies: A Comprehensive Account of the World Literature," by Larson, Haag, and Silvette was published by Williams and Wilkins in 1961. It is based upon study of more than 6,000 articles published in about 1,200 journals throughout the world. As a collateral activity, these scientists have also produced a series of comprehensive, critical reviews on a variety of specific subjects. This activity is continuing in preparation of supplementary volumes for later publication.

RESEARCH FINDINGS

It is impossible to list all the achievements of the council's research program. Illustrative examples only can be cited here.

Bioassay for tumorigenic action

A major difficulty with attempting to deduce a causal connection from the statistical association between cigarette smoking and the incidence of various

types of cancer, especially carcinoma of the lung is that there are a number of other noncausal reasons for the existence of such an association which can be postulated and must be excluded before any judgment can be reached.

Since the explanatory hypothesis originally advanced was the possibility that tobacco smoke might have activity as a direct contact carcinogen, a large number of studies have been sponsored in the effort to develop reliable and quantitative methods for assessing such possible activity in comparison with that of other substances and mixtures that are common in the environment and whose tumorigenic action is known.

1. A survey of mechanical smoking devices was made and conditions defined under which a relatively uniform cigarette smoke condensate could be made. The conditions were so specified as to fall within the range of those under which normal smoke is produced by human cigarette smokers, insofar as possible. Inattention by previous workers to the importance of combustion conditions to the chemical composition and biological activity of condensates may have vitiated the results of many other earlier investigators.

2. Painting of smoke condensates from commercial cigarettes and from cigar tobaccos and pipe tobaccos smoked in cigarette form has shown that their relative activities in no way conform to statistical association between cancer incidence and the smoking of cigarettes, pipes, and cigars. Moreover, the high dosages of smoke condensates required in these experiments, and the nearly lifelong treatment periods required for minimal tumor production, attest to the weakness of the activity of all such preparations and raise doubts as to whether normal human smoking could ever produce a dosage such as to elicit this type of action.

3. The painting or feeding of potent carcinogenic substances has been shown to increase the tolerance of mice to transplanted tumors or normal skin from other mouse strains, which transplants would be rejected in the absence of this pretreatment. This response could be related quantitatively to the dosage of carcinogenic substance and thus used as a bioassay tool. Standard cigarette smoke condensates tested by this method were completely inactive.

4. It had previously been shown that several carcinogenic substances injected intravenously into certain mice would produce lung adenomas in numbers that were a simple function of the dose of carcinogen given. These results were confirmed in a study sponsored by the council. Then, standard cigarette smoke condensates, freed from alkaloids so that they could be given intravenously in large doses, were administered in the same manner to the same strain of mice. No increase whatever in the number of lung adenomas was observed.

5. A one-cell organism, *Paramecium caudatum*, has been shown to be rapidly killed by exposure to ultraviolet light after overnight contact with many carcinogenic substances of the polynuclear hydrocarbon family in extremely small concentrations. Council projects have restudied this method extensively to refine it and develop maximum control of variables. Preliminary measurements with tobacco smoke condensates have shown inactivity for normal smoke.

6. Several studies in which mice of various strains were subjected to inhalation of cigarette smoke at frequent intervals during their whole lifespan have failed to produce carcinoma of the lung. Some inflammatory changes were found, rather erratically, among the treated mice, and these were accompanied by various degrees of histopathology. Such changes were, however, reversible if exposure was discontinued at any point, and never proceeded to invasive carcinoma.

7. Virus infections of the lungs of such mice were found to produce much more extensive histopathological effects of this kind than simple smoke inhalation. Virus infection followed by long-term cigarette smoke inhalation produced such effects more frequently and at higher levels but without production of cancer.

8. Condensates of tobacco smoke introduced into the lungs of several animal species in the form of solutions or suspensions so that dosages were higher than by inhalation of normal smoke, have also failed to produce carcinoma of the lung.

9. It has long been known that feeding urethane to strain A mice by mouth will produce pulmonary tumors. Addition of nicotine, smoke condensates or tobacco smoke inhalation was found in a council study not to enhance this effect. A further study discovered that the vitamin niacin has a defensive action against the urethane tumor production effect and that more tumors are produced in niacin-deficient animals. However, even in niacin-deficient animals the inhalation of tobacco smoke did not increase the production of pulmonary tumors following urethane feeding.

10. Sprague-Dawley male rats fed diets containing 2-acetylaminofluorene and also exposed to cigarette smoke inhalation or injected with a tobacco smoke condensate in peanut oil, experienced a delay in the development of liver changes that are considered to be indicative of a precancerous state (gross liver damage and lowering of riboflavin content). Another condensate, prepared by the standardized method referred to elsewhere, did not affect either the rate of cancer induction or the final tumor incidence in rats fed either 2-acetylaminofluorene or 3'-methyl-4-dimethylaminobenzene.

11. It has been shown that small doses of chemical carcinogens, which alone would not produce cancers, will do so when injected into male Swiss mice along with small doses of certain common viruses, which also do not produce cancer alone. The investigator showed that a combination occurs between the virus and the chemical substance and postulated that the virus was able to carry the chemical into the interior of the cell. Immunization of the animals against the viruses prevented the cancer production. Efforts to show a similar binding between these viruses and cigarette smoke condensate were unsuccessful.

12. Study of the sebaceous gland suppression in mouse skin by polynuclear hydrocarbons has shown that the usefulness of the phenomenon for bioassay purposes is limited by the occurrence of false positive and false negative reactions and by its relative insensitivity to small changes in concentration or activity of the substances tested.

13. Cigrarette smoke condensates were applied to the cervix and upper vaginal area of more than 200 DBA1 mice. Thirty-one percent of mice painted twice weekly developed tumors. The solvent applied alone at a similar rate was followed by tumors in 60 percent of the mice and treatment with a dry cotton applicator by tumors in 42.8 percent.

14. Animal and human lung cells have been successfully maintained in tissue cultures by several council grantees as a basis for development of other possible methods of bioassay. In tissue culture form, human cellular material can be used for testing. Satisfactory and interpretable methods for using such human cell material as a bioassay system for carcinogenicity have not yet been developed.

15. A number of other possible bioassay systems have been tried or are under study with various degrees of success or promise.

The overall impression gained from these many bioassay studies is that tobacco smoke is inactive or of very marginal activity in these several artificial systems, none of which, of course, actually measures human response under realistic conditions. The results fail to support the hypothesis that cigarette smoke can act as a direct contact carcinogen in the human lung. Study is continuing with respect to other hypothetically possible modes of action.

Ciliary activity and mucus flow

A council study undertook to evaluate the relative importance of the activity of the cilia in the total machinery of lung clearance in intact animals since it had been reported that cigarette smoke, like many other gases and aerosols, diminished the activity of these hairlike appendages which coat the upper respiratory tract and which normally propel upward the blanket of mucus which carries inhaled dust and debris out of the lung, and it had been suggested that delayed elimination of inhaled dust and debris, containing carcinogenic material from any source, might conceivably increase the hazard of lung carcinoma. Two other mechanisms of clearance operate in addition to the role played by mucus flow: (1) engulfment of debris by roving phagocytes, (2) absorption of substances into the bloodstream which carries them to the liver where detoxification mechanisms are active. A method of measuring rates of overall clearance of radioactive tagged dusts from the lungs of intact rabbits showed that inhalation of cigarette smoke had no measurable effect on total clearance rate. Hence, if one clearance mechanism was slowed by smoke exposure, another must have been speeded commensurately, even though the internal balance among the mechanisms may have been altered.

While several investigators have apparently confirmed the activity of cigarette smoke in depressing ciliary motility in isolated tissue from several animal species, and have traced this activity to specific components of the smoke, it appears quite uncertain at present whether the depression of ciliary activity can play any role, even indirectly, in the complex pattern of lung cancer pathogenesis. This study was recently completed and has not been published.

Lung pathology studies

In 1954, the council sponsored a descriptive study of human lung pathology in which 12 pathologists in different locations, both urban and rural, participated.

About 3,000 lungs of patients coming routinely to autopsy were investigated, yielding 8,590 sections from males and 3,661 from females. The study illustrated many difficulties in defining histopathological changes and in interpreting their possible significance in relation to malignant disease. "Carcinoma-in-situ" was diagnosed in only seven cases, and these were all patients with lung cancer. Some degree of hyperplasia occurred rather more frequently in smokers than in nonsmokers but this type of lesion was common both among cancer cases and among noncancer control cases and was even more extensive in the trachea where cancer rarely occurs. The type of lesion (atypical metaplasia) other than the tumor itself most frequently found in the lungs of lung cancer patients was not more frequent in smokers than among nonsmokers.

Cardiovascular research

The council has allocated a substantial grants fund for studying the cardiovascular system in health and disease and for investigating any short- or long-term effects of smoking and of nicotine upon this system.

1. A long series of pharmacologic studies has described the mechanisms of nicotine's action on the nervous system, especially at the synapses.

2. A comprehensive series of studies of nicotine metabolism has identified and described the products into which the alkaloid is rapidly converted by the mammalian body including man. The rapid conversion of nicotine into (−) -cotinine, a relatively inactive substance which tends to relax the vascular muscles, helps explain the transient and noncumulative character of many nicotine effects.

3. While nicotine was formerly regarded by many as a pressor substance, that is, as an agent that constricts the blood vessels and raises blood pressure, more detailed studies sponsored by the council have shown that constriction of vessels is usually confined to those in the skin of the extremities, though some individuals show an opposite reaction. Blood flow in the skeletal muscles is generally increased by nicotine. Flow in the cerebral circulation is unaffected by normal doses. Most importantly, perhaps, the flow of blood in the coronary arteries is increased by nicotine in normal persons, while the work of the heart muscle is gently stimulated as by mild exercise. In the presence of sclerotic disease of the arteries, this normal expansion may not be able to occur.

4. Studies with a new instrument called a vibrocardiograph have shown that the overall effect of nicotine is closely analogous to that of mild exercise.

5. It has been shown that persons engaged in stressful occupations have a greater incidence of cardiovascular disease than persons engaged in similar but less stressful ones. Among these, the persons who discontinued smoking had much less heart disease than those who had never smoked. These results are better in accord with the hypothesis that persons under stress find relief through smoking than with the hypothesis that smoking causes, aggravates or precipitates disease. The particularly low incidence among stopped smokers seems to reflect a selection, in this group, of persons who are able to adapt relatively well to stress, and is inconsistent with the idea that nicotine could exert any cumulative pharmacologic effect.

6. Tests of animals with diets conducive to arterial sclerosis have failed to show with added nicotine any significant or consistent effect of the nicotine in accelerating or aggravating the disease process.

7. Studies of human subjects by a large battery of physiological and psychological tests, have shown that healthy young men give patterns of responses that correlate with the occurrence of certain cardiovascular diseases among their ancestors. These patterns of response are considered to be indicative of predisposition to such diseases, since these tend to "run in families." Young men with these patterns of response are also more likely to be cigarette smokers. These studies therefore suggest that hereditary predisposition to certain cardiovascular diseases is also associated, noncausally, with cigarette smoking as a matter of constitution.

8. In addition, a large number of studies have contributed to basic knowledge of heart function, physiology, metabolism, biochemistry, and response to drugs, without direct and immediate relevance to tobacco or nicotine.

9. One group of scientists has shown that healthy persons who show an allergic skin sensitivity to tobacco extracts are likely also to show stronger effects of smoking upon skin surface temperatures or blood flow in the skin or muscle of the extremities. These scientists have therefore suggested that certain tobacco effects, especially upon the cardiovascular system, may be due to specific allergic susceptibility of particular individuals rather than being general pharmacological responses.

10. Smoking (two cigarettes) has been found to produce an elevation in the free fatty acids in the blood serum. This rise was higher in persons with history of heart disease than in normals. This kind of response is considered to be a normal reaction to any stress that releases catecholamines, which nicotine in adequate doses is known to do. The exaggerated response by heart patients may reflect their constitutional difference from normal persons.

11. In normal populations (excluding hypertensives), no differences in resting blood pressure were found between smokers and nonsmokers. In broader studies of working populations, smoking was associated with lower systolic and diastolic pressures.

No evidence for large or important difference in circulatory reactivity between groups of habitual smokers and nonsmokers was found. Little evidence of deterioration of cardiovascular "fitness" was seen in smokers performing work tests.

12. By means of moving picture X-ray photographs following injection of a radio-opague substance into an artery of the arm, it has been possible to make visible the flow of blood in the arteries of the brain. Cigarette smoking immediately prior to the photography normally increases blood flow in the cerebral circulation. This effect is ascribed tentatively to carbon dioxide in the smoke but possible nicotine effects are under study.

13. Because elevated levels of blood cholesterol have been reported to be associated with cardiovascular diseases, several council studies have included observations on this blood component. It has been shown that age and sex influence the blood levels, which also vary with the laboratory techniques used. The serum cholesterol has a rather wide range of normal values but these vary with season while chronically high values tend to run in families. Influenza infections were followed by sharp, transitory fall in this blood component but the cessation of smoking by a small group of students was not followed by any such fall. Administration of vitamin B_{12} did seem to lower cholesterol. Most significant perhaps was the finding that cholesterol rose during times of emotional stress, as during examination periods for students. This finding has also been corroborated elsewhere under other auspices.

In another study there was an indication that the distribution of cholesterol between alpha and beta lipoprotein fractions might differ between smokers and nonsmokers. This difference seemed to parallel differences in customary fat consumption between the two groups. This study, unconfirmed elsewhere, found an increased preference for fatty foods among smokers.

A great deal of the work sponsored in this field by the council was reported in a public symposium held at the New York Academy of Sciences on March 24, 25, 26, 1960, and published in a monograph entitled, "Cardiovascular Effects of Nicotine and Smoking." (Annals of the New York Academy of Sciences, 90, art. 1, pp. 1–344, Sept. 27, 1960.)

Though many transient effects have been more fully measured and described in our program, no evidence of any significant contribution by smoking or nicotine to causation, aggravation, or precipitation of any cardiovascular disease that contributes importantly to mortality has emerged.

Chronic respiratory diseases

In the study of such chronic diseases as the various forms of bronchitis, asthma, and emphysema, the primary problems are to define the various clinical entities, to develop reliable methods for differential diagnosis and to study the natural history or course of development of each individual disease. These problems must be solved before real progress in the study of causative factors can be expected or before meaningful epidemiological studies can be carried out for relative evaluation of environmental and intrinsic factors in their etiology.

The council has, however, sponsored a number of studies that contribute toward understanding of these diseases.

1. A searching pathological study of emphysematous lungs has improved the differentiation among several forms of emphysema, has contributed to their careful description and has recorded several types of collateral changes that occur in consequence of or parallel to the emphysematous condition.

2. A series of studies has been sponsored to describe better the breathing mechanics of both normal persons and those with various chronic lung diseases, and to improve methods for measuring the several aspects of lung function.

3. Using these methods of measuring lung function, the effects of smoking both in normal subjects and patients have been measured in several different centers. Cigarette smoke inhalation has been shown to produce a mild constriction of the bronchi in most persons which lasts from 10 to 80 minutes. This is not due

to nicotine or any other volatile substance and can be prevented by several drugs. It was not concluded that this treatment effect can initiate or aggravate any disease process.

In some studies, habitual smokers showed somewhat reduced "vital capacity" and somewhat increased "residual lung volume" but the difference was not statistically significant in all. Patients with severe emphysema generally showed decreases in arterial blood oxygen saturation after smoking but this did not occur in normals or those with mild emphysema. Mechanical resistance in breathing and increased work of breathing were observed in patients with emphysema and bronchitic diseases after smoking.

In general, these studies appear to show the altered responses of chronic lung disease patients to smoke inhalation rather than to imply that the smoke exposure produces or aggravates the disease itself. Further investigations are contemplated.

4. A long-term clinical study of chronic respiratory disease patients is being supported by the council in collaboration with other granting agencies. This has resulted in several tentative definitions of the lung diseases and in clinical methods of differential diagnosis which are under trial. It is too early to judge whether these definitions and diagnostic methods will be fully validated by experience, will undergo further modification, or will gain general acceptance.

5. Another long-term clinical study has been begun in which patients will be followed for a number of years with repetitive tests and function measurements followed ultimately by detailed pathological examinations of the lungs, post mortem. Our hope is that the comparison of function tests during life with the condition of the lungs found after decease will help to illuminate the relation between symptoms and pathological changes of various types.

Ulcer studies

While statistical association between cigarette smoking and mortality from peptic ulcer has been reported, it is not clear from the statistical relation alone, whether smoking contributes to the etiology or aggravation of peptic ulcer or whether, since peptic ulcer is a disease afflicting certain temperamental types of persons, the kinds of people most likely to develop peptic ulcer are also inclined to seek relief from anxieties and frustrations by smoking. The council has sponsored a series of studies to determine whether smoking would affect any of the physiological reactions that are believed by many clinicians to play a part in ulcer production, particularly the hypersecretion of acid by the stomach.

The absence of significant physiological responses to smoking in these areas, tends to lend support to the concept that ulcer-prone persons seem more likely than others to smoke cigarettes. Efforts to describe the ulcer-prone individual in terms of biochemical and psychological characteristics are continuing.

Smoking and body weight

In a council study comparisons of cigarette smokers and nonsmokers in a middle-aged group of businessmen have shown that the nonsmokers tend to be heavier than the smokers. Individuals who voluntarily stopped smoking without having any illness which prompted them to do so or without adopting any other special regimen of living, showed a substantial gain in weight within the ensuing 2-year period. The mean gain was 8.2 pounds.

Overweight is itself associated statistically with increased risk of certain diseases. The increased weight of nonsmokers and stopped smokers would seem to merit further evaluation.

Birth weight of infants

A council-sponsored study of 16,226 cases in three different types of hospitals explored reports of a lower average birth weight for infants of mothers who smoked during pregnancy as compared to those of mothers who refrained from smoking during the prenatal period. In a private hospital and a home for unwed mothers, the birth weights of the infants of smoking mothers were lower than those of nonsmoking mothers (though varying considerably from year to year in some groups), but there was no significant difference in the rates of stillbirth, abortion or birth complications. Among the patients of a charity hospital serving low-income patients, the birth weight difference was very small and still no significant difference occurred in stillbirth, abortion, or complications between the groups. Only in the home for unwed mothers was the prematurity rate significantly higher among infants of smoking mothers. Race was more strongly related to birth weight than smoking. Babies of Negro mothers were lighter in weight than babies of white mothers and this statistical relationship was stronger than that between smoking and birth weight.

Psychophysiological studies

A key problem that pervades the whole effort to study smoking and health is the question whether the types of persons who choose to smoke cigarettes are basically different in constitution, personality or life patterns from the types who choose not to smoke them. Such basic differences might themselves influence life expectancy and susceptibility to disease.

A series of studies has been sponsored by the council as a beginning toward solving the complex problem of inherent differences between nonsmokers and smokers of various types.

Extensive data on 252 selected college men collected over a 20-year period showed significant differences in physique, physiology, career selection, and personality between nonsmokers and heavy cigarette smokers. The smokers also tended to marry and change jobs more often, to indulge more in the use of coffee and alcohol, to lose weight over the years and to show more restless energy, more extroversion, and greater social gregariousness.

Two anthropometric studies of this and another group showed differences in prevailing body types among heavy cigarette smokers and nonsmokers as well as differences between these and pipe or cigar smokers. These findings suggest that constitutional factors do play a role in determining whether and in what form people use tobacco.

Research problems and future study

Despite significant advances in scientific knowledge and understanding, fundamental problems remain. Intensive research has raised many new questions. The task today would appear to be, if anything, more complex than it appeared a decade ago.

Many of the diseases with which the council is concerned, particularly cancer of the lung and the various diseases of the heart and circulatory system, were clinically identified and were encountered long before cigarette smoking became a widespread custom. Therefore, a simple demonstration of association between smoking patterns and these diseases cannot provide us with an adequate scientific anwer to the problem. We must learn the nature of the various factors that influence the cellular biochemical processes that initiate the development of these diseases in order to prevent or control medically the disease processes involved.

This point of view, which for 10 years has been one of the major elements of the council's philosophy of research, was very well expressed in a 1959 U.S. Public Health Service monograph (No. 56) on cancer morbidity, which commented on statistical and epidemiological data as follows:

"In the study of cancer, a disease that apparently can be induced by a multiplicity of etiological agents, one cannot realistically expect to do more than identify factors that appear to be frequently associated with cancer. The proof of an etiological relationship must then be sought through more intensive, clinical experimental studies."

The final sentence "the proof of an etiological relationship must then be sought through more intensive clinical or experimental studies" deserves special emphasis, and it sums up very well the main direction of our research effort not only in regard to lung cancer but also in regard to the several other diseases with which the council has been concerned.

Furthermore, some of the diseases which we are studying are not, of course, very clearly defined clinically as yet. For example, distinctions within the spectrum of chronic respiratory diseases, including asthma, bronchitis and emphysema, are far from precise and are not agreed upon among researchers.

Hopefully, support by the council and others of more penetrating and detailed clinical studies of patients will improve the definitions and knowledge of the etiology of these diseases.

The council will continue and expand its program of basic scientific research. It is in contact with the research efforts of the U.S. Public Health Service and of the American Medical Association. Cooperation with these groups to avoid unnecessary duplication and to provide exchange of ideas will be maintained.

INSTITUTIONAL RECIPIENTS OF GRANTS FROM THE COUNCIL FOR TOBACCO RESEARCH—U.S.A.

Age Center of New England, Boston, Mass.
The University of Alabama, Birmingham, Ala.
Albany Medical College, Albany, N.Y.

Albert Einstein Medical College, Bronx, N.Y.
All Soul's Hospital, Morristown, N.J.
M.D. Anderson Hospital and Tumor Institute, Houston, Tex.
University of Arkansas, Little Rock, Ark.
Baylor University College of Medicine, Houston, Tex.
Bellarmine College, Louisville, Ky.
Bio-Research Institute, Inc., Cambridge, Mass.
Boston University School of Medicine, Boston, Mass.
Brooks Hospital, Brookline, Mass.
California College of Medicine, Los Angeles, Calif.
California Institute of Technology, Pasadena, Calif.
University of California Medical Center, Los Angeles, Calif.
University of California Medical School, San Francisco, Calif.
Institute for Cancer Research, Philadelphia, Pa.
Centre Anticancereux Romand, Lausanne, Switzerland.
Memorial Hospital of Chester County, West Chester, Pa.
Chicago Board of Health, Chicago, Ill.
Chicago College of Osteopathy, Chicago, Ill.
Chicago Medical School, Chicago, Ill.
University of Chicago School of Medicine, Chicago, Ill.
Children's Cancer Research Foundation, Boston, Mass.
University of Cincinnati College of Medicine, Cincinnati, Ohio.
Cincinnati General Hospital, Cincinnati, Ohio.
Clayton Foundation Biochemical Institute, Austin, Tex.
Cleveland Psychiatric Institute and Hospital, Cleveland, Ohio.
University of Colorado, Denver, Colo.
Columbia University College of Physicians and Surgeons, New York, N.Y.
Columbia University, Goldwater Memorial Hospital, New York, N.Y.
Columbia Presbyterian Medical Center, New York, N.Y.
Cornell University Medical College, New York, N.Y.
The Creighton University, Omaha, Nebr.
Dartmouth Medical School, Hanover, N.H.
Dover Medical Research Center, Inc., Dover, Md.
Duke University Medical Center, Durham, N.C.
Emory University, Atlanta, Ga.
Ephrata Community Hospital, Ephrata, Pa.
Eugene Talmadge Memorial Hospital, Augusta, Ga.
University of Florida, Gainesville, Fla.
Fordham University, Bronx, N.Y.
Georgetown University School of Medicine, Washington, D.C.
Medical College of Georgia, Augusta, Ga.
The George Washington University, Washington, D.C.
Hahnemann Medical College, Philadelphia, Pa.
Harvard Medical School, Boston, Mass.
Harvard School of Public Health, Boston, Mass.
University of Houston, Houston, Tex.
Howard University, Washington, D.C.
University of Illinois College of Dentistry, Chicago, Ill.
Indiana University, Bloomington, Ind.
Indiana University School of Medicine, Indianapolis, Ind.
International Statistical Institute, Durham, N.C.
State University of Iowa College of Medicine, Iowa City, Iowa.
Jefferson Medical College, Philadelphia, Pa.
Johns Hopkins University School of Medicine, Baltimore, Md.
St. Joseph Hospital, Burbank, Calif.
St. Joseph's Hospital Research Laboratory, St. Paul, Minn.
University of Kansas, Kansas City, Mo.
Kansas City College of Osteopathy, Kansas City, Mo.
University of Kansas School of Pharmacy, Lawrence, Kans.
University of Kentucky, Lexington, Ky.
Kirksville College of Osteopathy, Kirksville, Mo.
Lankenau Hospital, Philadelphia, Pa.
Lehigh University, Bethlehem, Pa.
Los Angeles County General Hospital, Los Angeles, Calif.
Louisiana State University School of Medicine, New Orleans, La.
University of Louisville, Louisville, Ky.

Marquette University, Milwaukee, Wis.
Martland Medical Center, Newark, N.J.
St. Mary's Hospital, Madison, Wis.
University of Maryland Medical School, Baltimore, Md.
Massachusetts Institute of Technology, Cambridge, Mass.
Massachusetts Memorial Hospitals, Boston, Mass.
Meharry Medical College, Nashville, Tenn.
Memorial Hospital of Memphis, Tenn.
Methodist Hospital, Memphis, Tenn.
University of Miami, Coral Gables, Fla.
St. Michaels Hospital, Newark, N.J.
Michigan State University, East Lansing, Mich.
University of Michigan, Ann Arbor, Mich.
University of Minnesota School of Public Health, Minneapolis, Minn.
The University of Mississippi, Jackson, Miss.
University of Puerto Rico, San Juan, P.R.
Regis College, Weston, Mass.
University of Rochester School of Medicine and Dentistry, Rochester, N.Y.
Rockefeller Institute for Medical Research, New York, N.Y.
Roswell Park Memorial Institute, Buffalo, N.Y.
Russek Foundation, Inc., Staten Island, N.Y.
San Francisco Institute of Medical Sciences.
University of San Francisco, San Francisco, Calif.
Seton Hall College of Medicine, Jersey City, N.J.
University of Southern California, Los Angeles, Calif.
Medical College of South Carolina, Charleston, S.C.
University of South Dakota, Driver Behavior Laboratory, Vermillion, S. Dak.
Southwest Research Institute, San Antonio, Tex.
Southwestern Medical School, Dallas, Tex.
Stanford University School of Medicine, San Francisco, Calif.
Stritch School of Medicine, Chicago, Ill.
Syracuse University, College of Forestry, Syracuse, N.Y.
Temple University School of Pharmacy, Philadelphia, Pa.
The University of Tennessee, Memphis, Tenn.
University of Texas, Austin, Tex.
University of Texas Medical Branch, Galveston, Tex.
University of Texas, Southwestern Medical School, Dallas, Tex.
Tufts University School of Medicine, Medford, Mass.
Tulane University School of Medicine, New Orleans, La.
U.S. Public Health Service Hospital, Staten Island, N.Y.
University of Utah College of Medicine, Salt Lake City, Utah.
Vanderbilt University, Nashville, Tenn.
University of Vermont, Burlington, Vt.
Veterans' Administration Center, Los Angeles, Calif.
Veterans' Administration Hospital, Bronx, N.Y.
Veterans' Administration Hospital, Minneapolis, Minn.
Veterans' Administration Hospital, Providence, R.I.
Veterans' Administration Hospital, St. Louis, Mo.
Veterans' Administration Hospital, West Roxbury, Mass.
St. Vincent's Hospital, New York, N.Y.
Medical College of Virginia, Richmond, Va.
University of Virginia, Charlottesville, Va.
Wake Forest College, Winston-Salem, N.C.
Washington University, St. Louis, Mo.
University of Washington Medical School, Seattle, Wash.
Washington Square College, New York University, New York, N.Y.
Wayne State University College of Medicine, Detroit, Mich.
Western Reserve University, Institute of Pathology, Cleveland, Ohio.
West Virginia University, Morgantown, W. Va.
Winifred Masterson Burke Relief Foundation, White Plains, N.Y.
University of Wisconsin Medical School, Madison, Wis.
Woman's Medical College of Pennsylvania, Philadelphia, Pa.
Worcester Foundation of Experimental Biology, Shrewsbury, Mass.
Wyeth Laboratories, Philadelphia, Pa.
Yale University School of Medicine, New Haven, Conn

PUBLISHED REPORTS ON RESEARCH SUPPORTED IN WHOLE OR IN PART BY THE COUNCIL FOR TOBACCO RESEARCH—U.S.A., FORMERLY THE TOBACCO INDUSTRY RESEARCH COMMITTEE

1. "Trauma and Cancer. An Experimental Study in the White Pekin Duck," by *R. H. Rigdon.* Archives of Pathology 61:443–449, June 1956. (NCI)
2. "Evaluation of Substances Causing Loss of Sebaceous Glands From Mouse Skin," by Fred G. Bock and Rhoda Mund. Journal of Investigative Dermatology 26:479–487, June 1956. (Grantee: *G. E. Moore*)
3. "Effect of Cigarette Smoking on Gastric Secretions of Patients With Duodenal Ulcer," by *Philip Cooper* and James B. Knight Jr. New England Journal of Medicine 255:17–21, July 5, 1956.
4. "Ventilation in Chronic Pulmonary Emphysema. I. Pressure-Volume and Pressure-flow Relationships," by Ernest O. Attinger, Merrill M. Goldstein and *Maurice S. Segal.* American Review of Tuberculosis & Pulmonary Diseases 74:210–219, August 1956.
5. "Ventilation in Chronic Pulmonary Emphysema. II. Correlation of Compliance and Mechanical Resistance With Routine Pulmonary Function Tests," by Ernst O. Attinger, Merrill M. Goldstein and *Maurice S. Segal.* American Review of Tuberculosis & Respiratory Diseases 74:220–228, August 1956.
6. "Tumors Induced in Skin Without Follicles. An Experimental Study in the Duck," by *R. H. Rigdon.* Cancer Research 16:804–807, September 1956. (NCI)
7. "Contractility and Extractability of Heart Actomyosin After Death," by L. Dettli and *R. J. Bing.* Circulation Research 14:519–522, September 1956. (ALAHA, AHA, LIMRF, PHS)
8. "Lymphoid Hyperplasia Produced in the Skin of Chickens by Methylcholanthrene," by *R. H. Rigdon.* Res Bulletin 2:40–46. Fall 1956. (NCI)
9. "Contractile Properties of Actomyosin Threads and Bands Prepared From Dogs' Hearts," by L. Dettli and *R. J. Bing.* American Journal of Physiology 187:145–150, October 1956. (ALAHA, AHA, LIMRF, SAFSE, PHS)
10. "Mitotic Rate of Gingival Epithelium in Two Age Groups," by Julia Meyer, Amarjit S. Marwah and Joseph P. Weinmann. Journal of Investigative Dermatology 27:237–247, October 1956. (Grantee: *I. Schour*) (NIH)
11. "Hemangiomas. An Experimental Study in the Duck," by *R. H. Rigdon,* Jack Walker and A. H. Teddle. Cancer 9:1107–1115, November–December 1956. (NCI)
12. "Carcinogenesis in the White Pekin Duck," by *R. H. Rigdon.* Texas Reports on Biology & Medicine 14:508–527, Winter 1956. (NCI)
13. "Nucleic Acid Patterns During Growth and Regression of the Murphy-Sturm Lymphosarcoma in the Rat," by *Leopold R. Cerecedo* and Edward Bresnick. Biochimica et Biophysica Acta 23:226, January 1957. (NCI)
14. "Effect of Cigarette Smoking on Coronary Blood Flow and Myocardial Metabolism," by L. M. Bargeron, D. Ehmke, F. Gonlubol, A. Castellanos, A. Siegel and *R. J. Bing.* Circulation 15:251–257, February 1957. (AHA, LIMRF, PHS)
15. "Immediate Effect of Chewing Tobacco on Circulation of Habitual Chewers," by *David L. Simon,* Arnold Iglauer, John R. Braunstein and Robert E. Rakel. Journal of the American Medical Association 163:354–356, February 2, 1957.
16. "Comparative Vasoconstrictor Effects on Inhaling Tobacco Smoke in Warm and Cool Environments and Before and After Abstinence From Tobacco," by John W. Eckstein, *J. Edwin Wood* and Robert W. Wilkins. American Heart Journal 53:455–462, March 1957.
17. "Chemical Changes in the Lungs of Tumor-Bearing Rats," by *L. R. Cerecedo,* E. Bresnick, H. Hochstrasser, H. L. Rodriguez, E. T. Schubert and E. J. Singer. Biochimica et Biophysica Acta 24:58–61, April 1957.

NOTE.—The names of Council grantees are italicized in this bibliography. A key to the other grantors acknowledged by the authors (listed in parentheses after each item) will be found at the end of the list.

18. "Effect of Cigarette Smoking on Excretion of Uropepsin and Concentration of Plasma Pepsinogen," by *Philip Cooper*, Harold L. Stein, Goldwyn F. Moore and Harold W. Harrower. Rhode Island Medical Journal 40: 215–216 & 251, April 1957.
19. "The Dark Fixation of CO_2 by Succulent Leaves: Metabolic Changes Subsequent to Initial Fixation," by *Paul Saltman*, Victoria H. Lynch, George M. Kunitake, Clyde Stitt and Herbert Spolter. Plant Physiology 32: 197–200, May 1957. (NSF)
20. "Observations Concerning the Bronchi Relative to Smoking and Environment," by *H. R. Pratt-Thomas*. Tristate Medical Journal 5: 21–23, May 1957.
21. "Diagnostic Value of Activity of Malic Dehydrogenase and Phosphohexose Isomerase," by *R. J. Bing*, A. Castellanos and A. Siegel. Journal of the American Medical Association 164: 647–650, June 8, 1957. (AHA, LIMRF, PHS)
22. "Changes of Body Weight in Normal Men Who Stop Smoking Cigarettes," by *Josef Brozek* and Ancel Keys. Science 125: 1203, June 14, 1957. (NHI)
23. "Characteristics of the Individual as Guideposts to the Prevention of Heart Disease," by *Caroline Bedell Thomas*. Annals of Internal Medicine 47: 389–401, September 1957. (AL, EL, LL, NHI, PD, UC, VA)
24. "Immunological Aspects of Tobacco and Smoking," by H. Silvette, P. S. Larson and *H. B. Haag*. American Journal of the Medical Sciences 234: 561–589, November 1957.
25. "Role of Dietary Fat in Human Nutrition. Diet and the Epidemiology of Coronary Heart Disease," by *Ancel Keys* and Francisco Grande. American Journal of Public Health 47: 1520–1530, December 1957. (AHA, MHA, NDC, NF, SF, WWF, DWA)
26. "Effect of Cigarette Smoking on Dissolved Gastric Mucins and Viscosity of Gastric Juice," by *Philip Cooper*, Myron Saltz, Harold W. Harrower and Dorothy H. Burke. Gastroenterology 33: 959–967, December 1957.
27. "Gamma-(3-Pyridyl)-Gamma-Methylaminobutyric Acid as a Urinary Metabolite of Nicotine," by Herbert McKennis Jr., Lennox B. Turnbull and Edward R. Bowman. Journal of the American Chemical Society 79: 6342–6343, December 5, 1957. (Grantee: *P. S. Larson*) (AT)
28. "Some Statistical Observations on a Cooperative Study of Human Pulmonary Pathology," by *Edwin B. Wilson* and Mary H. Burke. Proceedings of the National Academy of Sciences 43: 1073–1078, December 1957.
29. "Metabolic Studies on the Arrested and Fibrillating Perfused Heart," by Alois Beuren, Charles Sparks and *Richard J. Bing*. American Journal of Cardiology 1: 103–112, January 1958. (AHA, LIMRF, PHS)
30. "Determinations of DPN (TPN), Thiamine, Amino Acids and Amino Sugars in Blood of Animals With Experimental Myocardial Infarction," by G. Cabrera, A. Beuren and *R. J. Bing*. Circulation Research 6: 15–19, January 1958. (AHA, LIMRF, BW, PHS)
31. "Effects of Smoking Upon the Mechanics of Breathing. I. In Normal Subjects," by Ernst O. Attinger, Merrill M. Goldstein and *Maurice S. Segal*. American Review of Tuberculosis and Respiratory Diseases 77: 1–9, January 1958.
32. "Effects of Smoking Upon the Mechanics of Breathing. II. In Patients With Cardiopulmonary Disease," by Ernst O. Attinger, Merrill M. Goldstein and *Maurice S. Segal*. American Review of Tuberculosis and Respiratory Diseases 77: 10–16, January 1958.
33. "Lessons From Serum Cholesterol Studies in Japan, Hawaii and Los Angeles," by *Ancel Keys*, Noboru Kimura, Akira Kusukawa, B. Bronte-Stewart, Nils Larsen and Margaret Haney Keys. Annals of Internal Medicine 48: 83–94, January 1958. (AHA, NDC, DWA)
34. "Soluble Liver h Proteins During Hepatocarcinogenesis by Aminoazo Dyes and 2-Acetylaminofluorene in the Rat," by *Sam Sorof*, Emily M. Young and Marilyn G. Ott. Cancer Research 18: 33–46, January 1958. (ACS. DRMF)
35. "Differences Between Smokers and Non-Smokers," by *Clark W. Heath*. Archives of Internal Medicine 101: 377–388, February 1958.
36. "Identification of Scopoletin in Cigarette Tobacco and Smoke," by Chao-Ewa Yang, Yasuhi Nakagawa and *Simon H. Wender*. Journal of Organic Chemistry 23: 204–205, February 1958. (AEC)
37. "The Psychology of Smoking," by *Charles McArthur*, Ellen Waldron and John Dickinson. Journal of Abnormal and Social Psychology 56: 267–275, March 1958.

38. "Familial and Epidemiologic Aspects of Coronary Disease and Hypertension," by *Caroline Bedell Thomas*. Journal of Chronic Diseases 7: 198–208, March 1958. (AL, EL, LL, NHI, PD, UC, VA, PHS)
39. "Contractility of Actomyosin Bands Prepared From Normal and Failing Human Hearts," by K. Kako and *R. J. Bing*. Journal of Clinical Investigation 37: 465–470, March 1958. (AHA, BW, LIMRF, PHS)
40. "Cigarette Smoke. Its Effect on Pulmonary Function Measurements," by *Hurley L. Motley* and William J. Kuzman. California Medicine 88: 211–220, March 1958.
41. "Metabolites of Nicotine and a Synthesis of Nornicotine," by Herbert McKennis Jr., Lennox B. Turnbull, Harvey N. Wingfield Jr. and Lovell J. Dewey. Journal of the American Chemical Society 80: 1634–1636, April 15, 1958. (Grantee: *P. S. Larson*)
42. "Cardiac Effects of Intracoronary Arterial Injections of Nicotine," by James W. West, Santiago V. Guzman and *Samuel Bellet*. Circulation Research 6: 389–395, May 1958. (LIMRF)
43. "A Correlated Histological, Cytological, and Cytochemical Study of the Tracheobronchial Tree and Lungs of Mice Exposed to Cigarette Smoke. I. Bronchitis With Atypical Epithelial Changes in Mice Exposed to Cigarette Smoke," by *Cecilie Leuchtenberger*, Rudolph Leuchtenberger and Paul F. Doolin. Cancer 11: 490–506, May–June 1958.
44. "Formation of Scopoletin From Esculin and Esculetin in the Rat," by Chao-Hwa Yang, H. D. Braymer, P. L. Petrakis, M. R. Shetlar and *S. H. Wender*. Archives of Biochemistry and Biophysics 75: 538–539, June 1958. (NIH)
45. "A Correlated Histological, Cytological, and Cytochemical Study of the Sequence of Events in the Bronchial Epithelium of Mice Exposed to Cigarette Smoke. II. Studies on the Fate of Atypical Epithelial Changes in the Bronchi of Mice Exposed to Cigarette Smoke," by *Cecilie Leuchtenberger*, Rudolf Leuchtenberger, William Zebrun and Patricia Shaffer. Proceedings of Seventh World Cancer Congress, London, July 1958.) Acta Unio Internationalis Contra Cancrum 15/3–4: 956–961, July 1958. (NHI, IHA)
46. "Pressure-Volume Changes in the forearm Veins of Man During Hyperventilation," by *John W. Eckstein*, William K. Hamilton and John M. McCommond. Journal of Clinical Investigation 37: 956–961, July 1958. (NAI, IHA)
47. "Metabolism of Methionine and Pectin Esterification in a Plant Tissue," by Clifford S. Sato, Richard U. Byerrum, Peter Albersheim and *James Bonner*. Journal of Biological Chemistry 233: 128–131, July 1958.
48. "The Effect of Cigarette Smoking on Intragastric Balloon Pressure and Temperature of Patients With Duodenal Ulcer," by *Philip Cooper*, H. W. Harrower, H. L. Stein and G. F. Moore, Gastroenterology 35: 176–182, August 1958.
49. "The Circulatory Response to Smoking. The Variation in Ballistocardiographic Smoking Tests in Healthy Young Men," by *Caroline Bedell Thomas* and Edmond A. Murphy. Journal of Chronic Diseases 8: 202–229, August 1958. (NHI, VA)
50. "Effect of Cooling and of Smoking Tobacco Upon the Blood Flow of Reactive Hyperemia of the Foot," by Jay D. Coffman, *J. Edwin Wood* and Robert W. Wilkins. Circulation 18: 177–182, August 1958.
51. "Scopoletin in Commercial Tobacco Products," by Chao-Hwa Yang, Yasushi Nakagawa and *Simon H. Wender*. Tobacco Science 2: 111–114, August 29, 1958. (AEC)
52. "Medical Uses of Tobacco, Past and Present," By H. Silvette, P. S. Larson and *H. B. Haag*. Virginia Medical Monthly 85: 472–484, September 1958.
53. "A Survey of Compounds for Activity in the Suppression of Mouse Sebaceous Glands," by *Fred G. Bock* and Rhoda Mund. Cancer Research 18: 887–892, September 1958.
54. "Functional Capillary Beds in the Beating KCl-Arrested and KCl-Arrested-Perfused Myocardium of the Dog," by S. R. M. Reynolds, M. Kirsch and *R. J. Bing*. Circulation Research 6: 600–6111, September 1958. (AHA, PHS, LIMRF)
55. "The Effects of Smoking on the Respiratory System in Normal Individuals," by *Kelly T. McKee*. Southern Medical Journal 51: 1110–1115, September 1958.

56. "Action of Cigarette Tar and Smoke on Chemically Induced Carcinogenesis," by Howard E. Hoffman and *A. Clark Griffin*. Texas Reports on Biology and Medicine 16: 333–345, Fall 1958.
57. "The Heart in Anoxia and Ischemia," by William H. Danforth and *Richard J. Bing*. British Journal of Anesthesia 30: 456–465, October 1958. (PHS, LIMRF, BWF)
58. "Studies on the Nature of Hypoxia With and Without Cyanosis in Chronic Pulmonary Disease," by *Hurley L. Motley*. Geriatrics 13: 616–633, October 1958. (NIH)
59. "The Survival of Excitability. Energy Production and Energy Utilization in the Heart," by Milton Kardesch, Charles E. Hogancamp and *Richard J. Bing*. Circulation 18: 935–945, November 1958. (AHA, LIMRF, PHS)
60. "The Effect of Complete Ischemia on the Intracellular Electrical Activity of the Whole Mammalian Heart," by Milton Kardesch, Charles E. Hogancamp and *Richard J. Bing*. Circulation Research 6: 715–720, November 1958. (AHA, BW, LIMRF, PHS)
61. "Myocardial Metabolism," by *R. J. Bing*, J. D. Choudhury, G. Michal and K. Kako. Annals of Internal Medicine 49: 1201–1215, November 1958. (PHS, AHA, LIMRF)
62. "Effect of Interruption of Coronoray Circulation on Metabolism of the Arrested Heart," by G. Michal, A. Beuren, C. E. Hogancamp and *R. J. Bing*. American Journal of Physiology 195: 417–423, November 1958. (LIMRF, AHA, BWF, PHS)
63. "Dark Fixation of CO_2 by Succulent Leaves: Conservation of the Dark Fixed CO_2 Under Diurnal Conditions," by George Kunitake and *Paul Saltman*. Plant Physiology 33: 400–403, November 1958.
64. "Changes in Transmural Central Venous Pressure in Man During Hyperventilation," by *John W. Eckstein* and William K. Hamilton. Journal of Clinical Investigation 37: 1537–1541, November 1958.
65. "Further Studies in Cholesterol Levels in the Johns Hopkins Medical Students: The Effect of Stress at Examinations," by *Caroline Bedell Thomas* and Edmond A. Murphy. Journal of Chronic Diseases 8: 661–668, December 1958. (NHI)
66. "Hyaluronate-Inactive Spreading Factor of Murine Endometrial Secretions (Ueterone)," by *F. Homburger*, M. S. Grossman and P. C. Harpel. Proceedings of the Society for Experimental Biology and Medicine 99: 665–668, December 1958.
67. "Quantitative Studies of Scopoletin in Cigarette Smoke and Tobacco," by Chao-Hwa Yang, Yasushi Nakagawa and *Simon Wender*. Analytical Chemistry 31: 2041–2044, December 1958. (AEC)
68. "Metabolism of Nicotine to (+)-Gamma-(3-Pyridyl)-Gamma-Methylaminobutyric Acid," by Herbert McKennis Jr., Lennox B. Turnbull and Edward R. Bowman. Journal of the American Chemical Society 80: 6597–6600, December 20, 1958. (Grantee: *P. S. Larson*) (AT)
69. "Cholesterol Characteristics," by *Caroline Bedell Thomas*. Maryland State Medical Journal 8: 2–6, January 1959. (NHI, VA)
70. "The Bacterial Oxidation of Nicotine. I. Nicotine Oxidation by Cell-Free Preparations," by L. I. Hockstein and *Sydney C. Rittenberg*. Journal of Biological Chemistry 234: 151–155, January 1959.
71. "The Bacterial Oxidation of Nicotine. II. The Isolation of the First Oxidative Product and its Identification as (1)-6-Hydroxynicotine," by L. I. Hochstein and *Sydney C. Rittenberg*. Journal of Biological Chemistry 234: 156–160, January 1959.
72. "A Constant-Rate Infusion Apparatus," by Quentin S. McKennis, Edward R. Bowman and Herbert McKennis Jr. Toxicology and Applied Pharmacology 1: 61–64, January 1959. (Grantee: *P. S. Larson*) (AT)
73. "The Respiratory System in the Normal White Pekin Duck," by *R. H. Rigdon*. Poultry Science 38: 196–210, January 1959. (NCI)
74. "Keratocanthoma Experimentally Induced With Methylcholanthrene in the Chicken," by *R. H. Rigdon*. Archives of Dermatology 79: 139–147, February 1959. (NCI)
75. "Mechanism of Removal of Fluid and Particulate Material From the Respiratory Tract of the Duck," by *R. H. Rigdon*. Archives of Pathology 67: 215–227, February 1959. (NCI)
76. "Types of Keratinization in the Human Gingiva," by J. P. Weinmann and J. Meyer. Journal of Investigative Dermatology 32: 87–94, February 1959. (Grantee: *I. Schour*) (NIH 2)

77. "Transmembrane Electrical Potentials in Ventrical Tachycardia and Fibrillation," by Charles E. Hogancamp, Milton Kardesch, William H. Danforth and *Richard J. Bing*. American Heart Journal 57: 214–222, February 1959. (AHA, BW, LIMRF, VAHS, PHS)
78. "Myocardial Efficiency," by *R. J. Bing* and G. Michal. Annals of the New York Academy of Sciences 72: 555–558, Feb. 6, 1959. (AHA, BW, LIMRF, NHI).
79. "Carcinogenic Activity of Cigarette Smoke Condensate. I. Effect of Trauma and Remote X-Irradiation," by *Fred G. Bock* and George E. Moore. Journal of the National Cancer Institute 22: 401–412, February 1959.
80. "Some Statistical Observations on a Cooperative Study of Human Pulmonary Pathology. II." by *Edwin B. Wilson* and Mary H. Burke. Proceedings of The National Academy of Sciences 45: 389–393, March 1959.
81. "The Natural History of Carcinoma of the Lung," by George L. Emerson, Marion S. Emerson and *Charles E. Sherwood*. Journal of Thoracic Surgery 37: 291–304, March 1959.
82. "Cigarette Smoking, Serum-Cholesterol, Blood Pressure and Body Fatness Observations in Finland," by Martii Karvonen, Esko Orma, *Ancel Keys*, Josef Brozek and Flaminio Fidanza. Lancet 1: 492–494, Mar. 7, 1959. (AHA, FHA, SBF, SJS).
83. "Effect of Nicotine on Cholesterol-Induced Atherosclerosis in the Rabbitt." by *Duane G. Wenzel*, James A. Turner and Donald Kissil. Circulation Research 7: 256–261, March 1959.
84. "Dark Fixation of CO_2 by Tobacco Leaves," by George Kunitake, Clyde Stitt and *Paul Saltman*. Plant Physiology 34: 123–127, March 1959.
85. "Cancer of the Lung—The Sex Ratio. A Review of the Problem," by Helen Kirchoff and *R. H. Rigdon*. Texas Reports on Biology and Medicine 17: 29–48, Spring 1959.
86. "Observations on Some Possible Precursors of Essential Hypertension and Coronary Artery Disease. VI. Comparison of the Circulatory Reactivity to the Cold Pressor Test and to the Smoking Test," by *Caroline Bedell Thomas* and Edmond A. Murphy. Annals of Internal Medicine 50: 970–980, April 1959. (NHI, VA).
87. "Occurence and Role of Glycogen in the Epithelium of the Alveolar Mucosa and of the Attached Gingiva," by Joseph P. Weinmann, Julia Meyer, Dorothy Mardfin and M. Weiss. American Journal of Anatomy 104: 381–402, May 1959. (Grantee: *I. Schour*) (NIH).
88. "Arsenic Content of Commercial Tobacco, 1917–1958," by F. E. Guthrie, *C. B. McCants* and H. G. Small Jr. Tobacco Science 3: 62–64, May 8, 1959.
89. "Studies in Tobacco Hypersensitivity. III. Reactions to Skin Tests and Peripheral Vascular Responses," by Vincent J. Fontana, Walter Redisch, Rose Lee Nemir, Marjorie K. Smith, Kurt DeCrinis and *Marion B. Sulzberger*. Journal of Allergy 30: 241–249, May–June 1959.
90. "Tissue Specificity of Serum Components," by S. D. Yeh, W. F. Seip, C. Burch and *F. W. Barnes Jr.* Archives of Internal Medicine 103: 933–948, June 1959. (ACSM, ACS, AHA, NIH, DRMF, MMFF, NOX).
91. "Tumor-Host Relations During Development and After Regression of the Tumor," by *Leopold R. Cerecedo*, Edward Bresnick and Edward T. Schubert. Archives of Biochemistry and Biophysics 83: 44–53, July 1959. (NCI 2).
92. "Lung Volume in Smokers and Nonsmokers," by Henry Blackburn, *Josef Brozek* and Henry L. Taylor. Annals of Internal Medicine 51: 68–77, July 1959. (NHI).
93. "Cardiac Effects of Isoproterenol, Norepinephrine and Epinephrine in Complete A–V Heart Block During Experimental Acidosis and Hyperkalemia," by Santiago V. Guzman, Antiono C. DeLeon Jr., James W. West and *Samuel Bellet*. Circulation Research 7: 666–672, July 1959. (AHA).
94. "Variability of Cholesterol Levels in Individual Johns Hopkins Medical Students, With Observations on Stopping Smoking, Vitamin B_{12} Administration and Acute Infection." by *Caroline Bedell Thomas* and Frieda Faiman Eisenberg. Bulletin of the Johns Hopkins Hospital 105: 14–50, July 1959. (NHI).
95. "Degree of Keratinization and Glycogen Content in the Uninflamed and Inflamed Gingiva and Alveolar Mucosa," by M. D. Weiss, J. P. Weinmann and J. Meyer. Journal of Periodontology 30: 208–218, July 1959. (Grantee: *I Schour*) (NIH 2).

96. "Identification of Esculetin in Tobacco and in Cigarette Smoke," by L. J. Dieterman, C. H. Yang, Y. Nakagawa and *S. H. Wender*. Journal of Organic Chemistry 24: 1134–1136, August 1959. (AEC).
97. "Demethylation of Cotinine *In Vitro*," by Herbert McKennis Jr., Lennox B. Turnbull, Edward R. Bowman and Einosuke Wada. Journal of the American Chemical Society 181: 3951–3954, Aug. 5, 1959. (Grantee: *P. S. Larson*) (AT).
98. "On the Chromosome Numbers of Human Amnion Cells in Primary and Strain Cultures," by Y. H. Nakanishi, M. V. Fernandes, M. Mizutani and *C. M. Pomerat*. Texas Reports on Biology and Medicine 17: 345–353, Fall 1959.
99. "A Study of the Sensitivity of the Mouse Forestomach Toward Certain Polycyclic Hydrocarbons," by *Fred G. Bock* and Douglas W. King. Journal of the National Cancer Institute 23: 833–839, October 1959.
100. "The Myocardial Metabolism of Fructose," by William H. Danforth, Charles E. Hogancamp, Fred B. Ballard and *Richard J. Bing*. American Journal of the Medical Sciences 238: 477–484, October 1959. (AHA, BW, LIMRF, PHS).
101. "Importance of Chemical Transmission in Cardiology and Neuropharmacology," by *Richard J. Bing*. Archives of Internal Medicine 104: 658–671, October 1959. (AHA, BW, LIMRF, PHS).
102. "Lipid Infiltration in the Rabbit Iris," by *Duane G. Wenzel*, James A. Turner and Donald Kissil. American Journal of Ophthalmology 48: 535–537, October 1959.
103. "Insecticide Residues on Tobacco," by *T. G. Bowery*, W. R. Evans, F. E. Guthrie and R. L. Rabb. Agricultural and Food Chemistry 7: 693–702, October 1959. (SCH, SRRP).
104. "Metabolism of Nicotine in the Human and Excretion of Pyridine Compounds by Smokers," by Edward R. Bowman, Lennox B. Turnbull and Herbert McKennis, Jr. Journal of Pharmacology and Experimental Therapeutics 127: 92–95, October 1959. (Grantee: *P.S. Larson*) (AT)
105. "Effect of Air Pollutants on Ciliated Mucus-Secreting Epithelium," by Herta M. Tremer, *Hans L. Falk* and Paul Kotin. Journal of the National Cancer Institute 23: 979–998, November 1959. (ACS, NCI)
106. "Effect of Cigarette Smoke and its Constituents on Ciliated Mucus-Secreting Epithelium," by *Hans L. Falk*, Herta M. Tremer and Paul Kotin. Journal of the National Cancer Institute 23: 999–1012, November 1959. (ACS, NCI)
107. "Metabolic Changes in Heart Muscle During Anoxia," by Gerhard Michal, Siegfried Naegle, William H. Danforth, Fred B. Ballard and *Richard J. Bing*. American Journal of Physiology 197: 1147–1151, December 1959. (AHA, BWF, LIMRF, PHS)
108. "Myocardial Extraction of Rb^{86} in the Rabbit," by Robert E. Mack, David D. Nolting, Charles E. Hogancamp and *Richard J. Bing*. American Journal of Physiology 197: 1175–1177, December 1959. (AHA, HLR, LIMRF, PHS)
109. "The Heart in Congestive Failure," by *Richard J. Bing*. Texas State Journal of Medicine 55: 931–936, December 1959. (PHS, AHA, LIMRF)
110. "Masculinity and Smoking," by *Carl C. Seltzer*. Science 130: 1706–1707, December 18, 1959.
111. "Smoke Condensates on Lung Cells in Tissue Culture With Special Reference to Chromosomal Changes," by Yuh H. Nakanishi, Masahior Mizutani and *C. M. Pomerat*. Texas Reports on Biology and Medicine 17: 524–590, Winter 1959.
112. "Effect of Tobacco Condensate on Respiratory Tract of White Pekin Ducks," by *R. H. Rigdon*. Archives of Pathology 69: 55–63, January 1960. (NCI)
113. "Metabolism of the Heart in Failure," by William H. Danforth, F. B. Ballard, K. Kako, J. D. Choudhury and *R. J. Bing*. Circulation 21: 112–123, January 1960. (PHS, LIMRF, AHA, BW, AL)
114. "Physiology of the Myocardium," by *Richard J. Bing*. Journal of the American Medical Association 172: 438–444, January 30, 1960. (PHS, LIMRF, AHA, BWF)
115. "Studies on the Biogenesis of the Ring Systems of Nicotine," by Thomas Griffith, Kenneth P. Hellman and *Richard L. Byerrum*. Journal of Biological Chemistry 235: 800–804, March 1960.

116. "The Bacterial Oxidation of Nicotine. III. The Isolation and Identification of 6-Hydroxypseudooxynicotine," by Lawrence I. Hochstein and *Sidney C. Rittenberg*. Journal of Biological Chemistry 235: 795–799, March 1960.
117. "Some Statistical Observations on a Cooperative Study of Human Pulmonary Pathology. III," by *Edwin B. Wilson* and Mary H. Burke. Proceedings of the National Academy of Sciences 46: 561–566, April 1960.
118. "Comparison of Smokers and Nonsmokers. I. A. Preliminary Report on the Ability To Taste Phenylthiourea (P.T.C.)," by *Caroline Bedell Thomas* and Bernice Hirschhorn Cohen. Bulletin of the Johns Hopkins Hospital 106: 205–214, April 1960.
119. "Identification of Caffeic Acid in Cigarette Smoke," by Choa-Hwa Yang, Y. Nakagawa and *S. H. Wender*. Journal of Organic Chemistry 25: 658–660, April 1960. (AEC, NIH)
120. "Effect of Nicotine and Tobacco on Muscle Function," by Ernst Fischer, Herbert Silvette, P. S. Larson and *H. B. Haag*. American Journal of Physical Medicine 39: 63–77, April 1960.
121. "Measurement of Tobacco Smoking," by P. S. Larson, *H. B. Haag* and H. Silvette. Medical Times 88: 417–429, April 1960.
122. "The Oxidation of Nicotine. I. Kinetics of the Liquid Phase Reaction Near Room Temperature," by *Robert H. Linnell*. Tobacco Science 4: 89–91, April 29, 1960.
123. "The Development of a Kitten Lung Cell Strain and its Chromosomes," by Yuh H. Nakanishi. Zeitschrift fur Zellforschung 51/2: 138–151, 1960. (Grantee: *C. M. Pomerat*)
124. "Myocardial Metabolism of Fatty Acids," by Fred B. Ballard, William H. Danforth, Siegfried Naegle and *Richard J. Bing*. Journal of Clinical Investigation 39: 717–723, May 1960. (AHA, LIMRF, PHS)
125. "Vascular Responses to Smoking Tobacco Compared With Responses to Skin Testing of Tobacco Extracts," by Kurt DeCrinis, Walter Redisch, Vincent Fontana, Arthur Lewis, *Marion B. Sulsberger* and J. Murray Steele. Annals of Internal Medicine 52: 1035–1041, May 1960.
126. "Tobacco and Renal Function and Diseases of the Urinary Tract. A Review of the Effects of Smoking and Nicotine Administration in Man and Animals," by P. S. Larson, *H. B. Haag* and H. Silvette. Virginia Medical Monthly 87: 332–341, June 1960.
127. "Effects of Ergometrine (Ergonovine) on the Isolated Atherosclerotic Heart of the Cholesterol-Fed Rabbit," by Dorothy Karp, Seymour H. Rinzler and *Janet Travell*. British Journal of Pharmacology 15: 333–344, June 1960. (JMF, NHI)
128. "The Relationship Between Biochemical Activity and Mechanical Function of the Heart," by *Richard J. Bing*. Proceedings of the Sixth International Congress of Internal Medicine, Basel: 30–36, 1960. (PHS, LIMRF, AHA, MCHA, AL, BWF).
129. "The Effect of Methylcholanthrene on the Gastrointestinal Tract of the Duck," by *R. H. Rigdon*. Texas Reports on Biology and Medicine 18: 275–283, Summer 1960. (NCI)
130. "Studies on the Effects of Acetaldehyde on Tissue Cells Cultivated *In Vitro*," by *Donald M. Pace* and Alice Elliott. Cancer Research 20: 868–875, July 1960. (NCI)
131. "The effect of Indole-3-Acetic Acid on Formaldehyde Metabolism," by Clifford S. Sato. Journal of Biological Chemistry 235: 2087–2091, July 1960. (Grantee: *J. Bonner*)
132. "Tobacco Amblyopia. The Evolution and Natural History of a 'Tobaccogenic' Disease," by H. Silvette, *H. B. Haag* and P. S. Larson. American Journal of Ophthalmology 50: 71–100, July 1960.
133. "A Correlated Histological Cytological, and Cytochemical Study of the Tracheobronchial Tree and Lungs of Mice Exposed to Cigarette Smoke. II. Varying Responses of Major Bronchi to Cigarette Smoke, Absence of Bronchogenic Carcinoma After Prolonged Exposure, and Disappearance of Bronchial Lesions After Cessation of Exposure," by *Cecilie Leuchtenberger*, Rudolf Leuchtenberger, William Zebrun and Patricia Shaffer. Cancer 13: 721–732, July–August 1960.
134. "Quantitative Cytochemical Studies on the Relation of Deoxyribonucleic Acid of Cells to Various Pathological Conditions," by *Cecilie Leuchtenberger* and Rudolf Leuchtenberger. Biochemical Pharmacology 4: 128–163, August 1960. (PHS, BF, EUPF, FFF)

135. "The Isolation and Structure of a Ketoamide Formed in the Metabolism of Nicotine," by Herbert McKennis Jr., Edward R. Bowman and Lennox B. Turnbull. Journal of the American Chemical Society 82: 3974–3976, August 5, 1960. (Grantee: *P. S. Larson*) (AT)
136. "Effect of Ischemia and Reoxygenation on Glycolytic Reactions and Adenosinetriphosphate in Heart Muscle," by William H. Danforth, Siegfried Naegle and *R. J. Bing*. Circulation Research 8: 965–971, September 1960. (AHA, AL, BW, LIMRF, PHS)
137. "Physiological Research in Chronic Pulmonary Disease: An Evaluation of Alveolar Aeration, Oxygen and Carbon Dioxide Transfer and the Pulmonary Circulation," by *Hurley L. Motley*. Diseases of the Chest 38: 250–260, September 1960. (NIH)
138. "Tumor-Host Relationships Studied *in Vitro:* Experiments with Tissue Slices," by *Leopold R. Cerecedo*, Sister Marian Jose Smith and Jesus Vicente. Biochemical and Biophysical Research Communications 3: 328–332, September 1960. (DRMF, NCI)
139. "Possible Mechanism of the Decline in Mechanical Efficiency of the Isolated Heart," by K. Kako, J. D. Choudhury and *R. J. Bing*. Journal of Pharmacology and Experimental Therapeutics 130: 46–54, September 1960. (AHA, AL, BW, LIMRF, PHS)
140. "Biosynthesis of the Nicotiana Alkaloids," by *R. F. Dawson*. American Scientist 48: 321–340, September 1960. (AEC, AT, C, M, P, RF)
141. "Nicotine and Its Botanical Sources," by *R. F. Dawson*, Marie L. Solt and D. R. Christman. Annal of the New York Academy of Sciences 90: 7–12, September 27, 1960. (AEC, GC, AT, RF)
142. "Absorption of Nicotine From Various Sites," by *Janet Travell*. Annals of the New York Academy of Sciences 90: 13–30, September 27, 1960.
143. "Absorption of Nicotine Under Various Conditions of Tobacco Use," by *P. S. Larson*. Annals of the New York Academy of Sciences 90: 31–35, September 27, 1960.
144. "The Excretion and Metabolism of Nicotine," by *Herbert McKennis Jr.* Annals of the New York Academy of Sciences 90: 36–42, September 27, 1960.
145. "The Pharmacological Actions of Nicotine," by *Julius H. Comroe Jr.* Annals of the New York Academy of Sciences 90: 48–51, September 27, 1960. (NHI, CRI)
146. "The Mechanism of Ganglionic Blockade Produced by Nicotine," by Edward W. Pelikan. Annals of the New York Academy of Sciences 90: 52–69, September 27, 1960.
147. "The Acute Effect of Cigarette Smoking on the Digital Circulation in Health and Disease," by *Jack Freund* and Claire Ward. Annals of the New York Academy of Sciences 90: 85–101, September 27, 1960.
148. "Influence of Nicotine on the Blood Flow of Resting Skeletal Muscle and of the Digits of Normal Subjects," by Hans Rottenstein, George Peirce, Ellier Russ, David Felder and *Hugh Montgomery*. Annals of the New York Academy of Sciences 90: 102–113, September 27, 1960.
149. "Effect of Smoking on the Peripheral Circulation in Relation to Environmental Temperature," by *J. Edwin Wood*. Annals of the New York Academy of Sciences 90: 114–118, September 27, 1960.
150. "The Acute Effect of Chewing Tobacco and Smoking in Habitual Users," by *David L. Simon* and Arnold Iglauer. Annals of the New York Academy of Sciences 90: 119–132, September 27, 1960.
151. "Responses of the Peripheral Veins in Man to the Intravenous Administration of Nicotine," by *John W. Eckstein* and A. W. Horsley. Annals of the New York Academy of Sciences 90: 133–137, September 27, 1960. (NHI)
152. "Tobacco Hypersensitivity," by Vincent J. Fontana. Annals of the New York Academy of Sciences 90: 138–141, September 27, 1960. (Grantee: *M. B. Sulzberger*)
153. "Tobacco Hypersensitivity: Peripheral Circulatory Implications," by *W. Redisch*, K. Meckeler, W. Brown and J. M. Steele. Annals of the New York Academy of Sciences 90: 142–144, September 27, 1960.
154. "Cardiac Effects of Intracoronary Arterial Injections of Nicotine," by *Samual Bellet*, James W. West and Santiago V. Guzman. Annals of the New York Academy of Sciences 90: 156–160, September 27, 1960. (LIMRF)

155. "Coronary Blood Flow and Cardiac Oxygen Metabolism During Nicotine-Induced Increases in Left Ventricular Work," by Ivan E. Forte, A. Jane Williams, Louis Potgeiter, J. E. Schmitthenner, *J. H. Hafkenschiel* and Cecilia Riegel. Annals of the New York Academy of Sciences 90: 174–185, September 27, 1960. (NHA, CPA, HASP)
156. "Effect of Cigarette Smoking on Coronary Circulation and Cardiac Work in patients with Arteriosclerotic Coronary Disease," by Timothy J. Regan, Harper K. Hellems and *Richard J. Bing*. Annals of the New York Academy of Sciences 90: 186–189, September 27, 1960. (AHA, NHI, LIMRF)
157. "The Effect on Rats of Chronic Exposure to Cigarette Smoke," by *H. B. Haag*, P. S. Larson and J. H. Weatherby. Annals of the New York Academy of Sciences 90: 227–238, September 27, 1960.
158.. "Circulatory Responses to Smoking in Healthy Young Men," by *Caroline Bedell Thomas* and Edmond A. Murphy. Annals of the New York Academy of Sciences 90: 266–276, September 27, 1960.
159. "Comparison of Cardiovascular and Related Characteristics in Habitual Smokers and Non-Smokers," by Henry Blackburn, Josef Brozek, Henry L. Taylor and *Ancel Keys*. Annals of the New York Academy of Sciences 90: 277–289, September 27, 1960. (NHI)
160. "Cardiac Effects of Nicotine in the Rabbit With Experimental Coronary Atherosclerosis," by *Janet Travell*, Seymour H. Rinzler and Dorothy Karp. Annals of the New York Academy of Sciences 90: 290–301, September 27, 1960. (JMF)
161. "The Chronic Effects of Orally Administered Nicotine in Cholesterol-Fed Rabbits," by *Duane G. Wenzel*, Jasbir Singh Kamal and James A. Turner. Annals of the New York Academy of Sciences 90: 302–307, September 27, 1960.
162. "Effect of Nicotine on the Coronary Blood Flow in the Presence of Coronary Insufficiency: An Experimental Study in Dogs," by *Samuel Bellet*, James W. West, Ugo C. Manzoli, Otto F. Müller and Paolo Rossi. Annals of the New York Academy of Sciences 90: 317–326, September 27, 1960. (EL)
163. "The Development of a Near-Diploid *in Vitro* Strain From a Smoke-Condensate Induced Mouse Tumor," by M. Mizutani, Y. Ohnuki, Y. H. Nakanishi and *C. M. Pomerat*. Texas Reports on Biology and Medicine 18: 455–469, Fall 1960.
164. "A Correlated Histological, Cytological, and Cytochemical Study of the Tracheobronchial Tree and Lungs of Mice Exposed to Cigarette Smoke. III. Unaltered Incidence of Grossly Visible Adenomatous Lung Tumors in Female CF_1 Mice After Prolonged Exposure to Cigarette Smoke," by Rudolf Leuchtenberger, *Cecilie Leuchtenberger*, William Zebrun and Patricia Shaffer. Cancer 13: 956–958, September-October 1960.
165. "The Effect of Smoke and Non-Smoke Gases on Cells in Cell and Organ Cultures," by *Philip Cooper* and Irene P. Goldring, (46th Clinical Congress of the American College of Surgeons.) Surgical Forum 11: 72–73, October 1960.
166. "Characteristics of Smokers Compared With Non-Smokers in a Population of Healthy Young Adults, Including Observations on Family History, Blood Pressure, Heart Rate, Body Weight, Cholesterol and Certain Psychological Traits," by *Caroline Bedell Thomas*. Annals of Internal Medicine 53: 697–718, October 1960. (NHI)
167. "The Circulatory Response to Smoking: The Effect of Small Doses of Hexamethonium and of Mephentermine on the Pattern of Response," by *Caroline Bedell Thomas* and Edmond A. Murphy. Journal of Chronic Diseases 12: 534–543, November 1960. (VA)
168. "Effects of Hypertensin on Arterial Blood Pressure, Heart Work and Cardiac Oxygen Utilization," by Ivan E. Forte, Louis Potgieter and Jerry E. Schmitthenner. Circulation Research 8: 1235–1241, November 1960. (Grantee: *J. H. Hafkenschiel*) (CIBA, CPA, HASP, NHI)
169. "Changing Concepts of the Role of Tobacco in the Management of Disease," by Paul S. Larson, *Harvey B. Haag* and Herbert Silvette. American Journal of the Medical Sciences 240: 613–635, November 1960.
170. "Biosynthesis of Anabasine and of Nicotine by Excised Root Cultures of *Nicotiana Glauca*," by Marie L. Solt, *R. F. Dawson* and D. R. Christman. Plant Physiology 35: 887–894, November 1960. (AEC)

171. "The Biosynthesis of Nicotine from Nicotinic Acid: Chemical and Radiochemical Yields," by *R. F. Dawson*, D. R. Christman, M. L. Solt and A. P. Wolf. Archives of Biochemistry and Biophysics 91: 114–150, November 1960. (AEC)
172. "The Pathologic Anatomy of the Bronchial Tree and Lungs," by *Stanley P. Reimann*. Archives of Pathology 70: 757–762, December 1960.
173. "Common Circulatory Measurements in Smokers and Non-Smokers," by Henry W. Blackburn, *Josef Brozek* and Henry L. Taylor. Circulation 22: 1112–1124, December 1960. (NHI)
174. "Storage of Catecholamines in the Heart. Effect of Amine Oxidase Inhibitors," by K. Kako, A. Chrysohou and *Richard J. Bing*. American Journal of Cardiology 6: 1109–1111, December 1960. (PHS, AHA, AL, HLR)
175. "Paper Chromatographic Determination of Rutin in Tobacco," by C. Y. Yang, W. Chorney, W. Dunlap, E. L. Murphy, Y. Nakagawa, N. Scully, R. Watanabe and *S. Wender*. Tobacco Science 4: 238–242, December 23, 1960. (AEC)
176. "Practical Limitations of the Kety Method of Determining Coronary Blood Flow by Infrared Analysis of Blood Nitrous Oxide," by I. E. Forte, L. Potgieter, J. E. Schmitthenner, H. S. Neal and *J. H. Hafkenschiel*. American Heart Journal 61: 81–87, January 1961. (HASP, CIBA, CPA, NHI)
177. "Circulatory Effects of Pipe and Cigar Smoking," by *David L. Simon* and Arnold Iglauer. American Journal of the Medical Sciences 241: 22–30, January 1961.
178. "Some Evidence for a Mechanical Receptor in Olfactory Function," by Showa Ueki and *Edward F. Domino*. Journal of Neurophysiology 24: 12–25, January 1961.
179. "Tobacco. Experimental and Clinical Studies," by P. S. Larson, *H. B. Haag* and H. Silvette. Published by The Williams & Wilkins Co., Baltimore, January 1961.
180. "Some Effects of Nicotine and Smoking on Metabolic Functions," by P. S. Larson, *H. B. Haag* and H. Silvette. Clinical Pharmacology and Therapeutics 2: 80–109, January–February 1961.
181. "Some Harvard Men and the Smoking Habit," by *Carl C. Seltzer*. Harvard Harvard Alumni Bulletin 63: 338–339, February 4, 1961.
182. "Effects of Mecamylamine on the Golgi Recurrent Collateral-Renshaw-Cell Synapse in the Spinal Cord," by S. Ueki, K. Koketsu and *E. F. Domino*. Experimental Neurology 3: 141–148, February 1961. (PHS)
183. "Cigarette Smoking and Ischemic Heart Disease," by B. Bronte-Stewart. British Medical Journal 1: 379–388, February 11, 1961. (Includes companion papers.) (Grantee: *A. Keys*)
184. "Myocardial Response to Cigarette Smoking in Normal Subjects and Patients With Coronary Disease," by R. J. Regan, M. J. Frank, J. F. McGinty, E. Zobl, H. K. Hellems and *R. J. Bing*. Circulation 23: 365–369, March 1961. (PHS, AHA, LIMRF, AL, BWF)
185. "A Study of the Tracheobronchial Epithelium and Changes Related to Smoking," by K. R. Cross, Donald V. Walz, G. Keith Palmer and *E. D. Warner*. Journal of the Iowa State Medical Society 51: 137–140, March 1961.
186. "Factors Affecting Myocardial Storage and Release of Catecholamines," by Kyohei Kako, Athanasios Chrysohou and *Richard J. Bing*. Circulation Research 9: 295–299, March 1961. (PHS, LIMRF, AHA, MCHA, AL, BWF)
187. "Tumor-Host Relationships Studied *in Vitro:* Experiments With Cell-Free Systems," by *Leopold R. Cerecedo*, Sister Marian Jose Smith and Jesus Vicente. Archives of Biochemistry and Biophysics 92: 484–486, March 1961. (DRMF, NCI)
188. "The Bacterial Oxidation of Nicotine. IV. The Isolation and Identification of 2,6-Dihydroxy-*n*-Methylmyosmine," by S. H. Richardson and *Sydney C. Rittenberg*. Journal of Biological Chemistry 236: 959–963, March 1961.
189. "The Bacterial Oxidation of Nicotine, V. Identification of 2,6-Dihydroxy-Pseudooxynicotine as the Third Oxidative Product," by S. H. Richardson and *Sydney C. Rittenberg*. Journal of Biological Chemistry 236: 964–967, March 1961.

190. "Changes in Modal Values of Chromosomes After Irradiation of Human Amnion Cells," by M. Mizutani, Y. Ohnuki, Y. H. Nakanishi and *C. M. Pomerat*. Proceedings of the Conference on Research on Radiotherapy of Cancer: 51–69, April 1961. (Published by the American Cancer Society) (USAF)
191. "Pathogenetic Interrelations in Hypertension and Coronary Artery Disease," by *Caroline Bedell Thomas*. Diseases of the Nervous System 22: 39–45, April 1961. (NHI, VA)
192. "Pulmonary Neoplasms Produced by Methylcholanthrene in the White Pekin Duck," by *R. H. Rigdon*. Cancer Research 21: 571–574, May 1961. (NCI)
193. "Measurement of Coronary Blood Flow Using Radioactive Iodine Compared With Nitrous Oxide," by Ivan E. Forte, Jerry E. Schmitthenner and Hunter S. Neal. Circulation Research 9: 547–551, May 1961. (Grantee: *J. H. Hafkenschiel*) (CIBA, CPA, HASP, NHI)
194. "Effect of Cigarette Smoking and Nicotine on Serum Free Fatty Acids," by Alfred Kershbaum, *Samuel Bellet*, Edward R. Dickstein and Leonard J. Feinberg. Circulation Research 9: 631–638, May 1961. (PHS)
195. "Cardiovascular Interaction of Nicotine, Ergonovine, and Hypercholesterolemia in the Rabbit," by *Duane G. Wenzel*, James A. Turner, Scott W. Jordan and Jasbir Singh. Circulation Research 9: 694–699, May 1961. (UKGRF)
196. "Metabolic Activity of the Intact Heart," by *Richard J. Bing*. American Journal of Medicine 30: 679–691, May 1961. (PHS, AHA, MCHA, LIMRF, JAHF)
197. "Mammallian Degradation of (-)-Nicotine to 3-Pyridylacetic Acid and Other Compounds," by *Herbert McKennis Jr.*, Edward R. Bowman and Lennox B. Turnbull. Proceedings of the Society for Experimental Biology and Medicine 107: 145–148, May 1961. (AT)
198. "Buerger Syndrome in the Orient," by *Victor A. McKusick* and Willard S. Harris. Lancet 1: 1117–1118, May 20, 1961. (PHS)
199. "Demethylation in the Metabolism of (-)-Nicotine *in Vivo*," by *Herbert McKennis Jr.*, Einosuke Wada, Edward R. Bowman and Lennox B. Turnbull. Nature 190: 910–911, June 3, 1961. (AT)
200. "The Role of Exercise Tests in the Diagnosis of Coronary Artery Insufficiency," by I. E. Forte, *J. H. Hafkenschiel*, Jerry E. Schmitthenner, Hunter S. Neal and C. A. Daugherty. American Heart Journal 61: 756–762, June 1961. (CIBA, CPA, HASP, NHI)
201. "Action of Nicotine and Tobacco-Smoking on the Adrenal Medulla," by H. Silvette, P. S. Larson and *H. B. Haag*. Archives of Internal Medicine 107: 915–931, June 1961.
202. "Effects of Atrial and Ventricular Fibrillation and Ventricular Tachycardia on Carbohydrate Metabolism of the Heart," by Michael Klarwein, Kyohei Kako, Athanasios Chrysohou and *Richard J. Bing*. Circulation Research 9: 819–825, July 1961. (PHS, AHA, MCHA, LIMRF, AL, BWF)
203. "Discussion" (Panel on Recent Progress and Present Problems in the Field of Shock), by *Richard J. Bing*. Federation Proceedings 200: 72–73, July 1961. (PHS, AHA, MCHA, LIMRF)
204. "Norcotinine (Desmethylcotinine) as a Urinary Metabolite of Nornicotine," by Einosuke Wada, Edward R. Bowman, Lennox B. Turnbull and *Herbert McKennis Jr.* Journal of Medicinal and Pharmaceutical Chemistry 4: 21–30 July 1961. (AT)
205. "Acute Effects of Inhalation of Cigarette Smoke on Airway Conductance," by Jay A. Nadel and *Julius H. Comroe Jr.* Journal of Applied Physiology 16: 713–716, July 1961. (CAL)
206. "Constitution and Smoking," by *Albert Damon*. Science 134: 339–341, August 4, 1961.
207. "Contractile Proteins of Heart Muscle in Man," by *Richard J. Bing* and K. Kako. Circulation 24: 483–490, August 1961—Part II. (PHS, LIMRF, AHA, MCHA, AL, BWF)
208. "Extraction and Release of Individual Free Fatty Acids by the Heart and Fat Depots," by Martin E. Rothlin and *Richard J. Bing*. Journal of Clinical Investigation 40: 1380–1386, August 1961. (PHS, AHA, MCHA, LIMRF, AL, BWF)
209. "A Protozoan Assay for Carcinogenic Hydrocarbons," by *Robert W. Hull*. Proceedings of the International Conference on Protozoology, Prague, Czechoslovakia, August 24, 1961. (Ms: 1–10)

210. "The Gibberellic Acid Inhibition of Nicotine Biosynthesis," by M. L. Solt, *R. F. Dawson* and D. R. Christman. Tobacco Science 5: 95–98, September 8, 1961.
211. "Rehabilitation in Heart Disease," by *R. J. Bing*. Archives of Environmental Health 3: 62–65, September 1961. (PHS, LIMRF, AHA, MCHA)
212. "Normal Rabbits' Aortic and Myocardial Cells Grown in Various Culture Media," by T. Kokubu and *O. J. Pollak*. Experimental Cell Research 24: 415–423, September 1961. (NHI)
213. "Cancer of the Lung 1930 to 1960: A Review," by *R. H. Rigdon* and Helen Kirchoff. Texas Reports on Biology and Medicine 19: 465–513, Fall 1961.
214. "Some Comparative Effects of Smoked Paper, Tobacco and Cigarettes on Chromosomes *in Vitro*," by Akio Awa, Yasushi Ohnuki and *C. M. Pomerat*. Texas Reports on Biology and Medicine 19: 518–528, Fall 1961. (NIH)
215. "Determination of Arsenic in Flue-Cured Tobacco and in Soils," by H. G. Small, Jr., and *C. B. McCants*. Soil Science Society of America Proceedings 25: 346–348, September-October 1961.
216. "Lesions in Ducks Given Methylcholanthrene," by *R. H. Rigdon* and S. M. McAnelly. Archives of Pathology 72: 455–464, October 1961. (NCI)
217. "Congestive Heart Failure. Its Physiopathology and Treatment, With Special Reference to Intractable Heart Failure," by William H. Morse and *Richard J. Bing*. Postgraduate Medicine 30: 293–300, October 1961. (PHS, LIMRF, AHA, MCHA)
218. "Dopa Uptake and Catecholamine Content in Heart and Spleen," by A. Wegmann, K. Kako and A. Chrysohou. American Journal of Physiology 201: 673–676, October 1961. (Grantee: *R. J. Bing*) (PHS, AHA, MCHA, AL, LIMRF, BWF)
219. "The Absorption of Nicotine From the Urinary Bladder of the Dog," by Joseph F. Borzelleca. Archives Internationales de Pharmacodynamie 133: 444–451, October 1961. (Grantee: *H. McKennis Jr.*) (AT, NIH)
220. "Hepatitis—a Feature of Periodic Peritonitis," by *Hobart A. Reimann*. Journal of the American Medical Association 178: 334–335, October 21, 1961.
221. "A Correlated Histological, Cytological and Cytochemical Study of the Tracheobronchial Tree and Lungs of Mice Exposed to Cigarette Smoke," by *Cecilie Leuchtenberger* and Rudolf Leuchtenberger. Acta Medica Scandinavica 170, Supplement 369: 102–118, 1961.
222. "Mycardial Metabolism in Progressive Muscular Dystrophy," by J. F. Sundermeyer, S. Gudbjarnason, V. E. Wendt, P. B. Den Bakker and *R. J. Bing*. Circulation 24: 1348–1355, December 1961. (PHS, AHA, MCHA, LIMRF, BWF, JAHF)
223. "Protective Effect of Parasympatheticomimetic Agents on Ciliated Mucus-Secreting Epithelium," by *Hans L. Falk*, Paul Kotin and Herta M. Tremer. Journal of the National Cancer Institute 27: 1379–1392, December 1961. (NCI, ACS, NIH)
224. "Common Human Viruses as Carcinogen Vectors," by *Christopher M. Martin*, S. Magnusson, P. J. Gosciensk and G. F. Hansen. Science 134: 1985–1986, December 15, 1961. (PHS 2)
225. "Flying-Spot Interference Television Microscope," by *P. O'B. Montgomery* and L. L. Hundley. Nature, 192: 1059–1060, December 16, 1961. (AEC, DRMF, SWMF)
226. "Morphological and Cytological Study of Human Amnion Cells in the Course of Recovery From Radiation Injury," by Masahiro Mizutani, Yuh H. Nakanishi and *C. M. Pomerat*. Texas Reports on Biology & Medicine 19: 811–824, Winter 1961. (USAF)
227. "Normal Roentgenographic Anatomy of the Human Circle of Willis," by *Robert A. Kuhn*. American Journal of Roentgenology 86: 1040–1049, December 1961.
228. "Effects of Acetone and Phenol on Established Cell Lines Cultivated *in Vitro*," by *Donald M. Pace* and Alice Elliott. Cancer Research 22: 107–112, January 1962. (CF)
229. "Effect of Nicotine on the Coronary Blood Flow and Related Circulatory Parameters," by *Samuel Bellet*, James W. West, Otto F. Müller and Ugo C. Manzoli. Circulation Research 10: 27–34, January 1962. (AHA, EL, LIMRF)
230. "Effects of Persantin (RA8), a New Coronary Vasodilator, on Coronary Blood Flow and Cardiac Dynamics in the Dog," by James W. West, *Samuel Bellet*, Ugo C. Manzoli and Otto F. Müller. Circulation Research 10: 35–44, January 1962. (AHA, EL, LIMRF)

231. "Transplantation of the Heart," by *Richard J. Bing*, Chiyo Chiba, Athanasios Chrysohou, Paul L. Wolf and Sigmundur Gudbjarnason. Circulation 25: 273–276, February 1962. (PHS, AHA, MCHA, LIMRF, AL, BWF, JAHF)
232. "Effects of Selective Ultraviolet Irradiation of the Nuclei of Living Cells," by *P. O'B. Montgomery*, F. Van Orden, L. L. Hundley, C. L. Chapman, and J. E. Cook. Proceedings of the Society for Experimental Biology and Medicine 108: 372–375, November 1961.
233. "Affinity of Polycyclic Aromatic Hydrocarbons for Electrons with Thermal Energies: Its Possible Significance in Carcinogenesis," by J. E. Lovelock, A. Zlatkis and *R. S. Becker*. Nature 193: 540–541, February 10, 1962.
234. "Periodic Fever, an Entity. A Collection of 52 Cases," by *H. A. Reimann*, American Journal of the Medical Sciences 243: 162–174, February 1962.
235. "The Buerger Syndrome in the Orient," by *Victor A. McKusick* and Willard S. Harris. Bulletin of the Johns Hopkins Hospital 109: 241–291, December 1961. (ECJ)
236. "Autoxidation of Nicotine. II. Products and Proposed Mechanism," by F. Paul Gavin and *Robert H. Linnell*. Tobacco Science 6: 28–31, February 23, 1962.
237. "Comparison of Smokers and Non-Smokers. II. The Distribution of ABO and Rh (D) Blood Groups," by Bernice Hirschhorn Cohen and *Caroline Bedell Thomas*. Bulletin of the Johns Hopkins Hospital 110: 1–7, January 1962. (NHI, PHS)
238. "Residual Arsenic in Soils and Concentration in Tobacco," by E. G. Small Jr. and *C. B. McCants*. Tobacco Science 6: 34–36, March 9, 1962.
239. "The Relationship Between Coronary Blood Flow, Myocardial Oxygen Consumption and Cardiac Work as Influenced by Persantin," by Vernon E. Wendt, John F. Sundermeyer, Pancras B. Den Bakker and *Richard J. Bing*. American Journal of Cardiology 9: 449–454, March 1962. (PHS, AHA, MCHA, LIMRE, BWF, JAHF)
240. "Demethylation in the Metabolism of (-)-Nicotine," by *Herbert McKennis Jr.*, Lennox B. Turnbull, Sorell L. Schwartz, Einosuke Tamaki and Edward R. Bowman. Journal of Biological Chemistry 237: 541–546, February 1962. (AT)
241. "Induction of Changes in Surface Activity of Strain L Cells at Gas-Membrane Interfaces," by *Philip Cooper*, Irene Goldring and Morris Klein. Science 135: 725–726, March 2, 1962.
242. "Psychological, Cultural, and Health Characteristics of Aging Smokers and Non-Smokers," by *Frederick E. Whiskin*, Andrew S. Dibner and Paul J. Rhudick. Journal of Gerontology 17: 69–74, January 1962.
243. "Metabolic, Histologic and Histochemical Aspects of the Homografted Heart," by *R. J. Bing*, C. Chiba, A. Chrysohou, S. Gudbjarnason and P. L. Wolf. Transactions of the Association of American Physicians 74: 318–332, 1961. (PHS, AHA, MCHA, LIMRF, BWF, AL, JAHF)
244. "Panlobar Emphysema: Anatomy and Pathodynamics," by *John P. Wyatt*, Vernon W. Fischer and Herbert C. Sweet. Diseases of the Chest 41: 239–259, March 1962.
245. "The Vibrocardiographic Exercise Test for Coronary Insufficiency," by *Clarence M. Agress* and Stanley Wegner. American Journal of Cardiology 9: 541–546, April 1962. (PHS, USAF, LACHA)
246. "Synthesis of Pyrrolidine Ring of Nicotine From Several C^{14}-Labeled Metabolites of *Nicotiana Rustica*," by Pei-Hsing Lin Wu, Thomas Griffith and *Richard U. Byerrum*. Journal of Biological Chemistry 237: 887–890, March 1962.
247. "Skin Grafting in Mongrel Dogs," by D. B. Pilcher, W. E. Johnson, R. Korson and *J. H. Jacobson II*. Plastic and Reconstructive Surgery 28: 670–680, December 1961.
248. "Influence of Arsenic Applied to the Growth Media on the Arsenic Content of Flue-Cured Tobacco," by H. G. Small Jr. and *C. B. McCants*. Agronomy Journal 54: 129–133, March–April 1962.
249. "The Actions of Nicotine on Central Nervous System Functions," by H. Silvette, E. C. Hoff, P. S. Larson and *H. B. Haag*. Pharmacological Reviews 14: 137–173, March 1962.
250. "Studies on the Metabolism of (-)-Cotinine in the Human," by Edward R. Bowman and *Herbert McKennis Jr.* Journal of Pharmacology and Experimental Therapeutics 135: 306–311, March 1962. (AT)

251. "Catecholamines in Homologous Heart Grafts," by W. Wegmann, C. Chiba, A. Chrysohou and *R. J. Bing*. Proceedings of the Society for Experimental Biology and Medicine 109: 543–545, March 1962. (PHS, LIMRF, MCHA, JAHF, BWF)
252. "Coronary Vasomotor Tonus in Atherosclerotic Dogs," by Cecil E. Cross and Robert W. Oblath. American Journal of Physiology 202: 616–618, April 1961. (Grantee: *P. F. Salisbury*)
253. "Studies on Figure Drawings: A Review of the Literature (1949–1959)," by Leona W. Jones and *Caroline B. Thomas*. Psychiatric Quarterly Supplement 35: 212–261, 1961, Part 2.
254. "Studies on the Biosynthesis of the Pyridine Ring of Nicotine," by Thomas Griffith, Kenneth P. Hellman and *Richard U. Byerrum*. Biochemistry 1: 336–340, March 1962.
255. "Studies on the Transplanted Heart. Its Metabolism and Histology," by C. Chiba, P. L. Wolf, S. Gudbjarnason, A. Chrysohou, H. Ramos, B. Pearson and *R. J. Bing*. Journal of Experimental Medicine 115: 853–866, April 1962. (PHS, AHA, MCHA, LIMRF, BWF, JAHF)
256. "The Buerger Syndrome in the United States. Arteriographic Observations With Special Reference to Involvement of the Upper Extremities and the Differentiation from Atherosclerosis and Embolism," by *Victor A. McKusick*, Willard S. Harris, Ole E. Ottesen and Richard M. Goodman. Bulletin of the Johns Hopkins Hospital 110: 145–176, March 1962. (NHI)
257. "Hereditary Periodic Edema. The Interrelation of Familial Periodic Disorders," by *Hobart A. Reimann*. American Journal of the Medical Sciences 423: 727–739, June 1962.
258. "The Effect of Cigarette Smoking on Coronary Blood Flow and Cardiac Work in Normal Subjects and Patients with Coronary Disease," by *R. J. Bing*. Chapter 4 in "Tobacco and Health," published by Charles C. Thomas, June 1962: 48–50. (PHS, LIMRF, AHA, MCHA)
259. "Tobacco in Health and Disease. Effect on Peripheral Circulation," by *J. Edwin Wood*. Chapter 5 in "Tobacco and Health:" 51–57.
260. "The Significance of Mouse Skin Tests of Cigarette Smoke Condensate," by *Fred G. Bock* and George E. Moore. Chapter 7 in "Tobacco and Health:" 72–86.
261. "A Correlated Histological, Cytological, and Cytochemical Study of the Major Bronchi From Mice Exposed to Cigarette Smoke," by *Cecilie Leuchtenberger* and Rudolf Leuchtenberger. Chapter 8 in "Tobacco and Health:" 87–104.
262. "Bronchial Pathology in Man," by *Stanley P. Reimann*. Chapter 10 in "Tobacco and Health:" 123–135.
263. "The Effect of Smoking and Nicotine on Respiration," by *J. H. Comroe Jr.* and Jay Nadel. Chapter 17 in "Tobacco and Health," 233–243. (CAL, PHS).
264. "Environfental Factors and Lung Cancer," by *Paul Kotin*. Chapter 18 in "Tobacco and Health:" 244–263.
265. "The Personal and Social Psychology of Smoking," by *Charles C. McArthur*. Chapter 20 in "Tobacco and Health:" 291–299.
266. "Cardiovascular and Related Characteristics in Habitual Smokers and Nonsmokers," by Henry W. Blackburn, Josef Brozek, Henry L. Taylor and *Ancel Keys*. Chapter 23 in "Tobacco and Health:" 323–351. (NHI)
267. "Tobacco Allergy and Vascular Responses," by *Walter Redisch*. Chapter 24 in "Tobacco and Health:" 352–359.
268. "Interrelationship of Smoking and Peptic Ulcer," by *Philip Cooper* and Harold K. Tsuji. Chapter 27 in "Tobocco and Health:" 402–408.
269. "Buerger's Disease: A Distinct Clinical and Pathologic Entity," by *Victor A. McKusick*, W. S. Harris, O. E. Ottesen, R. M. Goodman, W. M. Shelley and R. D. Bloodwell. Journal of the American Medical Association 181: 5–12, July 7, 1962. (NHI)
270. "Alterations in Growth of Strain L Cells Exposed to Smoke Gases," by *Philip Cooper*, Morris Klein and Irene P. Goldring. Proceedings of the Society for Experimental Biology and Medicine 110: 11–13, May 1962.
271. "Influence of Nicotine on Cells of Rabbits' Aorta and Myocardium in Tissue Cultures," by Tatsuo Kokubu and *O. J. Pollak*. Experimental and Molecular Pathology 1: 293–303, June 1962. (NHI)
272. "Constitution and Smoking in Italian-American Factory Workers," by *Albert Damon*. American Journal of Physical Anthropology 20: 67–68, March 1962.

273. "Myocardial Metabolism in a Patient With Hashimoto's Thyroiditis and Hypothyroidism," by P. B. Den Bakker, J. F. Sundermeyer, V. E. Wendt, M. Salhaney, S. Gudbjarnason and *R. J. Bing*. American Journal of Medicine 32: 822–826, May 1962. (PHS, AHA, MCHA, LIMRF, BWF, JAHF)
274. "An Ultraviolet Microbeam Television System," by W. A. Bonner. Annals of the N.Y. Academy of Sciences 97: 408–411, June 5, 1962. (Grantee: *P. O'B. Montgomery*) (AEC, DRMF, SWMF)
275. "Simultaneous Ultraviolet and Visible Light Flying Spot Television Microscopy," by *P. O'B. Montgomery*. Annals of the N.Y. Academy of Sciences 97: 491–497, June 5, 1962. (AEC, DRMF, SWMF)
276. "Local Circulation in Health Muscle Studied With Na^{24} Clearance Method," by *P. F. Salisbury*, C. E. Cross, R. W. Oblath and P. A. Rieben. Journal of Applied Physiology 17: 475–478, May 1962.
277. "Effect of Cigarette Smoking on Free Fatty Acids in Patients With Healed Myocardial Infraction," by A. Kershbaum, *S. Bellet*, R. F. Caplan and L. J. Feinberg. American Journal of Cardiology 10: 204–208, August 1962. (NHI, PHS)
278. "The Low-Fat Diet for Periodic Peritonitis," by *Hobart A. Reimann*. American Journal of Gastroenterology 38: 85–90, July 1962.
279. "The Redox-Potential of the Lactate-Pyruvate System in Blood as an Indicator of the Functional State of Cellular Oxidation," by S. Gudbjarnason and *Richard J. Bing*. Biochimica et Biophysica Acta 60: 158–162, June 1962.) PHS, AHA, MCHA, LIMRF, LIMRF, BWF, JAHF)
280. "Ventricular Performance Modified by Elastic Properties of Outflow System," by *P. F. Salisbury*, C. E. Cross and P. A. Rieben. Circulation Research 11: 319–328, August 1962. (NHI)
281. "Mechanism of the Positive Chronotropic Response to Nicotine," by Floyd E. Leaders and *J. P. Long*. Journal of Pharmacology and Experimental Therapeutics 137: 206–212, August 1962. (PHS)
282. "The role of the Heart in Shock," by *Richard J. Bing* and Herminio Ramos. Journal of the American Medical Association 181: 871–873, September 8, 1962. (PHS, AHA, MCHA, LIMRF, BWF, JAHF)
283. "The Speed of Cerebral Circulation," by *Robert A. Kuhn*. New England Journal of Medicine 267: 689–695, October 4, 1962.
284. "Cultivation of Normal and Malignant Human Lung Tissue. 1. The Establishment of Three Adenocarcinoma Cell Strains," by Mary V. Reed and *George O. Gey*. Laboratory Investigation 11: 638–652, August 1962. (ACS, NCI)
285. "Studies on the Respiratory and Cardiovascular Effects of (—)-Cotinine," by J. F. Borzelleca, E. R. Bowman, and *H. McKennis Jr.* Journal of Pharmacology and Experimental Therapeutics 137: 313–318, September 1962. (AT)
286. "Total Calf and Muscle Nutritive Blood Flow During Tobacco Smoking," by *Jay D. Coffman* and Stanley L. Javett. Proceedings of the New England Cardiovascular Society 20: 37–39, 1961–62.
287. "Free Fatty Acid Concentration and Composition in Arterial Blood," by Martin E. Rothlin, Christine B. Rothlin and Vernon E. Wendt. American Journal of Physiology 203: 306–310, August 1962. (Grantee. *R. J. Bing*) (PHS, AHA, MCHA, LIMRF, BWF)
288. "Action of Nicotine on Coronary Vascular Resistance in Dogs," by Floyd E. Leaders and *J. P. Long*. American Journal of Physiology 203: 621–625, October 1962. (PHS)
289. "The Effect of Sulphur Dioxide Upon Established Cell Lines Cultivated *in Vitro*," by J. R. Thompson and *D. M. Pace*. Canadian Journal of Biochemistry and Biolphysics 40: 207–218, February 1962. (PHS)
290. "Coronary Vasomotor Tonus in Moderate Hypothermia," by Cecil E. Cross, P. André Rieben and *Peter F. Salisbury*. American Journal of Physiology 203: 825–828, November 1962.
291. "Oxidation Reduction in Heart Muscle. Theoretical and Clinical Considerations," by S. Gudbjarnason, R. O. Hayden, V. E. Wendt, T. B. Stock and *R. J. Bing*. Circulation 26: 937–945, November 1962. (PHS, AHA, MCHA, LIMRF, BWF, JAHF)
292. "Catecholamine Content of Various Organs in Experimental Hypertension," by A. Wegman, K. Kako, and *R. J. Bing*. American Journal of Physiology 203: 607–608, October 1962. (PHS, AHA, MCHA, LIMRF, BWF, JAHF, WL, GP)

293. "Potential Method for the Determination of Electron Affinities of Molecules: Application to Some Aromatic Hydrocarbons," by W. E. Wentworth and *Ralph S. Becker*. Journal of the American Chemical Society 84: 4263–4266, November 20, 1962. (HEW)
294. "The Corrected Structure of a Ketoamide Arising From the Metabolism of of (−)-Nicotine," by *H. McKennis Jr.*, L. B. Turnbull, E. R. Bowman and S. L. Schwartz. Journal of the American Chemical Society 84: 4598–4599, December 5, 1962. (AT)
295. "Normal Myocardial Metabolism." by *R. J. Bing*. Chapter in "Coronary Heart Disease," W. Likoff & J. H. Moyer, Editors, published by Grune & Stratton, 1963: 59–63. (AHA, MCHA, LIMRF, BWF, JAHF, PHS)
296. "Physiologic Basis for Prohibition Against Smoking," by *Samual Bellett* and Alfred Kershbaum. Chapter in "Coronary Heart Disease," W. Likoff and J. H. Moyer, Editors, published by Grune & Stratton, 1963: 436–444. (PHS)
297. "Pyrolysis Products of Rutin, Quercetin, and Chlorogenic Acid," by Alexis Zane and *S. H. Wender*. Tobacco Science 7: 21–23, February 8, 1963. (NHI)
298. "Pulmonary Lesions in Dogs From Methylcholanthrene," by *R. H. Rigdon* and G. Corssen. Archives of Pathology 75: 323–331, March 1963.
299. "Hypercholesteremia and Pulmonary Arterial Lesions Produced by Thromboplastin," by *Ira Gore*, Kenzo Tanaka and B. J. Larkey. American Journal of Pathology 42: 345–356, March 1963. (NHI 3, MAHA, JAHMF, FTR)
300. "N-Methylation of Nicotine and Cotinine *In Vivo*," by *H. McKenis Jr.*, L. B. Turnbull and E. R. Bowman. Journal of Biological Chemistry 238: 719–723, February 1963. (AT)
301. "The Synthesis of Hydroxycotinine and Studies on its Structure," by *H. McKennis Jr.*, L. B. Turnbull, E. R. Bowman and E. Tamaki. Journal of Organic Chemistry 28: 383–387, February 1963. (AT)
302. "Some Pharmacological Actions of Nicotine and a Mechanism for the Positive Chronotropic Response to Nicotine," by F. E. Leaders. Dissertation Abstracts 23/5 (62–4980): 1–57, November 1962. (Grantee: *J. P. Long*) (PHS)
303. "Contractile Proteins of Normal and Failing Human Heart," by Mary L. Nebel and *Richard J. Bing*. Archives of Internal Medicine 111: 190–195, February 1963. (AHA, MCHA, LIMRF, BWF, JAHS, PHS)
304. "The Response of Mucus-Secreting Epithelium and Mucus to Irritants," by *Hans L. Falk*, Paul Kotin and Winifred Rowlette. Annals of the New York Academy of Sciences 106: 583–608, March 30, 1963. (NCI)
305. "Cerebral Circulation and 'Cerebral Ischemia,'" by *Robert A. Kuhn*. World Neurology 3: 740–752, November–December 1962.
306. "MA/My Strain of the Marsh Albino Mouse," by *William S. Murray*. Journal of the National Cancer Institute 30: 605–610, March 1963. (ACS)
307. "The Anoxic Heart," by *R. J. Bing*. Chapter 11 in "The Etiology of Myocardial Infarction," International Symposium of the Henry Ford Hospital, 1961. Published by Little, Brown & Company, 1963: 175–198. (PHS, AHA, MCHA, LIMRF, JAHF)
308. "Nicotine in the Etiology of Myocardial Infarction," by *D. G. Wenzel*. Chapter 31 in "The Etiology of Myocardial Infarction," 1963; 499–520. (LIMRF, NHI, UKGRF)
309. "Cytological and Cytochemical Effects of Agents Implicated in Various Pathological Conditions: the Effect of Viruses and of Cigarette Smoke on the Cell and Its Nucleic Acids," by Cecilie Leuchtenberger and Rudolf Leuchtenberger. International Review of Cytology 14: 281–326, 1963.
310. "Cytological and Cytochemical Alterations in the Respiratory Tract of Mice After Exposure to Cigarette Smoke, Influenza Virus, and Both," by *Cecilie Leuchtenberger*, Rudolf Leuchtenberger, Fritz Ruch, Kayo Tanaka and Tatsuya Kanaka. Cancer Research 23: 555–565, May 1963.
311. "Nuclear 'Caps'—A Morphological Entity Produced by the Carcinogen 4-Nitroquinoline N-Oxide," by R. C. Reynolds, *P. O'B. Montgomery* and D. H. Karney. Cancer Research 23: 535–538, May 1963. (DRMF)
312. "Studies on the Degradation of the Pyrrolidine Ring of (—)-Nicotine *In Vivo*, by S. L. Schwartz and *H. McKennis Jr.* Journal of Biological Chemistry 238: 1807–1812, May 1963. (AT)
313. "The Effect of Cigarette Smoke Condensate on Rabbits' Cardiovascular Cells *In Vitro*," by R. Koide and *O. J. Pollak*. Experimental and Molecular Pathology 2: 243–250, June 1963 (NHI)

314. "The Role of Catcholamines in the Free Fatty Acid Response to Cigarette Smoking," by A. Kershbaum, R. Khorsandian, R. F. Caplan, *S. Bellet* and L. J. Feinberg. Circulation 28: 52–57, July 1963. (NHI, PHS)
315. "Integrative Study of the Circulation in Moderate Hypothermia," by *P. F. Salisbury*, Cecil E. Cross, and P. A. Rieben. American Journal of Cardiology 12: 184–193, August 1963. (NHI)
316. "Biomicroscopic Observations on Vasoconstrictive and Thrombogenic Effects Produced by Long-Chain Saturated Fatty Acids Within the Vasculature of the Wing of an Unanesthetized Bat," by *L. A. Soloff* and M. P. Wiedeman. Nature 199: 495–496, August 3, 1963. (PHS)
317. "The Respiratory Epithelium of Patients With Lung Cancer," by *W. H. Carnes*. Chapter in "The Morphological Precursors of Cancer," L. Severi, Editor. Published by the University of Perugia, Italy, 1962: 625–634. (PHS)
318. "Comprehensive Spectroscopic Investigation of Polynuclear Aromatic Hydrocarbons. I. Absorption Spectra and State Assignments for the Tetracyclic Hydrocarbons and their Alkyl-Substituted Derivatives," by *R. S. Becker*, I. S. Singh and E. A. Jackson. Journal of Chemical Physics 38: 2144–2171, May 1, 1963. (HEW)
319. "Electron Affinites and Ionization Potentials of Aromatic Hydrocarbons," by *Ralph S. Becker* and W. E. Wentworth. Journal of the American Chemical Society 85: 2210–2214, August 5, 1963. (HEW)
320. "Formation of Metabolites From Nicotine by a Rabbit Liver Preparation," by N. M. Papadopoulos and J. A. Kintzios. Journal of Pharmacology and Experimental Therapeutics 140: 269–277, June 1963. (Grantee: *E. C. Hoff*. (AT)
321. "Action of Nicotine on the Ascending Reticular Activating System," by D. E. Knapp and *E. F. Domino*. International Journal of Neuropharmacology 1: 333–351, 1962.
322. "Plasma and Red Blood Cell Free Fatty Acid Responses to Glucose Loading With a Note on the Effect of Tobacco," by *L. A. Soloff* and H. Schwartz. American Journal of the Medical Sciences 246: 200–205, August 1963. (PHS, HASP, ADRF)
323. "Pulmonary Arterial Lesions Produced by Protamine," by *I. Gore*, K. Tanaka, M. Enjoji, H. J. White and B. J. Larkey. Journal of Pathology and Bacteriology 86: 209–214, July 1963. (NIH 2, MAHA, JAHMF, FRT)
324. "Addictive Aspects in Heavy Cigarette Smoking," by *Peter H. Knapp*, Charles Michael Bliss and Harriet Wells. American Journal of Phychiatry 119: 966–972, April 1963. (ACS)
325. "Circulatory Effects of Arterial Hypoxia," by *P. F. Salisbury*, C. E. Cross and C. I. Barron. Aerospace Medicine 34: 935–937, October 1963. (NHI)
326. "The Presence of Humoral Factors in Homocraft Rejection of the Transplanted Heart," by H. R. Ramos, C. Chiba, P. Schollmeyer, P. L. Wolf, B. Pearson, and *R. J. Bing*. Transplantation 1: 284–292, July 1963. (PHS, MCHA, LIMRF, BWF, JAHF)
327. "Host Factors Influencing the Behavior of Subcutaneous Sarcomas Induced by 3.4;9.10-Dibenzpyrene in C57BL/6Mice," by *F. Homburger*, A. Treger and J. R. Baker, Cancer Research 23: 1539–1544, October 1963. (NCI, VDKLF)
328. "Acute Ischemia of Inner Layers of Ventricular Wall," by *Peter F. Salisbury*, Cecil E. Cross, and P. A. Rieben. American Heart Journal 66: 650–656, November 1963. (NHI)
329. "Blood Flow in the Human Calf During Tobacco Smoking," by *J. D. Coffman* and S. L. Javett. Circulation 28: 932–937. November 1963.
330. "Observations on the Effects of Methanol and Formaldehyde on Established Cell Lines Cultivated in Vitro," by Alice Elliott and *Donald M. Pace*. Canadian Journal of Biochemistry and Physiology 41: 299–304, February 1963. (PHS)
331. "The Relationship of Smoking to the Outcome of Pregnancy," by P. Underwood, *L. L. Hester*, T. Laffitte Jr. and K. V. Gregg. Presented before Ameriacn College of Obstetricians and Gynecologists, Washington, D.C., November 9, 1963. Ms: 1–14.
332. "Positive Ionotropic Responses and Catecholamine Content of Isolated Rabbit Atria Exposed to Tyramine," by *E. T. Angelakos and* M. L. Trochiana. Acta Physiologica Scandinavica 59: 161–168, September–October 1963. (EOAR, PHS)

333. "Chemical and Histochemical Evaluation of the Distribution of Catecholamines in the Rabbit and Guinea Pig Hearts," by *E. T. Angelakos*, K. Fuxe and M. L. Torchiana. Acta Physiologica Scandinavica 59: 184–192, September–October 1963. (PHS)
334. "Taste Thresholds, Cigarette Smoking, and Food Dislikes," by Roland Fischer, F. Griffin and *A. R. Kaplan*. Medicina Experimentalis 9: 151–167, 1963. (NIH 3)
335. "Nuclear Ribosomes. An Early Factor in Tissue Preparation," by S. Gudbjarnason and C. De Schryver. Biochemical and Biophysical Research Communiations 14: 12–16, 1964. (Grantee: *R. J. Bing*). (PHS, AHA, MCHA, LIMRF, BWF, JAHF)
336. "Mouse-Skin Painting with Smoke Condensates from Cigarettes made of Pipe, Cigar, and Cigarette Tobaccos," by *F. Homburger*, A. Treger and J. R. Baker. Journal of the National Cancer Institute 31: 1445–1459, December 1963.
337. "Effects of Arterial Hypoxia on the Heart and Circulation: An Integrative Study," by C. E. Cross, P. A. Rieben, C. I. Barron, and *P. F. Salisbury*. American Journal of Physiology 205: 963–970, November 1963. (NHI)
338. "Studies on the Transplanted Heart. Role of Gamma-Globulin in Transplantation Immunity," by C. Chiba, J. Yamanaka, E. J. Zaleski, P. L. Wolf and *R. J. Bing*. Proceedings of the Society for Experimental Biology and Medicine 114: 637–640, December 1963. (PHS, AHA, MCHA, LIMRF, BWF, JAHF)
339. "The Acute Effect of Chewing Tobacco and Smoking in Habitual Users," by *D. L. Simon* and A. Iglauer. Kreislauf-Bucherei 21: 256–261, 1963.
340. "Experimental Approaches to Nucleolar Function," by *P. O'B. Montgomery Jr.* Experimental Cell Research, Supplement No. 9: 170–175, 1963. (AEC, DRMF, SWMF)
341. "Occupation and Smoking in College Graduates," by *Carl C. Seltzer*. Journal of Applied Psychology 48: 1–6, February 1964.
342. "Measurement of Isometric Contraction and Ejection Time by the Vibrocardiogram," by *C. M. Agress*, S. Wegner, D. J. Bleifer, H. M. Estrin, K. Schroyer and G. Labins. American Journal of Cardiology 13: 340–348, March 1964. (LACHA, NASA, and private donors)
343. "Ulceration of and Embolization by Atheromata," by *Ira Gore*. Chapter in "Evolution of the Atherosclerotic Plaque," R. J. Jones, Editor, Published by the University of Chicago, 1964: 315–329. (NIH)
344. "Protein Metabolism in Cardiac Hypertrophy and Heart Failure," by S. Gudbjarnason, M. Telerman and *R. J. Bing*. American Journal of Physiology 206: 294–298, February 1964. (PHS, AHA, MCHA, LIMRF, BWF, JAHF)
345. "Components of Alveolar-Arterial O_2 Difference in Normal Man," by *S. M. Ayres*, A. Criscitiello and E. Grabovsky. Journal of Applied Physiology 19: 43–47, January 1964. (NTA–ATS, NJRTF)
346. "Myocardial Protein Synthesis in Cardiac Hypertrophy," by S. Gudbjarnason, M. Telerman, C. Chiba, P. L. Wolf and *R. J. Bing*. Journal of Laboratory and Clinical Medicine 63: 245–253, February 1964. (PHS, AHA, MCHA, LIMRF, BWF, JAHF)
347. "Spectral Identification Studies of Phenolic Acids Using Aluminum Chloride," by Y. Nakagawa, M. R. Shetlar and *S. H. Wender*. Analytical Biochemistry 7: 374–378, March 1964. (NIH)
348. "Occupation and Smoking in College Graduates," by *C. C. Seltzer*. Psychological Review 71: 1–18, January–February 1964.
349. "Formation of Nornicotine and other Metabolites from Nicotine *In Vitro* and *In Vivo*," by N. M. Papadopoulos. Canadian Journal of Biochemistry 42: 435–442, April 1964. (Grantee: *E. C. Hoff*)
350. "The Significance of the Intracellular Nucleic Acid Metabolism and the Host Cell-Virus Relationship for Virus Infections," by *Cecilie Leuchtenberger*. Bibliotheca Microbiologica 4: 18–42, 1964. (NIH, CIBAB)
351. "The Effects of Norepinephrine on the Hemodynamics and Myocardial Metabolism of Normal Human Subjects," by J. Ribeilima, V. E. Wendt, H. Ramos, S. Gudbjarnason, T. A. Bruce, and *R. J. Bing*. American Heart Journal 67: 672–678, May 1964. (PHS, AHA, MCHA, LIMRF, BWF, JAHF)
352. "Disposition and Fate of (-)-Cotinine-H^3 in the Mouse," by E. R. Bowman, E. Hansson, L. B. Turnbull, *H. McKennis Jr.* and C. G. Schmiterlöw. Journal of Pharmacology and Experimental Therapeutics 143: 301–308, March 1964. (AT, NIH, ST)

353. "Glucose Blockage of Non-Esterified Fatty Acids Increase Produced by Smoking in Healthy and Coronary Subjects," by *Louis A. Soloff* and Heinz Schwartz. American Journal of the Medical Sciences 247: 580–584, May 1964. (ADGC)
354. "Mammalian Degradation of (-)-Demethylcotinine," by Sorell L. Schwartz and *Herbert McKennis Jr.* Nature 202: 594–595, May 9, 1964. (AT)
355. "Metabolic Release of Methyl Groups From a Series of N-Methylpyridium Compounds," by *H. McKennis Jr.*, E. R. Bowman, A. Horvath and J. P. Bederka Jr. Nature 202: 699–700, May 16, 1964. (AT, NIH)
356. "Additional Routes in the Metabolism of 3-Acetylpyridine," by *H. McKennis Jr.*, L. B. Turnbull and E. R. Bowman. Journal of Biological Chemistry 239: 1215–1220, April 1964. (NIH, AT)
357. "Effect of Nicotine on Catecholamine and Serotonin Levels *In Vitro*," by E. Hansson, D. T. Masuoka and *W. G. Clark*. Archives Internationales de Pharmacodynamie 149: 153–160, May 1, 1964. (ACS, NIH, NAMH)
358. "Effects of Carbon Dioxide Inhalation Upon Cerebral Blood Flow," by *Robert A. Kuhn*. Clinical Pharmacology and Therapeutics 5: 277–280, May–June 1964.
359. "Glucose Blockage of the Increase in Stroke Volume Produced by Smoking," by D. C. Moses, D. Powers and *L. A. Soloff*. Circulation 29: 820–825, June 1964. (NASP, ADRF)
360. "The Determination of Coronary Flow Equivalent With Coincidence Counting Technic," by *R. J. Bing*, A. Bennish, G. Bluemchen, A. Cohen, J. P. Gallagher and E. J. Zaleski. Circulation 29: 833–846, June 1964. (PHS, AHA, MCHA, LIMRF, BWF, JAHF)
361. "Taste Thresholds for Bitterness and Cigarette Smoking," by *A. R. Kaplan*, E. V. Glanville and R. Fischer. Nature 202: 1366, June 27, 1964. (NIH 2)
362. "Mechanism of Nicotine Induced Vascular Resistance in the Superior Mesenteric Artery of the Cat," by *J. P. Long* and C. L. Highgenboten. Archives Internationales de Pharmacodynamie 149: 385–392, June 1, 1964.
363. "Histochemical Demonstration of Uptake of Exogenous Norepinephrine by Adrenergic Fibers *In Vitro*," by *E. T. Angelakos*. Science 145: 503–504, July 31, 1964. (PHS)
364. "Induction of Neoplasms in Germfree Rodents by 3-Methylcholanthrene," by *M. Pollard*, T. Matsuzawa and J. C. Salomon. Journal of the National Cancer Institute 33: 93–99, July 1964. (PHS)
365. "Germfree Animals and Biological Research," by *Morris Pollard*. Science 145: 247–251, July 17, 1964. (ONR, NIH, DA, NF, NSF, AEC, UND, and county cancer societies)
366. "Nicotine-1'-Oxide: A Metabolite of Nicotine in Animal Tissues," by N. M. Papadopoulos. Archives of Biochemistry and Biophysics 106: 182–185, July 20, 1964. (Grantee: *E. C. Hoff*)
367. "Influence of Coronary Arterial Pressure on Coronary Vasomotor Tonus," by C. E. Cross. Circulation Research Supp. I to Vols. 14 & 15: 87–93, August 1964. (Grantee: *P. F. Salisbury*, deceased). (NIH)
368. "Precursors of Hypertension and Coronary Disease Among Healthy Medical Students: Discriminant Function Analysis. 1. Using Smoking Habits as the Criterion," by *C. B. Thomas*, D. C. Ross and C. Q. Higinbothom. Bulletin of the Johns Hopkins Hospital 115: 174–194, August 1964. (NHI)
369. "The Effect of Liver Imbalance on the Development of Oral Tumors in Mice Following the Application of Benzpyrene or Tobacco Tar," by *M. Protzel* and A. C. Giardina. Journal of the Newark City Hospital 1: 12–24, July 1964.
370. "Arterial Acid Mucopolysaccharide Changes by Protamine," by *Ira Gore*, Y. Tanaka and H. A. White. Archives of Pathology 78: 181–185, September 1964. (NIH)
371. "Pulmonary Alveolar Cell Inclusions: Their Development in the Rat," by *Sue Buckingham*, W. F. McNary Jr. and S. C. Sommers. Science 145: 1192–1193, September 11, 1964. (MAHA, HLF)
372. "Identification of Aromatic Aldehydes in Cigarette Smoke and in Tobacco," by C. H. Yang and *S. H. Wender*. Phytochemistry 3: 17–22, January 1964.
373. "Chromosomal Patterns in Cancer Patients During Treatment," by *A. P. Amarose*. New York State Journal of Medicine 64: 2407–2413, October 1, 1964. (ACS, AEC, PHS)

374. "Protein and Nucleic Acid Synthesis During the Reparative Processes Following Myocardial Infarction," by S. Gudbjarnason, C. De Schryver, C. Chiba, J. Yamanaka and *R. J. Bing*. Circulation Research 15: 320–326, October 1964. (PHS, AHA, MCHA, LIMRF, BWF, JAHF)
375. "Nucleolar 'Caps' Produced by Actinomycin D," by R. C. Reynolds, *P. O'B. Montgomery* and B. Hughes. Cancer Research 24: 1269–1277, August 1964. (DRMF)
376. "Age, Sex, and Taste Sensitivity," by E. V. Glanville, *A. R. Kaplan* and R. Fischer. Journal of Gerontology 19: 474–478, October 1964. (NIH, SOMHC)
377. "Lung Cancer and Metastasis," by *Shields Warren* and Olive Gates. Archives of Pathology 78: 467–473, November 1964. (AEC)
378. "Diffusing Capacity of the Lung in Pulmonary Emphysema," by *S. M. Ayres*, M. E. Buehler and R. G. Armstrong. Journal of Applied Physiology 19: 981–989, September 1964. (ATS, NJRTF, PHS)
379. "*In Vivo* and *In Vitro* Studies on the Question of a Biologic Relationship Between Nicotine and Ascorbic Acid," by R. I. Taber and *P. S. Larson*. Archives Internationales de Pharmacodynamie 151: 243–259, September 1, 1964.
380. "Tumor-Host Relationships Studied *In Vitro:* Experiments With Tissue Slices," by *L. R. Cerecedo*, Sister M. J. Smith and J. Vicente. Archives of Biochemistry and Biophysics 108: 7–11, October 1964. (NCI, DRMF)
381. "Absent Left Pulmonary Artery, Right-Sided Aortic Arch and Patent Ductus Arteriosus With Right to Left Shunt," by C. Wu, R. Balcon, R. S. Kurtzman and V. E. Wendt. American Journal of Cardiology 14: 702–708, November 1964. (Grantee: *R. J. Bing*) (AHA, BWF, LIMRF, MCHA, PHS)
382. "Ebstein's Malformation. Discordant Intracavitary Electrocardiographic and Pressure Relationship," by S. S. Moles, W. J. Jacoby Jr. and *H. D. McIntosh*. American Journal of Cardiology 14: 720–722, November 1964. (NHA 2)
383. "Pulmonary Surfactant and Atelectasis," by A. I. Sutnick and *L. A. Soloff*. Anesthesiology 25: 676–681, September–October 1964. (HASP)
384. "Mechanism of Heart Failure," by *R. J. Bing*, C. Wu and S. Gudbjarnason. Circulation Research Suppl. II. to Vols. 14 & 15: 64–69, November 1964. (PHS, AHA, MCHA, LIMRF, BWF, JAHF)
385. "Changes in Myocardial Enzyme Patterns in Human Heart Disease," by S. Gudbjarnason, C. De Schryver, G. Hunn and *R. J. Bing*. Journal of Laboratory and Clinical Medicine 64: 796–801, November 1964. (PHS, AHA, AMA–ERF, MCHA, LIMRF, BWF, JAHF)
386. "Relationship Between Evoked Response Changes and Behavior Following Small Doses of Nicotine in the Cat," by J. E. Shryne Jr. and *B. B. Brown*. Proceedings of the Western Pharmacology Society 7: 58–60, 1964.
387. "Stroke Volume and Cardiac Output After Smoking in the Postprandial and in the Fasting State," by *L. A. Soloff* and D. V. Powers. American Journal of the Medical Sciences 248: 693–696, December 1964. (ADGC)
388. "'Chronic Obstructive Lung Disease.' Syndrome of Clinical Expediency," by *J. P. Wyatt* and V. W. Fischer. Postgraduate Medicine 36: 441–448, November 1964. (PHS 2)
389. "Erythrocytic Phospholipid Linoleic Acid in Ischemic Heart Disease and in Health," by *L. A. Soloff* and H. Schwartz. Lancet 2: 1268–1269, December 12, 1964. (PHS, HASP)
390. "Pulmonary Surfactant in Health and Disease," by *L. A. Soloff* and A. I. Sutnick. Biochemical Clinics 1964, No. 4: "The Lung," pages 49–61. (HASP)
391. "The Effect of Liver Imbalance on the Development of Oral Tumors in Mice Following the Application of Benzpyrene or Tobacco Tar," by *M. Protzel*, A. C. Giardina and E. H. Albano. Oral Surgery, Oral Medicine and Oral Pathology 18: 622–635, November 1964.
392. "Differential Taste Sensitivities in Duodenal and Gastric Ulcer Patients," by *A. R. Kaplan*, R. Fischer, E. Glanville, W. Powell, M. Kamionkowski and B. Fleshler. Gastroenterology 47: 604–609, December 1964. (NIH)
393. "Antigen-Stimulated Desoxyribonucleic Acid Synthesis *In Vitro* by Sensitized Mouse Macrophages," by D. Rowley and *C. Leuchtenberger*. Lancet 2: 734–735, October 3, 1964. (CIBAB)

394. "Nucleic Acid Content of Turkey Heart With a Note on Hemodynamic Findings," by R. G. Sumner, T. C. Hoyle III, *H. D. McIntosh* and R. E. Whalen. American Journal of Physiology 207: 1102–1106, November 1964. (NIH 4, AHA, MPBFHA, DUCL)

395. "The Effects of Smoking on the Cardiac Output at Rest and During Exercise in Patients With Healed Myocardial Infarction," by W. S. Frankl, W. L. Winters and *L. A. Soloff*. Circulation 31: 42–44, January 1965. (PHS)

396. "The Metabolic Formation of Gamma-(3-Pyridyl)-Gamma-Hydroxybutyric Acid and its Possible Intermediary Role in the Mammalian Metabolism of Nicotine," by *H. McKennis Jr.*, S. L. Schwartz, L. B. Turnbull, E. Tamaki and E. R. Bowman. Journal of Biological Chemistry 239: 3981–3989, November 1964. (AT)

KEY TO OTHER GRANTORS ACKNOWLEDGED BY COUNCIL FOR TOBACCO RESEARCH GRANTEES

ACS	American Cancer Society.
ACSM	A.C.S., Maryland Division.
ADGC	Arlene Dickler Grass Chapter, Heart Association of Southeastern Pennsylvania.
ADRF	Arlene Dickler Research Fund.
AEC	U.S. Atomic Energy Commission.
AHA	American Heart Association.
AL	Abbott Laboratories.
ALAHA	Alabama Heart Association.
AMA-ERF	American Medical Association-Education and Research Foundation.
AT	American Tobacco Co.
ATS	American Thoracic Society.
BF	Brush Foundation.
BW	Burroughs-Wellcome & Co., Inc.
BWF	Burroughs-Wellcome Fund.
C	Columbia University.
CAL	California State Department of Health.
CF	Cooper Foundation (through the University of Nebraska Foundation).
CIBA	Ciba Pharmaceutical Products, Inc.
CIBAB	Ciba, Basle, Switzerland.
CPA	Committee on Problems of Alcohol of the National Academy of Sciences-National Research Council.
CRI	Cardiovascular Research Institute, University of California Medical Center.
DA	Department of the Army.
DRMF	Damon Runyon Memorial Fund.
DUCL	Duke University Computing Laboratory.
DWA	David Winton and Associates.
ECJ	Eizai Co., Japan.
EL	Eli Lilly & Co.
EOAR	European Office, Aerospace Research, U.S. Air Force.
EUPF	Elsa U. Pardee Foundation.
FFF	Franchester Fertility Fund.
FHA	Finnish Heart Association.
FRT	Fund for Research and Teaching, Department of Nutrition, Harvard School of Public Health.
FSA	Federal Security Agency, U.S. Public Health Service.
GC	General Cigar Co.
GP	Geigy Pharmaceutical Co.
HASP	Heart Association of Southeastern Pennsylvania.
HEW	U.S. Department of Health, Education, and Welfare.
HLF	The Heart-Lung Foundation.
HLR	Hoffmann-La Roche, Inc.
IHA	Iowa Heart Association.
JAHF	John A. Hartford Foundation.
JAHMF	John A. Hartford Memorial Fund.

JMF---------- Josiah Macy, Jr., Foundation.
LACHA---------- Los Angeles County Heart Association (private donors to).
LIMRF---------- Life Insurance Medical Research Fund.
LL---------- Lederle Laboratories Division of American Cyanamid Co.
M---------- University of Missouri.
MAHA---------- Massachusetts Heart Association.
MCHA---------- Michigan Heart Association.
MHA---------- Minnesota Heart Association.
MMFF---------- Milton M. Frank Foundation.
MPBFHA---------- Martin and Palm Beach Counties, Fla., Heart Associations.
NAMH---------- National Association for Mental Health.
NASA---------- National Aeronautics and Space Administration.
NCI---------- National Cancer Institute.
NDC---------- National Dairy Council.
NF---------- Nutrition Foundation.
NHI---------- National Heart Institute.
NIH---------- National Institutes of Health.
NJRTF---------- New Jersey Medical Research and Teaching Fund.
NOX---------- Noxema Corp.
NSF---------- National Science Foundation.
NTA-ATS---------- National Tuberculosis Association-American Thoracic Society.
ONR---------- Office of Naval Research.
P---------- Princeton University.
PD---------- Parke, Davis & Co.
PHS---------- U.S. Public Health Service.
RF---------- Rockefeller Foundation.
SAFSE---------- Swiss-American Foundation for Scientific Exchange.
SBF---------- Science Board of the State of Finland.
SCH---------- Shell Chemical Corp.
SF---------- Schweppe Foundation.
SJS---------- Sigfrid Juselius Stifelse (Finland).
SOMHC---------- State of Ohio Department of Mental Hygiene and Correction.
SRRP---------- Southern Regional Research Project.
ST---------- Swedish Tobacco Co.
SWMF---------- Southwestern Medical Foundation.
UC---------- Upjohn Co.
UKGRF---------- University of Kansas General Research Fund.
UND---------- University of Notre Dame.
USAF---------- U.S. Air Force School of Aviation Medicine.
VA---------- U.S. Veterans' Administration.
VAHS---------- Veterans' Administration Hospital, St. Louis, Mo.
VDKLF---------- Virginia and D. K. Ludwig Foundation.
WL---------- Wallace Laboratories.
WWF---------- Williams-Waterman Fund.

PUBLIC SYMPOSIA IN WHICH THE COUNCIL FOR TOBACCO RESEARCH—THE UNITED STATES HAS PARTICIPATED

1. Cardiovascular effects of nicotine and smoking: Held under the auspices of the New York Academy of Sciences, New York City, March 24, 25, 26, 1960. (Published in Annuals of New York Academy of Sciences, vol. 90, art. 1, pp. 1-344, Sept. 27, 1960.)

2. The air we breathe (a study of man and his environment): Held under the auspices of the Department of Continuing Education in Medicine and the Health Service University of California School of Medicine and University Extension, San Francisco, January 16, 17, 18, 1960. (Published as a monograph The Air We Breathe. Edited by Seymour M. Farber, M.D. and Roger Wilson, M.D. Charles C. Thomas, Springfield, Ill., 1961.)

3. Cancer of the lung and the use of tobacco (related problems): Held under the auspices of the International Institute of Statistics, 33d session, September 7, 1961. Paris. (Published in the Bulletin de L'Institut International de Statistique, vol. 39, sec. 3, Paris, 1962.)

INFORMAL SCIENTIFIC CONFERENCES SPONSORED BY THE COUNCIL FOR TOBACCO RESEARCH—UNITED STATES

1. Pathologic-anatomic study of human lungs (December 6, 1954) (participants):
   Dr. D. Murray Angevine, professor of pathology, University of Wisconsin.
   Dr. E. M. Butt, chief of pathology, Los Angeles County General Hospital.
   Dr. William H. Carnes, Department of Pathology, Stanford University School of Medicine.
   Dr. Russell L. Holman, head, Department of Pathology, Louisiana State University School of Medicine.
   Dr. Marvin Kuschner, pathologist, Bellevue Hospital Center, New York.
   Dr. Thomas C. Laipply, Department of Pathology, Northwestern University Medical School.
   Dr. William O. Russell, the University of Texas Medical Center.
   Dr. E. D. Warner, Department of Pathology, College of Medicine, State University of Iowa.
   Dr. W. B. Wartman, chairman, Department of Pathology, Northwestern University Medical School.
   Dr. Russell W. Weller, associate pathologist, the Hahnemann Medical College and Hospital, Philadelphia.
2. Pathologic-anatomic study of human lungs (May 14, 1955) (participants):
   Dr. E. M. Butt, chief of pathology, Los Angeles County General Hospital.
   Dr. William H. Carnes, Department of Pathology, Stanford University School of Medicine.
   Dr. Dean M. Connors, Department of Pathology, University of Wisconsin Medical School.
   Dr. H. W. Cross, Department of Pathology, College of Medicine, State University of Iowa.
   Dr. Russell S. Fisher, chief medical examiner, State of Maryland.
   Dr. E. Cuyler Hammond, American Cancer Society.
   Dr. Russell L. Holman, head, Department of Pathology, Louisiana State University School of Medicine.
   Dr. Kenneth P. Knudtson, clinical assistant professor of pathology, University of Washington Medical School, Seattle.
   Dr. Marvin Kuschner, pathologist, Bellevue Hospital Center, New York.
   Dr. T. C. Laipply, Department of Pathology, Northwestern University Medical School.
   Dr. H. P. Pratt-Thomas, Department of Pathology, Medical College of South Carolina.
   Dr. William O. Russell, pathologist in chief, University of Texas.
   Dr. Henry G. Schmidt, pathologist, Bellevue Hospital Center, New York.
   Dr. Russell Weller, associate pathologist, the Hahnemann Medical College and Hospital, Philadelphia.
3. Pathologic-anatomic study of human lungs (November 20, 1955) (participants):
   Dr. D. Murray Angevine, University of Wisconsin Medical School.
   Dr. D. L. Bittner, Stanford University School of Medicine.
   Dr. Tom K. Farris, Louisiana State University School of Medicine.
   Dr. Russell S. Fisher, office of the chief medical examiner, State of Maryland.
   Dr. E. Cuyler Hammond, American Cancer Society.
   Dr. Marvin Kuschner, pathologist, Bellevue Center, New York.
   Dr. Thomas C. Laipply, Northwestern University Medical School.
   Dr. H. R. Pratt-Thomas, Medical College of South Carolina.
   Dr. William O. Russell, the University of Texas Medical Center.
   Dr. Henry G. Schmidt, pathologist, Bellevue Hospital Center, New York.
   Dr. Dorothy Tatter, pathologist, Los Angeles County General Hospital.
   Dr. Donald V. Walz, College of Medicine, State University of Iowa.
   Dr. Russell Weller, Ephrata Community Hospital, Ephrata, Pa.
4. Tissue culture research (January 14, 1956) (participants):
   Dr. Lawrence Berman, Wayne University College of Medicine, Detroit.
   Dr. John J. Biesele, head, cell growth section, Sloan-Kettering Institute for Cancer Research, New York.
   Dr. Harry Eagle, chief experimental therapeutics, National Microbiological Institute, National Institutes of Health.

Dr. Wilton R. Earle, head, tissue culture section, Laboratory of Biology, National Cancer Institute, National Institutes of Health.
Mrs. Ruth Geiger, Neuropsychiatric Institute, University of Illinois.
Dr. George O. Gey, assistant professor of surgery, Johns Hopkins University School of Medicine, Baltimore.
Dr. Margaret R. Murray, associate professor of anatomy, Columbia University College of Physicians and Surgeons.
Dr. C. M. Pomerat, professor of cytology, the University of Texas.
Dr. Joseph J. Quilligan, Jr., chief, Virus and Tissue Culture Laboratories, College of Medical Evangelists, Loma Linda, Los Angeles.
Dr. Charity Waymouth, reserach fellow, Jackson Memorial Laboratory.
Dr. Philip R. White, research associate, Jackson Memorial Laboratory.

5. Cardiovascular and pulmonary function research (March 16–17, 1956) (participants):
Dr. Ernest O. Attinger, Boston City Hospital.
Dr. Richard J. Bing, Medical College of Alabama.
Dr. John W. Eckstein, Massachusetts Memorial Hospitals, Boston.
Dr. Frank C. Ferguson, Jr., Albany Medical College, New York.
Dr. Vincent J. Fontana, Bellevue Medical Center, New York.
Dr. Jack Freund, Medical College of Virginia, Richmond.
Dr. Carl C. Gruhzit, University of Pennsylvania, Graduate School of Medicine.
Dr. Joseph H. Hafkenschiel, the Lankenau Hospital, Philadelphia.
Dr. Kelly T. McKee, Medical College of South Carolina.
Dr. Hugh Montgomery, University of Pennsylvania, Philadelphia.
Dr. Hurley Motley, University of Southern California, Los Anegeles.
Dr. Walter Redisch, Goldwater Memorial Hospital, New York.
Dr. Seymour H. Rinzler, Cornell University Medical College, New York.
Dr. Hans Rottenstein, University of Pennsylvania, Philadelphia.
Dr. Maurice S. Segal, Boston City Hospital.
Dr. Janet Travell, Cornell University Medical College, New York.
Dr. Richard Weschsler, Montefiore Hospital Institute of Research, Pittsburgh.
Dr. J. Edwin Wood, Massachusetts Memorial Hospitals, Boston.
Dr. Frank Davis, Johns Hopkins Hospital, Baltimore.
Dr. Charles D. Marple, American Heart Association, Inc., New York.
Mr. Felix E. Moore, National Heart Institute, Bethesda, Md.

6. Cardiovascular and pulmonary function research (May 31 to June 1, 1957) (participants):
Dr. Ernest O. Attinger, Tufts University School of Medicine, Boston.
Dr. G. Cabrera, Washington University, St. Louis.
Dr. Kurt de Crinis, New York University Postgraduate Medical School.
Dr. John W. Eckstein, State University of Iowa College of Medicine.
Dr. John W. Ferree, American Heart Association, Inc., New York.
Dr. Jack Freund, Medical College of Virginia, Richmond.
Dr. Carl C. Gruhzit, the Graduate School of Medicine, University of Pennsylvania.
Dr. Santiago V. Guzman, Philadelphia General Hospital.
Dr. Harry Heiman, U.S. Public Health Service, air pollution medical program, Division of Special Health Services.
Dr. Jerry H. Jacobson, New York Eye and Ear Infirmary.
Dr. Kelly T. McKee, Medical College of South Carolina.
Dr. Hurley L. Motley, University of Southern California.
Dr. Walter Redisch, New York University Postgraduate Medical School.
Dr. Hans S. Rottenstein, University of Pennsylvania School of Medicine.
Dr. Stanley J. Sarnoff, National Heart Institute, Washington, D.C.
Dr. David L. Simon, Department of Internal Medicine, Cincinnati General Hospital.
Dr. Caroline B. Thomas, the Johns Hopkins School of Medicine, Baltimore.
Dr. Janet Travell, Department of Pharmacology, Cornell University Medical College, New York.
Dr. J. Edwin Wood, Massachusetts Memorial Hospitals, Boston.
Dr. Richard L. Wechsler, Montefiore Hospital Institute of Research, Pittsburgh.

48-824—65——32

7. Pathologic-anatomic study of human lungs (December 1, 1956) (participants):
   Dr. E. M. Butt, Los Angeles County General Hospital.
   Dr. William H. Carnes, University of Utah College of Medicine.
   Dr. Dean Connors, University of Wisconsin Medical School.
   Dr. K. R. Cross, State University of Iowa.
   Dr. Dean Davies, American Cancer Society, New York.
   Dr. Russell S. Fisher, University of Maryland School of Medicine, Baltimore.
   Dr. Harry Heimann, U.S. Public Health Service, air pollution medical program, Division of Special Services, Washington, D.C.
   Dr. Kenneth P. Knudtson, University of Washington Medical School, Seattle.
   Dr. Marvin Kuschner, Bellevue Medical Center, New York.
   Dr. Thomas C. Laipply, Northwestern University Medical School.
   Dr. Ralph Meier, Louisiana State University School of Medicine.
   Dr. H. R. Pratt-Thomas, Medical College of South Carolina.
   Dr. W. O. Russell, the University of Texas Medical Center.
   Dr. Henry G. Schmidt, Bellevue Medical Center, New York.
   Dr. Russell Weller, Ephrata Community Hospital, Ephrata, Pa.
8. Pathologic-anatomic study of human lungs (June 2, 1957) (participants):
   Dr. E. M. Butt, Los Angeles County General Hospital.
   Dr. William H. Carnes, Department of Pathology, University of Utah College of Medicine.
   Dr. Dean Connors, Department of Pathology, University of Wisconsin Medical School.
   Dr. K. R. Cross, associate professor of pathology, State University of Iowa.
   Dr. Russell S. Fisher, University of Maryland School of Medicine, Baltimore.
   Dr. Russell L. Holman, professor of pathology, Louisiana State University Medical School.
   Dr. Kenneth P. Knudtson, professor of pathology, University of Washington Medical School, Seattle.
   Dr. Marvin Kuschner, Department of Pathology, Bellevue Medical Center, New York.
   Dr. Thomas C. Laipply, associate professor of pathology, Northwestern University Medical School.
   Dr. G. K. Palmer, department of pathology, State University of Iowa.
   Dr. H. R. Pratt-Thomas, professor of pathology, Medical College of South Carolina.
   Dr. W. O. Russell, pathologist-in-chief, the University of Texas Medical Center, Houston.
   Dr. Henry G. Schmidt, Department of Pathology, Bellevue Medical Center, New York.
   Dr. Dorothy Tatter, Los Angeles County General Hospital.
   Dr. E. D. Warner, professor of pathology, State University of Iowa.
   Dr. Russell Weller, Ephrata Community Hospital, Ephrata, Pa.
   Dr. Alfred S. Frobese, the Graduate School of Medicine, University of Pennsylvania, Philadelphia.
   Dr. Harry Heimann, U.S. Public Health Service, air pollution medical program, Division of Special Health Services, Washington, D.C.
9. Problems of bioassay (May 9, 1958) (participants):
   Dr. Howard B. Andervont, chief, Laboratory of Biology, National Cancer Institute, Bethesda.
   Dr. Fred G. Bock, senior cancer research scientist, Roswell Park Memorial Institute, Buffalo.
   Dr. G. Della Porta, Division of Oncology, the Chicago Medical School.
   Mr. Frederic A. French, Cancer Research Laboratories, Mount Zion Hospital, San Francisco.
   Dr. Walter E. Heston, head, General Biology Section, National Cancer Institute, Bethesda.
   Dr. Freddy Homburger, president, Bio-Research Institute, Inc., Cambridge.
   Dr. W. C. Hueper, chief, Environmental Cancer Section, National Cancer Institute, Bethesda.
   Dr. Charles J. Kensler, Department of Pharmacology and Experimental Therapeutics, Boston University School of Medicine.

Dr. G. Burroughs Mider, associate director in charge of research, National Cancer Institute, Bethesda.
Dr. Edwin D. Murphy, research associate, Jackson Memorial Laboratory, Bar Harbor.
Dr. Benjamin A. Rubin, Department of Public Health and Preventive Medicine, Baylor University College of Medicine, Houston, Tex.
Dr. Stuart M. Sessoms, assistant director, National Cancer Institute, Bethesda.
Dr. Murray J. Shear, chief, Laboratory of Chemical Pharmacology, National Cancer Institute, Bethesda.

10. Tissue culture research (Sept. 12, 1958) (participants):
Dr. Philip Cooper, clinical professor of surgery, Albert Einstein College of Medicine, Bronx, N.Y.
Dr. George O. Gey, associate professor of surgery, the Johns Hopkins University School of Medicine, Baltimore.
Dr. Mary V. Reed, the Johns Hopkins School of Medicine, Baltimore.
Dr. Donald M. Pace, professor and chairman, Department of Physiology, director, Institute for Cellular, the University of Nebraska, Lincoln.
Dr. Alice Elliott, the University of Nebraska, Lincoln.
Dr. Masahiro Mizutani, Tissue Culture Laboratory, Department of Anatomy, the University of Texas—Medical Branch, Galveston.
Dr. Y. H. Nakanishi, Tissue Culture Laboratory, Department of Anatomy, the University of Texas—Medical Branch, Galveston.
Dr. Katherine K. Sanford, Tissue Culture Section, Laboratory of Biology, National Cancer Institute, National Institutes of Health, Bethesda.
Dr. Stuart M. Sessoms, assistant director, National Cancer Institute, Bethesda.
Dr. Charity Waymouth, staff scientist, Jackson Memorial Laboratory.

11. Psycho-psysiological research (Sept. 6, 1957) (participants):
Dr. Ernst G. Beier, associate professor of psychology, University of Utah, Salt Lake City.
Dr. Eugene M. Blumberg, practicing psychologist, Long Beach, Calif.
Dr. Josef Brozek, associate professor of physiological hygiene, University of Minnesota School of Public Health, Minneapolis.
Dr. Henry Chauncey, president, Educational Testing Service, Princeton, N.J.
Dr. Ralph Waldo Gerard, professor of neurophysiology, Mental Health Research Institute, University of Michigan, Ann Arbor.
Dr. Clark W. Heath, professor of medicine, Tufts University, Medford, Mass.
Dr. Donald W. MacKinnon, professor of psychology, University of California.
Dr. Charles McArthur, psychologist to the University of Health Services, Harvard University.
Dr. Paul Porter, Department of Psychology, University of Utah, Salt Lake City.
Dr. D. D. Smith, director, Psychological Sciences Division, Office of Naval Research, Washington, D.C.
Dr. Renato Tagiuri, Graduate School of Business Administration, Harvard University.
Dr. Caroline Bedell Thomas, associate professor of medicine, the Johns Hopkins University, Baltimore.

12. Psycho-physiological research (Jan. 24, 1958) (participants):
Dr. Josef Brozek, associate professor of physiological hygiene, University of Minnesota School of Public Health, Minneapolis.
Dr. Dean F. Dafies, administrator for research on lung cancer, American Cancer Society.
Dr. Hardin B. Jones, Division of Medical Physics, University of California, Berkeley.
Dr. M. Powell Lawton, assistant director, Psychological Services, Norristown State Hospital, Norristown, Pa.
Dr. Charles McArthur, psychologist to the University Health Services, Harvard University.
Dr. Curt P. Richter, director, Psychological Laboratory, the Johns Hopkins Medical School, Baltimore.

Dr. William H. Shelton, College of Physicians and Surgeons, Columbia University.
Dr. D. D. Smith, director, Psychological Sciences Division, Office of Naval Research, Washington, D.C.
Dr. Renato Tagiuri, Graduate School of Business Administration, Harvard University.

13. Chronic and acute lung diseases (September 11, 1959) (participants):
Dr. Cyrus C. Erickson, professor of pathology, University of Tennessee, Memphis.
Dr. Walter Finke, Department of Medicine, the Genesee Hospital, Rochester, N.Y.
Dr. Burgess L. Gordon, director of education, the Lovelace Foundation, Albuquerque, N. Mex.
Dr. Harry S. N. Greene, professor of pathology, Yale University School of Medicine.
Dr. Cecile Leuchtenberger, senior biologist and cytochemist, Children's Cancer Research Foundation, Boston.
Dr. Averill A. Liebow, professor of pathology, Yale University School of Medicine.
Dr. Bjarne Pearson, professor of pathology, Wayne State University College of Medicine, Detroit.
Dr. Sheldon C. Sommers, pathologist, Massachusetts Memorial Hospitals, Boston.
Dr. Douglas H. Sprunt, professor of pathology, University of Tennessee, Memphis.
Dr. Arthur J. Vorwald, professor and chairman, Department of Industrial Medicine and Hygiene, Wayne State University College of Medicine, Detroit.
Dr. Russell W. Weller, director of laboratories, Ephrata Community Hospital, Ephrata, Pa.

14. Bioassay and carcinogenesis (September 10, 1959), (participants):
Dr. R. S. Becker, associate professor of chemistry, University of Houston.
Dr. R. K. Boutwell, associate professor of oncology, University of Wisconsin Medical School.
Dr. Giuseppe Della Porta, division of oncology, the Chicago Medical School.
Dr. Louis F. Fieser, professor of chemistry, Harvard University.
Dr. Freddy Homburger, president, Bio-Research Institute, Inc., Cambridge, Mass.
Dr. A. W. Horton, associate professor of industrial health, University of Cincinnati College of Medicine.
Dr. Maurice Landy, Laboratory of Chemical Pharmacology, National Cancer Institute, Bethesda.
Dr. Melvin S. Newman, professor of chemistry, Ohio State University.
Dr. William E. Poel, research associate, University of Pittsburgh, Graduate School of Public Health.
Dr. Benjamin A. Rubin, assistant professor of epidemiology, Baylor University College of Medicine, Houston.
Dr. Murray J. Shear, Chief, Laboratory of Chemical Pharmacology, National Cancer Institute, Bethesda.
Miss Joan Smith (representing Dr. T. M. Sonneborn, Department of Zoology), Indiana University, Bloomington.
Dr. Paul E. Steiner, pathologist, the Institute for Cancer Research, Philadelphia, Pa.
Dr. C. S. Stephano, director of research, Stephano Bros., Inc., Philadelphia, Pa.
Dr. John C. Szerb, associate professor of pharmacology, Dalhousie University, Halifax, Nova Scotia.

15. Cardiovascular research (June 12, 1959) (participants):
Dr. Ernst O. Attinger, Boston City Hospital, Boston.
Dr. Kurt de Crinis, Goldwater Memorial Hospital, New York.
Dr. Frank W. Davis, Jr., Johns Hopkins University School of Medicine, Baltimore.
Dr. Thomas R. Dawber, National Heart Institute, Bethesda.
Dr. Jack Freund, Medical College of Virginia, Richmond.
Dr. James Gillette, Laboratory of Chemical Pharmacology, National Heart Institute, Bethesda.

Dr. Harvey B. Haag, Medical College of Virginia, Richmond.
Dr. Paul S. Larson, Medical College of Virginia, Richmond.
Dr. Antonio De Leon, Philadelphia General Hospital.
Dr. Kelly T. McKee, Medical College of South Carolina, Charleston.
Dr. Herbert McKennis, Medical College of Virginia, Richmond.
Dr. Edward W. Pelikan, Boston University School of Medicine.
Dr. Walter Redisch, New York University-Bellevue Medical Center, New York.
Dr. Seymour H. Rinzler, Cornell University Medical College, New York.
Dr. Jerry E. Schmitthenner, Lankenau Hospital, Philadelphia.
Dr. Caroline Bedell Thomas, Johns Hopkins University School of Medicine, Baltimore.
Dr. Janet Travell, Cornell University Medical College, New York.
Dr. Duane G. Wenzel, University of Kansas, Lawrence.
Dr. J. Edwin Wood, Medical College of Georgia, Augusta.

16. Cell and tissue culture research (May 24, 1960) (participants):
Dr. Philip Cooper, Albert Einstein College of Medicine, New York.
Dr. George O. Gey, Finney-Howell Cancer Research Laboratory, Johns Hopkins Hospital, Baltimore.
Dr. Ivy Goldring, Albert Einstein College of Medicine, New York.
Mr. Morris Klein, Albert Einstein College of Medicine, New York.
Dr. Cecilie Leuchtenberger, Children's Cancer Research Foundation, Boston, Mass.
Dr. Alvin S. Levine, Indiana University Medical Center, Indianapolis.
Miss Heda Linden, Finney-Howell Cancer Research Laboratory, Johns Hopkins Hospital, Baltimore.
Dr. Bill Maduros, the Hektoen Institute for Medical Research, Chicago.
Dr. Donald M. Pace, Institute for Cellular Research, University of Nebraska, Lincoln.
Dr. O. J. Pollak, Dover Medical Research Center, Inc., Dover, Del.
Dr. Tatsuo Kokubu, Dover Medical Research Center, Inc., Dover, Del.
Mrs. Patsy S. Morrow, Dover Medical Research Center, Inc., Dover, Del.
Dr. C. M. Pomerat, the University of Texas Medical Branch, Galveston.
Dr. A. Awa, the University of Texas Medical Branch, Galveston.
Dr. Y. Ohnuki, the University of Texas Medical Branch, Galveston.
Dr. Alan S. Rabson, Pathologic-Anatomy Department, National Institutes of Health, Bethesda.
Dr. Mary Reed, Finney-Howell Cancer Research Laboratory, Johns Hopkins Hospital, Baltimore.
Dr. Sarah E. Stewart, Laboratory of Biology, National Cancer Institute, Bethesda.
Dr. Charity Waymouth, Jackson Memorial Laboratory, Bar Harbor, Maine.

17. Virology Research (May 25, 1960) (participants):
Dr. Thomas F. Anderson, the Institute for Cancer Research, Philadelphia.
Dr. Philip Cooper, Albert Einstein College of Medicine, New York.
Dr. George Gey, Finney-Howell Cancer Research Laboratory, Johns Hopkins Hospital, Baltimore.
Dr. Ivy Goldring, Albert Einstein College of Medicine, New York.
Dr. Cecilie Leuchtenberger, Children's Cancer Research Foundation, Boston.
Dr. Alvin S. Levine, Indiana University Medical Center, Indianapolis.
Dr. Bill P. Maduros, the Hektoen Institute for Medical Research, Chicago.
Dr. Christopher M. Martin, division of infectious diseases, Seton Hall College of Medicine, Jersey City, N.J.
Dr. C. M. Pomerat, the University of Texas Medical Branch, Galveston.
Dr. Alan S. Rabson, Pathologic-Anatomy Department, National Institutes of Health, Bethesda.
Dr. Mary Reed, Finney-Howell Cancer Research Laboratory, Johns Hopkins Hospital, Baltimore.
Dr. Sarah Stewart, Laboratory of Biology, National Cancer Institute, Bethesda.
Dr. Howard M. Temin, division of biology, California Institute of Technology, Pasadena.
Dr. Charity Waymouth, Jackson Memorial Laboratory, Bar Harbor, Maine.

18. Bioassay and carcinogenesis research (May 25, 1961) (participants):
Dr. T. D. Day, University of Leeds School of Medicine, Leeds, England.
Dr. Walter E. Heston, National Cancer Institute, Bethesda.
Dr. Freddy Homburger, Vio-Research Institute, Inc., Cambridge, Mass.
Dr. Robert W. Hull, Northwestern University, Evanston.
Dr. Charles J. Kensler, Arthur D. Little, Inc., Cambridge, Mass.
Dr. William E. Peol, University of Pittsburgh.
Dr. Murray J. Shear, National Cancer Institute, Bethesda.
Dr. Constantine S. Stephano, Stephano Bros., Inc., Philadelphia, Pa.
Dr. Harold Stewart, National Institutes of Health, Bethesda.
Mr. G. F. Todd, Tobacco Manufacturers' Standing Committee, London, England.

19. Atherosclerosis studies (May 26, 1961) (participants):
Dr. William G. Beadenkopf, New York State Department of Health, Albany.
Dr. Thomas R. Dawber, U.S. Public Health Service, Framingham, Mass.
Dr. Ira Gore, Veterans' Administration hospital, West Roxbury, Mass. and Harvard Medical School.
Dr. Gloria Gallo, New York University College of Medicine, New York.
Dr. Michael Lyons, New York University College of Medicine, New York.
Dr. Henry C. McGill, Jr., Louisiana State University, School of Medicine, New Orleans.
Dr. George V. Mann, Vanderbilt University School of Medicine, Nashville, Tenn.
Mrs. Myra L. Richards, Louisiana State University, School of Medicine, New Orleans.
Dr. Seymour H. Rinzler, New York Hospital-Cornell Medical Center, New York.
Dr. Wilbur A. Thomas, Albany Medical College, Albany, N.Y.
Dr. George E. Wakerlin, American Heart Association, New York.

20. Mechanisms of cellular growth and development (April 21, 1962) (participants):
Dr. John T. Bonner, Princeton University, Princeton, N.J.
Dr. Don W. Fawcett, Harvard University, Cambridge, Mass.
Dr. Clifford W. Gurney, University of Chicago.
Dr. Alfred E. Mirsky, Rockefeller Institute, New York.
Dr. John Runnstrom, Wenner-Gren Institute, Stockholm, Sweden.
Dr. F. C. Steward, Cornell University, Ithaca, N.Y.
Marie D. Berardino, Ph. D., The Institute for Cancer Research, Philadelphia.
Jerome J. Freed, Ph. D., The Institute for Cancer Research, Philadelphia.
Thomas J. King, Ph. D., The Institute for Cancer Research, Philadelphia.
A. Lima-De-Faine, Fil. Dir., research fellow, The Institute for Cancer Research, Philadelphia.
Martin J. Nemer, Ph. D., The Institute for Cancer Research, Philadelphia.
Robert P. Perry, Ph. D., The Institute for Cancer Research, Philadelphia.
George Rudkin, Ph. D., The Institute for Cancer Research, Philadelphia.
Jack Schultz, Ph. D., The Institute for Cancer Research, Philadelphia.
Timothy R. Talbot, Jr., M.D., The Institute for Cancer Research, Philadelphia.

21. Cerebral effects of nicotine (September 28, 1962) (participants):
Dr. A. K. Armitage, King's College Hospital Medical School, London, England.
Dr. Edward F. Domino, The University of Michigan Medical School, Ann Arbor.
Dr. Eskil Hanson, University of California Medical Center, Los Angeles.
Dr. Charles Hockman, Medical College of Virginia, Richmond.
Dr. Ebbe Curtis Hoff, Medical College of Virginia, Richmond.
Dr. Paul S. Larson, Medical College of Virginia, Richmond.
Dr. Edward W. Pelikan, Boston University School of Medicine.
Dr. H. C. Sabelli, Chicago Medical School.
Dr. Carl C. Seltzer, Harvard University.
Dr. Duane G. Wenzel, University of Kansas, Lawrence.

22. Inflammatory and degenerative diseases of the lung (March 11, 1963) (participants):
    Dr. Samuel Andelman, Chicago Commissioner of Health.
    Dr. Alvan L. Barach, clinical professor of medicine, College of Physicians and Surgeons, Columbia University.
    Dr. William I. Fishbein, Chicago, Ill.
    Dr. L. Henry Garland, clinical professor of radiology, University of California, School of Medicine.
    Dr. Gustave A. Laurenzi, assistant professor of medicine, Seton Hall College of Medicine, Jersey City, N.J.
    Dr. Ross Lewis McLean, Atlanta, Ga.
    Dr. Edgar Mayer, New York, N.Y.
    Dr. Israel Rappaport, New York, N.Y.
    Carl C. Seltzer, Ph. D., Department of Nutrition, Harvard School of Public Health;
    Dr. Russell Sherwin, Department of Pathology, School of Medicine, University of Southern California.
    Dr. Sheldon C. Sommers, Scripps Memorial Hospital, La Jolla, Calif.
    Dr. Caroline Bedell Thomas, associate professor of medicine, School of Medicine, the Johns Hopkins University, Baltimore.
23. Methods for measuring physiological smoke exposure (Nov. 15, 1963) (participants):
    Dr. Anthony A. Albanese, Winifred Masterson Burke Rehabilitation Center, White Plains, N.Y.
    Dr. Stephen M. Ayres, St. Vincents Hospital of the City of New York.
    Dr. Hylan A. Bickerman, Goldwater Memorial Hospital, New York.
    Dr. Sylvia Itkin, Goldwater Memorial Hospital, New York.
    Dr. Edith Reilly, Goldwater Memorial Hospital, New York.
    Dr. Ralph I. Dorfman, Worcester Foundation for Experimental Biology, Shrewsbury, Mass.
    Mr. Arthur Gross, Southwest Research Institute, San Antonio, Tex.
    Dr. Paul S. Larson, Medical College of Virginia, Richmond.
    Dr. Herbert McKennis, Jr., Medical College of Virginia, Richmond.
24. Behavorial Effect of Nicotine (Sept. 11, 1964):
    Dr. Barbara D. Brown, California College of Medicine, Los Angeles.
    Dr. E. F. Domino, the University of Michigan Medical School, Ann Arbor.
    Dr. Paul S. Larson, Medical College of Virginia, Richmond.
    Dr. Edward W. Pelikan, Boston University School of Medicine.
    Dr. Carl C. Pfeiffer, New Jersey Neuro-Psychiatric Institute, Princeton.
    Dr. Duane G. Wenzel, the University of Kansas School of Pharmacy, Lawrence.
    Dr. Ken-ichi Yamamoto, the University of Michigan Medical School, Ann Arbor.
    Mr. G. F. Todd, Tobacco Research Council, London, England.

STATEMENT OF DR. SHERMAN KAPLAN

My name is Dr. Sherman Kaplan. I am chairman of the Department of Medicine, Mt. Sinai Hospital, Miami Beach, Fla., and assistant clinical professor of medicine at the University of Miami Medical School. I am a specialist, certified by the American Board of Internal Medicine and a fellow of the American College of Physicians. I attended medical school at the University of Louisville. After completing internship and residency training at Michael Reese Hospital and Cook County Hospital in Chicago, I taught at the Cook County Post Graduate School of Medicine, the Chicago Medical School, and participated in the running of a teaching department of the Cook County Hospital. For the past thirteen and a half years I have practiced in Miami Beach and at the present time I am engaged both in teaching house staff officers at the intern and resident level and in the private practice of medicine.

My training and practice have been devoted principally to the treatment of diseases of the heart and vascular system. Practicing in Miami Beach, I have had a unique opportunity to observe and treat a great number of people coming from all parts of the United States and many foreign countries simply because of the fact that I am in an area where the temperature is warm and the climate

congenial for people with this type of disease. During the past thirteen and a half years there have passed through my practice not less than 2,500 individuals with conditions relating to acute coronary occlusion and coronary artery insufficiency. These people have come from various and diverse backgrounds and they are as varied a group as can be found in any usual human population. From observing these patients and collecting information about all aspects of their histories and life patterns I have reached some conclusions relative to the background and development of coronary artery disease which I would like to communicate to you.

I would like to approach from a clinical viewpoint the question whether cigarette smoking results in deleterious effects on the cardiovascular system leading to coronary artery disease and to review critically the notion that smoking may be responsible for some large number of deaths resulting from the effects of this disease. I would also like to review briefly established causative factors of vascular disease. I should like to emphasize at the start that to this date, there is no known proven cause of hardening of the arteries (arteriosclerosis).

First, let me point out that a great many cases of coronary disease are traceable to certain definite disease circumstances. Diabetes, which to most people simply means a disorder in the body's handling of sugar, is known by physicians to be an important contributing factor in various types of vascular disorders. The circulatory difficulties which arise from this disorder may lead to a group of complications, including marked decrease of blood flow in the coronary artery. Thus we find that the incidence of coronary occlusion in the diabetic is considerably in excess of that in the nondiabetic.

A second disease circumstance predisposing to vascular disease is one involving the abnormal handling of ingested fats. It is called hyperlipemia and is characterized by a fatty or milky appearance to the blood serum. This condition is hereditary and results in marked deposits of fat and calcium material in the arteries with premature death due to vascular disease involving, in the main, the coronary artery.

To these recognized disease circumstances we can add the effect of the apparent inheritance pattern in heart disease. When one interrogates a patient with conorary artery disease about his family history, he is impressed by the fact that the patient usually reveals in his genealogy an uncommonly high incidence of vascular disease not only among his siblings but in his parents and grandparents on one or both sides of the family. The frequency with which this type of history occurs presents the unavoidable conclusion that there is some hereditary abnormality involved in the production of vascular disease, which includes not only coronary artery disease, but hypertension and stroke as well. This abnormality is present at the very moment of conception and its presentation as some form of vascular disease depends only on the passage of the proper interval of time.

Even more intriguing is the contribution of the factor of sex hormones to the integrity of the vascular system. It is a well-established fact that the menstruating female is uniquely protected against coronary occlusion. In contrast, in the postmenopausal female in whom ovarian function has decreased or ceased, there is now a sharp rise in the incidence of coronary occlusion, so that the incidence among these women approaches that of their male counterparts. Another interesting fact is that when the ovaries of a young menstruating female are removed, the incidence of coronary artery disease in such females abruptly rises to a rate paralleling that in the male or the postmenopausal female.

The importance of sex hormones if further borne out by the observation that males in whom certain types of liver damage occurs—such as in the chronic alcoholic with cirrhosis of the liver—the deactivation of female hormone accomplished by the normal liver is absent and he exhibits certain feminizing changes. Such men are found to have a surprising freedom from coronary artery disease similar to that in the menstruating young female.

A particularly pertinent subject for the purposes of this discussion is the well-known effects of stress upon the cardiovascular system. It has been well documented for some time from observations in laboratory animals that in circumstances of increasing tensions or sudden stressful stimuli there is a response in the function of various endocrine glands, which results in marked alterations in cardiac output, heart rate, serum cholesterol level and variations from the normal blood pressure. Clinical studies have extended these observations to human beings in situations of stress.

Some years ago observations were made on a group of accountants in San Francisco. The group was evaluated first in the month of September with respect to serum cholesterol levels, and blood clotting activity. The same group was then reevaluated during March and April. Under the stresses of the tax season a striking change was found to have occurred in all of the factors studied. This group which in September had appeared to be essentially normal in respect to cardiovascular function showed under stress the disturbances which are thought to favor the development of coronary artery disease and coronary occlusion.

These studies have been extended and similar results found by comparing college students during the midsemester and during final exam week. Striking differences are seen in the rate of coronary occlusion in the overworked and pressured general practitioner of medicine as compared to the pathologist or dermatologist.

How does cigarette smoking fit into this pattern? In my opinion, it is simply an easily visualized or discoverable trait which is very likely to be part of the behavior pattern of an individual reacting to stress. It does not cause or exacerbate the cardiovascular abnormalities which appear to contribute to the development of heart disease and heart attacks. In this connection, cigarette smoking is analagous to nail biting or hair plucking which some individuals resort to under situations of increased tension or stress. It is interesting that very often the so-called chain smoker may actually consume very little tobacco. Like the nail biter, who is unaware of biting his nails, the chain smoker is not aware that he has reached for and lighted a cigarette and he may snuff it out after one or two puffs.

In normal humans, smoking produces no change in blood flow in the coronary artery. X-ray studies of the coronary arteries before and after smoking show no change in the vessel caliber. With continued smoking there is no change from the resting level of coronary flow in both normal persons and those with coronary artery disease.

The electrocardiogram in both normal and heart patients shows no significant change and frequently none at all in the presence of smoking.

Studies relating to the clotting of the blood show no effect from tobacco or nicotine.

To conclude these remarks, I wish to comment briefly on the idea which has been advanced that steps taken to discourage cigarette smoking may reduce the number of deaths from cardiovascular disease. I have tried to point out that evidence to establish a connection between smoking and coronary artery disease, the most common form of heart disease, is lacking. The recent popularity of the theory that cholesterol in the diet was a factor favoring the development of coronary disease gave rise to a big business in safflower oil and other forms of unsaturated fats. The emphasis on obesity as a factor has led many people to undertake crash diets. Theories concerning the type of behavior which is best calculated to afford an individual protection from heart disease have been advanced from decade to decade and have enjoyed varying degrees of popularity. Just as the Public Health Service has wisely refrained from endorsing any of these theories in the past, so it would also seem wise to avoid expressions which appear to endorse the theory that cigarette smoking is implicated in coronary artery disease in the present state of our knowledge. Far more pertinent would be an undaunted pursuit of the missing links in the familial transmission of vascular disease and fat metabolism, and a carefully planned educational program designed to champion an even and moderate way of life.

Biographical Data

Education: College: University of Florida, 1941, bachelor of science. Medical school: University of Louisville, 1944, doctor of medicine. Internship: Michael Reese Hospital (Chicago), October 1944 to June 1945. Residency: Duval County Hospital (Jacksonville, Fla.), medicine, July 1945 to April 1946. Fellowship in hematology: Cook County Hospital (Chicago), January 1948 to January 1949. Cardiovascular fellow: Michael Reese Hospital (Chicago), 1949.

Positions held: Voluntary assistant, Cardiovascular Department, Michael Reese Hospital, 1950–51. Associate attending hematologist, Cook County Hospital, 1949. Associate director, Hematology Laboratory, Cook County Hospital, 1949. Adjunct attending physician, Columbus Hospital, 1950. Attending physician in medicine, Veterans' Administration Hospital, Coral Gables, Fla., 1951–53. Faculty member, University of Florida Medical Workshops, 1954, 1955, and 1957. Attending physician, director, Department of Medicine, Mount Sinai Hospital, Miami Beach, Fla., 1961 to present.

Membership in: American Heart Association, American Therapeutic Society, American Federation for Clinical Research, Society for Experimental Biology and Medicine, Chicago Society of Internal Medicine, American Medical Association, International Society of Hematology.

Teaching appointments: Assistant in medicine, Chicago Medical School; Cook County Post-Graduate School of Medicine; Assistant professor of medicine, University of Miami Medical School, 1954 to present; chairman, Department of Medicine, Mount Sinai Hospital, Miami Beach, Fla., 1961 to present. Certified by American Board of Internal Medicine, 1952, Fellow American College of Physicians, 1957.

STATEMENT OF DARRELL HUFF

I am Darrell Huff, of Pacific Grove, Calif., writer and editor. I am the author of articles on understanding and interpreting statistics that have appeared in Harper's and the New York Times magazine and many other general and specialized publications. Additional biographical information is attached.

My book "How To Lie With Statistics" is published in British, German, Swedish, Dutch, Japanese, and Danish editions as well as in regular and college editions in this country. It and my other publications on statistical matters are used in many universities, including the schools of public health at Harvard and the University of California.

I should say that, in spite of its title, "How To Lie With Statistics" is not a primer in deception. Rather it is a discussion of the warning signals to watch for in statistical material lest we reach conclusions not warranted by the facts.

In examining the literature on smoking and health, I find eight major warning signals.

The first of these is the presence of bias introduced into the epidemiological studies by the way in which the sample to be studied was chosen.

A second is the sample size found in some of the subgroupings.

A third is overprecise figures—numbers and decimals that appear to tell us more than, in fact, they do, simply because they are cold numbers.

Fourth is statistical significance. This deals with the probability that an apparent health difference, as between groups of smokers and nonsmokers, is a product of chance rather than a true one.

The semiattached figure is a fifth warning signal. We must be careful to distinguish between a man with lung disease, on the one hand, and microscopic tissue changes in a laboratory animal, on the other.

A sixth question deals with how data—on deaths, for example, are reported and classified.

Seventh is what can be called the bandwagon effect. This is the tendency to add up several pieces of evidence, not one of which is dependable, and then to draw an unwarrantedly firm conclusion from them.

A final warning signal is an assumption that correlation implies cause and effect. Two things very often go together without one having caused the other.

Now to the major question of sampling bias.

This committee is especially concerned with this question. Virtually the whole basis on which we are asked to believe that smoking produces certain diseases is a group of studies based on samples. And any conclusion from a sampling study can be no better than the quality of its samples—just as a river can rise no higher than its source.

For a simple example of accidental bias, consider a report published some years back that the average Yale graduate of the class of 1924 was earning $25,111 a year, which was even more money then than it is now. How could such an improbably high figure be produced by a mailed questionnaire? It is easy to see how selection and self-selection biased the sample. Those men whose addresses were unknown to the alumni office were omitted, of course; and so were those who were reluctant to reveal their income status to their old classmates. It's a fair guess that a disproportion of the least successful would be in both these groups. So the $25,000-odd was merely the average earnings reported by a selected part of the group rather than the actual average earnings of the whole class.

Similarly the spectacular failure of the 1936 Literary Digest poll. The editors thought they were getting a representative sample of Americans by taking names from phone books. What they actually got was a group weighted with above-average incomes. And so they came out with what was, as we look back on it, the absurd forecast of Landon 370 electoral votes, Roosevelt 161. What sounds like a small factor had led to completely false conclusions.

The kind of sample statisticians like, and on which their methods of analysis are based, is defined in this way by a leading statistician:

"A random sample is, in fact, a sample which is drawn from a population in such a way that every member of the population has an equal chance of selection as a member of the sample, and that his inclusion in or exclusion from the sample could not be affected by any factor other than chance."

As we all know, the various studies cited by the Surgeon General's report fail both of randomness and of representing the general population of any country. Respectively they are such special groups as British doctors, American veterans, cooperative friends of fieldworkers of the American Cancer Society, and so on.

Potentially even more serious is the self-selection that has occurred within these already-selected groups. Even within the five studies having definite targets the proportion selecting themselves out by not replying, or by not doing so adequately, varies from 15 to 44 percent. Persons classified as smokers are also self-selected in the sense that they have chosen to smoke, while we are using as controls persons who have chosen not to.

I should mention one striking indication that bias is not only possible here but clearly does exist. The mortality rates in the groups studied are far below those of the general population. Among the British doctors studied by Doll & Hill, for example, they "calculated that the standardized death rate among those who replied to us had been only 63 percent of the death rate for all doctors in the second year of the inquiry, and 85 percent in the third year."

Of the veterans studied by Dorn, in another of the major prospective studies cited by the Surgeon General's Committee, he reports: "Their average death rate for the 3 years, 1954–56, was about 70 percent of that for the total white male population in 1955."

And so it is with the other studies, leading the Surgeon General's report to conclude that "It is clear that the seven prospective studies involve populations gest the possibility that the studies recruited unusally healthy groups of nonpack of cigarettes or more daily have death rates that average slightly below the U.S. white male figure," and that "the low death rates for nonsmokers suggest the possibility that the studies recruited unusually healthy groups of nonsmokers."

A second major source of error in sampling studies is the use of samples that are not big enough. This is not always easy to detect, because a big enough sample for one purpose may be totally inadequate for another.

A treatment for a disease with a very high death rate can sometimes be studied with a handful of cases. But one of the most ambitious of the early experiments with a polio vaccine used a sample of 450 children and a control group somewhat larger—and produced no information at all even though an epidemic happened to hit the area that year. Better calculation afterward showed that at least 7,500 cases would have been needed to obtain a significant answer.

In the material used for the report on smoking and health, it is the subgroups that are often smaller than would be desirable for firm conclusions.

One instance: The report judges cigarette smoking to be a significant factor in cancer of the larynx. This conclusion is based on 4 studies in which the number of cases of this condition were, respectively, 17, 14, 7, and 3.

Third on my list is conviction by precision. It is one of the most universal of all fallacies in dealing with statistical material. The report that the Yale men averaged $25.111 a year is somehow far more impressive than "around $25,000." Yet obviously it must have been obtained by averaging a lot of round figures few of which were so precise themselves.

A sociological study in New York once reported what a workingwoman needed a weekly paycheck of $40.13 to get by. The American Petroleum Industries Committee once issued a statement that the average yearly tax bill for automobiles was $51.13. The statistical studies of smoking contain such figures as "mortality ratio of 1.06" or "1.55." We must keep in mind that, whatever we may think we know about these phenomena, we can't possibly know them with any such exactness as those decimals imply.

Yet it is a human trait to be impressed by this precision, however false, and to think we have learned far more than we have.

The fourth problem, significance, arises when we compare such things as recovery rates between patients given a certain drug and those not receiving it. Or mortality rates of smokers and nonsmokers. Or even the intelligence of children as shown by an IQ test.

Suppose your son's IQ on the excellent Standford-Binet test is found to be 98 and your daughter's, 101. Which child is brighter? You can't really say, because any such test is a sampling of capacity. And in any sampling study, including the epidemiological studies of smoking, we must allow for errors arising from the workings of chance.

The danger of a misleading result produced purely by chance is inherent in all investigations based on sampling.

How likely it is that an apparent difference is a true one is easily shown by accepted statistical methods. This likelihood can then be expressed in figures.

An example, from the Surgeon General's report, is a description of the difference between two groups—nonsmokers and smokers of five or more cigars per day—as "statistically significant at the 5-percent level." In simplest terms, this means that there is no more than 1 chance in 20 that all of the purported difference is purely a product of chance.

When coming upon such a statement of significance it is important to remember two things: First, that it is 19 to 1 that the observed difference is a true one; but, second, that there are 5 chances in 100 that the difference found in the samples does not exist at all in the populations being compared.

Such a statement means that, for the trait or occurrence in question, the sample was too small in size to give any greater degree of assurance than this.

Remember that this possibility of error is unavoidable even when the samples themselves have been drawn in a way that satisfies the pertinent statistical tests—are truly random and do represent the population in which we are interested. As we know, this unfortunately cannot be said of the samples used in the smoking studies.

A statement of statistical significance does not imply anything about the quality of the sample. Thus a conclusion may be statistically significant without actually having any significance in the common meaning of the word. Any of the possible faults in technique or interpretation may still remain. Any bias produced by the way the sample was selected is still there.

Fifth on my list is what I like to refer to as the "semiattached figure." When delving into complex material there is a natural tendency to confuse what has been demonstrated with what seems to have been.

A manufacturer, for example, once advertised extensively that his medical product killed so many thousand germs in a test tube in a given number of seconds. This ability, attested to by the usual "independent laboratory," and probably truthfully, was suggested to be reason for all of us to start using this product upon noting the first signs of a cold. It was hoped that the reader would overlook one thing—that no one has proved any connection at all between killing germs in a test tube and combating, in the human throat, whatever it is that causes colds.

A warning was once published that it is four times more dangerous to drive on the highway at 7 in the evening than at 7 in the morning. This was based on records showing four times as many fatalities at the evening hour as at the morning one. Like certain of the conclusions with which this committee is concerned, this one came out of the best available research—and sounded reasonable to boot.

The flaw, of course, lies in the absence of information about the relative number of people on the road at the two hours. It is entirely possible that there are four times as many people exposed to highway danger during the evening hour as during the morning one. And in that case the danger to any one person undertaking a trip is just about the same at one time as at the other. At least nothing to the contrary has been proved by the figures.

The concept of the semiattached figure applies to the experimental—laboratory—research that has been done on tobacco. Now I don't mean to imply that this is not valuable work, for its negative as well as its positive results, I suspect that failure to produce lung cancer by subjecting animals to inhalation of tobacco smoke may be just as valuable a contribution to our knowledge as a positive finding would be.

But as we evaluate laboratory findings it is important to keep in mind each way in which the experimental situation has differed from the one about which we want information.

Pathologists have pointed out that certain reversible changes in the epithelium are not at all the same thing as cancer of the lung; and, to sum up this problem generally, that mice aren't men.

We are concerned with these laboratory reports not so much because they tell us a great deal—for our purposes they are semiattached figures at best—as

because they are all we have. Perhaps their most notable conclusion is the one summed up on page 165 of the Surgeon General's report in these words on the subject of attempts to produce lung cancer: "The production of bronchogenic carcinomas has not been reported by any investigator exposing experimental animals to tobacco smoke."

Sixth: Reporting and calssifying data.

In 1931, New York State had 8,119 deaths from coronary artery disease. Six years later, 36,390. Why that frightening jump? Primarily a matter of reporting. Only from about 1930 on has coronary artery disease been reported as such on death certificates. And the idea grew more popular each year.

The same thing—a mere change in reporting methods—caused the apparent death rate from cerebral hemorrhage to jump sixfold in a single year.

In New York City, diabetes deaths suddenly dropped to half after January 1949. There had been no important medical change, as far as anyone knows, only a new practice of citing the direct cause, such as heart disease, with the chronic diabetes getting only passing mention.

Precedents like these are among the things that make the reported increase in lung cancer suspect. It may be real. But about the only thing of which we can be sure is that it is exaggerated and effectively obscurred by such known factors as improved methods of diagnosis, greater availability of medical care, and improvement in reporting methods.

The child born today can almost count on escaping the tuberculosis, pneumonia, diptheria, polio, and so on that would have been real threats to him a few generations ago. Consequently he has a far better chance to reach an age at which he may expect to encounter cancer or coronary disease.

It is not just a poor joke to say that the number of deaths in any population comes down in the end to one to a person. As we eliminate or reduce the deaths from certain causes we inevitably increase those from others.

A chart on page 128 of "Smoking and Health" shows that of a reported increase in cancer in this century almost exeactly one half is due to population growth and aging. How much, if any, of the other half is real and how much comes from improved diagnostic methods and changes in reporting it is impossible to tell.

These are some of the difficulties in learning whether the raw total in number of reported lung-cancer cases really indicates some new or increased hazard in our environment—such as smoking or air pollution—and if it does exist, to what degree.

My next-to-last warning flag is the bandwagon effect. The danger here lies in a common tendency to add up several pieces of inconclusive evidence into a firm conclusion when each piece examined alone is subject to grave doubt. We must also remember that it is easy to produce the same erroneous conclusion in one study after another if you repeat the same fundamental error.

Added to this is the inclination to neglect bits of evidence pointing to a contrary conclusion, or to try to explain them away, because they are awkward.

I think it is because we all are afraid of this happening that we share the common distrust of circumstantial evidence. It isn't that evidence becomes weak just because it is circumstantial. What we are recognizing is the danger that several weak indications are being added together to point in what may be the wrong way.

On the smoking question, we begin with the apparent increase in lung cancer. This, as we have seen, is subject to considerable question.

Then we note that the principal evidence is from studies based on samples that fail to meet some of the tests used by statisticians. Selection and self-selection have biased the results—and to an unknown degree.

We also note overprecise figures to guard against; and semiattached ones as well, particularly in reports of laboratory work.

From the laboratory also comes some of our negative evidence. To this we must add the diffuse results from the statistical studies, in which smoking appears to be involved with a host of unlikely ailments as well as with those of the lungs. It is of these findings that Dr. Joseph Berkson, the Mayo medical statistician, says skeptically, "We have 'proved too much.'"

Also arguing against the hypothesis are certain discrepancies. Some studies suggest association with other environmental factors rather than tobacco. Comparisons between the sexes do not seem to square with smoking habits. Inhaling seems to be associated with a higher death rate in some groups—but not in others. There is the "puzzling phenomenon," as the Surgeon General's report

calls it, that four of the five studies show a higher death rate for expipe smokers than for either nonsmokers or current smokers.

In California, Dr. Yerushalmy investigated parents' smoking and the birth weight of their babies. Smoking by mothers seemed to have no significant connection—unless the fathers also smoked.

Like the positive findings, these and all the other negative indications fail to add up to proof. But they do raise interesting and important questions that need to be answered before we can reach conclusions.

If, in spite of these difficulties, we accept some kind of association between smoking and health, we fetch up against a final and crucial question. This is the last of my topics: correlation and causation.

As the Surgeon General's report puts it: "The causal significance of an association is a matter of judgment * * *."

This is simply a way of saying that events A and B may regularly occur together without A having caused B or B having caused A. A third factor, C, may be causing both events to occur.

Many curious correlations have been established that illustrate this. A classic is the marked relationship traced between the salaries of Presbyterian ministers in Massachusetts and the price of rum in Havana. Which causes which? Obviously, both are simply products of a third factor, the historical rise in the cost of everything.

Another is the positive correlation found between the number of storks' nests found on Danish—or maybe it's Dutch—roofs and the number of children born in those houses. It sounds like scientific verification of the stork legend, but it is merely another indirect connection. Bigger houses hold more children—and they also hold more chimney pots on which storks may nest.

A fruitgrower once thought his trees were being blighted by waves from a radio station. He put a wire fence around some of the trees to shield them. To the bafflement of agricultural experts, these trees recovered miraculously while the rest remained in blight. In Texas a similar "little leaf" disease was cured every time when iron sulfate was poured around citrus trees—but this didn't work at all when tried by farmers elsewhere.

Statistically speaking, both of these odd treatments were absolutely proved to work in some places—and to fail in others. Well, in the end it turned out that the blight came from a zinc deficiency in the soil. Iron sulfate worked only when contaminated by zinc-coated buckets; and the shielding worked because traces of zinc washed off the galvanized wire and into the soil.

A little closer to our subject is a medical article that once pointed with alarm to the extent of cancer among milk drinkers. Cancer was shown to be climbing in such substantial milk-producing areas as Minnesota, Wisconsin, New England, and Switzerland—while remaining relatively rare in milk-scarce Ceylon. For verification, it was shown that English women drank milk—and got some kinds of cancer 18 times more frequently than Japanese women, who drank little milk.

The facts were correct. But when cause and effect were straightened out there was no reason for alarm. Cancer is predominently a disease of middle life and after. Lifespans were simply far longer in the dairy areas; and English women at that time were living an average of 12 years longer than Japanese women. You won't find much cancer anywhere among people who die young.

Since reporting methods influence the cancer statistics with which you are concerned, I'd like to mention a curious medical report from a Peiping hospital in 1927. It showed a surprising prevalence of cancer of the breast among Chinese men compared to Chinese women.

You can believe that that one took some explaining. It came down to a matter of modesty. Few Chinese women of that time would take such an ailment to a doctor, so cases among women—however prevalent—seldom became part of the statistics.

These are just a few of the many instances in statistical history that warn us against assuming that an association between two things is a demonstration of cause and effect.

Even if two things can be shown to occur together, we must still ask what the relationship is.

If Yale graduates really do have more money than most of us, is it because they went to Yale? Or is it because Yale tends to get boys from wealthy families—boys who would have pretty good incomes even if they didn't go there at all?

Or—as with the milk drinkers, the storks and babies, the fence around the trees, or the Chinese statistics—is there a third factor at work to produce both of the other two?

A third factor many authorities believe involved in any association between smoking and health is discussed by the Surgeon General's report, which says that "available evidence suggests the existence of some morphological difference between smokers and nonsmokers."

From some of the many studies on this, of which several are briefed in the final chapter of Smoking and Health, I'll list a few of the things that scientific studies have reported about smokers as compared to nonsmokers:

Smokers are most often of the relatively soft, round body type called endomorph, least often the slimmer ectomorph, while the opposite is true of nonsmokers.

They are more often 30 percent or more overweight and are generally taller, heavier, and larger in most body dimensions.

They tend to drink coffee, whiskey, and beer; where nonsmokers incline more toward tea, milk, and wine.

They are heavier drinkers, more often of what has been called the coronary type, easier to anger, more anxious, more inclined to change jobs. They marry oftener, go to hospitals oftener, and are more likely to have had parents who died of heart disease.

That smokers, particularly of cigarettes, are often of a specific personality type is a matter of common observation. While putting these notes together I happened to run across an illustrative incident in a book about business executives.

A man who had just about clinched an executive job was offered a cigarette, and turned it down in favor of his pipe.

"The interviewer slapped his hand forcefully on the desk. 'That settles it,' he shouted. 'You've just lost the job. We don't want any leisurely pipe smokers in this company. We're looking for cigarette smokers, the nervous type, men who are pushing constantly.'"

What the studies suggest is that there may be an inborn difference between those who take to smoking and those who do not. Many of us may be of what could be called a stress type of individual, a kind of person likely to live fast but not so long and more inclined than his neighbors to many activities, of which smoking is only one. If so, the smoker group in a population would show an excess of deaths from many causes—and this would be true of these same people even if tobacco had never been put to human use.

This possibility, along with all the other things I've talked about, accounts for the enormous difference of opinion that exists about questions of smoking and health. It is why, although some tell us that smoking appears to cause a variety of diseases, other authorities don't think so. And still others feel that the case, right down to today, remains obscure and unproven.

As Dr. Berkson told an assembly of doctors to whom he was explaining his doubts about a connection between smoking and lung cancer, "Surely it is no secret that huge blunders have been made with the uncritical use of statistics."

Or, as the humorist Artemus Ward warned us a long time ago:

"It ain't so much the things we don't know that get us in trouble. It's the things we know that ain't so."

Biographical Data

Residence: 1349 Pico Avenue, Pacific Grove, Calif.

Born July 15, 1913, Gowrie, Iowa. Father, school superintendent; mother, schoolteacher. Married Frances Nelson (writer) 1937; four daughters.

Educated public schools in Iowa, Illinois, California. B.A. (with distinction) and certificate in journalism, 1938, and M.A., 1939, State University of Iowa. One year of additional work on graduate scholarship in child and social psychology, State University of Iowa.

Elected to Sigma Delta Chi (professional), Kappa Tau Alpha (honorary journalism), and Phi Beta Kappa.

Reporter, Clinton (Iowa) Herald, 1936. Publicity director, Department of Iowa American Legion Convention, 1936. Reporter and feature writer, Cedar Rapids (Iowa) Gazette, 1937. Associate editor and housing editor, Look magazine, 1939–40. Editor in chief, six David C. Cook interdenominational Sunday school magazines, 1940–42. Managing editor, Better Homes & Gardens magazine, 1942–44. Executive editor, Liberty magazine, 1944–45. Partner in Cavedale Craftsmen, organization producing technical manuals (e.g., Eastman Kodak Data Book) in 1954–55.

Freelance writer and editor since 1945.

Essays on statistical subjects reprinted in many anthologies and textbooks for college English and communications courses; reproduced for course work at

Fresno State College, Augustana College, Black Hills Teachers College, U.S. Army Finance School, Boston University, U.S. Air Force Management and Statistical Branch, San Jose City College, Florida State University, University of California School of Public Health, Harvard University School of Public Health course in biostatistics, etc.; reproduced for distribution by Tennessee Valley Authority, Northern Illinois Gas Co., U.S. Air Force Pacific Air Forces, Traders Finance Corp. of Toronto, National Shoe Manufacturers Association, Rockefeller Foundation, Allstate Insurance Co., Navy Bureau of Ordnance; and reprinted in such specialized publications as Hospital Topics, Canaircommentary of Royal Canadian Air Force, English Digest, Rowntree Technical Library, New Jersey Business, Supervisory Management Magazine, Bell Telephone Co. Blue Bell, Industrial Editor, the Copenhagen newspaper BT, United Automobile Workers Ammunition, Trustee-the Journal for Hospital Governing Boards.

Invited to speak on interpretation of statistics to meetings of American Statistical Association, New York Society for General Semantics, Office Executives Association of New York, American Marketing Association, American Chemical Society.

Author of articles and occasional short stories in newspaper (Boston Herald, St. Louis Post-Dispatch, Philadelphia Inquirer, New York Herald Tribune, New York Times Sunday Magazine) and magazines: Harper's, Esquire, Reader's Digest, Redbook, Look, Saturday Evening Post, McCall's, Woman's Home Companion, American Photography, Industrial Photography, Better Homes & Gardens, The American Home, Saturday Night (Toronto), Woman & Beauty (London), London Daily Herald, and other British, Dutch and Australian publications, Popular Science Monthly, Science Digest, Christian Herald, VFW magazine, American Legion magazine, Medical Economics, Resident Physician, Woman's Day, Think, True, Writer's Digest, Writer's Year Book, Americas, Author & Journalist, Household, Good Housekeeping, Catholic Digest, Journal of Living, Parents magazine, Steelways, etc.

Book columnist: Chicago Sun, Iowa Publisher.

Received the 1963 National School Bell Award "for distinguished service in the interpretation of education."

Biographical information in Who's Who publications: Monthly supplement to Who's Who, January 1945; Who Knows What; and recent editions of Who's Who in the West.

Books: "Pictures by Pete" (Dodd, Mead, 1944); "The Dog That Came True" (McGraw-Hill, 1946; also published in France); 'How To Lie With Statistics" (Norton, 1954); also published in College Edition and adopted for use in most major universities; published by Gollancz in England and in Pelican paperback; and in German, Dutch, Danish, Swedish, and Japanese editions; 'How To Take a Chance" (Norton, 1959); also in Norton Library softcover, British hardcover and Pelican, and Swedish editions; "Score: The Strategy of Taking Tests" (Appleton, 1961); also in British hardcover and Pelican paperback editions; "Cycles in Your Life" (Norton, 1964); British and Swedish editions scheduled.

With Frances Huff: "Twenty Careers of Tomorrow" (McGraw-Hill, 1945; also Armed Services Edition); 'How To Lower Your Food Bills" (Macfadden-Bartels, 1963).

STATEMENT OF HARRY S. N. GREENE, M.D.

My name is Harry S. N. Greene. I was graduated from McGill University, School of Medicine, in 1930 with a degree of M.D., C.M. At the present time, I am the Anthony N. Brady professor of pathology and chairman of the Department of Pathology at Yale University School of Medicine. I am an experimental pathologist and have been actively engaged in cancer research for the past 30 years. I am also a smoker, and the etiology of lung cancer is a matter of personal concern as well as of scientific interest.

It appears to me that the primary issue at this stage of the lung cancer problem concerns an interpretation of statistical associations. A statistical association between two happenings may have three different meanings. The association may be purely happenstance, it may result from the operation of a common factor, or one happening may be the cause of the other. All of these various possibilities must be considered in assessing the significance of a statistical association. It must be emphasized that the judgment is not made by gathering more statistics but rather by subjecting the different possibilities to experimentation. In the present instance, this means subjecting the assumed association between smoking and lung cancer to laboratory investigation.

Laboratory investigation, to date, has not borne out the suggestion of a cause and effect relationship. A great deal of work has been done, but not a single instance has lung cancer been induced by tobacco products.

It is true that cancer has been produced in the skin of mice by long-continued painting with tobacco condensates. It should be emphasized, however, that cancer has also been produced in mice by a variety of common innocuous substances such as salt, sugar, egg white, and cellophane. Further, our concern is with the lung rather than with the skin and despite many experimental attempts, no tumors have been found to follow long-term exposure of this organ to inhalation of tobacco smoke.

The reported production of cancer of the lung in a dog in an interval of 11 days after the application of smoke condensate to its bronchial mucosa must be discounted. Cancer induction is a slow process and materials of the greatest known potency in this direction require months for their action. Further, many other experiments utilizing this same material and animals of the same species have yielded completely negative results. It must be concluded in the case in question that either the cancer was present before the experiment was begun or that the lesion was incorrectly diagnosed.

Experiments utilizing lung tissue in intimate and prolonged contact with tobacco products have been carried out in my laboratory. It had been found that embryonic tissues were much more susceptible to cancer-inducing substances than were their adult counterparts. When embryonic organs were infiltrated with a cancer-inducing substance and transplanted to the body of an adult animal, cancer occurred with twice the incidence and in less than half the time that characterized the reaction of the same organ in its adult state. For this reason, embryonic tissue transplants were used to test the possible cancer-inducing properties of various substances, including condensates from different cigarette and pipe mixtures, cake from my pipe, and ash from cigarette papers. Embryonic mouse lung was used as a test organ, and a very large number of animals was employed but not in a single instance was anything remotely resembling a cancer obtained.

The point to be emphasized is that despite long-continued experimentation, no evidence has been forthcoming to authorize an interpretation of the purported association between tobacco smoking and lung cancer. Certainly at a comparable stage of progress in the investigation of an association observed to occur in a research laboratory, the absence of evidence to support a causal connection would cast considerable doubt on its relevance, and high priority would be accorded to a search for other explanations to account for the coincidence of the two happenings. In my experience as a research worker, the usual answer has turned out to be that the two happenings were related not because one caused the other but because both represented different responses to a common cause. In the present context, a promising possibility along this line is that a common factor may operate to produce an increased susceptibility to lung cancer on the one hand and a heavy smoker on the other.

The smoking population is a selected population differing in other habits not related to the use of tobacco. In general, smokers are less conservatively inclined and have more need for the support offered by tobacco. It is quite possible that they represent a different constitutional type and that the genetic determiners of this type also operate to produce an increased susceptibiilty to lung cancer.

Genetic combinations of this variety are not uncommon, and one manifestation may appear completely unrelated to another. For example, there is a strain of rabbit constitutionally characterized by a high incidence of cancer of the uterus and a pugnacious disposition. The latter is often extreme, and the animal paces back and forth in its cage, snarls at passers-by, and attacks handlers like a bulldog. This behavior is present from early life and is so consistently associated with eventual death from a uterine cancer that it affords a uniformly accurate means of prognosis.

In any case, characteristics of behavior, highly different in their manifestations, may be mediated by a single hereditable genetic element, and it is entirely possible that, in man, a need for tobacco smoke and an increased susceptibility to lung cancer represent manifestations of a common genetic factor rather than a cause and effect sequence. The statistical observation that smokers are more susceptible than nonsmokers to a multitude of bodily ailments in addition to lung cancer is more in line with a general constitutional difference than with the expressed assumption that tobacco smoke is the direct causative agent of such a diversity of disorders.

48-824—65——33

The possibility of a variation in the constitution of pipe and cigarette smokers also offers a rational explanation of the observed differences in susceptibility to disease. The incidence of disease in pipe smokers is reported as not greater or even less than that in nonsmokers. This observed difference in disease incidence between cigarette and pipe smokers constitutes a fundamental discrepancy in the arguments favoring a cause and effect relationship between cigarette smoking and disease. The evidence does not establish inhalation as a factor in the difference, and the content of nicotine and benzapyrene is actually greater in pipe smoke.

In view of a common exposure to tobacco smoke, the difference in the incidence of disease between cigarette and pipe smokers probably relates to a difference in susceptibility. Differences in susceptibility to infectious agents and cancer-producing substances are known to occur in man and in laboratory animals and have been the subject of intensive study. Factors such as age, sex, and race play a highly significant role and other less obvious variations in constitution are of equal importance. Cancer of the lung in man is, itself, an excellent example of a constitutionally affiliated disorder. It occurs predominantly between the ages of 45 and 60, is six times as common in males as in females, and the frequency varies widely in different races and ethnic groups. The influence of other constitutional factors on its occurrence has not been investigated, but it is suggested that the inborn traits that make a pipe smoker or nonsmoker out of one individual and a cigarette smoker out of another may also be operative in determining susceptibility to lung cancer.

In any case, the inference that tobacco smoking is a cause of lung cancer is not based on experimental evidence but on statistical judgment, and my primary object in preparing this statement has been to emphasize that causation cannot be inferred from statistical association. The statistical relationship between smoking and lung cancer is subject to any number of possible interpretations. For example, while it can be interpreted casually, it also can be interpreted as a constitutional diathesis associated with a need for tobacco smoke. Experimental confirmation is essential to either interpretation, but to date this has not been forhcoming, and the nature of the relationship of tobacco smoking to lung cancer remains an unresolved question.

The reported discovery of cellular modifications in various areas of the lungs of smokers has led to the suggestion that such modifications represent precancerous changes. It should be noted, however, that lung cancer itself is a single lesion, whereas the so-called precancerous changes are found in multiple pulmonary locations. Further, identical changes in the appearance of the cells are present in the lungs of adults with pneumonia, influenza, and other pulmonary diseases and are also common in disease of young children. Mice also react similarly to infection with influenza virus and respond with a rapid growth of bronchial cells so anaplastic in appearance as to lead to an erroneous diagnosis of cancer. Such lesions, however, completely disappear when the animal recovers from the disease. It is apparent, therefore, that the changes in smokers are not precancerous and that their presence in the lung does not relate the habit of smoking to cancer.

CURRICULUM VITAE

Born: September 22, 1904, Woonsocket, R.I. Father, George Wellington Greene; mother, Gertrude Earl.

Education: Willbraham Academy, Wilbraham, Mass., 1917–21; Brown University, Providence, R.I., 1921–25; McGill University Faculty of Medicine, Montreal, Canada, M.C., C.M., 1925–30.

Married: Jean Barnes, December 18, 1954.

Children: Judith Ann Greene, Susan Nutting Greene, Melissa Leslie Greene.

Career: Instructor in pathology, Pathological Institute, McGill University, 1930–31; assistant in pathology, Rockefeller Institute for Medical Research, New York, 1931–35; associate in pathology, Rockefeller Institute, Princeton, N.J., 1935–41; associate professor of pathology and surgery, Yale University School of Medicine, 1941–43; professor of pathology, Yale University School of Medicine, 1943–50; Anthony N. Brady professor of pathology, chairman, Department of Pathology, 1950–.

Member: American Association for the Advancement of Science, American Association of Pathologists and Bacteriologists, American Genetic Association, Society for Experimental Biology and Medicine, Society for Study of Growth and Development, American Association for Cancer Research, Ewing Society, Harvey Society of New York, American Academy of Arts and Sciences, New England

Cancer Society, Interurban Pathological Club, Sigma Xi, Theta Delta Chi, Alpha Kappa Kappa. Clubs: Faculty Club, Yale; Graduates Club, Yale. Editorial boards: Cancer, 1948–62; Cancer Research, 1947–61.

Consulting pathologist to: Grace-New Haven Medical Center, New Haven Conn.; Veterans' Administration hospital, West Haven, Conn.; Fairfield State Hospital, Newton, Conn.; Laurel Heights Hospital, Shelton, Conn.; Uncas-on-Thames Hospital, Norwich, Conn.; Backus Hospital, Norwich, Conn.; Bristol Hospital, Bristol, Conn.; Lawrence & Memorial Hospital, New London, Conn.; Meriden Memorial Hospital, Conn.; and East Hartford Hospital, East Hartford, Conn.

Awards: Honorary master of arts, Yale University, 1943. (Reason unknown.) Borden Award, Association of American Medical Colleges, 1956. Citation: For his studies on the transplantation of tumors which have opened new channels for investigating the biological properties of normal and neoplastic tumors and have provided the bases for improved techniques adaptable to investigation in the fields of urology and endocrinology.

National committees: Committee on Growth of the National Research Council; Executive Committee of Growth of the National Research Council and chairman, Division of Biology; Committee on Burns, National Research Council; Transplantation Committee, National Research Council; Committee on Research Training in Pathology, National Institutes of Health.

BIBLIOGRAPHY

Hereditary Variations in the Skull of the Rabbit. Science, 76, (1975): 421, November 4, 1932.

A Pandemic of Rabbit Pox. Proc. Soc. Exp. Biol. & Med., XXX: 892, 1933.

Oxycephaly and Allied Conditions in Man and in the Rabbit. J. Exp. Med., 57: 967, 1933.

Hereditary Constitutional Deficiencies in the Rabbit. Tr. Assn. Amer. Phys., 48: 248, 1933.

A Lethal Dwarf Mutation in the Rabbit With Stigmata of Endocrine Abnormality. Science, 79: 487, 1934.

Hereditary Variation in the Gestation Period of the Rabbit. Science, 79: 526, 1934.

Observations on the Treatment of Infertile Rabbits With Antuitrin B. Proc. Soc. Exp. Biol. & Med., 31: 1010, 1934.

Hereditary Variations in Litter Size of Rabbits. Proc. Soc. Exp. Biol. & Med., 31: 1214, 1934.

Rabbit Pox. I. Clinical Manifestations and Course of Disease. J. Exp. Med., 60: 427, 1934.

Rabbit Pox. II. Pathology of the Epidemic Disease. J. Exp. Med., 50: 441, 1934.

A Lethal Mutation in the Rabbit With Stigmata of an Acromegalic Disorder. Science, 81: 25, 1935.

Rabbit Pox. III. Report on an Epidemic With Especial Reference to Epidemiological Factors. J. Exp. Med., 61: 807, 1935.

Birth Weight Criterion of Dwarfism in the Rabbit. Proc. Soc. Exp. Biol. & Med., 32: 1580, 1935.

Observations on Vitaimin Treatment of Reproductive Abnormalities in the Rabbit.. Proc. Soc. Exp. Biol. & Med., 31: 1010, 1934.

Rabbit Pox. IV. Susceptibility as a Function of Constitutional Factors. J. Exp. Med., 61: 807, 1935.

Hereditary Erachydactylia and Associated Conditions in the Rabbit. Science, 81: 405, 1935.

Observations on the Gestation Period of the Rabbit. J. Exp. Zool., 72: 195, 1935.

The influence of Intra-Uterine Factors on the Fetal Weight of Rabbits. J. Exp. Med., 63: 900, 1936.

Toxemia of Pregnancy in the Rabbit. II. Clinical Manifestations and Pathology. J. Exp. Med., 65: 809, 1937.

Toxemia of Pregnancy in the Rabbit. II. Etiological Considerations With Especial Reference to Hereditary Factors. J. Exp. Med., 67: 369, 1938.

Uterine Adenomata in the Rabbit. I. Clinical History, Pathology, and Preliminary Transplantation Experiments (with J. A. Saxton, Jr.). J. Exp. Med., 67: 691, 1938.

Heterologous Transplantation of Human and Other Mammalian Tumors. Science, 88: 357, 1938.

Uterine Adenomata in the Rabbit. II. Homologous Transplantation Experiments. J. Exp., Med., 69: 301, 1939.

Hereditary Brachydactylia and Allied Abnormalities in the Rabbit (with J. A. Saxton, Jr.). J. Exp. Med., 69: 301, 1939.
Age and Sex Differences in Hormone Content of the Rabbit Hypophysis (with J. A. Saxton, Jr.). Endocrinology, 24: 494, 1939.
Experimental Induction of a Disorder Resembling Toxemia of Pregnancy in the Rabbit. Proc. Soc. Exp. Biol. & Med., 40: 606, 1939.
Familial Mammary Tumors in the Rabbit. I. Clinical History. II. Gross and Microscopic Pathology. III. Factors Concerned in Their Genesis and Development. J. Exp. Med., 70: 147, 1939.
A Dwarf Mutation in the Rabbit. The Constitutional Influence of Hymozygous and Heterozygous Individuals. J. Exp. Med., 71: 839, 1940.
Familial Mammary Tumors in the Rabbit. IV. The evolution of Autonomy in the Course of Tumor Development as Indicated by Transplantation Experiments. J. Exp. Med., 71: 305, 1940.
The Pathology of Development (abstract). Growth Supplement, pp. 121–125, 1940.
Uterine Adenomata in the Rabbit. III. Susceptibility as a Function of Constitutional Factors. J. Exp. Med., 73: 273, 1941.
Heterologous Transplantation of Mammalian Tumors. I. The Transfer of Rabbit Tumors to Alien Species. J. Exp. Med., 73: 461, 1941.
Heterologous Transplantation of Mammalian Tumors. II. The Transfer of Human Tumors to Alien Species. J. Exp. Med., 73: 475, 1941.
Changes in Hormone Content of the Female Rabbit Hypophysis After Mating (with J. A. Saxton, Jr.). Endocrinology, 30: 395, 1942.
Heterologous Transplantation of a Human Fibrosarcoma. Cancer Research, 2: 649, 1942.
Wade Hampton Brown. Science, 96: 221, 1942.
The Participation of the Anterior Chamber of the Eye in Resistance Phenomena Related to Tumor Growth. Cancer Res., 2: 669, 1942.
A Transplantable Squamous Cell Carcinoma in the Rabbit (with W. H. Brown). Cancer Res., 3: 53, 1943.
The Occurrence and Transplantation of Embryonal Nephromas in the Rabbit. Cancer Res., 3: 434, 1943.
The Heterologous Transplantation of Embryonic Mammalian Tissues. Cancer Res., 3: 809, 1943.
The Heterologous Transplantation of Human Cancers (with P. K. Lund). Cancer Research, 4: 352, 1944.
The Occurrence of Dependent and Autonomous Phases in the Development of Cancer. Reprinted from AAAS Research Conference on Cancer, 154–161, August 2, 1944.
Biological Differentiation of Benign and Malignant Growths. Bull. N.Y. Acad. Med., 20: 595, 1944.
The Heterologous Transplantation of Mouse and Rat Tumors (with E. D. Murphy). Cancer Res., 5: 269, 1945.
Studies on the Variation of the Rous Sarcoma Virus Following Growth of the Tumor in the Anterior Chamber of the Guinea Pig Eye (with E. W. Shrigley and F. Duran-Reynals). Cancer Res., 5: 356, 1945.
The Production of Carcinoma and Sarcoma in Transplanted Embryonic Tissues. Science, 101: 644, 1945.
The Homologous and Heterologous Transplantation of Brain and Brain Tumors (with H. Arnold). J. Neurosurg., 11: 315, 1945.
The Heterologous Transplantation of Mouse Tumors Induced in Vitro. Cancer Res., *6:* 396, 1946.
The Microscope or the Guinea Pig? Yale J. Biol. & Med., 18: 239, 1946.
Growth of Avian Tumors Other than the Rous Sarcoma in the Anterior Chamber of the Guinea Pig Eye. (With E. W. Shrigley and F. Duran-Reynals.) Cancer Res., 7: 15, 1947.
The Use of the Mouse Eye in Transplantation Experiments. Cancer Res., *7:* 491, 1947.
Carcinoma of the Vaginal Wall in the Rabbit. (With B. L. Newton and A. A. Fisk.) Cancer Res., *7:* 502, 1947.
Evolution of Cancer of the Uterine Fundus in the Rabbit. (With B. L. Newton.) Cancer, *1:* 82, 1948.
Identification of Malignant Tissues. J.A.M.A., *137:* 1364, 1948.
Multiple Primary Tumors in the Rabbit. (With J. S. Strauss), Cancer, *2:* 673, 1949.
Heterologous Transplantation of the Brown-Pearce Tumor. Cancer Res., *9:* 728, 1949.

Abstracts, Proceedings of the Second Conference on the Diology of Normal and Atypical Pigment Cell Growth. First Session: Clinical and Pathological. Introduction: H. S. N. Greene. Zoologica, *35:* 1950.
The Heterologous Transplantation of Human Melanomas. Yale J. Biol. & Med., *22:* 611, 1950.
The Transportation of Tumors to the Brains of Heterologous Species. Cancer Res., *11:* 529, 1951.
A Conception of Tumor Autonomy Based on Transplantation Studies. A Review. Cancer Res., *11:* 899, 1951.
The Significance of the Heterologous Transplantability of Human Cancer. Cancer, *45:* 24, 1952.
The Significance of the Heterotransplantability of Human Cancer. A summary. J. Mt. Sinai Hosp., *18:* 324, 1952.
Heterologous Transportation of Human Neural Tumors. (With E. T. Krementz.) Cancer, *6:* 100, 1953.
The Transplantation of Tissues Between Zoological Classes. (With W. S. Albrink.) Cancer Res. *13:* 64, 1963.
The Heterologous Transplantation of Human Lung Cancer. Cancer Res., *13:* 347, 1953.
The Transplantation of Human Brain Tumors to the Brains of Laboratory Animals. Cancer Res., 13: 422, 1953.
The Induction of the Shope Papilloma in Transplants of Embryonic Rabbit Skin. Cancer Res., 13: 58, 1953.
The Heterologous Transplantation of V2 Rabbit Carcinoma. Cancer Res., 13: 610, 1953
The induction of the Shope Papilloma in Homologous Transplants of Embryonic Rat Skin. Cancer Res., *13:* 681, 1953.
Transplantation of the Shope Papilloma and the Rous Sarcoma During Early Developmental Stages. Cancer Res., *13:* 726, 1963.
The Heterologous Transplantation of Human Testicular Tumors. Cancer Res., *14:* 516, 1954.
Compatibility and Noncompatibility. Ann. N.Y. Acad. Sci., *59:* 311, 1955.
The Response of Skin From Rabbits Immune to the Shope Virus After *In Vitro* Infection and Transplantation to Normal Animals. Cancer Res., *15:* 124, 1955.
Attributes of Embryonic Tissues After Growth and Development in Heterologous Hosts. Cancer Res., *15:* 170, 1955.
Transplantation of Tissues. In: Biological Specificity and Growth. Ed., Elmer G. Butler. Princeton University Press, New Jersey, 1955.
Studies on the Metabolism of Plasma Proteins in Tumor-Bearing Rats. (With H. Busch.) Yale J. Biol. & Med., 27: 339, 1955.
Infectiousness of the Shope Papilloma Virus After Growth in Embryonic, Neoplastic, and Cancerous States of Domestic Rabbit Skin. Cancer Res., *15:* (11): 748–54, December, 1955.
Studies on the Metabolism of Plasma Proteins in Tumor-Bearing Rats. II. Labeling of Intracellular Particulates of Tissues by Radioactive Albumin and Globulin. (With M. Busch, S. Simbonis, D. Anderson.) Yale J. Biol. & Med., *29 (2):* 105, November, 1956.
Are Viruses Etiological Agents in Cancer? Proc. 3rd Natl. Cancer Conf., J. Lippincott, 449–452, 1957.
The Significance of Transplantability. (Thomas Dent Mutter Lecture LXIX). Trans. & Studies of the Coll. Phys. of Phila., 24 (3): 101–104, February 1957.
Pathology in Fields Collateral to Tissue Culture. J. Nat. Cancer Inst., 19 (4): 711–733, October 1957.
La Biologie des Homogreffes. Proc. Colloques Internationaux du Centre National de la Rechérche Scientifique, LXXVIII: 49–54, 1957.
Transplantability of the Shope Papilloma From the Initial Infection to the Stage of Histological Carcinoma. Cancer Res., 18 (4): 418–421, May 1958.
A Spontaneous Melanoma in the Hamster With a Propensity for Amelanotic Alteration and Sarcomatous Transformation During Transplantation. Cancer Res., 18 (4): 422–425, May 1958.
Adenocarcinoma of the Uterine Fundus in the Rabbitt. Ann. N.Y. Acad. Sci., 75: 535–542, January 9, 1959.
A Virus Etiology of Cancer? National Cancer Inst., Monograph No. 2: 141–148, 1959.
The Inhibitory Influence of a Transplanted Hamster Lymphoma on Metastasis. (with Elizabeth K. Harvey) Cancer Res., 20 (7): 1094–1100, August 1960.

The Relationship Between the Dissemination of Tumor Cells and the Distribution of Metastases. (with E. K. Harvey). Cancer Res., 24 (5) : 799–811, June 1964.
Metatasis from the Brain. (with E. K. Harvey). Cancer Res., 24 (6) : 1021–1027, July 1964.
Metastasis of Heterologously Transplanted Tumors. (with E. K. Harvey). Cancer Res., 24 (10) : 1678–1687, November 1964.

STATEMENT OF BERNICE C. SACHS, M.D.

I am Dr. Bernice C. Sachs of Seattle, Wash. I was graduated from the University of Michigan Medical School in 1942 and obtained my internship and postgraduate training in Chicago at Michael Reese Hospital and the Institute for Psychiatric and Psychosomatic Research and Training, 1942–49. Since then I have been in the active practice of psychosomatic medicine in a group of 70 doctors responsible for the medical care of some 75,000 people in Seattle.

I am the current president of the American Medical Women's Association, past vice president of the Pan-American Medical Women's Alliance and a member of the National, State, and county medical societies, American Psychosomatic Society for Clinical and Experimental Hypnosis, and Medical Women's International Association. My publications have appeared in Industrial Medicine and Surgery, Intercollegiate Association of Women Students, and Journal of the American Medical Women's Association. I devote a substantial part of my time to activities relating to community health and welfare through participation in the Board of Directors of Seattle-King County Safety Council, the Health and Welfare Council, the Public Relations Committee of King County Medical Society and the Governor's Committee on Opportunities for Youth. A detailed curriculum vitae is attached to this statement filed with the committee.

For the past 20 years the study of psychosomatic medicine has been my field of special interest. Psychosomatic medicine is the study of the interrelationship and mutual interaction of mind and body in disease processes. It simply connotes the simultaneous application of psychologic and physiologic techniques in the study of disease.

It is a very ancient principle that the mind and body are interactive and interdependent. Aristotle, for example, observed that "Probably all the affections of the soul are associated with the body—anger, gentleness, fear, pity, courage and joy, as well as loving and hating; for when they appear, the body is also affected." The extraordinary complexity of the activities and reactions of man leads physicians trying to understand and classify them to talk about the mind and body as if they were distinct and separate entities. The emphasis on specialization in medical practice of the past few decades has tended to increase this dichotomy of thinking. But the large body of psychiatric experience indicates that disease is a problem of the individual as a whole and not an autonomous disturbance localized in a particular organ. This body of experience is all but ignored in the report of the Surgeon General's Advisory Committee on Smoking and Health, which accords only minimal attention to accumulated data tending to show that in the smoking and health problem we may be dealing with a whole interrelated complex of underlying, constitutionally determined, physical and psychic patterns of behavior.

In considering how emotions or psychic states can be related to disease such as cancer or cardiovascular disease it must be realized that, as the eminent physiologist, William James, described in 1884, an emotion is a state of mind that manifests itself by a sensible body change. With every emotion—and man has some kind of emotion every minute—changes take place in muscles, blood vessels, in the viscera, in the endocrine glands. These bodily changes and the perceptive mental states which accompany them are, in fact, the emotion. The lives of people are filled with many small unpleasant emotions—none very violent or important taken singly. But in some people the monotonous repetition of these in daily life may operate to produce a personal environment of anxiety, apprehension, worry, frustration, discouragement and fear. These states then produce body manifestations by overstimulation of the muscles, external skeletal muscles, internal smooth muscles, muscles in the blood vessel walls and by overstimulation of the excretory glands. Ultimately the disorders of function by which emotional stimuli may thus manifest themselves can become structural changes, as Meyer and Cannon in America and Pavlov and Freud in Europe demonstrated in the second decade of this century.

When health and disease are conceived as reactions of the human organism to a complex internal and external environment, it becomes apparent that since causes of reaction are complex so the cause of disease must be multiple. And indeed the Surgeon General's Advisory Committee recognizes this basic proposition. "All members," the report notes, "shared a common conception of the multiple etiology of biological processes" and "all were thoroughly aware of the fact that there are series of events in occurrences and developments in these fields, and that the end results are the net effect of many actions and counteractions." But the Committee then proceeded to consider the statistical association of smoking with various diseases virtually as though smoking and disease existed in a vacuum and not in people with complex psychological and physiological differences. What we cannot tell from a simple statistical association—even if it is assumed the association is real—is whether both smoking and the various diseases are correlated with other hidden factors such as psychological and physiological differences which themselves exert the true causal force in each case. And, in fact, there is a good deal of accumulated data suggesting a number of reasons to believe this might be so.

Studies of the possible relationship between emotions and neoplasms of various sites have been slowly appearing in the literature over the last three decades. In the first of these, Dr. Elida Evans reported from a study of 100 cancer patients that her typical cancer patient had lost an important emotional relationship prior to the development of the neoplasm. Flanders Dunbar in her exhaustive study of the psychosomatic field from 1910–53 views cancer as profoundly influenced by emotional conditions. Hutschnecker in his book "The Will To Live" presents many case histories and clinical observations leading him to see a clear connection between emotional states and the neoplastic process. Foque in 1931 stated on the basis of his clinical experience that it was necessary to study "the role of sad emotions as activating and secondary causes in the activation of human cancers." Tarlau and Smalheiser (1951), Cobb (1954), Butler (1954), Kissen and associates, and LeShan and Worthington have all reported studies on cancer patients—including patients with lung cancer, breast cancer, cervical cancer, and other cancers—giving evidence of personality patterns significantly associated with the occurrence of malignant disease. While research in this field is still in its infancy certain significant factors seem to emerge:

1. There seems to be a correlation between cancer and certain types of psychological situations.
2. The most consistently reported psychological factor has been the loss of a major emotional relationship prior to the first noted symptoms of the cancer.
3. There may be some relationship between personality organization and the type or location of cancer. The evidence that different types of people tend to develop different types of cancer is extremely suggestive

It is interesting to note, in view of the statistical association between smoking and lung cancer, that in studies by Kissen and Eysenck, the relationship between lung cancer and extroversion is greater than can be accounted for by the greater number of cigarettes smoked by more extroverted subjects and suggests some congenital or constitutional factor relating disease and personality. Dr. Kissen and an associate also reported that male lung cancer patients have a significantly diminished outlet for emotional discharge. In addition, they said, such patients tend to bottle up or conceal their emotional difficulties. In a subsequent study, this University of Glasgow research worker reported that there was further evidence of a personality pattern common to male lung cancer patients which begins in childhood and does not appear to be related to smoking habits. The expanded study included a total of 335 patients of whom 161 had a diagnosis of primary lung cancer. They were studied before the investigator was aware of a diagnosis and in most cases before a diagnosis of lung cancer was confirmed. His findings are quite consistent with a multifactorial etiology of lung cancer in which smoking would play no etiological part.

The Surgeon General's report states "Stress seems to be related to smoking and there is evidence that the experience of stressful situations contributes to the beginning of the habit, to its continuation and to the number of cigarettes consumed." Kissen concludes that cigarette consumption increases in relation to the occurrence of some emotionally stressful situations. Nervous traits, anxiety and overreaction to environmental stimuli have been found to be very prevalent among smokers as compared to nonsmokers. The Public Health report further states: "existence of an association between stress and tensions on the one hand

and smoking behavior on the other can probably be accepted with a reasonable degree of confidence."

In a study by Matarazzo and Saslow, smokers report more psychosomatic symptoms than nonsmokers. In the English study by Eysenck, heavy, medium, and ex-smokers of cigaretts were found to have the largest number of psychosomatic disorders, nonsmokers the least. Using representative samples and objective techniques, the general picture that emerges is one of smokers tending to live faster and more intensely and to be more socially outgoing.

Several studies, using behavioral rather than psychological test data, support this picture. In a study at Johns Hopkins last summer, it was shown that there are significant somatic and psychological differences between groups of subjects with different smoking habits. The findings suggest that the inherent nature of the smoker compared with the nonsmoker is reflected in both his somatic and psychological makeup. Heart rate and anxiety accounted for the largest share of the differences between groups.

The Russek study of young coronary patients revealed that emotional stress associated with occupation appeared to be far more significant than heredity, dietary fat, tobacco, obesity or physical activity in the development of heart attacks. Fear, insecurity, discontent, frustration, restlessness, feeling of inadequacy, etc., experienced as a result of occupational stress were closely related to coronary attacks. The Friedman-Rosenman studies on behavior patterns and heart disease also show a striking correlation between the driving, aggressive, time-pressured executive-type personality and coronary attacks. Dr. Russek's data clearly indicates not only that the smoking habit is more prevalent in occupations of greater stressfulness but also that heavy smoking is more frequent when tensions increase. Those who have a tendency to nervousness have a tendency to smoke as an outlet. When things pile up, they tend to smoke more.

The important fact that emerges from all of this is that the smoking and health hypothesis is only one of several possible explanations of the survey data in the report of the Surgeon General's Advisory Committee. Cancer and heart disease are profound biologic phenomena. The cause or causes of lung cancer, as all human cancer (and I believe all cancer is one disease, whatever the organ in which it may occur), and of heart disease has not been established by science. From the research material in the smoking field we could conclude that the same stress that stimulates heavy smoking may be the stress that precipitates the complex cancer process or produces the coronary prone individual. What remains is that research into causation of these diseases is urgently needed along all possible avenues. Pursuit of the leads suggested by the data I have mentioned today give real hope for the future. For if we can determine that certain body changes follow certain types of emotional change and that these are correlated with cancer and heart disease we may have discovered new ways to attempt therapeutic intervention at different levels of biological function.

In conclusion I would like briefly to mention the teenage smoking problem. There are 20 million adolescents in America. And since smoking is a habit which, for a great many complex reasons, adults find exceedingly difficult to discontinue, it has always seemed reasonable to me to try to encourage young children not to take it up. But there is serious question in my mind whether a label warning that smoking is a health hazard will promote that endeavor. My experience with my adolescent patients accords with the findings of Dr. Eva Salber's study of the smoking practices in high schools and junior high schools in that it appears that the cigarette is used as a status symbol to impress both self and peers and to provide status and group security. This is particularly so for students who do not achieve well at school and who do not get on well with authority, parental or otherwise. Presumably any peer-oriented youngster is likely to smoke, whatever his social status, as part of a kind of defiant claim on adult status. It may be supposed that the more earnest students in high school take adult prohibition more seriously and perhaps, do not always fit in well with "the clique."

Laws and mores of our society deny high school students the right to enjoy the pleasures derived from alcohol, gambling, and tobacco. The mystery with which adults surround these areas of behavior lends them a special value which seems to act as a stimulus to many young people who desire to experience the supposed thrill of pleasures their elders deny them. Therefore, smoking becomes one form of teenage rebellion. The labeling of cigarettes, rather than deter their use, could well fan the fire of youthful rebelliousness.

CURRICULUM VITAE

1939: University of Michigan, B.A., cum laude.
1942: University of Michigan Medical School, M.D., with distinction.
1942–49: Internship and postgraduate medical training: Michael Reese Hospital and the Institute for Psychosomatic and Psychiatric Research and Training, Chicago, Ill.
1949: With group health clinic and hospital, Seattle, Wash., engaged in practice of psychosomatic medicine.

Honorary scholarship societies: Alpha Lambda Delta, Iota Sigma Pi, National Forensic League, Phi Beta Kappa, Phi Kappa Phi, Alpha Omega Alpha.

Professional societies: American Medical Association, Washington State Medical Society, King County Medical Society, American Psychosomatic Society, Washington Academy of Clinical Hypnosis, Society for Clinical and Experimental Hypnosis, Seattle Medical Women's Association, president, 1959–64; American Medical Women's Association (Washington State delegate, 1959–61; recording secretary, 1959–60; second vice president, 1960–61; vice president, 1961–63; president-elect, 1963–64; president, 1964–65); Pan-American Medical Women's Alliance (corresponding secretary, 1960–62; vice president from United States, 1962–64); Medical Women's International Association, Puget Sound Association of Phi Beta Kappa.

Community organizations: Chairman of children's program committee, Jewish Community Center, 1955–58; board of directors, Health and Welfare Council, 1957–60; board of directors, Western Division, Jewish Walfare Board, 1958–59; board of director's Past Presidents' Assembly, 1961–62; board of directors, Seattle-King County Safety Council, 1960–63; Governor's advisory committee on youth opportunities, 1962–65; Women's Medical College of Pennsylvania (board member, ex officio 1965).

National organizations: Women's University Club of Seattle, American Association of University Women, National Resource Personnel Board of the Intercollegiate Association of Women Students, Women's Conference Committee of National Safety Council.

STATEMENT OF ISRAEL RAPPAPORT, M.D.

I am Israel Rappaport (M.D., University of Budapest, Hungary, 1919; New York State Board, 1921), a practicing physician specializing in diseases of the chest since 1928. Having served as visiting physician to the chest service of Bellevue Hospital from 1930 to 1958, I am now consulting physician there. I also served on the faculty of Columbia University Medical School as associate clinical professor of medicine up to my retirement in 1958. I am also consultant to the chest service of Grasslands Hospital, Westchester County, N.Y., for many years past.

I have published numerous articles and several chapters in textbooks on various aspects of pulmonary diseases, including more than 20 articles on or related to pulmonary emphysema. These have appeared between 1936 and 1960 in issues of Annals of Internal Medicine, Diseases of the Chest, Journal of the American Medical Association, and The Lancet of London.

Because of new concepts which I evolved on chronic pulmonary disease, the late Dr. J. A. Miller invited me to join his staff at the chest service of Bellevue Hospital in 1928. Here, on my initiative, Dr. Miller launched the pulmonary function research project which was carried on by Drs. Richards and Cournand to worldwide fame, honored by the Nobel Prize in 1958. The novel concepts about pulmonary emphysema which inspired launching this research were announced (by Dr. J. A. Miller) in a publication "Pulmonary Fibrosis and Emphysema" in Ann. Int. Med. in September 1936 and "Chronic Lung Disease" in November 1938. In a series of subsequent articles, I was perhaps first in drawing repeated attention to the rising incidence of pulmonary emphysema and chronic bronchitis, and in 1957 in an article in the Journal of the American Medical Association, October 1957, I drew attention to "Changing Forms and Causes of Pulmonary Insufficiency in the Present Era of Medicine", explaining the recent changes in chronic bronchitis and emphysema. In 1958 I proposed the treatment of acute pulmonary insufficiency by tracheostomy, which is now a widespread procedure used to tide over patients dangerously ill from acute complications of chronic respiratory disease.

I feel that I have a right to speak out on the subject here involved because chronic lung disease has been a subject of prime interest to me for over 35 years.

I am opposed to acceptance of the concept that "cigarette smoking is the most important of the causes of chronic bronchitis in the United States which increases the risk of dying from chronic bronchitis"; I am also opposed to acceptance of the concept that a relationship exists between pulmonary emphysema and cigarette smoking "which although not causal leads to increased risk of dying from pulmonary emphysema."

My opposition is based on the following two reasons:

(1) It is a fact that the theory of the link assumed to exist between cigarette smoking and chronic lung disease refers to the traditional entities of chronic bronchitis and of pulmonary emphysema. Protagonists of this theory admit that we cannot define and cannot recognize these conditions clinically with any degree of certainty. The nature and origins of these conditions are still open problems. The fact that we are now in the process of establishing definitions and are now seeking information regarding the nature and origins of these diseases should in itself preclude our making decisions regarding such etiological concepts as that implied in the cigarette smoking theory at least until we know what pulmonary condition we are actually referring to. In the following, I will endeavor to prove with statements made by protagonists of the cigarette smoke theory that they are uncertain about what lung disease smoking should be linked to and that in the final analysis, their claims imply a link only with minor symptoms of little clinical significance rather than with any disease entity.

(2) Clinical experience in hospitals and in private practice over the past 40 years, constantly considered in the light of the past, recent, and current literature, has taught me that chronic lung disease as now observed is not to be identified with the traditional entities of chronic bronchitis and emphysema. In the following, I will endeavor to show that we are now concerned with a disease entity which has been evolving during the past half century, beginning before cigarette smoking became widespread; that smoking was not a factor in this evolution; and that recent and current observations afford no definite evidence proving that cigarette smoking plays a deciding or indeed any significant role in the origin of this disease, which occurs commonly also in nonsmokers.

I

In support of my first reason, I will refer here to statements from protagonists of the cigarette smoking theory as expressed in two recent publications, namely, the reports of the Royal College of Physicians, London, 1962, and the Report of the Advisory Committee to the U.S. Surgeon General, 1964.

The Royal College of Physicians of London concedes that the association between smoking and bronchitis does not mean that cigarette smoking is the chief cause or the only cause of the disease, and lists ample evidence implicating other factors. Pointing to the fact that death rates from chronic bronchitis in the United Kingdom are many times greater than in the United States they conclude as follows:

"Since cigarette consumption is similar in the two countries, factors other than smoking must be implicated. Part of the explanation may be the differences in diagnostic terms used in the two countries, but the experience of physicians who have worked in both countries leaves no doubt that chronic bronchitis is much more prevelant in the United Kingdom than in the United States."

Although English physicians still speak traditionally of chronic bronchitis, they are referring to a disabling and fatal form of it. In England the disease in question is a very serious public health problem, since it causes nearly 10 percent of the national mortality. In a most recent meeting of the foremost lung specialists in the United Kingdom, it was made clear that this grave disease is not to be identified with either chronic bronchitis nor with pulmonary emphysema, as is customary in the United States. In this symposium it was therefore proposed to designate this condition as "chronic nonspecific lung disease." Dr. D. Reid, in a recent discussion of the epidemiology of chronic nonspecific lung disease, attributes it chiefly to the combined effects of recurrent respiratiory infection, fog, cold, and air pollution, restricting the effects of smoking to "cough and phlegm."

Although there are definitely more heavy smokers in the United States than in the United Kingdom, yet morbidity and mortality from chronic lung disease is here incomparably less. As will be shown below, in the United States, too, the statistics on the association with smoking refer mostly to persons with "cough and phlegm" rather than to patients with the disease which caused the high morbidity and mortality and gives so much concern to public health officials.

The Royal College of Physicians of London must be given credit for not omitting from its report the list of factual data which are in opposition to the presumed link between smoking and chronic bronchitis. They reached the conclusion that "Cigarette smoking should be regarded as an important conditioning factor rendering many men and women liable to a disabling disease which they might have escaped had they not smoked." This cautious statement is, of course, a far cry from the concept of smoking as the most important cause of the disease.

What is more important is that it brings down the issue over the effects of smoking to the dubious and tenuous assumption that in every case of chronic lung disease caused by the factors mentioned above, cough and phlegm due to smoking must have preceded, which, of course, cannot be ascertained. The assumption that these patients might have escaped development of disabling disease had they not smoked before is sheer speculation.

Most important of all is the fact that in the report of the Royal College of Physicians a causal link to smoking is claimed only for so-called simple bronchitis, but not for disabling chronic bronchitis. The term "simple bronchities" refers merely to "cough with phlegm," trivial symptoms, as compared with chronic bronchitis which in England is a rather common cause of death. The term "bronchitis" applied to both of these conditions has led to the current confusion particularly in the literature linking smoking with chronic bronchitis. The error arising from this confusion is perhaps best illustrated by the long and firmly held belief expressed in the common phrase "Nobody dies from chronic bronchitis" which is found repeatedly in the literature in England as well as in the United States.

In the report of the U.S. Surgeon General's Advisory Committee, chapter 10 is devoted to presentation of the evidence upon which is based the conclusion that cigarette smoking is the most important cause of chronic bronchitis, and that a relationship, which is not causal, exists between smoking and pulmonary emphysema. The most remarkable fact about this presentation is that all the literature which is reviewed refers to entirely nonspecific tissue changes and symptoms presumed to be those of chronic bronchitis and emphysema. Indeed, this text includes a lengthy discussion of the reasons for the necessity to resort to this arbitrary presumption.

It is stated that "chronic bronchitis and pulmonary emphysema represent disorders of multiple causality. Such problems are particularly suited for analysis by epidemiologic methods." Then we are told that "the definition and criteria for diagnosis of chronic bronchitis and emphysema are not ideal for the purposes of epidemiological surveys." "Lack of standard diagnostic methods and the nonspecificity of diagnostic criteria has resulted in the use of symptom-prevalence surveys."

"Because of the nature of the diseases in question, these surveys present results by the prevalence of specific symptoms and signs, or combinations, rather than diagnostic labels of disease entities." The surveys serve to evaluate "whether smoking is associated with certain signs or symptoms to a greater extent than with other findings." It is repeatedly emphasized that the diagnosis of chronic bronchitis can be achieved only by exclusion of many other diseases of the lungs and that a clinical diagnosis of emphysema is even less exact.

The results of a few symptom-prevalence surveys (referring to cough, expectoration and breathlessness) are presented as epidemiologic evidence. The claim is made for existence of a relationship between smoking and these symptoms. This part of the report includes a number of statements which clearly indicate that this evidence is quite inadequate to establish even this claim of a link to these symptoms. For example, it is conceded that "in several of these surveys, females show a higher prevalence of breathlessness in nonsmokers than in smokers, particularly in the older age group. The reasons for this sex difference have not been explained." The importance of this admission lies in the fact that breathlessness is, of course, the most significant symptom of chronic lung disease.

Another important admission is this statement: "Morbidity data are insufficient at present to be of value in the estimation of the possible health hazard of smoking." Summation of the clinical evidence includes this statement: "Such evidence can do little more than provide a basis for hypothesis and indicate the effect of continued smoking on established disease; it does not, of course, establish or exclude causal relationship."

Referring to the pathologic changes in pulmonary parenchyma which are assumed to indicate a relationship between smoking and emphysema, the report

concedes: "These changes cannot be related with certainty to emphysema or other recognized disease at the present time."

Lack of space does not permit here inclusion from this report of many more such quotations which detract from the assumed value of the evidence presented.

Obviously the sum total of this evidence is far from adequate proof of a link between smoking and the changes and symptoms discussed in this report. Furthermore, while it is freely admitted that these changes are nonspecific and it is not possible to identify them as those of chronic bronchitis and emphysema proper, yet in this report the committee did not refrain from doing just that.

Before concluding these brief remarks on statements made by the two groups of protagonists of the cigarette smoke theory, some comment is required on the most significant difference between them with regard to their views on the effects of smoking here and abroad. In England they hold the view that smoking is not the chief cause of chronic bronchitis and that its disabling fatal form is caused by the combined effects of fog, air pollution and recurrent infections. In the report of the Surgeon General's Advisory Committee it is concluded that "cigarette smoking is the most important cause of chronic bronchitis in the United States" and that "for the bulk of the population of the United States the importance of cigarette smoking as a cause of bronchopulmonary disease is much greater than that of atmospheric pollution, or occupational exposure."

This difference is, of course, of fundamental significance from the standpoint of the issue over the effects of smoking. This remarkable difference certainly requires a considerable amount of explaining by the protagonists of the smoking theory here and abroad.

In fact most recent reports indicate that protagonists of the smoking theory here and abroad are already beginning to reconsider their views on this question. From findings in a recent epidemiologic study on prevalence of respiratory symptoms in Berlin, N.H., compared with Chiliwack, British Columbia, Ferris and Anderson (stanch protagonists of the cigarette smoke theory) were forced to conclude, contrary to their formerly repeatedly expressed belief, that smoking habits alone do not determine the prevalence of respiratory symptoms in a community. They concede that their findings now point in the direction of air pollution as a factor and they also speculate on the role of ethnic differences in the population as a cause of predisposition to chronic respiratory disease. With widening epidemiologic studies, the link between smoking and clinically significant lung disease is bound to become increasingly tenuous.

II

My second reason for opposing the cigarette smoke theory is based on the concept that the lung disease now in ascendancy is neither bronchitis nor emphysema, but is a new pulmonary disease entity which has evolved during the past half century beginning before cigarette smoking became widespread. This new form of chronic lung disease is now widely recognized as such as indicated by the apt designation of "chronic nonspecific lung disease" now used in the literature more and more frequently. This new form has evolved as a result of profound changes in medical science, changes in the lives of the people, and changes in the environment which have affected the respiratory organs in particular, during the past half of the present century. The incidence of the present form of chronic lung disease is known to have increased parallel with the following changes:

1. There has occurred a very sharp decline in the mortality from pulmonary infections (pneumonias, tuberculosis, etc.). However, many survivors of these formerly fatal afflictions are now left with permanent lung damage, and they remain more prone to further lung damage by subsequent affections involving this organ.

2. There has occurred a marked increase in respiratory infections by a variety of rival agents, including many only most recently identified, which, though relatively mild in terms of mortality, have a very high incidence of morbidity. We have no antibiotics against these respiratory infections which tend to recur frequently during life.

3. There has occurred a striking increase in the incidence of allergic and asthmatic respiratory affections.

4. Vastly increased industrialization has brought about changes in our environment affecting particularly our respiratory organs by pouring a number of pollutants into the air we breathe harmful in amount and nature.

The length of life of people has increased, the ratio of men and women living to advanced and old age is much greater. The factors listed above now have ample time to exert their combined untoward effects and aggravate the effects of the aging process particularly in the respiratory tract. Hence the increasing prevalence of chronic lung disease in our aging population.

The chronic lung disease which we now observe represents the results of a lifetime of wear and tear on the respiratory system. Its development and rate of progress in any particular case is primarily determined by the initial pulmonary endowment the individual is born with, the lung capacity he develops during the growth period of life and, by the pulmonary afflictions and damages he suffered during his lifetime.

We seem to be dealing with an exceedingly complex disease entity which we now observe with apparently increasing frequency in men and women of advancing and advanced age. It has a slow and very insidious evolution beginning quite early in life, and leads to overt pulmonary disability only many years later. In all population surveys, age proved to be the factor of highest correlation with the symptoms said to be indicative of chronic lung disease.

This insidious change in the prevalent forms of chronic lung disease began long before cigarette smoking became widespread. It became noticeable soon after the turn of the century and, by all indications, it afflicts nonsmokers as well as smokers. In England where this serious form of chronic lung disease is by far the most common as compared, for example, with this country, and reliable statistics of its incidence are available, the high rate of its occurrence in nonsmokers has been a conspicuous feature. It also appears to be far more frequent in men than in women, although during the past few decades women have been smoking in increasing numbers.

The nature and origins of the changed form of chronic lung disease presently evolving under the effects of recent and current changes in medical science and in medical practice, and under the effects of changes in the environment we are living in, is far more problematic than is generally appreciated, particularly by those who still insist on speaking of chronic bronchitis and pulmonary emphysema, disease entities which they can no longer define or understand.

In spite of numerous symposia held recently on the problem of pulmonary emphysema, we have made little progress, so far, in solving this problem. Current studies emphasize loss of lung substance (departitioning) as the essential criterion of this condition. In the process of attrition of lung substance throughout life, a large number of factors continue to operate, and the role of most of these factors still remains to be determined.

Clinical experience does not afford any indications of possible harm to the lungs from smoking, and certainly there are no apparent signs or symptoms of clinical significance which definitely implicate smoking in the origin and development of chronic lung disease in general. Indeed, in my own clinical experience, I have had under long observation many men and women with obviously poor pulmonary endowment (poor chest development and low pulmonary capacity) who had smoked heavily for many years and remained completely free from any signs of harmful effects of this habit in the lungs. In the large amount of literature recently accumulated on possible effects of smoking, no evidence has been produced of actual harmful effects in humans, and certainly there is no definite evidence of changes correlated with clinically manifest chronic lung disease produced by smoking.

To experienced physicians who examined and observed so many heavy smokers, the most astonishing feature of the present issue over the effects of smoking must be the current trend to simply ignore the overwhelming evidence presented by the tens of millions of smoking men and women going through life without any signs or symptoms of damage to their lungs from many years of smoking—even heavy smoking. In contrast, I am not surprised by the fact that the overwhelming proportion of smokers can continue to smoke all their lives without ill effect when I consider the imposing amount of clinical and pathological evidence for the enormous capacity for self-cleansing of the normal healthy and fit lung endowed with ample reserves.

Of the conclusions to be drawn from all the foregoing, the following two seem to me to be of most crucial importance.

(1) It is an incontestable fact that the vast majority of smokers, including millions of heavy smokers, never develop symptoms or signs of chronic bronchitis and emphysema.

(2) It is equally a fact established beyond doubt that the chronic respiratory diseases mentioned are commonly observed in patients who have never smoked.

Obviously only by completely ignoring these fundamental facts is it possible to uphold the claim of definite causal relationship between the chronic respiratory diseases and smoking. How is it possible to ignore these facts which speak with the force of a biologic experiment on human beings on the vastest possible scale.

With regard to the question of preventive action now proposed, I hold the following beliefs. I question whether the known facts about the link between cigarette smoking and chronic bronchitis and emphysema really call for or even justify such action. In my opinion, the answer to this question must be an unqualified "No." The reasons are as follows:

(1) At the present time, the presumed link between cigarette smoking and chronic bronchitis and emphysema is only a theory proposed on the basis of data which are, to say the least, meager and inconclusive.

(2) Medical practice in public health is not properly served by threats of definite harm when the medical facts warrant at most mild caution of possible danger. Indeed, such warnings tend to boomerang by loss of public faith in statements issued by public health authorities and might result in their being ignored, even by physicians who might otherwise tend to caution certain patients to moderate or discontinue cigarette smoking.

(3) I am convinced that medical science and medical practice will best be served by postponing action now and by continued study of the problems with strict adherence to separation of theory from facts, which was not always done by some protagonists of the cigarette smoke theory who dealt with this issue in the recent past.

(4) Of tens of millions of cigarette smokers, only a minute fraction is prone to develop chronic lung disease. Therefore, little medical purpose is served by warning all to stop smoking. The fact that we do not yet possess the knowledge which would enable us to select those to whom smoking may possibly be harmful does not give us the right to advocate that everyone refrain from smoking. Until we have solved this problem, physicians will probably continue to do what they have been doing; namely, advising patients with symptoms suggesting possible onset of chronic lung disease that smoking may aggravate their symptoms.

(5) The often-used argument that preventive action may be justified before the cause of a disease is established hardly applies in this case. The assumed possible link between cigarette smoking and chronic lung disease cannot be compared with the link which exists, say, between an infection, the agent of which is still unknown, and a definite disease. Where we are dealing with a definite disease clearly linked to an infection, we need not wait for determination of the particular infectious agent. In chronic lung disease we have an ill-defined disease indefinitely linked to a number of undetermined agents. Action against any particular one of the possible agents is illogical, unjustified, unreasonable, and purposeless.

STATEMENT OF DR. DUANE CARR

My name is Duane Carr, of Memphis Tenn., professor in surgery at the University of Tennessee College of Medicine. I have taught medical students, interns and residents in surgery for over 30 years at the university, and developed a training program for thoracic surgeons which received the approval of the accrediting agencies and which was recognized in this country and abroad. I am one of the founders of the Southern Thoracic Surgical Association, the first governor of Tennessee of the American College of Chest Physicians, and received my certification in thoracic surgery in the founder's group. Besides the American Medical Association, my medical society affiliations include senior membership in the American Association for Thoracic Surgery, active membership in the American Society of Thoracic Surgeons, fellowship in the American College of Surgeons, fellowship in the American College of Chest Physicians, active membership in the Southern Surgical Association; and I am past president of the Southern Tuberculosis Conference, the Southern Trudeau Society, the southern chapter of the College of Chest Physicians, the Tennessee Thoracic Society, the Southern Thoracic Surgical Association and of the Memphis and Shelby County Medical Society. I have been awarded an honorary position on the faculty of the University of El Salvador. Currently I am a member of the American Board of Thoracic Surgery which examines candidates for certification in the field, representing the Surgical Section of the American Medical Association on this board.

My medical education was obtained at Harvard Medical School and my basic surgical training was received at the Boston City Hospital. My thoracic surgical training consisted of 3 years at the University of Michigan Hospital under the direction of Dr. John Alexander, a pioneer in the field of chest surgery and the organizer of the first formal training program for residents in this specialty.

Since 1934 my teaching and my private practice have been confined to the field of thoracic surgery. In my private office are records of over 30,500 patients with chest disease, of whom over 3,000 had cancer of the lung. I have personally taken the history of the majority of these patients, and a smoking history has been routinely taken on all of them over the past 25 years. I have also seen several hundred patients with cancer of the lung on the charity services of the Baptist Memorial Hospital and the John Gaston Hospital in Memphis, but I did not personally take the histories on these patients nor are their records in my personal files.

A detailed list of my society affiliations and major contributions to the medical literature is attached.

Dr. John Alexander, like Dr. Evarts Graham and other humanitarian scientists, taught his disciples to adhere to a logical program of reasoning in the approach to any problem. This consisted of gathering all the information possible pertaining to a problem, analyzing it, sifting it out, and after careful thought to project a hypothesis which, if all subsequent observations fit the pattern, can be considered a tenable theory. If a theory is correct, then actual experiments will be able to consistently produce an anticipated result in the hands of all skilled workers in the field. This system of logic is not new. It has withstood the test of time for over 2,000 years.

My extensive, and frequently bitter, experience with cancer of the lung has led me to apply this process of logical reasoning to the problem in an attempt to understand the cause of cancer, specifically cancer of the lung. I have failed, but I am not alone. At present some things are known about cancer, but more are not. We know that cancer consists of a mass of body cells which have lost the governing mechanism which makes them divide and grow in an orderly fashion to replace cells which have died. But we do not know what that governing mechanism is. We talk freely about chromosomes and genes in the nuclei of cells and we even know some of the chemical components of each because of relatively recent research. Actually, however, we have no understanding of how they work to achieve the marvelously complex differentiation between the cells of specific types, their structures and their functions.

Not knowing how they work normally makes it difficult to place our finger upon the precise factor which produces deviations from the normal. The cause of cancer, any kind of cancer, remains yet to be discovered.

No hypothesis yet formulated in regard to the cause of any one cancer satisfies the scientific requirement that all subsequent clinical observations fit the pattern. It is therefore no wonder that experiments with cigarette smoke have not succeeded in producing the result expected from the hypothesis that smoking causes cancer of the lung.

Many observations not only fail to fit the pattern prescribed by the hypothesis that smoking tobacco causes lung cancer, but are actually contrary to it:

1. Lung cancer, even epidermoid carcinoma, is found with a surprising degree of frequency in persons who have never smoked.

2. Smokers who do have lung cancer and who started smoking at a very early age develop cancer no earlier in life than the nonsmoker or the smoker who started 20 years later. If cigarette smoking were a causative factor, one would expect the age at which every lung cancer develops to be influenced by the amount and duration of smoking.

3. Women smoke heavily, and have been doing so for 30 to 40 years, yet the gap between the number of men and women with cancer of the lung is several times as wide now as it was a few decades ago when no "nice woman" smoked.

4. Cancers have developed in men who formerly smoked but who had not done so for the preceding 10 years. But body cells are dying off and being replaced constantly, so that most of the body cells, including those of the lung, are replaced completely every 7 years. The smoking of previous years could not possibly affect these newer cells.

5. Inhaled smoke is fairly evenly distributed to both lungs and throughout each lung in diminishing concentration the farther out in the lung it goes. If smoking were the cause of cancer, the disease should appear first centrally in both lungs, where the concentration of smoke is greatest, and it should appear

in many places in both lungs at approximately the same time. Yet we find cancer starting far from the root of the lung in only one little bronchus out of several hundred bronchi, in an area where the concentration of smoke is the lowest.

6. The number of smokers in the United States is estimated at 70 million persons. If smoking truly constitutes a real hazard and a predictable cause of cancer, the number of cases of the disease should exceed by many times the approximately 40,000 deaths reported in 1962. Of these only 18,000 have been definitely specified as originating in the lung. Both figures include smokers and nonsmokers, males and females, and several types of cancer which nobody has attributed to smoking.

7. In many medical centers, perhaps in most of them, the apparent increase in the number of cases of primary cancer of the lung has been due to the availability of accurate diagnosis. The average number of cases of lung cancer recognized in the John Gaston Hospital between 1929 and 1934 was one case per year. In the following year 44 cases were recognized and proved, an increase in incidence of 4,400 percent. This was in the same hospital, the same group and type of patients, with the same equipment. The single variable was the presence of a new, interested, and trained thoracic surgeon. Almost any statistician will tell you that a change of 4,400 percent with only one variable is obviously due to that one factor, a causal relationship. It is obvious therefore that I caused this tremendous increase in the incidence of cancer of the lung; statistics prove it.

Of course, the truth is that up to that time nobody used the bronchoscope except to remove foreign bodies from the lung, not for diagnosis. There was no such thing as a Papanicolaou smear on sputum. X-ray films were of comparatively poor quality and not all patients, even with lung disease, were X-rayed. Autopsies were few and far between. As facilities have improved for diagnosis and more men have been better trained in their use, the recognized incidence of cancer of the lung has increased rapidly. Currently it appears to be leveling off.

These are but a few of the observations which do not fit the pattern for a hypothesis which states that smoking is the cause of lung cancer.

Experiments have been carried out without success in an attempt to produce cancer of the lung in experimental animals by the constant inhalation of high concentrations of cigarette smoke throughout a large segment of the natural lifetime of these animals. Even the selection of experimental animals which are known to have an hereditary susceptibility to cancer, a factor which should have helped produce positive results, has not altered the negative results of these experiments. It is not strange that these experiments have failed. Experiments usually fail when the hypothesis is false.

So (1) clinical observations do not fit the pattern of the hypothesis that smoking causes cancer of the lung, and (2) experiments which would be consistently successful if the hypothesis were valid have failed.

How does it happen, then, that there is this popular concept spread over the country that smoking is the cause of lung cancer?

The proponents of the hypothesis rely almost entirely for their support upon the apparent statistical association between smoking and the frequency of cancer. But is a statistical association valid proof of cause?

I would like to spend one moment reminding you of some other statistical associations which in the past have been generally accepted as proving a causal relationship until research and widening knowledge revealed the true agent, or reason, for disease.

Some of you gentlemen may be old enough to remember the term "sugar diabetes." As a youth I was repeatedly warned not to use so much sugar because it would "give me diabetes." Doctors and laymen believed this. The statistical association was 100 percent; people who ate much sugar had diabetes, and it could be found in the urine, proof that sugar was the cause. We smile now at the thought; now that we know that disease of the pancreas with destruction of the isles of Langerhans is the culprit. Will our children smile at us for our naivete is we go on record supporting an hypothesis that smoking causes lung cancer when the true cause of any cancer is presently unknown but will finally be found?

One other example of many which could be quoted. Just before the turn of the century it was a widely accepted "fact" that night swamp air was poisonous. People dwelling near swamps shuttered up their houses at sundown to "shut out the night air." This did offer some measure of protection, statistically, and was

accepted by physicians and laymen alike as proof of the hypothesis. The statistical association between those who lived in damp swampy areas and who acquired "fevers" which often caused death was extremely high.

Fortunately, a few logically minded doctors did not accept this popular concept. Their observations did not all fit the pattern for the hypothesis that night air was the poisoning offender, even though the statistical association was perfect. You all know how General Wood and his associates, through their brilliant and arduous research discovered that mosquitoes, not the night air, transmitted yellow fever.

I would like to emphasize the fact that my interest is to control this cancer problem. And it will be controlled, probably within our lifetime. The intracellular chemists are sorting out and isolating many of the 5,000 chemical compounds which are thought to be present in each body cell. Knowledge is being gained regarding the function of some of them. Electron microscopes are revealing viruses, some of which are found in cancers, and viruslike substances which we cannot be sure are living or if they be inert. The secret of what imparts life to a chemical remains hidden from us and is known only to the designer and creator of this complex universe.

I wish that something as simple as smoking were the factor we seek. The solution would then be easy; abolish smoking and there would be no cancer of the lung. But we already know that is not true because nonsmokers also get the disease.

In conclusion, I wish to say that current scientific knowledge, in my opinion, falls far short of proving that cigarette smoking is a causal factor in the production of lung cancer. It is to be hoped that further intensive research to determine the true cause of lung cancer will not be deterred by the premature conviction of cigarettes, which may later be found to be innocent.

BIOGRAPHICAL DATA

Born February 5, 1902, Ann Arbor, Mich.

Education and training:

Public schools of Ann Arbor, Mich. Attended the University of Arizona, the University of Colorado, and the University of Michigan, obtaining a B.A. degree in 1924.

Graduated from Harvard Medical School, 1929, with the degree of doctor of medicine.

Took interne and resident training at the New York State Sanatorium for Incipient Tuberculosis at Raybrook, N.Y., general surgical training, Boston City Hospital.

Training in thoracic surgery from 1931 to 1934, service of Dr. John Alexander, University of Michigan, Ann Arbor.

Medical activities:

Practiced in Memphis, Tenn., since September 1934, specializing in thoracic surgery. A teacher at the University of Tennessee College of Medicine.

Professor in surgery at the University of Tennessee since 1949.

On active staff of the John Gaston Hospital since 1935.

Baptist Memorial Hospital, active staff since 1934, chief of staff in 1950, chief of surgical staff in 1938, president of staff in 1959.

Consultant in thoracic surgery at the Methodist Hospital, St. Joseph Hospital, LeBonheur Children's Hospital, West Tennessee Tuberculosis Hospital, U.S. Public Health Service Hospital, E. H. Crump Hospital, and Hospital for Crippled Children.

Worked and advised with Mr. Bland Maxwell and Mr. E. H. Crump regarding the establishment of the present system of tuberculosis hospitals in Tennessee.

Medical Societies: Senior member, American Association for Thoracic Surgery; life member, Southern Surgical Association; fellow, American College of Surgeons; fellow, American College of Chest Physicians; member, American Thoracic Society; fellow, American Medical Association; Tennessee State Medical Association; Memphis and Shelby County Medical Society; Memphis Surgical Society; Journal Review Club; certified by American Board of Surgery (Thoracic) 1949; Society of Thoracic Surgeons, founder's group.

Past president of the following societies: Southern Trudeau Association, 1948; southern section, American College of Chest Physicians, 1949; Southern Tuberculosis Conference, 1950; Southern Thoracic Surgical Association, 1957; Mem-

phis and Shelby County Tuberculosis Association and Memphis and Shelby County Medical Association, 1960.

Bibliography: Author of chapters in the "Surgery of Pulmonary Tuberculosis" by Dr. John Alexander and of articles in the John Alexander Monograph series and over 30 contributions to the field of thoracic surgery in medical journals. See copy of complete bibliography attached.

BIBLIOGRAPHY

Carr, D. and Alexander, John: Tuberculosis of the Chest Wall, Journal of Thoracic Surg., 3: 380, April 1934.
——— Automatic Hilar Ligature for Lobectamy, Journal Thoracic Surg., 4: 327, Febr. 1935.
——— Indications for Thoracic Surgery, Memphis Med. Journal, 10: 17, Aug. 1935.
——— Indications for Thoracic Surgery, Journal Tenn. Med. Assn., 29: 102, Mar. 1936.
——— Pneumonia—Its Surgical Aspects, Memphis Med. Journals, 13: 60, Apr. 1938.
——— Artificial Rest in the Treatment of Pulmonary Tuberculosis, Mississippi Doctor, 15: 6, July 1937.
——— Treatment of Injuries of the Chest, Journal Tenn. Med. Assn., 33: 438, Nov. 1940.
——— Hazards of Pneumothorax, Diseases of the Chest, 19: 2–8, No. 5, 1943.
Carr, D. and Skinner, E. F.: Pulmonary Lobectomy, Memphis Med. Journal 21: 68, May 1946.
Carr, D. and Harter, J. S.: Lobectomy and Pneumonectomy in Pulmonary Tuberculosis, Diseases of Chest, 12: 387, Sept.–Oct. 1946.
Carr, D., Denman, W. E., and Skinner, E. F.: Non Medicinal Aids in the Treatment of Bronchial Asthma, Arizona Med., 3: 357, Nov. 1946.
——— Noxious Gases and Bronchiectasis, Diseases of the Chest, 13: 596, Sept. 1947.
——— Intrathoracic Neoplasms, Real and Apparent, South. Surgeon, 13: 653, Sept. 1947.
Carr, D. and Chandler, J. H.: Dorsal Sympathetic Ganglionectomy for Intractable Asthma, Journal Thoracic Surg. 17: 1, Feb. 1948.
Skinner, E. F., Carr, D., and Denman, W. E.: Treatment of Inoperable Bronchogenic Carcinoma with Methyl-bis, J. Thoracic Surg. 17: 428, Aug. 1948.
Wilson, H., and Carr, D.: Combined Cervical and Thoracic Approach for Pesection of Large Arteriovenous Aneurysm, Surgery, 24: 324, August 1958.
Carr, D., Skinner, E. F., Denman, W. E., and Kessler, O. R.: Bronchography, Diseases of the Chest, 15: 92, Jan. 1949.
——— Coarctation of the Aorta—Diagnosis and Surgical Technic, Memphis Medical Journ., June 1949.
——— Physiological Significance of Bronchiectasis, Disease of the Chest, 16: 137, Aug. 1949.
Carr, D., Skinner, E. F. Robbins, S. G., and Kessler, O. R.: Primary Neoplasms of the Lung, Diseases of the Chest, 17: 618, June 1950.
Carr, D.: Supparative Diseases of the Lungs and Bronchi, Mississippi Doctor, pp. 60–69, July 1950.
Skinner, E. F., Carr, D., Kessler, O. R., and Denman, W. E.: Chest Injuries in Civilian Practice, Diseases of the Chest, 18: 363, Oct. 1950.
Carr, D., and Robbins S. G.: Streptokinase and Antibiotics in the Treatment of Clotted Hemothorax Ann. Surg. 133: 853, June 1951.
Skinner E. F. Isbell H. and Carl D.: Case Report—An unusual Mediastinal Cyst, Journal Thoracic Surgery, 23: 502, May 1952.
Skinner, E. F., and Carr, D.: Palliative Therapy of Incurable Intrathoracic Malignancies, Am. Practitioner, 3: 900, Nov. 1952.
Skinner, E. F., Isbell, H., and Carr, D.: Disseminated Lymphoblastoma Resembling Pulmonary Tuberculosis—Temporary Dramatic Response to Nitrogen Mustard Therapy (case report), Diseases of the Chest, 25: 585, May 1954.
Carr, D.: Crushing Injuries of the Chest, Mississippi Doctor, Aug. 1954.
Farringer, J. L., and Carr, D.: Cardiac Tamponade, Annals Surg. 141: 437, April 1955.
Skinner, E. F., Hall, J. H., Carr, D., and Robbins, S. G.: Routine Supraclavicular Biopsy in Suspected Bronchogenic Carcinoma, Annals Surg. 21: 590, June 1955.

St. Raymond, A. H., Jr., Carr, D., Skinner, E. F., and Robbins, S. G.: Pericardial Coelomic Cysts, Diseases of the Chest, XXX: 1, Oct. 1956.
Carr, D.: Intrathoracic Emergencies in the Aged, Geriatrics, 12: 16, Jan. 1957.
Skinner, E. F., Carr, D., and Hall, J. B.: Strangulated Diaphragmatic Hernia, Journal Thor. Surg. 36: 102, July 1958.
Carr, D.: Complications of Esophageal Surgery, chapter in Complications in Surgery and Their Management, Edited by Artz, C. P., and Hardy, J. D., Saunders, 1960.
Skinner, E. F., and Carr, D.: Bronchography, Simplified, G.P., 28: 113, Sept. 1963.
Carr, D., and Suttliff, W. D., Histoplasmosis: Chapter in the Treatment of Mycotic and Parasitic Diseases of the Chest (John Alexander Monograph Series). Edited by John Steele. Charles C. Thomas Co., Springfield, 1964.

STATEMENT OF IAN MACDONALD, M.D.

My name is Ian Macdonald. I am a surgeon, with the degree of M.D., C.M., from McGill University, received in 1928. For 24 years I have been associated with the School of Medicine of the University of Southern California, where I am clinical professor of surgery, and for 10 years I was coordinator of cancer teaching. Since 1935 my clinical work has been limited to the treatment of cancer and allied diseases, both by surgery and radiation therapy, with certification as a specialist in radiotherapy by the American Board of Radiology in 1938. In cancer research, I have been the responsible investigator in various projects at our school of medicine, chairman of two national, cooperative research groups, a member of the American Association for Cancer Research and of the Committee on Cancer of the American College of Surgeons. I am a member of other surgical, radiologic, and medical societies, a former officer and director of the American Cancer Society at local, State, and National levels, recipient of the Society's Distinguished Service Medal, and former chairman of the Commission on Cancer of the California Medeical Association. My publications number over 60 in medical journals, and chapters in several textbooks, mainly on various aspects of cancer.

In July 1957, as an invited witness before the Subcommittee on Legal and Monetary Affairs, Committee on Government Operations, House of Representatives, I exressed my conviction that "the total evidence fails to provide a cause and effect relationship between * * * the smoking of cigarettes and the development of lung cancer in humans." Now, nearly 8 years later, I have examined the published record of my testimony and find no significant detail which requires modification. Although the causation of lung cancer remains as enigmatic and as complex as ever, in the past several years a number of published reports have emphasized the variety of factors in the background of individuals who develop this form of cancer. This expanding evidence of a constellation of factors associated with lung cancer lends no comfort to the advocates of a single influence—that of cigarette smoking—as the principal cause of the disease. In fact, the inconsistencies surrounding this cause-and-effect thesis become even more numerous than in 1957. Some of the more notable, recent contributions on the subject will be cited shortly.

CONTRIBUTORY FACTORS IN CANCER

Investigation of the background of individuals who develop certain types of cancer may indicate a more frequent association with some factor, or factors, than in control, noncancerous groups. If such an association is impressive as determined by statistical analysis, the background factor may be referred to as a contributory influence in the development of the specific cancer. The propriety of such a concept is questionable, and for the following reasons:

In no form of cancer is the associated factor always present.
The cancer can and does develop in its absence.
The factor may be present in large numbers of persons, only a very few of whom develop the cancer in question.

Such is the reationship between the smoking of cigarettes and lung cancer.

Translation of "contribution" to "cause"

As repetitious statistical studies in this and other countries became pyramided in an international, high-rise statistical unanimity, the association of cigarette smoking and lung cancer became translated into a claim of cause and effect. When, in the laboratory, cancer appeared, albeit reluctantly, in the skin of mice genetically prone to skin cancer, after the application of unrealistic concentrations of tobacco tar, some propagandists abandoned all reserve to describe cigarette smoking as the "principal cause of lung cancer."

Rene Dubos recently has commented on the unsolved and complex problems which concern man and his environment, by saying: "All problems of the living organism, in health and disease, are problems of organized complexity. The reductionist approach (is the) analysis of oversimplified systems involving only one variable." No more dramatic illustration of these words can be offered than the attempt to explain lung cancer in terms of a single variable, created by statistical illusion.

RECENT REPORTS ON LUNG CANCER

The past several years have been marked by the publication of some careful studies with conclusions which are in direct conflict with the notion of a tobaccogenic causation of lung cancer. Reference to some of the more important of these investigations is appropriate here.

From Mercy Hospital in Pittsburgh, Joseph A. Perrone has reported on 1,000 cases of lung cancer. He emphasizes the variety of background factors, concludes that "* * * smoking cannot be implicated as the major cause of lung cancer."

Of these 1,000 cases, 42 percent were nonsmokers; of 784 male patients, 26 percent were nonsmokers, and 77 percent of 216 women with lung cancer had never smoked. Dr. Perrone concludes that three factors are of paramount importance in contributing toward the probability of lung cancer: occupation, air pollution, and economic status.

Of the seven occupations most frequently pursued by these patients with lung cancer, five involved exposure to petroleum products and their combustion in automotive equipment, both of internal combustion and diesel types. Of the 300 men engaged in the seven most frequent occupations, which included coal miners and painters, 59 percent were nonsmokers.

* * * * * * *

An important contribution in the German literature is the report of a meticulous study by two pathologists at the Pathological Institute in Dusseldorf (Poche and Kneller), with the aid of a biostatistician (Mittman). The study was based on 1,229 patients with lung cancer proved by microscopic examination. The questionnaires which produced the information were completed by physicians only. Factors found to be of significant influence, statistically tested by correlation coefficients, were: urban residence and occupation.

Background factors of no significance included the smoking of cigarettes. In fact, the heaviest cigarette smoking was in the occupational group with the lowest incidence of lung cancer (office workers, teachers, and other professions, clerks).

* * * * * * *

A different approach was used at the University of Groningen, in which the interest of the investigator (Anna M. Der Wal) was focused on the association of prior chronic diseases of the lungs with the development of pulmonary cancer in later life. She obtained information from three separate groups:

1. 150 patients with lung cancer;
2. 150 control persons, not matched for cigarette smoking;
3. 100 controls carefully matched with the lung cancer patients for smoking habits.

This, too, was a sophisticated, statistically controlled study. Some of the pertinent conclusions were:

There is a highly significant relationship ($P < 0.001$) between chronic lung disease and lung cancer;

This relationship is independent of smoking;

The number of cigarettes smoked (< 10, > 10–20 and > 20) did not influence the probability of lung cancer.

* * * * * * *

From the oriental medical literature, a report by a Japanese chest surgeon (K. Kaiho) concerns 1,659 cases of lung cancer. About 80 percent of these

patients were smokers, but 83 percent of a control group of noncancer patients were devotees of the weed. He found no difference in the proportion of heavy smokers among the patients with lung cancer and patients without cancer. There was a high familial predisposition to cancer in general in the relatives of lung cancer patients. This author believes that the low ratio of male-female lung cancer (4:1, compared to about 6:1 in the United States), is evidence that external factors such as smoking are of little importance. One of his definite conclusions: there is no relationship between smoking and lung cancer.

* * * * * * *

A Chinese clinician (J.-S. Tsai) has reported from Peiping on 252 patients with lung cancer. The most unusual feature of his group of patients makes them, to our knowledge, unique: there was "no great difference" in sex incidence. Only 62.5 percent of these Chinese patients were smokers.

* * * * * * *

In the southeastern area of South Dakota, during a 12-year period (1949–61) only 33 cases of lung cancer were recorded in the tumor registry of the Sacred Heart Hospital in Yankton, making it 10th in order of frequency in this non-industrialized area. This part of South Dakota thus registers annually less than 5 new lung cancer patients per 100,000 population, compared to less than 15 per 100,000 for the United States at large. This disparity cannot be credited to a lesser proportion of smokers in this agricultural area, as will be evident in a comparison with the Pittsburgh series reported above:

	Lung cancer cases	
	Pittsburgh, Pa.	Southeastern South Dakota
	Percent	*Percent*
Smokers	57	52
Nonsmokers	42	48

Previous comparisons of this sort have demonstrated the same lack of any correlation between smoking and the prevalence of lung cancer. Some years ago a comparison of the States of New York and Idaho showed equal sales of cigarettes per capita, with a mortality from lung cancer four times greater in the more densely populated, highly industrialized State.

* * * * * * *

The Canadian Public Health Service is concerned with an aboriginal population far removed from our civilized ways of life. In recent year, X-ray survey teams have combed the Canadian Arctic, mainly in a search for pulmonary diseases. Not a single case of lung cancer has been found in the Eskimo or Indian populations, yet nearly all of them are heavy smokers, usually of cigarettes in recent decades.

* * * * * * *

A female population with no significant experience in smoking, but with a lung cancer incidence which may be higher than in U.S. women in general, has been the subject of a report by J. T. Nix. At the Tulane Bio-Medical Center, with sponsorship by the National Institutes of Health, Dr. Nix has set up a continuing study of mortality in 116,173 nuns, as collected from Catholic hospitals in the United States and Canada. In a preliminary report, 1.04 percent or 575 deaths were due to verified lung cancer. Should this rate be maintained in a significant sample, the lung cancer mortality rate for nuns would approximate 10 per 100,000, compared to 4.9 per 100,000 females in upstate New York. The mystery deepens if one recognizes that the majority of these religious do not have the same exposure to environmental influences as does the average woman.

Significance of recent reports

Seven of the recent reports just cited provide information on samples of experience with lung cancer, numbering in all 4,377 patients with the disease. Each of these reports includes the result of an inquiry into a possible relationship of smoking with lung cancer, in several instances with sophisticated tech-

niques in biometric control of the data. In none of these studies was a credible or significant relationship established between smoking and lung cancer.

By contrast, the conclusion made in "Smoking and Health," the report of the Advisory Committee to the Surgeon General of the Public Health Service (publication No. 1103) were based largely on seven prospective studies, which provided data on a total of only 1,984 cases of lung cancer (p. 164).

Early in 1964 an editorial in the journal Growth, in stating the need for extensive basic research in lung cancer, commented on the famous report: "As with all one-sided statistical surveys, the report fails to take into consideration the complexity of the factors involved, and thus invites criticism of its conclusions."

Other statistical inconsistencies

When comparisons are made of total populations, by smoking and death rates from lung cancer, usually no correlation with cigarette smoking is evident. In some instances the relationship of cigarette consumption and lung cancer is an inverse ratio: for men, the use of cigarettes in the United Kingdom is about one-half of that in the United States, but mortality from lung cancer is more than twice as great in England and Wales.

Within the United States, many comparisons of States and cities show equivalent consumption of tobacco as cigarettes, but mortality ratios from lung cancer which differ greatly.

Sex difference in incidence of lung cancer

Few U.S. women smoked until 1930, while recent surveys indicate that 40 percent or more of women are smokers. The major share in the increased use of cigarettes since 1930 is attributed to women. In spite of these facts, the male-female ratio of mortality from lung cancer has increased from 2 to 1 in 1930, to as much as 7 to 1 in recent years. This increasing excess of lung cancer in males is interpreted by some investigators as evidence of an important hormonal influence; it is surely inconsistent with patterns of cigarette consumption.

Time-dose factor

Assuming that a given substance has some carcinogenic influence in animals, the time at which a cancer will appear in a susceptible individual will be determined by the time of exposure and the dose used. Although the factor of susceptibility, as determined by genetic inheritance, is by far the most important influence, and although such biologic interactions are not measurable with mathematical exactitude, if an adequate sample of individuals is exposed there will be a rough conformance to the law of time and dose.

Consider these criteria in terms of tobacco and lung cancer:

Dose in males since 1920 has increased from 1.6 to 6.3 lbs. per capita, 1920 to 1950;

Time of exposure has lengthened, due to use of tobacco earlier in life in the last several decades.

By the law of time-dose relationship, lung chancer should have shown a distinct trend toward peak incidence at an earlier age if cigarette smoking had any causative influence. No suggestion of any such change is evident: peak years of incidence of male lung cancer remain fixed at 55 to 59 since the first decade of this century.

In the broader perspective of general mortality ratio of cigarette smokers versus nonsmokers there is a paradoxical time-dose relationship in data found in the Report on Smoking and Health (p. 87, table 6). Here the mortality ratio for all causes, for current smokers of cigarettes only, is expressed in terms of that of nonsmokers as unity, from the fifth through the ninth decades of life, and by the number of cigarettes per day. Regardless of the amount of smoking, there is a progressive improvement in mortality ratio in each succeeding decade of life, but the most striking reversal is in that group of men who are excessive smokers of 40+ cigarettes daily:

Mortality ratio for smokers of 40+ cigarettes per day

Age:	
40–49	3.06
50–59	2.37
60–69	1.68
70–79	1.28
80–89	0.58

This pattern defies the law of time-dose relationship, with the octogenarian smoker of 40+ cigarettes daily having a 40 percent better chanch of survival than his nonsmoking fellows. These data suggest that the less favorable mortality ratios of cigarette smokers in earlier years are not related directly to smoking. Perhaps smoking is a behavioral characteristic of the younger man who has a lesser probability of survival than the nonsmoker, but for reasons unrelated to smoking.

These negative correlations with the duration and amount of cigarette smoking provide the basis for two statements:

The evidence indicates the absence of any contribution of cigarette smoking in the causation of lung cancer.

The data cited are inconsistent with an influence of cigarette consumption per se on mortality ratios.

EXPERIENCE WITH LUNG CANCER IN THE COUNTY OF LOS ANGELES

Air pollution in the Los Angeles Basin has evoked an increasing interest in respiratory diseases, and especially in lung cancer. The Los Angeles County Hospital has one of the largest autopsy series in the United States, and the most variegated from a racial-ethnic standpoint.

As new and improved techniques in diagnosis developed, lung cancer showed an upward trend at Los Angeles County Hospital for some years until 1958. Since then, and through 1962, the proportion of lung cancer in total autopsies has reached a relative plateau. The latest available data, for 1963, emphasize the fixed incidence of the disease.

	Number of autopsies	Lung cancer	Lung cancer as percent of all autopsies
Year:			
1958	2,772	84	3.0
1959	2,308	69	2.9
1960	2,178	73	3.3
1961	2,211	86	3.8
1962	2,055	79	3.8
1963	2,181	67	3.0

This large series of autopsies on lung cancer patients has made possible a special study of microscopic types of tumor, the results of which are pertinent to the alleged cause-and-effect relationship with cigarette smoking. It has become an article of faith, among those who advocate this thesis, that the influence of smoking is recognizable in terms of microscopic types.

Epidermoid (squamous) carcinoma is alleged to be associated with smoking. It is derived from the pavement type of epithelium which lines the bronchial tubes, resembles the skin in its microscopic structure, produces no secretions.

Adenocarcinoma is represented as having no association with smoking. This tumor originates in a glandular type of cell forming the substance of the lung and beyond the smallest bronchial tubes. The parent cell resembles that in the lining of the intestine, and is mucous producing.

Among those who accept a causal role for cigarette smoking there has been a corollary belief: that epidermoid carcinoma is on the increase, while adenocarcinoma is said to be stationary or even decreasing in proportion to its lack of association with smoking and other environmental factors.

At the Los Angeles County Hospital, lung cancer tissues from 956 autopsies done between 1927 and 1957 have been reexamined with the aid of newer, histochemical techniques. Most important was a more accurate detection of a substance (mucin) produced only by glandular tissue; when identified in lung cancer, the tumor must be an adenocarcinoma. When this research method was used in the restudy of the 956 cases, so many of the supposed "epidermoid" cancers had to be reclassified as adenocarcinoma that a new orientation was evident: the proportion of adenocarcinomas was increasing, especially in recent years, while those of epidermoid nature were stationary.

In this large, representative group of lung cancers, on the basis of improved accuracy in identification of the two main types of tumor, the distribution is thus completely inconsistent with the tobaccogenic thesis.

The other unusual feature of lung cancer in Los Angeles deserves comment here. The incidence of the disease in women of Mexican ancestry and birth is almost as great as in Mexican males who, in turn, have a slightly greater incidence of lung cancer than white males of U.S. origin. Yet, available information indicates that the smoking of cigarettes by Mexican-born women is at a much lower level than in the general female population. For women of Mexican origin, but born in California, there is no such excess of lung cancer, although cigarette smoking is more prevalent among the U.S.-born than in native-born Mexican females.

SUMMARY

This synoptic discussion has touched upon only some of the facets which indicate the complexity of the problem which is lung cancer. There are other data of significance on the relationship of the disease to socioeconomic and nutritional factors, to residence in town and country and the almost unexplored area of intrinsic influences—hormonal, sexual, enzymatic, viral, and hereditary.

The current, popular emphasis on a single environmental factor, i.e., the smoking of cigarettes, has been shown to be inconsistent with the evidence provided by a number of recent clinical, investigative reports.

Cancer of the lung seems to be a highly complex biologic enigma, the basic causes of which, in common with other forms of cancer, are as yet unknown. Emphasis on a single environmental factor as a "principal cause" reduces the problem to a narrow concept of causality, when the disease with which it is thus identified becomes established in its absence, and occurs infrequently in its presence. Such substitutions of shadow for scientific substance may lead to a decreased effort in cancer research.

BIOGRAPHIC DATA

M.D., C.M., McGill University, 1928.

Graduate training: Montreal General Hospital (intern, house surgeon); University of Michigan Hospital (resident in pathology); Toronto General Hospital (chief resident surgeon), 1927–32.

Institutional appointments: Surgical pathologist, Los Angeles County Hospital, 1932–34; director, Ogden Memorial Tumor Clinic, Cornwall Hospital, New York, 1934–38; assistant, department of clinical research, American College of Surgeons, 1938–40.

Private practice: Los Angeles, since 1941: cancer and allied diseases; surgery and radiation therapy.

Academic appointments: Instructor in surgery, 1931–32 (Toronto); instructor in surgery, 1933–34 and 1940–43; assistant professor of surgery, 1943–48; associate professor, 1948–53; clinical professor of surgery, 1953– , all at School of Medicine, University of Southern California.

Hospital staffs: Attending senior surgeon, tumor surgery, Los Angeles County Hospital; St. Vincent's Hospital; Hollywood Presbyterian Hospital; consultant in radiotherapy, Children's Hospital.

Certification: American Board of Radiology (radiation therapy) 1938.

Professional societies and associations: American College of Surgeons (committee on cancer); Los Angeles Surgical Society; Pacific Coast Surgical Association; Society Graduate Surgeons L.A.C.H. (honorary); American Radium Society; Ewing Society; Society of Head and Neck Surgeons (founding member); American Association for Cancer Research; American College of Radiology (fellow); California Roentgen Society; American Association Advancement of Science; Sigma Xi Research Society; A.M.A.; California Medical Association; Los Angeles County Medical Association.

Other appointments: Editor, the Bulletin, L.A.C.M.A.; past-president, LACMA (1962).

Listed in Who's Who in America; American Men of Science, etc.

Publications: Over 60 in various surgical and medical periodicals; author of chapters in various texts, including: Davis-Christopher Textbook of Surgery, sixth, seventh, and eighth editions (The Breasts); the Management of the Patient with Cancer (Thos. Nealon, ed.) in press (Cancer of Breast), W. B. Saunders Co., Philadelphia.

PUBLICATIONS

Peptic Digestion of Coagulated Albumin, Trans. Royal Soc. Canada, XXI, J. 1927.

Use of Thorium Dioxide as Aid to Clinical Diagnosis. Canad. M.A.J. 27: 136–137, Aug. 1932.

Local and Constitutional Pathology of Bronchial Asthma, Ann. Int. Med. 6: 253–277 (1932).
Treatment of Acute Appendicitis, Univ. of Toronto M.J. 9: 236–239 (1932).
Histology of Biliary Ducts and Its Correlation With Symptomatology of Common Duct Stone, Surg. Gynec. and Obstet. 60: 775–780 (1935).
Prevention of Anthrax Infection in Woolen Textile Processing, J. Indust. Hyg. and Toxicol. 18: 357–362 (1936).
Response of the Mammary Gland to Prolonged Stimulation With Ovarian Hormones, Surg. Gynec. and Obstet. 63: 138–144, Aug. 1936.
Gastric Roentgenologic Changes in Deficiency Disease; Response to Treatment, New York State J. Med. 37: 1423–1426, Aug. 15, 1937 (with Hocker, A. F. and May, R. C.).
Organization and Conduct of Cancer Clinics in General Hospitals, Bull. Am. Coll. Surgeons 24: 85–92, Apr. 1939 (with Crowell, B.C.).
Mammary Carcinoma; Review of 2,636 Cases, Surg. Gynec. and Obstet. 74: 75–82 Jan. 1942.
A Modified Classification of Bone Tumors, Radiology 40: 6– (1943) (with Budd, J.W.).
Osteogenic Sarcoma I: A Modified Nomenclature and Review of 118 Five Year Cures, Surg. Gynec. and Obstet. 77: 413–421 (1943) (with Budd, J.W.).
II: Roentgenographic Interpretation of Growth Patterns in Bone Sarcoma, Surg. Gynec. and Obstet. 82: 81– (1946) (with Budd, J. W.).
Historical Development of the Cancer Problem, Ann. West. Med. and Surg. 1: 4– (1947)
The Bleeding Nipple as a Diagnostic and Therapeutic Problem, Calif. Med. 68: 1– (1948).
Cancer of the Lip, Calif. Med. 1: (1948).
Palliative Management of Mammary Carcinoma, Calif. Med. 69: 144–147, Aug. 1948.
Resection of the Axillary Vein in Radical Mastectomy; its Relation to the Mechanism of Lymphedema, Cancer 1: 618–624, Nov. 1948.
Carcinoma of the Uterine Cervix; Therapeutic Problem, Ann. West. Med. and Surg. 3: 126–129, Apr. 1949.
Evaluation of Cancer Research Programs, Mod. Hosp. 73: 84–92, Dec. 1949.
Diagnosis and Management in Mammary Cancer, M. Arts and Science 4: 27–32 (1950).
Combined Radical Cervicofacial Procedures for Primary Facial Cancer, Surg. Gynec. and Obstet. 90: 16–20, Jan. 1950.
Biological Predeterminism in Human Cancer, Surg. Gynec. and Obstet. 92: 443–452, Apr. 1951.
Cancer of the Gingiva, J. Oral Surg. 10: 58– (1952).
Management of Carcinoma of the Uterine Cervix, Calif. Med. 76: 55–61, Feb. 1952 (with Guiss, L. W.).
Carcinoma of the Breast; Diagnosis and Factors Determining Prognosis and Treatment, Ariz. Med. 9: 25–30, Sept. 1952.
Steroid Hormone Therapy in Mammary Carcinoma, Amer. J. Roent., Radium Therapy and Nuclear Med. 68: 954–962, Dec. 1952 (with Davis, F. E. and Jacobson, G.).
Biological Predeterminism in Gastric Cancer; Limiting Factor in Surgical End-Results, W. J. Surg. 61: 547–551, Sept. 1953.
The Importance of Total Thyroidectomy for Papillary Carcinoma of the Thyroid Gland, Am. Surgeon 19: 1189–1190, Dec. 1953.
Surgical Management of Papillary Carcinoma of the Thyroid Gland; the Case for Total Thyroidectomy Ann. Surg. 137: 156–164, Feb. 1953 (with Kotin, P.).
Cancer Detection, a Realistic Appraisal of its Value, Ariz. Med. 10: 1– , Jan. 1953.
Biologic Predeterminism in Gastric Carcinoma as the Limiting Factor of Curability, Surg. Gynec. and Obstet. 98: 148–152, Feb. 1954 (with Kotin, P.).
Therapuetic Alterations of Steroid Metabolism in the Management of Advanced Carcinoma, Surg. Clin. N. Am. 34: 1321–1335, Oct. 1954.
Factors Affecting the Biologic Behavior of Gastric Carcinoma with Special Emphasis on Survival Rates, Hawaii Med. J. 14: 297–298; 356 (1955) (with Kotin, P.).
Environmental Factors of Occupational Origin Related to Carcinogenesis, J.A.M.A. 157: 5–7, Jan. 1, 1955.

Postmastectomy Lymphedema, Am. J. Surg. 90: 281–286, Aug. 1955 (with Osman, K.).
Prognosis of Mammary Carcinoma in Young Women, Cancer 9: 281–287 (1956) (with Wilcox, N. E.).
Graphic Key for Use with Marginal Punch Cards, Am. J. Clin. Path. 26: 1188 (1956) (with Wilcox, N. E.).
Carcinoma of the Thyroid Gland; a Review of 106 Cases, Calif. Med. 86: 16–19 Jan. 1957 (with O'Hara, G. L. and Weber, R. A.).
The Role of Extirpative Procedures in Cancer of the Breast. Cancer 10: 805–807 (1957).
Indications for Treatment of Papillary Carcinoma of the Thyroid Consistent with Basic Surgical Principles. Current Surgical Management, J. H. Mulholland, Ed., Philadelphia, W. B. Saunders Co., 1957, pp. 326–330 (with G. L. O'Hara).
Indications of the Fundamental Biology of Mammary Carcinoma. Proc. 3rd National Cancer Conference, Philadelphia and Montreal, J. B. Lippincott Co., 1957, pp. 87–95.
The Individual Basis of Biologic Variability in Cancer. Surg. Gynec. and Obstet. 106: 227–229, Feb. 1958.
Carcinoma of the Cervix: A Study of Epidemiologic Factors in Carcinoma of the Uterine Cervix, Am. J. Obstet. 76: 1–10, July, 1958 (with Jones, E. G. and Breslow, L.).
Exposure and Suction Drainage in the Management of Major Dissective Wounds, Surg. Gynec. and Obstet. 107: 532–538, Oct. 1958 (with Smith, G. K., Guiss, L. W. and deMoss, E. V.).
Clinical Evidence of Biologic Variability in Mammary Carcinoma. Breast Cancer: Second Biennial Louisiana Cancer Conference. A. Segaloff, Ed., St. Louis, C. V. Mosby Co., 1958. pp. 37–45.
Medical Treatment of Cancer. Med. Clin. of N. Amer. 43: 971–1002, July, 1959 (with Yettra, M.).
Carcinoma of the Breast in a Private Practice. Arizona Med. 16: 726–731, (November) 1959 (with Guiss, L. W.).
The Breasts. Christopher's Textbook of Surgery, Loyal Davis, Ed. W. B. Saunders Co., VI and VII Editions, 1953 and 1960, Chapter 14, Philadelphia.
Androgens and Estrogens in the Treatment of Disseminated Mammary Carcinoma: A Retrospective Survey of 944 patients. Subcommittee on Breast and Genital Cancer, Council on Drugs, A.M.A (Ian Macdonald, chairman) J.A.M.A. 172: 1271 (March 19) 1960.
Sex Steroids for Palliation of Disseminated Mammary Carcinoma. Guest Editorial J.A.M.A. 172: 1288–1289 (March 19) 1960.
Adrenalectomy and Hypophysectomy in Disseminated Breast Carcinoma; Preliminary Statement of a Joint Committee. J.A.M.A. 175: 787–790 (March 4) 1961.
Predeterminism in Palliation of Breast Cancer. Guest Editorial J.A.M.A. 175: (March 4) 1961.
End Results and Causes of Failure in Treatment of Intraoral Carcinoma. Am. J. Roent., Radium Therapy and Nuclear Medicine 83: 412–420 (March) 1960 (with Guiss, Lewis W.).
Endocrine Ablative Procedures in Disseminated Mammary Carcinoma. Proceedings of the Fourth National Cancer Conference. J. B. Lippincott Co., Philadelphia and Montreal, 1961, pp. 273–280.
Congenital Glioma on the Left Side of the Face. California Med., 95: 393–396 (December) 1961 (with Kern, W. H.).
Experiences with Regional Chemotherapy of Cancer by Isolation-Perfusion. Western J. Surg., Obst. & Gynec. 69: 6–8, 1961 (with McKenna, R. J., and Guiss, L. W.).
Adrenalectomy and Hypophysectomy in Disseminated Mammary Carcinoma. Report of Joint Committee (Ian Macdonald, chairman) Surg., Gynec. & Obst. 115. 215 (August) 1962.
The Role of Radical Regional Lymphadenectomy in Treatment of Melanoma (with Guiss, Lewis W., senior author). Am. J. Surgery 104: 135, 1962.
A New Brand of Prohibitionism. Surg., Gyn. & Obst. 116: 239, 1963 (editorial).
Carcinoma of the Eyelid Treated by Irradiation (with R. J. McKenna, senior author). Calif. Med. 96: 184, 1962.
The Breasts. Christopher's Textbook of Surgery, Loyal Davis, Ed. W. B. Saunders Co., VIII Edition, 1964, Philadelphia.

Treatment of Palpebral Carcinoma by Irradiation. Pacific Med. & Surg. 72: 356–359, 1964.
Cancer in the Elderly, J. Am. Geriatrics Soc. 13: 73, 1965.
The Breast. Management of the Patient with Cancer, Thomas F. Nealon, Ed. W. B. Saunders Co., Philadelphia (in press).

STATEMENT OF DR. RAYMOND J. BARRETT

My name is Raymond J. Barrett, M.D. I practice thoracic surgery in Detroit, Mich., and have done so exclusively for the past 15 years. I am certified by the American Board of Surgery and by the Board of Thoracic Surgery. I am clinical assistant professor of surgery at the School of Medicine of Wayne State University. I am chief of thoracic surgery at Detroit Memorial and St. Joseph Mercy Hospitals and am surgeon and chief of the Thoracic Surgery Outpatient Department at Harper Hospital. I am director of surgical training at Herman Kiefer Hospital. In addition, I am consultant or on the active staff at five other Metropolitan Detroit hospitals. I am a fellow of the American College of Surgeons and am a member of the American Association for Thoracic Surgery, the Western Surgical Association, the Central Surgical Association, as well as being on the committee on pulmonary surgery of the American College of Chest Physicians. I am a founding member of the Society for Thoracic Surgeons. In addition to articles in numerous medical publications, I am the author of chapters in two textbooks on diseases of the chest.

It is to be understood that the views presented in this statement are my own and that I am not appearing as a spokesman for any of the institutions or societies with which I am affiliated.

The majority of my practice has been devoted to carcinoma of the lung, and I have had experience with over 1,600 patients with this disease. Being vitally interested in the treatment and prevention of this condition, I feel that a grave disservice is being rendered the study of the disease by the assumption that the cause has been found—at least this assumption is now in the mind of the public and indeed in that of many physicians who are not intimately involved with the problem.

I am a clinician and not a statistician. I confess that I can quickly be lost in the terminology of probabilities, significant versus insignificant variations and the like. However, I retain grave doubts that questionnaires and computers have ever solved the cause of any disease. When I analyze the figures in the Surgeon General's report and find on page 95 that "even the smokers of one pack of cigarettes or more daily have death rates that average slightly below the U.S. white male figure," I can't help but conclude that something has been very wrong in the makeup of all series reported. It was recognized that this was an obviously awkward fact and must be accounted for. An attempt was made to do this by stating that the study excluded people in hospitals and that there was a probable selection of men of higher economic level. However, I cannot escape the conclusion that a television rating analyst or public opinion pollster would be discredited if he had drawn similar conclusions from an equally unrepresentative group. I know that if I personally wished to demonstate the potentially lethal consequences of a certain course of action, I would be disconcerted if my final results showed a lower death rate in my suspect group than was occurring in the general population. The fact remains, however, that the Surgeon General's report states unequivocally that the average death rate in heavy cigarette smokers was lower than that of the general U.S. white male population.

I accept the fact that a statistical relationship exists between the smoking of cigarettes and carcinoma of the lung. However, as the report itself states, a statistical relationship does not establish a cause and effect relationship. I first became aware of this when recalling correspondence between Thomas Edison and Henry Ford. Mr. Edison stated that a study had shown that whereas (and I must confess that I am quoting the figures from memory) 86 percent of male prison inmates smoked cigarettes, only 14 percent of the general population did so. Whether or not this was conclusive, since it is known that Mr. Ford harbored strong feelings of his own about cigarette smoking, it is a fact that smoking was forbidden in Ford factories and indeed for the medical staff in Henry Ford Hospital until after his death. Although Mr. Edison's statistical relationship was undoubtedly valid when made (around 1914 or

1915, as I recall), the historical perspective acquired in the next 50 years would indicate that abolishment of cigarettes at that time would not have affected subsequent crime rates.

Again in the field of statistics I feel that the alarming projections for the incidence of carcinoma of the lung within the next 15 to 20 years are completely unrealistic and will be proven false. Rather I feel that the actual peak incidence has already been reached and that the reported incidence of the disease will peak out within the next 10 years. Certainly such has been the experience with many other diseases. First, a method of treatment is found for a certain class of illness, then diagnostic methods arise and are refined to sort out and classify suitable candidates for such treatment. Appendicitis was first described in 1886. With increasing recognition of the lifesaving potentialities of prompt recognition and treatment, the reported incidence of the affliction zoomed for several decades. It has now entered the public domain to the extent that the population thinks of it in the presence of abdominal pain and seek medical confirmation of their frequently correct diagnosis. Although the reported incidence of appendicitis exhibited a meteoric rise for several decades after its first description, it has remained stable for many years. At the same time it must be realized that its actual incidence has probably varied little if at all over the same period of time.

In more modern times we come to the spectacular example of the "blue babies." Prior to the 1940's, children born with congenital defects of the heart could look forward only to an early death. Suddenly a method was found to surgically attack and greatly improve the lot of children who had certain specific types of these abnormalities. With a means of treatment available, diagnostic techniques and refinements were rapidly evolved to sort out, from the large group, those specific conditions which could be improved. Suddenly the reported incidence of these conditions began to rise. Yet, no one aware of the background really believed that we were experiencing a sudden epidemic of alarming proportions—rather a definite disease entity was, with increasing frequency, being sorted out of a large group of seemingly hopeless defects. The impetus was the possibility of cure.

With the above as a background it must be recognized that the treatment of cancer of the lung is also new. The first successful removal of a lung for cancer was performed 32 years ago. The modern widespread surgical attack on lung cancer is a post-World War II phenomenon. Equally new are the cellular techniques for the diagnosis of lung cancer in the living patient without surgery. Prior to these advances, the only means of proving lung cancer was by autopsy.

It is certainly safe to say that less than 25 percent of deaths in this country are followed by autopsy. Thus, prior to the 1940's, when the diagnosis of lung cancer could first be made in the living patient by surgery or cellular studies on the sputum, it is obvious that a large percentage of lung cancers were not diagnosed. In those years tuberculosis was considered the major killer among chest diseases of prolonged duration. None can question that among the deaths attributed to tuberculosis were many that were actually due to cancer. Gilliam (2) has shown that if in 1914 an error of only 2 percent had been made by including deaths that were actually due to lung cancer among the heading of "Deaths Due to Other Respiratory Diseases," then the reported 26-fold increase in lung cancer between 1914 and 1950 would only be a fourfold increase. Similarly in England in 1957 the Registrar General (3, 4) reported that "If, however, only 10 percent of the other respiratory group were wrongly diagnosed and certified, the 1911–20 rate of 64 per million would become 715 per million and the lung cancer in this age group would have increased 3.6 times instead of 40 times (i.e., between 1911–20 and 1955)."

My largest experience with lung cancer has been at Harper Hospital, one of the three most active hospitals in Michigan in the diagnosis and treatment of this disease. The medical records of this institution indicate that a peak incidence of the disease was reached in 1958 and that there has been a steady decline since that time as shown in the following figure.

	Patients
1956	176
1957	205
1958	211
1959	184
1960	170
1961	157
1962	132
1963	129

Conversations with staff members in other major Detroit hospitals reveal a similar experience.

The previous paragraphs have attempted to illustrate some of my reasons for feeling that we are by no means facing an epidemic increase in lung cancer.

In the statistical field my final objection lies in the inclusion of all types of cancer found in the lung to prove that 41,000 people died of lung cancer in 1962. On page 26 of the Surgeon General's report, table I lists deaths from selected disease categories in the United States in 1962. Cancer of the lung carries the twin code numbers, 162 and 163, of the international statistical classification. While No. 162 refers to primary tumors of the lung, No. 163 refers to tumors of the lung, unclassified, including secondaries. Thus the quoted figure of 41,000 must include large numbers of tumors which did not arise in the lung but rather arose elsewhere in the body and then spread to the lung via the bloodstream. If I may quote from the chapter on metastatic tumors (secondaries) from a recent textbook, (5) "The lung is a common site for metastasis from primary malignant tumors originating elsewhere in the body. The incidence of metastisis to lung is significantly greater than primary bronchogenic tumor." How then can one possibly justify the inclusion of these tumors which have arisen elsewhere as indicative of an increased incidence of primary carcinoma of the lung?

CLINICAL OBJECTIONS

In the clinical realm several known findings do not seem consistent with the theory. If the inhalation of cigarette smoke is injurious to the surface lining or epithelium of the airway, then certainly the concentration areas through which all smoke must pass are the larynx or voice box and the trachea or windpipe. However, by all competent figures the incidence of carcinoma of the larynx seems to be showing no substantial increase and in any event accounts for less than 2,500 deaths per year. Meanwhile, carcinoma of the windpipe or trachea is a clinical curiosity. In the same 15-year interval in which we encountered 1,600 patients with lung cancer, we saw only 2 patients with primary cancer of the trachea. Again, at the lower end of the trachea there is a spur projecting into the airstream and diverting the air into the right and left main bronchi supplying the respective lung. If an analogy may be drawn, this would be similar to a point of land projecting into a flowing stream with diversion of the latter to both sides. One might reasonably expect erosive action and deposition of debris at this point. In clinical practice, however, primary cancer arising at this point is rare, although it is occasionally invaded from its outer wall by lymph nodes draining cancer arising elsewhere in the lung.

Again the proponents of the cause and effect relationship between cigarette smoking and lung cancer point out that changes can be demonstrated in the lining membrane or epithelium of heavy smokers. It is known, however, that similar changes are also found in nonsmokers, in a variety of inflammatory conditions, and even in babies. It is significant that these changes are found only in the trachea and major bronchi. The absolute rarity of tracheal cancer has already been pointed out. In addition there is a growing body of work which would suggest that lung cancer does not actually arise in the major bronchi but rather more peripherally and that it becomes clinically manifest only after it has advanced centrally in the normal drainage patterns of the lung toward the more major bronchi. Some verification of this thought may or may not arise from a current study in which we are engaged. My associates and myself are currently involved with several Detroit hospitals which are serving as one unit in a nationwide 20-unit U.S. Public Health Service study to evaluate the effectiveness of combined radiation and surgery in the treatment of lung cancer. The protocol for this study requires a meticulous cross-sectional study of all portions of the resected lung carried out in considerably more detail than has previously been the custom. It is entirely possible that the most valuable findings to emerge from this joint study might lie in the area of elucidating the actual point of origins of these tumors.

In the descriptions of the changes in the membranes of heavy smokers I have the feeling that there has been some loose terminology. Thus some workers speak of certain of these changes as "carcinoma in situ." Carcinoma is cancer. In the same breath, these workers speak of the changes as being reversible. This would mean self-curing cancer. I know of few clinicians who believe this and I personally find it very difficult to accept.

Again, if cigarette smoking were the cause of lung cancer, one might reasonably expect the development of the disease in both lungs—if not concurrently, at

least within a few years subsequently. Yet such is not the case. One might facetiously respond that sufferers from this disease do not live long enough to develop a second cancer, but, while funny, this is not the answer. We know that 25 percent of those who have a lung or a lobe of lung removed do survive over 5 years and yet development of a second lung cancer is almost unknown. Might one not logically anticipate a second cancer in all of these surviviors?

To continue on the trail of clinical inconsistencies we come to age of onset of the disease. All studies show a remarkably uniform age of onset between 55 and 60 for smoker and nonsmoker alike. If one were conditioned for the development of cancer by two decades of smoking, might one not reasonably anticipate onset of the disease in the forties among those who began smoking in their teens? Certainly such a relationship of earlier onset of the disease was found in the Schneeberg miners—the classical example of occupational causation of lung cancer. The Schneeberg mines in the mountains of Saxony and Bohemia were operated for over 500 years. Nearly 90 percent of all tumors in the miners were carcinoma of the lung. It was estimated that lung cancer was 30 times as common (6) among the miners as in the equivalent male population in Vienna.

To this day controversy rages as to the exact substance or substances in the mine—cobalt, arsenic, radium, uranium—which were responsible. It is known that mice exposed to the radioactive ores developed lung tumors. Whatever the deleterious substance or substances, the miners so exposed developed lung cancer from 10 to 15 years earlier than did the male population of Vienna of similar age group and makeup.

I cannot escape the conclusion that, if cigarette smoking were the cause of lung cancer, the age of onset of the disease should vary with the age at which smoking was begun and the quantity consumed in the interval. Such, however, is not the case.

Finally, on the clinical side, I am staggered by the nonchalant acceptance of the known fact that carcinoma of the lung is twice as common in England as in the United States, although the English per capita consumption of cigarettes is only one-half that of the United States. To combat this obviously disquieting fourfold disproportion there has arisen the theory that the Englishman smokes his cigarette further before discarding it. From this idea have arisen the butt studies with measurements of the lengths of discarded cigarette butts in England and in this country. One U.S. study was based on the lengths of discarded cigarette butts in a hospital cafeteria (7). I personally consider the latter studies somewhat ridiculous. However, they are an example of what I consider many jerry-built investigations constructed to shore up gaping inconsistencies in the theory.

EXPERIMENTAL OBJECTIONS

If a cause-and-effect relationship is presented as fact, it should be capable of experimental proof. Einstein and other scientists postulated that under a certain set of circumstances an enormous release of energy would occur. The atomic bomb was the spectacular confirmation of that theory.

Similar confirmation of a theory was recently reported in the field of medicine from Iceland (8). Examination of death statistics in Iceland revealed that carcinoma of the stomach was exceptionally common as contrasted to a falling incidence of the disease in most countries. Dungal noted that the incidence was high in farmers who ate mainly smoked fish and was much lower among fishermen and dwellers along the coasts who ate fresh or salted fish. Here was an example of a statistical relationship suggesting the possibility of a cause and effect relationship. Dungal designed and carried out the appropriate experiments to check this possibility. To one group of rats he fed a diet of ground smoked fish, while to a second group he fed a diet of ground salted fish. While no rat on the salted fish diet developed a malignant tumor, 5 of 18 rats on the smoked fish diet developed malignant abdominal tumors, 1 developed leukemia and several developed lung tumors. Of interest is the fact that several rats on a diet of smoked mutton also developed lung tumors. One cannot deny that this is apparent experimental confirmation of a statistical relationship. It does not prove that a diet high in smoked fish will cause stomach cancer in humans, but it makes it seem more likely. By contrast proven cancer of the lung cannot be produced in any experimental animal by exposure to tobacco smoke or even by repeated painting of the tracheo-bronchial tree with tobacco tars.

Again, we know that atherosclerosis, arteriosclerosis, or hardening of the arteries is one of the major causes of death in the United States. A statistical association was found between atherosclerosis and a high consumption of egg

yolks, meat fats, and dairy products. Animals fed diets high in these constituents develop lesions similar to those observed in humans. Although the significance of the statistical association seemed confirmed by experimental evidence, many do not feel that consumption of these products is the actual cause of arteriosclerosis.

When we move to the lung, however, we come to an area where cancer cannot be produced in experimental animals either by exposure to an atmosphere of cigarette smoke or by applications of tobacco tar. By contrast it can be produced by other substances including products of combustion from the gasoline engine. Realizing this inconsistency, the proponents of the cigarette causation can show that skin cancers can be produced in experimental animals by the application of tobacco tar. This is true—however, it can also be caused by the application of a variety of other substances including repeated application of a variety of common food products ordinarily considered safe for human consumption. To discredit this roundabout evidence further, it may be stated that there is no known condition of cancer of the skin arising in the countless millions who exhibit yellowed knuckles on their smoking hand.

SUMMARY

1. When studies designed to demonstrate a great hazard to health culminate in slower death rate among those exposed to the presumed hazard than is found in the general population. I am amazed at the public acceptance of the conclusions reached in the Surgeon General's report.

2. I feel that the projected alarming future increase in the incidence of carcinoma of the lung is completely unrealistic when interpreted as a potential epidemic which can be checked. Rather, historical perspective would suggest that we are actually approaching a peak and rather stable incidence at the present time.

3. Clinically I find great difficulty in reconciling the fact that those areas presumably exposed to the highest concentration of tobacco tar and lined with the same type of membrane prove either to be those least affected by cancer or to be those in which the incidence of cancer is minute as contrasted to that found in the lung.

4. Experience with cancer of various organs suggests that in the presence of a valid external causative agent, cancer will develop at an earlier age in those earlier and more extensively exposed to the presumably causative agent. Such has never proven to be the case in lung cancer arising in cigarette smokers.

5. I find it difficult to accept a cause and effect relationship when experimental attempts to reproduce the disease with the presumed causative factor are uniformly unsuccessful.

6. I feel that many of the studies and experiments devised to explain away the many glaring inconsistencies in the theory have been truly scientific neither in their approach nor in their conclusions. I do not, however, impugn the sincerity of those so involved.

7. On the basis of the above objections, I feel that no service is being rendered either the public or the profession by the loud and repeated proclamations and intimations that the major cause of this dread disease has been found.

REFERENCES

(1) Smoking and Health, U.S. Dept. of Health, Educ., and Welfare, Washington, D.C.

(2) Gilliam, A. G. (1956): Trends of Mortality Attributed to Carcinoma of the Lung. Possible Effects of Faulty Certification of Deaths Due to Other Respiratory Diseases. Cancer, N.Y., 8, 1, 130

(3) The Registrar General's Statistical Review of England and Wales, 1957, Part I, Tables, Medical, p. 140, London: H.M.S.O., 1957

(4) The Registrar General's Statistical Review of England and Wales, 1956, Part III, Commentary. London: H.M.S.O., 1957

(5) Bronchopulmonary Diseases, ed. by E. A. Naclerio, Hoeber-Harper, N.Y., 1957

(6) Peller, S.: Lung Cancer Among Mine Workers. Hum. Biol., 11, 130, 1939

(7) Hilding, A. C.: On Cigarette Smoking, Bronchial Carcinoma and Ciliary Action. 1. Smoking Habits and Measurements of Smoke Intake. New Engl. J. Med., 254, 775, 1956

(8) Dungal, Niels: The Special Problem of Stomach Cancer in Iceland, J.A.M.A., 178, 789, 1961

CURRICULUM VITAE

Born: Arkon, Ohio, March 19, 1920.

Education: B.S., University of Akron, 1940; M.D., Western Reserve University, 1943.

Graduate hospital training: Intern, University of Chicago clinics, 1944; resident in general surgery, Henry Ford Hospital, 1947–50; resident in thoracic surgery, Herman Kiefer Hospital, 1950–52.

Academic position: Clinical assistant professor of surgery, Wayne State University.

Hospital appointments:

Chief of thoracic surgery, Detroit Memorial Hospital and St. Joseph Mercy Hospital.

Surgeon and chief of thoracic surgery, Outpatient Department, Harper Hospital.

Consultant in thoracic surgery, Herman Kiefer Hospital and Wyandotte General Hospital.

Surgical staff, Detroit Receiving Hospital, Mount Carmel Mercy Hospital, Jennings Memorial Hospital, and Crittendon General Hospital.

Licensure: Ohio, 1944; Michigan, 1948.

Certification: American Board of Surgery, 1952; Board of Thoracic Surgery, 1954.

Military service: Captain, Medical Corps, Army of the United States, September 1944 to December 1946.

Membership in societies: Fellow, American College of Surgeons; fellow, American College of Chest Physicians; Central Surgical Association; Western Surgical Association; American Association for Thoracic Surgery; Society of Thoracic Surgeons, founding member and member of steering committee; the Chest Club; American Medical Association; Michigan State Medical Society; Wayne County Medical Society; Michigan Thoracic Society; Detroit Surgical Society; Detroit Surgical Association; the Academy of Surgery of Detroit; and the Detroit Academy of Medicine.

Special appointments: Committee on Pulmonary Surgery, American College of Chest Physicians; responsible investigator, Michigan Heart Association; counselor, Detroit Surgical Society; past counselor, Detroit Surgical Association; director of surgical training, Herman Kiefer Hospital; Cancer Committee, Harper Hospital and Detroit Memorial Hospital; and delegate, Michigan State Medical Society.

BIBLIOGRAPHY

1. Lam, C. R., Rogers, F. J., and Barrett, R. J. The effect of moderate degrees of Dicumarol-induced hypoprothrombinemia on experimental intravascular thrombosis. 1949, S.G. & O., 89.
2. Barrett, R. J., Masaki, Mikio, and Tuttle, W. M., 1954. Circulatory status of resected tuberculous pulmonary lobes. J. Thor. Surg., 27, March.
3. Tuttle, W. M., Hertzler, J. H., and Barrett, R. J., 1955. The importance of surgery in the management of the pulmonary coin lesion. Am. J. Surg., 89, Feb.
4. Barrett, R. J., Day, J. C., and Tuttle, W. M., 1956. The arterial distribution to the left upper pulmonary lobe. J. Thor. Surg., 32, Aug.
5. Tuttle, W. M., Hertzler, J. H., and Barrett, R. J., Coin Lesions. 1957. Chapter in textbook "Bronchopulmonary Diseases." Hoeber-Harper, N.Y.
6. Barrett, R. J., 1958. Surgical treatment of spontaneous pneumothorax with emphysematous blebs. Modern Medicine, March.
7. Barrett, R. J., and Tuttle, W. M., 1958. The treatment of closed chest injuries. J. Mich. S. Med. Soc., 57, Sept.
8. Barrett, R. J., O'Rourke, P. V., and Tuttle, W. M., 1958. The arterial distribution to the right upper pulmonary lobe. J. Thor. Surg., 36, July.
9. Tuttle, W. M., Crowley, R. T., and Barrett, R. J., 1958. Achalasia of the esophagus—further thoughts on surgical management. J. Thor. Surg., 36, Sept.
10. Barrett, R. J., Day, J. C., O'Rouke, P. V., O'Brien, E. J., and Tuttle, W. M., 1958. Pulmonary resection in the treatment of pulmonary tuberculosis—experience with 1,730 patients. J. Thor. Surg., 36, Dec.
11. Barrett, R. J., and Tuttle, W. M., 1959. Pre- and post-operative care of the thoracotomy patient. Surg. Clin. N. Amer., Dec.

12. Barrett, R. J., and Tuttle, W. M., 1960. A study of essential hemoptysis. Thor. and Card. Surg., 40, Oct.
13. Barrett, R. J., Carcinoma of the Lung, 1961. J. Mich. S. Med. Soc., July.
14. Tuttle, W. M., and Barrett, R. J., chapter on "Diseases of the Mediastinum" in textbook "Traumatic Medicine and Surgery," 1962, Butterworths, Ltd., London.
15. Tuttle, W. M., and Barrett, R. J., 1963. Late esophageal perforations. Arch. Surg., 86, p. 695–700, May.
16. Barrett, R. J., Day, J. C., O'Rourke, P. V., Chapman, P. T., Sadeghi, H., Perry, R., and Tuttle, W. M., 1963. Primary carcinoma of the lung: Experience with 1,312 patients, J. Thor. and Card., Surgery, 46, p. 292–297, Sept.

STATEMENT OF ALAN S. DONNAHOE

I am Alan S. Donnahoe, of Richmond, Va. I am the executive vice president and assistant publisher of the Richmond Times-Dispatch and the Richmond News Leader. In addition to my newspaper work, I have spent a good many years in the practical application of statistical method. I have been a lecturer on statistics at the University of Richmond. I have served as a member of the Committee on Business Statistics, U.S. Chamber of Commerce; the Business Advisory Committee, U.S. Bureau of Labor Statistics; and the Business Advisory Committee, U.S. Bureau of the Census. I am a member of the American Statistical Association and have served on its Committee on Monographs. I have a real interest in public health and have been a member of the Executive Committee of the Virginia Tuberculosis Association.

I wish to thank the committee for this opportunity to appear and make this statement in connection with the subject under consideration which is, of course, of great interest and importance to the people in my section of the country.

When the report of the Surgeon General's Advisory Committee was released last year, it became the responsibility of our newspaper to give our readers an intelligible account of not only the conclusions of the report, but also the facts and data which formed the basis for those conclusions. I found the report to be a formidable document, bristling with statistical tables, hard to understand, and even more difficult to summarize and report. Because of this, it is quite understandable that many newspapers relied almost entirely on either the summary provided for the press or on the conclusions stated in the report itself as the basis for their news stories.

Since the conclusions of the report seemed to be based primarily on statistics, I felt that I should undertake a more searching analysis of it for the benefit of our readers. I was surprised to find that despite the firm conclusions stated in the report, the text revealed many frailties and inconsistencies in the underlying statistical data. I think it is a fair statement that the public has little knowledge of these deficiencies and the extent to which they qualify the conclusions drawn in the report. In this connection, it is significant that one member of the Surgeon General's Advisory Committee has subsequently implied that the Committee may not have been as firmly convinced of a casual connection between smoking and disease as the report's conclusions indicated. Dr. John B. Hickam, in an address to the North Carolina Heart Association, is reported by the Associated Press to have said: "The more we looked at the statistics, the more difficult it was to understand. The picture is not at all as clear as the numbers appear at first."

When the Congress of the United States is considering action based upon the report of the Surgeon General's Advisory Committee, I feel that it should also be aware of the discrepancies in the statistical data which raise serious questions as to the validity of the conclusions reached.

In Europe many years ago a strong correlation was observed between the consumption of corn and corn products and the incidence of pellagra. It was widely assumed that the one was the cause of the other, and this assumption resulted in a great reduction in the growing of corn and the use of wheat as a dietary substitute. Eventually, it was discovered that pellagra is the result of a nutritional deficiency, which can be supplied by milk and greens, and that corn was simply an unfortunate victim of an inference based on statistical association. From this, and many other examples, we are led to recognize that scientific truth is a perishable commodity, and that theories in vogue today may be out of fashion tomorrow.

It is in this context, it seems to me, that we must consider the report of the Advisory Committee to the Surgeon General on Smoking and Health.

How can one approach any subject of this kind? We can, at least, it seems to me, think in these terms:

First, does the evidence on which the theory is based appear to be valid? I think we have every right to be suspicious of any finding based on erroneous evidence, if, indeed, that should be the case.

Second, is the theory comprehensive, in the sense of explaining most of the known facts? A partial explanation is disturbing to most of us, in trying to understand any subject.

Third, is the theory consistent, in the sense that it is not contradicted by any of the evidence on which it is based or any other known fact?

Fourth, does the theory meet the test of reasonableness? Not much is said about this, but I am quite certain that this is the first test applied by all practicing statisticians. When unreasonable results are obtained in a survey, there is a strong suspicion that something went wrong somewhere in the technique applied.

Finally, is any alternative theory available, consistent with known fact, which may be equally or even more plausible as a tentative explanation?

CONSISTENCY

Let us turn first to the question of consistency of the information said to show a connection between cigarette smoking and disease.

A story is told in Virginia about a schoolteacher, many years ago, who applied for a job in one of our rural counties, and was being interviewed by members of the school board. "Which theory do you teach," said one such member, "that the world is round or that the world is flat?" "Well, sir," the teacher replied earnestly, "I'll tell you. I can teach it either way."

We may have somewhat the same feeling about the Surgeon General's report, when we discover that some of the evidence used to prove the connection between cigarette smoking and lung cancer can also be used, perhaps with equal cogency, to prove that there is so such connection.

For example, the report shows that Holland, Switzerland, Finland, and Great Britain have a lower per capita consumption of cigarettes than the United States, but that all have higher mortality from lung cancer. Indeed, in the case of Great Britain, the mortality rate is more than double that of the United States. Similarly, Canada, Australia, and Denmark have about one-half the United States per capita consumption of cigarettes, but show about the same mortality rate from lung cancer.

Another example can be found in the ratio of male to female deaths from lung cancer. Notwithstanding the rapid growth in cigarette smoking among women, this ratio has increased from 1.5 in 1930 to more than 6 at the present time. This trend would certainly seem to be totally inconsistent with the cigarette-causation theory.

The same statistical evidence, used by the committee to bolster its conclusion on cigarette smoking and lung cancer, shows that cigarette smokers have a 40-percent greater mortality than nonsmokers from stomach cancer. Yet, over the years, the mortality rate from stomach cancer has declined: precisely the opposite of what would be expected if statistical association meant causation.

There are still other strange phenomena in the Surgeon General's report. For example:

It appears that once men reach the ripe age of 70, if they smoke cigarettes at all, the more they smoke the better, in terms of further life expectancy. Indeed, from 80 to 89, the heavy cigarette smoker has only one-half the mortality rate of the nonsmoker.

In still another of the surveys used by the committee, the men who had smoked cigarettes for less than 15 years had a slightly lower mortality rate than nonsmokers.

According to the report, there are many compounds which can induce cancer in animals, but only a small number of them can be found in tobacco smoke, and these in minute quantities. Even so, the most potent of these is said to be benzapyrene; and the Committee reports that there is 10 times as much of it in pipe tobacco as in cigarette tobacco. Yet pipe smokers—even those who smoke more than 10 pipefuls per day, and those who have smoked for more than 30 years—have death rates no different from those of nonsmokers, according to the statistics in the report. And we must also note that these same statistics show

a higher mortality rate for former pipe smokers than for either smokers or nonsmokers.

In brief, if these statistics can be believed, it is quite safe to smoke a pipe, but highly dangerous to discontinue the practice.

These are strange facts, in light of the conclusions of the Surgeon General's report. Is it not a curious form of scientific method that permits us to emphasize only those facts that support a given hypothesis, and ignore all others of a contradictory nature?

COMPREHENSIVE THEORY

But let us now turn to our second test. How comprehensive is this smoking-health theory? How much does it explain, and how much does it leave unexplained?

Although statistics in the report show cigarette smokers have a higher overall mortality rate, other factors are cited that seem quite important. For eaxmple: Cigarette smokers who take heavy exercise have a lower mortality rate than nonsmokers who take none.

Cigarette smokers among married men have about the same mortality rate as nonsmokers who are single.

Cigarette smokers who are so fortunate as to have long-lived parents and grandparents have about the same mortality rate as nonsmokers with short-lived ancestors.

Coming back to the question of lung cancer itself, the report shows that the incidence of this disease varies widely. For example:

There is sharp variation from one region to another. (The rate in New York City has been reported as four times the rate in Iowa.)

Men in certain occupations such as bartenders, waiters, and sheet metal workers, seem unusually vulnerable to the disease, without relation to their smoking habits.

There is a strong inverse relationship with income level. Low-income males, for example, have more than double the lung cancer rate of high-income males.

Immigrants to this country have a lung cancer rate about one-third greater than the rate among native-born citizens.

Further, for these immigrants, the incidence of cancer by site varies according to the country of origin: among the Irish, high death rates from oral cancer; among the Polish, gastric cancer; among the Russians, stomach cancer; among the English, lung cancer; and so on.

So far as I know, no one has suggested that smoking is causally related to matrimony, exercise, relative income, age or type of ancestry, and yet, as we have just seen, all of these things seem to have a strong influence on the risk of cancer.

How then can we be so certain about just one element in this complex structure, when we are in such total ignorance of all the others? Most of us, quite properly, have a great reluctance to draw broad conclusions for fragmentary and incomplete evidence.

REASONABLENESS

Now let us turn to the test of reasonableness which, as I have said, is the first test applied in practical survey work of all kinds. Where results are clearly unreasonable, it raises the strongest possible suspicion that some error in technique has occurred in some phase of sampling or survey procedures.

This leads us to what is, in many ways, the most remarkable finding in the entire report. The astonishing fact—if we are to believe the statistical evidence cited by the Committee—is that lung cancer accounts for only about 15 to 20 percent of the "excess" deaths among cigarette smokers.

About half of the "excess" deaths is to be found in heart disease, and the remainder are distributed among about every other type of disease known.

This not only staggers the imagination, but apparently it staggered the committee as well. On most of these diseases, the typical committee conclusion was that "the data are not sufficient to support a direct or causal connection" with cigarette smoking; and in the case of some of the chronic diseases, that "the explanation * * * is not clear."

Dr. Joseph Berkson, the distinguished medical statistician of the Mayo Clinic, has commented on this phenomenon as follows:

"The idea that cigarette smoking causes all these many deaths from all these many causes does indeed seem seriously questionable. There is not any scien-

tifically known pharmacologic or physical explanation for so widespread and multifarious an effect.

"If we extrapolate the results to the general population, we must believe there are some 250,000 deaths annually from smoking-induced diseases, without any of them having been individually noted as such from independent clinical or pathologic evidence. Only by their numbers are they known."

With findings of this type, it is mandatory that survey procedures be reviewed with rigorous care; because, in actual practice, when such findings occur, they almost invariably turn out to be the result of faulty technique somewhere along the line which may make the entire survey unreliable.

VALID EVIDENCE?

What were the procedures used by the committee in collecting data? The answer is that the committee itself did no original research, but relied wholly on the work of others.

With this total reliance on secondary materials, the quality of such evidence must be closely examined.

The great mass of evidence before the committee evolved from seven surveys, of various population groups, by various agencies.

One survey involved British doctors; another included men in California in nine occupations where there was some reason to expect high incidence of lung cancer; another involved California members of the American Legion; still another was restricted to Canadian pensioners of three wars; and so on. In view of this, it is not surprising that the committee said "None of the population was designed, in particular, to be representative of the U.S. male population" and that to project the results to any population of men "must involve an element of unverifiable judgment."

But this is not all. In five of the studies, the percentage of nonresponse was 15, 32, 32, 43, and 44 percent, respectively. The committee itself referred to these as "sizable proportions" of nonresponse.

Even more serious to a statistician are the conditions under which the other two surveys were conducted. In the language of the committee:

"In the two American Cancer Society studies it is not possible to present meaningful percentages (of nonresponse), since each research volunteer selected her own small part of the study population from among her own acquaintances."

These two studies represented 57 percent of the total replies in all seven studies: the majority of all cases studies; and for these, certainly, it can only be concluded that there was not the slightest pretense of scientific sampling. Indeed, if there is any way not to sample scientifically, it is to permit ladies to select respondents from within their circle of acquaintances, and then include only those who are inclined to participate.

When we consider all of this—the fact that no one can tell what population was really being measured, the further fact of high nonresponse in some surveys, and of haphazard selection of respondents in the others—the result is a statistical melange of unknown and unknowable reliability.

To be certain of this we need seek no further authority than the one statistician who served on the committee. In the second edition of his book on sampling, published a couple of years ago, Dr. William Cochran had this to say on the subject:

"The following are some common types of nonprobability sampling:

"1. The sample is restricted to a part of the population that is readily accessible.

"2. The sample is selected haphazardly.

"3. The sample consists essentially of volunteers, in studies in which the measuring process is unpleasant or troublesome to the person being measured."

How valid are surveys of this type? Dr. Cochran goes on to say:

"About the only way of examining how good one of them may be is to find a situation in which the results are known, either for the whole population or for a probability sample, and make comparisons. Even if a method appears to do well in one such comparison, this does not guarantee that it will do well under different circumstances."

In other words, what Dr. Cochran is saying is that surveys of this kind are not very helpful; that you really cannot tell whether the results mean anything or not, unless you can compare them with known facts; and even then there can be no certainty as to other results obtained.

Even so, let us take the criteria suggested by Dr. Cochran. Let us see if we can compare the results in these seven surveys with known fact, to see if they coincide. Let us do this with the most critical element of all: the mortality rate.

Here we find another astonishing situation: In most instances the age-adjusted mortality rate in these seven surveys is far below the known national average—not only for nonsmokers, but often for heavy cigarette smokers as well. In three of the seven studies, the mortality rate for heavy cigarette smokers was lower than the average for all males in the U.S. population, and in one survey was almost 30 percent below the national average.

On this, the committee comments as follows:

"It is clear that the seven * * * studies involve populations that are healthier than U.S. males as a whole." After pointing out that the exclusion of seriously ill individuals might account for some of this variation, the committee still admits that "the sizes of the differences appear surprising."

Remember that we are dealing here with a type of survey that has no inner test of reliability, which can only be tested by comparing results with known facts; and that we have just found that the results do not coincide with known fact in terms of mortality rate, the most vital element of all.

What sort of weight should be attached to evidence of this kind: to surveys that fail to meet the minimum standards of scientific sampling; to statistical data to which no error limits can be assigned; to findings that are contradictory to known fact? Is this the kind of material from which to weave new and dramatic scientific theory, with far-reaching implications in the field of public policy?

ALTERNATE THEORIES

Confronted with these hard questions, it is logical to look for alternate theories that might explain the various findings, with a somewhat lesser tax on our limits of credulity. More specifically, there are two sets of conditions that—with no true causal connection between smoking an dhealth—could still generate survey findings of the type we have seen.

The first is spurious correlation. If, for obvious reasons, we assume (1) that smokers are less likely than nonsmokers to participate in a survey of this kind; and (2) that seriously ill people will not participate; then we can produce survey results with strong correlation between smoking and disease, even though there is no correlation whatsoever in the population at large.

On page 116 of the Committee report, there appears a table prepared by Dr. Berkson, showing an actual arithmetical example of how these assumptions can generate high correlation in survey data, from zero correlation in the population as a whole.

It is highly significant, in my mind, that the Committee agreed that Dr. Berkson's assumptions were basically correct, and disagreed with Dr. Berkson only in the degree to which they actually occurred: a distinction which falls into the area of pure speculation.

Closely related to this is another type of survey error. Consider the method by which the Committee measured the relationship between smoking and various diseases. For each such disease, the mortality rate among smokers was divided by the rate among nonsmokers, to get a relative measure of the difference. But, as we have seen, all of the surveys were quite atypical in terms of known mortality rates, and particularly so among nonsmokers. The Committee's statement on this point is commendably candid:

"The low death rates for nonsmokers suggest the possibility that the studies recruited unusually healthy groups of nonsmokers."

Now, if we have artificially low rates for nonsmokers, which is conceded to be true, and we divide these into normal rates for smokers, what do we get? Clearly, we get what appears to be high mortality for smokers, generated wholly from sampling bias.

But apart from bias and spurious correlation, still another condition can provide an explanation of the survey results. It is possible that the correlation between cigarette smoking and various diseases is real, but without causal significance. This would be the case, for example, if both smoking and disease were correlated with other hidden factors—such as psychological or physiological differences—which exert the true causal force in each case. There are many reasons to believe that this might be so.

And it is possible, of course, that all of these conditions might be operating at the same time: elements of bias and spurious correlation, and elements of non-

causative correlation. If so, it would be very easy indeed to obtain the given survey results, with no causal connection between cigarette smoking and lung cancer or any of the other diseases.

Further, if these factors operate at all, it is likely that they would operate in all surveys of this type, thus generating the same type of results in each, and the appearance of great uniformity in this respect.

But the important fact that emerges from all this is that the smoking and health hypothesis is only one of several possible explanations of the survey data in the Surgeon General's report and, all things considered, may well be the least plausible of the lot.

In Fortune magazine (February 1964), Dr. William Cochran, the sole statistician on the Surgeon General's Advisory Committee, is reported as having expressed the view that purely statistical analysis of the problem has its limitations, and that the only way to prove that smoking causes lung cancer is to perform scientific experiments that would prove the existence of a biological mechanism. This takes on special significance when we remember that there has never been any experimental verification of the smoking-cancer theory and that, on the contrary, of the many attempts to induce lung cancer by smoking in experimental animals, all without exception have failed.

CONCLUSION

In conclusion, it would seem fair to say that the smoking-cancer hypothesis evloves almost entirely from statistical correlation, which at best can only suggest but never prove causation, based in this instance on statistical data of highly dubious quality, collected by a variety of agencies by methods that can only be described as haphazard and unscientific.

These data, as might be expected, are internally inconsistent, lead to unreasonable implications, and are contradictory not only with other research of a competent nature, but also with other facts known to be true.

In a word, the smoking hypothesis is as weak as its evidence is shaky; and what we are dealing with is not so much scientific method as it is scientific guesswork.

Guesses may have merit, and may sometimes prove correct, but they are a poor substitute for scientific procedures, and a flimsy foundation for public policy.

All that seems anywhere near certain at this moment is that we continue to have a critical need for further research in this field. This was admirably summarized in a journal editorial of the Virginia Medical Society in one sentence that may also serve as an apt conclusion to this statement today:

"This (Surgeon General's) report bears out what physicians have known for a long time—namely, that the causes of cancer are complex, and the present survey has done little to clarify the subject."

STATEMENT OF CLARENCE COOK LITTLE, SC. D.

I am Clarence Cook Little of Ellsworth, Maine.

It may be of interest to you to know that the first time I had the privilege to appear before a congressional committee considering legislation on a subject relating to cancer was 28 years ago, in 1937.

I came then as managing director of the American Society for the Control of Cancer (which is now called the American Cancer Society), past president of the Amerian Association for Cancer Research, and director of the Jackson Laboratory for Cancer Research. With me were Dr. James Ewing, also a past president of AACR and then director of the Memorial Hospital in New York, and Dr. Francis Carter Wood, past president of the American Cancer Society and the director of Cancer Research at Columbia University.

The question before the Congress then was the National Cancer Act. We came to urge with unanimous enthusiasm the passage of that act because it had, by that time, become apparent the cancer problems required that there be conceived and implemented a whole new concept of attack on a vast scale. The realization had become inescapable that the basic nature of the cancer process was biologial, that cancer was a phenomena of life itself and of growth, and that it would require continued massive research efforts to acquire the knowledge which would permit an eventual understanding and control of the origin and development of that biological growth process. It had become clearly recognized that the solution of this problem would require the cooperation of all the scientific disciplines—including biochemistry, physical chemistry, physics, radiology, bio-

physics, zoology, botany, embryology, physiology, genetics, pathology, virology, and bacteriology—and that private effort alone could not assemble or maintain all the scientific resources to attack the problem in the way that it had to be approached. It is interesting that those of us who then appeared before the Congress represented as nearly as possible the unanimous feeling of all cancer research scientists at that time.

I think that it is tremendously sobering and important to realize that as I appear before you today—28 years later—exactly the same facts exist, for although we have acquired a great deal of knowledge about many phases of the cancer process, there still remains an unpredictable and impressive mass of information to be acquired by new techniques, by more and better trained personnel, by more and different avenues of attack and by greatly increased resources.

At the present time I hold the positions of scientific director of the Council for Tobacco Research—U.S.A. and director emeritus of the Roscoe B. Jackson Memorial Laboratory. I am also engaged in part-time laboratory research at the Jackson Laboratory under a grant from the National Cancer Institute. A full account of my professional qaulifications is attached to this statement.

I suppose that, finding myself still active part time in laboratory research on cancer 58 years after I first started that career, I should feel a sense of frustration and discouragement. This is far from the truth. Because the cancer process is a problem of life and growth, its study has a way of increasing the sense of these qualities in those who are trying to analyze and understand it. Why is it that so much still remains unknown? What kind of an enemy to man is this process called cancer? These are not academic questions. They lie at the heart of understanding and are vital as guides to us all, including those like yourself who consider legislation bearing on environmental factors—of which cigarettes are only one of hundreds—which in recent years segments of the scientific community have associated with cancer.

The cruel and insistently destructive conditions characteristic of many clinical stages of cancer and of all advanced cancer generate an equally insistent effort to grasp for immediate answers and solutions. But all those qualities that cancer exhibits as a disease are unfortunately not characteristic of its causes and origins. And we cannot hope for solutions if we lose sight of the many essential aspects of its complex biological nature as a life process.

The change from the noncancer cell to the cancer cell occurs within the microscopic or submicroscopic structure and function of a previously noncancerous cell.

This world where cancer arises is a tiny but magnificent world—an infinitely small and delicate world where it is now known that viruses, which cannot even be seen until magnified a thousand or more times, can live peaceably, harmlessly, and, even apparently cooperatively, inside the cancer cell, perhaps triggering, perhaps maintaining its power of resurgent growth. In this world too reside the subtle arrangements and rearrangements within or between molecules which may produce or activate this same power. The changes we are concerned with are not gross visible phenomena.

Cancer originates in biological unbalance. In every form of life, health and normal function depend upon maintaining the extraordinary complex state of biological balance between the component elements of the organism, plant, or animal, as the case may be. This means, unavoidably, that there exists, and always will exist, in these organisms the possibility that unbalance and disorganization may appear to challenge, interrupt, and perhaps overthrow the balance and organization on which normal health and function depend.

The nature of the cancer process as such, is basically the same in the whole range of plant and animal forms, reaching from the lower ones up to and through man. In every case it is an actual part of the organism itself. It is not a stranger coming from the outside which attacks, damages, and "kills" the cell. The cancer is natural and completely at home, and the organism in which it occurs does not recognize it as being foreign. One must realize, thus, that cancer cannot be thought of as a "disease" in the ordinary sense in which people think of that word. We know that in its early stages it causes no pain or untoward symptom, and one can make the startling but true statement that cancer in its early stages cannot kill.

Cancer cells, far from being cells "killed" or "damaged" to the outward eye of the researcher, are highly efficient lifeunits which reproduce themselves with greater speed, tenacity, and success than the other cells and tissues of which

the rest of the adult individual is composed. The body cannot keep pace with, control or contain their tireless growth.

Cancer is a type of cell, a type of process unique in historical scientific experience of disease or even life itself. For, as Leo Loeb, a pioneer St. Louis pathologist, once dramatically said, it is potentially "immortal."

The capacity of cancer to continue unabated vigor of growth over an indefinite period has been demonstrated beyond question by repeated transplants of bits of cancer from one animal to another. There are today growing in several laboratories in various parts of the world many masses of mouse cancer tissue which are actually parts of an Austrian mouse from which transplants of its original cancer were first made in 1900. The nature of that cancer and its vigor of growth are the same after 65 years and a series of perhaps 800 to 1,000 successive transplants from one group of mice to another. The successive cancers produced in this way by transplantation have continued to grow with no sign whatever of aging as long as they have food and space in which to expand.

The Austrian mouse in which the original cancer occurred could not possibly have had a lifespan of over 3¾ years—by then it would have been a mouse Methuselah—but the parts of it that were cancer are still as young biologically as ever.

An average adult mouse weighs about an ounce. But over the years there must have been several hundred pounds or more of "mouse" derived from the tissue of that original animal. In fact, had it been desirable to do so, enough tons of tissue from that original mouse could have been made available today to fill completely this committee room and all others for that matter.

Most types of cancer appear at or after the age of maturity of the various tissues in which they occur. In man this means age 35 or usually older. This fact in itself limits our opportunity for the study of cancer in man. The years pass. While the observed subject is growing old; the observer—the clinician, the biologist, the research worker—is unhappily growing old at the same rate. It was imperative therefore to find and to develop animal research material which grew old much more rapidly than man but which also naturally and without experimental inciters develop cancer of the types and in the same relative age sequence as does man.

Mice appeared to be the laboratory material that cancer research needed. A mouse of 2 years old is relatively about as old as a person of 70 or over. Several types of mouse cancer, especially of the lung and of the breast, had been recorded as occurring naturally in various strains or families in different laboratories.

By 1909 I began the effort to make this material more useful and available. In 1907, a Danish scientist starting with a population of ordinary garden beans, as mixed in its various hereditary types as are human populations, had reported that in some six or eight generations of selective close inbreeding he had separated that population into its component parts. Once this was done each component substrain or family was uniform and continued to reproduce its own characteristic type of biological life-history generation after generation as long as it was inbred.

It was evident that, although 20 to 30 generations of inbreeding rather than 6 to 8 would be required, the same principle applied to and the same results could be obtained in separating and maintaining the various component strains in the mixed population of mice. This would enable us, for example, to breed for high cancer incidence on the one hand and for low cancer incidence on the other. So I set about doing it, from 1907 to 1917 at the Harvard Graduate and Medical Schools, 1918 to 1921 at the Carnegie Institution of Washington, 1922 to 1924 at the University of Maine, and from 1925 to 1928 at the University of Michigan. The work was continued and expanded over the years.

The opportunity to build a special institution dedicated to experimental research on heredity and cancer in laboratory animals and to the production of uniform, stable strains of experimental mice—which were as necessary to continued progress in medical and biological research as are purified and standardized chemicals—came to me through loyal friends in 1929. At the Jackson Laboratory, Bar Harbor, Maine, from then until 1947 the program grew and bore fruit. Today, hundreds of laboratories on our side of and behind the Iron Curtain and in every continent use a total of close to 1 million of the Laboratory's standardized, diversified and predictable mice in research each year.

It is interesting to note here that the present-day methods of hormone therapy in cancer of the human breast and of the prostrate are based directly on our experimental findings in mice, tracing back as far as the 1920's. In addition, the principle of genetic similarity of tissues, by which it has been possible to trans-

plant cancer from mouse to mouse, with accurate knowledge in advance as to whether or not the transplantation will be successful, was developed by my students and myself in 1915. This has been used in many laboratories as the basis of the research on which most, if not all, of the advances in successful transplantation of human skin in cases of severe burns and of other human organs inside the body have been based.

Just as the microscope has extended man's power of sight, so the scope of his power to observe, study, and analyze the process of heredity and the nature of individual biological life patterns has been extended to cover up to approximately 270 successive generations in certain of well over 70 different biological strains of mice. To do this in man, one would have had to start 5,400 years ago or in 3400 B.C.

Strains of mice with an incidence of 80, 90, or even 99 percent of breast cancer were developed in contrast to other strains with less than 1-percent incidence. A strain with 80-percent incidence of lung cancer and strains with less than 1 percent were developed. Strains with high or with low incidence of leukemia also were established and exist today.

In all this work there was no experimental stimulation whatever for the occurrence of these cancers. The cancers occurred as natural phenomena of growth in some strains and not in others even though external environmental conditions were the same for all. The cancers that occur in various different tissues and organs arise at different times and under different conditions, the various tissues and organs beginning to age and to show irregularity in their functioning at different times.

The tissue of origin of these cancers, their nature, the relative number which will occur and the approximate age of occurrence are all biologically predictable in these strains.

The fact is that each individual mammal, whether it be a mouse or a human being, has its own innate, genetic potentialities for maintaining those intricate balances between its various tissues and organs in their continuing function, which mean health, or for being unable to resist those disturbing forces—internal or external—which almost continually challenge and may critically upset these balances and eventually lead to the appearance of the cancer process.

In man all the different biological types of individuals are inextricably mixed. Genetically uniform, stable strains of men which would permit us to separate and analyze individual genetic potentialities for cancer in man cannot be developed. Since our social customs maintain man's mixture, it has not been practical clinically to separate and to isolate the various types of humans with various degrees of susceptibility or resistance to different challenges to the body's internal balance.

But generations of basic research has given us the knowledge of the all-important role played by the inherited potentialities of different systems of tissues and organs in determining the individual biological life pattern, and has proved the fact that the as yet unexplained variation between individuals, maintained by heredity, is the main factor in the origin of the cancer process. This must not be forgotten.

But we do forget it, and we greatly oversimplify our problems and delay their ultimate solution every time we focus our main attention on external agents of the superficial environment which are vastly easier to see, measure, and record than are the determining biological processes.

Today, new types of equipment can greatly extend our powers of observation beyond those that formerly existed. This has opened up a new world of experimental research. Into this new world—the world of the molecule or even the atom—man's intellect is hurrying with the sort of explorative enthusiasm that centuries ago drove his body across new oceans and continents.

But it is outside of this world where cancer originates that the obvious agents or events that our eyes can see, our observers record, and our computers manipulate, exist. The world of records is not the world of life and the origin of the cancer process, we know, is a very basic form of life itself.

All of us, research workers, legislators, and ordinary citizens should never forget for a moment, under any pressure, the nature of the enemy cancer against whom we fight.

That enemy is superlatively delicate in its origin, subtly subversive in its failure to arouse antagonism or even suspicion within our body, awesome in its unaging vigor of growth. It is and will be a problem for all time to all organisms, including man, which depend for their health on controlled and orderly internal balance.

Wherever complicated balances are maintained, the possibility of their upset exists and must be considered, not in fear or with lack of emotional control but patiently, wisely, and with creative intellectual effort—not with overconfident reliance on incomplete or partial knowledge but with untiring determination to search for the whole truth. This is a solemn obligation which no one can obscure, camouflage, or avoid.

When I began to prepare this statement to you, it was hard for me to realize that I have become the person now alive in our country, who has been active in this search for the longest time. The years have passed with amazing speed, unfortunately with a speed that increases with age.

There is personal happiness in the advances which have been made, humility in the failures but, above all, there is the compulsion to try to give to those who, like you, have taken your place as workers on the still unfinished trail, an orientation which I have found to be sound and renewing—a sort of compass that keeps a sense of direction toward truth through tangles of conflicting opinions, theories and claims of discovery. On every major trail of scientific search there are exciting vistas, intriguing spots for a temporary pause for relaxation or renewal. But the compass is still in one's hand and there are still many miles of unknown terrain to travel before the goal is reached. One does not settle for a vista—he travels on. And that is what science must do if it is to determine the causes of cancer.

I have tried to define some of the principles which characterize the cancer process and its origins. These principles guide, and will continue to guide the Council for Tobacco Research—U.S.A. and its Scientific Advisory Board as it refines and extends its research program.

I should like to introduce my colleague, Dr. Robert C. Hockett, Associate Scientific Director of the council, who will give a brief account of its program in more detail.

At the end of his remarks, he and I will be very glad to attempt to answer any questions.

CURRICULUM VITAE

Education:

1914: Harvard D.Sc.
1912: Harvard S.M.
1910: Harvard A.B.

Research and administration:

1965–54: Scientific director, the Council for Tobacco Research—U.S.A. (formerly the Tobacco Industry Research Committee).
1965–56: Director emeritus, Roscoe B. Jackson Memorial Laboratory.
1956–29: Director, Roscoe B. Jackson Memorial Laboratory.
1945–29: Managing director, American Society for the Control of Cancer.
1929–25: President of the University of Michigan.
1925–22: President of the University of Maine.
1922–21: Assistant director, Station for Experimental Evolution, Carnegie Institution.
1921—9: Research associate, Harvard Medical School.
1918–17: U.S. Army, Aviation Section.
1917–13: Assistant dean, Harvard College; Research Fellow in Genetics.

Commissions and committees:

1937–39: Member, National Advisory Council.
1931–33: President, Mount Desert Island Biological Laboratory.
1932: Secretary general and chairman, Council of the Sixth International Congress of Genetics.
1927: Member of Executive Committee, First World Population Conference.
1925– : Director, American Birth Control League (president 1936–38).
1922– : Member, Eugenics Committee of the United States.

Honorary degrees:

1952: L.H.D., Marietta College.
1951: L.H.D., Dickinson College.
1951: Sc.D., Boston University.
1950: Sc.D., University of Chicago.
1935: L.L.D., Colby College.
1932: Litt. D., University of Maine.
1929: L.L.D., University of New Mexico.
1925: L.L.D., Albion College.
1924: L.L.D., University of New Hampshire.

Professional organizations:
Fellow: National Academy of Sciences; American Academy of Arts and Sciences; New York Academy of Medicine; Hollywood Academy of Medicine; American Association for the Advancement of Science; National Institute of Social Science.
Member: American Society of Naturalists; American Society of Zoologists; Society of Experimental Biology and Medicine; Eugenic Research Association; American Public Health Association; Population Association of America; American Eugenics Society; American Association of Anatomists; American Society of Mammalogists; American Social Hygiene Association.
Publications: Dr. Little is the author of numerous books and articles on genetics, cancer research, and educational and social problems.

STATEMENT OF JOHN J. KENNEDY, PH. D., CHAIRMAN OF THE DEPARTMENT OF MARKETING, UNIVERSITY OF NOTRE DAME

My name is John J. Kennedy, and I am chairman of the Department of Marketing at the University of Notre Dame. I appreciate the opportunity to present my views to this committee. The inquiry which the committee is conducting into the problem of smoking and health is a broad one. I understand, for example, that the committee has heard considerable testimony on the underlying medical question, whether smoking does in fact present the risk to health that has been so widely asserted.

I can draw on no training or special knowledge that will help the committee resolve this all-important threshold issue. Perhaps, however, because of my background in marketing, my views will be of some benefit to the committee in the event that it should decide that the possible effects of smoking on health may be such as to require some kind of stand by the Government. Before my appointment to the Notre Dame faculty, in 1963, I taught in the field of marketing at Ohio State University, in the Defense Management Center. I have written a number of articles on the general subject of marketing and have recently published a text on marketing entitled "The Principles of Marketing—Facts and Figures." I have served as a consultant to industry and Government on marketing problems. I have also been active in the American Marketing Association.

I am sympathetic with the view that the Government has a role to play in the smoking and health controversy. Serious charges have been made against tobacco. If the charges are thought to be supported by sufficient evidence to warrant smokers' reconsidering their smoking habits, this fact should be made known. On the other hand, if the charges cannot be supported by sufficient evidence to warrant the concern that they have caused, then that fact should be made known. I am not sure that it is a cause for rejoicing, but I think it is a fact that the American people look to their Government for guidance on such questions as whether smoking can cause respiratory illness, whether foods rich in cholesterol predispose a person toward heart disease, whether the widespread use of pesticides may be expected to yield a "silent spring."

What sort of action should the Government take with respect to these problems? In the area of smoking, the appointment of the Surgeon General's Advisory Committee on Smoking and Health was a praiseworthy first step. The Committee produced a report that indicated areas for further scientific investigation. Certainly the research called for by this report should be undertaken. On that point there can hardly be dispute.

There can be and is dispute, however, as to what additional steps should be taken at this time on the basis of the Surgeon General's Committee report. Among the proposals which have been made are two which fall directly within the field of marketing. One is the suggestion that all packages of cigarettes be required to contain a statement to the effect that smoking may be harmful to health; the other is that cigarette advertisements be required to carry warning statements.

Let me comment first on the proposal that cigarette packages be required to carry warnings. This proposal is contained in at least three bills pending before the committee. It is also a provision of the Federal Trade Commission's cigarette advertising and labeling Trade Regulation Rule.

In view of the widespread publicity that health charges against tobacco have already received, I am personally not convinced that additional warnings on cigarette packages are essential to protect the national health. Nevertheless, I

can see nothing in marketing principles that should necessarily lead Congress to reject this possible course of action.

I should add, however, that the wording and form of any label warning statement warrant very careful consideration. For example, I think it would be important that any warning accurately reflect established scientific findings and the true significance of those findings, both factually and in tone. Obviously, a warning should not understate or belittle known risks. On the other hand, for a variety of reasons, it should not overstate them or state them in an excessively inflammatory fashion. In this connection, I believe that a warning statement referring specifically to death and cancer, such as the FTC's rule apparently might require, would be excessively inflammatory.

To overstate a warning, or to make it unusually frightening, could actually result in fewer persons seeing the warning and reacting to it. This is because of the psychological mechanism by which persons do not see what they do not want to see. Generally, people do not want to see those things that cause them anxiety. It follows that the more anxiety a warning message on cigarette packages might lead to, the more censoring out of that warning message there will be.

Another reason that health warnings on cigarette packages should not overstate, or too vividly state, the possible health risks in smoking is that to do so could stimulate an undesirable reverse reaction. There are doubtless some people who are attracted to smoking for the very reason that smoking has frequently been called a health hazard. While possibly such persons are a minority, I do not think they constitute an insignificant group, and in fact they probably are more numerous among young people than any other age group. In the case of the person who is inclined to smoke because he has been counseled not to smoke, or perhaps even been forbidden to smoke, dramatic health warnings on packages could have an effect directly opposite to that which those advocating them would intend and expect them to have.

There is still another reason why health warnings on cigarette packages, if they should be required, should not overstate the danger. To overstate the danger could lead to an undermining of the effectiveness of warnings currently in use in connection with other products. We all know the story of the boy who cried wolf. If warnings on cigarette packages portrayed smoking as a more serious or immediate danger than our experience confirms, we would soon some to attach little significance to warnings. For example, I should hate to see my children develop a cynical attitude toward the warning statements they now find on the various poisonous compounds they come across on our kitchen shelves. Yet I believe that this might well occur if they observed grownups continue to smoke—as of course many would—despite a shocking and dramatic health warning on cigarette packages.

In this connection, I think it is important to keep in mind the distinction between the kind and degree of health danger presented by the various household compounds we encounter in our kitchens and by cigarette smoking. One swallow of some of these compounds could be fatal, particularly to a child. It is obviously imperative that that one swallow be avoided. To this end it is appropriate that the warning be both clear and arresting.

The risk to health presented by cigarettes, even if of the degree suggested by the report of the Surgeon General's Advisory Committee, is of a wholly different nature. No single cigarette and no package of cigarettes significantly affected anyone's health. It is the long run, habitual smoking of cigarettes, if anything, which has been alleged to cause illness to some persons. The risk represented by a package of cigarettes is therefore minuscule compared to the risk presented by a single unit of many household chemicals. Whatever warning that might be required to appear on a cigarette package should not be inconsistent with the fact.

II

As already indicated, it has also been proposed that cigarette advertisements be required to carry warning statements. The FTC's trade regulation rule has such a provision, as does at least one bill now pending in Congress. I believe that such a requirement would be ill-considered and ought to be rejected.

A requirement that cigarette advertising warn of possible risks to health could have a number of affirmative drawbacks. The requirement would create a precedent that could cause considerable confusion in consumers' minds as to the function of advertising and as to its meaning. It is important to remember that advertising has traditionally been viewed as the mass form of selling in

which the advertiser states his product's positive values. Because advertising has never been expected to argue against use of the advertised product, but rather to present a frankly partisan picture in its favor, consumers approach advertising with a certain wariness. This is a universal phenomenon. While consumers expect affirmative statements of fact in advertising to be accurate, they do not expect everything that is advertised necessarily to be completely safe or free of possible risk.

Should some advertisements (whether for cigarettes or other products) begin to carry warning statements, consumer expectation would begin to change. At first, perhaps, the change in expectation would be confined to certain product classes. Thus, for example, if the Government were to require health warnings in cigarette advertising but fail to require similar warnings in cigar or pipe advertising, the public would be encouraged to believe that cigar smoking or pipe smoking is a great deal less risky than cigarette smoking, if not completely without risk. I realize that some statistics may tend to support this hypothesis, but I wonder whether the underlying scientific facts are sufficiently unambiguous to warrant the Government's putting on this hypothesis its legislative imprimatur.

I think the same evolution in consumer expectation would occur with respect to other classes of products, although perhaps not immediately. Thus, for example, I believe that, should the Government require warnings in cigarette advertising, the absence of health warnings in other advertising would come to take on a new significance to consumers. For example, there are various over-the-counter drug products whose frequent or excessive use, or whose use in particular situations, may involve serious health risks. I do not believe that consumers regard the failure of advertisements for these products to call attention to such risks as suggesting that the risks do not exist. Should consumers become accustomed to seeing health warnings in the advertising of other products, such as cigarettes, however, failure of over-the-counter drug advertising to warn of possibly relevant health risks could acquire new meaning.

I doubt very much whether the Government would really want to open the lid on this kind of Pandora's box. But even if the Government were prepared to undertake supervisory responsibility over all advertising, I think the effort would be doomed to failure. This is because to require advertisements to state the case against use of the advertised product would be to impose on advertising a function that is fundamentally inconsistent with its basic purpose.

It is one thing to require advertising to be honest. This requirement does not conflict with advertising's basic purpose and in fact reflects a broad moral consensus that is shared by consumers and advertisers alike. It would be quite another thing to require advertisers to devote a portion of every advertisement to a statement of the reasons why consumers should not use their products. Because of the self-contradictory nature of such a requirement, I do not believe the requirement would ever come to be self-enforced. I think a large measure of self-enforcement is essential to the proper functioning of any law or set of laws.

In conclusion let me say as follows:

1. Whatever governmental action with respect to smoking and health might be appropriate in other spheres, I am personally not convinced that any requirement of warning is necessary at this time in connection with the marketing of cigarettes. I recognize, however, that this is a policy question to be decided by the Congress on the basis of its overall analysis and evaluation of the relevant facts. I have no special expertise that would aid Congress in making this analysis and evaluation.

2. Should some kind of warning requirement be thought to be in the public interest, nothing in marketing principles militates against requiring such warnings on cigarette packages. It is assumed that such warnings would be phrased in language that is factually accurate and reasonable in tone.

3. Marketing principles argue strongly against requiring health warnings in cigarette advertising. Their requirement could set a precedent that might well have to be extended to other products to avoid consumer confusion. At the same time, extension of the principle of advertising warnings to other products would necessarily fail because of the basically contrived and self-contradictory nature of such warnings.

Finally, the precedent of requiring a manufacturer to deprecate his product in the advertising process could have serious longrun implications for the advertising mechanism. And advertising is both a cause and effect of large-scale production. As such, it is a basic source of our economic growth.

STATEMENT OF ALVIS E. GREER, M.D., F.A.C.P., M.C.C.P.

I am Alvis E. Greer, of Houston, Tex. I am the founder of the Greer Clinic and managing director. My specialty is internal medicine and diseases of the chest. I have practiced this specialty in Houston for over 50 years.

I was graduated from Northwestern University Medical School with honors in June 1908 and received the honorary key of Alpha Omega Alpha at graduation. I completed my postgraduate training in chest diseases at the Harvard Postgraduate Medical School after serving in the Army Medical Corps during the First World War.

I have been professor of clinical medicine at the Baylor University College of Medicine and am presently professor emeritus of clinical medicine. I have been chief of staff of the Memorial Baptist Hospital, Houston Tuberculosis Hospital, and Jefferson Davis Hospital, in Houston.

I have been president of six medical organizations including the American College of Chest Physicians, an international organization, which I served as president in 1953–54. I was chairman of the board of examiners of the American College of Chest Physicians from 1946–52; a member of the executive council in 1953; and am a member of the board of regents at present. I was chairman of the section on diseases of the chest of the Americal Medical Association in 1951.

I have contributed over 42 articles to the medical literature as well as material to several textbooks. I am the author of a book entitled "Disseminating Fungus Diseases of the Lung," published in 1962. A detailed list of my qualifications and publications is attached to my statement filed with the committee.

I appreciate this opportunity to make known my views concerning the status of the controversy over cigarettes and lung cancer. I think it is unfortunate that attempts to establish that cigarette smoking has a definite role in causation of lung cancer have been pursued with such vigor and almost evangelical fervor that there is now a widespread impression that we have discovered the actual cause of this important form of cancer. It is my considered opinion that it is wrong to foster this impression as though it were based on some definite scientific determination when the fact is that our present knowledge is too meager to justify any such conclusion.

My study of lung cancer over the past 50 years as an internist and diagnostician leads me to agree with Dr. Joseph Berkson of the Mayo Clinic that there is no proof of causal relationship between the smoking of cigarettes and lung cancer. I would say, as he does, "Without false modesty, and quite frankly, I do not know the cause of cancer. Moreover, I am going to say without the slightest fear of contradiction, that no one else does either."

Looking back only some 20 or 30 years, we would find general agreement in textbooks and other medical writings that the cause of bronchial carcinoma is unknown. The wheels of progress grind slowly and the scientist who looks longer backward will be able to look longer forward. Based on the history of medical progress, the odds are greatly against any assumption that we have discovered the cause of lung cancer in the past two or three decades.

Reviewing numerous reports dealing with carcinoma of the lung which have appeared in recent years, I am unable to find any convincing evidence that any of the various factors or elements which have been studied in relation to this disease has been demonstrated to be an actual cause. The theory that cigarette smoking is either a cause or the principal cause of lung cancer is strongly advocated by some, but is also strongly opposed by equally talented scientific investigators.

I am sure you are aware that we have no direct evidence of the nature or mode of action of the many factors or agents that may be operating to produce cancer in man or that may increase his susceptibility to this disease. At the present time we are still in the stage of trying to understand the basic processes which determine normal or neoplastic growth. This is the proper beginning point in the study of cancer.

Progress is being made in this area of basic cancer research. It has been determined from histological evidence that the cancer cell is a changed form of the normal cell and these changes must be a feature of physiological environment. It has been found that a disturbance in nucleic acid metabolism is a common factor in the initiation of the primary cancer changes. However, the establishment of a cancer seems to be dependent on more than one element. The promotion of growth of this primary factor may be facilitated by hereditary, physical, chemical, and immunological factors. When basic research has been carried forward

to a point where we can demonstrate by factual histological evidence the mechanisms which produce cancer, we shall be in a position to act with authority and not by speculation in attempting to control disease.

In our present state of knowledge, opinions concerning the role of suspected agents, such as cigarette smoke, must be regarded as being in the realm of suspicion and possibility. At the present time, it is unfortunately true that the evaluation of evidence concerning such suspected agents depends upon the mental processes of individual observers. I think there is no doubt that subjective bias enters into the writing of research papers and the collection of data and there is no double-blind test to exclude it.

The father of medicine, Hippocrates, who lived 500 years B.C., is credited with the phrase, "Theory is the flower, not the root of experiences." All too often in the history of medicine, theories advanced by physicians have been mistaken for concrete medical knowledge. It is illogical to embrace the theory that smoking is the cause of lung cancer and to ignore such other possible factors as environment, heredity, immunology, the effects of chronic respiratory infections, hormonal influences, and virus infections. It is also illogical to adopt this theory in disregard of such observations as the geographical differences in lung cancer rates which do not correspond to differences in smoking patterns, and the deceleration in rate of increase of lung cancer at a time when cigarette smoking is increasing at a substantial rate.

The atmospheric environment has long been suspected to be a source of agents thought to influence the development of pulmonary carcinoma. In 1879, Harting and Hesse reported an exceptionally high incidence of lung cancer among the miners of radioactive ores in Schneeberg. Since that time, increased mortality from respiratory cancer has been shown to be associated with a great number of agents encountered in particluar occupations. The list of occupations in which there seems to be an excessive risk of lung cancer is lengthening as research progresses. Furthermore, agents which were formerly thought to be encountered only by those in specific occupations have now been found to be widely distributed in the general environment. The importance of these substances as possible lung cancer hazards is a matter of serious debate.

The chemical compounds in cigarette smoke which are suspected of being carcinogenic belong to a group called polycyclic aromatic hydrocarbons. These compounds are ubiquitous in all atmospheres, and in most urban atmospheres they are found in concentrations hundreds of times greater than the trace amounts found in cigarette smoke. Some scientists believe that this atmospheric pollution is the dominant factor in lung cancer, but others strongly disagree.

None of the external or environmental factors studied explains satisfactorily the epidemiological pattern of human lung cancer. It may be that none of these factors is by itself sufficient to produce lung cancer, but that the appearance of cancer depends on the combined effects of multiple factors. It may be that certain agents which do not produce cancer may, nevertheless, be necessary to promote its growth and that these agents determine the time of appearance and rate of incidence of respiratory cancer. There is also evidence that lung cancer may be related to preexisting pulmonary disease which damages the lungs and that populations in which such diseases have been prevalent will have a high incidence of lung cancer. Thorough evaluation of the possible importance of these factors is a difficult, if not impossible, task in the absence of knowledge of the fundamental processes involved in the production of cancer.

There is a question whether the increase in lung cancer is real or relative. A large part of the great increase in registered deaths from lung cancer, which has occurred in this century is certainly due to better diagnosis and to a greater medical awareness of the disease, as stated by Willis on the basis of study of autopsy records from 1903 to 1960. The greatest part of this increase has occurred during this period of improving diagnosis and awareness of the disease. During this period there has also been a large increase in the number of people in the older-age groups where cancer occurs with highest frequency. It is my opinion that the lung cancer statistics reflect the influence of these factors, and that the increase is relative and not real.

I wish to state, without equivocation, that the cause of cancer of the lung will not be found by the present tendency toward concentration on one particular suspect. When we have solved the fundamental nature of cancer, we may unravel the etiologic factors of cancer in general as well as localized cancer. It is my personal opinion that there is a definite relationship between the basic causal factors of lung cancer and cancer elsewhere in the body, and unless we

approach the solution of this major problem from that viewpoint, the ultimate answers will be long delayed. Such research will take time—many years, perhaps—and in the meantime we must approach the solution hopefully, but without premature presumptions and illogical deductions.

PERSONAL AND PROFESSIONAL SUMMARY

Alvis E. Greer, M.D., M.C.C.P., diagnostician and diseases of the chest. Founder and managing director, the Greer Clinic, Houston, Tex.

Education: Northwestern University Medical School, Chicago; graduated with honors, 1908, receiving the honorary key, Alpha Omega Alpha.

Postgraduate training: Cook County Hospital, Chicago, as intern. position won after examination before the Civil Service Commission of Cook County, 1908–10. U.S. Army, First World War, Camp Travis Base Hospital, San Antonio, Tex., an assistant to the Chief of the Medical Service; my work dealing predominantly with diseases of the chest. Harvard Postgraduate Medical School, 1919.

Biographical references:

Directory of Medical Specialists, volume 10, published for the Advisory Board of Medical Specialists by Marquis.

Who's Who, Who's Important in Medicine, Chicago, 1961.

American Men of Medicine, 3d edition, Institute for Research and Biography, 1961.

Editorial connections: Medical Record and Annals, assistant editor, 1933–42, editor in chief, 1942–56.

Medical school appointments: Professor of clinical medicine, Baylor University School of Medicine; emeritus professor at present.

President: American College of Chest Physicians (International) 1953–54; Texas Chapter, American College of Chest Physicians (International), 1943; Southern Chapter, American College of Chest Physicians (International), 1952; Harris County, Tex., County Medical Society, 1940; Texas Club of Internists, 1950; South Texas Postgraduate Assembly, 1933.

Degree conferred: American College of Chest Physicians (International), master, 1959.

National board of accreditation: American Board of Internal Medicine.

National board of examiners: American Board of Internal Medicine, subspecialty, pulmonary diseases, 1956–60; emeritus member at present.

American College of Chest Physicians, chairman, board of examiners, 1946–52.

Hospital positions: Chief of Staff, Memorial Baptist Hospital, 1921; Houston Tuberculosis Hospital, 1914–36; Jefferson Davis City-County Hospital, three times (dates not aavilable).

Consultant, St. Luke's Hospital, Hermann Hospital, Memorial Baptist Hospital.

Memberships: chairman, section on diseases of the chest, American Medical Association, 1951, also member, American Medical Association at present; American College of Chest Physicians (International), board of regents; Southern Chapter, American College of Chest Physicians (International); Texas Chapter, American College of Chest Physicians (International); American Board of Internal Medicine; American Society of Tropical Medicine; American Heart Association; American Thoracic Society; American Cancer Society; Texas Academy of Internal Medicine; Texas State Medical Society; Southern Medical Society; Harris County Medical Society; Trudeau Society; Texas Club of Internists; South Texas Postgraduate Medical Assembly; Geriatric Society; New York Academy of Sciences.

Publications—books published:

"Nontuberculosis Diseases of the Chest," member, editorial committee, and author, chapter V, "Pulmonary Mycoses," pages 178–241. Charles C. Thomas, publisher, Springfield, Ill., 1954.

"Clinical Cardiopulmonary Physiology," author, chapter on "The Sequelae of Pulmonary Mycoses," pages 379–383, published by Grune & Stratton, New York, 1957.

"Disseminating Fungus Diseases of the Lung," 405 pages, author. Charles C. Thomas, publisher, Springfield, Ill., 1962.

Present commitment: Member of panel of joint meeting of American Medical Association and American College of Chest Physicians, dealing with the subject "Increasing Problem of Respiratory Mycoses," New York, June 17–21, 1965.

PUBLICATIONS

Empyema, J. A. M. A. 66: 1019, 1916
Artificial Pneumothorax, Texas J. Med., 12: 324, 1916
Artificial Pneumothorax in the Treatment of Pulmonary Tuberculosis. J. A. M. A., 70: 1518, 1918
The Present Status of Blood Chemistry in Nephritis, Texas J. Med., 16: 169, 1920
Experiences with Non-Surgical Drainage of the Gallbladder, M. Rec. and Ann., 16: 160, 1922
Spirochetosis Bronchialis (Castellani) A Case Report, South. M. J., 17: 7, 469, 1924
Lung Abscess, Amer. J. Med. Sci., 169: 345, 1925
The Differential Diagnosis of Chronic Pulmonary Tuberculosis, Texas J. Med., 21: 308, 1925
The Incidence of Syphilis in a Tuberculosis Clinic, Texas J. Med., 24: 756, 1929
Pulmonary Syphilis; report of a case, Am. J. Syph., 14: 2, 195, 1930
The Physician of Yesterday and Tomorrow, The Alcalde, University of Texas, 16: 169, 1930
Pellagra-Like Skin Lesions Due to the Ketogenic Diet, J. A. M. A., 95: 863, 1930
The Problem of Syphilis in a Tuberculosis Clinic, Ann. Int. Med., 4: 4, 387, 1930
Primary Carcinoma of Lung; with report of case, Texas State J. Med., 27: 574, 1931
The Use of Fetal Spleen in Agranulocytosis, Texas J. Med., 28: 289, 1932
Agranulocytic Angina—Report of a Case, Ann. Int., Med., 6: 4, 518, 1932
Looking Backward and Forward in Medicine, The Centaur, 38: 4, 359, 1933
Addison's Disease: Report of Two Cases Treated With Suprarenal Cortical Extract, Texas J. Med., 29: 483, 1933
An Experimental Study of the Treatment of Benzol-Produced Agranulocytosis in Albino Rats, South. M. J., 28: 12, 1114, 1935
The Diagnosis of Thoracic Aneurysm, M. Rec. and Ann., 31: 910, 1936
The Scientific Basis for the Development of Character, M. Rec. and Ann., 30: 198, 1937
Fungus Infections of the Lungs, Texas State J. Med., 33: 750, 1938
Vaccine Treatment of Chronic Arthritis by Improved Intravenous Method, Texas State J. Med., 32: 24, 1938
The Place of Vitamin K in Hemorrhagic Diseases, Texas State J. Med., 36: 208, 1940
The Chemotherapy of the Pneumococcal Pneumonias, M. Rec. and Ann. 36: 200, 1942
The Coexistence of Pathogenic Fungi in Certain Chronic Pulmonary Diseases: With Especial Reference to Pulmonary Tuberculosis, Dis. of Chest, 9: 212, 1943
Disturbance in Rate and Rhythm of the Heart Beat, M. Rec. and Ann., 37: 699, 1943
The Problem Pertaining to the Socialization of Medicine, Texas State J. Med., 40: 24, 1944
The Synergism Between Mycotic and Tuberculous Infections of the Lungs, Dis. of Chest, 14: 33, 1948
Chronic Nontuberculous Pulmonary Infections and Their Sequelae, Dis. of Chest. 15: 3, 270, 1949
Actinomycosis, M. Rec. and Ann., 44: 1, 1950
The Acute Pneumomias, M. Rec. and Ann., 45: 10, 1951
Evolution of Medicine. Chairman's Address, Section on Diseases of the Chest, Amer. Med. Assoc., J. A. M. A., 148: 103, 1952
Actinomycosis, XII° Conference de L'Union Internationale Contre la Tuberculose, Rio de Janeiro, Brazil, August 1952
Cystic Disease of the Lungs: Report of Two Cases. M. Rec. and Ann., 46: 12, 343, 1952
A Discussion of Certain Preliminary Aspects of Pulmonary Disease, Memorias del X Congreso Panamericano de la Tuberculosis, Tomo II, Caracas, Venezuela, December 1953
The Rock on Which We Stand, President's Address, American College of Chest Physicians, 1953-54, Dis. of Chest, 24: 119, 1953
Cigarette-Lung Cancer Problem, M. Rec. and Ann., 48: 8, 985, 1954
Chronic Pulmonary Brucellosis (With Lantern Slides), III Congreso International de Enfermedades del Torax, Miercoles, Barcelona, Spain, October 1954

Knowledge is Not Enough, Dis. of Chest, 25: 698, 1954
Pulmonary Brucellosis, Dis. of Chest, 29: 5, 1956
North American Blastomycosis of a Nasal Sinus, Report of Second Case Reported in Medical Literature, Dis. of Chest, 38: 4, 454, 1960

BOOKS PUBLISHED

Nontuberculous Diseases of the Chest, Member Editorial Committee, and Author Chapter V, Pulmonary Mycoses, pp. 178–241; Charles C. Thomas, Publisher, Springfield, Illinois, 1954.
Clinical Cardiopulmonary Physiology, Author Chapter on The Sequelae of Pulmonary Mycoses, pp 379–383, published by Grune and Stratton, New York, 1957.
Disseminating Fungus Diseases of the Lung, 405 pages, Author; Charles C. Thomas, publisher, Springfield, Illinois, 1962.

Statement of Dr. L. Henry Garland

SMOKING AND HEALTH

The interrelationships of smoking and health are complex. There is much statistical evidence at hand but a paucity of scientific medical facts.

1. Many of the statistical reports contain contradictory data. For example, British males are reported to have about twice the incidence of lung cancer of U.S. males, and yet to smoke only about one-half as many cigarettes per capita. This is a 4-to-1 difference. Is it due to genetic factors? To atmospheric pollution?

2. U.S. males in the lower economic brackets are reported to suffer twice the incidence of primary lung cancer of U.S. males in the upper economic brackets, although males in the lower economic brackets are reported to smoke less. What causes this 2-to-1 difference? Is it a nutritional factor?

3. In many of the studies interpreted as implicating cigarette smoking as a health hazard, the death rates in the cigarette smokers actually turn out to be lower than the death rates in U.S. males as a whole. For example, the age adjusted death rates per thousand man-years for cigarette smokers of one pack or more daily, in North America (ages 35 and over) average 21.5, while for U.S. males as a whole for a comparable year (1960) they average 22.9. Either it is a fact that the cigarette-smoking males have a slightly lower death rate than U.S. white males as a whole, or it is a fact that the sample of the male population used in many of these studies is not representative of U.S. males as a whole.

The above figures are taken from the 1964 report to the Surgeon General. On pages 94–96 of that report these pertinent facts appear:

"None of the populations was designed, in particular, to be representative of the U.S. male population. Any answer to the question 'to what general populations of men can the results be applied?' must involve an element of unverifiable judgment."

"[Reports] suffer from the difficulties that the populations studied are hard to define, that the smokers and nonsmokers were recruited by a large number of volunteer workers, and that completeness in the reporting of deaths was hard to achieve, since this depends on reports from the volunteers" (p. 95).

"So far as interpretation of results is concerned, the discrepancy raises two points. It is clear that the seven prospective studies involve populations which are healthier than U.S. males as a whole. Secondly, the low-death rates for nonsmokers suggest the possibility that the studies recruited unusually healthy groups of nonsmokers" (p. 96).

Reliable generalization cannot safely be based on studies of such unrepresentative populations.

4. In connection with bladder cancer: some writers believe that this is causally related to heavy cigarette smoking. It is noteworthy therefore that at the 1963 American Public Health Association meeting, a distinguished proponent of this hypothesis observed that "there are insufficient data to warrant conclusions, and the available data are often contradictory." It seems to me personally that there are comparable levels of incompleteness or contradictoriness in the lung cancer and chronic bronchitis data.

5. In connection with coronary artery disease, the report stresses that the causative role of cigarette smoking in deaths from this disease is not proven, and

that while male cigarette smokers do have higher reported death rates from coronary artery disease than do nonsmokers "it is not clear that the association has causal significance" (pp. 32–39).

At the American Heart Association annual meeting in 1963 many speakers opined that tobacco probably has a deleterious effect on the heart, but that this effect is not easy to pinpoint. But in a study of some 6,000 Brooklyn men, Spain found that smoking habits could not be related to heart disease; Talbott reported that cigarette smoking actually speeded the clearing of lipids from the blood after a high-fat meal; Kannen concluded that the evidence does not indicate that cigarette smoking contributes to the underlying pathology of coronary heart disease (although he believes it may be a serious complicating factor under certain specified conditions): Cannot the data from which these discordant statements arise be submitted to independent biostatistical review for apparent significance?

6. Since most of the evidence incriminating cigarettes is statistical, all serious students of the problem should, I believe, read and reread the careful qualifying comments in the report to the Surgeon General, notably the words "Statistical methods cannot establish proof of a causal relationship in an association. The causal significance of an association is a matter of judgment which goes beyond any statement of statistical probability" (pp. 94–97).

7. There are many other unanswered questions:

(a) Why has the prevalence of oral cavity cancer and pharynx cancer declined in the last 3 decades, despite the higher intensity of exposure to these areas to cigarette smoke?

(b) Would a large study employing trained and tested investigators yield the same data as that commonly quoted from many of the volunteer-helper studies in this country?

(c) Is the increase in primary bronchial cancer really as great as commonly quoted? The study by Gilliam quoted on page 140 of the report to the Surgeon General demonstrates how the increase in reported U.S. bronchial cancer may be much less than claimed. This study shows that if in 1914, 2 percent of the deaths certified to tuberculosis were really due to lung cancer, then the increase in primary bronchial cancer between that year and the year 1950 would be about eightfold for males and only 1.3-fold for females * * * figures vastly lower than the commonly quoted increase.

A subsequent study by Gilliam noted a declining rate of increase in reported bronchial cancer, which is not consistent with reported increased cigarette consumption if cigarette smoking is regarded as causing lung cancer. (Gilliam, etc. Cancer 14 (3), 622–628, May–June 1961.) Similar decline is reported in England and Wales. (Lees, Lancet, June 20, 1964, p. 1393.)

(d) My own studies on the locus of origin of primary bronchial cancer indicate that almost two-thirds of them arise in portions of the bronchial tree removed from the main bronchi (where the concentrations of cigarette smoke are presumably lowest).

(e) The peak incidence of primary bronchial cancer in U.S. males is close to 60 years of age, both in smokers and nonsmokers, and this peak tends to be maintained irrespective of the amount smoked or when the cigarette smoking allegedly commenced. These are extraordinary findings which in my opinion seriously question the cigarette hypothesis.

(f) British scientists report that "in men who have given up cigarette smoking, mortality rates from lung cancer decline immediately." (Doll & Hill, Brit. Med. J., 1964, p. 1399.) If lung cancer is a response to a hypothetical carcinogen in cigarette smoke, and this carcinogen has been applied for 30 or 40 years, how could cessation of application be followed by an immediate decline? My studies on the natural duration of untreated human bronchial cancer, and my knowledge of experimental tumor response to proved carcinogens, lead me to the conclusion that Doll & Hill's observation is completely paradoxical.

Well designed research programs should help to provide the answers to many of these questions, and should, I believe, be pursued. In the meantime, the established facts in my opinion are:

(a) That medical science does not yet know the cause of cancer, or emphysema, or atherosclerosis, and

(b) That it is unlikely that a single exogenous factor such as cigarette smoke should be a prime cause of these three diverse disorders.

It is my understanding that these hearings pertain to labeling. If I may be permitted to express some comments, I should like to do so.

1. Cigarettes are said by some to be potentially lethal when used to excess. There is little doubt that automobiles, liquor, wine and, indeed, some say even

certain dairy products, are lethal when used negligently or to excess. To be consistent, should we not so label all these products? Where does it end?

2. In the light of the known perversity of human nature, is such labeling apt to be more of a source of attraction than deterrence? Is it any substitute for education or common sense moderation?

3. I hold no brief for the tobacco companies nor their advertising, but I notice no national organization campaigning to curb the sale or advertising of alcohol, cars, guns or other lethal products, each of which has the evil that victims of its use or misuse are frequently innocent bystanders. If smoking hurts, "it hurts only the smoker; it should be at the bottom of the list of dangers from which a free people must be protected. When I am safe from drunken drivers, careless hunters, and spray-happy farmers, there may be some logic in saving me from myself." (Dorothy Samuel, Saturday Review, Feb. 22, 1964.)

REFERENCE

(for first five numbered paragraphs)

1. Dean, G. Complex etiology of lung cancer. Acta Un. Int. Cancer. 19, 721, 1963.

2a. Dorn & Cutler. U.S. Public Health Service Monograph No. 56, 1959.

2b. Marketing Research Report No. 189, U.S. Department of Agriculture, July 1957, page 63.

3. Report to the Surgeon General of the United States, 1964, page 95, table 15.

4. Lilienfeld, A. M. Medical Tribune, 12, 2, 63, page 1.

5. American Heart Association Convention Report. Modern Medicine, 11, 25, 63.

BIOGRAPHICAL DATA

Clinical professor of radiology, University of California Medical School, San Francisco.

Chief consultant in radiology, University of California—San Francisco General Hospital.

Chief consultant in radiology, Letterman Army Hospital and St. Joseph's Hospital, San Francisco.

Longtime clinical professor of radiology, Stanford University Medical School.

Past director, California division, American Cancer Society.

Past chairman, Committee on Cancer Diagnosis and Therapy, National Research Council, National Academy of Sciences.

President of the following organizations and in the indicated years: Radiological Society of North America, 1948. California Academy of Medicine, 1957.

Recipient of the following honors:

Bronze Medal for Distinguished Service, American Cancer Society, 1954, Gold Medal, American College of Radiology, 1960, Gold Medal, Radiological Society of North America, 1961.

Visiting radiologist in chief, pro tempore, Peter Bent Brigham Hospital, Boston, 1961.

M. C. Sosman, Harvard Medical School, 1961.

Ross Golden lecturer, New York Roentgen Society, New York Academy of Medicine, 1959.

Mayo Foundation lecturer, Mayo Clinic, Rochester, Minn., 1958.

Honorary M.D. degree, University College, Dublin, Ireland, 1960.

Contributor of over 150 papers to various scientfic medical journals, author of chapters or sections of several textbooks; coauthor of "Diseases of the Chest" with Corwin Hinshaw.

Member of and guest lecturer to numerous local, State, and National scientific societies.

Additional biographic data in Who's Who, Who's Who in Medicine, American Men of Science, etc.

BIBLIOGRAPHY

0. Imhotop, Calif. & West. Med., 29, 1, 1928.

1. The incidence of pleural lesions in children known to be tuberculosis. Am. Rev. Tbc., 18, 404, 1928, with L. B. Dickey.

2. Gastric botility. Brit. J. Rad., 2, 233, 1929.

3. A flexible bed for high-voltage therapy. Am. J. Roent. & Rad. Ther., 21, 287, 1929.

4. Ostoitis fibrosa and allied diseases of bone. Am. J. Roent. & Rad. Ther., 22, 517, 1929.

5. The roentgen diagnosis of duodenal ulcer. Radiology, 14, 482, 1930.
6. X-rays in the diagnosis of pregnancy. Calif. & West. Mod., 34, Mar., 1931.
7. Ostoitis fibrosa localisata. Radiology, 16, 679, 1931 with A. R. Kilgore.
8. The bone and joint changes of leprosy: a roentgenologic study. Radiology, 17, 930, 1931 with W. F. Chamberlain and N. E. Wayson.
9. Peptic ulcer in a patient aged 96. Calif. & West., Med., 38, Feb., 1933, with G. Cheney.
10. Carcinoma of the breast, its roentgen treatment. Calif. & West., 39, Dec., 1933, with J. M. Rehfisch.
11. Carcinoma of the larnyx. Calif. & West., Med. , 41, Nov., 1934.
12. The treatment of carcinoma of the pharnyx and larnyx. Radiology, 24, 261, 1935.
13. A simple table for postmortem chest roentgenography. Am. J. Roent. & Rad. Ther., 33, 839, 1935, with W. L. Allrod.
14. The roentgen treatment of certain types of arthritis. Radiology, 25, 416, 1935.
15. Associated values of clinical and radiographic findings in the diagnosis of chronic pulmonary tuberculosis. Calif. & West., Med., 43, 41, 1935.
16. Correlation between the shape of the female pelvis and the clinical course of labor. West. J. Surg., Gynec. & Obst., 44, 1, 1936, with Drs. Pettit, Dunn and Shumaker.
17. The shape of the female pelvis and its clinical significance. Radiology, 26, 443, 1936, with Drs. Pettit, Dunn and Shumaker.
18. The X-ray aspects of pneumoconiosis. Radiology, 27, 21, 1936.
19. Persistent right sided aortic arch. Am. J. Roent. & Rad. Ther., 39, 713, 1938.
20. The roentgen treatment of certain hemorrhagic disorders. Calif. & West. Med,. 49, Aug., 1938.
21. Pulmonary pneumocyst. Report of an enormous solitary cyst in a healthy adult female. Am. J. Med. Sci., 196, 699, 1938, with G. Cheney.
22. The nonsurgical treatment of hyperthyroidism complicating heart disease. Surg., Gynec. & Obst., 67, 632, 1938, with W. W. Nowman.
23. Fractures of the neck of the femur. Radiology, 33, 421, 1939, with H. A. Hall.
24. The shape of the female pelvis and its clinical significance: further roentgen studies. Am. J. Roent. & Rad. Ther., 40, 359, 1938.
25. Radiation therapy: the use of the term "supervoltage". Am. J. Roent. & Rad. Ther., 41, 284, 1939.
26. Intracranial collections of iodized oil following lumbar myelography. Surg., Gynec. & Obst., 70, 196, 1940 with E. J. Morrissey.
27. Differential diagnosis of mechanical and paralytic ileus. Arch. Surg., 1, 147, 1940 with J. B. Haworth.
27. a. Vulvular efficiency in mitral and aortic insufficiency. Soc. for Exptl. Biology, 1940 with Ancel Keys, H. L. Friedell & M. F. Madrazo.
28. The effect of iodized oil on the meninges of the spinal cord and brain. Radiology, 35, 467, 1940.
29. Leiomyosarcoma of the esophagus. Am. J. Roent. & Rad. Ther., 45, 27, 1941, with Lindol Franch.
30. Leiomyosarcoma of the duodenum. Radiology, 37, 353, 1941, with Bethel Hunning.
31. The roentgen kymographic evaluation of the size and function of the heart. Am. J. Roent. & Rad. Ther., 44, 805, 1940, with A. Keys, et al.
32. The effects of roentgen irradiation on experimental hyperthyroidism. Am. J. Roent. & Rad. Ther., 45, 692, 1941, with W. Cutting et al.
33. The radiological aspects of the arthritides—outline for refresher course given at Atlanta 1939, Cleveland 1940, San Francisco 1941. Radiology 36, 118, 1941.
34. Fluoroscopy in the diagnosis of pulmonary tuberculosis. Am. Rev. Tbo., 45, 1, 1942.
35. Radiologists and fractures. Editorial. Radiology, 39, 229, 1942.
36. Spontaneous internal biliary fistula: roentgen diagnosis. Radiology, 38, 154, 1942.
37. Vitamin deficiency in cardiac conditions: roentgen diagnosis. Radiology, 38, 426, 1942.
38. Motal fume fever. Editorial. Am. J. Roent. & Rad. Ther., 48, 692, 1942.
39. The posteromesial pleural line. Radiology, 41, 29, 1943.
40. Tropical diseases of interest to the radiologist. Radiology, 41, 75, 1943.
41. Treatment of intra-oral carcinoma. J. Calif. State Dental Assoc., Aug., 1943.
42. Welders' lungs. Editorial. Am. J. Roent. & Rad. Ther., 51, 4, 1944.
43. Tropical diseases of interest to the radiologist. Radiology, 44, 1, 1945.

44. Meckel's Mverticulum. Am. J. Roent. & Rad. Ther., 53, 145, 1945, with M. F. Mottram.
45. Traumatic pneumorephalus. Radiology. 44, 237, 1945, with M. F. Mottram.
46. Osteopenic sarcoma of the skull. Radiology, 45, 45, 1945.
47. Myocardial infarction—roentgen diagnosis. U.S. Nav. Med. Bull. 45, 89, 1945.
48. Peptic ulcer in a naval hospital. Stanford Med. Bull. 3, 114, 1945.
49. X-ray burn resulting from G. I. Fluoroscopy, J. A. M. A., 129, 419, 1945.
50. Cardiovascular changes in tsutsugamuchi disease. U.S. Nav. Med. Bull., 45, 1054, 1945, with M. Sokolow.
51. Intrathoracic metallic foreign bodies. Diseases of the chest. 11, 1, 1945.
52. The scientific importance of X-rays. Electrical Engineering. December 1945.
53. Generalized leontiasis. Am. J. Roent. & Rad. Ther. 55, 37, 1946.
54. Spondylolisthenis. Am. J. Roent. & Rad. Ther. 55, 275, 1946, with S. F. Thomas.
55. Lloyd Bryan : a memoir. Am. J. Roent. & Rad. Ther. 55, 488, 1946.
56. The radiological aspects of certain tropical diseases. Calif. & West. Med. 62, 158, 1945.
57. Pulmonary sarcoidosis: the early roentgen findings. Radiology, 48, 333, 1947.
58. A total population chest survey. Editorial. Radiology, 49, 629, 1947.
59. Radiation therapy of laryngeal carcinoma. West. J. Surg., Obst. & Gynec., 55, 352, 1948.
60. Roentgen cardiac kymography: electrocardiographic correlation. Calif. Med., 68, March, 1948, with S. F. Thomas.
61. Roentgen treatment of multiple myeloma. Radiology, 50, 297, 1948.
62. Roentgen diagnosis of myocardial infarction. J. A. M. A., 137, 762, 1948, with S. F. Thomas.
63. Conditions to be differentiated in the roentgen diagnosis of pulmonary tuberculosis. Annals of Internal Med., 29, 878, 1948.
64. On the scientific evaluation of diagnostic procedures. Radiology, 52, 309, 1949.
65. Cancer detection centers, Calif. Med., 72, Feb. 1950.
66. The roles of surgery and radiology in the treatment of cancer. Am. J. Roent. & Rad. Ther., 62, December 1949.
67. On the reliability of roentgen surgery procedures. Am. J. Roent. & Rad. Ther., 64, 32, 1950.
68. Results of irradiation in cancer of the lip, tongue and ear. Calif. Med., 73, 312, 1950, with M. A. Sisson.
69. The present status of radiology in the diagnosis of curable cancer. Cancer Supplement to J. Kansas Med. Soc., August 1950.
70. Radiological end results in the control of cancer. Cancer Supplement to J. Kansas Med. Soc., August 1950.
71. Roentgen and steroid hormone therapy in mammary cancer metastatic to bone. J. A. M. A., 144, 997, 1950, with M. Baker, W. H. Picard, M. A. Sisson.
72. Nasopharyngeal irradiation. Relative merits of roentgen and radium therapy for benign conditions. J. A. M. A., 146, 454, 1951, with H. A. Hill, M. E. Mottram.
73. The radiological aspects of the diagnosis of arthritis. Med. Record and Annals., 45, 625, 1951.
74. Cancer of the ovary. J. Faculty of Radiologists, 3, 1, 1951.
75. An evaluation of the role of aorial chest roentgenograms in estimating the the progress of disease in patients with pulmonary tuberculosis. Am. Rev. Tbc., 64, 225, 1951.
76. The treatment of metastatic breast cancer in bone. Calif. Med., 75, 265, 1951.
77. Studies on the reliability of mass X-ray surveys. Irish J. M. Sc., Nov., 1950. 489–494. Abat. Rad., 57, 595, 1951.
78. Indications for radiation treatment of non-neoplastic diseases. Med. Record Annals., 45, 661, 1951.
79. End results in the treatment of cancer of the ovary. Med. Record and Annals., 45, 734, 1951.
80. Studies on the value of serial films in estimating the progress of pulmonary disease. Radiology, 58, 161, 1952.
81. Carcinoma of the larynx. X-ray therapy. Laryngoscope, 62, 75, 1952.

82. Results of an international test in chest roentgenogram interpretation. J. A. M. A., 149, 631, 1952.
83. Roentgen therapy of carinoma of the larynx. Surg., Gynec., & Obst., 94, 598, 1952. with M. A. Sisson.
84. Cancer of the ovary: results of treatment in 79 cases. Acta Union Internationale Contra La Cancer, 8, 151, 1952.
85. Observer error in the interpretation of chest films: an international investigation. Lancet, September 13, 505, 1952.
86. Radiations and common sense: Editorial. Stanford Med. Bull, 4, 215, 1952.
87. The value of mass chest X-ray surveys in the control of lung cancer. Stanford Med. Bull., 11, 44, 1953.
88. The role of irradiation in the management of breast cancer. J. A. Geriat. Soc., 1, 39, 1953.
89. Cancer detection. Calif. Med., 78, 473, 1953.
90. Resultado de una prueba internacional en la interpretacion de radiografias del torax. Radiologia, 3, 89, March, 1953.
91. X-ray interpretation of lesions of the small and large intestine. Kansas City Med. J., 29, 5, May, 1953.
92. The treatment of cancer with "Laetriles." Calif. Med., 78, 320, April 1953.
92. a. Arginane.
92. b. Grogomycin.
93. Cancer clinics. Ca., 3, 76, March 1953.
94. Recent advances in radiation therapy. Stanford Med. Bull., 11, 110, 1953.
95. Radiological aspects of "collagen" diseases. Calif. Med., 79, 284, Oct. 1953.
96. Roentgen findings in the "collagen" diseases. Am. J. Roten. & Rad. Ther., 71, 581, 1954.
97. Cancer of the breast, the results of radical mastectomy and radiotherapy in two hospitals. Surg., Gynec. & Obst., 98, 700, June 1954.
98. Indicaciones de la radioterapia en las enfemadades no neoplasicas. Acta Radiological Interamericana., 3, 15, 1953.
98. a. Multiphasis surveys. Calif. Med., 51, 240, 1954.
99. Cancer detection in the physician's office. Ca., 4, 123, July 1954, with Ian Macdonald.
100. The rationale and results of simple mastectomy and radiotherapy in primary cancer of the breast. Am. J. Roent., 72, 923, 1954.
101. Pulmonary roentgenologic changes in the collagen diseases. Am. J. Surg., 90, 63, 1955, with M. A. Sisson.
102. The detection of carcinoma of the lung by screening procedures, particularly photofluorography. Am. J. Roent. & Rad. Ther., 74, 402, 1955.
103. The yield of chest X-ray surveys—guest editorial. J. A. M. A., 157, 1499, 1955.
104. The history of the Cancer Commission of the California Medical Association. Calif. Med., 83, 104, 1955.
105. The treatment of cancer of the thyroid gland. Calif. Med., 84, 381, 1956.
105. a. Some observations on cancer of the thyroid gland. Indian J. Radiol., Souv. Number, 1956.
106. Cancer detection: the present status. Calif. Med., 84, 122, 1956.
107. Radiation exposure and common sense. Calif. Med., 85, 115, 1956.
107. a. New technique in cholecystography. Minn. Med., 39, 433, 1956.
108. The results of radiotherapy of bronchial cancer. Rad., 67, 48, 1956, with M. A. Sisson.
109. Radiation therapy of carcinoma of the lung. Acta Radiol., Interamericana, 5, 1, 1956, with M. A. Sisson and R. N. Carlan.
110. M. D. 1963—a glance at medicine of the future. J. Student A. M. A., 6, 36, 1957.
111. Radiologic diagnosis in early treatment of cancer of the lung. Postgrad. Medicine, 22, 417, 1957.
112. a. The long-range effects of radiation on bone. Clin. Orthodped., Edited by de Palan.
113. For———— Calif. Mod., 87, 295, 1957.
114. On the radiation treatment of certain endocrine disorders. Stanford Med. Bull., 15, 3, 743, 1957.
115. Cancer of the ovary: results of treatment in 135 cases. Stanford Med. Bull., 15, 191, 1957, with M. A. Sisson.
116. The care of patients with bronchial cancer. Radiology, 69, 581–583, 1957.
117. Radioactive isotopes in the diagnosis and treatment of cancer, J.A.M.A., 164, 1096–1098, 1957.

118. The relative biological effectiveness of supervoltage radiations. Am. J. Roent. & Rad. Ther., 78, 902–905, 1957.
119. The leukemia hazard. New Eng. J. Med. 257, 1141–1142, 1957.
120. The treatment of cancer of the breast. Carman Lecture, 1957. Radiology, 70, 159–190, 1958.
121. Robert R. Newall—Biography. News Letter, Am. College Rad., 12, 2, 1956.
122. The differential diagnosis of solitary pulmonary nodules. Chicago Med. Soc. Bull., April 12, 1958, pp. 1–8.
123. The pursuit of the unorthodox. J. Michigan State Med. Soc. 57, 525–531, 1958.
124. Medical aspects of the hazards from atomic energy and its byproducts. Insurance Law J. 428, 594–622, September 1958.
125. The place of radiotherapy in primary cancer of the breast. Breast Cancer, edited by A. Segaloff. Mosby Co., St. Louis, 1958.
126. Cancer Diagnostic Centers. Medical Press. 240, 653–657, 1958.
127. Radiation treatment of cancer. J. Am. Geriatrics Society. 7, 136–147, 1959.
128. Alfred R. Kilgore—obituary. Calif. Med., 19, 453, 1959.
129. Medical radiation and patient safety. Current Medical Digest. June 1959, pp. 49–53.
130. Studies on the accuracy of diagnostic procedures. Am. J. Roent. & Rad. Thor. 82, 25–38, 1959.
131. California outlaws the cancer quack. Today's Health, August, 1959, pp. 30–72.
132. Solitary pulmonary nodules. A new method of diagnosis of solitary lesions of the lung. —— Med. 17, 261–260, 1960.
133. The problem of observer error: Sixth annual —— Golden Lecture of the New York ———— Society. Bull. N. Y. Acad. of Med., 36, 569–584, 1960.
134. A three-step method for the diagnosis of solitary pulmonary nodules. Canad. Med. Assoc. J. 88, 1079–1092, 1960.
135. Bronchial carcinoma: the lobar distribution of lesions in 150 cases. Calif. Med., 94, 7–9, 1961.
136. Clinical and laboratory observer variations. J. New Drugs. 1, 65–71, 1961.
137. Cancer of the thyroid and previous irradiation. Surg., Gynec. & Obst. 112, 564–566, 1961.
138. Optimum radiotherapy of cancer. Current Medical Digest. 28, 58–59, 1961.
139. Radiation therapy of cancer; current results with megavoltage and orthovoltage. Am. J. Roent., 86, 621–639, 1961.
140. Changing concepts in the management of cancer of the breast. The new Physician—J. Student A.M.A., December 1961.
141. The siren song of nostra. Narration. J.A.M.A. 178, 102, 1961.
142. The apparent sites of origin of carcinomas of the lung. Radiology, 78, 1–11, 19—.
143. Radiologic services in the modern hospital. Hospital Administration. Edited by J. K. ——, Ph. D. Saunders Co., Philadelphia, Pa., pp. 306–370.
144. Newer medalities in radiation therapy. Proc. Conference on Oral Cancer. Am. Soc. Oral Surg. Pub. July 1962. 840 North Lake Shore Drive, Chicago.
145. The pursuit of excellence—Presidential Address, American College of Radiology, published in part. Modern Hospital, 99, 78, 1962.
146. The management of cancer of the breast. Surgical Clinics of North America, 42, 853, 1962.
147. The solitary nodule (coin lesion) of the lung. (With Walton M. Edwards, Robert S. Cox.) Am. J. Roent. 88, 1020–1041, 1962.
148. The erect lateral lumbar roentgenogram in the evaluation of "lowback" pain. With M. C. Hill & W. Coulnon. Calif. Med. 98, 260–263, 1963.
149. The radiological service—how many radiologists are advisable. (Editorial) Radiology, —, —, 1963.
150. The rate of growth and apparent duration of untreated primary bronchial carcinoma. With — ————. Cancer, 16, 694, 1963.
151. Radiation treatment of cancer of the larynx. Section in Otolaryngology. W. F. Prior, 1963.
152. A radiologist looks at radiation protection procedures. Radiology, 82, 963, 1964.
153. The diagnosis of cancer—radiology. Calif. Med., 100, 397–401, 1964.

154. The unproved method in cancer treatment. Connecticut Med., 28, 519–524, July 1964.
155. The current status of radiotherapy in carcinoma laryngis. Ann Atol., Rhin. & Laryng., 73, 488, June 1964.
156. Modern radiotherapy of neoplastic disease. J. Am. Geriatrics Soc. 12, 1011–1021, November 1964.

Also author of sections in following books:

1. Diagnostic Roentgenology. Edited by Ross Golden, Nelson 1948; Williams and Wilkins, 1956.
2. Annual Report of Smithsonian Institution. Washington, D.C., 1946.
3. (71a) Annual Reviews of Medicine, Stanford University, 1951.
4. (119a) Physiopathology of Cancer, Edited by Homberger and Fishman, Hoeber-Harper, 1958, 2d edition.
5. Bronchopulmonary diseases, Edited by Naclerio, Hoeber-Harper, 1957.
6. (109b) Proceedings of Third National Cancer Conference, Lippincott, Philadelphia, 1957.
7. Co-Author "Diseases of the Chest." Saunders, Philadelphia, 1956. 2d edition, 1963.
8. Roentgenology of the Chest. Edited by G. B. Rain, Thomas, Springfield, 1957.
9. (112a) Clinical Orthopedics. Edited by A. F. de Palma. Lippincott, Philadelphia, 1957.
10. Modern Concepts of Hospital Administration. Radiologic Services. Edited by J. K. Owen. Saunders, Philadelphia, 1962.
11. (151) The Radiation Treatment of Carcinoma of the Larynx. Otolaryngology. Prior & Co., 1963.

Also, miscellaneous articles, signed editorials, discussions, and book reviews since 1927 in: Radiology; American Journal of Roentgenology; Journal A. M. A.; California Medicine; U.S. Naval Medical Bulletin; Bulletin of the California Radiological (formerly Pacific Roentgen) Society; Proceedings and Annual Reports of the American College of Radiology, etc.

STATEMENT OF DR. SHELDON C. SOMMERS

I am Sheldon C. Sommers, a physician, general pathologist interested in tissue diagnosis and an experimental pathologist engaged for over 20 years in investigating mechanisms of disease. My college and medical school education were at Harvard, and I practiced and taught pathology in Boston for 15 years. In 1960 I was president of the New England Society of Pathologists.

Presently I am associate professor of pathology at Columbia University College of Physicians and Surgeons in New York, and also clinical professor of pathology at University of Southern California School of Medicine, Los Angeles. My present hospital appointment is associate director of laboratories, Delafield Hospital, New York. My chief research interests in pathology are human cancer, heart and kidney diseases, endocrine abnormalities and gynecology. On these and related subjects I have written abou 170 publications, and am a member of 9 professional societies as well as the Pluto Club, an association limited to 35 active university experimental pathologists. My curriculum vitae and list of publications are attached.

Your committee may be interested in my studies of host factors in human cancer made over the past 15 years with the help of grants from the U.S. Public Health Service. The aim was to determine what attribues there are within human beings that may affect their susceptibility to develop a certain kind of cancer, or provide resistance to developing cancer. These peculiarities of individuals, sometimes called constitutional factors, have been investigated from the autopsy material and clinical records of about 2,500 patients. Cancers of the breast, prostate, liver, stomach, lung, cervix, and endometrium of uterus, kidney, and large intestine have been analyzed, comparing the changes found in all important body tissues with those in persons of similar ages who died without cancer.

In reference to lung cancer, a series of 210 autopsied cases was examined from 4 hospitals in the Boston area. Of these 168 were men, a male predominance found in most series of lung cancer. In the men with squamous carcinomas, which is the most common microscopic type, 57 percent were heavy cigarette smokers, 18 percent were nonsmokers with lung cancer and had an occupational

exposure known to be associated with an increased incidence of lung cancer. Another 19 percent were light smokers with occupational factors. Thus the percentage of smokers in this series of lung cancer cases appeared to be about the same as in the general population.

The men with lung cancer also had more common than expected histories of serious marital problems, venereal diseases, alcoholism, and severe trauma. They included a number of men with evidence of excessive nervous energy expressed by overstraining their physical capacities in various ways. McArthur, a Harvard psychologist, from his viewpoint has found the same features in lung cancer patients, some of whom he described as "living in overdrive." An excellent description of such a person—namely Ross, the famous editor of the New Yorker magazine, who died of lung cancer—is in the book "The Years With Ross" by James Thurber. Most of the men had evidence of long-continued inflammation with infection of the bronchi and lung.

The other finding in the men with squamous lung cancer that distinguished them from other groups was a persistence of normal testicular and prostatic structure into late middle age, when most men show some testicular atrophy and prostatic enlargement. A "male" factor long recognized in lung cancer seemed to involve a continued active production of male sex hormones beyond the average.

Too few women with this cancer type were available for adequate analysis.

In women and some men adenocarcinomas of the lung appeared to arise from abnormal internal processes that involved abnormal estrogenic hormonal stimulation. This lead is presently being followed by a further study of 50 autopsied cases of women with lung cancer from Delafield Hospital, New York.

Subsequently, Dr. Marjorie J. Williams, then pathologist at Temple Veterans' Administration Center and now chief of the Pathology Section at Veterans' Administration central office, and I made a similar study of 100 men with lung cancer autopsies from Temple, Tex. Their environmental exposures were not analyzed. As was previously found, most showed evidence of underlying chronic inflammatory lung disease. The men with squamous lung cancers again showed the greatest tendency to presentation of the normal testicular structure in late middle age. Host factors were thus found to be important in respect to the development of the type of lung cancer ascribed by some to cigarette smoking.

More recently in a study of the degenerative lung disease emphysema, which according to J. P. Wyatt, a leading authority, predominates markedly in men, host factors were found. There were endocrine changes in men with emphysema associated either with overgrowth of breast tissue microscopically or with its preservation in a normal state. In contrast many other men had breast atrophy.

These host factor studies are relevant to the investigations of relationships between cigarette smoking and lung cancer in the following ways. Even if one accepts a heavy inhalation exposure at the rate of two packs per day for 20 years, only a small minority of male cigarette smokers (somewhat less than 3 per 100 man-years) developed fatal lung cancer. As with all factors suspected of being weak carcinogens, a variety of significant contributing factors are likely. Host factor studied previously described have indicated at least two: (1) Chronic inflammatory lung disease; probably bacterial, viral, or both; (2) hormonal factors, particularly evidence of persistent male sex hormone production into late middle age. The major point is that the danger of cancer is not apparently spread evenly among heavy smokers. It affects particularly men, some with excessive nervous energy, often with chronically inflamed bronchi and lungs, and some with evident abundant male hormonal production. Women, men with decreasing male sex hormones, and certain other groups are less affected.

In summary, there is evidence for multiple factors in lung cancer development, and extensive scientific investigation should continue to determine what role, if any, all the factors including cigarette smoking may play. The subject of the cause of the lung cancer is not closed but just barely opened.

REFERENCES

Editorial Review: "The Endocrine and Genetic Factors in Cancer of the Lung." Growth, 1964, 28, 1–15.

McArthur, C. C., "The Personal and Social Psychology of Smoking." In "Tobacco and Health," C. C. Thomas, Springfield, Ill., 1961, pp. 201–9. "Smoking and Health," U.S. Dept. of Health, Education, and Welfare, Washington, D.C., 1964, 387 pp.

Sommers, S. C., "Host Factors in Fetal Human Lung Cancer," A.M.A. Arch. Path., 1958, 65, 104.

Sommers, S. C., "Pulmonary Emphysema, Healed Myocardial Infarcts and Other Disease Correlations with Male Breast Structure." Am. J. Med. Sci., 1964, 248, 341–44.

Thurber, J., "The Years With Ross," Little, Brown & Co., Boston, 1957, 310 pp.

Williams, M. D., and Sommers, S. C., "Endocrine and Certain Other Changes in Men With Carcinoma of the Lung." Cancer, 1962, 15, 109–17.

Wyatt, J. P., V. W. Fischer, and H. C. Sweet, "Emphysema." Am. Rev. Resp. Dis., 1964, 89, 533–60, 721–35.

PUBLISHED ARTICLES

1. Jacobs, J. L. and Sommers, S. C.: The specificity of formolized proteins. J. Immunol., 36: 531–541, 1937.
2. Menkin, V., Kadish, M.A. and Sommers, S. C.: Leukocytosis-promoting factor in inflammatory exudates of man. Arch. Path., 33: 180–192, 1942.
3. LeCompto, P. M., Sommers, S. C. and Lathrop, F. D.: Tumor of carotid body type arising in the middle ear. Arch. Path., 44: 78—81, 1947.
4. Warren, S. and Sommers, S. C.: Cicatrizing enteritis (regional ileitis) as a pathologic entity. Am. J. Path., 24: 475–501, 1948.
5. Warren, S. and Sommers, S. C.: Giant-cell inclusions in cicatrizing enteritis. Proc. Soc. Exper. Biol. & 1 ed., 8: 461–463, 1948.
6. Warren, S. and Sommers, S. C.: Pathogenesis of ulcerative colitis. Am. J. Path., 25: 657–659, 1949.
7. Hertig, A. T. and Sommers, S. C.: Genesis of endometrial carcinoma. I. Study of prior biopsies. Cancer, 2: 946–956, 1949.
8. Sommers, S. C., Hertig, A. T. and Bongloff, H.: Genesis of endometrail carcinoma. II. Cases 19 to 35 years old. Cancer, 2: 957–963, 1949.
9. Hertig, A. T., Sommers, S. C. and Bengloff, H.: Genesis of endometrial carcinoma. III. Carcinoma in situ. Cancer, 2: 964–971, 1949.
10. Sommers, S. C., Lawley, T. B., and Hertig, A. T.: A study of the placenta in pregnancy treated by stilbestrol. Am. J. Obst. & Gynec., 58: 1010, 1949.
11. Warren, S. and Sommers, S. C.: Proteolysis in intestinal disease. Gastroenterology 14: 522–526, 1950.
12. Wyatt, J. P. and Sommers, S. C.: Chronic marrow failure, myelosclerosis and extramedullary hematopoiesis. Blood, 5: 329–347, 1950.
13. Meissner, W. A. and Sommers, S. C.: Postpartum endometrial hyperplasia in diabetics treated with stilbestrol and progesterone. J. Clin. Endocrinol., 10: 603–609, 1950.
14. Sommers, S. C. and Johnson, J. K.: Congenital tricuspid atersia. Am. Heart J., 41: 130–143, 1951.
15. Sommers, S. C., Wilson, J. C. and Hartman, F. W.: Lymphoid lesions in poliomyelitis. J. Exper. Med., 93: 505–512, 1951.
16. Warren, S., Holt, M. W. and Sommers, S. C.: Some early nuclear effects of ionizing radiation. Proc. Soc. Exper. Bio. & Med., 77: 288–291, 1951.
17. Holt, M. W., Sommers, S. C. and Warren, S.: Preparation of tissue sections for quantitative histochemical studies. Anat. Rec., 112: 177–186, 1952.
18. Sommers, S. C. and Teloh, H.: Ovarian stromal hyperplasia in breast cancer. AMA Arch. Path., 53: 160–166, 1952.
19. Warren, S., Holt M. W. and Sommers, S. C.: Some cytologic and histochemical studies of radiation reaction. Am. J. Clin. Path., 22: 411–417, 1952.
20. McManus, R. G. and Sommers, S. C.: Breast cancer prognosis and ovarian cortical stromal hyperplasia. New England J. Med., 246: 890–892, 1952.
21. Sommers, S. C. and Young, T. L.: Oxyphil parathyroid adenomas. Am. J. Path., 28: 673–689, 1952.
22. Edwards, J. L. and Sommers, S. C.: Radiation reactions in parabiotic rats. J. Lab. & Clin. Med., 40: 342–354, 1952.
23. Chute, R. N. and Sommers, S. C.: Hemolytic disease and polycythemia in parabiosis intoxication. Blood, 7: 1005–1016, 1952.
24. Hollander, A. and Sommers, S. C.: Lepromatous leprosy. New England J. Med., 247: 634, 1952.
25. Christensen, W. R., Sommers, S. C. and Spaulding, C. K.: Effect of soft roentgen rays on the rabbit skin. Am. J. Roentgenol. and Nuclear Med., 63: 801–808, 1952.
26. Sommers, S. C., Chute, R. N. and Warren, S.: Heterotransplantation of human cancer. I. Irradiated rats. Cancer Res., 12: 909–911, 1952.

26a Chute, R. N., Sommers, S. C. and Warren, S.: Heterotransplantation of human cancer. II. Hamster cheek pouch. Cancer Res., 12: 912–14, 1952.
26b Sommers, S. C., Sullivan, B. A. and Warren, S.: Heterotransplantation of human cancer. III. Chorioallantoic membranes of embryonated eggs. Cancer Res., 12: 915–917, 1952.
27. Brown, W. J., Winston, R. and Sommers, S. C.: Membranous staphylococcal enteritis after antibiotic therapy. Report of two cases, Am. J. Digest. Dis., 20: 73–75, 1953.
28. Sommers, S. C. and McManus, R. G.: Multiple arsenical cancers of skin and internal organs. Cancer, 6: 347–359, 1953.
29. Sommers, S. C., Anderson, L. M. and Warren S.: Basement membranes in chronic intestinal diseases. Lab. Investigation, 2: 223–226, 1953.
30. Wakefield, R. D. and Sommers, S. C.: Fatal membraneous staphylococal enteritis in surgical patients. Ann. Surg., 138: 249–252, 1953.
31. McManus, R. G.: and Sommers, S. C.: Significance of gastric polyps accompanying cancer. Am J. Clin. Path., 23: 746–757, 1953.
32. Sommers, S. C.: Ovarian Rete Cysts. Am. J. Path., 29: 853–859, 1953.
33. Sommers, S. C.: Endocrine changes after hemiadrenalectomy and total body irradiation in parabiotic rats. J. Lab. & Clin. Med., 24: 396–407, 1953.
34. Holt, M. W., Sommers S. C., and Warren, S.: Intranuclear changes resulting from exposure to ionizing radiation as detected in frozen-dried preparations. Lab. Investigation, 2: 408–418, 1953.
35. Sommers, S. C., Geyer, B. S. and Chute, R. N.: Autoradiographic arsenic localization in adult and embryonic epithelium and connective tissue. Proc. Soc. Exper. Biol & Med., 84: 234–239, 1953.
36. Sommers, S. C., Teloh, H. A. and Goldman, G.: Ovarian influence upon survival in breast cancer. AMA Arch. Surg., 67: 916–919, 1953.
37. Sommers, S. C. and Lombard, O. M.: Cancer associated with ovarian stromal hyperplasia. AMA Arch. Path., 56: 462–465, 1953.
38. Warren, S. and Sommers, S. C.: Pathology of regional ileitis and ulcerative colitis. J. Am. Med. Assoc., 154: 189–193, 1954.
39. Adamson, N. E., Jr. and Sommers, S. C.: Endometrial ossification. Am. J. Obst. & Gynec., 67: 187–190, 1954.
40. Chute, R. N., Kenton, H. B. and Sommers, S. C.: A laboratory epidemic of human-type tuberculosis in hamsters. Am. J. Clin. Path., 24: 223–226, 1954.
41. Marcial-Rojas, R. A. and Sommers, S. C.: Differentiated mucoepidermoid tumors of salivary glands. AMA Arch. Otolaryng., 59: 135–140, 1954.
42. Hollander, A., Sommers, S. C. and Grimwade, A. E.: Histochemical and ultraviolet microscopic studies of chronic dermatoses and the corium membrane. J. Invest. Dermat., 22: 335–348, 1954.
43. Strande, A., Sommers, S. C. and Petrak, M.: Regional enterocolitis in cocker spaniel dogs. AMA Arch. Path., 57: 357–362, 1954.
44. Sommers, S. C. and Meissner, W. A.: Basement membrane changes in chronic thyroiditis and other thyroid diseases. Am. J. Clin. Path., 24: 434–440, 1954.
45. Wood, J. S., Jr., Holyoke, E. D., Clason, W. P. C., Sommers, S. C. and Warren, S.: An experimental study of the relationship between tumor size and number of lung metastases. Cancer, 7: 437–443, 1954.
46. Goddard, J. W. and Sommers, S. C.: Method for thyroid cell mapping. Lab. Invest., 3: 197–210, 1954.
47. Colcock, B. P. and Sommers, S. C.: Prognosis in Paget's disease of the breast. Surg. Clin. No. Am., 34: 773–783, 1954.
48. Burt, A. S., Landing, B. H. and Sommers, S. C.: Amphophil tumors of the hypophysis induced in mice by I131. Cancer Res., 14: 497–502, 1954.
49. Sommers, S. C. and Meissner, W. A.: Unusual carcinomas of the pancreas. AMA Arch. Path., 58: 101–111, 1954.
50. Sommers, S. C., Edwards, J. L. and Chute, R. N.: Increase in hypersensitivity lesions of parabiosis intoxication after adrenalectomy. J. Lab. & Clin. Med., 44: 531–543, 1954.
51. Sommers, S. C., Crozier, R. and Warren, S.: Ultraviolet microscopy of glomerular diseases. Am. J. Path., 30: 919–939, 1954.
52. Turner, D. D. and Sommers, S. C.: Medical intelligence. New England J. Med., 251: 744–745, 1954.
53. Patterson, W. B., Chute, R. N. and Sommers, S. C.: Transplantation of human tumors into cortisone-treated hamsters. Cancer Res., 14: 656–659, 1954.

54. Goddard, J. W. and Sommers, S. C.: Thyroid stimulation in diabetes mellitus. Diabetes, 3: 383–388, 1954.
55. Sommers, S. C., Murphy, S. A. and Warren S.: Pancreatic duct hyperplasia and cancer. Gastroenterology, 27: 629–640, 1954.
56. Rohman, M. and Sommers, S. C.: A double primary carcinoma of the urinary bladder. J. Urol., 72: 1174–1177, 1954.
57. Sommers, S. C.: Some applications of ultraviolet microscopy to pathology. BMC, 5: 105–108, 1954.
58. Lemon, H. M. and Sommers, S. C.: Clinicopathologic conference. Am. J. Clin. Path., 24: 1402–1407, 1954.
59. Sommers, S. C., Crozier, R. and Warren, S.: A study of the ultraviolet microscopy of renal vascular diseases. Circulation, 11: 38–43, 1955.
60. Wood, J. S., Jr., Holyoke, E. D., Sommers, S. C. and Warren, S.: Influence of pituitary growth hormone on growth and metastasis formation of a transplantable mouse sarcoma. Bull. Johns Hopkins Hosp., 96: 93–100, 1955.
61. Sommers, S. C. and Warren, S.: Ulcerative colitis lesions in irradiated rats. Am. J. Digest. Dis., 22: 109–111, 1955.
62. Sommers, S. C.: Endocrine abnormalities in women with breast cancer. Lab. Invest., 4: 160–174, 1955.
63. Haley, H.L., Dews, G. H. and Sommers, S. C.: A histochemical comparison of primary thyroid hyperplasia and adenomatous goiter. AMA Arch. Path., 59: 635–640, 1955.
64. Keefer, C. S. and Sommers, S. C.: Clinicopathologic Conference. Am. J. Clin. Path., 25: 1053–1057, 1955.
65. Sommers, S. C., Gates, O. and Goodof, I. I.: Late recurrence of granulosa cell tumors. Obst. & Gynec., 6: 395–398, 1955.
66. Sommers, S. C.: Development of research at Massachuhetts Memorial Hospitals. BMO, 6: 113–115, 1955.
67. Handler, A. H., Davis, S. and Sommers, S. C.: Heterotransplantation experiments with human cancers. Cancer Res., 16: 32–36, 1956.
68. Parker, T. G. and Sommers, S. C.: Adrenal cortical hyperplasia accompanying cancer. AMA Arch. Surg., 72: 495–499, 1956.
69. Sommers, S. C.: Testicular spermatogenic cel hypertrophy accompanying prostatic hypertrophy and cancer. Am. J. Path., 32: 185–199, 1956.
70. Sommers, S. C. and Haley, K. H.: Similarity of glomerular ultraviolet absorptions in diabetes mellitus and after cortisone therapy. Proc. Soc. Exper. Biol. & Med., 91: 262–265, 1956.
71. Sommers, S. C. and Chute, R. N.: Carcinogenesis and altered host reactions in parabiotic rats. AMA Arch. Path., 61: 295–304, 1956.
72. Sommers, S. C.: Introduction to pathology of neoplastic diseases. J. Student A.M.A., 21–25, April, 1956.
73. Shakhashir, T. and Sommers, S. C.: Chronic menstrual endometrium. Obst. & Gynec., 8: 112–115, 1956.
74. Sommers, S. C.: Basement membranes, ground substances and lymphocytic aggregates in aging organs. J. Gerontol., 11: 251–260, 1956.
75. Brin, M. and Sommers, S. C.: A "blighted" ascites tumor. Transplant. Bull., 3: 102–103, 1956.
76. Sommers, S. C. and Wadman, P. J.: Pathogenesis of polycystic ovaries. Am. J. Obst. & Gynec., 72: 160–169, 1956.
77. Boughton, G. A. and Sommers, S. C.: Renal changes in shock treated with levarterenol (Levophed). Am. J. Clin. Path., 27: 29–34, 1957.
78. Barr, R. and Sommers, S. C.: Unusual causes of death after cardiac surgery. Am. Heart J., 53: 232–239, 1957.
79. Martel, A. and Sommers, S. C.: Endocrine correlations in mammary adenofibrosis and chronic cystic mastitis. Ann. Surg., 145: 326–333, 1957.
80. Sommers, S. C.: Endocrine changes with prostatic carcinoma. Cancer, 10: 345–358, 1957.
81. Lambie, A. T., Burrows, B. A. and Sommers, S. C.: Clinicopathologic Conference. Refractory anemia, agammaglobulinemia, and mediastinal tumor. Am. J. Clin. Path., 27: 444–452, 1957.
82. McNulty, J. R. and Sommers, S. C.: Keratoacanthoma as a surgical pathologic entity. Surg., Gnyec. & Obst., 104: 663–668, 1957.
83. Janes, R. G. and Sommers, S. C.: Glomerular alterations in kidneys of rats treated with desoxycorticosterone. AMA Arch. Path., 64: 58–62, 1957.
84. Saltz, M., Sommers, S. C. and Smithwick, R. H.: Clinicopathologic correlations of renal biopsies from essential hypertensive patients. Circulation, 16: 207–212, 1957.

85. Merriam, J. C., Jr. and Sommers, S. C.: Mammary periductal hyalin in diabetic women. Lab. Invest., 6: 412–420, 1957.
86. Meissner, W. A., Sommers, S. C. and Sherman, G.: Endometrial hyperplasia, endometrial carcinoma, and endometriosis produced experimentally by estrogen. Cancer, 10: 500–509, 1957.
87. Sommers, S. C. and Meissner, W. A.: Host relationships in experimental endometrial carcinoma. Cancer, 10: 510–515, 1957.
88. Sommers, S. C., and Meissner, W. A.: Endocrine abnormalities accompanying human endometrial cancer. Cancer, 10: 516–521, 1957.
89. Soutter, L., Sommers, S. C., Relman, A. S., and Emerson, C. P.: Problems in the surgical management of thymic tumors. Ann. Surg., 146: 424–438, 1957.
90. Barr, R. W., and Sommers, S. C.: Endocrine abnormalities accompanying hepatic cirrhosis and hepatoma. J. Clin. Endocrinol., 17: 1017–1029, 1957.
91. Ullrick, W. C., Lentini, E. A. and Sommers, S. C.: Excitability and contractility of postmortem and human heart muscle. Lab. Invest., 6: 528–535, 1957.
92. Sommers, S. C.: Host factor in fatal human lung cancer. AMA Arch. Path., 65: 104–111, 1958.
93. Merriam, J. C., Sommers, S. C. and Smithwick, R. H.: Clinico-pathologic correlations of renal biopsies in hypertension with pielonephritis. Circulation, 17: 243–248, 1958.
94. Kiefer, E. D., Swinton, N. W., Atkinson, R. P. and Sommers, S. C.: Panel discussion on chronic ulcerative colitis. Am. J. Gastroenterol., 29: 359–373, 1958.
95. Azar, H. A. and Sommers, S. C.: Retroperitoneal ectopic seminal vesicle communicating with a contralateral solitary kidney. Report of a case. J. Urol., 79: 994–998, 1958.
96. Sommers, S. C., Relman, A. S. and Smithwick, R. H.: Histologic studies of kidney biopsy specimens from patients with hypertension. Am. J. Path., 34: 685–715, 1958.
97. Sommers, S. C.: Constitutional aspects of gastric carcinoma. AMA Arch. Path., 66: 487–983, 1958.
98. Ullrick, W. C., Lentini, E. A. and Sommers, S. C.: Oxygen consumption of post-mortem human heart muscle. Proc. Soc. Exper. Biol. & Med., 99: 246–247, 1958.
99. Shamma, A. H., Goddard, J. W., and Sommers, S. C.: A study of the adrenal status in hypertension. J. Chron. Dis., 8: 587–595, 1958.
100. Silva, T. F., and Sommers, S. C.: Renal biopsy changes with pheochromocytoma. Am. J. Med. Sci., 236: 700–704, 1958.
101. Keffler, R., Lenson, N., and Sommers, S. C.: Carcinoma arising in minor salivary gland ducts of the lower lip. Am. J. Surg., 97: 79–82, 1959.
102. Strong, S. M. and Sommers, S. C.: Branchiogenic carcinoma. AMA Arch. Otolaryng., 68: 764–769, 1958.
103. Wilkins, R. W. and Sommers, S. C.: Clinicopathologic Conference. Enlargement of the heart, cardiac failure and loose, dry, scaly skin. Am. J. Clin. Path., 31: 66–72, 1959.
104. Sommers, S. C.: Pituitary cell relations to body states. Lab. Inves., 8: 588–621, 1959.
105. Coffman, J. D., and Sommers, S. C.: Familial pseudoxanthoma elasticum and valvular heart disease. Circulation, 19: 242–250, 1959.
106. Sommers, S. C.: Pathology of the kidney and adrenal gland in relationship to hypertension. In: "Hypertension", W. B. Saunders Co., 23, 1958.
107. Andritsakis, G. D. and Sommers, S. C.: Criteria of thymic cancer and clinical correlations of thymic tumors. J. Thoracic Surg., 37: 273–290, 1959.
108. Androutsopoulos, N. A. and Sommers, S. C.: Postmenopausal endometriosis. Obst. & Gynec., 14: 245–248, 1959.
109. Ullrick, W. C., Lentini, E. A. and Sommers, S. C.: Summation and tetanus in postmortem human heart muscle. J. Appl. Physiol., 14: 567–568, 1959.
110. Hollander, A., and Sommers, S. C.: Current case of lepromatous leprosy, acid-fast bacilli in epidermis. Conn. Med., 23: 650–654, 1959.
111. Thayer, C. L. and Sommers, S. C.: Host factors in carcinoma of the uterine cervix. Am. J. Obst. & Gynec., 78: 386–392, 1959.
112. Bloodworth, J. M. B. and Sommers, S. C.: "Cirrhotic glomerulosclerosis". A renal lesion associated with helatic cirrhosis. Lab. Invest., 8: 962–978, 1959.

113. Fuller, C. H. and Sommers, S. C.: The thyroid status in relation to arteriosclerotic disease. BMQ, 10: 1–2, 1959.
114. Sanchez, G. C. and Sommers, S. C.: Peptic ulcer diathesis with a mixed adenocarcinoma of the pancreas: Case report. Gastroenterology, 38: 467–470, 1960.
115. Sommers, S. C.: Renal and adrenal pathology in hypertension. Conn. Med., 24: 240–244, 1960.
116. Kelly, J. W. M., Parsons, L., Friedell, G. H. and Sommers, S. C.: A pathologic study in 55 autopsies after radical surgery for cancer of the cervix. Surg., Gynec. and Obst., 110: 423–432, 1960.
117. Hollander, A. and Sommers, S. C.: A historical study of mucopolysaccharides of leprosy of the skin. Acta. dermat. venereol. Proc. 11th Internat. Congr. Dermat. 3: 407–411, 1957 . . . 1960.
118. Buckingham, S. and Sommers, S. C.: Pulmonary hyaline membranes. AMA J. Dis. Child., 99: 216–227, 1960.
119. Patton, R. B. and Sommers, S. C.: The histopathology of infarcation and other ulcerative diseases of the esophagus. Am. J. Clin. Path., 33: 516–524, 1960.
120. Hollander, A. and Sommers, S. C.: Histochemical comparison of Boeck's Sarcoid with other cutaneous granulomas. AMA Arch. Dermat. 81: 944–946, 1960.
121. Friedell, G. H., Sherman, J. D. and Sommers, S. C.: Spleen and liver in the anemia of the tumor-bearing hamster. AMA Arch. Path., 70: 863–871, 1960.
122. Grassi, J. E. and Sommers, S. C.: A case of carcinoma of the breast in a young woman with hamartomatous hypothalamic malformation. Am. J. Surg., 100: 606–612, 1960.
123. Celoria, G. C., Friedell, G. H. and Sommers, S. C.: Raynaud's disease and primary pulmonary hypertension. Circulation, 22: 1055–1059, 1960.
124. Turgeon, C. and Sommers, S. C.: Juxtaglomerular cell counts and human hypertension. Am. J. Path., 38: 227–241, 1961.
125. Sommers, S. C. and Turgeon, C.: Morphologic studies on relationship of pyelonephritis to hypertension, in: "Biology of pyelonephritis", Little, Brown and Company, Boston 1960.
126. McAauley, R. L. and Sommers, S. C.: Mast cells in nonspecific ulcerative colitis. Am. J. Digest. Dis., 6: 233–236, 1961.
127. Sommers, S. C. and Verendia, J. B.: An appraisal of laboratory determinations of estrogens. Am. J. Clin. Path., 35: 319–327, 1961.
128. Yin, P–H and Sommers, S. C.: Some pathologic correlations of ovarian stromal hyperplasia. J. Clin. Endocrinol, & Metab., 21: 472–477, 1961.
129. Patalano, V. J., and Sommers, S. C.: Biopsy diagnosis of periarteritis nodosa. Arch. Path., 72: 1–7, 1961.
130. Tedeschi, L. G. and Sommers, S. C.: Oxytalan fibers in sclerosing hemangiomas. Arch. Dermatol., 84: 128–130, 1961.
131. Sommers, S. C.: Some pathologic conditions associated with renal and adrenal hypertension. J.A.M.A., 178: 715–717, 1961.
132. Friedell, G. H., Sherman, J. D. and Sommers, S. C.: Growth curves of human cancer transplants during experimental chemotherapy. Cancer, 14: 1117–1121, 1961.
133. Sherwin, R. P., Grassi, J. E. and Sommers, S. C.: Hamartomatous malformation of the posterolateral hypothalamus. Lab. Invest., 11: 89–97, 1962.
134. Williams, M. J. and Sommers, S. C.: Endocrine and certain other changes in men with carcinoma of the lung. Cancer, 15: 109–117, 1962.
135. Ganem, K., Friedell, G. H. and Sommers, S. C.: A study of ovarian thecomatosis. California Medicine, 96: 254–256, 1962.
136. Tedeschi, L. G. and Sommers, S. C.: Oxytalan fibers—dermal fibromas and giant-cell tendon sheath tumors. Arch. of Derm., 85: 527–529, 1962.
137. Soergel, K. H. and Sommers, S. C.: The alveolar epithelial lesion of idiopathic pulmonary hemosiderosis. Am. Rev. of Resp. Dis., 85: 540–552, 1962.
138. Soergel, K. H. and Sommers, S. C.: Idiopathic pulmonary hemosiderosis and related syndromes. Am. J. of Med., 32:499–511, 1962.
139. Sommers, S. C., McLaughlin, R. J. and McAuley, R. L.: Pathology of diastolic hypertension as a generalized vascular disease. Am. J. Cardiol., May 1962, 652–658.
140. Reeves, G. and Sommers, S. C.: Endometrial hemosiderin as evidence of metrorrhagia. OBS. & GYN., 19: 790–792, 1962.

141. Reynolds, C. T., Smithwick, R. H. and Sommers, S. C.: Excision of adrenal adenoma and sympathectomy in the therapy of hypertension. Am. J. of Surgery, 103: 696–701, 1962.
142. More, B. M., and Sommers, S. C.: Status of the myocardial arterioles in angina pectoris. Amer. Heart J., 64: 323–333, 1962.
143. Reynolds, C. T. and Sommers, S. C.: Sympathectomy for glomerulonephritis with hypertension. Arch. of Surgery, 85: 390–393, 1962.
144. Sommers, S. C., Robbins, G. B., Babin, D. S. and Knaack, C. T.: Chronic pyelonephritis, renal tubular atrophy and hypertension. Arch. Int. Med., 110: 505–510, 1962.
145. Whisenand, J. M., Kostas, D. and Sommers, S. C.: Some host factors in the development of renal cell carcinoma. West. J. of Surg., Obs. & Gynec., 70: 284–285, 1962.
146. Boughton, R. M. and Sommers, S. C.: A new concept of renal hypertension. J. of Urology, 89: 113–136, 1963.
147. Reeves, G., Lowenstein, L. and Sommers, S. C.: A suggested mechanism of erythropoietic control of juxtaglomerular cells. Am. J. of the Med. Sciences, 245: 134–187, 1963.
148. Hark, B. and Sommers, S. C.: Endometrial curettage in diagnosis and therapy. Obst. & Gynec., 21: 636–638, 1963.
149. Sommers, S. C., Weber, C. E. and Reeves, E.: A hemagglutination reaction of mothers and infants of different ABO and Rh groups. Am. J. Clin. Path., 39: 482–484, 1963.
150. Bussfield, A. B. and Sommers, S. C.: The effect of malnutrition on tropic hormone storage in the human hypophysis. Arch. Path., 75: 564, 1963.
151. Beaser, S. B., Sak, M. and Sommers, S. C.: Influence of insulin therapy and pyelonephritis upon diabetic glomerulosclerosis in hamsters. Metab. 12: 704–709, 1963.
152. Sommers, S. C.: Some endocrine and immunologic aspects of prognosis in breast carcinoma. Acta Union Int. Contre Cancer 16: 959–60, 1962.
153. Reeves, G., Figuerdo, A. and Sommers, S. C.: A case of breast carcinoma with hypothalamic Malformation. West. J. Surg. Obs. & Obst. 71: 184–186, 1963.
154. Hutt, M. S. R. and Sommers, S. C.: A clinicopathologic analysis of biopsy specimens in persistent glomerulonephritis. Am. J. Path. 43: 459–475, 1963.
155. Bowden, D. H., Danis, P. G. and Sommers, S. C.: Ataxia-Telangiectasis. J. Neuropath. & Exp. Neur. 22: 549–553, 1963.
156. Beaser, S. B., Sak, M. F., Donaldson, G. W., McLaughlin, R. J. and Sommers, S. C.: Alloxan diabetes in the golden hamster, Mesocricetus Auratus 11. Glomerulosclerosis and its relation to diabetic regulation. Diabetes 13: 49–53, 1964.
157. Williams, M., Barnes, M. B. and Sommers, S. C.: Hyponatremia, antidiuretic hormone secretion and oat cell carcinoma of the lung. Dis. of Chest 44: 95–99, 1963.
158. Monroe, L. S., Boughton, G. A. and Sommers, S. C.: The association of gastric epithelial hyperplasia and cancer. Gastroenterology 46: 267–272, 1964.
159. Teel, P. and Sommers, S. C.: Vascular invasion as a prognostic factor in breast carcinoma. Surg., Gynec. & Obst. 118: 1006–1008, 1964.
160. Reeves, G., Lowenstein, L. and Sommers, S. C.: The renal macula densa and juxtaglomerular body in cirrhosis. Arch. Int. Med. 112: 708–715, 1963.
161. Williams, M. J. and Sommers, S. C.: Emphysema, peptic ulcer and lung carcinoma with pituitary Crooke's cells. Am. J. Med. Sci. 247: 422–426, 1964.
162. Sommers, S. C. and Dixon, F. J.: Seminar on untoward reactions to treatment. Am. Society of Clinical Pathologists, Chicago, 1964, pp. 67.
163. Breslau, A. M., Gonick, H. C., Sommers, S. C. and Guze, L. B.: Pathogenesis of chronic pyelonephritis. Am. J. Path. 44: 679–705, 1964.
164. Wright, C. F., Medenilla, G. A. and Sommers, S. C.: Perinatal death: A clinicopathological analysis of 99 cases. Calif. Med. 100: 336–339, 1964.
165. Sommers, S. C.: Abnormalities accompanying carcinomas of the large intestine. Dis. Colon & Rectum 7: 262–269, 1964.
166. Kennedy, J. H., Williams, M. J. and Sommers, S. C.: Cushing's syndrome and cancer of the lung: Pituitary Crooke cell hyperplasia in pulmonary oat cell carcinoma. Ann. Surg. 160: 90–94, 1964.

167. Sommers, S. C.: Pathology of essential hypertension. Cyclo. Med. 4:-9-15, 1964.
168. Buckingham, S., McNary, W. F., Jr. and Sommers, S. C.: Pulmonary alveolar cell inclusions: Their development in rat. Science 145: 1192-93, 1964.
169. Russfield, A. B., Fisher, E. R. and Sommers, S. C.: Dissociation of hypophyseal content and urinary excretion of gonadotropin in cirrhosis. Proc. Soc. 116: No. 4, 1022-1024, Aug.-Sept. 1964.
170. Sommers, S. C.: Pulmonary emphysema, healed myocardial infarcts and other disease correlations with male breast structure. Am. J. of Med. Sci. 248: 341-344, Sept. 1964.
171. Sommers, S. C., Gonick, H. C., Kalmanson, G. M. and Guze, L. B.: Pathogenesis of chronic pyelonephritis. The Am. J. Path. 45: No. 5, 729-739, Nov. 1964.

STATEMENT OF THEODOR D. STERLING, PH. D.

BIOGRAPHICAL INFORMATION

Positions:

Professor of biostatistics and director, Medical Computing Center, College of Medicine, University of Cincinnati, at present.

Assistant professor of statistics, Department of Statistics, Michigan State University, 1957-58.

Instructor to associate professor of mathematics, psychology, and statistics, Departments of Mathematics and Psychology, University of Alabama, 1954-57.

Professional activities and honors:

President (1964) of Biological Information Processing Organization (an affiliate of the American Association for Advancement of Science and of Association for Computing Machinery).

Chairman, Committee of the Education of Blind on Computers of the Association for Computing Machinery.

Member of the Advisory Panel on Mathematical Education for Biology, Management, and Social Sciences (BMSS) of the Mathematics Association of America.

Chairman, Subcommittee on Implementing Recommendations of BMSS for Biological Sciences.

Member of Sigma Xi, Pi Mu Epsilon (1954).

Honorable mention for the Morrison-Cressy Award in the Natural Sciences (1963).

Professional and honorary societies: Amer. Math. Assoc., Math. Soc., Instit. Math. Stat., Amer. Stat. Assoc., Biometric Soc., South. Soc. Phil., Acad. Pol. Sci., Amer. Assoc. Univ. Prof., N.Y. Acad. Sci., Sigma Xi, Pi Mu Epsilon.

Education: B.A. (with honors), University of Chicago, 1949; M.A., University of Chicago, 1953; Ph. D., Tulane University, 1955.

Personal history:

Born 1923, Vienna, Austria.

Served in the U.S. Army from February 1943 to March 1946 as infantry scout during Solomon and Philippine campaigns.

Married 1949; two children.

INTRODUCTION AND SUMMARY OF CONCLUSIONS

Information collected so far on the link between smoking and various diseases has raised a certain amount of disagreement in the scientific community. Offhand, disagreements among scientists have always been helpful in elucidating solution to problems. This useful function of scientific disagreement is somewhat diminished when it becomes a matter of public concern. However, the fact that this disagreement exists is in no way eliminated by reports of committees or of organizations who study certain health problems in a professional manner.

The consensus of the scientific community is neither measured easily nor is this consensus decisive in scientific matters. Scientists have too often witnessed that the correct interpretation about the state of nature was advanced by the minority rather than by the majority. In fact, the opinions of scientists or of the scientific community are of no consequence to facts of nature. If smoking

does cause disease then the body will respond to it, if it does not then the body will not, irregardless of what opinions we, the Surgeon General, or committees appointed by anybody may hold.

I, for one, am convinced that the answer to the problem of whether or not smoking of tobacco causes disease is not yet substantiated sufficiently so that a firm positive or negative verdict can be rendered. I wish to emphasize that I am testifying with respect to the adequacy of the evidence for supporting final verdicts rather than advancing one myself. The reasons on which I base my own conclusions may be summarized as follows:

1. A number of animal studies have attempted to produce lung cancer by means of cigarette smoke. The results of all these studies have been negative.

2. Epidemiological evidence, based mostly on statistical manipulations, is unclear, conflicting, and in many ways impossible to interpret.

It is a simple fact that the public and repeatable production of a phenomenon is the prerequisite for proof of causation in all sciences and certainly in biology. All experiments that have attempted to produce lung cancer by the use of cigarette smoke have failed so far. Although there is a weakness in generalizing from animal studies to human reactions, it is nevertheless true in most cases that what will affect a human being will also affect some species of experimental animals. The total weight of the evidence at this time, including that furnished by epidemiological studies, is such that it suggests the necessity for certain experiments but does not support definite conclusions.

CRITERIA FOR SCIENTIFIC PROOF

Investigators may differ in their interpretation of evidence because they adopt slightly different criteria of what makes up scientific proof. On the whole, though, while there are no precise rules, there is general agreement among investigators on the major aspects and methods of a work that make it scientific. However, not all decisions, even those made by scientists, are necessarily scientific. This has become increasingly clear in the last few years when scientists have been asked to make decisions which have public import either in war or in the area of public health. In dealing with our present problem it is very important to keep in mind when such decisions are motivated by purposes of science and when they are motivated by public health or other necessities and aims.

The scientific decision process seeks to derive self-contained statements of fact about the existence of phenomena or associations. The scientist has learned that correct statements of fact bestow upon man immense powers to manipulate and modify nature to his benefit and satisfaction. He has learned also that to be effective scientific decisions must be reached by stringent and hardheaded rules. Primarily among these is that the scientist cannot be influenced by extraneous motives. It does not matter whether these motives arise from the noblest, most selfless aspirations, or from the basest drive for self-aggrandization. Any possible influences on scientific decisions that are not relevant to the problem itself are direct or implicit sources of bias. Included in such sources of biases are considerations of the social or political consequences of the scientific decision itself. The care with which extraneous motives are eliminated from the scientific process is reflected in the manner in which its conclusions are usually documented:

1. The conclusion is documented to have a more than reasonably high probability of being correct. The preferred demonstration is to specify the conditions by which the phenomena can be produced publicly and at will.

2. It is shown that alternative conclusions either have a high probability of being incorrect or have a much lower probability of being correct than the preferred statement.

3. It is demonstrated that sources of bias which are extraneous to the evidence itself have been eliminated from any influence on the decision process.

It is generally recognized that special care must be taken if decisions on medical or biological fact are based predominantly on evidence of statistical associations between agent and disease. Such an association does not reach the status of a scientific fact until the disease itself can be called forth or prevented under controlled conditions either in man or in animals. Correct conclusions as to cause and effect have been drawn purely from epidemiological coincidence in the past. These occasions have been more than counterbalanced

by the many instances in which exclusive reliance on statistical association has proven to be misleading. Well accepted epidemiological findings have been confirmed by experiments that tested the suggested associations under laboratory conditions.

It is at the point of scientific versus action oriented attitudes that interpreters of the data on smoking and health have failed to reach a common understanding and appreciation of their respective points of view. For the proponents of public action the demonstrated statistical association between smoking and increased incidence of mortality is conclusive. For the proponents of hard-headed scientific judgment, the statistical association does not represent adequate evidence on which to base conclusions. Therefore, action orientation has led to the repetition of basically the same study, demonstrating over and over again that certain statistical coincidences do indeed exist and the scientific orientation has kept on being disturbed by the constant occurring anomalies within the statistical evidence, the lack of adequate methodology, and above all, by the failure of laboratory experiments to produce positive evidence of a presumed effect of smoking.

EXPERIMENTAL EVIDENCE ON ATTEMPTS TO INDUCE LUNG CANCER WITH TOBACCO AND TOBACCO SMOKE

The report by the Surgeon General's Committee on Smoking and Health points out most adequately that while bronchogenic carcinomas can be produced in a variety of animals by many substances, such tumors cannot be produced by tobacco extracts, smoke, or condensates.

"The lungs of mice, rats, hamsters, and primates have been found to be susceptible to the induction of bronchogenic carcinoma by the administration of polycyclic aromatic hydrocarbons, certain metals, radioactive substances, and oncogenic viruses. The histopathologic characteristics of the tumors produced are similar to those observed in man and are frequently of the squamous variety." (Smoking and Health, p. 167.)

"Bronchogenic carcinoma has not been produced by the application of tobacco extracts, smoke, or condensates to the lung or the tracheobronchial tree of experimental animals with the possible exception of dogs." (Smoking and Health, p. 165.)

As the first quote points out, it has been well established that bronchogenic carcinomas can be produced in animals. A number of studies published in the literature have so far failed to demonstrate the same for cigarette smoke as a causative agent. One should be aware at this point that the number of studies appearing in the literature may be misleading. There is a documented tendency of scientific reports to publish only positive results and avoid the publication of negative results as much as possible (49). Whatever the case might be, experimental facts appear to be as follows:

Essenberg (13), Muehlbock (39), and Leuchtenberger (26) exposed mice to cigarette smoke with no results on the formation of cancers. Lorenz et al (31) and Leuchtenberger et al (27) did not observe an increase in pulmonary adenomas in mice that inhaled cigarette smoke. Leuchtenberger et al (25) does describe a series of microscopic changes in the lungs of mice exposed to cigarette smoke resembling somewhat those found by Auerbach et al (2) (3) (4) (5). However no dose response effect was reported. The morphological findings consisted of bronchitis with proliferation of the epithelium. Some areas of hyperplasia showed atypical changes. However the changes were reversible when exposure to smoke was stopped. Such pathological changes are usually not considered certain enough as indiactors of actual damage to tissue. In discussing this evidence, the Surgeon-General's report concludes:

"The production of bronchogenic carcinomas has not been reported by any investigator exposing experimental animals to tobacco smoke" (p. 165).

Most experiments in which tobacco tars were brought into direct contact with the lung and the tracheobronchial tree of experimental animals have yielded negative results (41, 42, 43). It should be pointed out that producing carcinoma by painting skin epithelium with or without additional additives such as olive oil or killed tubercule bacillus is really not evidence that such carcinomas can be produced by tobacco smoke.

It cannot be denied that one of the most significant pieces of elements on the relationship between smoking and health, especially on the relationship between smoking and the causation of tumors is the fact that it has not been possible to produce such tumors in animals who ordinarily respond to other irritants

by forming the same type of tumors found in man. This is not just lack of experimental evidence. It is negative evidence to the hypothesis that smoking causes bronchogenic tumors.

There are however, certain dangers in generalizing from animal experiments. These dangers should always be kept in mind. Sometimes agents which are not harmful to man may be so for animals and sometimes agents which are harmful to animals may fail to result in similar effects on man. There are differences in the responses of different animal species of which, of course, man is one.

One of three possibilities exists with the interpretation of data on animals. The first one is that smoking per se does not cause bronchogenic tumors. The second one is that with respect to smoking as a causative agent, animals and man respond differently. Thirdly, inadequate methods may have been used so far. There is no reasonable way to decide this question on existing evidence and any attempt to do so without additional experimentation would be pure speculation.

EPIDEMIOLOGICAL AND STATISTICAL EVIDENCE

The major source for statements concerning the relationship between smoking and health have been epidemiological studies. The role of statistical association and association by coincidence in epidemiological studies is not accepted without question in the scientific community. It is true that in infectious diseases and diseases due to nutritional deficiencies or excesses epidemiological methods have pointed very strongly to the existence of certain causative agents. However, the existence of these causative agents ultimately had to be established by animal and human experimentation. It is also true that the epidemiological methods have at times been misleading. A large enough number of failures of epidemiological methods are known so as to make scientists distrust evidence of a statistical and epidemiological nature until further fortified by experimentation.

To this general caution should be added that problems of so-called chronic disease epidemiology have not yielded to the application of conventional epidemiological tools. Whenever a disease appears to be caused through alternate pathways and could be the effect of the accumulation of many events acting over a long period of time, the application of epidemiological tools and methods have led to little more than confusion. There are many dangers associated with the unquestioning acceptance of epidemiological evidence. I point here to lengthy discussions which I and others have undertaken in such areas as the association between lead or between low-dose radiation and certain diseases (22, 45, 50, 51, 56). It is with the suspicion that epidemiological and statistical evidence is often ambiguous and, unless collected with the greatest of care, has relatively little value that we must approach existing evidence on smoking and lung cancer or other health effects.

I would summarize the views of others as well as of my own with respect to existing epidemiological evidence by maintaining that it is unclear, insufficient, and hopelessly confounded with many extraneous factors. Specifically, I would emphasize the following:

1. The association between cigarette consumption and increases of any disease over time is not meaningful. (In contrast, the lack of such an association would be a significant indication that no casual relationship between smoking and health existed.)
2. The populations which have been sampled show so many anomalies when compared to census data that conclusions based on their study seem less than certain.
3. Techniques used to measure the effect of smoking on disease are often unsuitable.
4. It is unclear from present data which if any disease is or is not caused by smoking.
5. Apparent effects on health can be accounted for by factors other than smoking.

Association between cigarette consumption and lung cancer over time

There has been a considerable increase in the reported amount of lung cancer in the last few decades. There has also been an increase in the amount smoked during the same time. (12, 16, 17, 29, 37, 40). It is not true however that one can conclude anything from this observed covariation. The amount of electricity that has been used during the same time has increased just as much as has the amount of gasoline, alcohol, or meat and dairy products consumed. Over any short period of time there are real trends as well as apparent fluctuations and

cycles which, by their sheer number and by the fact that things either go up or down, always must give the appearance of some sort of an association if this type of evidence were ever accepted at all as pointing toward an association. The truth of the matter is that an increase in smoking and the increase in lung cancer is no more evidence of causality than the increase in the consumption of meat and dairy products and the increase in lung cancer or the increase in smoking and that of either national income or the national debt.

The curious aspect about the time-serial relation between incidence of smoking and disease is the fact that while the relatively short time cofluctuations between these incidents by themselves, are not proof of causality, the failure of such a coincidence would be important negative data. There is a possibility that such negative evidence is appearing now. Gilliam et al (15) detected a decline in the rate of increase in the incidence of lung cancer which cannot be related to any decline in the rate of increase of smoking. If these observations should turn out to be true and if a declining trend in lung cancer should develop in the next few years such a trend would be strong evidence against a causal association between smoking and lung cancer.

Sampling and suitability of the sampled populations

The followup of population is an extremely difficult and expensive undertaking. It is convenient therefore to select populations which are easy to follow. These might be groups of individuals readily available for study and willing to participate or groups of individuals that can be used to select samples within their own environment. Under either condition the sampling situation is far from ideal. Specially organized groups differ almost by definition from the general population. This difference may exert itself in many ways, all or some of which may bear importantly on health. For instance if we were to study a population of postmen because postmen are readily available we would also study a population that does a great deal of walking as well as other physical exercises. Another aspect of sampling for populations which furnish the present evidence on the smoking-health link is worthy of note. The tendency has been to select among relatively older age groups. The reason for the selection is that lung cancer, the primary health problem of interest, occurs with a small frequency. It occurs at even lower rates among younger populations, so that in choosing an older population the sample can be limited to a reasonably small size. However, such selections bring in a number of concomitant problems. An older population is in general subject to a great many diseases. It is a population that is responding to a total life history of health habits, environmental exposures, occupational problems, and past histories of medical and physical events. Because of these factors it becomes extremely important to check study populations for agreement with the characteristics of the general population itself.

The most important studies by Hammond (on men in 9 and 25 States) suffer from the additional drawback that the sample is hard to define. Smokers and nonsmokers were recruited by a large number of volunteer workers of the American Cancer Society. Volunteer workers of the American Cancer Society may consist largely of relatives of cancer victims or of individuals with strong convictions on cancer and as such cannot be considered unbiased with respect to the effects of smoking on cancer. The fact that a large number of such workers was involved does in no way eliminate possible biases introduced by this particular method of selection. Because of this source of bias the population studied by Hammond is impossible to define.

Another problem with all present studies was that without exception the percent of usable replies to questionnaires or to followups have been extremely small. The percent of usable material in followups are given in the table below which has been taken from "Smoking and Health" (p. 96).

TABLE 16.—*Percentages of usable replies in 5 studies*

British doctors	U.S. veterans	California occupational	California Legion	Canadian veterans
68	68, 85	85	56	57

What effect the lack of responses has had on the observed results is extremely hard to define. Certainly, whatever conclusions can be based on such incomplete surveys are dependent on a great number of assumptions which one has to be willing to make.

Another most disturbing feature about the various sample populations is the fact that they do not agree with each other or with the U.S. population in terms of their disease patterns. For instance, the table below has been taken from "*Smoking and Health*."

TABLE 15.—*Age-adjusted death rates per 1,000 man-years for current smokers of cigarettes only (aged 35 and over), by amount smoked, in seven studies and for U.S. white males*

Study	Non-smokers	Current smokers of cigarettes only		U.S. white males, 1960
		Less than 1 pack	1 pack or more	
British doctors	15.8	19.2	23.2	22.9
Men in 9 States	[1] 14.4	[1] 22.4	[1] 27.1	[1] 22.6
U.S. veterans	12.0	18.1	23.9	22.9
California occupational	[1] 10.5	[1] 14.2	[1] 18.0	[1] 22.6
California legion	11.3	16.4	16.3	22.9
Canadian veterans	14.1	22.1	24.2	22.9
Men in 25 States	[2] 12.8	[2] 18.5	[2] 19.2	22.9

[1] Ages 60–69.
[2] These figures may be too low by about 1.7 percent, since the person-years used in the computation included some contribution by men who had not been fully traced.

Inspection of this table shows the following:

1. There are large differences among the study populations with respect to death rate.
2. With some exception, the death rate of all these populations (including heavy smokers) is way below that for white U.S. males. There are a great number of explanations that may be advanced to explain this. However, it is one thing to advance explanations to account for discrepancies in data in which no discrepancy should exist and another one to use these data plus the explanation as a basis for firm couclusions about a phenomena such as smoking and health.

In general, we may summarize that although a number of epidemiological studies have made available some information on the differences in death rates between smokers and nonsmokers, it is generally true that these populations seem to be highly selected, differ from each other and from the general population in their death rates, and have a very low followup response rate. The extent to which such sampling peculiarities can distort the observed pattern of disease for a population have been demonstrated and discussed (6) (44) (51) (52) (56). Until adequate and reasonably unbiased samples are obtained, the merits of the observations on disease patterns exhibited by these populations are difficult to judge.

Even if these populations are accepted as providing the best data available at the moment, the comparison of smokers and nonsmokers mortality made possible by them raises more questions than it provides answers for. Foremost among these are:

1. How to measure the effect of smoking, and
2. The problem of the overall versus the specific effect of smoking.

Measurement of the effect of smoking on disease

The comparisons of mortality incidence between smokers and nonsmokers has been based predominantly on mortality ratios. This mortality ratio is obtained by dividing the age specific death rate for disease of smokers by that of nonsmokers. The ratio should be in the approximate region of unity if no difference exists between smokers and nonsmokers with respect to the death rate of the specific disease. Table 19 (p. 102 from "Smoking and Health") which is relevant to the ensuing discussion is reproduced below.

TABLE 19.—*Total numbers of expected and observed deaths and mortality ratios for smokers of cigarettes only [1] in 7 prospective studies*

Underlying cause of death	Expected	Observed	Mortality ratio	Median mortality ratio	Non-smoker
Cancer of lung (162-3)	170.0	1,833	10.8	11.7	123
Bronchitis and emphysema (502, 527.1) [2]	89.5	546	6.1	7.5	59
Cancer of larynx (161)	14.0	75	5.4	5.8	8
Cancer of oral cavity (100-8)	37.0	152	4.1	3.9	27
Cancer of esophagus (150)	33.7	113	3.4	3.3	19
Stomach and duodenal ulcers (540-1)	105.1	294	2.8	5.0	67
Other circulatory diseases (451-468)	254.0	649	2.6	2.3	170
Cirrhosis of liver (581)	169.2	379	2.2	2.1	96
Cancer of bladder (181)	111.6	216	1.9	2.2	92
Coronary artery disease (420)	6,430.7	11,177	1.7	1.7	4,731
Other heart diseases (421-2, 430-4)	526.0	868	1.7	1.5	398
Hypertensive heart disease (440-3)	409.2	631	1.5	1.6	334
General arteriosclerosis (450)	210.7	310	1.5	1.7	201
Cancer of kidney (180)	79.0	120	1.5	1.4	59
All other cancer	1,061.4	1,524	1.4	1.4	742
Cancer of stomach (151)	285.2	413	1.4	1.3	203
Influenza, pneumonia (480-493)	303.2	415	1.4	1.6	169
All other causes	1,508.7	1,916	1.3	1.3	1,036
Cerebral vascular lesions (330-4)	1,461.8	1,814	1.3	1.3	1,069
Cancer of prostate (177)	253.0	318	1.3	1.0	198
Accidents, suicides, violence (800-900)	1,063.2	1,310	1.2	1.3	627
Nephritis (592-4)	156.4	173	1.1	1.5	98
Rheumatic heart disease (400-416)	290.6	309	1.1	1.1	185
Cancer of rectum (164)	207.8	213	1.0	0.9	150
Cancer of intestines (152-3)	422.6	395	0.9	0.9	307
All causes	16,653.9	26,223	1.68	1.65	11,168

[1] Current cigarettes only for 4 studies: all cigarettes (current and expected) for the two California studies and the study of men in 25 States.

[2] "Bronchitis and emphysema" includes "other bronchopulmonary diseases" for men in 9 States and Canadian veterans.

We find that cancer of the lung has the highest mortality ratio, bronchitis and emphysema the next highest, followed by cancer of the larynx, and so on. From this ranking the conclusion is reached by some that the most important effect of smoking is on cancer of the lung, etc. But does the mortality ratio really indicate what weight should be given to the association between smoking and various diseases? There are altogether 15,653.9 expected deaths from all causes. Of these, 6,430.7 would be expected to be due to coronary artery disease alone. It stands to reason that if nonsmokers have roughly 45 percent of all deaths due to coronary artery disease, smokers, even if all 26,223 deaths had been due to this cause could not have had a mortality ratio higher than 4. There is a limitation here to the maximum size of the mortality ratio. Yet the mortality ratio increase to 1.7 for coronary artery disease actually represents a very large number of excess deaths. On the other hand, the expected number of deaths due to cancer of the lung among smokers turns out to be 170.3. This represents roughly 1 percent of the total number of expected deaths. Therefore a relatively small increase in the lung cancer deaths among the smokers could possibly yield a large increase in the mortality ratio. The mortality ratio is therefore dependent on the actual proportion of deaths from specific causes within the population.

The question which now remains unanswered is if the increase in the percentage of death due to coronary artery disease observed in this population indicates a greater or a lesser effect of smoking than deaths due to cancer of the lung or bronchitis or emphysema or cancer of the larynx? Even if smoking had the effect ascribed to it, is this effect measured accurately by the mortality ratio? This is by no means a minor point. In terms of possible confounding hypotheses it would be very suggestive if one would say that the major effect of smoking is on coronary artery disease since some of the differences between smokers and nonsmokers are precisely in those medical regions which are usually associated with coronary artery disease. It should be pointed out here that according to Berkson's published calculations the effect of lung cancer is actually minimal as compared to that of certain circulatory diseases (6).

The measurement of the effect of smoking is important. The use of mortality ratio to define the specific effect of smoking, if such a definition is possible (and there is good reason to maintain that it is not) is of questionable validity.

What disease is caused by smoking?

One very serious question raised by the available epidemiological data concerns the increase in death for all causes for smokers as compared to nonsmokers. Whether or not one accepts the mortality ratio as valid, it is obvious that smokers in the samples died at a faster rate than nonsmokers from practically all diseases. There is only one disease, cancer of the intestine, for which smokers die at a lesser rate than do nonsmokers, and one disease, cancer of the rectum, for which the rates for both smokers and nonsmokers are alike. The conclusion that has been drawn in the past from such data was that smokers differ from nonsmokers in their total pattern of mortality. This has given rise to the serious question if one can ascribe an effect of smoking to all diseases? The conclusion that all excess mortality is caused by smoking has proven very unpopular in the past. It does seem unreasonable that one particular agent would cause all these damages. On the other hand it is not too unlikely to come up with consistent differences in all measures or in the whole pattern of illness if serious biases are introduced through inadequate sampling procedures. For instance my associates and I showed that under certain conditions a healthy population may be made to appear to have either a higher or a lower death rate than the comparable general population depending upon how one arranges the data (52).

Across the board differences between smokers and nonsmokers have to be recognized as one of the major difficulties in making the existing epidemiological data palatable. Some authors (including those responsible for "Smoking and Health") have chosen to bypass this problem by making a disease by disease comparison between smokers and nonsmokers and letting some outside criterion (such as statistical significance) decide on whether or not the observed difference indicates the existence of a real effect due to smoking. It is simple to demonstrate that such a procedure is statistically as well as logically unsound.

Let us assume we test whether or not differences in death rates relate to political persuasion. A large sample of white males is divided as to Republican or Democratic registration and followed for some time as in the smoking studies. A disease-by-disease comparison of death rates in both populations is made next. Where a large difference as measured by statistical test appears in the disease rate it is ascribed to differences in political belief.

Quite obviously no one would accept conclusions based on such a comparison. We would reason that even though no differences in the rate of demise of Democrats and Republicans may exist, random selection would almost assure that for some diseases more Democrats and for others more Republicans died. We would be concerned in learning something about the pattern of differences. We would be satisfied that no differences existed between the two groups if Democrats died at a faster clip for about half the diseases and at a slower rate for the other half.

The same reasoning must be followed if a difference does appear to exist for a large number of disease mortality ratios. Let it be assumed that there does exist a difference in mortality pattern between smokers and nonsmokers. One would expect that, by chance alone, for some diseases this difference would be larger and for others it would be smaller. Observing within the data that most of the diseases are different and few of them are alike one would be forced to the conclusion that the general pattern of mortality is different—not that only some of these diseases differ and others do not. To do any other way is to ignore some data and select others for one's purposes. The reason this point has become such a bone of contention is that obviously two kinds of conclusion can be drawn here. One can assume that cigarette smoking causes just practically every disease known to man or one could more reasonably assume that the differences exhibited in the various sample populations between smokers and nonsmokers are due to some factors other than smoking.

Other factors that could account for the observed difference between smokers and nonsmokers

It is interesting that the data as they are presented in "Smoking and Health" support rather well alternative conclusions that could well account for the differences in disease patterns between smokers and nonsmokers. One such very tempting alternative to the effect of smoking is that some individuals live in a style of life which is inimical to good health and that smoking is one of the characteristics of this style of life. On the other hand, other individuals live a style of life which is generally considered healthy of which nonsmoking is one of the ingredients. Thus the association, one observes, may not be between

cigarette smoking and disease, but it may be between a certain style of life and disease. (The following descriptions of study findings have been taken almost verbatim from the Surgeon General's report on "Smoking and Health.")

Several studies reported that heavy smokers also drink alcoholic beverages excessively (18), (33), (35). Friedman's type A men (the coronary type) tend to be heavy smokers (14). Smokers are said to be more easily angered and to eat more when under stress (55). They have been reported to marry oftener, to change jobs more frequently and to be more often hospitalized (30). The concentration of serum cholesterol has been found to be slightly higher in smokers than in nonsmokers (8), (9), (21), (36), (54), although some studies have found no relationship (1), 23). One investigator found also not only that serum cholesterol was higher in smokers than in nonsmokers but also that it remained higher in those who stopped smoking (11). Smokers also have higher heart rates than nonsmokers (7). One study found an excess of smokers who were 30 percent overweight and the subjects who were 40 percent or more overweight were all regular smokers. Also the nonsmokers had a greater frequency of individuals with 10 percent or more underweight than did the smokers (55). Smokers not only have certain physical characteristics that would make them appear to be candidates for some diseases especially of the circulatory system, but their psychological characteristics are in line with the hypothesis advanced here. The general picture emerging from all studies is one of smokers tending to live faster and more intensely and to be more socially outgoing. Studies, using behavioral rather than psychological tests support this picture (10) (35). Most studies support the contention that neuroticism defined, among others, by the existence of anxiety states, nervousness, somatic symptoms, unusual restlessness in terms of jobs and residence, is indeed associated with smoking habits (24) (30) (34) (38). Other relevant evidence includes the large differences between the mortality of smokers and nonsmokers when compared by marital status, educational levels, use of tranquilizers, and degree of exercise (p. 100, table 18, "Smoking and Health").

TABLE 18.—*Age-adjusted death rates per 1,000 men (over approximately 22 months) for variables that may be related to mortality*

Type of smoking	Long-lived parents and grandparents	Short-lived parents and grantparents	No previous serious disease	Previous serious disease
None	14.8	21.1	11.6	42.5
Cigarettes [1]	27.1	44.8	22.3	65.0
	Single	Married	Use tranquilizers	Do not use tranquilizers
None	26.0	18.9	29.1	18.2
Cigarettes [1]	50.1	33.0	52.4	31.8
	Educational level			
	No high school	Some high school	High school graduate	Some college	College graduate
None	22.7	20.0	16.9	18.3	15.8
Cigarettes [1]	35.2	34.5	35.5	34.2	29.4
	Degree of exercise [2]			
	None	Slight	Moderate	Heavy
None	23.8	14.7	11.0	9.5
Cigarettes [1]	34.1	25.5	20.8	19.7

[1] Smokers of more than a pack per day who inhaled moderately or deeply.
[2] Confined to men with no history of heart disease, stroke, high blood pressure, or cancer (except skin) who were not sick at the time of entry.

All the references cited above are included in the report on "Smoking and Health" as well as others that would indicate that smoking may be a response to frustration and failure to achieve status (20) and may be accompanied by impulsive and rebellious behavior (32) (35) (47). In short, a picture quite in harmony with our hypothesis of differences in style of life emerges both in physical and in psychological terms.

CONCLUSIONS

I have attempted to summarize some of the reasons why a number of investigators feel that the problem of the relation between smoking and health is far from closed. To the contrary, the evidence appears to point to a number of studies which ought to be done right now.

Summarizing the differences among investigators and especially between my own interpretation of the data and that of others I would stress again the following points:

1. Laboratory investigations using cigarette smoke as an independent variable have not been able to produce bronchogenic carcinomas in animals which ordinarily respond with this disease to a variety of irritants. This may be the strongest and most convincing piece of evidence warning investigators from the conclusion that smoking causes lung cancer.

2. Epidemiological studies have collected data with an eye to cost to such an extent that their results are too ambiguous for clear-cut interpretations.

The review of the existing evidence compels me to two major conclusions. The first one is that existing evidence does not establish any firm causal relationship between smoking and disease. The second is that existing evidence does indicate a number of important problem areas which should receive thorough study.

BIBLIOGRAPHY

1. Acheson, R. M., eJssop, W. J. E. Tobacco smoking and serum lipids in old men. Brit Med J 2: 1108–1111, 1961.
2. Auerbach, O., Gere, J. B., Forman, J. B. Petrick, T. G., Smolin, H. J., Muehsam, G. E., Kassouny, D. Y., Stout, A. P. Changes in the bronchial epithelium in relation to smoking and cancer of the lung. New Eng J Med 256: 97–104, 1957.
3. Auerbach, O., Petrick, T. G., Stout, A. P., Statsinger, A. L., Muehsam, G. E., Forman, J. B., Gere, J. B. The anatomical approach to the study of smoking and bronchogenic carcinoma. A preliminary report of 41 cases. Cancer 9: 76–83, 1956.
4. Auerbach, O., Stout, A. P., Hammong, E. C., Garfinkel, L. Bronchial epithelium in former smokers. New Eng J Med 267: 119–25, 1962.
5. Auerbach, O., Stout, A. P., Hammong, E. C., Garfinkel, L. Changes in bronchial epithelium in relation to cigarette smoking and in relation to lung cancer. New Eng J Med 265: 253–367, 1961.
6. Berkson, J., and Elveback, L. Competing exponential risks, with particular reference to the study of smoking and lung cancer. J.A.S.A. 55: 415, Sept., 1960.
7. Blackburn, H., Brozek, J., Taylor, H. L. Common circulatory measurements in smokers and nonsmokers. Circulation 22: 1112–1124, 1960.
8. Bronte-Stewart, B. Cigarette smoking and ischaemic heart disease. Brit Med J 1: 379–385, 1961.
9. Damon, A. Constitution and smoking. Science 134: 339–341, 1961.
10. Davis, R. Cigarette smoking motivation study. Research Services, London, 1956.
11. Dawber, T. R., Kannel, W.B., Revotskie, N., Stokes, J., Kagan, A., Gordon, T. Some factors associated with the development of coronary heart disease. Six years' followup experience in the Framingham study. Amer J. Public Health 49: 1349–1356, 1959.
12. Doll, R. Etiology of lung cancer. Advances Cancer Res 3: 1–50, 1955.
13. Essenberg, J. M. Cigarette smoke and the incidence of primary neoplasms of the lung in albino mice. Science 116: 561–2, 1952.
14. Friedmann, M., Rosenman, R. H. Association of specific overt behavior pattern with blood and cardiovascular findings. JAMA 169: 1286–1296, 1959.
15. Gilliam, A. G., Hilmore, B. K., and Lloyd, J. W. Trends of mortality attributed to carcinoma of the lung. The declining rate of increase. Cancer 14: 622–628, 1961.

16. Gordon, T., Crittenden, M., Haenszel, W. Cancer mortality trends in the United States, 1930–1955. Part II: End results and mortality trends in cancer. Nat Cancer Inst Monogr No. 6: 131–355, 1961.
17. Haenszel, W., Shimkin, M. B., Miller, H. P. Tobacco smoking patterns in the United States. Pub Health Monogr No. 45: 1–111, 1956.
18. Health, C. W. Differences between smokers and non-smokers. AMA Arch Int Med 101: 377, 1958.
19. Holland, J. J., Dissertatio inaugur. med. chir. sistens carcinoma labii inferioris absque sectione persanatum. In: Wolff, J. Die Lehre von der Krebskrankheit Jena, 1911. Vol. 2, p. 52–78.
20. Horn, D. Behavioral aspects of cigarette smoking. J. Chronic Dis 16: 383–95, 1963.
21. Karvonen, M., Keys, A., Orma, E., Fidanza, F., Brozek, J. Cigarette smoking, serum-cholesterol, blood-pressure, and body fatness. Observations in Finland. Lancet 1: 492–494, 1959.
22. Kehoe, R. A., Harben Lectures, J Roy Inst Public Health 24: 177, 1961.
23. Konttinen, A. Cigarette smoking and serum lipids in young men. Brit Med J 1: 1115–1117, 1962.
24. Lawton, M., Phillips, R. The relationship between excessive cigarette smoking and psychological tension. Amer J Med Sci 232: 397–402, 1956.
25. Leuchtenberger, C., Leuchtenberger, R., Doolin, P. F. A correlated histological, cytological, and cytochemical study of the tracheobronchial tree and lungs of mice exposed to cigarette smoke. I. Bronchitis with atypical epthelial changes in mice exposed to cigarette smoke. Cancer 11: 490–506, 1958.
26. Leuchtenberger, C., Leuchtenberger, R., Zebrun, W., Shaffer, P. A correlated histological, cytological, and cytochemical study of the Tracheobronchial tree and lungs of mice exposed to cigarette smoke. II. Varying responses of major bronchi to cigarette smoke. Absence of bronchogenic carcinoma after prolonged exposure, and disappearance of bronchial lesions after cessation of exposure. Cancer 13: 721–32, 1960.
27. Leuchtenberger, R., Leuchtenberger, C., Zebrun, W., Shaffer, P. A correlated histological, cytological and cytochemical study of the tracheobronchial tree and lungs of mice exposed to cigarette smoke. III. Unaltered incidence of grossly visible adenomatous lung tumors in female CF mice after prolonged exposure to cigarette smoke. Cancer 13: 956–8, 1960.
28. Levin, M. L., Goldstein, H., Gerhardt, P. R. Cancer and tobacco smoking. A preliminary report. JAMA 143: 336–8, 1950.
29. Lickint, F. Atiologie and Prophylaxe des Lungenkrebses. 2. Statistische Voraussetzungen zur Klarung der Tabakrauchätiologie des Lungenkrebses. Dresden and Leipzig, Theodor Steinkopff, 76–102, 1953.
30. Lilienfeld, A. Emotional and other selected characteristics of cigarette smokers and nonsmokers as related to epidemiological studies of lung cancer and other diseases. J Nat Cancer Inst 22: 259–82, 1959.
31. Lorenz, E., Stewart, H. L., Daniel, J. H., Nelson, C. V. The effects of breathing tobacco smoke on stain A mice. Cancer Res 3: 123–4, 1943.
32. Lynn, R. M. A study of smokers and non-smokers as related to achievement and various personal characteristics. (Abstract) In: Res Prog No. 464, p. 164, 1948.
33. Matarazzo, J. D., Saslow, G. Psychological and related characteristics of smokers and non-smokers. Psychol Bull 57: 493, 1960.
34. Matarazzo, R. M., Matarazzo, J. D., Saslow, G., Phillips, J. S. Psychological test and organismic correlates of interview interaction patterns. J Abnorm Soc Psychol 56: 329–38, 1958.
35. McArthur, C., Waldron, E., Dickinson, J. The psychology of smoking. J Abnorm Soc Psychol 56: 267–75, 1958.
36. Miller, D. C., Trulson, M. F., McCann, M. B., White, P. D., Stare, F. J. Diet blood lipids and health of Italian men in Boston. Ann Intern Med 49: 1178–1200, 1958.
37. Milmore, B. K., Conover, A. G. Tobacco consumption in the United States, 1880–1955. Public Health Mongr No. 45: 1–111, 1956.
38. Moodie, W. Smoking, drinking, and nervousness. Lancet 2: 188–9, 1957.
39. Muhlbock, O. Carcinogene Werking van Sigarettenrook bij Muizen. Nederl T. Geneesk. 99: 2276–8, 1955.
40. Neilsen, A., Clemmensen, J. Bronchial carcinoma—A pandemic. II. Incidence and tobacco consumption in various countries. Danish Med. Bull. 1: 194–9, 1955.

41. Peacock, P. R. Cigarette smoking by laboratory animals. Seventh International Cancer Congress, London, July 6–12, 1958. Abstracts of papers. p. 153.
42. Peacock, P. R. Cigarette smoking experiments. Brit. Emp. Cancer Campaign, 35th Ann. Rep., Part 2, 1957. p. 303.
43. Peacock, P. R. Experimental cigarette smoking by domestic fowls. Brit. J. Cancer 9: 461, 1955.
44. Raventos, Antolin, M. D. Radiologists and Epidemiology. Radiology, Vol. 74, No. 6, pp. 973–975, June 1960. (Editorial)
45. Saenger, E., Silverman, F., Turner, M. Neoplasia following therapeutic irradiation for benign conditions in childhood. Radiology 74: 889–904, 1960.
46. Sadowsky, D. A., Gilliam, A. G., Cornfield, J. The statistical association between smoking and carcinoma of the lung. J. Nat. Cancer Inst. 13: 1237–58, 1953.
47. Schonfeld, J. Special report to the Surgeon General's advisory Committee on Smoking and Health.
48. Smoking and Health. Report of the Advisory Committee to the Surgeon-General of the Public Health Service.
49. Sterling, T. D. Publication decisions and their possible effects on inferences drawn from tests of significance—or vice versa. Journal of The Statistical Association Vol. 54: 30–34, March 1959.
50. Sterling, T. D. Epidemiology of disease associated with lead. Archives of Environmental Health, Vol. 8: 333–348, Feb. 1964.
51. Sterling, T. D., Saenger, E. L., and Phair, J. J. Radiation epidemiology. Cancer 15: 489, 1962.
52. Sterling, T. D., Phair, J. J., and Rustagi, J. New developments in chronic disease epidemiology: competing risks and eligibility. American Industrial Hygiene Association Journal, 23: 433–446, Nov.-Dec. 1962.
53. Soemmerring, S. Th. De Morbis Vasorum Absorbentium Corporis Humani. Varrentrappii Wenneri, Traiectic ad Moenum, Publ. 1795. p. 109.

STATEMENT OF DR. HIRAM LANGSTON

I am Dr. Hiram Langston, thoracic surgeon. I was born in Rio de Janeiro, Brazil in 1912 of Southern Baptist missionary parents and educated through the sophomore year of college in local schools. I received my A.B. degree from the University of Louisville at age 18 and my M.D. degree from the same university at age 22. I then underwent 7 years of residency training in surgery and pathology. This resulted in a master of science (surgery) degree from the Postgraduate School of Medicine of the University of Michigan in 1941. I am certified by the American Board of Surgery (1942) and a founder member of the Board of Thoracic Surgery (1948).

During World War II I served as a thoracic surgeon in the Mediterranean theater of operations from 1942 to 1945, rising to the rank of major, Army of the United States. I was separated from the service in 1946. I was awarded the Army commendation ribbon, Bronze Star Medal, and the Order of Aeronautical Merit, officer grade, Brazilian Air Force.

I have held teaching appointments in the University of Michigan, Northwestern University, and Wayne State University at various times, being currently clinical professor of surgery, University of Illinois College of Medicine, Chicago, Ill.

I am chief of surgery at the Chicago State Tuberculosis Sanitorium, consultant in cardiopulmonary surgery at the Veteran's Administration Hospital, Hines, Ill., and civilian consultant to the U.S. 5th Army. I am on the staff of several hospitals in the Chicago area.

I am a member of various professional societies, including the American Medical Association, American College of Surgeons (fellow), American College of Chest Physicians, Western, Central, and American Surgical Associations, as well as the American Association for Thoracic Surgery, of which I was the secretary for 5 years between 1956–61.

I am emeritus member of the Board of Thoracic Surgery, currently a member of the Advisory Council for Thoracic Surgery of the American College of Surgeons, and representative from the American Association for Thoracic Surgery to the National Society for Medical Research.

As medical know-how has increased, clinical pictures have been analyzed more critically and disease entities of similar nature have become separated one from another. This has been true of the great group of pulmonary diseases. Tuberculosis has become distinguishable from other chronic granulomas, such as those produced by the fungi. Acute pneumonias have been classified more intimately and have become separable from disease resulting from bronchial obstruction. The various causes of bronchial obstruction have become recognizable. Among these, bronchogenic carcinoma or lung cancer has assumed preeminence. From vague recognition some 50 years ago, it has emerged as probably the commonest visceral cancer in men.

When the various faces of this disease were recognized, many sensitive persons were impressed by their number, even to suggesting a veritable epidemic. They were seized by a sense of panic.

The obvious result was a rather frantic search for some etiologic or causal factor. Among a myriad of suspects, ranging from tar roads to tuberculosis, the rising consumption of cigarettes, which seemed to parallel the increased recognition of lung cancer, was soon seized upon as a reasonable culprit.

Since the 1930's, a voluminous bibliography has developed around the etiology of this disease. Frustration in applying experimental and other methods of investigation to the clarification of the problem has lead to the emphasis on statistical association as the basis for the current contention that cigarette smoking is causative.

I am not versed in statistical methods and must accept what the experts in this field bring forth both for and against this concept.

It seems acceptable to me that there has been some actual increase in the incidence of bronchogenic carcinoma and that this increased number of cases is not explained solely by the development of greater diagnostic acumen on the part of medical practitioners in this as well as other countries. Furthermore, there appears to be very little room to doubt that there is some statistical association between cigarette consumption and the recognition of bronchogenic carcinoma. I cannot, however, take the step from statistical association to etiologic or causal factor. I do not believe that this statistical association proves causation. My reasons are primarily clinical.

I. INCIDENCE OF LUNG CANCER

A. *Frequency of the disease.*—There is no question but that cancer of the lung has been designated with increasing frequency as a cause of death or as a clinical diagnosis over the past 50 years. We need to merely note the fact that Adler in 1912 apologized for writing a book on such an obscure subject. Now in the United States we expect several thousand deaths in the current year from this disease. Several factors can be called upon to explain this.

1. Increased awareness of this as a fundamental cause of various pulmonary disorders. Since in most instances the cancer causes obstruction to the bronchus, the resultant pneumonitis, blood spitting, etc., has no doubt in the past been called and coded as pneumonia, tuberculosis, etc. This experience seems to be shared by virtually all of the reporting world.

2. Increased longevity. Better control of infectious diseases, accounting for high mortality in the younger age groups, has allowed an increased segment of the population to reach the so-called cancer age. This is almost certainly the reason why in Tuberculosis Sanatoria we see this disease much more often today than previously.

(3) There may well be an actual increase in the number of lung cancers. At the Veterans' Administration Hospital, Hines, Ill., where I am consultant in thoracic surgery, we have seen a definite rise in frequency of these cases on our wards in spite of the fact that Hines has changed from a national center for referral of such cases to a regional one, consequent to the expansion of the Veterans' Administration system. For example, in 1952 when Hines was a center for regional referrals of lung cancer in the greatly expanded Veterans' Administration system, we admitted 190 cases as opposed to 180 cases in 1945 when it was a recipient of national cases, under the old Veterans' Administration setup. The incidence has generally continued to rise in spite of the advent of two thoracic surgical services in new Veterans' Administration hospitals in the immediate area.

In sharp contrast, the case incidence of carcinoma of the colon and rectum, stomach, larynx, and esophagus, tended downward. The absence of an increase in larynx cancer corresponding with the apparent increase in lung cancer when

both sites are equally exposed to cigarette smoke, casts further doubt as to the validity of any causative role claimed for cigarette smoking.

B. *Onset of the rising incidence.*—It has been implied by the proponents of a causal relation between carcinoma of the lung and inhalation of cigarette smoke habitually, that the spiraling incidence followed the increased popularity of the cigarette.

The pronouncement by the Royal College of Physicians indicates that this occurred around the time of World War I, at least in England.

Interestingly enough, the meticulous German pathologists were impressed by a rising incidence of this condition in their caseload beginning before 1900. The cases increased not only in total numbers, but as a percentage of all cancers and as a percentage of all autopsies. Thus, bronchogenic carcinoma as a pathologically proved disease began its rising incidence before cigarette consumption became popular.

II. CANCER AGE

Allusion was made above to the "cancer age." This has been facetiously referred to as 3 to 83 years, but when dealing with bronchogenic carcinoma, the age of incidence is amazingly narrow in all series. This peak of age incidence is 50 to 65 years. The curve downward on either side of this peak is surprisingly steep. Certainly this is true below 45 and above 70 years of age, respectively. Our tables, based on an analysis of 2,570 veterans at Hines, present the same curve. The only age incidence study that differs from this is that of the Schneeberg miners, who developed the disease 10 or 15 years sooner, apparently as a result of their particular exposure. No comparable reduction of age of onset exists even as to the heaviest cigarette smokers.

It is of particular note that the same age incidence persists regardless of whether, how long, or how much the subject smokes. Thus, while it may be that there is a statistical association between smoking and the frequency of lung cancer, smokers do not seem to get it any earlier than nonsmokers regardless of the duration or amount of smoking. Certainly this fact justifies doubt of the hypothesis that smoking is a causal factor in lung cancer.

It appears, therefore, that there is little or no evidence of a dosage factor since the heavy smoker does not develop its cancer any earlier. This has been very eloquently elaborated upon by Professor Passey, who found that the age of onset of the cancer was not influenced by either the amount of smoking in terms of cigarettes per day nor the age at which the individual began smoking.

III. LOCATION OF THE CANCER

Another very impressive clinical fact that is inconsistent with any inhalant being a causal factor in this disease, has to do with the distribution of the cancers.

The trachea, as well as the principal bronchi of cigarette smokers, are alleged to show various and ominous changes, which range from the loss of cilia to so-called precancerous lesions. These do occur more frequently in the bronchi than in the trachea, but in the former location seem to be evenly distributed.

It is tremendously significant to me, however, that regardless of how grave sounding these changes may seem in these studies, cancer of the trachea is a medical rarity, even though exposed to all inhaled smoke. Furthermore, the appearance of a cancer simultaneously in each lung or, in these persons who have survived one lung cancer, the appearance of a second cancer later likewise is a medical rarity. I am speaking in terms of tens and not hundreds of cases in all the recorded medical literature.

IV. AIR POLLUTION

On the basis of different analyses, of carcinogenic substances do exist in the urban atmosphere in amounts far greater than the heaviest cigarette consumption might provide. The urban incidence (statistically) of lung cancer is almost always substantially greater than that in rural areas, thus pointing to air pollution as a possible etiologic or causal factor.

I cannot, however, accept air pollution as any more of a direct etiologic agent than inhalation of cigarette smoke and for the same reasons.

It is interesting to note that in the British report by the Royal College of Physicians, carcinogens were said to be present in cigarette smoke in minute amounts only.

v.

Admitting my inadequacy in the realm of statistical analysis, I nonetheless, wish briefly to point out that at least two studies suggest that the peak of incidence of cancer of the lung may be near or may have been reached. Thus, perhaps and hopefully, a declining phase in this problem may lie ahead. Already the rate of apparent increase of lung cancer has so declined that there is no longer a parallel with the still increasing consumption of cigarettes.

SUMMARY

In summary, I accept a statistical association between cigarette smoking and lung cancer, but do not consider that this proves smoking to be a cause of the disease.

The increase in diagnosed lung cancer cases is explainable by a variety of reasons but there has probably been some actual increase. The cause for this probable increase is not clear to me. This rising incidence began prior to the popularity of cigarettes, which casts doubt again on there being any causal relation between cigarette smoking and the disease.

Further, in spite of alleged changes of ominous character in the airway of habitual smokers, clinical cancers rarely occur in the trachea (windpipe), simultaneously in both lungs, or a second time in the survivor of one lung cancer.

Also, regardless of smoking habits, an individual developing a lung cancer will do so in the same very narrow age range—50 to 65 years.

Finally, there is some evidence that perhaps the peak of incidence in the lung cancer problem may be here now or may possibly have passed.

All of this evidence leads me to conclude that we still don't know the cause or causes of cancer of the lung. The continuing need for honest research in seeking the answer to this unsolved problem cannot be sidestepped merely because an apparent statistical association has spotlighted a convenient though probably innocent suspect.

BIOGRAPHICAL DATA

Place of birth: Rio de Janeiro; date of birth: January 12, 1912 (U.S.A. citizenship by derivative citizenship).

Father's name: Alva B. Langston; mother's name: Louise Foe Diuguid.

Education: Collegio Batista, Rio de Janeiro, Brazil, to 1928; Georgetown College, Kentucky, 1929; University of Louisville, Kentucky, 1929–30, A.B.; University of Louisville, Kentucky, 1930–34, M.D.; University of Michigan, Graduate School, 1939–41, M.S. (surgery).

Married: Helen M. Orth; date of marriage: June 22, 1941.

Children: Paula F. Langston, born June 15, 1946; Thomas O. Langston, born September 5, 1949; Carol E. Langston, born September 4, 1953.

BRIEF CAREER SUMMARY

Born of U.S. parents engaged in educational missions under the Southern Baptist Convention. Educated through sophomore year of college in Rio de Janeiro, subsequent education as outlined above. Elected to Theta Kappa Psi medical fraternity and Alpha Omega Alpha honorary medical fraternity. Internship: Garfield Memorial Hospital, Washington, D.C., 1934–35; resident in pathology, Garfield Memorial Hospital, 1935–37; assistant resident in surgery, University Hospital, Ann Arbor, Mich., 1937–38; resident in surgery, University Hospital, Ann Arbor, Mich., 1938–40; instructor in thoracic surgery, University Hospital, Ann Arbor, Mich., 1940–41; private practice and associate in surgery, Northwestern University, Chicago, Ill., 1941–42; February 1942 to February 1946, military service, Northwestern University sponsored hospital (12th general). Served in North Africa and Italy as chief of thoracic surgery. Rose to rank of major, AUS; ultimately awarded Army Commendation Ribbon, Bronze Star Medal and Ordem do Merito Aeronautico (Officer Grade) (Brazilian Air Force). Returned to Northwestern University with rank of assistant professor of surgery. In 1948 entered private practice of thoracic surgery in Detroit, Mich., and served as associate professor of surgery at Wayne University. Returned to Chicago in 1952 with appointments as follows: 1. associate professor of surgery at University of Illinois College of Medicine; 2. chief surgeon, Chicago State Tuberculosis Sanitarium, Department of Public Health, State of Illinois; 3. consultant in thoracic surgery to the Veterans' Administration hospital, Hines, Ill.; 4. on the staff of Grant Hospital, Henrotin Hospital, etc.; 5. appointed clinical professor of surgery at University of Illinois College of Medicine, 1962.

PRINCIPAL PROFESSIONAL OR BUSINESS ACTIVITIES

Diplomate, American Board of Surgery, 1942; founder member, Board of Thoracic Surgery, 1948; member, the Board of Thoracic Surgery, 1956–61; member of various committees of national and local societies; consultant in thoracic surgery, 5th Army, USA; consultant in thoracic surgery, Veterans' Administration, Washington, D.C.; secretary, American Association for Thoracic Surgery, 1956–61; member, Editorial Board of the John Alexander Series, Charles C. Thomas, publisher; member, Editorial Board, Journal of Thoracic and Cardiovascular surgery; U.S. representative to Editorial Board, Folha Medica, Rio de Janeiro, Brazil.

Home address: 952 Pine Tree Lane, Winnetka, Ill.

Professional or business address: 55 East Washington Street, Chicago, Ill., 60602.

Membership in medical societies: American Association for Thoracic Surgery; American College of Chest Physicians (fellow); American College of Surgeons (fellow); American Medical Association; American Surgical Association; Central Surgical Association; Chicago Medical Society; Chicago Surgical Society; Illinois Medical Society; Illinois Surgical Society; The Institute of Medicine of Chicago; Pan-Pacific Surgical Association; Society for Thoracic Surgeons; and Western Surgical Association.

Membership on hospital staffs: clinical professor of surgery, University of Illinois College of Medicine; chief of surgery, Chicago State Tuberculosis Sanitarium, Department of Public Health, State of Illinois; consultant in thoracic surgery, Veterans' Administration hospital, Hines, Ill.; Grant Hospital; Henrotin Hospital; Augustana Hospital; Lake Forest Hospital; and St. Joseph Hospital.

BIBLIOGRAPHY

1. The Problem of Catgut Sensitivity and Its Relation to Wound Healing; Annals of Surgery, 115,1: 121–147, January 1942.
2. Empyema: Abstract in Quarterly Bulletin of Indiana University Medical Center, Indianapolis, Ind., 4: October 1942.
3. The Treatment of Intrathoracic Wounds; with William M. Tuttle, M.D., and Robert T. Crowley, M.D.; Abstract in the Medical Bulletin of the Mediterranean Theater of Operations, 2,6: 142–149, December 1944.
4. The Treatment of Intrathoracic Wounds; with William M. Tuttle, M.D. and Robert T. Crowley, M.D.; Surgery, Gynecology, and Obstetrics, 81,2: 158–168, August 1945.
5. The Pathology of Chronic Traumatic Hemothorax; with William M. Tuttle, M.D.; Journal of Thoracic Surgery, 16,2: 99–116, April 1947.
6. The Treatment of Organizing Hemothorax by Pulmonary Decortication; with William M. Tuttle, M.D.; Journal of Thoracic Surgery, 16,2: 117–126, April 1947.
7. Lung Mobilization—Its Indications in the Management of the "Captive" Lung; Surgery, Gynecology, and Obstetrics, 85,3: 301–307, September 1947.
8. Pleuropulmonary Manisfestations of Amebiasis; with R. T. Fox, M.D.; Archives of Surgery, 55: 618, November 1947.
9. The Indication for Posterior Transpleural Bronchotomy in the Management of Intrabronchial Tumors; with R. T. Fox, M.D.; Surgery, Gynecology, and Obstetrics, 86,2: 192–196, February 1948.
10. Intrabronchial Fibroma Managed by Posterior Transpleural Bronchotomy; with R. T. Fox, M.D.; The Proceedings of the Institute of Medicine of Chicago, Chicago Surgical Society, 17,2: 53, February 15, 1948.
11. Nonneoplastic Tumefaction of Rib—Report of a Case; with Edward Bigg, M.D.; Quarterly Bulletin of Northwestern University Medical School of Chicago, 22,1: 56–58, Spring Quarter, 1948.
12. The Present Status of Pulmonary Decortication; Editorial in Surgery, Gynecology & Obstetrics, 87,4: 478–480, October 1948.
13. Benign Endobronchial Tumors: Transactions of the 45th annual meeting of the National Tuberculosis Association, 1949.
14. The Use of Interstitial Radon Seeds and Needles in Inoperable Lung Cancer; with Irving M. Ariel, M.D., Jerome R. Head, M.D. and Edward E. Avery, M.D.; Cancer, 2,4: 581–586, July, 1949.
15. Primary Carcinoma of the Lung: A Clinical Study of 1205 Cases; with Irving M. Ariel, M.D.; Edward E. Avery, M.D., L. Kantor, M.D. and Jerome R. Head, M.D.; Cancer, 3,2: 229–239, March, 1950.

16. Thoracic Surgery in the 12th General Hospital (U.S.); Quarterly Bulletin of Northwestern University Medical School of Chicago, 24,3: 210–221, Fall Quarter, 1950.
17. Esophageal Duplications; with William M. Tuttle, M.D. and T. B. Patton, M.D., Archives of Surgery, 61: 949–956, November, 1950.
18. Benign Endobronchial Tumors; A Collective Review, International Abstracts of Surgery in Surgery, Gynecology & Obstetrics, 91,6: 521–535, December, 1950.
19. The Perivascular Space of the Pulmonary Vessels: An Anatomic Demonstration; with Alfred M. Tocker, M.D.; The Journal of Thoracic Surgery, 23,6: 539–545, June, 1952.
20. Intrathoracic Surgical Procedures in Patients Past the Age of 60; with Daniel C. Campbell, Jr., Major, USAF (MC); Journal of the American Geriatrics Society, 3,5: 330–336, May, 1955.
21. Rounded Intrathoracic Lesions; with Donald W. Springer, M.D.; Paul E. Geiger, M.D.; The American Journal of Roentgenology, Radium Therapy and Nuclear Medicine, 75,5: 827–849, November, 1955.
22. Surgery of the Chest; Chapter No. 7 in "The Recovery Room—Immediate Postoperative Management", W. B. Saunders Co., Philadelphia & London, 1956.
23. The Treatment of Metastatic Pulmonary Malignancy; with Charles R. Kelly, M.D.; The Journal of Thoracic Surgery, 31,3; 298–315, March, 1956.
24. The Diagnosis of Pulmonary Lesions; with Noble O. Correll, Jr., M.D.; Illinois Medical Journal, 109,3: March, 1956.
25. An Analysis of the Late Results of Thoracoabdominal Wounding; with William M. Tuttle, M.D., and Robert T. Crowley, M.D.; American Journal of Surgery, 91,4: 578–580, April, 1956.
26. Polypoid Endobronchial Tumors; with Richard C. Powers, M.D. and Melvin C. Godwin, Ph. D. & M.D.; Archives of Surgery, 72 96: 984–990, June 1956.
27. The Cardiorespiratory Dynamics of Controlled Respiration in the Open and Closed Chest; with Archer S. Gordon, M.D., Ph. D. (By Invitation), Charles W. Frye, M.S. (By Invitation); Journal of Thoracic Surgery, 32,4: 431–453, October, 1956.
28. Protective Mechanisms of the Tracheobronchial Tree; with Noble O. Correll, Jr., M.D., Clinical Medicine, 4,1: 61, January, 1957.
29. The Surgical Treatment of Pleural Tuberculosis; Chapter VIII in the "Surgical Management of Pulmonary Tuberculosis"; with Noble O. Correll, Jr., M.D.; Charles C Thomas—Publisher, Springfield, Illinois, 1957.
30. Postoperative Sodium Excretion Following Administration of Hypertonic Sodium Chloride Solution; Joseph L. Kovarik, M.D. (By Invitation) and John F. Laws, M.D. (By Invitation); Sponsored by Hiram T. Langston, M.D.; Journal of Thoracic Surgery, 34,5: 624–630, November, 1957.
31. Pulmonary Lymphatic Drainage in the Dog; with Noble O. Correll, Jr., M.D.; Surgery, Gynecology & Obstetrics, 107: 284–286, September, 1958.
32. The Postoperative Chest—Radiographic Considerations Following Thoracic Surgery; with Anton M. Pantone, M.D. and Myron Melamed, M.D.; John Alexander Monograph Series—No. 2, Charles C. Thomas—Publisher, Springfield, Illinois, 1957.
33. The Surgery of Pulmonary Tuberculosis; Presented at the Forty-third Annual Meeting of the Radiological Society of North America, Chicago, Illinois, November 20, 1957; published in Radiology, 71,3: 345–347, September, 1958.
34. Pleuropneumonectomy in Tuberculosis; with Frank J. Milloy, Jr., M.D.; Diseases of the Chest, 34,6: 593, December, 1958.
35. The Incidence of Blood Vessel Invasion in Bronchogenic Carcinoma; with John F. Laws, M.D., Elizabeth A. McGrew, M.D., Clarence Heidenreich, M.D. and Mimi D. Slominski, M.D.; Surgery, Gynecology & Obstetrics, 107: 704–708, December, 1958.
36. Surgery of Pulmonary Tuberculosis; Editorial in the Illinois Medical Journal, 114,6: 293–294, December, 1958.
37. Biopsy Procedures in the Diagnosis of Pulmonary Disease; The Medical Clinics of North America, 43,1: 291–296, W. B. Saunders Co., January, 1959.
38. Persistent Subarachnoid-Pleural Space Fistula: A Case Report; with Frank J. Milloy, M.D. and Nobel O. Correll, M.D.; Journal of the American Medical Association, 169: 1467, March, 1959.

39. The Bacterial Flora of the Human Tracheobronchial Tree; with Nobel O. Correll, Jr., M.D., Ralph H. Hubble, Ph.D. and Kenneth C. Johnston, M.D.; The Journal of Thoracic Surgery, 37,3: 367–370, March, 1959.
40. Space Problems in Extensive Resection for Pulmonary Tuberculosis: The Use of Pre-resection Tailoring Thoracoplasty; with Frank J. Milloy, M.D. and Ahmed Kadhem, M.D.; The Journal of Thoracic Surgery, 37,4: 442–445, April, 1959.
41. Pneumonectomy in the Management of Pulmonary Tuberculosis; with Frank J. Milloy, M.D.; Surgery, Gynecology & Obstetrics, 110: 658–664, June, 1960.
42. Chemotherapy in Resection for Pulmonary Tuberculosis; Problems of Extensive Disease and Drug-Resistant Organisms; with Marjorie M. Pyle, M.D. and Karl H. Pfuetze, M.D.; American Review of Respiratory Diseases, 82,1: 51–58, July, 1960.
43. Surgery in the Treatment of Pulmonary Tuberculosis; with John W. Brouhard, M.D. and Frank J. Milloy, M.D.; Archives of Surgery, 81: 269–274, August, 1960.
44. Injuries of the Chest; Chapter in book, "First Aid", 5th Edition, edited by Warren H. Cole, M.D., Charles B. Puestow, M.D.; Appleton Century Crofts, Inc. Publishers, New York, N.Y.; 1960.
45. The Surgical Treatment of Metastases to the Lung; Chapter No. 24 in "The Treatment of Cancer and Allied Diseases", A Comprehensive Treatise, 2d Edition; 4: 413–423; edited by G. T. Pack, M.D. and I. M. Ariel, M.D.; Paul B. Hoeber, Inc., Publishers, Medical Division of Harper & Brothers, 1960.
46. Pulmonary Tuberculosis; Chapter No. 7 in "Surgical Diseases of the Chest", edited by Brian Blades, M.D. with William M. Tuttle, M.D.; C. V. Mosby Co., St. Louis, Mo., Publisher, January, 1961.
47. Surgery of the Bronchus; The Western Journal of Surgery, Obstetrics & Gynecology, 69,4: 249–252, July–August, 1961.
48. Bilateral Simultaneous Bronchogenic Carcinoma: Report of a Case Treated Surgically; with Joseph C. Sherrick, M.D.; Journal of Thoracic and Cardiovascular Surgery; 43,6: 742–751, June, 1962.
49. Pulmonary Tuberculosis, Lobectomy & Hemoptysis; edited by William J. Donnelly, M.D., Chief, Section of Hematology; Report from the Clinicopathologic Conference, Veterans Administration Hospital, Hines, Illinois; 32:3; September, 1962.
50. Patterns of Bronchial Arborization in the Left Upper Lobe: A Review of 500 Bronchographic Studies; with Ann Stitt, M.D. and Frank J. Milloy, M.D.; Quarterly Bulletin of Northwestern Medical School of Chicago, 36,3: 253, Fall Quarter, 1962.
51. Experiences with Autotransfusions; with George Milles, M.D. and William Dalessandro, M.D.; Surgery, Gynecology & Obstetrics, 115: 689–694, December, 1962.
52. Pre-resection Radiation for Bronchogenic Carcinoma; with L. Penfield Faber, M.D. and George R. Kaiser, M.D.; The Journal of Thoracic and Cardiovascular Surgery, 46,2: 227–231, August, 1963.
53. Further Experiences with Autogenous Blood Transfusions; with George Milles, M.D. and William Delessandro, M.D.; presented before the American Surgical Association, Phoenix, Arizona, April 3–5, 1963; published in Annals of Surgery, 158:3: 333–337; September, 1963.
54. The Thorax, Pleura and Lungs Chapter 13 in "Christopher's Textbook of Surgery", 8th Edition, Edited by Loyal Davis, M.D.; W. B. Saunders Company, Philadelphia—Publishers, 1964; pp. 389–430
55. Injuries of the Chest Chapter in book, "First Aid", 6th Edition, Edited by W. H. Cole, M.D., C. B. Puestow, M.D.; Appleton Century Crofts, Inc., New York, N.Y.—Publishers
56. Tracheostomy and Assisted Ventilation: Use in Respiratory Insufficiency in the Postsurgical Patient; with W. E. Neville, M.D., A. Spinazzola, M.D., and L. P. Scicchitano, M.D.; Presented at the Centural Surgical Association Meeting, Rochester, Minnesota, February 29, 1964. Published in Archives of Surgery, 89; 3: pp. 149–157, July 1964
57. Treatment of Metastasis to Lungs Chapter in "Progress in Clinical Cancer", Edited by Irving Ariel, M.D.; Grune & Stratton, Inc., New York, N.Y.—Publisher (In Press)
58. Autotransfusions with George Milles, M.D.; The Modern Hospitals; 102, 5; pp. 104–105; May, 1964

59. Pulmonary Tuberculosis Chapter 7 in "Surgical Diseases of the Chest", Edited by Brian Blades, M.D., with William M. Tuttle, M.D.; C. V. Mosby Co., St. Louis, Mo., Publisher, in press Second Edition
60. The Thorax, Pleura and Lungs Chapter 13 in "Christopher's Textbook of Surgery", 8th Edition, Edited by Loyal Davis, M.D.; W. B. Saunders Company, Philadelphia—Publishers, Second Printing in press

---

STATEMENT OF JACK M. FARRIS, M.D., LOS ANGELES, CALIF.

My name is Jack M. Farris. I am a general surgeon and a substantial portion of my life has been spent in the care of patients suffering from cancer of all parts of the body.

By the age of 24, I had received an A.B., B.S. and M.D. degree from the University of Nebraska. During the following 10 years (1937–47), I was associated with the University of Michigan both in participation and direction of postgraduate activities in the medical school. I became assistant professor of surgery there, where I directed research, participated in the teaching activities of both graduate and undergraduate levels and assumed independent responsibility for the surgical care of approximately 50 percent of the total University Hospital population in general surgery. During the War, I served approximately 24 months overseas as a surgeon in the University of Michigan unit and for a time was attached to General Patton's 3d Army during the campaign through Germany and during this time received the Bronze Star.

At the present time, my chief activities are concerned with the surgical treatment of patients at the Good Samaritan Medical Center in Los Angeles. I am associate clinical professor of surgery at the University of California in Los Angeles and a consultant in surgery for the Veterans' Administration, for whom I direct the surgical activities of their institutions at Long Beach, Calif., Tucson, Ariz., Phoenix, Ariz., Prescott, Ariz., and others.

I am certified by the American Board of Surgery, holding certificate No. 1539. I am a member of the cancer committee of the American College of Surgeons and section chief in charge of cancer activities for the College of Surgeons for area 11, which includes California, Arizona, Nevada, and Hawaii. I have published a number of scientific articles and have written several chapters for surgical texts. I belong to a number of surgical societies, the details of which are in the attached curriculum vitae.

I have followed with interest throughout the past 10 years the evidence for and against the thesis that cigarette smoking has a causal relationship with cancer of the lung. It is only natural, therefore, that I have read with interest "Smoking and Health," the report of the Advisory Committee to the Surgeon General of the Public Health Service. I do not believe that lung cancer has been shown to be caused by cigarette smoking. In my opinion, any conclusion to the contrary is not justified—particularly from the evidence at hand thus far. The report of the Surgeon General does not resolve but only adds to this controversy, in my opinion, and lends further evidence to support the frequent observation that statistics are misleading.

Many of the data presented are contradictory and, to say the least, confusing For example, on page 112, it states: "Death rates for current pipe smokers were little if at all higher than for nonsmokers * * * Ex-pipe smokers, on the other hand, showed higher death rates than both nonsmokers and current smokers in four out of (the) five studies (reported)." A possible conclusion to be drawn here is that if one once acquires the pipe smoking habit, he must never quit for fear of actually increasing his liability to cancer of the lung. Hammond and Horn, on the other hand, suggest that a possible explanation may be that a substantial number of pipe smokers stop smoking because of illness. But no one has data to show which explanation is correct, if, indeed, either one is. We can only speculate.

On page 133, in a discussion on the sex ratio of cancer of the lung, the report states: The lung cancer sex ratio of 1.5 to 1 in 1930 has steadily incerased during the intervening period to the current value of over 6 to 1, that is, for every one female who develops cancer of the lung there are six males. This suggests that cancer of the lung has little or no relationship to cigarette smoking because, in spite of the fact that more and more females have acquired the habit in the past 30 years, the disparity between the incidence in males and females is increasing.

In this connection, I direct your attention to table III on page 156, where Mills and Porter in 1957 report on 94 cases of cancer of the lung occurring exclusively in females. It clearly states that 83 percent of these cancer victims were nonsmokers and only 73.3 percent of the females in this study without lung cancer were nonsmokers. A possible conclusion from these statistics is that it is safer for females to smoke than not to smoke.

Furthermore, cancer of the lung is more common among the poor than the rich—almost twice as much. There is no evidence to show, however, that consumption of tobacco is high in the low income group and it may be even less. Another point of interest. Cancer of the lung is more common in Britain, perhaps twice as much as in this country, where, on the other hand, significantly less tobacco is consumed. Even British males who are transplanted to New Zealand and Australia, where they reside for many years, have a higher incidence of cancer of the lung than the natives of these countries.

I quote from page 165: "Most experiments in which tobacco tars (these are condensates of tobacco combustion) are brought into direct contact with the lung and wind pipe of experimental animals have yielded negative results." It has always interested me that in humans that the deeply stained fingers of the habitual smoker never develop cancer of the skin. It has also interested me that the windpipe of man, which receives the initial impact of the inhaled smoke, is rarely the site of cancer. The common locations are out in the fine branches of the windpipe—areas which have little or no contact with the inhaled smoke.

As I have discussed this problem with physician friends throughout the country, it has become apparent that there are three groups of individuals in our profession.

There are those, first of all, who have a firm conviction that there is a definite relationship between cancer of the lung and cigarette smoking and a second group who feel just as strongly that there is little or no relationship.

There is a third group of physicians, however, who are undecided. I fall in this group. In other words, I believe that it is premature to make any far-reaching conclusions from the evidence at hand thus far and that we should continue to make careful observations based upon logic and careful analysis of more statistics and infinitely more experimental and clinical evidence than are available at the present time.

According to the Hammond-Horn calculations as published in the surgeon General's report, the highest risk group composed of heavy smokers suffered a rate of 239 lung cancer deaths per 100,000 population as opposed to 27 per 100,000 among nonsmokers. Although this ratio is high and impressive, if one applies reverse English, it is apparent that more than 99½ percent of heavy smokers are not victims of lung cancer. If cigarettes are cancer causing, why does this large number of heavy smokers escape? Do they have a built-in protection or immunity? We do not know, but the comparatively very small number of heavy smokers affected makes me wonder whether the more likely explanation is that cigarettes are not the culprit. A similar problem exists in attempts to pinpoint the possible causes of cancer of the stomach, for example. Two years ago, I visited five medical schools in Japan, hoping to uncover information concerning cancer of the stomach. As you may know, the incidence in Japan is 20 to 30 times greater than in this country. As a matter of fact, 60 percent of all males and 30 percent of all females who die from cancer in Japan die from cancer of the stomach. Cancer of the lung is extremely rare. From the statistical point of view, this high incidence of cancer of the stomach can easily be correlated with the drinking of hot tea or just as easily be related to the ingestion of large amounts of rice. I would suspect, however, that neither of these factors is the cause. It is further of interest that cancer of the stomach in Japan is more common among the poor premature far-reaching conclusions before sufficient data are at hand. There is also evidence to show that it is gradually diminishing in its incidence. Furthermore, cancer of the stomach in the United States in 10 of our largest cities has dropped 50 percent in incidence during the past decade.

There is further evidence to show that, as cancer of the stomach declines, cancer of the distal gastrointestinal tubes (i.e., the colon) is becoming more prevalent. We have no explanation for these facts. I only mention them to emphasize the numerous complexities in the behavior of cancer and the danger of making premature far-reaching conclusions before sufficient data are at hand. There is evidence at the moment that the incidence of cancer of the lung may have reached its peak or plateau and in the next decade will also decline irrespective of the consumption of tobacco—following the pattern of cancer of the stomach.

Therefore, in summary, I believe that all thoughtful physicians are concerned over the problem of cancer, regardless of what part of the body is involved. As far as the cancer of the lung problem is concerned, there are those who think that smoking is important and those who think it is not. I am not certain. I simply say that it is too early to make any far-reaching conclusions from the evidence at hand and that a definite possibility exists that smoking has little or nothing to do with the incidence of cancer of the lung. I hope to keep an open mind.

CURRICULUM VITAE—JACK MATTHEWS FARRIS, M.D.

Born: Litchfield, Ill., November 9, 1912.
Education:
A.B. (1933); B.S. (1934); M.D. (1937), University of Nebraska.
Intern, University of Michigan Medical School 1937–38.
Resident, University of Michigan Medical School 1938–39.
Resident in surgery, University of Michigan Medical School 1939–40.
Instructor in surgery, University of Michigan Medical School 1940–43.
Formerly assistant professor of surgery, University of Michigan Medical School.
U.S. Medical Corp (European theater) 1943–46.
Present appointments:
Board of directors, Hospital Service of Southern California.
Consultant in surgery, Veterans' Administration Hospital, Long Beach.
Area consultant in surgery, Veterans' Administration, San Francisco.
Surgical staff, the Hospital of the Good Samaritan.
Surgical staff, Methodist Hospital of Southern California.
Associate professor of surgery, University of California Medical School.
Section chief, cancer committee, American College of Surgeons.
Medical societies:
Diplomate of American Board of Surgery.
Fellow of American College of Surgeons.
American Surgical Association.
Society of University Surgeons.
Pacific Coast Surgical Association.
Frederick A. Coller Surgical Society.
Los Angeles Surgical Society.
Bay District Surgical Society.
American Medical Association.
California Medical Association.
Los Angeles County Medical Association.
Publications: See attached sheets.

BIBLIOGRAPHY

1. The Relation of Cartilage to the Repair of Bone, S.G. & O. 66: 173 (Feb. 1) 1938. (With J. D. Bisgard.)
2. Tuberculosis of the Lung; Case Report, J. Thorac. Surg. 9: 108 (Oct.) 1939. (With C. Haight.)
3. The Role of Vitamin K in the Treatment of Obstructive Jaundice, Univ. Hosp. Bull., University of Michigan 6: 33 (May) 1940.
4. The Surgery of Modern Warfare, S.G. & O. 72: 15 (Jan.) 1941. (With F. A. Coller.)
5. The Management of the Jaundiced Patient: with Special Reference to Vitamin K, S.G. & O. 73: 21 (July) 1941. (With F. A. Coller.)
6. Progress in Surgery, in Encyclopedia Americana, New York, American Corp., 1942.
7. Tissue Reactions to Suture Materials; A Preliminary Report, Ann. Surg. 114: 159 (July) 1941.
8. Tissue Reactions to Suture Material as Observed in the Anterior Chamber of the Rabbit's Eye; A Preliminary Report, Univ. Hosp. Bull., Univ. of Mich 7: 61 (Aug.) 1941.
9. Discussion on Meade, William H. and Long, Carroll H: The Use of Cotton as a Suture Material, with Particular Reference to its Clinical Application, J.A.M.A. 117: 2: 40 (Dec. 20) 1941.
10. Wounds of Warfare, J. Lab. & Clin. Med. 28: 441 (Jan.) 1943. (With F. A. Coller.)
11. Total Gastrectomy; Effects upon Nutrition and Hematopoiesis, Surgery 13: 823 (June) 1943. (With H. K. Ransom.)

12. Surgical Treatment of Long-Standing Deep Phlebitis of the Leg; A Preliminary Report, Surgery 15: 749 (May) 1944. (With R. Buxton, C. A. Meyer, and F. A. Coller.)
13. The Effect of Streptomycin in "Closed-Loop" Appendicitis; An Experimental Study, Univ. Hosp. Bull., Univ. of Michigan 12: 90 (Oct.) 1946. (With H. Romack.)
14. Some Observations on Wound Healing; A Clinical Study, with a Note on Topical Chemotherapy and Secondary Closure, S.G. & O. 84: 203 (Feb.) 1947. (With T. D. Jones.)
15. The Effect of Streptomycin on Experimentally Induced Appendicitis, Surgery 22: 305 (Aug.) 1947. (With H. Romack.)
16. The Hernia Problem, with Reference to a Modification of the McVay Technique, Surgery 24: 293 (Aug.) 1948. (With J. Ettinger and J. A. Weinberg.)
17. Transverse versus Vertical Abdominal Incision, Proc. Pan-Pacific Surg. Assn. 4th Congress, 1947, Honolulu, p. 7.
18. Surgical Aspects of Abnormal Twinning, Surgery 28: 443 (Aug.) 1950. (With R. C. Bishop.)
19. A Method for Removal of an Open Swallowed Safety Pin from the Stomach, Bull. Moore-White Med. Foundation 1: 14 (Sept.) 1949.
20. Surgical Aspects of Abnormal Twinning, Bull. Moore-White Med. Foundation 1: 3 (March) 1950. (With R. C. Bishop.)
21. Conservation in the Surgical Treatment of Benign Gastric Ulcer, Surgrey 30: 256 (July) 1951. (With F. B. Wilkins and J. A. Weinberg.) Also in Bull. Moore-White Med Foundation 2: 35 (Sept.) 1951.
22. The Surgical Treatment of Malignant Melanoma, Bull. Moore-White Med. Foundation 3: 27 (Sept.) 1952.
23. Surgery of Inguinal Hernia, Modern Medicine, p. 171 (Sept. 15) 1952.
24. The Origin and Treatment of Malignant Melanoma, California Med 78: 110 (Feb.) 1953.
25. Peripheral Arterial Embolism, Bull. Moore-White Med. Foundation 4: 20 (March) 1953. (With H. Drake.)
26. Gastric Cancer, with a Consideration of Total Gastrectomy, Bull. Moore-White Med. Foundation 4: 44 (Sept.) 1953.
27. Pulmonary Embolism, Western J. Surgery, Obst. & Gyn. *61:* 524 (Sept.) 1953.
28. Cancer of the Parathyroid Glands; 4 Cases among 143 Patients with Hyperparathyroidism; Discussion of Paper by Cope, Oliver; Nordi, George L. & Castleman, Benjamin. Ann. Surgery *138*: 651 (Oct.) 1953. Discussion pp. 670–671.
29. A Useful New Tissue Forceps, Bull. of Instruments of Particular Interest to The Surgeon *2*: 5, 1954 V. Mueller & Co.
30. Gastric Cancer, with a Consideration of Total Gastrectomy, Am. J. Gastroenterology, *22*: 203 (Sept.) 1954.
31. Thrombosis and Embolism, Surg. Clin. North America. *34*: 1271 (Oct.) 1954.
32. Evaluation of Vagotomy with Gastroenterostomy Performed for Chronic Duodenal Ulcer (Discussion of Stanley O. Hoerr's paper), Surgery *38*: 149 (July) 1955.
33. Isolated Lipodystrophy, A Form of Mesenteric Tumor (Discussion of J. T. Crane, M. J. Aguilar, and Orville F. Grimes) Am. J. Surg. *90*: 169 (Aug.) 1955.
34. An Evaluation of Temporary Gastrostomy, Ann. Surgery, *144*: 3 (Sept.) 1956. (With G. K. Smith)
35. Vagotomy, Clinical Results, California Medicine *85*: 394–398, (Dec.) 1956. (With G. K. Smith)
36. Malignant Melanoma—Rationale of Treatment, Current Surgical Management, W. B. Saunders Co., 1957, pp. 447–451. (With G. K. Smith)
37. The Rationale of Vagotomy and Pyloroplasty in the Management of Bleeding Duodenal Ulcer, J. A. M. A. *166*: 8 (Feb. 22) 1958. (With G. K. Smith)
38. Vagotomy and Pyloroplasty in Chronic Duodenal Ulcer with Special Reference to Technique, A.M.A. Arch. Surg. *78*: 652 (May) 1959. (With G. K. Smith)
39. Current Surgical Concepts of Gallbladder Disease, The Medical Clinics of North America, W. B. Saunders Co. *43:* 4 (July) 1959. (With G. K. Smith)
40. Umbilical Hernia: An Inquiry into the Principle of Imbrication and a Note on the Preservation of the Umbilical Dimple, Am. J. Surg. *98*: 2 (Aug.) 1959. (With G. K. Smith, and A. S. Beattie)

41. Hepatohypercholecterolemic Cirrhosis—Report of a Case Implicating Chlorpromazine as the Etiologic Agent, California Medicine, *91*: 154–155, (Sept.) 1959. (With A. S. Beattie and G. R. Frampter)
42. Vagotomy and Pyloroplasty: A Solution to the Management of Bleeding Duodenal Ulcer, Ann. Surg., Vol. 152, No. 3 (Sept.) 1960. (With G. K. Smith)
43. Hypothermia in Acute Surgical Emergencies, W. Jr. Surg., Obs. & Gyn., *69*: 67–72, (March–April) 1961. (With Dave Comar)
44. Re-evaluation of Temporary Gastrostomy as a Substitute for Nasogastric Suction, Am. Jr. Surg., Vol. 102, (Aug.) 1961. (With G. K. Smith)
45. Panel Discussion on Pancreatic Disease, Am. Jr. of Gastroenterology, Vol. 34, No. 4, (October) 1960.
46. An Unusual "Steering-Wheel Injury:" Traumatic Bowel Resection with Recovery (in Press).
47. Role of Pyloroplasty in the Surgical Treatment of Gastric Ulcer, Ann. Surg. Sup., Vol. 154, No. 6, (December) 1961. (With G. K. Smith)
48. The Pathologic Effects of Metallic Foreign Bodies in the Pulmonary Circulation, Jr., Thor. and Cardiovas. Surg., Vol. 38, No. 5, pp. 670–684, (November), 1959. (With L. Brewer et al.)
49. Vagotomy and Pyloroplasty for Bleeding Duodenal Ulcer—A Note on Selective Vagotomy, Am. Jr. Surg., Vol. 105, (March) 1963. (With G. K. Smith)
50. Some Observations upon Selective Gastric Vagotomy, Arch. Surg., Vol. 86, (May) 1963. (With G. K. Smith)
51. The Treatment of Gastric Ulcer (in situ) by Vagotomy and Pyloroplasty: A Clinical Study, Ann. Surg. (in Press) (with G. K. Smith) Presented at the meeting of the American Surgical Association in Phoenix, Arizona in April 1963, Ann. Sug., Vol. 158, No. 3, (September) 1963.
52. The Treatment of Gastric Ulcer (in situ) by Vagotomy and Pyloroplasty: A Clinical Study (to be published in Current Surgical Management III). (With G. K. Smith)
53. Temporary Gastrostomy (to be published in Current Surgical Management III). (With G. K. Smith)
54. Umbilical Hernia (in Press) Nyhus and Harkins' Book, Hernia.
55. Discussion—Jaboulay Pyloroplasty, Atlas of Technics in Surgery 2nd Edition, 1964, Madden, J. L.

STATEMENT OF DR. LOUIS H. CLERF

I am Dr. Louis H. Clerf, residing in St. Petersburg, Fla. I am professor of laryngology and broncho-esophagology, emeritus, Jefferson Medical College, and was head of that department, Jefferson Hospital, Philadelphia, Pa., 1930–54.

I am a member of and held offices in all the medical societies covering my specialty including secretary, editor, and president of the American Laryngological Association and the American Broncho-Esophagological Association, president of the Triological Society, a fellow of the American College of Surgeons and American College of Physicians among others, and a member of the Board of Examiners in Otolaryngology. I have attached to my prepared statement additional pertinent data and a list of 180 contributions to medical literature.

My experience in cancer of the air passages began in 1922 when I joined the Chevalier Jackson Bronchoscopic Clinic in Philadelphia. I succeeded Dr. Jackson as professor and head of the department at the Jefferson Medical College and Center in 1930 and continued in that capacity until my retirement in 1954. You may know Dr. Jackson perfected the bronchoscope and was a pioneer in the field of diagnosis and treatment of cancer of the larynx and in diagnosis of cancer of the lung. The American Broncho-Esophagological Association established a Chevalier Jackson Award in his honor and it was my good fortune to be the first recipient.

You may be interested to know that the first positive diagnosis of cancer of the lung by bronchoscopic biopsy in a living patient was made in the Jefferson Hospital Clinic in 1924. In 1945, Dr. Peter Herbut and I reported a method of staining bronchoscopically removed secretions for cancer cells as an aid in early diagnosis of lung cancer. This method has proven to be a valuable diagnostic aid.

During the period from 1922 to 1954, I observed over 4,000 cases of cancer of the larynx and throat and treated over 1,800 of these by surgical means. My interest in cancer of the lung was concerned with diagnosis as our clinic did only

bronchoscopic studies. During the 32 years at the Jefferson Medical Center and 22 years as bronchologist at the Radiological Clinic of the Philadelphia General Hospital, and four other Philadelphia hospitals, I examined by bronchoscopy over 3,000 cases of cancer of the lung. My interest therefore was in the patient suffering with cancer. While I have done no experimental studies on animals I have maintained an active interest in work directed toward finding the cause of cancer.

The statistical findings contained in the report of the Advisory Committee to the Surgeon General, U.S. Public Health Service, indicate that a statistical association between cigarette smoking and cancer of the larynx and lungs exists and concluded that cigarette smoking is causally related to these cancers in man. The emphasis placed on cigarette smoking as a suspected cause of cancer has overshadowed all other possible causes and probably has influenced many research studies. I cannot support the hypothesis that there is a causal relationship.

While I am not a statistician I am impressed that the conclusions drawn from this report are inferential and there is lacking adequate supporting evidence in the field of animal experimentation and clinical experience. I always stressed to my students that making an inferential diagnosis was a rapid method of arriving at a wrong conclusion.

On the clinical side, the proponents of the smoking theory find it difficult to explain the curious incidence of cancer in the air passages. There has been no increase in the incidence of cancer of the larynx to parallel the rise in cigarette consumption over the last three decades. While the Surgeon General's Advisory Committee concluded that cigarette smoking is a significant factor in the causation of laryngeal cancer in the male, I cannot agree.

Of further interest in this report is the sex incidence of laryngeal cancer. Thirty years ago the ratio was 6.3 males to 1 female; now it is 10.8 males to 1 female. If smoking is a factor, the incidence of laryngeal cancer in females should have increased since the proportion of women smokers to men smokers has increased enormously.

If it is assumed that cigarette smoke applied for a long period to the mucous membrane of the air passages of a male causes cancer, it is logical to assume that it would produce the same results in a female. There should be no difference in the effect of smoke, if there is any effect, for there is no demonstrable sex difference in tissue response following application of proven toxic agents.

The distribution of cancer in the air passages presents a contradiction to the cigarette smoke theory of cancer. The mouth, throat, larynx, trachea, and main bronchi through which smoke must pass before reaching the smaller bronchi are subjected to a greater concentration of smoke than the smaller bronchi. Since the main bronchi, the trachea, and a great part of the larynx are covered by the same type of ciliated epithelium or lining epithelium as the smaller bronchi, cancer should be observed more often in these. The reverse is true. Early cancer is found more often in the smaller bronchi than in the main bronchi. Cancer of the trachea, the main trunk of the bronchial tree, which is exposed to the greatest concentration of inhaled smoke is rare, being almost a curiosity. The larynx, which also receives a greater concentration of smoke than the lungs, is less often the site of cancer than the lungs. From this it is evident that areas exposed to the greater concentrations of smoke and which should be sites of greater incidence of cancer, if cigarette smoking is a cause, are actually areas where cancer is uncommon.

The tracheobronchial airway is covered with a mucous blanket that is constantly propelled or swept by the cilia from the periphery of the lung to the trachea and larynx. This secretion carries much of the noxious substances contained in inspired air. The main bronchi, trachea, and larynx which were subjected to these substances during inspiration are again exposed, probably for a longer period, as the secretions are swept upward.

Many of the observations concerning the incidence of cancer of the air passages are most puzzling. There is no apparent answer. Why is cancer of the upper throat (nasopharynx) more than 10 times as great in China or Formosa than elsewhere in the world? This was noted before cigarette smoking become popular. Orientals transplanted to this country continue to have a high incidence of such cancer in spite of American foods, customs, etc. Cancer in the lower throat (hypopharynx) is more common in Great Britain, France, and Scandinavian countries than in the United States and is more common among women than men. Some have ascribed this to alcohol or to vitamin and iron deficiency.

If smoking is a causal factor, the incidence of cancer of the lung in females should be approaching that in males since many women have been smoking for 30 or more years. The mortality rate in females has changed remarkably little during the past 30 years.

If smoking cigarettes is a factor, why should the incidence of cancer of the lung be greater in urban than in rural populations?

The quantity of cigarette smoke condensate and the length of exposure have been referred to as influencing the development of experimental skin cancer in mice. If this applies to man, and it should, if the cigarette smoke hypothesis is sound, one would expect cancer of the lung at an earlier age in a smoker who started smoking early in life or was an excessive smoker. Yet, studies of mortality in relation to age indicate that the greatest number of deaths in cancer of the lung occur between 50 and 65 years. The peak incidence age of cancer of the lung in males in the United States is 57 years, and this is uninfluenced by whether the patient smoked cigars, a pipe, or cigarettes, by how much or how long he smoked or whether he smoked at all. I am in agreement with Prof. R. D. Passey that the inherent change in the airway which determines the age of death from cancer of the lung is unrelated to and uninfluenced by smoking habits.

When considering the reported increased incidence of cancer of the lung, it must be taken into account that all the diagnostic aids other than physical examination were discovered or improved within the past 35 years and are now more generally employed. Employment of X-rays of the chest for detection of cancer has been increasing over the years. Reference was made earlier to the first positive bronchoscopic diagnosis of cancer in 1924. Mention has also been made of the cytologic diagnosis of cancer made by study of bronchoscopically removed secretions and by sputum studies over the past 20 years. Exploratory surgery, now a safe procedure, is an accepted practice. It is this period that has shown the greatest increase in reported cases of cancer of the lung. In addition, the lengthened lifespan has increased the number of humans attaining cancer age. The suggestion that the reported increase in cancer of the lung could be, in part, accounted for by the availability of better diagnostic methods seems to be supported by the absence of a similar increase in cancer of the larynx. The larynx is more accessible to examination and the methods of diagnosis of cancer of the larynx have changed little over this period.

Experimental studies have shown that tobacco tars applied to the backs of mice and rabbits have caused tumors, both benign and malignant. In connection with these experiments it must be recalled that a strong solution of tobacco tar and acetone was applied three times weekly and the average time of appearance of the skin cancer was 71 weeks. This represents over one-half of the lifespan of a mouse. Similar results have been produced in sensitive animals with other substances usually considered harmless, including such foods as eggs.

Studies carried out on experimental animals exposing them to smoke of cigarettes produced no cancer. Concentrated cigarette smoke condensate was placed into the trachea and bronchi of animals over long periods by a number of observers with negative results. From this it would appear that animal experimentation, which is used so much in medical research, both in seeking the cause of disease as well as in determining treatment, has produced nothing to incriminate tobacco smoke.

Further studies of the lung and larynx cancer problems would appear necessary, particularly in fields other than smoking. Viral studies have shown promise in leukemia or cancer of the blood and may provide a breakthrough. It has been shown that after viral infection animal cells acquire properties different from those they had before infection. These include a lack of sensitivity to regulation and increased growth ability. Under certain conditions the cells may become cancer cells. It would appear that the cause of cancer of the lung need not necessarily be specific for this organ only but could produce cancer in any part of the airway and possibly any organ of the body.

In brief summary, I am of the opinion that there is only a statistical relationship between cancer of the lung and cigarette smoking. I cannot accept a causal relationship between smoking and cancer of the lung or cancer of the larynx. There is a complete lack of evidence to support either hypothesis. Additional research is necessary and this should be pursued along all possible leads.

Thank you for the privilege of appearing before you.

CURRICULUM VITAE—DR. LOUIS H. CLERF, ST. PETERSBURG, FLA.

Born: Ellensburg, Wash.
Education:
Ellensburg schools.
St. Martin's College, Olympia, Wash.
Jefferson Medical College, 1912 (doctor of medicine).
Hospital training:
Resident physician, Jefferson Hospital 1912–14.
Chief resident physician, Jefferson Hospital, 1914–16.
New York Eye and Ear Infirmary.
Military service:
Medical Corps, U.S.N., 1916–22.
Presently, captain, Medical Corps, U.S.N.R. (inactive).
Membership in medical societies:
American Medical Association.
American Laryngological Association.
American Rhinological, Otological & Laryngological Society.
American College of Surgeons.
American Academy of Ophthalmology and Otolaryngology.
American Broncho-Esophagological Association.
American Association for Thoracic Surgery.
American Therapeutic Society.
American College of Physicians.
American College of Chest Physicians.
American Gastroenterology Association.
American Trudeau Society.
College of Physicians of Philadelphia.
Pennsylvania State Medical Association.
Pennsylvania Tuberculosis Association.
Philadelphia County Medical Society.
Philadelphia Laryngological Society.
Pathological Society of Philadelphia.
New York Laryngological Society.
New York Bronchoscopic Society.
Association of Military Surgeons.
Pan American Medical Association.
Membre Titulaire de la Societe de Broncho-oesophagopic de Langue Francaise.
Scottish Otological and Laryngological Society.
Collegium Oto-rhino-laryngologicum.
Hospital positions:
Laryngologist and broncho-esophagologist, Jefferson Medical Center.
Bronchologist: Philadelphia General Hospital; Pennsylvania Hospital, Jewish; Germantown; St. Joseph's; St. Mary's; Rush; Delaware County; Wilmington, Del., General Hospital.
Offices held in medical societies:
Past president, editor and secretary, American Broncho-Esophagological Association.
President, Philadelphia County Medical Society.
President and treasurer, Philadelphia Laryngological Society.
President, Triological Society.
Member, board of directors, Pennsylvania Tuberculosis Association.
Secretary and chairman, section on Otolaryngology and Rhinology, American Medical Association.
Clerk, section on Otolaryngology, College of Physicians.
President, secretary and editor, American Laryngological Association.
Member, American Board of Examiners in Otolaryngology.
Member, American Board of Chest Physicians.
Member, board of governors, American College of Surgeons.
Director, National Tuberculosis Association.
President, New York Laryngological Society.

Honors:

Honorary doctor of laws, Villanova University.
Honorary doctor of science, St. Martin's College.
Honarary doctor of letters, Jefferson Medical College.
Signum Fidei Medal, LaSalle College.
Shaffery Medal, St. Joseph's College.
Strittmatter Award, Philadelphia County Medical Society.
De Roaldes Medal, American Laryngological Association.
Chevalier Jackson Award, American Broncho-Esophagological Association.
Alumni Achievement Award, Jefferson Medical College Alumni.

CONTRIBUTIONS TO MEDICAL LITERATURE

1. Atresia of Esophagus. Surg. Clinics of North America, Feb. 1924.
2. Bronchoscopic Lung Mapping in Diseases of Lung, Surg. Clinica of N.A. 1924.
3. Cicatricial Stenosis of Esophagus Caused by Commercial Lye Preparations, J.A.M.A. June 1928.
4. Control Through the Nasal Ganglion of Earache of Laryngeal Origin, J. AMA. 1924.
5. Foreign Bodies of Dental Origin in Air and Food Passages, U.S. Naval Med. Bull, July 1925.
6. Seventeen Life-Saving Bronchoscopies in One Case, Surg. Gyne & Obst. April 1924.
7. Foreign Bodies in the Air and Food Passages, Laryngolcope, 1924.
8. Surgical Treatment of Bronchiectatic Cavities, Collaboration, Proc. Phila. Acad. Surg. 1924.
9. Photography of Larynx. Ann. Otol. Rhin. & Laryng. March 1925
10. Bronchoscopy in Diagnosis and Treatment of Lung Suppuration (Collaboration) Indiana M.J. 1925.
11. Peroral Endoscopy, Arch. Otolaryng. March 1925.
12. Bronchoscopy as an Aid to the Thoracic Surgeon (Collaboration) J. AMA-Jan. 1925.
13. Arachidia and Other Forms of Vegetal Bronchitis, Atl. Med. J. May 1925 (collaboration).
14. Hematemesis. A Plea for Objective Methods of Diagnosis (collaboration) Arch. Otol. Sept. 1925.
15. Laryngostatis and the Laryngostat (collaboration), Arch. Otol. Feb. 1925.
16. Bronchoscopic or Esophagoscopic Specimen Collector, Laryngoscope, July 1925.
17. A New Bronchoscopic Powder Insufflatory, Laryngoscope, June 1925.
18. Bronchoscopy in Lung Suppuration, Atl. Med. J. Oct. 1925.
19. Pneumonography. Surg. Gyne and Obst. Dec. 1925.
20. Foreign Bodies in the Air and Food Passages, Ann. Otol. & Rhin. March 1925.
21. Bronchoscopic Aids in Thoracic Surg. Surg. Clinics of North Amer. 1926.
22. Cicatricial Stenosis of Esophagus, Surg. Clin. N.A. 1926.
23. Peroral Endoscopy, Arch. Otol. 1926.
24. Bronchoscopic Aspects in Diagnosis of Nontuberculosis Diseases of Lungs, Atl. Med. J. 1926.
25. Foreign Bodies in the Tracheobronchial Tree, Laryngoscope, 1926.
26. Diseases of the Esophagus, Va. Med. Monthly, Aug. 1926.
27. Laryngeal and Esophageal Sequelae of Diphtheria, Laryng. Dec. 1926.
28. Foreign Bodies in Esophagus. Ann. O.R.L. Dec. 1926.
29. Postoperative Massive Collapse of Lung. Rept. of Bronchoscopic Observations. (Collaboration) Ann. O.R.L. Jan. 1927.
30. Nonendoscopic Cases of Foreign Bodies in the Tonsil. Arch. Otol. Dec. 1926.
31. Peroral Endoscopy. Arch. Otol. March 1927.
32. Radium Capsules in Stomach: Removed by Peroral Gastroscopy, Amer. J. Roentgen & Radium Ther. June 1927.
33. Bronchiectasis Associated with Disease of Nasal Accessory Sinus; Etiol & Bronchoscopic Treatment of Bronchiectasis, Arch. Otol. July 1927.
34. Bronchoscopy as an Aid in Diagnosis and Treatment of Bronchial Asthma, J. AMA. Sept. 1927.
35. Laryngeal Complications of Irradiation. Arch. Otol. Oct. 1927.
36. Peroral Endoscopy, Arch. Otol. March 1928.
37. Postoperative Pulmonary Atelectasis. (Collaboration) Ann. Surg. July 1928.
38. Lung Abscess Following Tonsillectomy; Bronchoscopic Observations on 56 Cases, Atl. M.J. 1928.

39. Peroral Endoscopy as an Aid to the Doctor in General Practice, South. Med. & Surg. 1928.
40. Peroral Endoscopy. Arch. Otolaryng. March 1929.
41. Chondroma of Larynx, Arch. Otol. 1929.
42. Cancer of Larynx, Penna. Med. J. Dec. 1929.
43. Pulmonary Abscess, An Analysis of 172 Cases (Collaboration) Arch. Surg. 1929.
44. Bronchial Obstruction (collaboration) Med. Clin. of North Amer. Jan. 1930.
45. Pulmonary Abscess Following Tonsillectomy. Arch. Otol. Feb. 1930.
46. Peroral Endoscopy, Otolaryng. March 1930.
47. Postoperative Collapse of Lung (collaboration) Amer. J. Gyne and Obst. June 1930.
48. Peroral Endoscopy. Arch. Otolaryng. March 1931.
49. Bronchoscopy in Diagnosis and Treatment of Pulmonary Disease. Ind. State Med. J. July 1931.
50. Is Bronchoscopy Indicated in Tuberculosis? J.A.M.A. July 1931.
51. Carcinoma of Larynx, Laryngoscope, 1931.
52. Congenital Stenosis of Larynx. Ann. Otol. Sept. 1931.
53. Bronchoscopic Treatment of Bronchiectasis and Lung Abscess, Am. Rev. Tuberc. Dec. 1931.
54. Bronchoscopic Aids in Diagnosis of Pulmonary Disease, Ind. State Med. J. 1932.
55. Peroral Endoscopy, Arch. Otol. March 1932.
56. Cancer of Larynx (Collaboration) Arch. Otol. Nov. 1932.
57. Cicatricial Stenosis of Larynx. Ann. Otol. Rhin. and L. March 1932.
58. Foreign Body Accidents in Children, Radiology, 1933.
59. Peroral Endoscopy, Arch. Otol. Feb. 1933.
60. Desirability of Teaching Bronchoscopy and Esophagoscopy to Undergraduates, J. Assoc. Amer. Med. Colleges, Sept. 1933.
61. Broncho-esophageal Fistula, Ann. Otol. Rhin. and L. 1933.
62. Bronchogenic Carcinoma (collaboration) J. Thor. Surg. 1933.
63. Congenital Anomalies of Esophagus with Special Reference to Congenitally Short Esophagus with Portion of Stomach Above Diaphragm (collaboration) An. Otol. Rhin. and Larynx, 1933.
64. Foreign Bodies in Gastrointestinal Tract. Surg. Clin. N.A. Feb. 1934.
65. Peroral Endoscopy, Arch. Otol. Feb. 1934.
66. Pulmonary Abscess, Bronchiectasis and Pulmonary Neoplasms, Radiology, May 1933.
67. The Congenitally Short Esophagus (collaboration) J.A.M.A. 1934.
68. Bronchoscopy in Treatment of Pulmonary Abscess and Bronchiectasis, New Eng. J. Med. June 21, 1934.
69. Carcinoma of Larynx. An Analysis of 58 Cases With Treatment by Laryngofissure. Arch. Otol. June 1934.
70. Interrelationship of Sinus Disease and Bronchiectasis with Special Reference to Prognosis, June 1934.
71. Bronchoscopy in the Diagnosis of Pulmonary Disease, Canad. Med. Assoc. J. 1934.
72. Melanoma of Bronchus; Metasis Simulation Bronchogenic Neoplasm, Ann. Otol. Rhin. and L. 1934.
73. Peroral Endoscopy in Otolaryngological Practice, Surg. Gyne. and Obst. 1935.
74. Congenitally Short Esophagus (collaboration) Rev. of Gastroenterol. 1935.
75. Peroral Endoscopy, Arch. Otol. 1935.
76. Cough Considered from an Otolaryng. Viewpoint, Laryngoscope, 1935.
77. Subcutaneous Emphysema as a Complication of Foreign Body in Bronchus. Ann. Otol., Rhinol. June 1935.
78. Foreign Bodies in Stomach; Removal by Peroral Endoscopy. Surg. Gyne. and Obst. Aug. 1935.
79. Foreign Bodies in Air Passages; Observations on Complications and End Results. Ann. Otol. Rhin. and Laryng. Sept. 1935.
80. Congenital Anomalies of Alimen. Tract. with Especial Reference to Congenitally Short Esoph. (collaboration), Am. J. Roent. and Radium Therapy. May 1935.
81. Present Status of Bronchoscopy in Bronchial Asthma. Ann. Int. Med. Feb. 1935.
82. Peroral Endoscopy (collaboration), Arch. Otolaryng. 1936.

83. Safety Pin in Esophagus. Arch. Otol. Sept. 1936.
84. Pulmonary Atelectasis in Tuberculosis. Dis. Chest, Dec. 1936.
85. Historical Notes on Foreign Bodies in Air Passages, Ann. Med. History, 1936.
86. Blastomycosis of Larynx (collaboration), Ann. Otol. Rhinol. Dec. 1936.
87. Suppurative Diseases of Lungs, Their Diagnosis and Treatment. Northwest Med. Jan. 1937.
88. Peroral Endoscopy. Arch. Otol. March 1937.
89. Carcinoma of Bronchus. Radiology, April 1937.
90. Carcinoma of Larynx, Pa. State Med. J. May 1937.
91. Treatment of Simple Chronic Laryngitis. Arch. Otol. March 1938.
92. Peroral Endoscopy, March 1939.
93. Tracheal Stenosis from Roentgen Therapy. Ann. Otol. Rhinol. and Larynx. Sept. 1938.
94. Pulmonary Suppuration, W. Va. Med. J. Nov. 1938.
95. Subglottic Carcinoma of Larynx, Pa. Med. J. Feb. 1939.
96. Carcinoma of Larynx, W. Va. Med. J. May 1939.
97. Bronchiectasis; A Consideration of Its Causes and Its Prevention. Va. Med. J. June 1939.
98. Peroral Endoscopy, Arch. Otol. April 1939.
99. Rupture of Main Bronchus From External Injury. Surg. Feb. 1949.
100. Foreign Bodies in Air and Food Passage; Observations on End Results in a Series of 950 Cases, Surg. Gyne and Obst. Feb. 1940.
101. Pathologic Conditions of the Esophagus, Laryngoscopy. May 1940.
102. Treatment of Chronic Hypertrophic Laryngitis, Arch. Otolaryng. June 1940.
103. Peroral Endoscopy. Arch. Otol. June 1940.
104. Cancer of Larynx; An Analysis of 250 Operative Cases, Arch. Otolaryng. Sept. 1940.
105. Diseases of the Esophagus. Arch. Surg. Nov. 1940.
106. Clinical Significance of Hoarseness and Its Importance in Cancer of Larynx, South. Med. and Surg. Dec. 1940.
107. Photographic Study of the Larynx by Mirror Laryngoscopy, Arch. Otol. March 1941.
108. The Fate of Patients with Untreated Bronchiectasis (collaboration), J. AMA, June 1941.
109. Peroral Endoscopy, Arch. Otol. June 1941.
110. Paralysis of the Larynx (collaboration), Ann. Otol. Rhinol & Laryng. Sept. 1941.
111. Bronchoscopy as a Diagnosis Aid in Nontuberculous Pulmonary Disease, West. J. Surg. Obst. and Gyne. Oct. 1941.
112. Tumors of Larynx and Hypopharynx, North Carol. Med. J. Oct. 1941.
113. The Importance of Gastroscopy in Differentiating Gastric Ulcer and Carcinoma (collaboration), Rev. of Gastroent. Jan. 1942.
114. Hoarseness and Cancer of Larynx, West J. Surg. Obst. and Gyne. Nov. 1941.
115. Peroral Endoscopy, Arch. Otol. June 1942.
116. Adenoma (mixed tumor) of Bronchus; A Study of 35 Cases (collaboration), Ann. Otol. Rhin. and Larynx. Sept. 1942.
117. Amyloid Tumor of Larynx, Arch. Otol. Sept. 1942.
118. Delayed Wound Healing Associated with Scurvy (collaboration), Penn. Med. J. Oct. 1942.
119. Tuberculous Tracheobronchitis, Dis. Chest. Nov. 1942.
120. Cricopharuyngeal Spasm (collaboration), Laryngoscopy. Dec. 1942.
121. Bronchoscopy in Bronchiectasis, Dis. Chest. Jan. 1943.
122. Functional Aphonic, Ann. Otol., Rhinol. Dec. 1943.
123. Esophagobronchial Fistula, Surg. Gyne and Obst. Dec. 1943.
124. Peroral Endoscopy, Arch. Otolaryng. Dec. 1943.
125. Prevention of Bronchiectasis, Pa. Med. J. April 1944.
126. Cancer of the Larynx; Report of Unusual Case, Ann. Otol. Rhinol. & Larynx. June 1944.
127. The Preepiglottic Space; Its Relation to Carcinoma of Epiglottis, Arch. Otolaryng. Sept. 1944.
128. Progress in Otolaryngology; Summaries of Bibliographic Material (collaboration), Arch. Otol. Sept. 1944.
129. Tracheopathia Osteoplastica; Report of Case, Ann. Otol. Rhinol. Dec. 1944.
130. Peroral Endoscopy in Thoracic Surgery, Clinics of N.A. 1945.

131. Bronchoscopy in Bronchopulmonary Disease, Modern Med. April 1945.
132. Broncholithiasis; Rept. of 10 Cases (collaboration), Ann. Int. Med. Dec. 1945.
133. Clinical Significance of Certain Respiratory Symptoms, Pa. M.J. Feb. 1946.
134. Bronchogenic Carcinoma, Diagnosis by Cytologic Study of Bronchoscopically Removed Secretions (collaboration), J. AMA. April 1946.
135. Malignant Tumors of the Maxillary Sinus, An Analysis of 47 Fatalities (collaboration), Ann. Otol. Rhinol. June 1946.
136. Bronchogenic Carcinoma; Am. J. Med. (collaboration), Aug. 1946.
137. Clinical Significance of Hoarseness, Amer. Pract. Sept. 1946.
138. Peroral Endoscopy, Arch. Otolaryng. 1946.
139. Cancer Cells in Bronchial Secretions (collaboration), Med. Clinics N.A. Nov. 1946.
140. Diagnosis of Bronchogenic Carcinoma by Examination of Bronchial Secretions (collaboration), Ann. Otol., Rhinol. & Laryng. Sept. 1946.
141. Keratosis of Larynx, J. AMA. Dec. 1946.
142. Sarcoma of Larynx; Report of Eight Cases, Arch. Otolarynx. Nov. 1946.
143. Cytology of Bronchial Secretions; A Diagnostic Aid in Diagnosis of Pulmonary T.B. (collaboration), Amer. Rev. of Tuberc. Dec. 1946.
144. Clinical Significance of Hoarseness and Wheezing Respiration, J. Mich. State Med. Soc. Jan. 1947.
145. Progress in Otolaryng., Arch. Otolaryng. Feb. 1947.
146. Paralysis of Larynx, J. Mich. State. Med. Soc. April 1947.
147. Surgical Treatment of Paralytic Stenosis of Larynx; Plastic and Reconstructive Surgery. July 1947.
148. Cough as a Symptom. Med. Clinics of N.A. Nov. 1947.
149. Laryngectomy, Surg. Gyne and Obst. Feb. 1948.
150. One-State Pharyngeal Diverticulectomy, Improved Technique an Analysis of 186 Cases (collaboration), Surg. Gyne and Obst. March 1948.
151. Progress in Bronchology, J. AMA. March 1948.
152. Carcinoma of the Larynx, Laryngoscope. July 1948.
153. Diagnosis and Operability of Bronchogenic Carcinoma, J. Thoracic Surg. Aug. 1948.
154. Peroral Endoscopy, Arch. Otol. March 1948.
155. Adenoma of Bronchus, Ann. Otol. Rhinol. and Laryng. Sept. 1948.
156. The Role of Bronchoscopy in Diagnosis and Treatment, N.Y. State J. Med. April 1949.
157. Cytologic Diagnosis of Cancer of the Lung, Penna. Med. J. Feb. 1949.
158. Dysphagia, Otolaryngologic Aspects. Trans. Acad. Ophthal & Otolaryng. Nov. 1949.
159. The Value of Cytological Diagnosis of Pulmonary Malignancy. Am. Rev. of TBC. Jan. 1950.
160. The Surgical Treatment of Bilateral Posticus Paralysis of Larynx. Feb. 1950.
161. Esophageal Hiatal Hernia, J. AMA. May 1950.
162. Carcinoma of Larynx, Postgrad. Med. July 1950.
163. Peroral Endoscopy, Arch. Otolaryng. June 1950.
164. Peroral Endoscopy, Arch. Otolaryng. Aug. 1951.
165. Cytologic Studies and Prognostic Results in Bronchogenic Carcinoma, Ann. Otol. Rhinol. June 1951.
166. Carcinoma of Larnyx and Pharynx, J. Med. Assoc. Alabama, April 1950.
167. Historical Aspects of Foreign Bodies in Air and Food Passages, Ann. Otol. Rhinol. March 1952.
168. Historical Aspects of Foreign Bodies in Air and Food Passages, Trans. Coll. Phys. of Phila. June 1952.
169. Early Diagnosis of Cancer of Lung, AMA. Oct. 1952.
170. Diagnosis of Carcinoma of Larynx, Surg. Clinics N.A. Dec. 1952.
171. Esophagus and Its Diseases, J. Omaha Midwest Clin. Soc. Jan. 1953.
172. Unilateral Vocal Chord Paralysis, J. AMA. March 1953.
173. Treatment of Carcinoma of Larynx. 1952.
174. Paralysis of Larynx of Peripheral Origin, Acta Otolaryng. June 1953.
175. Tumors of the Neck. Trans. Am. Acad. Ophthal & Otolarynx. Feb. 1953.
176. Bronchologic Aids in Diagnosis. Laryng. March 1953.
177. Re-Evaluation of Semons' Hypothesis, Laryng. Aug. 1953.
178. Epiphrenic Esophageal Diverticulum. Ann. Otol. Rhinol. and Larynx. Sept. 1953.
179. Tumors of the Neck. West Va. Med J. Nov. 1953.

180. Cytology of Tumors of the Bronchus, Proc. Otorhinol. Amsterdam, 1953.
181. Bilateral Abductor Paralysis of Larnyx. Ann. Otol. Rhinol and Larynx. March 1955.
182. Evaluation of Dissection of Neck in Carcinoma of Larnyx. Ann. Otol. Rhinol and Laryng. June 1955.

CONTRIBUTIONS TO TEXTBOOKS

1. Diseases of Oesophagus, Modern Medicine.
2. Diseases of Esophagus, and Stomach. Marin Rehfuss.
3. Nose, Throat and Ear and Their Diseases. Jackson and Coates.
4. Cyclopedia of Medicine. Sajous.
5. Diseases of Chest. Norris and Landis.
6. Clinical Tuberculosis. B. Goldberg.
7. Modern Surgery. Christopher.
8. Practitioners Series. Paul MacCready.

STATEMENT OF R. H. RIGDON, M.D.

I am R. H. Rigdon, of Galveston, Tex. I am a physician. I received my M.D. degree from Emory University, Atlanta, Ga., in 1931. I took my intern and resident training in pathology at Duke University in North Carolina. I have been a teacher of pathology since that time. I have been on the teaching staff of Vanderbilt Medical School, the University of Tennessee College of Medicine, the University of Arkansas Medical School, and have been professor of pathology at the Medical Branch of the University of Texas at Galveston for 18 years. I am certified by the American Board of Pathology in pathological anatomy and forensic pathology. I am a member of the American Society of Experimental Pathology. I am a member of the American Medical Association and several other medical organizations.

In addition to my teaching and practice of pathology, I am an experimental pathologist. I have been interested in research since I finished my basic training in pathology at Duke University. I have been interested in several fields of research, among which may be mentioned staphylococcus infection in man and animals, malaria in man and animals, cancer in man and animals, muscular dystrophy in man and the white Pekin duck, and the effect of irradiation on food which was a program sponsored by the U.S. Army.

For the last 15 years I have been interested in lung cancer. I have published three review articles on lung cancer. The first discussed lung cancer as it was known before 1900, the second from 1900 to 1930, and the third from 1930 to 1960. I am now gathering material for a fourth review from 1960 to 1970.

I have also been interested in the frequency of lung cancer in cases that we have studied at autopsy (frequency of cancer of the lungs in all malignancies studied at autopsy, Southern Medical Journal 44: 506, 1951) and the correlation of the diagnosis of cancer as made on the death certificates with that observed at the autopsy (vital statistics and the frequency of disease, Texas State Journal of Medicine 59: 317, 1963). I have been interested in obtaining the history of cigarette smoking in hospital and clinic patients and correlating these data with the clinical diagnosis (smoking habits of 21,612 individuals in Texas, Journal of the National Cancer Institute 16: 1287, 1956). I have obtained the smoking histories of college students to establish the frequency they smoke (smoking habits of college students in Texas, Texas Reports on Biology and Medicine 12: 292, 1954).

In the field of research I have been interested in studying the effect of chemicals that produce cancer. Some of these chemicals are put directly into the lungs of ducks and dogs through the mouth and windpipe. One of these chemicals, methylcholanthrene, has produced many tumors in the lung. Benzpyrene is a chemical frequently suggested as a significant carcinogen in cigarette smoke. It has been demonstrated that large amounts of benzpyrene are present in charcoal broiled steaks. It is also in the air we breathe. I have placed large amounts in the lungs of ducks and have not observed any cancers.

As far as I know, lung cancer has not been produced in any animal that inhaled cigarette smoke. I did not obtain tumors when tobacco tars were put directly into the lungs of ducks. It is interesting to know that tobacco tar when put on the skin of mice will produce a skin cancer. I put a cancer-producing agent, methylcholanthrene, on the skin of a duck and got many different types of tumors,

but when the same agent was put on the skin of the turkey one type of tumor resulted. Now there is not much difference in the skin of the duck and turkey, but there is lots of difference in the skin of a mouse and the respiratory tract of man.

I am unable to transfer data about cancer, as obtained from experimental animals, to man. Recently, that is within the past 3 years, cancers have been found to develop in the liver of rats fed peanut meal (Newberne, P. M., Wm. W. Carlton, and G. N. Wogan. Hepatomas in rats and hepatorenal injury in ducklings fed peanut meal or *Aspergillus falvus* extract. Path. Vet. 1: 105, 1964). I have been studying some of these rat livers. In view of my experience with cigarettes and cancer, I cannot help but think of the problems that could arise in relation to rats eating peanuts. Then, too, we have the problem of liver cancer in fish fed cottonseed products (Wolf and Jackson. Hepatomas in rainbow trout, descriptive and experimental epideminology. Science 142: 676, 1963). It is my opinion that more research is needed in the field of cancer before one is correct in concluding that agents that cause cancer in rats, fish, and mice necessarily cause cancer in man.

Genetic factors must be considered in cancer. We now have a group of approximately 30 ducks resulting from the mating of a specific pair of birds. In this group we have had two that developed tumors, one of the eye and one of the ovary. It is of considerable interest to know that all of these ducks from this mating are sterile. The question of genes arises referable to tumors and sterility. There are observations of tumors being present in a mother and daughter.

The cause of cancer is not known. By this we mean that we do not know why a cell in the body of one person will become a cancer and the corresponding cell in another person will not become a cancer. A cancer arises from cells within the body. A normal cell grows and reproduces itself in a uniform manner, while a cancer cell grows and multiplies at an abnormal rate; it spreads into parts of the body where a normal cell would not think of going. This abnormal activity of a cell is what we call a cancer. It is a known fact, and so far as I know it is not denied by anyone, that a cancer (1) may be produced by a virus, (2) by irradiation, (3) by ultraviolet light, (4) by certain chemicals, (5) occurs in areas of chronic inflammation, and (6) may be inherited.

In the performance of autopsies I find that the lung is one of the most frequent sites for tumors that originate elsewhere in the body. A cancer may originate in the liver and spread to the lung. It may grow and destroy the lung. The patient dies and at autopsy a cancer is found in the liver and the lung. Microscopic study proves it to have originated in the liver and spread to the lung. The death certificate, without an autopsy, would have recorded this case as lung cancer and, had he smoked cigarettes, the statisticians, no doubt, would have associated smoking with the cause of this cancer. The spread of cancer to the lungs is a common occurrence. Shields Warren in November of 1964 said, "There is always the possibility of confusing secondary tumors of the lung with primary tumors, in spite of radiologic or other means of clinical examination of the patient and even autopsy findings. It will be noted that 26 percent of 5,885 cases of the cancers had metastasized to the lung." (Lung cancer and metastasis. Archives of Pathology 78: 467, 1964.) From a medical standpoint, every effort must be made to establish whether or not a cancer is primary or secondary in the lung. Cancer of the lung is a hard diagnosis to make. Because of my experience, I must question the frequency of lung cancer as it is recorded on death certificates.

Many cases of cancer occur in the lung when there is no history of cigarette smoking. Several months ago I reviewed a case of primary lung cancer when there was no history of smoking (Clinicopathologic Conference. Texas State Journal of Medicine 59: 705, 1963) and another case in which the patient gave a history of smoking 6 to 20 cigars a day. It is because of my knowledge of such cases that I cannot accept the statistical data on lung cancer as being satisfactory to establish the frequency of lung cancer and for this information to serve as the basis for determining the cause of cancer. In my opinion more work is indicated on this problem.

In 1934 Sweany said, "If there is any merit in this theory (cigarette smoking and lung cancer), it should be manifest in the female sex, where the increase in the use of cigarettes has been greater than in men. If, for example, the ratio of men to women 20 years ago was 3 to 1, and now in 1932 it is 1.5 to 1, the case is well nigh proved. So far, no such increase in ratios has appeared, for the sex ratio was and still is around 3 males to 1 female, similar to other malignant conditions other than those of sex differences. On the other hand, there are many patients with lung cancer who do not give a history of cigarette smoking at all"

(primary bronchiogenic carcinoma; incidence, pathogenesis, and diagnosis. Annals Otology, Rhinology 43: 561, 1934). Dr. Joseph Perrone in April of 1964 reported a group of 1,000 cases of lung cancer in Pittsburgh and pointed out that 474 of these were present in nonsmokers. Dr. Perrone also pointed out that in his group of 1,000 cases of lung cancer there were 754 whites and 246 nonwhites. He then asked, "Why should the Negro not develop lung cancer more frequently than the white, for he is certainly exposed to irritatitng gases, and furthermore, many colored men smoke cigarettes they roll themselves" (One thousand cases of lung cancer. Pennsylvania Medical Journal 67: 31, 1964).

It is my opinion that education has been an important factor in the increase in lung cancer. With pulmonary tuberculosis decreasing, the possibility of lung cancer must be more carefully considered as a cause of death. As a pathologist, I see cases that were considered clinically to be tuberculosis but at autopsy are found to be cancer and others that were considered to be cancer but at autopsy are tuberculosis. I recently found a 20-percent difference in the diagnosis as recorded on the death certificates and that made by the pathologist at the autopsy (Vital statistics and the frequency of disease. Texas State Journal of Medicine 59: 317, 1963). These cases occurred in a hospital with excellent clinicians and all necessary diagnostic equipment. What percentage of error would occur in cases that are observed for a short time by physicians who do not have all the special equipment necessary to make a correct clinical diagnosis of lung cancer? This is one of the reasons I cannot accept vital statistics as correct for determining the frequency of cancer of the lung. Some statisticians apparently don't worry about the correctness of the diagnosis on the death certificate, but I do.

Gentlemen, I hope that it is obvious from my remarks why I was classified in the Surgeon General's report on cigarette smoking on page 179 as "though accepting the existence of an association, have questioned its significance in terms of a causal hypothesis."

In regard to the Surgeon General's report on smoking and health, I think it is an excellent summary of one side of this controversy. If equal time and effort had been given to the opposite view by this committee, I think the report would have been twice the size and would have been a report that scientists in the future could review to see really what the state of knowledge was in 1963.

Last year the Federal Trade Commission solicited my comments on their proposed "Trade Regulation Rules." In my reply I disagreed with their label proposal and pointed out that I do not think the statement "Cigarette smoking is dangerous to health. It may cause death from cancer and other diseases" is correct. I would consider the statement "Caution—Cigarette smoking may be dangerous to health" to be more consistent with the facts as we know them today. If we label cigarettes, then we should label peanuts since we know that cancers occur in the liver of rats fed peanuts. Charcoal broiled steaks should also be label since benzpyrene has been demonstrated in them. An indefinite number of items will fall into this labeling category.

To summarize my views, may I say that, first, I believe that there is no satisfactory experimental evidence to establish a connection between cigarette smoking and lung cancer. Cancer of the lung has not been produced experimentally in any animal by the inhalation of cigarette smoke. The fact that tobacco tars will produce a tumor on the skin of a specific strain of mouse does not, in my opinion, lead to the conclusion that cigarette smoke will produce cancer in the lungs of man. As I continue my work in the field of experimental carcinogenesis, I find puzzling variations in the responses observed from one species of animal to another with respect to the development of cancer. This is why I say that data concerning cancer in animals should not be considered proof of a similar effect in man.

Animal experiments do suggest, however, areas for further research. I have mentioned, as one example, the observation referring to tumors developing in a strain of sterile ducks which may indicate some connection between the genetic defect responsible for sterility and the development of tumors. Animal research also suggests the importance of certain factors such as viruses, irradiation, and others.

Second, I question some of the circumstantial evidence concerning smoking and cancer. I pointed out that my experience in the performance of autopsies leads me to question whether lung cancer occurs as frequently as it is recorded on death certificates. Death certificates, in my opinion, are not accurate enough to establish the frequency of lung cancer. Many cases of lung cancer occur where there is no history of cigarette smoking. The ratio of men to women among lung cancer cases has not changed during the last three decades or more

although there has been a progressive increase in cigarette smoking among women during this period.

It is my opinion that factors such as those I have mentioned were not dealt with adequately in the report of the Surgeon General's Advisory Committee on Smoking and Health.

I thank you.

BIOGRAPHICAL DATA—RAYMOND HARRISON RIGDON

Office: The University of Texas Medical Branch, Galveston, Tex.
Home: 1328 Ball Street, Galveston, Tex.
Born: July 30, 1905, Musella, Ga.
Education:
Gordon Institute, Barnesville, Ga., 1922–24.
Emory University, Atlanta, Ga., B.S., 1929; M.D., 1931.
Intern, Duke University Hospital, Durham, N.C., 1931–32.
Assistant resident, Duke University Hospital, 1932–34.
Resident, Duke University Hospital, 1934–35.
Academic and professional experience:
Professor of Pathology, the University of Texas Medical Branch, Galveston, 1948– . Graduate faculty, 1961– .
Senior consultant in pathology, M. D. Anderson Hospital and Tumor Institute, Houston, 1957– .
Consultant in pathology, U.S. Public Health Service Hospital, Galveston, 1957– .
Clinical professor of pathology, Postgraduate School of Medicine, the University of Texas, Houston, 1958– .
Director of Laboratory of Experimental Pathology, the University of Texas Medical Branch, Galveston, 1947–57.
Professor of experimental pathology, the University of Texas Medical Branch, Galveston, 1947–48.
Professor of pathology and chairman of Department of Pathology, University of Arkansas School of Medicine, Little Rock, 1944–47.
Associate professor of pathology, University of Tennessee Medical College, Memphis, 1939–43.
Instructor and assistant professor of pathology, Vanderbilt University, Nashville, 1935–39.
Licensed to practice medicine: Georgia, 1931; Tennessee, 1943; Texas, 1947.
Specialist boards:
Diplomate, American Board of Pathology, 1944.
Fellow, College of American Pathologists, 1955.
Certified in forensic pathology by American Board of Pathology, 1961.
Fellow, American College of Legal Medicine, 1962.
Fellow, International Academy of Law & Science, 1965.
Societies, member of:
Galveston County Medical Society.
State Medical Association of Texas.
American Medical Association.
Texas Society of Pathologists.
American Society of Experimental Pathology.
American Association of Pathologists and Bacteriologists.
American Society of Clinical Pathologists.
American Association for Advancement of Science.
Society for Experimental Biology and Medicine.
Southern Medical Association.
Law-Science Academy.
Awards and recognitions:
President, Texas Society of Pathologists, 1961.
Chancellor, Law-Science Academy, University of Texas, 1959.
Chairman and secretary, Southwestern Section, Society for Experimental Biology and Medicine, 1951–55.
Chairman and secretary, Section on Pathology, Southern Medical Association, 1938–44.
Certificate, Law-Science Institute, in recognition of distinguished service, 1957.
Who's Who in American Education, 1951–52.
American Men of Science, 1949.
Who's Important in Medicine, 1945.
Who's Who in South and Southwest Medicine.
Certificate of Merit, Scientific Exhibit, American Medical Association, 1944.
Society of Sigma Xi.

Fraternity: Phi Beta Pi.
Contributed to international symposia:

Capillary Permeability in Areas of Inflammation. The Mechanism of Inflammation, edited by G. Jasmin and A. Roberts, Acta, Inc., Medical Publishers, Montreal, Canada, 1953.

Role of Anoxia in the Pathogenesis of the Lesions in Acute Malaria. V. Congress Internationaux de Medecine Tropicale et du Paludisine, Istanbul, Turkey, 1954.

Lymphoid Hyperplasia Produced in the Skin of Chickens by Methylcholanthrene. Second International Symposium on the Reticuloendothelial System, Boston, 1956.

Spontaneous Regression of Tumors Produced by Methylcholanthrene in the Skin of Fowls. First Pan American Cancer Cytology Congress, Miami, 1957.

Pulmonary Neoplasms Produced by Methylcholanthrene in the White Pekin Duck. Pan American Medical Association, Mexico City, 1960.

Publications: See attached sheets.

PUBLICATIONS—DR. R. H. RIGDON AND ASSOCIATES

DUKE UNIVERSITY, DURHAM, N.C.

1. Adenomyoma (Adenomyosis of Frankl) of the Uterus with Tuberculous Infection. Rigdon, R. H., Am. J. Obst. & Gyn. 25: 902, 1933.
2. On the Relation between Thrombophlebitis of the Inferior Vena Cava and Occlusion of the Hepatic Veins (Endophlebitis Hepatic Obliterans), Rigdon, R. H., Bull. Johns Hopkins Hosp. 53: 4, 162, 1933.
3. A Study of the Action of a Filtrable Staphylococcal Toxin on the Kidneys of Normal Rabbits. Rigdon, R. H., Joyner, A. L., and Ricketts, E. T., Am. J. Path. 10: 3, 1934.
4. Giardia Infestation of Gallbladder and Intestinal Tract. Calder, Royall M. and Rigdon, R. H., Am. J. Med. Sci. 190: 1, 82, 1935.
5. Early Lesions following Intravenous Administration of a Filtrable Staphylococcus Toxin. Rigdon, R. H., Arch. Path. 20: 201, 1935.
6. Renal Lesions in Staphylococcus Aureus Infections and their Relation to Acute Glomerular Nephritis. Rigdon, R. H., Arch. Int. Med. 55: 117, 1936.
7. A Gastro-Intestinal Lesion Associated with Staphylococci Infection in Man. Rigdon, R. H. and Leff, W. A. Arch. Path, 21: 298, 1936.
8. The Age of Sexual Maturity in 250 Albino Female Rats (Mus Norvegicus Albicus, Wistar Strain). Rigdon, H. R., J. Lab. & Clin. Med. 21: 11, 1182, 1936.

VANDERBILT UNIVERSITY, NASHVILLE, TENN.

9. Effect of Staphylococcus Toxin on the Dog's Blood Pressure. Rigdon, R. H., Arch. Path. 22: 806, 1936.
10. Inhibitory Action of Sodium Chloride on Skin Necrosis Produced by Staphylococcus Toxin. Rigdon, R. H. Arch. Path. 22: 763, 1936.
11. Inhibitory Effect of Hypertonic Solutions of Sodium Chloride on Staphylococcus Hemotoxin. Rigdon, R. H., J. Infect. Dis. 60: 25, 1937.
12. Production of Colitis in the Dog with Staphylococcus Toxin. Rigdon, R. H., Arch. Path. 23: 634, 1937.
13. Effect of Staphylococcus Toxin on the Knee Joints of Rabbits. Rigdon, R. H., Arch. Path. 24: 215, 1937.
14. A Study of Immunity to Staphylococcus Toxin in the Albino Rat. Rigdon, R. H., J. Lab. & Clin. Med. 22: 11, 1141, 1937.
15. Staphylococci Immunity—Resume of Experimental and Clinical Studies. Rigdon, R. H., Arch. Path. 24: 233, 1937.
16. Effect of Various Salts on Hemolysis and Skin Necrosis Produced by Staphylococcus Toxin. Avery, Roy C., Rigdon, R. H., and Johlin, J. M. Proc. Soc. Experi. Biol. & Med. 37: 131, 1937.
17. The Effect of Staphylococcus Antitoxin on Rabbits given Broth Cultures of Staphylococci Intravenously. Rigdon, R. H., J. Lab. & Clin. Med. 23: 2, 159, 1937.
18. Observations on Dolman's Test for Determining the Presence of Staphylococcal Enterotoxin. Rigdon, R. H., Proc. Soc. Experi. Biol. & Med. 38: 82, 1938.
19. Deterioration of Staphylococcal Toxin in Saline. Rigdon, R. H. and Harris, Henry., Proc. Soc. Experi. Biol. & Med. 39: 585, 1938.

20. Effect of Heat on the Hemolytic and Skin Necrotizing Factors in Staphylococcus Toxin. Rigdon, R. H. J. Lab. & Clin. Med. 24: 2, 142, 1938.
21. Capillary Permeability in the Skin of the Rabbit. Rigdon, R. H., Proc. Soc. Experi. Biol. & Med. 42: 43, 1939.
22. Failure of an Acute Inflammatory Process to Extend into Area previously Injected with India Ink. Avery, Roy C. and Rigdon, R. H., Proc. Soc. Experi. Biol. & Med. 42: 67, 1939.
23. Experimental Nephritis Produced by Staphylococcus Toxin in the Dog. Rigdon, R. H., J. Lab. & Clin. Med. 24: 9, 935, 1939.
24. Local Lesions produced in Mice by Staphylococcus Toxin and by Toxin and Non-toxin Producing Strains. Rigdon, R. H., Surg. 6: 1, 91, 1939.
25. Some of the Experimental Lesions produced by Staphylococcus Toxin. Rigdon, R. H., Southern Med. J. 32: 798, 1939.
26. Hemolysis produced by Staphylococcus Colonies and Toxin on Agar Media containing various Animal Bloods. Rigdon, R. H., J. Lab. & Clin. Med. 24: 12, 1264, 1939.
27. Capillary Permeability and Inflammation on Narcotized Rabbits. Cressman, Ralph D., and Rigdon, R. H., Arch. Surg. 39: 586, 1939.
28. Effects of Intraperitoneal Injections of Staphylococcus Antitoxin on Subcutaneous Stapylococcic Infection in Mice. Rigdon, R. H., J. Lab. & Clin. Med. 25: 3, 251, 1939.
29. Staphylococcus Toxin—A Résumé. Rigdon, R. H., Am. J. Med. Sci. 199: 412, 1940.
30. Demonstration of a Capillary Permeability Factor in Tissue Extracts from Normal Rabbits. Rigdon, R. H., Arch. Surg. 41: 96, 1940.
31. Capillary Permeability in Areas of Inflammation produced by Xylene. Rigdon, R. H., Arch. Surg. 41: 101, 1940.
32. The Detoxification of Staphylococcal Toxin by Absorption on Organic Liquids. Johlin, J. M., and Rigdon, R. H., J. Immunol. 41: 233, 1941.

UNIVERSITY OF TENNESSEE, MEMPHIS, TENN.

33. Creeping Eruption (Ankylostoma Braziliense Infestation) with Spontaneous Remissions and Recurrences—Report of two Cases. Rigdon, R. H., J. Pedi. 16: 5, 637, 1940.
34. Experimental Study of the Effects of Sulfapyridine on Staphylococci and Staphylococcus Toxin. Rigdon, R. H. and Freeman, P. R., J. Lab. & Clin. Med. 25: 11, 1125, 1940.
35. Localization of Staphylococci in Areas of Inflammation produced by Xylene. Rigdon, R. H. Arch. Surg. 41: 879, 1940.
36. A Study of Capillary Permeability and Inflammation in the Skin of Rabbit given Adrenalin. Rigdon, R. H., Surg. 8: 839, 1940.
37. Relation of Capillary Permeability to Inflammation. Rigdon, R. H., Southern Med. J. 34: 292, 1941.
38. Observations on Capillary Permeability in Areas of Inflammation produced by Staphylococci. Rigdon, R. H. Surg. 9: 3, 436, 1941.
39. Effect of Sulfapyridine on Staphylococcus Toxin. Rigdon, R. H., Haynes, Anne, and Lipscomb, Alys., J. Lab. & Clin. Med. 26: 7, 1111, 1941.
40. Effect of Alpha Estradiol Benzoate on Local Areas of Inflammation in the Skin of the Rabbit. Rigdon, R. H., and Chrisman, R. B., Jr., Endocrinology, 28: 5, 758, 1941.
41. Capillary Permeability and Inflammation in Rabbits given Heparin. Rigdon, R. H., and Wilson, Harwell, Arch. Surg. 43: 64, 1941.
42. Amniotic Fluid (Amfetin) in its Relation to Inflammation. Rigdon, R. H., and Warren, J. W., Am. J. Surg. 53: 381, 1941.
43. Localization and Concentration of Staphylococcus Antitoxin in areas of Rabbit's Skin. Rigdon, R. H., J. Lab. & Clin. Med. 27: 37, 1941.
44. Post-Vaccinal Meningo-Encephalo-Myelitis. Report of a Case. Dunn, T. M., and Rigdon, R. H., Am. J. Clin. Path. 11: 10, 771, 1941.
45. Capillary Permeability and Inflammation in Rabbits with Staphylococcic Septicemia—An Experimental Study. Rigdon, R. H., Arch. Surg. 44: 129, 1942.
46. Observations on Capillary Permeability and Inflammation in the skin of Sensitized Rabbits. Rigdon, R. H., and Haynes, Anne. J. Lab. & Clin. Med. 27: 5, 598, 1942.
47. Pathogenesis of Arthritis following the Intravenous Injection of Staphylococci in the Adult Rabbit. Rigdon, R. H., Am. J. Surg. 55: 553, 1942.

48. Retention of Nonprotein Nitrogen in the Blood of the Rabbit following intravenous Injections of a hypertonic Solution of Dextrose. Rigdon, R. H., and Moore, Frances, J. Lab. & Clin. Med. 27: 779, 1942.
49. Renal Lesions following the Intravenous Injection of a Hypertonic Solution of Sucrose—A Clinical and Experimental Study. Rigdon, R. H., and Cardwell, E. S., Arch. Int. Med. 69: 670, 1942.
50. A Study of the Pathological Lesions in *P. Knowlesi* Infection in *M. Rhesus* Monkeys. Rigdon, R. H., and Stratman-Thomas, W. K., Am. J. Trop. Med. 22: 329, 1942.
51. Effect of Heparin on Phagocytosis by the Cells of the Reticulo-Endothelial System. Rigdon, R. H., and Schrantz, F. S., Ann. Surg. 116: 122, 1942.
52. A Statistical Study of the Number of White Blood Cells in the Blood of the Rabbit. Haynes, Anne, and Rigdon, R. H., Anatomical Rec. 83: 587, 1942.
53. The Effect of Low Blood Pressure upon Capillary Permeability and Inflammation in the Skin of Rabbits. Rigdon, R. H., Miles, Robert M., and Bland, Richard P., Surg. 12: 302, 1942.
54. Capillary Permeability and Inflammation in the Skin of Rabbits. Wilson, Harwell, and Rigdon, R. H., Arch. Surg. 45: 416, 1942.
55. Observations of the Effect of Histamine Phosphate on Capillary Permeability and Inflammation. Rigdon, R. H., J. Lab. & Clin. Med. 27: 12, 1554, 1942.
56. Observations on the Failure of Heparin to Inhibit the Clotting of Blood in Vitro by Staphylococci. Rigdon, R. H., and Haynes, Anne, Ann. Surg. 116: 430, 1942.
57. A Consideration of Therapy in Staphylococcus Infections. Rigdon, R. H., and Stookey, Paul F., Surg. 12: 4, 635, 1942.
58. A Consideration of the Mechanism of Death in Acute *Plasmodium Falciparum* Infection: Report of a Case. Rigdon, R. H., Am. J. Hygiene, 36: 269, 1942.
59. Failure of Heparin to Inhibit Coagulation of Citrated Blood and Plasma in Presence of Staphylococci. Rigdon, R. H., Proc. Soc. Experi. Biol. & Med. 50: 324, 1942.
60. Effect of Roentgen Irradiation on Capillary Permeability and Inflammation in the Skin of the Rabbit. Rigdon, R. H., and Curl, Howard, Am. J. Roentgen. & Radium Therapy 49: 250, 1943.
61. Effect of Ethyl Alcohol Intoxication on the Development of Local Inflammatory Reactions in the Rabbit. Rigdon, R. H., J. Lab. & Clin. Med. 28: 714, 1943.
62. Effects of Infrared Irradiation of the Tissues of the Rabbit. Rigdon, R. H., Ewing, Frances, and Tate, Adair., Am. J. Path. 19: 517, 1943.
63. Localization and Concentration of Staphylococcus Antitoxin in Areas of Rabbit's Skin Treated with Ultraviolet Radiation. Rigdon, R. H., Am. J. Roentgen. & Radium Therapy 50: 101, 1943.
64. Aneurysms of the Coronary Arteries—Review of the Literature and Report of a Case. Rigdon, R. H., and Vandergriff, Harris, Am. J. Surg. 61: 407, 1943.
65. Aneurysms of the Vertebral Arteries; A Consideration of their Etiology. Rigdon, R. H., and Allen, Chester, J. Lab. & Clin. Med. 29: 28, 1944.
66. Acute Dysentery Produced by Shigella Alkalescens—Report of a Case with Necropsy. Rigdon, R. H., Michelson, I. D., and Allen, Frank, Am. J. Trop. Med. 24: 135, 1944.
67. A Pathological Study of the Acute Lesions produced by *Plasmodium Lophurae* in young White Pekin Ducks. Rigdon, R. H., Am. J. Trop. Med. 24: 371, 1944.

UNIVERSITY OF ARKANSAS, LITTLE ROCK, ARKANSAS

68. Effect of Heparin on Phagocytosis—Observations on *P. Lophurae* in the Chick. Rigdon, R. H., J. Lab. & Clin. Med. 29: 840, 1944.
69. A Consideration of the Mechanism of Splenic Infarcts in Malaria. Rigdon, R. H., Am. J. Trop. Med. 24: 349, 1944.
70. The Pathological Lesions in the Brain in Malaria. Rigdon, R. H., Southern Med. J. 37: 687, 1944.
71. Lesions in the Brain Associated with Malaria—Pathologic Study on Man and Experimental Animals. Rigdon, R. H., and Fletcher, D. E., Arch. Neurol. & Psych. 53: 191, 1945.

72. Polycythemia produced by Cobalt in the Duck. Davis, John E., McCullough, A. W., and Rigdon, R. H., J. Lab. & Clin. Med. 30 : 327, 1945.
73. Autopsies with Limited Personnel : Use of a Voicewriter. Rigdon, R. H., and Schwander, Howard, J. Assn. Am. Med. Colleges, July, 1945.
74. Effect of Radiation on Malaria. An Experimental Study in the Chick and Duck. Rigdon, R. H., and Rudisell, Hillyer, Jr., Proc. Soc. Experi. Biol. & Med. 59 : 167, 1945.
75. Terminal Hypoglycemia in Ducks with Malaria. Marvin, H. N., and Rigdon, R. H., Am. J. Hygiene 42 : 174, 1945.
76. Anoxia in Malaria. Rostorfer, H. H., and Rigdon, R. H., J. Lab. & Clin. Med. 30 : 860, 1945.
77. Transfusions of Red Cells in Malaria. An Experimental Study in Ducks. Rigdon, R. H., and Varnadoe, None B., Am. J. Trop. Med. 25 : 409, 1945.
78. *Plasmodium Lophurae* Infection of the Chick Embryo. Rigdon, R. H., Am. J. Hygiene 42 : 189, 1945.
79. Malarial Pigment. A Consideration of the Mechanism of Elimination from the Duck. Rigdon, R. H., Am. J. Clin. Path. 15 : 489, 1945.
80. Cutaneous Blastomycosis. Rigdon, R. H., and Winkler, C. H., Jr., J. Ark. Med. Soc. 42 : 95, 1946.
81. Neurologic Manifestations Associated with Malaria in Ducks. A Clinicopathologic Study. Fletcher, D. E., and Rigdon, R. H., Arch. Neurol. & Psych. 55 : 35, 1946.
82. A Study of Oxygen Transport in the Blood of Young and Adult Domestic Ducks. Rostorfer, H. H., and Rigdon, R. H., Am. J. Physio. 146 : 222, 1946.
83. Multiple Argentaffin Tumors (Carcinoids) of the Rectum. Rigdon, R. H., and Fletcher, D. E., Am. J. Surg. 71 : 822, 1946.
84. A Consideration of Anoxia in the Mechanism of Death in Acute Malarial Infections. Rigdon, R. H., Experi. Med. & Surg. 4 : 156, 1946.
85. A Physiologic Study of Hematopoiesis in the Duck with Malaria. Rostorfer, H. H., and Rigdon, R. H., Am. J. Clin. Path. 16 : 518, 1946.
86. Effect of Oxygen on *P. Lophurae* Infected Ducks. Rigdon, R. H., and Rostorfer, H. H., Proc. Soc. Experi. Biol. & Med. 63 : 165, 1946.
87. Effect of Vitamin A Deficiency on *Plasmodium Lophurae* Infection in Ducks. Rigdon, H. H., J. Infect. Dis. 79 : 272, 1946.
88. Blood Oxygen in Ducks with Malaria. Rigdon, R. H., and Rostorfer, H. H., J. Natl. Malaria Soc. 5 : 253, 1946.
89. A Physiological Study of Erythroblasts in the Ducks. Rostorfer, H. H., and Rigdon, R. H., Blood, The J. of Hematol. 1 : 75, 1947.
90. Effect of Oxygen on Malaria. Rigdon, R. H., and Varnadoe, Nona B., J. Lab. & Clin. Med. 32 : 57, 1947.
91. Observations on the Anemia in Ducks Infected with *P. Lophurae*. Rigdon, R. H., and Rostorfer, H. H., Blood, The J. of Hematol. 2 : 244, 1947.
92. The Relation of Blood Oxygen Transport to Resistance to Anoxia in Chicks and Ducklings. Rostorfer, H. H., and Rigdon, R. H., Biological Bull. 92 : 23, 1947.
93. Blindness in Ducks Accompanying Hypoglycemia. A Clinical and Pathological Study. Rigdon, R. H., and Fletcher, D. E., Am. J. Path. 23 : 227, 1947.
94. Effect of Insulin on *Plasmodium Lophurae* Infection in Ducks. Rigdon, R. H., and Marvin, H. V., Am. J. Hygiene, 45 : 195, 1947.
95. Transverse Myelitis Accompanying Tuberculosis Meningitis. Rigdon, R. H., Am. Rev. Tbc. 55 : 332, 1947.
96. An *in Vitro* Study of the Mechanism Producing Rapid Diminution in the Parasitemia in Ducks Infected with *Plasmodium Lophurae*. Rigdon, R. H., Am. J. Hyg. 46 : 254, 1947.
97. Some Factors that Influence the Degree of Parasitemia in Ducks Infected with *P. Lophurae*. Rigdon, R. H. and McCain, B. E., Am. J. Trop. Med. 27 : 673, 1947.
98. Effect of 3,3'Methylenebis (4 Hydroxycoumarin) on Vitamin A Deficient Ducks. Rigdon, R. H. and Varnadoe, Nona B., J. Lab. & Clin. Med. 32 : 532, 1947.
99. Effect of 3,3'Methylenebis (4 Hydroxycoumarin) "Dicumarol" on *P. Lophurae* Infection in Ducks. Rigdon, R. H. and McCain, B. E., J. Natl. Malaria Soc. 7 : 38, 1948.
100. Tularemia in Arkansas. Rigdon, R. H. and Chesnutt, C. R., Jr., J. Ark. Med. Soc. 44 : 183, 1948.

101. Chronic Abscesses Secondary to Cholelitheiasis and Perforation of the Gallbladder. Rigdon, R. H., Am. J. Surg. 77: 124, 1949.
102. A Consideration of Glomerular Nephritis in its Relation to Sulfa Sensitivity. Rigdon, R. H., Sidden, W. H., and Fletcher, D. E., Am. J. Med. 6: 177, 1949.
103. Neurologic Manifestations Associated with Vitamin A Deficiency in Young Ducks, Fletcher, D. E. and Rigdon, R. H., Arch. Neurol. & Psych. 61: 199, 1949.

UNIVERSITY OF TEXAS, GALVESTON, TEX.

104. Clinical Observations on Vitamin A Deficiency in Young Ducks. Rigdon, R. H., Texas Rep. Biol. & Med. 5: 4, 438, 1947.
105. Diffuse Amyloidosis of the Skin Accompanying Primary Systemic Amyloidosis. Rigdon, R. H., Am. Practitioner 2: 423, 1948.
106. A Consideration of the Use of Blood and Oxygen as Supportive Therapy in the Treatment of Malaria. Rigdon, R. H., Am. J. Clin. Path. 18: 485, 1948.
107. Tularemia. Rigdon, R. H., Texas St. J. Med. 44: 392, 1948.
108. Multiple Lymphosarcomatous Ulcers in the Jejunum: Report of a Case. Rigdon, R. H., Rogers, F. F., and Kirksey, O. T., Texas Repts. Biol. & Med. 6: 414, 1948.
109. Effect of Blood and Oxygen on *P. Knowlesi* Infection in Monkeys. Rigdon, R. H., Am. J. Hygiene 48: 147, 1948.
110. Clinicopathologic Conference. Rigdon, R. H., Am. J. Clin. Path. 18: 387, 1948.
111. Hemoglobinuria (Blackwater Fever) in Monkeys. A Consideration of the Disease in Man. Rigdon, R. H., Am. J. Path. 25: 195, 1949.
112. Macroglossia Accompanying Primary Systemic Amyloidosis. Rigdon, R. H. and Noblin, Frances E., Ann. Otol., Rhinol. & Laryngol., 58: 470, 1949.
113. Frequency of Cancer in 7,500 Routine Autopsies Performed over a Period of 43 Years at The University of Texas Medical Branch. Rigdon, R. H. and Kidder, L. A. Texas Repts. Biol. & Med., 7: 237, 1949.
114. Effect of Antihistamine on the Localization of Trypan Blue in Xylene Treated Areas of Skin. Rigdon, R. H., Proc. Soc. Experi. Biol. & Med., 71: 637, 1949.
115. The Electrocardiogram of Normal and Malarial Infected Monkeys. Ruskin, Arthur and Rigdon, R. H., J. Lab. & Clin. Med. 34: 1105, 1949.
116. Lethal Effects and Electrocardiographic Changes Produced by Quinine Dihydrochloride in Malarial Infected Monkeys. Rigdon, R. H. and Ruskin, Arthur, J. Lab. & Clin. Med. 34: 1109, 1949.
117. Effect of Human Blood on *Plasmodium Knowlesi* Infection in Monkeys. Rigdon, R. H. and Breslin, Dorothy, J. Nat'l Malarial Soc. 8: 298, 1949.
118. Sudden Death During Pregnancy in Sickle Cel Anemia. Rigdon, R. H., Southern Med. J. 42: 1032, 1949.
119. Thrombosis of Cerebral Vessels with Necrosis of the Basal Nuclei. Rigdon, R. H. and Lefeber, Edward J., Am. Rev. Tbc. 61: 247, 1950.
120. Sudden Death during Childhood with Xanthoma Tuberosum. Rigdon, R. H. and Willeford, George, J.A.M.A. 142: 1268, 1950.
121. Pulmonary Arteritis due to Acquired Syphilis. Hejtmancik, Milton R., Bradfield, James Y., and Rigdon, R. H., Am. J. Syph., Gonor. & Ven. Dis. 34: 236, 1950.
122. Chorio-Epithelioma Following Hysterectomy. Willeford, George and Rigdon, R. H., Am. J. Surg. 80: 933, 1950.
123. A Consideration of the Phenomenon of "Sludged Blood" in Disease. Rigdon, R. H., Am. J. Clin. Path. 20: 946, 1950.
124. Sudden Death During Childhood with Xanthomata. Rigdon, R. H. J. Insurance Med. 5: #4, 1950.
125. Observations on the Effect of Certain of the Antimalarial Drugs on Erythrocytes. Rigdon, R. H. and Breslin, Dorothy, Texas Repts. Biol. & Med. 8: 371, 1950.
126. Effect of Phenylhydrazine Hydrochloride on *Plasmodium Knowlesi* Infection in the Monkey. Rigdon, R. H., Micks, Don W., and Breslin, Dorothy, Am. J. Hygiene 52: 308, 1950.
127. Primary Carcinoma of the Lung in Texas. Rigdon, R. H. and Brindley, Paul, Texas St. J. Med. 46: 885, 1950.
128. Observations on the Mechanism of Blackwater Fever. An Experimental Study in the Monkey. Rigdon, R. H. and Quattlebaum, J. E., J. Nat'l Malaria Soc. 9: 332, 1950.

129. Heinz Body Phenomenon in Monkey Erythrocytes: A Quantitative Method. Rigdon, R. H. and Breslin, Dorothy, Proc. Soc. Experi. Biol. & Med. 76: 242, 1951.
130. Necrosis of the Basal Nuclei in Cases of Tuberculous Meningitis Treated with Streptomycin. Rigdon, R. H., Tuberculology, March, 1951.
131. Frequency of Cancer of the Lung in all Malignancies Studied at Autopsy. Rigdon, R. H. and Kirchoff, Helen, Southern Med. J. 44: 506, 1951.
132. Accuracy of Death Certificates for Establishing the Frequency of Cancer as Shown by Autopsy. Rigdon, R. H. and Kirchoff, Helen, Texas Repts. Biol. & Med. 9: 652, 1951.
133. Some Complications Observed in Cases of Tuberculous Meningitis Treated with Streptomycin. Med. Rec. & Ann. 45: 525, 1951.
134. An Anomalous Coronary Artery Arising from the Pulmonary Artery. Cronk, E. S., Sinclair, J. G., and Rigdon, R. H. Am. Heart J. 42: 906, 1951.
135. Some Toxic Manifestations of Drug Therapy from a Pathologic Standpoint. Rigdon, R. H. Presented April 2, 1951 to the Medical Service Officer Basic Course, Army Medical Service Graduate School, Army Medical Center, Washington, D.C.
136. Effect of Hypervitaminosis A and Hypovitaminosis A on the Skeleton of a Duck. Rigdon, R. H. and Rude, J. G. Arch. Path. 52: 299, 1951.
137. Pathologic Lesions in the Nervous System of the Duck Fed a Ration Deficient in Vitamin A. Rigdon, R. H., Arch. Path. 53: 239, 1952.
138. A Consideration of Some of the Theories Relative to the Etiology and Incidence of Lung Cancer. Rigdon, R. H. and Kirchoff, Helen, Texas Repts. Biol. & Med. 10: 76, 1952.
139. Mycotic Aneurysm (Cryptococcosis) of the Abdominal Aorta. Report of a Case with Autopsy. Rigdon, R. H. and Kirksey, O. T., Am. J. Surg. 84: 486, 1952.
140. Pancreatic Fibrosis in Ducks on a Nutritional Basis. Miller, O. Neal and Rigdon, R. H., Proc. Soc. Experi. Biol. & Med. 80: 165, 1952.
141. Toxoplasmosis in Texas: Report of a Case with Autopsy. Corpening, T. N., Stembridge, V. A., and Rigdon, R. H., Texas St. J. Med. 48: 469, 1952.
142. Pathologic Characteristics of Fungus Disease as Observed at Autopsy. Rigdon, R. H., Texas St. J. Med. 48: 460, 1952.
143. Frequency of Cancer in the White and Colored Races as Observed at Autopsy between 1920 and 1949 at the Medical Branch. Rigdon, R. H., Kirchoff, Helen, and Walker, Mary Lee. Texas Rep. Biol. & Med. 10: 914, 1952.
144. A Consideration of Cardiac Hypertrophy in Sickle Cell Anemia. Stembridge, V. A. and Rigdon, R. H., Southern Med. J. 45: 948, 1952.
145. Tumors Produced by Methylcholanthrene in the Duck. Rigdon, R. H., Arch. Path. 54: 469, 1952.
146. Blood Volumes of Ducks Using Human Serum Albumin Labeled with Radioiodine (19955). Portman, Oscar W., McConnell, Kenneth P., and Rigdon, R. H., Proc. Soc. Experi. Biol. & Med. 81: 599, 1952.
147. Effect of Phenylhydrazine Hydrochloride on *Plasmodium Lophurae* Infection in the Duck. Rigdon, R. H., Micks, Don W., and Breslin, Dorothy. Royal Soc. Trop. Med. & Hyg. 47: 70, 1953.
148. Morphologic Changes in the Dog's Adrenal Gland Following Anoxia (20038). Rigdon, R. H. and Swann, H. G., Proc. Soc. Experi. Biol. & Med. 82: 111, 1953.
149. Acute Anemia Produced by Phenylhydrazine Hydrochloride in the Duck: Observations on Nucleated Erythrocytes *In Vivo*. Rigdon, R. H., Texas Rep. Biol. & Med. 11: 110, 1953.
150. Fibroma Arising from Feather Follicles of Ducks Following Local Application of methylcholanthrene to the Skin. Rigdon, R. H., Proc. Soc. Experi. Biol. & Med. 83: 34, 1953.
151. Intravascular Life Span of the Duck Red Blood Cells as Determined by Radio Active Selenium. McConnell, Kenneth P., Portman, D. W., and Rigdon, R. H., Proc. Soc. Experi. Biol. & Med. 83: 140, 1953.
152. A Review of the Effects of Selenium on the Hematopoietic System. Walker, Mary Lee and Rigdon, R. H., Texas Rep. Biol. & Med. 11: 547, 1953.
153. A Radio-Transparent Post-Mortem Table. Rigdon, R. H. and Freund, A. P., Texas Rep. Biol. & Med. 11: 512, 1953.
154. Inhibition of Maturation of Duck Erythocytes by Sodium Selenite. Rigdon, R. H., Crass, G., and McConnell, Kenneth P., Arch. Path. 56: 374, 1953.

155. Smoking and Cancer of the Lung—Let's Review the Facts. Rigdon, R. H. and Kirchoff, Helen, Texas Rep. Biol. & Med. 11: 715, 1953.
156. Capillary Permeability in Areas of Inflammation. Rigdon, R. H., Revue Canadienne De Biologie 12: 227, 1953.
157. Primary Disease Processes as Observed at Necropsy in 353 Pediatric Cases Examined between 1948 and 1952 at the Medical Branch of The University of Texas. Thomsen, M. and Rigdon, R. H., Texas Rep. Biol. & Med. 12: 182, 1954.
158. Spontaneous Regression of Neoplasms. An Experimental Study in the Duck. Rigdon, R. H., Southern Med. J. 47: 303, 1954.
159. The Physician, Crime, and the Court. Rigdon, R. H., Texas St. J. Med. 3: January 1954.
160. Spontaneous Occurrence and Regression of Hemangiomas in Chickens. Rigdon, R. H., The Southwestern Vet. 7: 311, 1954.
161. Smoking Habits of College Students in Texas. Kirchoff, Helen and Rigdon, H. H., Texas Rep. Biol. & Med. 12: 292, 1954.
162. Anemia Produced by Chloramphenicol (Chloromycetin) in the Duck. Rigdon, R. H., Crass, G., and Martin, Norma., Arch. Path. 58: 5, 1954.
163. Histologic study of the Bone Marrow in Normal White Pekin Ducks. Crass. G . and Rigdon, R . H., Arch. Path. 58: 158, 1954.
164. Experimental Production of Squamous-Cell Carcinomas in the Skin of Chickens. Rigdon, R. H. and Brashear, Doyle, Cancer Res. 14: 629, 1954.
165. Scientific Proof of the Reaction of the Body to Injury. Rigdon, R. H., Law and Medicine, A. Symposium, Journal of Public Law, 3: 615, 1954.
166. Role of Anoxia in the Pathogenesis of the Lesion in Acute Malaria. Rigdon, R. H., Vmes Congres Internationaux de Medecine Tropicale et du Paludisme, II: 186, 1954.
167. Effect of Vitamin B_{12} on Selenium Poisoning in the Rat. Rigdon, R. H., Couch, J. R., Brashear, Doyle, and Quereshi, R. Taher., Arch. Path. 59: 66, 1955.
168. Consideration of the Mechanism of the Anemia Produced by Chloramphenicol in the Duck. Rigdon, R. H., Martin, Norma, and Crass, G., Antibiot. & Chemother. 5: 38, 1955.
169. Spontaneous Regression of Hemangiomas: An Experimental Study in the Duck and Chicken. Rigdon, R. H., Cancer Res. 15: 77, 1955.
170. A Consideration of the Mechanism of Reticulocytosis: An Experimental Study in the Duck. Rigdon, R. H., Smiley, David, Crass, G., and Martin, Norma., Texas Rep. Biol. & Med. 13: 170, 1955.
171. Where Cancer of the Lung Occurs in Texas. Rigdon, R. H., Kirchoff, Helen and Martin, Norma., Texas Rep. Biol. & Med. 13: 162, 1955.
172. Atypical Cirrhosis in the Duck Produced by Methylcholanthrene. Rigdon, R. H., Am. J. Path. 31: 461, 1955.
173. Myxosporidia in Fish in Waters Emptying into Gulf of Mexico. Rigdon, R. H. and Hendricks, J. W., J. Parasitol. 41: 511, 1955.
174. Thiamine Deficiency in Sea Lion (Otaria California) Fed only Frozen Fish. Rigdon, R. H. and Drager, G. A., J.A.V.M.A. 127:453, 1955.
175. Neurogenic Tumors Produced by Methylcholanthrene in the White Pekin Duck. Rigdon, R. H., Cancer 8: 906, 1955.
176. A Patholic Study in Vitamin B_{12} Deficient Chick Embryos. Ferguson, T. M., Rigdon, R. H., and Couch, J. R. Arch. Path. 60: 393, 1955.
177. Cancer of the Lung before 1900. A Historical Review. Rigdon, R. H., Texas Rpts. Biol. and Med. 13: 993, 1955.
178. A Consideration of the Mechanism by which Squamous-Cell Carcinomatoid Tumors in the Chicken Spontaneously Regress. Rigdon, R. H., and Hooks, Murray D., Cancer Res. 16: 246, 1956.
179. Cataracts in Vitamin E Deficiency. An Experimental Study in the Turkey Embryo. Ferguson, T. M., Rigdon, R. H., and Couch, J. R., Arch. Ophthal. 55: 346, 1956.
180. Smoking Habits of 21,612 Individuals in Texas. Kirchoff, Helen and Rigdon, R. H., J. Nat'l Cancer Inst. 16: 1287, 1956.
181. Trauma and Cancer. An Experimental Study in the White Pekin Duck. Rigdon, R. H., Arch. Path. 61: 433, 1956.
182. Fibroelastosis in Adults. Garneb, Samira R. and Rigdon, R. H., Am. Heart J. 52: 138, 1956.

183. Frequency of Cancer in the White and Negro. A Study Based upon Necropsies. Kirchoff, Helen, and Rigdon, R. H., Southern Med. J. 49: 834, 1956.
184. Carcinogenesis in the White Pekin Duck. Rigdon, R. H., Texas Repts. Biol. & Med. 14: 508, 1956.
185. Tumors Induced in Skin Without Follicles. An Experimental Study in the Duck. Rigdon, R. H., Cancer Res. 16: 804, 1956.
186. Hemangiomas. An Experimental Study in the Duck. Rigdon, R. H., Walker, Jack, and Teddlie, A. H. Cancer 9: 1107, 1956.
187. Lymphoid Hyperplasia Produced in the Skin of Chickens by Methylcholanthrene. Rigdon, R. H., R.E.S. 2: 40, 1956.
188. Thyroid in B–12 Deficient Chick Embroys. Ferguson, T. M., Rigdon, R. H., and Couch, J. R., Endochrinology 60: 13, 1957.
189. A Consideration of Smoking and Cancer of the Lung with a Review of the Literature. Rigdon, R. H., Southern Med. J. 50: 524, 1957.
190. Histologic Study of the Skin of Hairless American Deer Mice (Peromyscus Maniculatus gambeli). Rigdon, R. H. and Packchanian, A. A., Arch. Path. 64: 210, 1957.
191. Spectrophotometric Examination of Cirrhotic Livers for 3-Methylcholanthrene From White Pekin Ducks Treated With This Carcinogen. Rigdon, R. H., Eason, Harold, and Neal, Jack, Texas Rept. Biol. and Med. 15: 916, 1957.
192. Cancer of the Lung and Smoking. A Review of some of the Data. Rigdon, R. H., proceedings of 1957 seminar, Aug. pp. 56–67, 1957, National Association of Coroners, Louisville, Ky.
193. Effects of Gossypol in Young Chickens With the Production of a Ceroid-Like Pigment. Rigdon, R. H., Crass, G., Ferguson, T. M., and Couch, J. R., Arch. Path, 65: 228, 1958.
194. Smoking and Disease. A Study Based Upon 12,050 Individuals. Rigdon, R. H. and Kirchoff, Helen. Texas Repts. Biol. and Med. 16: 116, 1958.
195. Air Sacs in the Turkey. Rigdon, R. H., Ferguson, T. M., Feldman, G. L., and Couch, J. R., Poultry Sci. 37: 53, 1958.
196. Spontaneous Hernias in the Axilla of the Turkey. Rigdon, R. H., Ferguson, T. M., Feldman, G. L., Stelzner, H. D., and Couch, J. R., Poultry Sci. 37: 169, 1958.
197. Tumors Induced by Methylcholanthrene in the Turkey. Rigdon, R. H., Texas Repts. Biol. & Med. 16: 232, 1958.
198. Cancer of the Lung From 1900 to 1930. Rigdon, R. H., and Kirchoff, Helen, Surg., Gyn. and Obst. 107: 105, 1958.
199. Effect of Dinitrophenol on Lens of Chick Embryo. Feldman, G. L., Ferguson, T. M., Rigdon, R. H., Reid, B. L., Cross, M. S., and Couch, J. R., Proc. Soc. Experi. Biol. and Med., 98: 646, 1958.
200. A Study of the Mechanism of the Experimentally Induced Pendulous Crop in the Turkey. Rigdon, R. H., Ferguson, T. M., Feldman, G. L., Wheeler, H. O., and Couch, J. R., Am. J. Vet. Res. 19: 681, 1958.
201. Fungi in the Crop of the Turkey. Manfre, A. S., Wheeler, H. O., Feldman, G. L., Rigdon, R. H., Ferguson, T. M., and Couch, J. R., Am. J. Vet. Res. 19: 689, 1958.
202. Trauma and Cancer: A Review of the Problem. Rigdon, R. H., Southern Med. J. 51: 1105, 1958.
203. In Vivo Production of a Ceroid-like Pigment in Chickens Given Gossypol. Rigdon, R. H., Ferguson, T. M., Mohan, V. S., and Couch, J. R., Arch. Path. 67: 94, 1959.
204. Cataracts Produced by Dinitrophenol. An Experimental Study. Rigdon, R. H., Feldman, G. L., Ferguson, T. M., Reid, B. L., and Couch, J. R., Arch. Ophthal. 61: 249, 1959.
205. Keratoacanthoma: Experimentally Induced with Methylcholanthrene in the Chicken. Rigdon, R. H., Arch. Dermat. 79: 139, 1959.
206. Cancer of the Lung—Sex Ratio. A Review of the Problem. Kirchoff, Helen and Rigdon, R. H., Texas Repts. Biol. and Med. 17: 29, 1959.
207. Mechanism of the Removal of Fluid and Particulate Material from the Respiratroy Tract of the Duck. Rigdon, R. H., Arch. Path. 67: 215, 1959.
208. The Respiratory System in the Normal White Pekin Duck. Rigdon, R. H., Poultry Sci. 38: 196, 1959.
209. Recognition of Trauma as a Cause of Cancer. Virginia Law Weekly 11, No. 15, March 1959.

210. Erythremic Myelosis. Bensch, Klaus, Rigdon, R. H., and Phillips, Charles. Texas Repts. Biol. and Med. 17 : 267, 1959.
211. Cataracts in Chickens with Lymphomatosis. Rigdon, R. H., Am. J. Vet. Res. 20 : 647, 1959.
212. The Pharmacological Action of Autonomic Drugs on the Eye of Fowls, Clouse, Melvin E. and Rigdon, R. H., Texas Repts. Biol. and Med. 17 : 305, 1959.
213. Spontaneous Cataracts in Turkeys. Rigdon, R. H., Ferguson, T. M., and Couch, J. R., Am. J. Vet. Res. 20 : 961, 1959.
214. Effect of Methylcholanthrene on the Respiratory Tract of the White Pekin Duck. Rigdon, R. H., Arch. Path. 68 : 578, 1959.
215. Effect of Tobacco Condensate on Respiratory Tract of White Pekin Ducks. Rigdon, R. H., Arch. Path. 69 : 55, 1960.
216. Amyloidosis-Experimental Production in Ducks with Methylcholanthrene. Rigdon, R. H., Texas Repts. Biol. and Med. 18 : 93, 1960.
217. Histopathogenesis of "Keratoacanthoma" Induced With Methylcholanthrene. Rigdon, R. H. Arch. of Dermatology. 81 : 381–387, 1960.
218. Histopathology of Animal Reaction to Pigment Compounds-chickens. The Chemistry of Gossypol. Rigdon, R. H. Natl. Cottonseed Products Assn. Inc. Dallas, 1960.
219. The Effect of Methylcholanthrene on the Gastro-intestinal Tract of the Duck. Rigdon, R. H., Tex. Rep. Biol. & Med. 18 : 275–283, 1960.
220. Experimental Studies on Cataract Formation. Ferguson, T. M., A. A. Swanson, J. R. Couch, G. L. Feldman and R. H. Rigdon. Am. J. of Ophthalmology. 49 : 79–81, May 1960.
221. Blood and Bone Marrow Differential Counts on the Rat. Rigdon, R. H. Gwendolyn Crass, and L. R. Richardson, Texas Rpts. Biol. & Med. 18 : 480–485, 1960.
222. Concretions in the Bladder of Male rats. Rigdon, R. H. The Journal of Urology. 84 : 307–310, 1960.
223. Pendulous Crops in Turkeys—An Anatomic and Pathologic Study. Rigdon, R. H. T. M. Ferguson, J. R. Couch. American J of Veterinary Res. 21 : 979–986, 1960.
224. A Long-term Feeding Study of Irradiated Foods Using Rats as Experimental Animals. Richardson, L. R., S. J. Ritchey, and R. H. Rigdon. Federation proceedings. Vol. 19 : 1023–1027, 1960.
225. Muscular Dystrophy : Spontaneous Occurrence in Ducks, Tex. Rpts. Biol. and Med. 19 : 167–177, 1961. Rigdon, R. H.
226. Pulmonary Neoplasms Produced by Methylcholanthrene in the White Pekin Duck. Rigdon, R. H. Cancer Res. 21 : 571–574, 1961.
227. Tumors After Implants of Methylcholanthrene in Ducks. Rigdon, R. H., and Syed Omer. Arch. of Path. 71 : 641–645, 1961.
228. Spontaneous Muscular Dystrophy in the White Pekin Duck. Rigdon, R. H. American J. of Path. 39 : 27–40, 1961.
229. Spontaneous Occurring Muscular Necroses and Encephalomalacia in the Turkey. Rigdon, R. H., T. M. Ferguson and J. R. Couch. Poultry Sci. 40 : 766–771, 1961.
230. Pendulous Crop in the Chicken—a Pathologic Study. Rigdon, R. H., American Journal of Veterinary Research, 22 : 379–381, 1961.
231. Amyloidosis, Spontaneous Occurrence in White Pekin Ducks. R. H. Rigdon, MD, American Journal of Pathology, 39 : 369–378, 1961.
232. Cancer of the lung—1930–1960. A Review. Rigdon, R. H., and Kirchoff, Helen. Texas Rept. Biol. and Med., 19 : 465–513, 1961.
233. Lesions in Ducks Given Methylcholanthrene. Rigdon, R. H., and McAnelly, S. M. Arch. of Path., 72 : 455–464, 1961.
234. Trauma and Cancer : A Relationship Based upon Cell Mutation. Rigdon, R. H. South. M. J., 55 : 341–344, 1962.
235. Spontaneous Occurring Muscular Necrosis in the Chicken. Rigdon, R. H., Ferguson, T. M. and Couch, J. R. Poul. Sci., 41 : 398–409, 1962.
236. Fatal Chickenpox : A Review of the Literature and a Report of a Case. Rigdon, R. H., Shojaii, S. H. and Garber, E. P. Am. Prac., 13 : 292–302, 1962.
237. Muscular Dystrophy in the Chicken. A Pathologic Study, Rigdon, R. H., Ferguson, T. M., and Couch, J. R. Texas Rept. Biol. and Med., 20 : 446–453, 1962.
238. Spontaneously Occurring Muscle Necrosis and Amyloidosis in the White Pekin Duck. Rigdon, R. H., Am. J. Vet. Res., 23 : 1057–1064, 1962.

239. Effect of Urethane on Pulmonary Tumors Produced by Methylcholanthrene. Rigdon, R. H. Texas Repts. Biol. and Med., 21: 65–73, 1963.
240. Pulmonary Lesions in Dogs from Methylcholanthrene. Rigdon, R. H. and Corseen, Gunter. Arch. of Path., 75: 323–331, 1963.
241. Carcinosarcoma of the Stomach. Arganaras, Edwardo and Rigdon, R. H. Gastroent., 44: 322–329, 1963.
242. Vital Statistics and the Frequency of Disease. Rigdon, R. H. and Kirchoff, Helen. Texas State J. Med., 59: 317–324, 1963.
243. Absorption and Excretion of Benzpyrene. Observations in the Duck, Chicken, Mouse and Dogs. Rigdon, R. H. and Neal, Jac., Texas Repts. Biol. and Med., 21: 247–261, 1963.
244. Clinicopathologic Conference. Rigdon, R. H.; Harrison, Wilson; Wilson, McClure; Chen, Julian; Green, Wm. O.; and Mazuelos, D. M. Texas State J. Med., 59: 705–711, 1963.
245. Galactose Intoxication. Pathologic Study in the Chick. Rigdon, R. H., Couch, J. R., Creger, C. R., and Ferguson, T. M. Experientia, 19: 349–357, 1963.
246. Absorption and Excretion of Benzpyrene in the Cockroach (Periplaneta Americana). Rigdon, R. H. and Neal, Jack. Experientia, 19: 474–481, 1963.
247. Perosis Secondary to Naturally Occurring Muscle Necrosis in the Duck. Rigdon, H. R. Am. J. Vet. Res., 24: 1030–1057, 1963.
248. Effect of Vitamin E on Spontaneous-Occurring Necroses in Striated Muscle of Ducks. Rigdon, R. H. J. Comp. Path. & Therap., 74: 85–89, 1964.
249. Fluorescence of Chickens and Eggs Following the Feeding of Benzpyrene Crystals. Rigdon, R. H. and Neal, Jack. Texas Rept. Biol. and Med., 21: 558–566, 1963.
250. Effect of Carcinogenic Hydrocarbons on Growth of Mice. Rigdon, R. H. and Giannukos, Nick J. Arch. of Path., 77: 198–204, 1964.
251. Absorption and Excretion of Benzpyrene When Fed to Mice. Rigdon, R. H. and Neal, Jack. Texas Rept. Biol. and Med. 22: 156–164, Spring, 1964.
252. Muscular Dystrophy in Man and Duck. A Comparative Study. Rigdon, R. H. and Drager, Glenn. Arch. of Int. Med., 113: 586–597, 1964.
253. Radiologic Lesions in white Pekin Ducks With Muscular Dystrophy. Rigdon, R. H. and Schreiber, M. H. Jour. of Comp. Path. and Therap., 74(2): 200–204, 1964.
254. Histologic Changes in Muscles of Chickens With Malformed Feet and Legs. Rigdon, R. H. Am. J. Vet. Res., 25: 768–733, 1964.
255. Effect of Feeding Benzpyrene on Reproduction in the Rat. Rigdon, R. H. and Rennels, E. G. Experientia, 20: 224–229, 1964.
256. Rupture of Spleen in Ducks With Amyloidosis. Rigdon, R. H. Arch. of Path., 78: 66–67, 1964.
257. Spontaneous Occurring Muscular Dystrophy in the white Pekin Duck. Rigdon, R. H. Texas Rept. Biol. and Med., 22(1): 930–939, 1964.

STATEMENT OF THOMAS H. BURFORD, M.D.

I am Thomas H. Burford, of St. Louis, Mo. I am a doctor of medicine specializing in thoracic surgery. I am professor of thoracic surgery at Washington University in St. Louis, and was a founder member of the Board of Thoracic Surgery. Since 1954 I have been chief of the chest surgical service at Barnes Hospital and the Washington University School of Medicine in St. Louis. From 1946 until 1954, I was associate chief under Dr. Evarts Graham who was a pioneer in the surgical treatment of cancer of the lungs. A detailed list of my qualifications is attached to my statement filed with the committee.

My major interest has been the diagnosis and treatment of lung cancer. My experience in the field has been significant. I have seen and treated over 4,000 cases of lung cancer during this period. I am not a cancer researcher and I am not a statistician. My opinions are based on a large clinical experience, on a thorough study of the scientific literature pertaining to lung cancer, and on an objective evaluation of published research and statistical studies.

I do not believe that lung cancer is caused by cigarette smoking and I do not believe that smoking is responsible for any shortening of life. The oft-quoted statistics purporting to prove that smoking does cause lung cancer or does

shorten human life have done nothing more than perhaps establish certain statistical associations which fall far short of proving a causal connection.

Cancer is a profound biologic phenomenon and it is my opinion that cancer is the same disease and is very probably caused by the same agent or agents regardless of what organ it affects. It is stretching credulity beyond reason to believe that the aforementioned statistics and these associations have been responsible for discovering the causes of disease that have thwarted the efforts of the best investigators for generations.

Cancer of the upper windpipe or trachea is one of the rarest diseases and yet the upper windpipe, which receives a greater exposure to tobacco smoke than the other parts of the windpipe, is the same from the structural and the microscopic point of view as the other major windpipes, including the major bronchi where most lung cancers are said to develop. This is a definite inconsistency and one that looms very important, in my mind at least, in the whole problem of lung cancer.

In the earlier studies alleging statistical association between smoking and cancer of the bronchus it was claimed that cancer of the bronchus occurred in descending order of frequency from the main to the smaller branches. A recent important study has shown that many tumors ostensibly primary in the large bronchi have actually arisen in a smaller and more distant bronchus and involve the larger one by direct extension. Many of us are now convinced that the majority of cases of lung cancer arise in a small bronchus rather than a major bronchus. This is the same type of inconsistency as the rarity of cancer in the upper windpipe since the smaller bronchi have little, if any, exposure to cigarette smoke. This also tends strongly to refute the cigarette-cancer causation theory.

A further reason for my disbelief is that I have found no really convincing evidence that the incidence of lung cancer is actually increasing although cigarette consumption has been rising for several decades. When one considers the fact that in 1940 methods of diagnosis were far less well developed than they are at the present time, and even those that were well developed were not exploited, the increase in lung cancer can be explained in part at least by the fact that a diagnosis of cancer is thought of in every case of chronic lung disease and all diagnostic methods are fully utilized. Post mortem examinations today are carrier out in a far more careful and meticulous fashion than they were two decades or even one decade ago resulting in more frequent discovery of lung cancers.

Another factor that contributes to the apparent numerical increase in lung cancer is the continuing lengthening of the lifespan of the human. More people are living to reach the older ages when cancer strikes than was true even a decade ago. This very important factor has been ignored by the investigators who have attempted to prove the connection between cigarette smoking and lung cancer.

Careful study of the literature will reveal that many thoughtful studies by competent people concur in this opinion that the cause of lung cancer, or for cancer in any organ is unknown. Without needlessly belaboring the issue it is obvious that there is a large volume of good scientific evidence which tends to refute the premise that cigarette smoking is causally related to cancer of the lung.

Of great importance is the increasing number of reports which tend to associate lung cancer with air contamination by the fumes of the internal combustion engine. It seems to me that any unbiased examination of the world's scientific literature will conclude that there is as much or more reason to suspect air pollutants as there is to suspect cigarette smoking.

It is fair to say that more and more competent investigators who previously manifested little interest in the problem have developed interest and are beginning to publish more and more significant studies contradictory to the causation hypothesis. It would be possible to cite many more reasons why this hypothesis is not scientifically sound. It suffices to say that in the opinion of many excellent, highly qualified investigators the cause of cancer in general and of lung cancer in particular is not proven.

Many of us feel that cancer will eventually be proven to be due to a virus-like substance and that it will very probably require a very special set of circumstances within the host for the cancer to develop. So long as the cause of cancer is unknown it would seem only reasonable that to raise an alarm about cigarette smoking is unwarranted.

CURRICULUM VITAE—THOMAS HANNAHAN BUFORD

Born: New Franklin, Mo.; December 23, 1908.
Education:
A.B., University of Missouri, 1931.
B.S., University of Missouri, 1933 (in medicine).
M.D., Yale University, 1936.
Graduate hospital clinical experience:
Intern, St. Louis University Group, 1936–37.
Intern, Barnes Hospital, 1937–38.
Assistant resident, Barnes Hospital, 1938–40.
Fellow in thoracic surgery, Washington University, 1940–42.
Academic positions:
Associate professor of surgery, Washington University, 1946–50.
Professor of thoracic surgery, Washington University, January 1, 1951.
Chief, thoracic and cardiovascular surgery, Barnes and allied hospitals.
Hospital appointments:
Associate surgeon, Barnes Hospital and St. Louis Children's Hospital.
Attending consultant surgeon in thoracic surgery:
Robert Koch Tuberculosis Hospital.
St. Louis City Hospital.
Homer G. Phillips Hospital.
Area consultant in thoracic surgery, Veterans' Administration, area 9.
Staff member, Jewish Hospital (also associate in thoracic surgery on ward service staff).
Consulting staff in surgery, St. Luke's Hospital.
Medical service consultant, U.S. Air Force hospital, Scott.
Consultant thoracic surgeon for:
Frisco Hospital Employees' Association.
Missouri Pacific Hospital Employees' Association.
Wabash Hospital Employees' Association.
Licensure: Missouri, 1937.
Certification:
American Board of Surgery, 1943.
Founder member, The Board of Thoracic Surgery, 1947.
Military service: Army, United States, December 24, 1941, to October 10, 1945.
Membership in societies:
Diplomat, American Board of Surgery.
American College of Surgery.
Board of Thoracic Surgery, founder member and member of the board, 1947–56.
Southern Medical Association.
American Association for the Surgery of Trauma.
American Association for Thoracic Surgery.
Excelsior Surgical Club.
National Trudeau Society, Missouri Chapter.
Sigma Xi.
American Medical Association.
Missouri State Medical Association.
St. Louis County Medical Society.
American Association for the Advancement of Science.
St. Louis Heart Association.
Western Surgical Association.
American Surgical Association.
Society for Experimental Biology and Medicine.
Society of Clinical Surgery.
Society of Vascular Surgery.
American Association of Trauma.
St. Louis Surgical Society.
Honorary degrees, special lectures, medals, awards, and distinctions:
Clarence M. Jackson Scholarship in Anatomy, University of Missouri.
Legion of Merit, World War II.
Honorary consultant, Los Alamos Medical Center.
Positions on editorial boards:
Associate editor, The Journal of Thoracic Surgery.
Acting editor, The Journal of Thoracic Surgery, 1957.
Editorial board, The Journal of Trauma.

Special committee appointments:
Advisory Membership Committee, American Surgical Association.
Advisory Council on Thoracic Surgery, American College of Surgeons.
Advisory Board, International Abstracts of Surgery.
Conference Committee on Graduate Training in Surgery.
Medical Conference Committee, Labor Health Institute.
Council American Association for Thoracic Surgery.
Credentials Committee, American College of Surgeons.
Dean's Committee, Veterans' Administration.
Medical Advisory Board, Washington University Clinics.
Membership Committee, American Association for Thoracic Surgery, chairman.

PUBLICATIONS OF THOMAS H. BURFORD, M.D.

1935

1. (with A. W. Diddle) "A Study of a Set of Quadruplets," The Anatomical Record, 1935, *61*: 281–293.

1936

2. (with E. Allen, A. W. Diddle and J. H. Elder) "Analyses of Urine of Chimpanzees for Estrogenic Content During Various Stages of Menstrual Cycle," Endocrinology, 1936, *20*: 546–549.
3. (with A. W. Diddle) "Effect of Total Hysterectomy Upon Ovary of Macacus Rhesus: Experimental Study," Surg. Gynec. & Obst., 1936, *62*: 701–707.
4. (with E. Allen and A. W. Diddle) "Effect of Total Thyroidectomy Upon Experimentally Induced Menstruation in Mature Ovariectomized Monkeys," Endocrinology, 1936, *20*: 635–648.

1937

5. (with E. Allen, R. V. Worthington, and A. W. Diddle) "Experimental Menstruation in Monkey after Removal of Ovaries and Adrenals," Proc. Soc., Exp. Biol. & Med., 1937, *36*: 162–163.

1940

6. (with J. A. Key) "Local Implantation of Sulfanilamide in Compound Fractures; Its Effect on Healing," South. Med. J., 1940, *33*: 444–455.
7. (with J. A. Key and C. J. Frankel) "Local Use of Sulfanilamide in Various Tissues," J. Bone & Joint Surg., 1940, *22*: 952–958.

1941

8. (with E. A. Graham) "Local Use of Sulfanilamide in Pleural Cavity," J. Thor. Surg., *11*: 203–209.
9. (with J. A. Key) "Prophylactic Implantation of Sulfanilamide in Clean Operative Wounds for Reduction of Post-Operative Infections," Surg., Gynec. & Obst., 1941, *73*: 324–332.

1942

10. (with B. Blades) "Influence of Sulfanilamide Therapy on Postpneumonia Empyema Thoracis," J.A.M.A., 1942, *118*: 950–952.

1943

11. (with J. H. Forsee and others) "Symposium on War Medicine; Management of Thoracic War Injuries," J. Lab.. & Clin. Med., 1943, *28*: 418–440.
12. (with J. H. Forsee and others) "El tratamiento de las heridas toracias de guerra," Prensa Med. Argent., 1943, *30*: 739–757.

1944

13. (with P. C. Samson and B. Burbank) "Report of Thoracic Surgical Service," M. Bull. North African Theat. Op. (No 1), 1944, *1*: 10.

1945

14. (with P. C. Samson) "Management of War Wounds of Thorax in Overseas Theater," Clinics, 1945, *3*: 1561–1585.
15. (with E. F. Parker & P. C. Samson)"Early Pulmonary Decortication in the Treatment of Post-Traumatic Empyema," Ann. Surg., 1945, *122*: 163–196.
16. "Review of 1,000 Thoracic Cases," Bull. U.S. Army Med. Dept., 1945, *89*: 70–72.
17. (with Benjamin Burbank) "Traumatic Wet Lung," J. Thor. Surg., 1945, *14*: 415–424.
18. (with P. C. Samson et al) "Immediate Care of the Wounded Thorax," J.A.M.A., 1945, *129*: 606–610.

1946

19. (with Benjamin Burbank) "Experience in the Localization of Thoracic Foreign Bodies," J. Thor. Surg., 1946, *15*: 64–75.
20. (with P. C. Samson, L. A. Brewer and B. Burbank) "The Management of War Wounds of the Chest in a Base Center," J. Thor. Surg., 1946, *15*: 1–30.

1947

21. (with P. C. Samson) "Total Pulmonary Decortication; Its Evolution and Present Concepts of Indications," J. Thor. Surg., 1947, *16*: 127–145.
22. (with E. E. Graham) "Primary Carcinoma of the Lung," Modern Med., 1947, *15*: 63–65.

1948

23. (with W. Cole and R. Elman) Textbook of General Surgery, Fifth edition, Appleton-Century, 1948.
24. (with M. J. Carson) "Diagnosis and Surgical Treatment of Certain Congenital Cardiovascular Anomalies," J. Pediatrics, 1948, *32*: 495–515.
25. (with E. A. Graham and J. H. Mayer) "Middle Lobe Syndrome," Postgrad. Med., 1948, *4*: 29–34.
26. (with E. F. Parker) "Pulmonary Decortication in the Treatment of Early Pyogenic Empyema," Surgery, 1948, *24*: 371–391.
27. (with M. J. Carson, W. G. Scott and J. Goodfriend) "Diagnosis of Pulmonary Stenosis by Angiocardiography," J. Pediatrics, 1948, *33*: 525–543.
28. (with M. J. Carson) "Visualization of the Aorta and Its Branches by Retroarterial Diodrast Injection," J. Pediatrics, 1948, *33*: 675–687.

1949

29. (with E. M. Bricker and B. Eiseman) "The Use of Tubed Pedicle Grafts in Carcinoma of the Upper Esophagus," J. Thor. Surg., 1949, *18*: 304–315.
30. (with M. J. Carson and W. G. Scott) "Angiocardiography and Aortography in the Diagnosis of Congenital Cardiovascular Lesions," J. Thor. Surg., 1949, *18*: 860–868.

1950

31. "Coarctation of the Aorta and Its Treatment," Surg. Clin. N. Amer., 1950, *30*: 1249–1258.
32. "Diagnosis and Management of Chest Tumors," So. Med. J., 1950, *43*: 755–759.
33. "Pulmonary Paraffinoma" (Lipoid Pneumonia), J. Thor. Surg., 1950, *20*: 418–428.
34. "Respiratory and Circulatory Studies After Pneumonectory in Childhood," J. Thor. Surg., 1959, *20*: 484–493.
35. (with F. H. Taylor and A. Roos) "Respiratory and Circulatory Studies in Patients After Bilateral Lobectomy," J. Thor. Surg., 1950, *20*: 947–981.

1951

36. (with L. H. Bosher, Jr., and L. V. Ackerman) "The Pathology of Experimentally Produced Lye Burns and Strictures of the Esophagus," J. Thor. Surg., 1951, *21*:483–489.

1952

37. (with Watts Webb) "Gangrene of the Arm Following Use of the Subclavian Artery in a Pulmonosystemic (Blalock) Anastomosis," J. Thor. Surg., 1952, *23*: 199–205.
38. (with J. G. Gabbard, A. Roos and D. Eastwood) "The Effect of Ether Anesthesia Upon Alveolar Ventilation and Acid-Base Balance in Man," Ann. Surg., 1952, *136*: 680–690.
39. (with Bercu, B. A. and Massie, E.) "Trends in Mitral Valvuloplasty," Proc. Central Soc. for Clin. Research, 1952, *25*: 7–9.

1953

40. (with Watts Webb) "Studies of the Re-expanded Lung After Prolonged Atelectasis," Arch. Surg., 1953, *66*: 801–809.
41. (with Watts Webb and Lauren V. Ackerman) "Caustic Burns of the Esophagus and Their Surgical Management," Ann. Surg., 1953, *138:* 453–460.

1954

42. (with J. F. Neville, Jr., and B. Bercu) "Selective Angiocardiography," Surg. Forum. Am. Coll. Surgeon, 1954.
43. (with F. H. Taylor) "Hemoptysis," Missouri Med., 1954, 19–22.

1955

44. (with L. H. Bosher) "The Mediastinum," Pullen, R. L. Pulmonary Diseases, Lea and Febriger, Phila., 1955, 557–605.
45. (with J. H. Mayer) "The Diaphragm," Pullen, R. L., Pulmonary Diseases. Lea and Febriger, Phila., 1955, 606–630.
46. "Injuries of the Thorax and Its Contents," Pullen, R. L., Pulmonary Diseases, Lea and Febriger, Phila., 1955, 631–656.
47. (with G. H. Lawrence) "Caustic Burns of the Esophagus," Postgrad. Med., 1955, *18:* 159–164.
48. (with G. H. Lawrence) "Congenital Aneurysm of the Superior Vena Cava," J. Thor. Surg., 1955, *31:* 327–330.

1956

49. (with G. H. Lawrence et al) "Evaluation of Mitral and Aortic Valvular Disease by Left Heart Catheterization," Surg. Gynec. and Obst., 1956, *101:* 558–562.
50. (with Carl E. Lischer) "Theatment of Short Esophageal Hernia With Esophagitis by Finney Pyloroplasty," Ann. Surg., 1956, *144:* 647–651.

1958

51. (with Sol Center et al.) "Results in the Treatment of Bronchogenic Carcinoma," J. Thor. Surg., 1958, *36:* 316–324.
52. "Evarts Ambrose Graham" Eulogy, J. Thor. Surg., 1958, *36:* 281–284.
53. (with Thos. B. Ferguson) "Tumors of the Lung and Mediastinum," Chap. II Surgical Treatment B. M. Fried., Lea and Febriger, 1958, Phila., Pa.

1959

54. (with Thos. B. Ferguson) "The Role of Surgery in the Management of Unilateral Pleural Effusion," Ann. Int. Med., 1959, *50:* 981–997.
55. Chapter on Lungs and Mediastinum, Textbook of Surgery, Cole and Elman, 7th edition, Appleton-Century-Crofts, N.Y., N.Y.

1960

56. (with Thos. B. Ferguson, D. Goldring and M. R. Behrer) "Coarctation of the Aorta in Infants," J. Thor. Surg., *39:* 47–59, 1960.
57. (with Thos. B. Ferguson) "An Evaluation of the Modified Heller Operation in the Treatment of Achalasia of the Esophagus," Ann. of Surg., 1960, *152:* No. 1.

58. (with Myron W. Wheat, Jr.) "Digitalis in Surgery: Extension of Classical Indications," J. Thor. & Cardiovascular Surg., 1961, *41:* No. 2, 162–168, C. V. Mosby Co., St. Louis, Mo.
59. (by invitation with Jos. H. Ogura, and Chas. L. Roper) "Complete Functional Restitution of the Food Passages in Extensive Stenosing Caustic Burns," J. Thor. & Cardiovascular Surg., 1961, *42:* No. 3, 340–351; 359–362, C. V. Mosby Co., St. Louis, Mo.
60. (with Watts R. Webb) "Current Concepts of the Management of Acute Mediastinitis," Am. Surg., *28:* 309–319.

1962

61. (with Hakan Arvidsson, Brent M. Parker) "Coronary Artery Occlusion, A Compilcation of Thoracic Aortography in a Patient with Calcific Aortic Stenosis," Am. J. Cardiol., *10:* 115–119.

1963

62. (with Marvin J. Friedenberg, Alexis F. Hartmann, Jr. and Jerome L. Silverman) "Opacification from the Pulmonary Artery of an Anomalous Left Coronary Artery," Radiology, *80:* 806–810.
63. (with Brent M. Parker, Erik C. Carlsson and Edward F. Buchner) "The Diagnosis of Aorticopulmonary Septal Defect," Am. Heart J., *65:* 534–541.
64. (with Lyman A. Brewer, III) "Administrative Considerations in the Mediterranean (Formerly North African) Theater of Operations," History of World War II, Thoracic Surgery, Vol. 1, pp. 73–111.
65. "Evolution of Clinical Policies in the Mediterranean (Formerly North African) Theater of Operations," History of World War II, Thoracic Surgery, Vol. 1, pp. 185–212.
66. "Reparative Surgery," History of World War II, Thoracic Surgery, Vol. 1, pp. 299–303.
67. (with Hiram C. Polk, Jr., M.D.) "Hiatal Hernia in Infancy and Childhood," Surgery, *54:* 521–525.
68. (with Kirkley R. Williams, M.D.) "The Management of Chylothorax Related to Trauma," J. Trauma, *3:* 317–325.
69. (with B. M. Parker, M.D., Lee C. Shine, M.D., and Kirkley R. Williams, M.D.) "Indwelling Electronic Cardiac Pacemakers," J.A.M.A., *186:* 94–98, November, 1963.

1964

70. (with J. N. Middlekamp, M. L. Purkerson) "The Changing Pattern of Empyema Thoracis in Pediatrics," J. Thor. & Cardiovascular Surg., *47:* 165–173, 1964.

STATEMENT OF JOSEPH B. WOLFFE, M.D.

I am Joseph B. Wolffe, a doctor of medicine, a member of the American Medical Association, and a founder member of the U.S. Committee of the World Medical Association. I am medical director of the Valley Forge Heart Hospital & Medical Center, Norristown, Pa., and of the Wolffe Clinic & Hospital, Philadelphia. I am certified by the American Board of Internal Medicine, a founder and honorary trustee of the American College of Cardiology, a founder and former director of the American Society for the Study of Arteriosclerosis and for many years chairman of the Nomenclature Committee, a fellow of the American College of Angiology and recipient of its honor certificate in June 1964; a member of the Council on Arteriosclerosis, Council on Circulation, Clinical Cardiology and Council for High Blood Pressure Research of the American Heart Association and a number of other national and international organizations which are herewith appended.

For 17 years, I was associate professor of medicine at Temple University School of Medicine, in charge of cardiology. I am an associate editor of the Encyclopedia of Cardiology, American editor of the Journal of Sports Medicine and Physical Fitness and one of the editors of the Encyclopedia of Science and Sports Medicine (to be published). For over 40 years, my major interest in internal medicine has been the prevention and treatment of diseases of the heart and blood vessels. In this country and abroad, I have studied and treated thousands upon thousands of patients and am the author of more than 150 scien-

tific publications. My qualifications in greater detail and a partial list of my publications are hereto attached.

I am convinced that in our country a harmful psychological atmosphere has already been created by otherwise well-meaning warnings and advertisements. Emphasis on disease rather than health appears in profusion in newspapers, magazines, on radio, and with startling effect on television. As the result of this, a great many people, particularly those who are impressionable, have been traumatized with fear of disease, which has resulted in a prevalence of unwarranted anxieties and neuroses. The effect is harmful and, in my opinion, causes more damage than good. By stressing periodic medical examinations much more can be accomplished without resorting to campaigns based on fear. During a drive for funds to help research and treatment of this or that particular disease, physicians' offices are overcrowded with impressionable patients who fear they have succumbed to one or another of these diseases which are currently being publicized and the symptoms mentioned.

It should be noted that a causal relation between smoking and cardiovascular disease has not been established, despite some reports to the effect that a statistical association exists in the male segment of our population between excessive cigarette smoking and atherosclerosis, the most common form of arteriosclerosis or "hardening of the arteries." These statistics do not warrant the establishment of scientifically acceptable proof of a causal relationship. Although women are smoking much more than previously, there has been no increase in coronary disease among them to the best of my knowledge.

The point is this: A mere statistical correlation between a supposed cause and a known effect is not enough in and of itself to establish a causal relationship between the two. Among my own statistical studies of the profile pattern of smokers, a very unexpected finding suggested itself. Individuals who smoked gave a history of a greater number of extramarital relationships than those who did not smoke. Is it possible to deduce that the use of tobacco is responsible for more extramarital relationships? Of course it is not.

Let us further illustrate. A man is subject to a great many tensions and pressures. He smokes or habitually paces the floor or shows other mannerisms—he develops cardiovascular disease. May we assume that habitual pacing of the floor or the various mannerisms cause cardiovascular disease? Of course not. And by the same token there is no ground from such facts alone for concluding that his smoking is an etiologic factor in the causation of the disease. In other words, statistical correlation by itself is simply not enough. Let me go further. If the patient should be advised to stop smoking and he does so, but his tensions and pressures remain unaltered and he still shows manifestations of nervousness such as being short tempered, pacing the floor or other individual mannerisms, his condition or disease invariably progresses—despite his giving up smoking. However, if over a period of time, a coronary patient succeeds in alleviating pressures and tensions, his cardiovascular picture improves or at least remains unchanged.

Now the picture is different. Now we have not only a statistical correlation between unabated pressures and tensions on one hand and coronary artery disease on the other, but also the arresting or the reversal of the disease by the elimination of the suspected cause. One therefore feels justified in maintaining that a causal relationship between tensions and pressures and ensuing coronary disease has been established. But we have not found that the patient improves by the mere elimination of smoking.

Smoking may aggravate existing cardiovascular disease such as thromboangiitis obliterans, cor pulmonale, or other cardiac diseases associated with respiratory infections.

It is important to bear in mind that coffee, too, may aggravate some heart conditions because it tends to overstimulate an already hyperirritable heart in susceptible nervous individuals—causing or aggravating palpitation, heart consciousness, pounding in the chest, cardiac irregularities, and insomnia. I am sure that the Government, in its wisdom does not intend to place a skull and crossbones on jars of coffee or soft drinks containing caffeine because it may overstimulate the heart in some susceptible individuals.

The most accurate statement on tobacco that I can make at this stage is that smoking per se does not cause organic cardiovascular disease. I say this on the basis of (*a*) my own experiments, (*b*) my clinical observations, and (*c*) a critical survey of the literature.

There is a variety of cardiovascular diseases caused by known as well as unknown etiologic factors. Under the age of 40, childhood rheumatism or so-

called rheumatic fever, associated with damage of heart valves, the heart muscle, and the cover of the heart or pericardium, is the most common. After the age of 40, the one most frequently seen is atherosclerosis, a soft-hardening form of arteriosclerosis or so-called hardening of the arteries as previously mentioned. In this disease, the arteries tend to become clogged and various parts of the body may suffer from lack of blood supply. The heart muscle may become impaired because of blocking of the coronary arteries, upon which it depends for its blood supply; this condition is frequently referred to as a "heart attack" or coronary thrombosis. There may be impairment of brain function as the result of obliteration of the cerebral vessels upon which the brain depends for its blood supply—commonly known as strokes or little strokes. Impaired vision occurs in some individuals. The circulation to the lower extremities may be diminished with threatened or actual development of gangrene. It is a disseminated disease. Atherosclerosis is prevalent among the affluent and is more common in the Western countries and among the sedentary population.

It has been satisfactorily proven that a diet high in saturated animal fat is one of the factors in the genesis of atherosclerosis, provided there is hereditary predisposition to the disease. This is supported by clinical studies. Certain types of endocrine (glandular) dysfunctions are often associated with atherosclerosis as well as other cardiac disturbances. This does not mean that high fat intake will cause atherosclerosis in nonsusceptible individuals. Similarly, excessive intake of sugars and starches will not cause diabetes in nonsusceptible subjects, while the same amount of sugar and starches will convert a latent diabetic to a true diabetic. Here, again, the consumption of sugar and starches per se does not cause diabetes. Evidence is accumulating which points to the fact that a sedentary life and lack of exercise are also implicated as possible factors in the development of atherosclerosis.

A high fat diet, rich in cholesterol, is used routinely to induce experimental atherosclerosis in animals in many institutions devoted to research. Since the 1930's our group of investigators has had such animals on hand at all times to help in the search for effective forms of therapy. What may interest the members of this important committee, I believe, is the fact that a number of years ago we were studying methods to hasten the development of atherosclerosis in animals fed on a high fat and cholesterol diet. Among the methods tried was the inhalation of tobacco in a smoke chamber. To our disappointment, there was no acceleration noted in the disease by this method. On the other hand, marked limitation of the animals' physical movements hastened the onset and aggravated the existing disease. Despite a high fat and atherogenic diet, we could not produce the same degree of atherosclerosis if the animals were exercised. Colonies of animals in which the disease was induced by confinement and overfeeding showed marked regression of the atherosclerotic process to near normalcy when the animals were gradually and adequately exercised. (I shall be glad to present, to those interested, published data pertaining to this and some other pertinent concepts expressed by me at this hearing.) Yet, despite accumulated evidence linking high fat and high cholesterol diets to the cause of cardiovascular diseases in susceptible subjects, the printing of warnings on packages of lard or bacon is not even suggested and, of course, would be unwarranted.

I cannot accept the theory of causal effect of cigarette smoking in atherosclerosis for many reasons. First of all, there is a complete absence of animal experiments to support it. I have referred earlier in this discussion to the negative results of our own experiments, and I know of no successful attempt by anyone to induce organic cardiovascular disease in experimental animals by the inhalation of cigarette smoke.

Although one cannot always equate animal experiments to man, our investigation of human beings parallels to a great extent that of our animal experiments.

Secondly, as far as atherosclerosis involving the coronary arteries is concerned, recent clinical observations warrant emphasis on stressful living as another important etiologic factor. This was pointed out during a presentation before the First International Conference on Preventive Cardiology, at the University of Vermont, in August of 1964. This paper is entitled "Situational Stresses as Cause of Cardio-Vascular Diseases (The Nutcracker Syndrome)." The term "nutcracker syndrome" has been coined by us to describe a group of diseases resulting from inextricable conflicting noxious forces. Stressful, interpersonal and environmental impacts will gain expression through an individual's *locus minoris resistentiae*—the "Achilles heel" of man. If the coronary vessels are vulnerable, coronary thrombosis may occur. If other vessels supplying other organs are affected, the damage may occur to an eye, the brain or an extremity.

An encouraging note is that alleviation of stresses, proper dietary regimen and prescribed physical activity with periods of relaxation are important therapeutic measures which have been proven to save and prolong life.

In 1959, in preparation for an investigation of monoamine oxidase inhibitors in the treatment of angina pectoris, we asked a group of patients to discontinue smoking. This was done in the hope of testing a drug in a context uncomplicated by too many other factors. We found that 62 percent of patients in this group did not follow instructions and continued to smoke. An undesirable gain in weight was observed in the 38 percent of patients who cooperated. The average gain in weight was 3 pounds in that month and several individuals gained as high as 12 to 14 pounds. A great number of patients required sedatives and tranquilizers as substitutes for smoking. Smoking was possibly their means of copying with stress. The difference in frequency and severity of attacks of angina pectoris among smokers and nonsmokers during one month of clinical trial was of no statistical significance.

It has been suggested that cigarette smoking has a constricting effect on the vessels of the heart. Recent studies of the coronary arteries using catheterization, failed to show vasoconstricting effects of tobacco on the coronary arteries.

In summary, although I have studied the problem for more than 25 years, I do not believe that cigarette smoking causes organic cardiovascular disease. May I state that I would be seriously disturbed, as a physician, as I am sure many others would be, if fear-producing warnings were introduced to the American home and dining table. It may turn out to be a powerful disease-producing factor. If such actions are entertained, it would logically follow that warning labels should be placed on ingestible products such as lard, butter, cream, ice cream, candy, sugar and coffee, all of which may in some instances be harmful. Overconcern with disease is in itself disease producing. We must guard against excesses in our warnings, lest we find that warnings on vital matters will go unheeded. Warnings of the nature proposed should be reserved for situations of undisputed certainty and not used in situations which are speculative at best.

BIOGRAPHICAL DATA—JOSEPH B. WOLFFE, M.D., F.A.C.C., F.A.C.A., F.A.C.S.M.

Certified internal medicine, 1937.

EDUCATION

Premedical: University of Glasgow, Scotland.
Medical: Temple University School of Medicine, 1919.
Internship: Mt. Sinai Hospital (Einstein Medical Center, Southern Division Philadelphia, Pa., 1919–20).
Chief resident physician: Mt. Sinai Hospital, 1920–21.
Cardiologist and assistant visiting physician, Mt. Sinai Hospital, 1922–23.
Course in electrocardiography at University of Pennsylvania, 1923.
Lecturer in cardiology, Temple University School of Medicine 1923, in charge of outpatient department.
Lecturer in correlative medicine at Temple University until 1930.
Assistant professor of medicine, Temple University School of Medicine 1930.
Associate professor of medicine, Temple University School of Medicine, 1932–47. in charge of cardiovascular division.
Informal postgraduate course in cardiology at major European universities such as University of Vienna, Paris, and St. Andrews, Scotland, during summer months of years preceding World War II.
Dr. Wolffe left Temple University to become medical director of the Wolffe Hospital, the first group practice in this part of the country. He is medical director of Valley Forge Medical Center and Heart Hospital, Valley Forge Heart Research Institute.

MILITARY SERVICE

Lieutenant Commander (MC) U.S. Naval Reserve in specialist division, commissioned April 17, 1939, (former) consultant 4th Naval District, appointment September 9, 1937.

PROFESSIONAL AFFILIATIONS

Philadelphia County Medical Society (life member); Pennsylvania County Medical Society; American Medical Association; American Heart Association (member of Council on Arteriosclerosis, Clinical Cardiology, Hypertension);

served on Board of Governors of Philadelphia Heart Association; American Therapeutic Society (former vice president); founder and director of American Association for the Study of Arteriosclerosis which has become Section on Arteriosclerosis of the American Heart Association; founder and trustee (at present honorary trustee upon reaching age level outlined in constitution) American College of Cardiology; former chairman of Workshop Committee of American College of Cardiology; founder, member of board of trustees, former president (three consecutive terms) American College of Sports Medicine; World Medical Association; Association of Military Surgeons; fellow American College of Angiology; vice president and member of Executive Committee, International Federation of Sports Medicine; chairman, International Depository Committee on Olympic Medical Archives—FIMS; delegate to International Physiologic Congress, Rome 1932 and Moscow 1935; participant of Conference on Fitness of American Youth by invitation of President Eisenhower, 1955, 1956.

AWARDS

New Jersey Medical Society for Scientific Exhibit on Arteriosclerosis; Laymen's Honor Award Pennsylvania Physical Education Society; Anderson Award of American Association for Health, Physical Education, and Recreation; Honor Award of American College of Sports Medicine; Citation of Merit by Physicians Square Club of America, Honor Award for Science in recognition of his work in behalf of preventive medicine as chairman of the Olympic Medical Archives presented by Governor Asuma of Tokyo, October 1964.

PUBLICATIONS

List attached: associate editor of Cardiology (Encyclopedia of the Cardiovascular System); associate editor, Journal of Sports Medicine and Physical Fitness; associate editor of Encyclopedia of Sports Medicine.

REPRINT LIST

1927: Angina Pectoris, Sajou's Analytic Cyclopedia, 10 Ed. F. A. Davis Co., Phila.
1928, June: The Electrocardiogram in Coronary Disease as Compared to the Normal, Atlantic Med. J.
1929: Two Methods for Teaching Cardiac Arrhythmiss, Correlating the Electrical and Hydrostatic Events, Medical and Surgical Year Book, Physicians Hosp. of Pittsburgh, Vol. 1.
1930, Jan. 15: Case of Infection with Bacillus Aerogenes Capsulatus, Medical J. and Record.
1930, May: The Heart in General Practice, W. Va. Med. J. 26: 1–11.
1930, May: Résumé of Methods in Cardiac Diagnosis (M. Schumann, M. D.), Medical Times.
1931, January: Cessation of Attacks of Auricular Paroxysmal Tachycardia by the Use of Calcium (with S. Dellett, M.D.), Ann. Int. Med. 4: 795–803.
1931, June: The Therapy of Tissues Extract (Desympatone), Tr. Am. Ther. Soc. 1931–51–4.
1932, February: Coarctation of the Aorta Associated with Rheumatic Infection and Anourysm of the Innominato Artery—Case Report, Arch. Podiat. 49: 100–108.
1933, June: Angina Pectoris: Its Treatment with Insulin-Free Pancreatic Extract (Dysympatone), Medical World.
1933, July: V. A. Dermatologic Test Suggesting Autonomic Imbalance, J. Lab. & Clin. Med. 18: 1012.
1933, September: Angina Pectoris—Its Possible Causes and Treatment, Penna. Med. J.
1933, December: Rheumatic Heart Disease, Active and Arrested, Arch. Pediat. 50.
1934, February: The Silent or Auscultatory Gap (with Chas. J. Brim, M.D.), Med. Record.
1934, April: A Doctor's Message to Instructors in Physical Education, Cadet of Phi Delta Pi.
1934, August: VII. Autonomic Imbalance in Animals, J. Lab. & Clin. Mod. 19: 1184.
1934, August: Aconito. IV. Electrocardiographic and Pharmacological Studies of Aconite and Its Alkaloids (with J. C. Munch), J. Pharm. & Exp. Thor. 51: 471–475.

1935, August: Experimental Air Embolism (H. F. Robertson, M.D.), Ann. Int. Med. 9: 162–165.
1936, August: The Abdominal Syndrome of Rheumatic Disease in Childhood (with Chas. J. Brim, M.D.), J.A.M.A.
1936, June 19: Basal Pericarditis—A Sign of Early Rheumatic Infection, J.A.M. 108: 2101–2102.
1937, June: Gastro-Intestinal Factors in Angina Pectoris (with V. A. Digilio, M.D.), Tr. Am. Ther. Soc.
1937, September: Acute Psychosis Associated with Coronary Thrombosis (with A. Silverstein, M.D.), Penna. Med. J.
1938, March: Exhibit Number 27, Pancreatic Hormone (Insulin-Free) in Cardiovascular Disease (with V. A. Digilio, M.D.), J. Med. Soc., N. Jersey.
1938, April: Newer Concepts in the Diagnosis and Treatment of Juvenile Rheumatism (V. A. Digilio, M.D.). J. Lab. & Clin. Med.
1939, January: Lethal Differences Between Pancreatic Extract (Wolffo) and Acetyl Beta-Methylcholino in Atropinized Animals, J. Lab. & Clin. Med. 24: 360–366.
1939, January: Pancreatic Extract (Enzyme-Free) in the Treatment of Diabetic and Arteriosclerotic Gangrene, Am. J. Surg. 43: 109–18.
1939, January–February: Treatment of Angina Pectoris, Rev. Castroenterology 6: 36–40.
1939, November: The Effects of Extracts of Normal and Abnormal Thyroids on the Rabbit Heart and Liver, Western J. Surg., Obs. & Gyn.
1940, January: Independent vs. Interconnected Time Marking System Employed in Electrocardiography, Ann. Int. Med. 13: 1160–66.
1941, April: Atheromatous Cardiovascular Disease. Newer Concepts in Diagnosis and Treatment, Del. State Med. J.
1942, January: The Importance of an Acid-Ash Diet and Increased Amount of Water Intake in the Treatment of Edema, Address delivered before Dietitians' Assembly.
1942, May: Thrombosis of Renal Artery Simulating Coronary Thrombosis (with D. J. Donnelly), J.A.M.A. 119–127.
1942, May: Recognition and Management of Cardia Neurosis, J. Med. Soc. N. Jersey.
1943: Clinical Recognition and Management of Thrombosis of the Renal Artery and its Branches (Atherothrombosis of the Renal Artery), Urol. & Cut. Rev. 47: 276–281.
1945, August: Atheromatosis to be Distinguished from Arteriosclerosis, Military Surgeon 97: 92–100.
1947: Early Cardiac Signs of Childhood Rheumatism—Practical Aspects and Significance (with G. W. Mueller), Clin. Med. 54: 37–41.
1947: The Heart of the Athlete (G. W. Mueller), Phila. Board of Ed.
1947, June: Subconjunctival Hemorrhage During Rutin Therapy (with A. W. Danish, M.D.), J.A.M.A. 134: 692–693.
1947, Sept.-Oct.: Arteriosclerosis—At Present a Melting Pot of Arteriopathics; Geriatrics 2: 296–300.
1948, July: What Value Enteric Coating, Am. J. Med. 5: 87–89.
1948, June: The Heart in the Athlete (with V. A. Digilic, M.D.), Journal-Lancet 68: 228.
1948, Aug.: The Effect of Rutin on Coagulation Time of Rat Blood, J. Pharm. & Exp. Ther. 94: 4.
1949: The Heart in the Athlete, J. A. Ass. Health, Phys. Ed. & Recr. 62: 89.
1949: Attitudes vs. Atoms, Med. Wom. J.
1949: Experimental Atheromatosis and Hepate-Atherosis in Ducks and Geese: Its Reversibility and Clinical Applications, Am. Heart J. 38: 467.
1950, Nov.: The Liver in the Atheromatous Syndrone, Ann. Western Med. & Surg.
1951, July: Bishydroxycoumarine and Myocardial Infarction, J.A.M.A. 146: 1274.
1951: Atheromatous Coronary Artery Disease, Transact. of the Am. College of Card. 1: 122.
1952, January: Studies in Experimental Atheromatosis. Atheromatosis and Hepatic-Atherosis in Geese. Possible Reversibiilty and Clinical Implications, Gerentology 7: 13-23.
1953: The Role of Arterial Diseases in Clinical Medicine, J. Am. Geriat. Soc. 1: 157.

1954: Atherosclerosis—A Review of its Complications and Management, Geriatrics 9: 211.
1954: Methenium Compounds in the Treatment of Hypertension, J. Am. Geriat. Soc. 2: 359.
1954: Intractable Angina Pectoris: Treatment with Fractional Doses of Radioactive Iodine, J. Am. Geriatrics, Soc. 2: 288.
1954: A Critical Evaluation of Cardiovascular, Biochemical and Other Findings in Marathon Runners—and Their Clinical Implications, Proc. 10th Intern. Congress of Sports Med., Belgrade, Yugoslavia, 363.
1955: Atheromatous and Essential Benign Hypertension—Two Clinical Entities: Differential Diagnosis and Treatment, J. Am. Geriatr. Soc. 3: 607.
1955: Report of Committee on Nomenclature of the American Society for the Study of Arteriosclerosis. Tentative Classification of Arteriopathics, Circulation 12: 1065.
1956: Atherosclerosis. The Present State of our Knowledge, New York State Med. J. 56: 2361.
1956: Future Basic Research Relating Physical Education to Sports Medicine, 59th Ann. Proc. College of Phys. Ed.
1957: The Heart of the Athlete, Journal-Lancet 77: 66.
1957: Recreation, Medicine and the Humanities, Published by the University of N. Carolina, P–5.
1958: Cardiovascular Response to Vigorous Physical Activity, Medicina Sportiva 12: 3.
1958: Cardiovascular Disease VS. Epilepsy as a cause of Drowning, Medicina Sportiva 12: 6 pp. 225–231.
1959: Beitrag zur konservativen Behandlung der Sklerosis obliterans Aortae abdominalis (Die haufigste Ursache des Leriche Syndroms), Deutsches Medizinisches Journal.
1959: Treatment of Angina Pectoris with Nialamide, Clinical Medicine Vol. VI, No. 9.
1961: The Role of Your Profession and Mine in Total Fitness for America, New York State Journal of Health, Phys. Ed. & Recreation Vol. 13, No. 4.
1962: The Relationship of Health & Exercise and Changing Concepts in Medical Care: Implications for Recreation Planning and Service, 44th Annual National Recreation Congress.
1962: X-Ray of the Abdominal Aorta in Detection of Atherosclerosis, Clinical Medicine Vol. 69 No. 2.
1962: Contraindications to Additional Physical Exercise in every day living with Special Reference to Cardiovascular Diseases, The Journal of Sports Medicine & Physical Fitness. Vol. 2, No. 4.
1963: Comparison of Step Test and Hand Cranking Test to Indicate Exercise Tolerance of Cardiovascular Patients, Archives of Physical Medicine & Rehabilitation. Vol. 44.
1964: Cooperative Medical Research on an International Scale, The Journal of Sports Medicine & Physical Fitness. Vol. 4, No. 2.
1964: Situational Stresses as Cause of Cardiovascular Diseases (The Nutcracker Syndrome), Proc. First International Conf. on Preventive Cardiology, University of Vermont.

STATEMENT OF MILTON B. ROSENBLATT, M.D., ASSOCIATE CLINICAL PROFESSOR OF MEDICINE, NEW YORK MEDICAL COLLEGE RE SMOKING AND DISEASE: ETIOLOGICAL PERSPECTIVE

"Those who cannot remember the past are condemned to repeat it."—G. Santayana.

INTRODUCTION

The increase in lung cancer in the past few decades has fostered the concept that this is a modern disease produced by exposure to recently introduced carcinogenic substances. In the intensified search for causal agents many fundamental facts have been disregarded. The proper differentiation between apparent and absolute increase requires a perspective that encompasses far more than a mere assessment of epidemiological statistics. Th rapid rise of a disease coincident with improvement in diagnostic techniques has occurred many times in the course of medical history. At the turn of the century, when the marked increase in cancer deaths in England was attributed variously to parasitic infestation, meat consumption and excessive rainfall, King and Newsholme (1) ob-

served prophetically in 1893 that whenever a cancer became diagnostically accessible the incidence automatically increased. The report of the Advisory Committee has based its judgments of casuality almost entirely on epidemiological data, has invoked hypothetical considerations to substantiate the statistical correlations, and has not sufficiently considered pertinent refutatory evidence.

HISTORICAL CONSIDERATIONS

The report of the Advisory Committee discusses the history of lung cancer only insofar as it relates to the studies on smoking and completely ignores the fact that the disease had been prevalent for a hundred years before cigarette smoking became widespread. Nowhere in the report is it even intimated that the basic knowledge of the pathology of lung cancer was developed in the 19th century, that all the characteristic symptoms and physical signs were discovered in the 19th century, and that astute clinicians, both here and abroad, were emphasizing, in the 19th century, that lung cancer occurred far more frequently than was generally realized.

In 1815, Laënnec (2) differentiated lung cancer from tuberculosis and other pulmonary diseases in an article in the Dictionnaire des sciences médicales. Four years later he published a treatise on physical diagnosis, De l'auscultation médiate, which was translated by Forbes (3) and evoked considerable interest in the disease in England. Andral (4), in 1821, investigated the possibility of diagnosis by sputum examination and in 1837, edited the fourth edition of Laënnec's classic work contributing a profusion of footnotes on lung cancer. Bouillard (5), in 1826, discussed the possible relationship between antecedent pulmonary infection and lung cancer. Heyfelder (6) won a citation for his studies on the subject in 1837 and, in 1839, Bayle's Traité des maladies cancéreuses listed "cancer du poumon" as an established primary malignancy. Other French articles were published by Bérard (7) in 1821, Arnal (8) in 1844, Lebert (9) in 1845, Charcelay (10) in 1837, and Monneret and Fleury (11) in 1846, the latter authors contributing a sizable bibliography.

Lung cancer has been a subject of considerable interest in Britain since the publication of Stokes' textbook, Diseases of the Chest, in 1837. The descriptions of the manifestations of the disease and the problems of differential diagnosis were indicative of a wide clinical experience. Stimulated by Stokes' teachings many other British physicians made important contributions. A report by Hare (12) in 1838 described a neurological complication which was rediscovered (13) a hundred years later in this country. Significant observations in pathology and clinical medicine were made during this era by Hughes (14), MacLachlan (15), Burrows (16), and Graves (17). In April 1843, the British and Foreign Medical Review reviewed five articles on lung cancer with an editorial comment on the increasing interest in the disease and its greater prevalence than previously suspected. In the second half of the 19th century, English reports showed an increasing interest in the microscopic studies of lung cancer in order to better differentiate it from metastatic tumors of the lung. Histological findings established in 1857 by Quain (18), Cockle (19), Mayne (20), Pitman (21), Budd (22), Page (23), and others are just as valid today as they were a century ago.

The greatest advances in the pathology of lung cancer were made in Germany in the latter decades of the 19th century. Waldeyer's (24) studies of the origin of cancers stimulated investigative research culminating in the establishment of the origin of lung cancer from bronchial epithelium. The number of case reports, articles, and inaugural dissertations on "lungenkrebs" contributed by German physicians in the 19th century is remarkable. The authors whose works provided the groundwork for our current pathological concepts include Perls (25), Georgi (26), Reinhardt (27), Birch-Hirschfeld (28), Hesse and Hartung (29), Siegel (30), Siegert (31), Wolf (32), Passler (33), Frankel (34), Schwalbe (35), Hartmann (36), and a great many others. The various cell types and architectural structures found in lung cancer were well described in these publications. The German pathologists noted that lung cancer cases usually came to autopsy in a far advanced stage of the disease but that few had been diagnosed during life. One of the most valuable contributions was the differentiation of primary lung cancer from secondary pulmonary growth and benign tumors. It is noteworthy that the pathological techniques and stains discovered by the German pathologists in the 19th century are still very much in use at present.

General interest in lung cancer developed considerably later in the United States than it did in Europe but cases were described (37) at the Massachusetts General Hospital in 1842 and 1850. Articles contributed by Lehlbach (38) in 1870 and by Loomis (39) in 1876 showed considerable familiarity with the disease. Delafield (40), the pathologist at Roosevelt Hospital, was well acquainted with primary lung cancer as early as 1868 as evidenced by his autopsy records. In the latter decades of the 19th century the number of American articles increased including contributions by Pepper (41), Van Giesen (42), Ripley (43), Kemper (44), Janeway (45), Holland (46), Hodenpyl (47), and LeCount (48). On December 18, 1880, the Medical Record commented editorially that lung cancer would continue to interest pathologists despite the lack of specific treatment. The most important American article on lung cancer in the 19th century appeared in the New York Medical Journal on February 8, 1896. The author was Adler (49) whose monograph on the subject in 1912 has since become a medical classic. In the 1896 article, Adler repeatedly emphasized that lung cancer was not a rare disease in the United States but was rarely diagnosed. He urged physicians to become more familiar with its clinical manifestations and pathologists to do more meticulous work so as to better recognize the disease at autopsy.

As the 19th century came to a close, articles on lung cancer also appeared in medical journals in Italy, Poland, and Norway, and advances were being made in clinical diagnosis. It is not generally realized that the X-ray (50) and the bronchoscope (51) were beginning to be used to detect lung cancer before the 20th century. One of the most informative contributions of the period was the collection of statistical data on the necropsy incidence of lung cancer. Feilchenfeld (52), in a dissertation from Leipzig in 1901, described the rise in lung cancer autopsies at the Urban Hospital in Berlin and attributed it to the larger number of autopsies and the increased interest in the subject. Rieck (53) in 1904, noted the rise in lung cancers at the Pathological Institutes of Munich for the period 1854–1902. Similar observations were made by Feldner (54) in 1908 at Göttingen. Kikuth (55) reported a ninefold increase in lung cancer autopsies at the Eppendorfer Krankenhauses between the periods 1889–99 and 1900–11. Karrenstein (56), in a review from the University of Berlin in 1908, made the significant observation that no proper evaluation of lung cancer incidence could be made on the basis of official vital statistics. He also noted that refinements in histological study made it possible for the pathologist to recognize cases formerly obscured by late complications. It is very evident from the many published reports that the rise in autopsy incidence in Germany was due to greater awareness of the disease and better pathological diagnosis.

LUNG CANCER MORTALITY

Proponents of the causal relationship between smoking and lung cancer have pointed to the rise in lung cancer deaths during the past three decades as corroborative evidence since this period was also characterized by a rise in cigarette consumption. On the basis of national mortality figures it would appear that a tremendous increase in lung cancer had occurred in the United States since 1930. There is, however, much evidence available to challenge the accuracy of the mortality statistics. It is not generally realized that even if it had been possible to diagnose lung cancer in the early decades of this century there was no specific category in the vital statistics in which to record the lung cancer deaths. It was not until 1949, after revision of the international code, that classification of lung cancer became a statistical reality.

In 1912, Adler (57) in his famous text on lung cancer critically questioned the accuracy of the census reports emphasizing that the incidence of lung cancer was far greater than realized. The total number of recorded lung cancer deaths in the United States in 1914 was less than 400 reaching approximately 1,000 by 1920. On February 13, 1926, the Journal of the American Medical Association commented editorially that the number of cases in the preceding 15-year period was so great as to almost defy enumeration but the current national figure for lung cancer deaths was still less than 2,000. In 1930, when the number of lung cancer deaths in the United States was recorded as 2,837 Chevalier Jackson (58), the pioneer in bronchoscopic diagnosis, had records of almost 500 cases.

It is very apparent that the increase in lung cancer since 1930 was based on greater pathological knowledge and the development of techniques with which to diagnose lung cancer. However, the report of the Advisory Committee states that a true increase in lung cancer has occurred and bases its contention on

evidence furnished by State cancer registries and necropsy records from large general hospitals. The report cites the statistics in upstate New York showing an average annual rate of increase of 7 percent for males and 3–3.5 percent for females during the period 1947–60. The presentation of the data in this manner is most misleading. Review of the total lung cancer deaths in New York State during the period under discussion shows that the rate of increase of lung cancer had declined from 42 percent between 1940 and 1945 to a low of 18 percent between 1955 and 1960. This could not have occurred in the presence of a true increase of the disease.

The report also cites autopsy data from large hospitals where "diagnostic accuracy has been uniform and excellent for many years." A rise in autopsy incidence in hospitals is not an index of an absolute increase of the disease. It is well known that many factors contribute to autopsy incidence among which are (1) increased pathological knowledge, (2) change in autopsy material with respect to sex and age (lung cancer is a disease of older age groups), (3) greater percentage of autopsies of "interesting" cases, (4) change in nature of cases hospitalized, and (5) wider selection of population (clinics in medical centers attract patients from large areas). The intense interest in lung cancer primed by the first successful surgical treatment by Graham (61) in 1933 and sustained by greater awareness of the disease has resulted in the hospital referral of many more lung cancer cases with subsequent increase in autopsies. The report compares the autopsy records at the Massachusetts General Hospital between the the periods 1892–1929 and 1956–61 showing an increase from 17 lung cancers to 172 in the later period. From these figures it would appear that a true increase had recently occurred but an earlier report from the same hospital by King (37) showed that the increase had begun as early as 1920 and that by 1938 there were 475 cases diagnosed of which 158 had been confirmed by autopsy, biopsy, or exploratory thoracotomy. King, who had personally observed the increase in lung cancer hospital admissions attributed it to greater interest in diagnosis and surgical therapy.

Autopsy experience in lung cancer in the United States lagged considerably behind that of the German pathologic institutes. In the 1931 edition of Henke and Lubarsch's Handbuch der Speziellen Pathologischen Amatomie und Histologie, Fischer's data on lung cancer included reports of almost 4,000 cases of which only a very small percentage were derived from American sources. The paucity of lung cancer autopsy reports in the United States in the early decades of this century was not due to absence of the disease but to absence of knowledge. This is well illustrated in a report by Jaffé (59), in 1935, showing that lung cancer comprised more than 11 percent of all the cancers at the Cook County Hospital in Chicago. This figure is comparable to the incidence during the present era. During the same period that Jaffé, a European trained pathologist in lung cancer diagnosis, found the proportion of lung cancer to all cancers to be 11 percent, the incidence at the Vancouver General Hospital was less than 2 percent and was less than 1 percent at the University of Oregon (110).

There has been constant progress in the pathological diagnosis of lung cancer in all areas of the world. A review by Harvey (60) of the autopsy material at the Royal Prince Alfred Hospital in Australia revealed an error of almost 20 percent in the diagnosis of lung cancer. There are also marked differences in pathological interpretation during the present era when, according to the report pathological diagnosis has been uniform. Spain (114) in 1959 reported an increase in squamous cell carcinoma and a decline in adenocarcinoma and presented this as evidence of the carcinogenic effect of cigarettes. In contrast, Lee and Ts'o (115) in 1963 found the autopsy incidence of adenocarcinoma to be almost three times that of squamous carcinoma. One factor responsible for a considerable portion of the lung cancer autopsy increase was the observation by Barnard (62) in England, and Karsner and Saphir (63) in the United States, that certain tumors formerly diagnosed as sarcomas were, in actuality, cancers of the lung. The transfer of these oat cell tumors from one category to another automatically resulted in an autopsy increase of lung cancer which was only apparent. The frequency of incidence of oat cell tumors varies with different pathologists; Whitwell (116) found that oat cell cancers comprised as high as 41 percent of all lung cancers while many others found the incidence much lower.

It is interesting to observe the disdain with which the proponents of the smoking-cancer theory reject improvement in diagnosis as a major factor in the increase of lung cancer. Nevertheless, every diagnostic facility used at present to detect lung cancer was either discovered or perfected within the past three

decades—the period of the great increase of lung cancer. Bronchoscopy, one of the most important diagnostic procedures, had been available for many years but was scarcely used prior to 1930 because of unwarranted anxiety as to possible hazards. It is of historical interest that at the Brompton Hospital in London, renowned for specialization in pulmonary diseases, only one bronchoscopic examination had been performed prior to 1925. Within three decades the number of bronchoscopies exceeded 800 per year. For more than a century physicians had been attempting to diagnose lung cancer by examination of the sputum for fragments containing malignant tissue. Although success was achieved sporadically, the procedure was tedious and hampered by technical difficulties. In the 1930's staining techniques were developed which facilitated sputum examination but the process remained essentially a research procedure. In 1943, Papanicolaou described a staining technique which within a few years became applicable to the routine examination of the sputum. The "Pap" smear for cancer cells in the sputum and bronchial aspirate has added significantly to the diagnostic approach during the two decades in which it has been utilized.

Surgical exploration of the chest is another procedure which has added to the number of cases diagnosed. Prior to the 1940's, exploratory thoracotomy was often considered a procedure of last resort and the indications were very limited. Since then refinements in surgical technique and anesthesia have made this a safe procedure with wide diagnostic indications. In 1949, a report from the Mayo Clinic by Johnson (64) showed that 50 percent of the lung cancers had been diagnosed only after surgical exploration. During the past two decades interest in thoracic surgery has increased tremendously and thoracotomy is a routine procedure in practically all hospitals, disclosing cases of lung cancer which would otherwise remain undiagnosed. Surgery has also been of diagnostic value in the increased number of biopsy examinations utilizing new techniques. The greatest contribution to lung cancer diagnosis has been the vast increase in X-ray examinations which are now routine procedures in hospitals, clinics, doctors' offices, industry, and military organizations. Many of the lung cancers detected by routine X-ray examination have been entirely unsuspected. It seems hardly necessary to emphasize that the tremendous improvement in diagnostic facilities has resulted in a far greater recognition of lung cancer than was previously possible. Clinical experience has shown how easily lung cancer may be mistaken for penumonia, tuberculosis, lung abscess, brain tumor or even abdominal disease in the absence of appropriate diagnostic investigation. How much reliability can be placed on lung cancer mortality statistics during an era when the disease was not clinically diagnosable?

ACCURACY IN DIAGNOSIS

The vast improvements in diagnostic techniques have made it possible to detect greater numbers of lung cancers but have also revealed that there are many pitfalls in diagnosis not suspected previously. Autopsy studies have shown that cases diagnosed clinically as lung cancer, even with biopsy confirmation, may actually be secondary cancers. It is now well established that the lung has a great affinity for metastatic tumors and that 30 to 40 percent (112, 113) of all cancers produce secondary pulmonary growths, some of which may simulate bronchogenic carcinoma. When nonpulmonary cancers spread to the bronchial tubes all the manifestations of primary lung cancer may be reproduced resulting in erroneous diagnoses. In spite of all the progress made in diagonstic techniques, a positive differentiation between primary and secondary lung cancer may not be possible without autopsy exclusion of other primary sites.

The present classification of lung cancer deaths contains two categories: (1) lung cancer, specified as primary; and (2) lung cancer, unspecified as to primary or secondary. Examination of lung cancer mortality statistics for 1961 and 1962, the latest years for which data have been completed, reveals some interesting facts. For the year 1961, out of a total of 38,929 lung cancer deaths, only 19,462 (50 percent) were specified as primary lung cancer. For the year 1962, out of a total of 41,376 lung cancer deaths only 18,866 (46 percent) were specified as primary. The remainder were unspecified which means that the lung cancers may have been primary in the lung, or, may have spread to the lung from tumors originating in other organs.

The statistician and epidemiologist, lacking experience in clinical diagnostic problems, are often totally unaware of the difficulties in differentiating between

primary and secondary lung cancer. Even when cases are specified as primary lung cancer this does not necessarily mean that the diagnosis was correct in all cases. It has become increasingly apparent to clinicians and pathologists working in the field of lung cancer that sputum examinations for cancer cells and even biopsy examinations may yield misleading information. Great reliance is placed on the histological findings obtained by examination of a lymph node or of bronchial tissue but positive differentiation between primary and secondary cancers is not always possible. In a recent autopsy study (65) of cancer of the pancreas, it was found that 12 percent of the cases had been diagnosed during life as primary lung cancer. Other reports of erroneously diagnosed lung cancers on the basis of biopsy examination have included cancers of the kidney, adrenal ovary, thyroid, stomach, and rectum. Inasmuch as the cases specified as primary lung cancer were not all autopsied, there is a significant potential source of error to be considered.

The Advisory Committee to the Surgeon General placed the greatest reliance on statistical computations in arriving at its conclusion of a causal relationship between smoking and lung cancer. The report states, "In recent years, about two-thirds of the certification of lung cancer deaths have been based on microscopic examination of tissue from the primary site and the percentage is even higher for deaths under 75 years." The two references cited to validate the above statement appear as very tenuous endorsements. One report (66) is an evaluation of accuracy in a series of 1,837 death certificates in Pennsylvania. The conclusion with respect to primary lung cancer was based on a total of 21 cases with no mention made of the number of diagnoses based on autopsy. The second reference (67) discusses the general aspects of cancer diagnosis but presents no particular data on primary lung cancer. A study based on 21 lung cancer cases without autopsy confirmation is inadequate authority for a broad statement implying that over two-thirds of all the lung cancer deaths were confirmed pathologically.

RATE OF INCREASE

The so-called epidemic rise in certified lung cancer deaths in the United States has followed a pattern that, when scrutinized objectively, is more indicative of progress in diagnosis than of a true increase of the disease. This pattern shows a progressive decline in the rate of increase of lung cancer and was fully elaborated upon by Gilliam (68) in his studies at the National Cancer Institute. It is regrettable that the Advisory Committee disregarded this significant contribution in its epidemiological considerations.

The earliest statistics available (table I) show that the the number of certified lung cancer deaths in the United States was 371 in 1914, and 956 in 1920. Although these figures are ridiculously low when compared to the large numbers of cases reported in European institutions during this era they represented an increase of more than 150 percent. A comparable trend was noted in the records of the Metropolitan Life Insurance Co. which showed an increase of 100 percent in the standardized annual death rate from lung cancer among its policy holders between 1917 and 1926. It is to be emphasized that this tremendous increase occurred before the era of widespread cigarette smoking. In the succeeding years the total number of lung cancer cases increased but the the rate of increase declined.

TABLE I.—*Mortality of lung cancer in the United States*

Year [1]	Number of deaths	Percent increase
1914	371	[2]
1920	965	158
1930	2,357	146
1935	4,237	79
1940	7,121	68
1945	10,922	53
1950	18,313	67
1955	26,827	46
1960	37,500	39

[1] Data for 1925 not available.
[2] No comparative data.

TABLE II.—*Mortality of lung cancer in New York State*

Year [1]	Number of deaths	Percent increase
1931	615	[2]
1935	1,006	64
1940	1,440	43
1945	2,041	42
1950	2,711	33
1955	3,779	39
1960	4,451	1

[1] Data for 1930 not available.
[2] No comparative data.

Between 1930 and 1935 the increase was 79 percent; between 1940 and 1945 it was 53 percent; and between 1955 and 1960 it was only 39 percent. A comparative study (table II) of the lung cancer mortality statistics of New York State (no figures available before 1931) showed the greatest rate of increase, 64 percent, between 1931 and 1935. Since then the rate progressively declined and between 1955 and 1960 it was only 18 percent.

How is it possible to reconcile the declining rate of increase of lung cancer with the 200-fold increase in cigarette consumption during the same period? If tobacco is a cancer producing agent there should have occurred a progressive rise in the rate of increase. A logical explanation for the progressive decline in the rate of increase is that it is a reflection of the increasing ability to diagnose lung cancer during the past three decades. In the early 1930's the mortality attributed to lung cancer was increasing among the white male population at the rate of approximately 10 percent per year. Thereafter, this percentage declined regularly and by 1958 the lung cancer deaths were increasing only at the rate of 5 percent annually. Among the white female population, the rate of increase declined from approximately 6 percent per year in the earlier period to about 1 percent in 1958. The recorded lung cancer deaths among the nonwhite population, although much smaller in number, showed the same downward trend in the rate of increase. The higher rate of increase in the nonwhite population was consistent with the accelerated improvement in medical facilities in recent years for this group.

The progressive decline in the rate of increase is a very significant factor in evaluating the carcinogenic effect of tobacco. If smoking produced lung cancer, directly or indirectly, the increased consumption of cigarettes would have resulted in a sustained or greater rate of increase. The fact that the opposite has occurred implies that there is a relatively fixed prevalence of lung cancer in the population and that with each succeeding decade the improvement in diagnostic techniques resulted in the recognition of a greater number of cases. Eventually, the incidence of lung cancer will be stabilized as it has been for many other cancers in which the investigative procedures have been standardized for long periods of time.

The experience in the declining rates of increase of the certified cases of lung cancer is very similar to that which occurred in the German pathologic institutes in the late 19th and early 20th centuries. This was the era when the diagnosis of lung cancer could only be definitely established at autopsy. In almost all of the major hospitals the rate of increase followed a definite trend consisting of a sudden rise, corresponding to the period in which pathologic diagnostic criteria were established, followed by a decline in the rate of increase as the disease became better known. At the Moabit Hospital in Berlin, Wahl (69) found a 300-pound increase in the percentage of lung cancers to all cancers between 1917 and 1923. The following year the rate of increase had declined to 17 percent. Schonherr (70) reported similar findings at the Patholic Hygienic Institute of Chemnitz; comparing the periods 1898–1916 and 1919–22 there was a 110-percent increase in lung cancer autopsies which fell to 24 percent in the next 4 years. Comparable observations (see table III) were made by Materna (71) in Troppau, by Schlesinger (72) in Leipzig, by Engenolf (73) in Göttingen, and by Holzer (74) in Prague. At St. Bartholomew's Hospital in London, Maxwell and Nicholson (75) found that the greatest increase in the autopsy incidence of lung cancer had occurred between the periods 1884–88 and 1894–98.

The rapid increase in the incidence of a disease when new clinical or pathological diagnostic techniques are introduced has been observed repeatedly.

An excellent example is endobronchial tuberculosis, a very common complication of progressive pulmonary tuberculosis. The condition has been undetected by pathologists in thousands of autopsies performed in this country and abroad. In the early 1930's clinical and bronchoscopic studies established the existence of endobronchial tuberculosis and this was reflected immediately in a tremendous rise in necropsy incidence.

The report of the Advisory Committee states (p. 135) that "lung cancer mortality among males has risen at a fairly constant rate since 1930" and cites Gordon, et al. (76) of the National Cancer Institute as reference. However, there seems to be some disparity between the report's interpretation and Gordon's article which states, "For white males and females and for nonwhite males the increase in mortality for cancer of the lung and bronchus was greatest between 1930 and 1935 and has since tended to decelerate. The article also noted that the increase in lung cancer mortality began simultaneously for all adult age groups suggesting it was caused by increased diagnostic awareness.

TABLE III.—*Lung cancer in European hospitals in late 19th and early 20th centuries*

City	Institution	Author	Years	Percent total cancers	Percent increase
Moabit	Moabit Hospital	Wahl	1917–18	3.53	
			1923–24	14.08	300
			1924–25	16.45	17
			1925–26	12.35	0
			1926–27	13.10	6
Chemnitz	Pathologic Hygienic Institute.	Briese	1898–1916	4.51	
		Schonherr	1919–22	9.50	110
			1923–27	11.80	24
Troppau	Pathologic Institute	Materna	1912–14	2.08	
			1915–17	7.14	240
			1921–23	8.00	12
Zurich	Pathologic Institute	Probst	1906–10	1.13	
			1911–15	3.34	190
			1916–20	6.12	83
			1921–25	7.17	17
Leipzig	Pathologic Institute	Seyfarth	1900–1906	5.01	
			1907–13		
			1914–18	11.23	120
		Schlesinger	1924–29	13.20	18
Göttingen	Pathologic Institute	Feldner	1852–79	.62	
			1880–1908	.90	61
		Simross	1906–12	2.59	190
		Engenolf	1921–27	4.43	70
Dresden	Friedrichstadt Hospital.	Reinhard	1852–76	.92	
		Wolf	1877–94		
		Junghanns	1893–1912	6.46	600
			1913–27	10.73	24
Prague	Pathologic Institute	Holzer	1895–99	.78	
			1905–09	2.24	190
			1915–19	4.81	110
			1920–24	7.98	66
London	St. Bartholomew's Hospital.	Maxwell and Nicholson	1884–88	3.91	
			1894–98	7.83	100
			1904–08	7.17	0

SEX DISTRIBUTION

Cancer of the lung occurs predominantly among males. In the United States in 1930 there were 1,818 lung cancer deaths in males and 1,019 in females (ratio=1.8:1). In 1940 there were 6,057 male and 2,029 female lung cancer deaths (ratio=3:1). A decade later there were 14,922 male and 3,391 female deaths (ratio=4.4:1). For 1960 the figures were 30,800 males and 5,000 females (ratio=6.2:1). The progressive widening of the sex ratio during recent decades has been interpreted by many as an indication of greater diagnostic accuracy inasmuch as lung cancer has been found to be predominantly a disease of males. In 1947, Clemmenses and Busk (77) observed that the lung cancer sex ratio in Denmark between 1936 and 1945 was 2.4:1 whereas the ratio in a special diagnostic clinic in Copenhagen was 7.2:1. (This well-known study was omitted in the report.) Low sex ratios were found in many of the lung cancer studies in the 19th century and reflected the difficulties in differentiating between primary and metastatic involvement. The disparity in sex distribution has led to assumptions by those unfamiliar with the biological characteristics of the disease that predominance in the male is the result of heavier smoking habits. The validity of this interpretation is readily challenged by (1) sex distribution of lung cancer

before the era of cigarette smoking and (2) the lack of any effect of the increased consumption of cigarettes by females on the sex ratio.

TABLE IV.—*Sex distribution of lung cancer before cigarette smoking era*

Author	Years	Place	Males	Females	Ratio
Hare, H	1830-80	Collected series	90	33	3:1
Buday	1870-88	Kolozsvár	9	1	9:1
Harris, V	1882-91	London	52	17	3:1
Passler, H	1878-94	Collected series	50	18	3:1
Wolf, K	1885-94	Dresden	27	4	6:1
West, S	1897	London	47	14	3:1
Lenhartz	1893-99	Leipzig	13	1	13:1
Feilchenfeld, J	1894-1900	Berlin	20	2	10:1
Riechelmann, W	1895-1901	do	21	6	3:1
Watsuji, S	1904	do	4	1	4:1
Redlich, W	1900-05	do	26	5	5:1
Haberfeld, W	1887-1906	Vienna	48	20	2.4:1
Karrenstein	1908	Berlin	24	8	3:1
Feldner, O	1908	Göttingen	6	1	6:1
Seydel	1900-09	Munich	16	4	4:1
Adler, I	1842-1911	Collected series	269	93	2.9:1
Dormanns, E	1901-11	Munich	7	1	7:1
Weller, C	1878-1912	Collected series	70	17	4:1
King, D	1875-1914	Boston	36	9	4:1
Rau, W	1909-14	Dresden-Friedrichstadt	13	2	6.5:1
Briese	1898-1916	Chemitz	44	16	3:1
Lavrinovitch	1915	Petrograd	42	19	2:1
Jaffé, R	1915-18	Vienna	92	8	11:1
Passey, R	1894-1918	Great Britain	579	182	3.2:1
Rau, W	1914-19	Dresden-Friedrichstadt	22	5	4.4:1
Eichengrun, W	1902-19	Cologne	32	5	6.4:1

It is apparent from table IV that lung cancer was predominantly a disease of males during an era in which cigarette smoking was virtually nonexistent. Most of the studies show a sex ratio of at least 3 to 1, and some are comparable to ratios reported within the past decade. It is of considerable interest that as early as 1895, Wolf's cases of "primäre lungenkrebs" from the Dresden municipal hospitals showed a distribution of 6 to 1 favoring the male, and Passler, in 1896, found a ratio of 3 to 1 in a collected series of 68 cases. In Hare's Pathology, Clinical History and Diagnosis of Affections of the Mediastinum, published in 1889, the ratio was also 3 to 1 in a series of 122 cases. Harris (78) in 1892, made a combined study of St. Bartholomew's Hospital and at the City of London Hospital for Diseases of the Chest and found a ratio exceeding 3 to 1. Lenhartz (79), in Leipzig, reported a ratio of 13 to 1 in 1899, and Feilchenfeld (52), in 1901, a ration of 10 to 1 in Berlin.

Predominance of lung cancer in the male in the 19th century was evident in both the individual necropsy studies and in the collected series of cases. Adler's (57) collected series spanned more than seven decades and included cases from London, Prague, Berlin, Jena, Rome, Paris, Glasgow, St. Petersburg, Zurich and even Brooklyn. Despite the variety of sources the overall picture of male predilection was similar to Reichelman's (80) report in 1902 from the Friedrichshain Hospital in Berlin, Karrenstein's (56) in 1908, from the University of Berlin, and Briese's (81) report, in 1916, from the Pathologic-Hygienic Institute of Chemnitz. Weller (82), who was among the first American pathologists to become interested in bronchogenic carcinoma, reported, in 1913, a series of 87 collected cases with a sex ratio of 4 to 1.

In some instances it was possible to follow the sex ratio of lung cancer through several periods in the same institutions. In 1925, Berblinger (83) completed a necropsy study previously originated by Laeschka at the Pathologic Institute of Jena. Lung cancer predominated in the male for each lustrum beginning with 1910, and the ratio for the 15-year period was 4 to 1. Peters (84) found a ratio of 3 to 1 between 1905 and 1908 at the Moabit and Urban Hospitals of Berlin and a ratio of 5 to 1 between 1917 and 1922. At the Dresden and Friedrichstadt hospitals and nursing homes, Junghanns (85) found a ratio of 4 to 1 in the period 1893–97 and again in the period 1898–1902. Dormanns (86) found a sex ratio of almost 7 to 1 at the University of Munich in 1901–11 and again in 1922–31. In Cologne, Eichengrum and Esser (87) found a ratio of approximately 6 to 1 in the period 1902–14 and a 9 to 1 ratio in 1914–19.

One of the most significant studies was that of Passey and Holmes (88) from a group of teaching hospitals in England and Scotland covering a period of more than 30 years and including the eras before and after the onset of heavy cigarette

smoking. They found a sex ratio of 3 to 1 for each of the periods 1894–98, 1899–1903, and 1909–13. Between 1914 and 1919 the ratio was 4 to 1, and between 1919 and 1923 it was again 3 to 1. The highest ratio was 4.5 to 1 which occurred in the period 1924–28.

The affinity of lung cancer for the male was present before and after the onset of the cigarette smoking era. Some of the sex ratios in the 19th century reports were actually higher than those obtained in recent studies. The alleged correlation between smoking and male predominance of lung cancer is based on a statistical association which ignores the fact that the disease favored the male when cigarette smoking was scarcely known. This point was emphasized in a report by Ibrahim (89) from the Dacca Medical College Hospital in East Pakistan where he found a sex ratio of 9 to 1 in a group of 20 lung cancer cases which included 14 nonsmokers, 4 occasional smokers and 2 heavy smokers. Cigarette smoking is a rarity in East Pakistan; the popular method of smoking is the hukka pipe with the water filter.

LUNG CANCER IN FEMALES

There has been a progressive increase in cigarette consumption by women for more than four decades. A survey of smoking patterns by the U.S. Bureau of the Census in 1955 stated that 18 million women, 18 years of age and over, had reported use of tobacco, and that 15 million had at one time or another been regular cigarette smokers. The corresponding figures for men were 38 million and 31 million respectively. The survey acknowledged that it had underestimated cigarette consumption by 15 percent on the basis of comparable tax data, and common observation suggests even a greater margin of error.

According to the various prospective and retrospective studies cigarette smoking is alleged to be a potent carcinogenic agent. It is difficult to reconcile this conclusion with the continued predominance of the disease in males despite the prodigious rise in cigarette consumption by females. During all the years of increased female smoking there has not been the slightest narrowing of the sex ratio indicative of a relative increase of lung cancer among women. It has already been emphasized that the sex ratio has actually widened. Inasmuch as diagnostic facilities are equally available to both sexes, it is more logical to assume that the predominance in males is the result of sex predilection of the disease rather than of smoking.

Data from the U.S. National Office of Vital Statistics show that lung cancer death rate between 1930 and 1958 increased 12 times for men and 3 times for women. The greatest increase among women occurred between 1930 and 1950 during which time the rate rose from 1.5 per 100,000 to 4.0 per 100,000. Since 1950 the rate showed little increase. The male to female ratio with respect to mortality rates was 1.7 to 1 in 1930 and 6.6 to 1 in 1958 emphasizing the relative decrease among women during an era of heavy cigarette smoking. Mortality statistics in succeeding years show no indication of changing trends. The total increase of male lung cancer deaths between 1959 and 1962 was 4,665.[1] The increase of female lung cancer deaths for the 4-year period was 333 cases, averaging less than 85 cases per year.

It is evident from the foregoing that the tremendous increase in cigarette smoking by women did not result in any comparable rise in lung cancer deaths or in reduction of the sex ratio of the disease. During the past few years the female lung cancer death rate has remained virtually stationary. It is scientifically incongruous to attribute the etiology of lung cancer to cigarettes when more than 15 million regular women smokers show an annual increase of less than 85 cases. The rapid adoption of smoking habits by women about 40 years ago would have resulted in a continuing epidemic of lung cancer if tobacco were the causative agent.

AGE DISTRIBUTION OF LUNG CANCER

Observations for considerably more than a century have shown that lung cancer is primarily a disease of older age groups with most cases occurring in the 5th, 6th, and 7th decades. Simons (111) in a collected series of more than 5,000 cases found that 80 percent had occurred between 40 and 70 years of age. Lung cancer is uncommon below the age of 40 and rare during the first three decades of life. It is seen, in table V, that the predilection for older age groups was noted consistently in all the statistical reports before and after the onset of heavy cigarette smoking.

[1] Mortality statistics for 1962 estimated by American Cancer Society.

TABLE V.—*Age distribution of lung cancer*

Before onset of heavy cigarette smoking							After onset of heavy cigarette smoking						
Author	Year	Decade [1]					Author	Year	Decade [1]				
		4th	5th	6th	7th	8th			4th	5th	6th	7th	8th
Walshe, W	1846		+	+			Frenczy, K	1915		+	+	+	
Reinhard, W	1876		+	+	+		Seyfarth, C	1924		+	+	+	
Hare, H	1880	+	+	+			Hanf, O	1925			+	+	+
Buday	1888		+	+	+		Fishberg, M	1926		+	+	+	
Harris, V	1891	+	+	+			Shennan, T	1927		+	+		
Passler, H	1894		+	+	+		Schonherr, E	1927		+	+	+	
Wolf, K	1894			+	+		Wahl, S	1927			+	+	
West, S	1897		+	+	+		Maxwell, J	1928		+	+		
Lenhartz	1899			+	+		Kuhn, C	1929		+	+	+	
Felichenfeld, J	1900		+	+	+		Freemont-Smith, M	1929	+	+	+		
Riechelmann, W	1901	+	+	+	+		Schlesinger, M	1929			+	+	+
Sehrt, E	1903		+	+	+		Funk, E	1930	+	+	+		
Watsuji, S	1904		+	+	+		Buschbeck, H	1930		+	+	+	+
Redlich, W	1905		+	+	+		Sitsen, A	1931		+	+	+	
Haberfeld, W	1906		+	+	+		Jaffé, R	1934		+	+	+	
Karrenstein	1908		+	+	+		Harvey, C	1935		+	+	+	
Seydel	1909		+	+	+		Halpert, B	1940		+	+	+	
Adler, I	1911		+	+	+		King, A	1942		+	+	+	
Dormanns, E	1911		+	+	+		Fried, B	1944			+	+	
Weller, C	1912			+	+		Rosenblatt, M	1949		+	+	+	
King, D	1914		+	+	+		Ibrahim, M	1953		+	+	+	
Rau, W	1914		+	+	+		Sabour, M	1960		+	+	+	
Briese	1916		+	+	+		MacFarlane, J	1960		+	+	+	

[1] Decades in which majority of cases occurred.

The age distribution of lung cancer has a definite relevancy to the etiological considerations. It has been alleged that cigarette smoking produces a cumulative carcinogenic effect over a period of approximately two decades. If this concept is valid, the segment of the cigarette smoking population which began smoking in the early teenages should develop lung cancer before 40 years of age. No indication of this has occurred in over 40 years of heavy cigarette smoking. Data from the World Health Organization show a similar curve of age distribution in the United States, the United Kingdom, Germany, and Italy with the greatest number of cases between 55 and 64 years of age and only a small proportion before 44 years of age.

The age at which the lung cancer patient started to smoke has no relation to the age in which the disease was acquired. Patients who began smoking in the early teenages and those who began 20 or more years later developed lung cancer during the same later period of life; namely, in the 5th, 6th, or 7th decade. Furthermore, there is no evidence that the lung cancer patient who was a heavy smoker developed the disease at an earlier period of life than the patient who was a light smoker. If tobacco is a potent carcinogen the amount consumed and the duration of smoking should have some relationship to the onset of the disease. Passey (90) studied the smoking histories of 495 men with lung cancer and found that they had acquired the disease at approximately the same age regardless of whether smoking had been started at 6 years or at 41 years of age. It was also found that the number of cigarettes consumed daily did not influence the age of onset of disease; the light smoker was affected with lung cancer at the same age as the heavy smoker.

RELATION OF LUNG CANCER TO TOTAL CANCERS

During recent years lung cancers have comprised roughly 10 to 15 percent of all cancers diagnosed at necropsy and national mortality statistics have followed a similar pattern of distribution. It is of considerable interest, therefore, to observe that the same relationship was present before the era of cigarette smoking in certain European institutions with a long history of experience in lung cancer. Maxwell and Nicholson (75) found that between 1894 and 1898, the percentage of lung cancers to total cancers at the St. Bartholomew's Hospital was 7.83. Bonser (91) found the percentage of lung cancers at the Leeds General Infirmary to be 13.6 in 1896, 8.1 in 1899, and 10.9 in 1910. Hampeln (92) found a 12.5 percentage between 1894 and 1899 at the Riga Hospital. In Dresden, Junghanns (85) found the percentage to be 11.6 between 1893 and 1897, and 9.3 between 1898 and 1902. Seyfarth (93) found a percentage of 11.23 in Leipzig between 1914 and 1918. Jaffe and Sternberg (94) found a 10.73 percentage in Vienna between the years 1915 and 1918. Lipschitz (95) found 11.3 percent between 1919 and 1923 at the National Research Institute in Zwickau. The large proportion of lung cancers among total cancers in these reports is comparable to current relationships. In institutions unfamiliar with lung cancer the ratios were lower in the precigarette era and rose steadily with increasing knowledge of the disease.

THE PATHOLOGICAL EVIDENCE

The report of the Advisory Committee cited certain pathological investigations (96, 99, 125) as corroborative evidence of a relationship between smoking and lung cancer. The results of these investigations showed that pathological changes occurring in the ephithelial lining of the trachea and large bronchial tubes were much more common in smokers and in lung cancer patients than in nonsmokers. There were three types of changes observed and each was found to increase with the number of cigarettes smoked; among the ex-cigarette smokers, the changes were far less noticeable. The specific pathological changes were: (1) Loss of cilia of the surface cells, (2) hyperplasia of the basal cells, and (3) the presence of atypical cells. Because the changes were found in smokers and in lung cancer patients the report deduced that these changes, especially the advanced stages, probably represented precancerous conditions. In the judgment of the report, the missing link between smoking and lung cancer had been established.

There is, however, a major fallacy in the assumption that these pathological changes lead to lung cancer. The changes that were found in smokers were located in those parts of the bronchial tubes in which lung cancer seldom develops. There were other significant inconsistencies. The advanced pathological

changes (carcinoma in situ) were found equally distributed among the large and small bronchial tubes whereas it is now well established (126, 127, 128) that lung cancer predominately originates in the smaller bronchi, or, more peripherally. In a recent pathological study of lung cancer cases operated at the Doctors Hospital during the past 15 years it was found that almost 90 percent of the cases had originated in the smaller bronchi or in the distal bronchioles.

The tendency for the alleged precancerous changes to occur in parts of the bronchial tubes seldom involved by lung cancer was also noted in a study (129) similar in scope to those cited in the report. It was found that the most advanced changes occurred at the carina (the site of the largest bronchi) and that the changes were least evident in the smaller bronchial tubes where lung cancer develops most frequently. It was also noted that "bronchial epithelium may be perfectly normal in heavy smokers, even in men who have smoked from adolescence and reached a consumption of 40 cigarettes daily."

An interesting inadvertent contribution to this subject is a study (130) of the distribution of cigarette smoke in the bronchial tubes. It was demonstrated that the greatest concentration of smoke occurred in the large bronchi just below the trachea (where lung cancer is seldom found) and the least concentration of smoke in the peripheral parts of the lung (where lung cancer is common). This inverse relationship between the concentration of the inhaled smoke and the site of origin of lung cancer does not support a causal association. The concentration of smoke was greatest in the parts of the bronchi associated with the most precancerous changes and the fewest lung cancers.

There were other paradoxical results in the pathological studies cited in the report. The moderate and less advanced precancerous conditions were found with greatest frequency in the large bronchial tubes where lung cancer seldom occurs, and were found with least frequency in the small tubes where lung cancer commonly occurs. The finding of so many instances of carcinoma-in-situ among the smokers was a most unusual observation. This lesion is generally considered a rarity in noncancer patients and a summary (100) of 11 other studies comprising almost 1,000 noncancer patients showed that carcinoma-in-situ had occurred in only 1 instance. The report saw fit to include in its evidence a study of certain cells in bronchial epithelium which were presumed to typify the ex-smoker. The alleged specificity of these cells is extremely doubtful. They are degenerated cells of the epithelial lining in which the nucleus has contracted to assume an eccentric position because of accumulation of mucus. These cells have been observed in many inflammatory conditions of the respiratory tract. They may also be found in the nasal secretions of smokers, and nonsmokers, alike, who happen to have common colds.

It must be emphasized that the alleged precancerous changes observed in the bronchial lining of smokers are the same changes that have been observed in patients with inflammatory diseases of the lung for many decades before cigarette smoking became widespread. As early as 1876, it was noted (97) that one of the complications of pneumonia was an atypical growth of the cells of the bronchial lining. These changes were also found in cases of chronic pulmonary tuberculosis and were well described in 1895 (32). Similar changes were noted (98) in bronchopneumonia and in influenza. The pathological alterations described in the report as identifiable with cigarette smoking occur commonly in a variety of pulmonary conditions including bronchiectases, bronchopneumonia, tuberculosis, and lung abscess. They represent the natural protective response of the bronchial epithelial cells to injury and occur, alike, in smokers and in nonsmokers. The proliferation of cells from the germinal layer of the epithelium to form a new type of tissue (squamous metaplasia) is a natural process which attempts to recreate the type of epithelium which existed in the embryonic state. These changes are very common and if they led to lung cancer, the incidence of the disease would be many times greater. There have been studies (117, 118) which showed a relationship between postinflammatory changes and lung cancer but the latter changes were not observed in the studies associating smoking and lung cancer.

In spite of all the evidence that negates the etiological significance of the pathological changes found in smokers, the report concluded that these changes help to establish a causal relationship between smoking and lung cancer. The precise wording of the conclusion is most interesting: "It may be concluded * * * that some of the advanced epithelial hyperplastic lesions with many atypical cells, seen in the bronchi of some cigarette smokers, are probably premalignant."

One may speculate as to why a conclusion couched in such equivocal terms should be used to scientifically evaluate such an important relationship as smoking and lung cancer. A basic knowledge of the common inflammatory reactions of the bronchi does not justify such extrapolative predictions.

It is also implied in the report that there are two categories of lung cancer and corroborative studies (131, 132) are cited. The first (epidermoid and anaplastic) is associated with smoking but the second (adenocarcinoma) is associated with nonsmoking. The arguments against such a concept are decisive. The categories are, in fact, determined by the site of origin from the bronchial tract. The epidermoid tumors originate in the bronchi and the adenocarcinomas in the terminal bronchioles. If smoking has a carcinogenic effect and produces epidermoid carcinoma then this effect must stop abruptly at the junction between bronchi and bronchioles. Furthermore, inasmuch as lung cancer has a predilection for only certain segments of the lung it must also be assumed that cigarette smoke has a preternatural affinity for these particular segments.

THE EXPERIMENTAL EVIDENCE

One of the major obstacles in establishing a causal relationship between smoking and lung cancer has been the inability to obtain biological confirmation of the statistical association. Despite the many attempts to produce bronchogenic carcinoma in the experimental animal by exposure to cigarette smoke, the results have been dismal failures. Mice have been frequently used in these experiments because of the tendency of certain strains to develop spontaneous lung tumors. Uniformly negative results were obtained by Campbell (124) in 1936, by Lorenz (119) in 1943, by Essenberg (120) in 1952, and Leuchtenberger (102) in 1960. In not a single instance has bronchogenic carcinoma been produced experimentally by exposure to tobacco smoke. The other forms of experimentation involved direct application of tobacco extracts or smoke condensates. Again., it was found impossible (121) to produce bronchogenic carcinoma with one glaring exception. Rockey (101) painted tobacco tar on the left main bronchus of dogs three to five times weekly through a fistula. Out of 130 dogs used in the experiment there was one which obligingly responded with the production of invasive carcinoma. The report acknowledges that this work has not been confirmed and there are aspects of the experiment which evoke skepticism regarding the implications.

It would seem reasonable that such overwhelming evidence of the lack of lung cancer producing properties of tobacco or its products should be an important consideration in the evaluation of a casual relationship between cigarettes and lung cancer. However, in the report, these negative results are treated as incidental findings and an extended effort is made to reconcile the failure to produce bronchogenic carcinoma experimentally with the smoking-cancer theory. Preceding the discussion on the carcinogenicity of tobacco, the report subtly vitiated the negative findings by emphasizing that "failure to produce cancer in a given test, by a given material, does not rule out the carcinogenic capacity of the same material in another species * * *." In another section, the report stated that certain polycyclic aromatic hydrocarbons in cigarette smoke have been designated as carcinogenic on the basis of tests in rodents and that therefore one can "reasonably postulate" that the same substances may also be carcinogenic in one or more tissues of man. The failure of some investigators to produce skin cancer in mice by applying various tobacco products is rationalized by explanations criticizing the technique of the experiments. The report quotes evidence that skin cancer can be induced in man by industrial exposure to soots, coal tar and pitch, and mineral oils. It then states that inasmuch as some of the hydrocarbons are also present in tobacco smoke "It is reasonable to assume that these can be carcinogenic for man also." This type of syllogistic reasoning implicating tobacco as a carcinogen seems a very weak argument when confronted by the many million-years of exposure of the fingers of the smoking population to tobacco without producing cancer of the skin.

The experimental evidence suggesting that certain hydrocarbons in cigarette smoke are carcinogenic for man is not substantiated by the low prevalence of lung cancer in smokers. The statistical risk of exposure to lung cancer is generally presented in terms of comparison between smokers and nonsmokers. The most recently publicized report of Hammond found 110 lung cancers in 36,975 smokers and only 12 lung cancers in a "matched" group of an equal number of nonsmokers. The risk in the smoking group was 11 times that of the non-

smokers but the prevalence rate of lung cancer among the smokers was only 0.3 percent, or, one lung cancer in every 333 smokers. If cigarette smoking is a potent cancer producing agent it is difficult to explain why 36,865 smokers in the study group of 36,975 were not affected.

CHRONIC BRONCHITIS AND EMPHYSEMA

The manifestations of chronic bronchitis have been described for almost 200 years but the report of the Advisory Committee concluded that cigarette smoking was the most important cause. The disease was described by Coste (122) in 1767, by Badham (103) in 1808, by Laënnec (104) in 1819, by Eberle (123) in 1830, and by many others whose observations antedated the era of cigarette smoking by many decades. It is difficult to understand how cigarette smoking can be implicated as the "most important cause" of bronchitis when the disease was so prevalent before cigarette consumption became widespread. It is also difficult to understand how a causal relationship can be established between smoking and chronic bronchitis when the latter has been defined in an arbitrary manner, unrelated to specific pathological, biochemical, or physiological criteria.

Chronic bronchitis has been defined as a disorder characterized by productive cough on most days for at least 3 months of the year for not less than 2 successive years. The report acknowledges that the diagnosis of chronic bronchitis requires the exclusion of other bronchopulmonary diseases which produce identical symptoms. The crux of the problem is that the conclusions of the Advisory Committee were based on epidemiological studies from which other diseases had apparently not been excluded by appropriate diagnostic examinations. In most of the studies the diagnosis was established solely on the basis of personal recollection. Chronic or recurrent productive cough may result from a variety of pulmonary conditions ranging from tumor to allergic rhinitis. Recurrent seasonal cough is a common symptom in many diseases. Residual inflammatory changes resulting from bronchopulmonary infections in childhood frequently produce cough and other respiratory symptoms in adult life. Symptoms interpreted as chronic bronchitis by the inquiring epidemiologist may have an entirely different meaning in clinical medicine.

The history (105) of emphysema also antedates the era of cigarette smoking but the report found that smoking was associated with an increased risk of dying from the disease. This correlation is very tenuous because emphysema is not a specific entity. It is an anatomical and pathological condition of the air spaces which occurs in a variety of diseases including bacterial pulmonary infection involving the smaller bronchi, tuberculosis, silicosis, and nonspecific pulmonary fibrosis. Emphysema may be found at autopsy in patients who presented no pulmonary symptoms during life and, conversely, may be entirely absent at autopsy in patients presenting all the typical symptoms, signs, and X-ray features of the disease. The findings in pulmonary function tests are not specific for the diagnosis of emphysema. In some instances the disease is already far advanced in early adult life; in others, the symptoms become apparent only with advancing age. The changes found in the lungs at autopsy range from local subpleural involvement to extensive bilateral alveolar destruction with the formation of giant air vesicles. The fact that a clinical diagnosis of emphysema based on symptoms may have absolutely no relationship to the actual disease destroys the validity of any statistical correlations.

EPIDEMIOLOGICAL EVIDENCE

Although the epidemiological surveys purport to investigate the prevalence of chronic bronchitis and emphysema, the absence of standardized diagnostic criteria militates against any accurate evaluation. The statistical studies have concentrated on symptoms which are supposed to be typical of the diseases under investigation. The conclusions concerning chronic bronchitis and emphysema contained in the report of the Advisory Committee are therefore based on the association between smoking and certain symptoms rather than on a relationship between smoking and specific diseases.

The results of a series of studies revealed that in general smokers coughed more than nonsmokers. However, the wide variations in the incidence of cough suggests that this symptom, regardless of significance, may be due to many factors other than smoking. Table I, page 281, in the report summarizes the results in 11 surveys. The incidence of cough among smokers ranged for 6 to 54.8 percent. The report characterized two studies with very low percentages of

cough in smokers as involving "unusual types of population." One of the unusual populations consisted of unselected policyholders; the other was comprised of a military unit at time of discharge. It is difficult to understand why these categories should affect the alleged relationship between smoking and coughing. If the smokers in these groups represent a more healthy segment of the population it is apparent that coughing is more related to other conditions than to smoking.

The expectoration of sputum was also equated with smoking with most of the studies emanating from the same sources as the surveys on cough. The incidence of sputum production in the smokers ranged from 11.4 to 64.7 percent; in the nonsmokers the range was from 0 to 24.5 percent. The report found it interesting that in most of the studies the nonsmokers reported sputum production more frequently than cough. These findings are more than "interesting"; they are irreconcilable. Unless coughing is a nervous habit it is the result of a physiological reflex to eliminate the sputum which has accumulated in the tracheobronchia tree. The sputum cannot enter the pharynx under its own power; it must be coughed up. The discrepancy between the incidence of sputum production and cough exemplifies the type of irresponsible tabulation that has been utilized in the establishment of important conclusions.

In table 3, page 284, of the report is listed a summary of studies on the prevalence of both cough and sputum in relation to smoking. The range was from 7.2 to 51.0 percent in the smokers and from 0 to 8.9 percent in the nonsmokers. Not listed in the table is a report by Oswald and Medvei (106) which included occasional cough or sputum in addition to the more frequent and persistent symptoms. This study if more than 5,000 persons found 63.7 percent of the male smokers and 47.7 percent of the male nonsmokers with cough or sputum; among the females, 63.2 percent of the smokers and 47.7 percent of the nonsmokers had cough and/or sputum. Again, it may be pointed out that population prevalence studies of sputum or cough, no matter how painstakingly done, cannot contribute sufficiently accurate data for valid conclusions. It may be further emphasized that even if cigarette smokers have more cough and more sputum than nonsmokers this does not necessarily indicate that these symptoms are reflected in permanent pathological changes in the tracheobronchial tree.

The prevalence of breathlessness among smokers was also studied. The results showed variations of incidence similar to the survey's cough and sputum. In one study (107) approximately 25 percent of the male smokers and 17 percent of the nonsmokers admitted to breathlessness. In another study (108) the female nonsmokers were more breathless than the smokers. However, the female smokers over 45 years coughed and expectorated more than the nonsmokers even though they were less short of breath. Still another study (109) found more shortness of breath in both male and female nonsmokers than in the smokers. Experience in history taking has made it very apparent that subjective evaluation of breathlessness is fraught with potential error. There are any number of physiological conditions capable of producing sensations of breathlessness including anxiety syndromes. Latent cardiovascular disease, thyroid disorders, anemia, and other organic diseases may also be manifested in exertional shortness of breath. A correlative study between smoking and breathlessness must exclude all other causes by complete examination including laboratory studies. The report cites several studies correlating smoking wtih a heterogeneous assortment of respiratory conditions ranging from "chest illness" to "irreversible obstructive lung disease." Among males the prevalence of these conditions was found higher in smokers; among females the differences were less marked and in some surveys there were no differences found between smokers and nonsmokers.

SUMMARY

1. Historical studies show that lung cancer had been prevalent for a century before the era of widespread smoking.
2. Progress in the diagnosis of lung cancer during the past three decades has resulted in the recognition of far more cases than was previously possible.
3. The rate of increase of lung cancer has progressively declined in the past 40 years despite the 200-fold increase in cigarette consumption.
4. Lung cancer has occurred predominantly in males in the 19th century and in the era of cigarette smoking; the sex predilection is a biological characteristic and not a result of smoking.
5. There has been no comparable increase of lung cancer in females despite the prodigious consumption of cigarettes; the rate in increase has already been stabilized in females.

6. Lung cancer has occurred predominantly in the 5th, 6th, and 7th decades during the 19th century and in the era of cigarette smoking; the age distribution has not been influenced by duration of smoking or by smoking habits.

7. In institutions with long experience in lung cancer the percentage relationship of lung cancer to total cancers in the 19th century was similar to percentages prevailing at present.

8. The pathological evidence presented in support of the smoking lung cancer theory is equivocal and the conclusions are unwarranted. The greatest number of alleged precancerous conditions in smokers were found in bronchial tubes that are least involved by lung cancer.

9. There is no valid experimental evidence confirming the smoking lung cancer theory; bronchogenic carcinoma has never been produced by exposure of experimental animals to tobacco smoke.

10. The allegations that bronchitis and emphysema are related to smoking are based on the most tenuous assumptions; the diseases are defined arbitrarily and the conclusione are therefore meaningless.

REFERENCES

(1) King, G., and Newsholme, A.: On the alleged increase of cancer, *Proc. Royal Soc. London 54:* 209, 1893.
(2) Laënnec, R.: *Traité de L'Auscultation Médiate, et des Maladies des Poumons et du Coeur*, Paris: J. S. Chaude, 1819: 4th ed., 1837.
(3) Forbes, J.: *Treatise on Diseases of the Chest*, London: T. & C. Underwood, 1821.
(4) Andral, G.: *Recherches sur l'expectoration dans les différentes maladies de poitrine*, Paris: Didat, Jr., 1821.
(5) Bouillaud, J.: Observations sure le cancer des poumons * * *, *J. Compl. du Dict. des. Sc. méd. 25:* 289, 1826.
(6) Heyfelder: Du cancer des poumons, *Archives Gén. de Méd. 14:* 345, 1837.
(7) Bérard: Tumeurs encéphaloïdes d'une forme singulière à la surface des poumons, *Bull. Soc. anat. de Paris 3:* 13, 1828.
(8) Arnal: Cancer épithéloide du thorax, etc. * * *, *Gaz. de Hôp. 17:* 78, 1844.
(9) Lebert, H.: Du cancer des organes de la respiration, *Physiologie Pathologique*, Paris: J. B. Bailliere, Vol. 2, p. 390, 1845.
(10) Charcelay, M.: Masse encéphaloïde volumineuse dans la plèvre droite, *Bull. Soc. anat. de Paris 58:* 12, 1837.
(11) Monneret, E., & Fleury, L.: Cancer of the lung, *Compendium de Med. Prat. 7:* 167, 1846.
(12) Hare, E.: Tumours involving certain nerves, *London Med. Gaz. 1:* 16, 1838.
(13) Pancoast, H.: Superior pulmonary sulcus tumor, *J.A.M.A. 99:* 1391, 1932.
(14) Hughes, H. M.: Cases of malignant disease of the lung, *Guy's Hosp. Rep. 6:* 330, 1841.
(15) Mac Lachlan: On primary cancerous degeneration and ulceration of the lung, *London Med. Gaz. 32*: 23, 1842.
(16) Burrows, G.: Case of extensive carcinoma of the lungs, *Medico-Chir. Trans. 9*: 119, 1844.
(17) Graves, R. J.: *Clinical Lectures on the Practice of Medicine*, London: New Sydenham Society, Vol. II, p. 61, 1848.
(18) Quain, R.: Encephaloid tumors at the root of the left lung, *Trans. Path. Soc. London 8*: 36, 1857.
(19) Cockle, J.: Contributions to the pathology of intrathoracic cancer, *Brit. Med. J.*, p. 230, 1857.
(20) Mayne, R.: On cancer of the lung, *Dublin Hosp. Gaz. 4*: 19, 1857.
(21) Pitman, H.: Encephaloid tumor involving the heart and lungs, *Brit. Med. J.*, p. 902, 1857.
(22) Budd, G.: On some of the effects of primary cancerous tumours within the chest, *Medico-Chir. Trans. 24*: 215, 1859.
(23) Page: Malignant disease of the lung, *Lancet 1*: 489, 1862.
(24) a Waldeyer, H.: Die entwickelung der carcinome, *Arch, f. path. Anat. 14*: 140, 1868.
b ———: Über den Krebs, *Samml. klin. Vortr*, No. 33, *Chirurgie* No. 10, 1872.
(25) Perls, M.: Zur Casuistik des Lungencarcinoms, *Archiv, f. path. Anat. 56*: 437, 1872.

(26) Georgi, W.: Ein Fall von primären Lungencarcinom ohne Metastasen, *Berl. klin. Wchnschr.*, No. 28–29, p. 413, 1879.
(27) Reinhardt, W.: Der primare Lungenkrebs, *Archiv f. Heilk. 19*: 369, 1878.
(28) Birch-Hirschfeld, F.: Das primäre Carcinom der Lungen, *Lehrbuch der path. Anat.*, Leipzig: F. C. Vogel, Vol. 2, p. 462, 1882.
(29) Hesse, W., and Hartung, F.: Der Lungenkrebs die Bergkrankheit in den Schneeberger Brugen, *Vierteljahrschr. f. Gerichl. Med. 30*: 296, 1879.
(30) Siegel, J.: *Zur Kenntniss des primären Pflasterepithelkrebses der Lunge*, Munchen: F. Straub, 1887.
(31) Siegert, F.: Zur Hisogenese des primären Lungenkrebses, *Archiv f. path. Anat. 134*: 287, 1893.
(32) Wolf, K.: Der primäre Lungenkrebs, *Fortschritte der Med. 13*: 725, 1895.
(33) Passler, H.: Ueber das primäre Carcinom der Lunge, *Archiv f. path. Anat.* 145: 191, 1896.
(34) Frankel, A.: Zur Diagnostik der Brusthöhlengeschwulste, *Dtsch. med. Wchnschr. 17*: 1345, 1891.
(35) Schwalbe, J.: Zur Lehre von den primären Lungen-und Brustfellgeschwulsten, *Dtsch. med. Wchnschr. 17*: 1235, 1891.
(36) Hartmann, R.: *Über Lungenkrebs vom Bronchus ausgehend*, Kiel: P. Peters, 1896.
(37) King, D.: Primary cancer of the lung, *N.E.J.M. 219*: 828, 1938.
(38) Lehlbach, C.: Case of primary encephaloid cancer of right lung, *Trans. Med. Soc. New Jersey*, p. 150, 1870.
(39) Loomis, A.: *Lectures on Disease of the Respiratory Organs*, New York: William Wood & Co., 1876.
(40) Delafield, F.: Primary cancer of the lung, in *Case Reports of Tumors of the Lung, 1868–1888*, unpublished notebook, New York City.
(41) Pepper, W.: Two clinical lectures on primary intra-thoracic carcinoma, *Phila. Med. Times 9*: 97, 1878.
(42) Van Giesen: Cancer of the Lung, *Med. Record 18*: 495, 1880.
(43) Ripley: Primary infiltrating medullary carcinoma of the lung, *Med. Record 18*: 691, 1880.
(44) Kemper, G.: Primary cancer of the lung, *Trans. Indiana State Med. Soc.*, p. 172, 1882.
(45) Janeway, E.: Primary carcinoma of the lung, *Med. Record 23*: 215, 1883.
(46) Holland: A specimen of encephaloid cancer of the lung, *St. Louis Med. & Surg. J. 46:* 172, 1884.
(47) Hodenpyl, E.: Multiple new growths of the lung, *Proc. N.Y. Path. Soc.*, p. 19, 1895.
(48) Le Count, E. R.: Primary carcinoma of the lung, *Trans. Chicago Path. Soc. 4:* 67, 1899.
(49) Adler, I.: The diagnosis of malignant tumors of the lungs, *N.Y.M.J. 63:* 173, 1896.
(50) Weinberger: Beltrage zur Klinik der malignen Lungengeschwulste, *Ztschr. f. Heilk. 2:* 78, 1901.
(51) Killian, G.: Zur Diagnostischen Verwertung der oberen Bronchoskopie bie Lungencarcinom, *Berl. klin. Wchnschr. 37:* 437, 1900.
(52) Feilchenfeld, J.: *Beitrage zur Statistik und Kasuistic des Carcinoma*, Leipzig: E. Ebering, 1901.
(53) Reick, H.: *Kreb-statistik*, München: Kastner & Callway, 1904.
(54) Feldner, O.: *Krebstatistik noch den sektions-protokollen des Pathologisch-Anatomischen Institute zu Göttingen, vom Jahre 1852–1908*, Lübbecke: F. Werngurg, 1908.
(55) Kikuth, W.: Ueber Lungencarcinom, *Archiv v. path. Anat. 225:* 107, 1925.
(56) Karrenstein: Ein Fall von Kancroid eines Bronchus und Kasuistisches zur Farge des primären Bronchial und Lungenkrebses, *Charité-Ann. 32:* 315, 1908.
(57) Adler, I.: *Primary Malignant Growths of the Lung and Bronchi*, New York: Longmans, Green & Co., 1912.
(58) Jackson, C.: Mechanism of physical signs in neoplastic diseases, *J.A.M.A. 95:* 639, 1930.
(59) Jaffé, R.: The primary carcinoma of the lung, *J. Lab. & Clin. Med. 20:* 1227, 1934.
(60) Harvey, C.: Cancer of the lung: A clinical survey of 100 cases, *Med. J. of Australia 2:* 565, 1936.
(61) Graham, E., and Singer, J.: Successful removal of entire lung for carcinoma of the bronchus, J.A.M.A. *101:* 1371, 1933.

(62) Barnard, W.: The nature of the "oat-celled sarcoma" of the mediastinum, *J. Path. and Bact. 29:* 241, 1926.
(63) Karsner, H., and Saphir, O.: Small cell carcinoma of the lung, *Am. J. of Path. 6:* 553, 1930.
(64) Johnson, C. R., Clagett, O. T., and Good, C. A.: The importance of explatory thoracotomy in the diagnosis of certain pulmonary lesions, *Surgery 25:* 218, 1949.
(65) Lisa, J., Trinidad, S., and Rosenblatt, M.: Pulmonary manifestations of carcinoma of the pancreas, *Cancer 17:* 395, 1964.
(66) Moriyama, I. M., Baum, W. S., Haenszel, W. M., and Mattison, B. F.: Inquiry into diagnostic evidence supporting medical certification of death, *Amer. J. of Public Health 48:* 1376, 1958.
(67) Haenszel, W.: Mortality and morbidity statistics on all forms of cancer, *Acta. Un. Int. Cancer 17:* 837, 1961.
(68) Gilliam, A. G., Milmore, B. K., and Lloyd, J. W.: Trends of mortality attributed to carcinoma of the lung, *Cancer 14:* 622, 1961.
(69) Wahl, S.: Über die Zunahme des Lungencarcinoms, *Ztschr. f. Krebs. 25:* 302, 1927.
(70) Shonerr, E.: Beitrag zur Statistik und Klinik der Lungentumoren, *Ztschr. f. Krebs. 27:* 436, 1928.
(71) Materna, A.: Zur Klinik und Pathologie des primären Lungenkrebses, *Beitrage z. klin. Chir. 132:* 708, 1924.
(72) Schlesinger, M. Die Bronchialcarcinome von 1924–1929 in Leipzig, *Ztschr. f. Krebs. 31:* 517, 1930.
(73) Engenolf, W.: Ueber die in den Jahren 1921–1927 vom Göttingen Pathologischen Institut beobachteten Gerschwulste, *Ztschr. f. Krebs 31:* 417, 1930.
(74) Holzer, H.: Zur Frage der Haufigkeit des Bronchialkrebses, *Med. Klin.* 21 : 1235, 1925.
(75) Maxwell, J., and Nicholson, W.: The incidence of primary malignant intrathoracic new growths, *St. Bartholomew's Hosp. Rep. 62:* 204, 1929.
(76) Gordon, T., Crittenden, M., and Haenszel, W.: Cancer mortality trends in the United States, 1930–55. Part II: End results and mortality trends in cancer, *Nat'l. Cancer Inst. Monogr. 6:* 131, 1961.
(77) Clemmensen, J., and Busk, T.: On the apparent increase in the incidence of lung cancer in Denmark, 1931–35, *Brit. J. of Cancer 1:* 253, 1947.
(78) Harris: Intrathoracic growths, *St. Bartholomew's Hosp. Rep. 28:* 73, 1892.
(79) Lenhartz: Die bösartigen Neubildungen der Lungen, in Ebstein, W., and Schwalbe, J :. *Handbuch der Praktischen Medizin*, Stuttgart: F. Enke, Vol. I, p. 490, 1899.
(80) Reichelman, W.: Eine Krebstatistik vom pathologischeanatomischen Standpunkt, *Berl. klin. Wchnschr. 39:* 728, 1902.
(81) Briese: Zur Kenntniss des primären Lungenkarzinoms mit statistischen Angaben, *Frankfurt, Ztschr. F. Path. 23:* 48, 1920.
(83) Weller, C.: Primary carcinoma of the larger bronchi, *Archiv f. Int. Med. 11:* 314, 1913.
(83) Berblinger, W.: Über die Zunahme des primären Lungenkrebses in den Jahren 1920 bis 1924, *Klin. Wchnschr. 4:* 913, 1925.
(84) Peters, W.: Über das Lungencarcinon, *Ztschr. f. Krebs. 37:* 587, 1932.
(85) Junghanns, H.: Der Krebs der Lungen, Bronchien und oberen Luftwege, *Ztschr. f. Krebs 28:* 572, 1929.
(86) Dormanns, E.: Beitrag zur Frage der Zunahme der Krebskrankheit, *Ztschr. f. Krebs 39:* 40, 1933.
(87) Eichengrun, W., and Esser A.: Statistik über die in den Jahren 1902–26 in Path. Institut Augusta Hospital Köln obduzierten Carcinomfalle mit besonderer Berüchsichtigung der Frage der Krebszunahme nach dem Kriege, *Ztschr, f. Krebs 24:* 63, 1927.
(88) Passey, R., and Holms, J.: The incidence of intrathoracic neoplasia in the teaching hospitals of Great Britain, 1894–1928, *Quart. J. Med. 4:* 321, 1935.
(89) Ibrahim, M.: Bronchogenic carcinoma in East Pakistan, *Dis. of Chest 26:* 286, 1954.
(90) Passey, R.: Some problems of lung cancer, *Lancet 2:* 107, 1962.
(91) Bonser, G.: The incidence of tumours of the respiratory tract in Leeds, *J. Hyg. 28:* 340, 1929.
(92) Hampeln, P.: Haufigkeit und Ursache des primaren Lungencarzinoms, *Mitt. a.d. Grenzgeb. d. med. u. Chir. 36:* 145, 1923.

(93) Seyfarth, C.: Lungenkarzinome in Leipzig, *Dtsch. med. Wchnschr. 44:* 1497, 1924.
(94) Jaffé, R. J., and Sternberg, H.: Kriegspathologische Erfahrungen, *Archiv f. path. Anat. 231:* 346, 1921.
(95) Lipschitz, M.: Uber die Zunahme des Bronchuscarcinoma in letzten Jahrzehnt and die diagnostische Berwertung der Bronchographic, *Dtsch. med. Wchnschr. 55:* 1708, 1929.
(96) Auerbach, O., *et al.:* Carcinoma-in-situ and early invasive carcinoma occurring in the tracheobronchial trees in cases of bronchial carcinoma, *J. of Thor. Surg. 34:* 298, 1957.
(97) Friedländer, C.: Experimental Untersuchungen ueber chronische Pneumonie und Lungenschwindsucht, *Archiv f. path. Anat. 68:* 325, 1876.
(98)a McKenzie, L.: Epithelmetaplasia bei Bronchopneumonie, *Archiv f. path. Anat. 190:* 350, 1907.
(98)b Winternitz, M. C., *et al.: The Pathology of Influenza*, New Haven: Yale University Press, 1920.
(99) Auerbach, O., *et al.*: Changes in the bronchial epithelium in relation to smoking and carcinoma of the lung, *N.E.J.M. 256:* 97, 1957.
(100) Ford, D., *et al.:* Dysplatsic lesions of the bronchial tree, *Cancer 14:* 1226, 1961.
(101) Rockey, E. E., *et al.*: Experimental study on effects of cigarette smoke condensate on bronchial mucosa, *J.A.M.A. 182:* 1904, 1962.
(102) Leuchtenberger, C., *et al.*: A correlated histological, cytological, and cytochemical study of the tracheobronchial tree and lungs of mice exposed to cigarette smoke, *Cancer 13:* 721, 1960.
(103)a Badham, C.: Observations on the Inflammatory Affections of the Mucous Membranes of the Bronchiae, London: Callow, 1808.
(103)b Stokes, W.: *A Treatise on the Diagnosis and Treatment of Diseases of the Chest*, Philadelphia: A. Waldie, 1837.
(104) Laënnec, R.: *Traité de L'Auscultation Médiate*, 4th ed., Vol. I, Paris. J S. Chaude, 1837.
(105) Louis, M.: *Researches on Emphysema of the Lungs*, trans. by T. Stewardson, Jr., Philadelphia: Dunglison American Medical Library, 1838.
(106) Oswald, N. C., and Medvei, V. C.: Chronic bronchitis: The effect of cigarette smoking, *Lancet 2:* 843, 1955.
(107) Densen, P. M., *et al.:* New York City Health Department chronic respiratory disease survey, May, 1963, Interim Report to Advisory Committee.
(108) Higgins, I. T. T.: Respiratory symptoms, bronchitis and ventilatory capacity in a random sample of an agricultural population, *Brit. Med. J. 2:* 1198, 1957.
(109) Higgins, I. T. T., and Cochran, J. B.: Respiratory symptoms, bronchitis and disability in a random sample of an agricultural community in Dumfriesshire, *Tubercle 39:* 296, 1958.
(110) Menne, F., and Anderson, M.: Bronchiogenic carcinoma, *J.A.M.A. 117:* 2215, 1941.
(111) Simons, E.: *Primary Carcinoma of the Lung*, Chicago: Yearbook Publishers, 1937.
(112) Willis, R. A.: *Pathology of Tumors*, 3d ed., Washington, D.C.: Butterworth & Co., Ltd., 1960.
(113) Trinidad, S., Lisa, J. R., and Rosenblatt, M. B.: Bronchogenic carcinoma simulated by metastatic tumors, *Cancer 16:* 1521, 1963.
(114) Spain, D.: Recent changes in relative frequency of various histologic types of bronchogenic carcinoma, *J. Nat'l. Cancer Inst. 23:* 427, 1957.
(115) Lee, S., and Ts'o, T.: Histological typing of lung cancers in Hong Kong, *Brit. J. Cancer 17:* 37, 1963.
(116) Whitwell, F.: The histopathology of lung cancer in Liverpool: The specificity of the histological cell types of lung cancer, *Brit. J. Cancer 15:* 440, 1960.
(117) Beaver, D. L., and Schapiro, J. L.: A consideration of chronic pulmonary parenchymal inflammation and alveolar cell carcinoma with regard to a possible etiologic relationship, *Am. J. Med. 21:* 879, 1956.
(118) Raeburn, C., and Spencer, H.: Lung scar cancers, *Brit. J. Tuberc. 51:* 237, 1957.
(119)a Lorenz, E., Stewart, H. L., Daniel, J. H., and Nelson, C. V.: The effects of breathing tobacco smoke on strain A mice, *Cancer Res. 3:* 123, 1943.
(119)b Lorenz, E.: Experimental studies on tobacco smoke, *Proc. Nat'l. Cancer Conference*, p. 203, 1949.

(120) Essenberg, J. M.: Cigarette smoke and the incidence of primary neoplasms of the lung in albino mice, *Science 116:* 561, 1952.
(121)a Peacock, P. R.: Cigarette smoking by laboratory animals, *Seventh Inter. Cancer Congress*, London, p. 153, 1958.
(121)b ———: Cigarette smoking experiments, *Brit. Emp. Cancer Campaign, 35th Annual Report*, Part 2, 1957.
(122) Coste: *Traité des Maladies du Poumon*, Paris: Herissant fils, 1767.
(123) Eberle, J.: *Treatise on the Practice of Medicine*, Philadelphia: John Grigg, 1830.
(124) Campbell, J.: The effect of exhaust gases from internal combustion engines and of tobacco smoke upon mice, *Brit. J. Exper. Path. 17:* 146, 1936.
(125) Auerbach, O., Stout, A. P., Hammond, E. C., and Garfinkel, L.: Changes in bronchial epithelium in relation to cigarette smoking and in relation to lung cancer, *New England J. Med. 265:* 253, 1961.
(126) Garland, L. H., Beier, R. L., Coulson, W., Heald, J. H., and Stein, R. L.: The apparent sites of origin of carcinomas of the lung, *Radiology 78:* 1, 1962.
(127) Liebow, A. A.: Cited in Garland, *et al.*: The apparent sites of origin of carcinomas of the lung, *Radiology 78:* 1, 1962.
(128) Walter, J. B., and Pryce, D. M.: The site of origin of lung cancer and its relation to histological type, *Thorax 10:* 117, 1955.
(129) Cunningham, G. J., and Winstanley, D. P.: Hyperplasia and metaplasia in the bronchial epithelium, *Annals of the Royal College of Surgeons 24:* 323, 1959.
(130) Macklin, C. C.: Induction of bronchial cancer by local massing of carcinogen concentrate in outdrifting mucus, *J. Thoracic Surg. 31:* 238, 1956.
(131) Breslow, L., Hoaglin, L. Rasmussen, G., and Abrams, H. K.: Occupations and cigarette smoking as factors in lung cancer, *Am. J. Public Health 44:* 171, 1954.
(132) Doll, R., Hill, A. B., and Kreyberg, L.: The significance of cell type in relation to the aetiology of lung cancer, *Brit. J. Cancer 11:* 43, 1957.

Curriculum Vitae

1927: Graduated from the College of the City of New York (B.S.).
1931: Graduated from the Long Island College of Medicine (M.D.).
1931–33: Internship and residency in pulmonary diseases, Montefiore Hospital.
1934–35: Fellowship in pulmonary diseases, Montefiore Hospital.
1934–51: Assistant, associate, and attending physician, respectively, Pulmonary Division, Montefiore Hospital.
1935–37: Assistant in medicine and instructor, New York Post-Graduate Medical School, Columbia University.
1936–56: Chief, chest clinic, New York City Hospital; associate visiting and visiting physician, respectively, New York City Hospital.
1938–40: Associate visiting physician, Municipal Sanatorium.
1944 to date: Associate clinical professor of medicine, New York Medical College.
1956 to date:
Chief, medical clinics, Metropolitan Hospital; visiting physician, Metropolitan Hospital and Bird S. Coler Hospital.
Associate attending physician, Flower-Fifth Avenue Hospital.
Attending physician, Doctors Hospital.
Fellow, American College of Chest Physicians; member of Council on Undergraduate Medical Education.
Fellow, American College of Cardiology.
Fellow, New York Academy of Medicine.
American Thoracic Society.
Association of American Medical Colleges.
American Association for History of Medicine.
New York County and State Medical Societies.
American Medical Association.

Publications

Books

1. *Cancer of the Lung* (with J. Lisa), Oxford University Press, January, 1956.
2. *Bronchiectasis* (with J. Lisa), Oxford University Press, February, 1943.

Articles

1. The association of bronchogenic carcinoma and pulmonary tuberculosis, *Geriatrics 20:* 99, February, 1965.
2. Lung cancer in the 19th century, *Bulletin of the History of Medicine, 38:* 395, 1964.
3. The significance of the solitary pulmonary metastasis, *Medical Science 15:* 38, July, 1964.
4. Pulmonary manifestations of carcinoma of the pancreas (with J. Lisa and S. Trinidad), *Cancer 16:* 1521, December, 1963.
5. Bronchogenic carcinoma simulated by metastatic tumors (with S. Trinidad and J. Lisa), *Cancer 16:* 1521, December, 1963.
6. Bronchogenic carcinoma: Relation to antecedent pulmonary infection, *Dis. of Chest 44:* 598, 1963.
7. Specific epithelial degeneration (Ciliocytophthoria) in inflammatory and malignant respiratory disease, *Dis. of Chest 43:* 605, June, 1963.
8. The association of bronchogenic carcinoma and pulmonary tuberculosis, to be published in *Geriatrics.*
9. The significance of the solitary pulmonary metastasis, to be published in *Medical Science.*
10. Lung cancer in the 19th century, to be published in the Bulletin of the History of Medicine.
11. Bronchogenic carcinoma simulated by secondary tumors (with S. Trinidad and J. Lisa), in *Progress in Clinical Cancer,* to be published by Grune & Stratton, New York City.
12. Co-existence of lung cancer and pulmonary tuberculosis, *Clinical Medicine 69:* 1303, June, 1962.
13. Quantophrenia, lung cancer and common sense, *J.A.M.A. 180:* 87, April 7, 1962.
14. Bronchiectasis, *Medical Science 7:* 744, June 10, 1960.
15. The modern diagnosis and treatment of pulmonary tuberculosis, *Medical Science 6:* 316, September 10, 1959.
16. Bronchogenic carcinoma: Etiologic considerations, *Clinical Medicine,* Volume 7, June, 1959.
17. Iproniazid (Marsilid) hepatitis, *N.Y.S. Med. J. 58:* 3680, November 15, 1958.
18. Cancer of the lung: Facts and fallacies, *Kentucky State Med. J.,* February, 1958.
19. Metastatic pulmonary melanoma of 15 months' duration, *Dis. of Chest 34:* 342, September, 1958.
20. Why Doctors disagree, *Essential Books* (Oxford University Press) *1:* 11, April, 1956.
21. The middle lobe syndrome (with I. Kross), *Jour. of the Mount Cinai Hospital 17:* 711, March-April, 1951.
22. Clinical considerations and treatment of amyloidosis, *U.S. Armed Forces Med. J. 2:* 739, 1951.
23. Lobectomy in a patient 83 years of age (with A. Aufses and J. Lisa), *J.A.M.A. 143:* 552, June, 1950.
24. Early diagnosis of carcinoma of the lung, *N.Y. Medicine 5:* 16, November 5, 1949.
25. Studies of mycobacteria with the electron microscope (with A. Gessler and E. Fuller), *Am. Rev. Tuberc. 46:* 587, December, 1942.
26. Cholesterol content of sputum (with M. Bruger), *Am. Rev. Tuberc. 47:* 530, May, 1943.
27. Putrid lung abscess, *J. Thoracic Surgery 9:* 294, February, 1940.
28. Upper lobe pneumonia in the adult (with A. Bachman), *Ann. of Int. Med. 11:* 1845, April, 1938.
29. Paroxysmal auricular fibrillation in the course of right heart failure, *Am. Heart J. 15:* 114, January, 1938.
30. Massive pleural effusions in artificial pneumothorax, *Am. Rev. Tuberc. 36:* 467, October, 1937.
31. Cardiac failure secondary to chronic pulmonary tuberculosis (with G. Nemet), *Am. Rev. Tuberc. 35:* 713, June, 1937.
32. Clinical manifestations of amyloidosis, *Ann. of Int. Med. 8:* 678, December, 1934.
33. Recovery from generalized amyloidosis secondary to pulmonary tuberculosis, *Arch. Int. Med. 57:* 562, March, 1936.
34. Vitamin therapy in intestinal tuberculosis (with M. Steinbach), *Am. Rev. Tuberc.,* January, 1935.

35. Trytophan test in tuberculous meningitis, *Am. Rev. Tuberc. 29:* 668, June, 1934.
36. Amyloidosis and amyloid nephrosis, *Am. J. Med. Sci. 8:* 678, October, 1933.
37. What interns expect of the hospital, *Modern Hospital,* August, 1934.
38. The immortal French physician: Rene Theophile Laennec, *Med. Times and Long Island Med. J.,* August, 1931.

STATEMENT OF LEO KATZ, PH. D.

I am Leo Katz of East Lansing, Mich., currently professor of statistics and director of the statistical laboratory at Michigan State University and visiting professor of biostatistics in the Medical School at the University of Cincinnati. Since 1951, I have been principal investigator on research sponsored by the Office of Naval Research and the National Science Foundation. I have held visiting professorships at the University of North Carolina and at Stanford University and have served 1 year as European scientific liaison officer for probability and statistics in the London branch office of the Office of Naval Research.

I am a fellow of the Institute of Mathematical Statistics, the American Statistical Association, the Royal Statistical Society, and the American Association for the Advancement of Science. I am a member of the American Mathematical Society, the Mathematical Association of America, the London Mathematical Society, the Biometric Society and others. My teaching, research, and consulting activities are all in the fields of mathematical statistics and probability theory. My vitae in greater detail are attached herewith.

The report of the Advisory Committee to the Surgeon General of the U.S. Public Health Service has two prime objectives: firstly, to establish that there exists a clear and significant association between patterns of smoking habits and risks of death, and secondly, if association is established, to verify that the form of this association is between smoking as cause and increased risk of death as effect. In particular, the argument is in sharpest focus in considering the relationship between the amount of cigarette smoking and the risk of death from cancer of the lung. I direct my initial remarks toward clarification and evaluation of the extent to which these two objectives are attained in the report.

ASSOCIATION

On the first objective, the determination of association could be made precisely, on statistical grounds alone, if the samples were indeed randomly selected and representative of the purported universe of nonsmoking and cigarette-smoking adult males in the United States. The determination could still be made approximately if it were possible to estimate the biases introduced by nonrepresentativeness of the samples. Many critics of the committee report have pointed up specific sources of bias; the most serious are self-selection in the sample and lack of adequate followup study of nonrespondents. In examining the question whether the occurrences of two attributes which vary from individual to individual in a population are indeed associated, it is elementary and essential statistical practice that the investigator select his sample so as to represent adequately the population he studies and that he neither permits individuals to nominate themselves for inclusion in the study nor uses some readily available but possibly nonrepresentative group of individuals. Further, the fact some do and some do not respond to his queries invites the immediate suspicion that these two groups may differ in respect to the very attributes being studied; a further investigation into the similarity or dissimilarity of nonrespondents to respondents is necessary to allay this suspicion. The fact that the various computations made from the sample surveys reported by the advisory committee to the Surgeon General consistently underestimate the known general and specific death rates of the population is an indication that such biases did indeed occur in those studies.

While one can sympathize with the committee in its inability to go beyond existing studies to conduct independent investigation of its own, it is unfortunately true as matters stand that there is no way to evaluate accurately the extent of the biases in the estimates. At the very least, the committee has established that there might be an association between cigarette smoking and lung cancer; at most, it has established that the association is of the magnitude claimed in the report. The truth of the matter is probably somewhere between

these two extremes and justifies looking into the second issue, namely, whether the association might be one of cause and effect.

I should like to emphasize that there is a fundamental difference between arguments which serve to establish association and those required to determine that one phenomenon is causal and another is an effect ascribable to the first as cause. Association is a purely statistical property of collections of observations on two attributes of the same individuals. The occurrence of association, in whatever degree, cannot of itself indicate whether or not the relationship between the attributes is or is not one of cause and effect. In particular (see pp. 182 ff. of the report to the Surgeon General), evidence as to "* * * consistency of the association, * * * strength of the association, * * * specificity of the association, * * * temporal relation of the association, [and/or] * * * coherence of the association" can only serve to buttress the claim that there is association but cannot cast any light whatever of the question of causal relationship.

CAUSALITY

Logically, once positive association has been established between two factors A and B by some process of statistical inference, there are only four possibilities as regards the nature of the relationship. These are:

(1) Factor A is a significant cause of factor B; consequently, presence of factor A in greater degree causes a greater amount of factor B and we observe positive association between A and B.

(2) The reverse, viz., B is a significant cause of A; in this case, we observe a positive association indistinguishable from case (1).

(3) Both A and B are significant effects of some common cause or system of causes; we still may observe the same apparent positive association as in the previous two cases.

(4) our evidence of association is invalid due to improper sampling procedures, nonrandom assignments, insufficient followup of nonrespondents, etc.; we may observe an artificial or spurious association between A and B.

If the fourth of these is the true state of affairs, there is no point in even discussing whether A causes B or not, as we have not even shown that A and B are related at all.

It does not seem to be very likely that any large group of the investigations cited by the Surgeon General's committee could have been so contaminated that the associations observed must be judged to me mostly spurious. Let us assume, in order to continue discussion in the present line, that the fourth possibility listed above has been ruled out; we still have before us the problem of deciding which of the remaining three cases describes the causal nature of the relationship between the two factors. The issue now is clear: Does A cause B, does B cause A, or are both A and B effects due to an underlying system of causes which produces the observed association? Here we come to the heart of the matter. Up to this point, statistical methods to evaluate the degree of association are valid and, indeed, are the only valid method of proceeding in the face of individual variability and uncertainty. However, from this point onward, statistical methods alone are of no further avail and our only recourse is to definitive experiments. Specifically, the question of causality can only be resolved by an experiment so designed that two clearly distinguishable results of the experimentation will be observed depending on which of the two competing hypotheses is correct: (1) increased cigarette smoking does cause increased risk of lung cancer or (2) increased cigarette smoking does not cause increased risk of lung cancer. Since no such experiment has been done, no positive statement regarding causality is justified.

The argument I have just presented is entirely independent, may I stress, of the question of association. Notice that I stipulated, for continuation of that discussion, that association did exist. Let us turn now to the claim made by the advisory committee to the Surgeon General that the results of experiments which convey information regarding association can somehow be made to impute the existence of a cause-effect relationship if the association is consistent, strong, specific, of proper order in temporal relationship, and coherent.

Psychologists are agreed that people differ in their individual needs for oral gratification and that one of the main sources of this gratification is the smoking habit. Another principal source of satisfaction of oral needs is the habit of

thumbsucking, practiced largely by infants and usually abandoned in early childhood. It is not at all unlikely that carefully conducted experiments would indicate significant associations among each pair of the factors: cigarette smoking, deaths from lung cancer, and thumbsucking in infancy. Focusing on the association between thumbsucking and deaths from lung cancer, we see that the temporal relationship is even more pronounced than between smoking and lung cancer. Further, it is reasonable to suppose that 29 retrospective studies could consistently show strong association as specific as that seen in lung cancer versus smoking. Finally, this whole collection of phenomena is coherent in a theory which holds that those individuals who develop the thumbsucking habit and are later forced by social pressures to adopt other forms of oral gratification tend to introduce into their mouths and air passages carcinogenic and other foul substances which may produce lung cancer (and increased risk of death from a long list of causes).

The hypothetical example we have just examined is not entirely trivial. Although you may object to a claim made on the evidence outlined that lung cancer is caused by thumbsucking, I maintain that this is precisely the nature of the supporting evidence for the claim that lung cancer is caused by cigarette smoking. The statistical arguments presented in the report of the advisory commitee to the Surgeon General cannot, in and of themselves, be used to go beyond demonstration of association in an attempt to support a case for a cause-effect relationship.

POSSIBLE ACTIONS AND CONSEQUENCES

My remaining remarks are directed toward discussing briefly the possible actions available to the Congress of the United States, on which recommendations may be made by this committee. My own opinion is that the question of whether cigarette smoking causes lung cancer has not been settled, and that consequently no final decision should be undertaken on the strength of the present evidence. Therefore, it seems to me that the only possible action which should be considered by this committee is a decision to withhold judgment and to call for a maximum effort to produce one or more definitive experiments which would provide conclusive evidence on the matters still under dispute.

I feel most strongly the desirability of designing and performing such experiments as expeditiously as possible. I expect that we shall encounter difficulties in carrying out this program, but after all, a people who can achieve such diverse miracles as interplanetary travel and the invention of a plastic bag to wrap sandwiches should have no insurmountable difficulty in marshaling enough ingenuity to carry out such a program of experimentation.

VITAE

Home address: 425 Durand Street, East Lansing, Mich. (517) 332–5101.
Office address: Department of Statistics, Michigan State University (517) 355–9588.
Born: November 29, 1914, at Detroit, Mich.
Family: Wife, Jean (married 1936); two sons, Michael (1943), Daniel (1945).
Education:
B.S.E.E., Lawrence Institute, 1936.
M.A. (mathematics), Wayne University, 1938.
Ph. D. (mathematics), University of Michigan, 1945.
Postdoctoral study and research:
University of California, Berkeley, summer 1948.
University of North Carolina, Chapel Hill, summer 1950.
University of California and Stanford University, 1952–53.
Principal investigator on research under contract with Office of Naval Research on mathematical models for study of social group organization theory, April 1952 to October 1956.
Principal investigator on research under contract with Office of Naval Research on investigation of power of 2 by 2 test of independence, September 1957 to August 1959.
Principal investigator on research under contract with National Science Foundation on mathematical statistics and probability theory, July 1958 to February 1965.

Professional experience:
Statistician, Michigan Department of Labor, 1941–42.
Mathematician, aircraft development section, General Motors Corp., 1942–45.
Statistical consultant and part-time instructor, Wayne University, 1945–46.
Assistant professor of mathematics, 1946–49; associate professor of statistics, 1949–56; professor of statistics, Michigan State University, 1956–.
Consultant, Veterans' Administration, 1955–.
Consultant, U.S. Air Force, 1956–.
Head, Department of Statistics, Michigan State University, 1956–63.
Director, Statistical Laboratory, Michigan State University, 1959–.
European scientific liaison officer (statistics and probability theory), Office of Naval Research, London, 1959–60.
Ford Foundation visiting distinguished professor, School of Business, University of North Carolina, 1961–62.
Visiting professor of statistics, Stanford University, summer, 1962.
Visiting lecturer in statistics, NSF, 1963–65.
Visiting professor of biostatistics, College of Medicine, University of Cincinnati, 1963–.

Membership in professional societies:
Institute of Methematical Statistics (fellow).
American Mathematical Society.
American Statistical Association (fellow).
Royal Statistical Society (fellow).
American Association for Advancement of Science (fellow).
London Mathematical Society.
Psychometric Society.
Institute of Management Sciences.
Mathematical Association of America.
Biometric Society.
Sigma Xi.
American Association of University Professors.
Phi Kappa Phi.

Listings: Who's Who in America; American Men of Science; and others.

PUBLICATIONS

1. "Selective Admission of Prospective Teachers," *Wayne University College of Education Research Publications*, No. 1, x+150 pp., 1939. With W. Reitz.
2. "A note on basic statistics," *Michigan Labor and Industry*, Vol. 1, 1941.
3. "Application of the generalized Pascal function to data not subject to explanation in terms of the ordinary Poisson function," General Motors Corp., Labor Economic Section, 1943.
4. "A study of the spin characteristics of the P–75 airplane and suggested modification of XP–75 to produce same ellipsoid of inertia," G.M.C., Aircraft Development Section, 1944.
5. "Frequency functions defined by the Pearson difference equation," dissertation, University of Michigan, 1945.
6. "A matrix approach to the analysis of sociometric data. Preliminary report," *Sociometry*, Vol. IX, 1946. With E. Forsyth.
7. "On the matrix analysis of sociometric data," *Sociometry*, Vol. X, 1947.
8. "Punched card technique for the analysis of multiple-level sociometric data," *Sociometry*, Vol. XIII, May 1950.
9. "The probability distribution of the number of isolates in a social group," Institute of Statistics, University of North Carolina, mimeo series No. 36, July 1950.
10. "An application of matrix algebra to the study of human relations within organizations," Institute of Statistics, University of North Carolina, mimeo series No. 39, August 1950.
11. "On relative efficiencies of BAN estimates," *Annals of Mathematical Statistics*, Vol. 21, September 1950.
12. "The distribution of the number of isolates in a social group," *Annals of Mathematical Statistics*, June 1952, pp. 271–276.
13. "A new status index derived from sociometric analysis," *Psychometrika*, Vol. 18, March 1953.

14. "Properties and factorizations of matrices defined by the operation of pseudo-transposition," *Duke Mathematical Journal*, Vol. 20, June 1953.
15. "Confidence intervals for the number showing a certain characteristic in a population when sampling is without replacement," *Journal of the American Statistical Association*, Vol. 48, June 1953.
16. "A proposed index of the conformity of one sociometric measurement to another," *Psychometrika*, Vol. 18, September 1953. With J. H. Powell.
17. "The number of locally restricted directed graphs," *Proceedings of the American Mathematical Society*, Vol. 5, August 1954, pp. 621–626.
18. "Enumeration of sociometric matrices and applications," in *Conference on Multidimensional Analysis*, National Science Foundation, 1954, pp. 33–37.
19. "Probability of indecomposability of a random mapping function," *Annals of Mathematical Statistics*, Vol. 26, September 1955, pp. 512–517.
20. "Measurement of the tendency toward reciprocation of choice," *Sociometry and the Science of Man*, Vol. XVIII, December 1955, No. 4, pp. 659–665.
21. "The variance of the number of mutual choices in sociometry," *Psychometrika*, Vol. 21, No. 3, September 1956, pp. 299–304. With Thurlow R. Wilson.
22. "Probability distributions of random variables associated with a structure of the sample space of sociometric investigations," *Annals of Mathematical Statistics*, Vol. 28, No. 2, June 1957. With J. H. Powell.
23. "A note on estimating the statistical significance of mutuality," *Journal of General Psychology*, 1958, 58, pp. 97–103. With Renato Tagiuri and T. R. Wilson.
24. "The concept of configuration of interpersonal relations in a group as a time-dependent stochastic process," Psychometrika, Vol. 24, No. 4, December 1959, pp. 317–327. With Charles H. Proctor.
25. "Conference on plane sampling at Stockholm," *Office of Naval Research, London, England, Technical Report* ONRL–C–1–60, January 1960.
26. "Third colloquium on Mathematical Statistics and Probability Theory at Oberwolfach," *Office of Naval Research, London, England, Technical Report* ONRL–C–5–60, June 1960.
27. "The 32d meeting of the International Statistical Institute in Tokyo," *Office of Naval Research, London, England, Technical Report* ONRL–C–11–60, August 1960.
28. "Statistical methods and models," *Sociometric Reader*, Editor of Section 11, B., Free Press, Glencoe, Ill., 1960.
29. "Statistics in Great Britain," *Office of Naval Research, London, England, Technical Report* ONRL–76–60, November 1960.
30. "Automation of Radiation Treatment Planning, IV: Derivation of a Mathematical Expression for the Percent Depth Dose Surface of Co^{60} Beams and Visualization of Multiple Field Dose Distributions," *British Journal of Radiology*, (in press). With T. D. Sterling and H. Perry.
31. "Comparison of the Power Functions for the Test of Independence in 2 by 2 Contingency Tables," *Annals of Mathematical Statistics, (in press)*.
32. "Unified treatment of a Broad Class of Discrete Probability Distributions." *Proceedings of the International Symposium on Classical and Contagious Discrete Distributions, (in press)*.

REVIEWS

R1. Cochran and Cox, "Experimental Designs," *Mathematical Tables and other Aids to Computation*, Vol. V, January 1951.
R2. McNemar, Quinn, "Psychological Statistics," *Journal of the American Statistical Association*, December 1955, Vol. 50, pp. 1345–1346.
R3. Cramer, Harold, "The elements of Probability Theory and Some of Its Applications," *Journal of the American Statistical Association*, March 1956, Vol. 51, pp. 165–166.
R4. Cohen, Lillian, "Statistical Methods for Social Scientists," *Journal of the American Statistical Association*, June 1956, Vol. 51, pp. 380–381.
R5. Nixon, J. W., "A History of the International Statistical Institute, 1885–1960," *Quality Control*, Vol. XVII, April 1961, pp. 31–32.
R6. Takacs, Lajos, "Stochastic Processes: Problems and Solutions," *Journal of American Statistical Association*, December 1961, Vol. 56, p. 1024.

STATEMENT OF JOSEPH H. OGURA, M.D.; ALDEN H. MILLER, M.D.; GEORGE A. SISSON, M.D.; AND HAROLD G. TABB, M.D.

This joint statement is presented on behalf of Dr. Joseph H. Ogura, Dr. Alden H. Miller, Dr. George A. Sisson, and Dr. Harold G. Tabb. Dr. Joseph H. Ogura is professor of otolaryngology at Washington University, St. Louis, Mo. and associate otolaryngologist at the Barnes Hospital Group in St. Louis. Dr. Alden H. Miller is head of department and clinical professor of surgery, Department of Otolaryngology at the University of Southern California, school of Medicine, and head of Department of Otolaryngology at Los Angeles County General Hospital and Childrens Hospital, Los Angeles, Calif. Dr. George A. Sisson is clinical professor of Otolaryngology at the State University of New York, School of Medicine, Syracuse, N.Y., and chief of the Department of Otolaryngology at Community-General Hospital at Syracuse. Dr. Harold G. Tabb is professor and chairman, Department of Otolaryngology, Tulane University, School of Medicine, New Orleans, La. and senior visiting surgeon at Charity Hospital of Louisiana at New Orleans.

Further data concerning each of the participants are contained in summaries submitted with this statement.

We understand that this committee is interested in receiving information relating to possible health problems associated with cigarette smoking. It has come to our attention that the Advisory Committee to the Surgeon General reported that cigarette smoking is a significant factor in the causation of laryngeal cancer in the male. This finding is of special interest to us as physicians whose specialty is the treatment of diseases of the larynx and related areas of the nose, mouth, and throat. Each of us has devoted years of practice to the diagnosis and surgical treatment of cancer of these areas. Our total experience comprises in the neighborhood of 3,000 cases of cancer of the larynx and adjacent areas. We naturally have great interest in any observations or judgments concerning the possible cause of cancer in this part of the body. However, it is our opinion that the discussion of the problem of laryngeal cancer in the report of the Surgeon General's Advisory Committee represents an inadequate review and evaluation of the pertinent data and that the conclusion is open to question on a number of grounds.

The committee's conclusion is essentially based on its interpretation of statistical data showing an association between cigarette smoking and cases of cancer of the larynx. While we have noted a similar association in our cases, we are also aware of other facts which indicate that the association may not have causal significance.

The vital statistics of the United States pertaining to the behavior of laryngeal cancer in the population at large reveal an increase in the number of deaths from this disease among white males over the past three decades, which is much smaller than might be expected on the basis of growth in population and the increase in the number of people now living to an age when laryngeal cancer tends to occur. Although no official figures for the United States on the number of new cases each year exist, we find no indication of any appreciable increase in the number of cases seen from year to year. If cigarette smoking were a significant factor in the causation of laryngeal cancer, we would, at least, expect to find a large increase in mortality or frequency of the disease over the past three decades corresponding to the increase in cigarette consumption. We regard the absence of such an increase as significant evidence inconsistent with the asserted role of cigarette smoking.

As the report of the Surgeon General's Advisory Committee indicates, laryngeal cancer is a disease which occurs predominantly in men. It also notes that the ratio of males to females with cancer of the larynx was 6.3 to 1 30 years ago as compared to 10.8 to 1 today. Our experience suports the observation that the proportion of males to females among larynx cancer patients has been rising over the years. Since women now represent a larger proportion of the smoking population than they did 30 years ago, it is difficult to explain this phenomenon on the basis that smoking is a significant factor. No adequate explanation has been advanced for the large and increasing preponderance of this disease in males. Some have suggested that hormonal factors may be important, but at this time we simply do not know.

We find not infrequently cases of cancer of the larynx in men and women who have never used tobacco in any form which indicates, at least, that tobacco is not a necessary factor. Very little attention is given in the report to the

possible importance of other factors frequently found in association with laryngeal cancer. It is noted in this report (p. 211) that "* * * other factors may play a significant role in the production of laryngeal cancer, such as alcohol and inadequate nutrition." In our view this is a highly pertinent observation and some attempt should have been made to evaluate the significance of these factors. We know from our experience that many patients with laryngeal cancer are heavy drinkers. The association with alcohol in some series of cases may be higher than the association with tobacco. Very often a patient has a history of both heavy drinking and heavy smoking. Inadequate nutrition is also likely to be part of the clinical picture. The variety in the case histories of patients with cancer of the larynx may be a good indication that some factor which remains undiscovered may eventually be found to be the true cause. Further, if tobacco, alcohol or inadequate nutrition are important in producing cancer of the larynx, we have yet to understand how they operate and why it is that cancer does occur in the absence of any or all of these factors. Our present knowledge would indicate that it is premature to incriminate any of the present suspects.

Another matter not sufficiently dealt with in the Advisory Committee's report is the question of why cigarette smoke should appear to be specifically related to cancer of the larynx but not to cancer of adjacent parts of the throat. Very little attention is given to the differences in cancer arising in various parts of the relatively small area of the mouth, throat and respiratory passages, although these parts are all exposed to cigarette smoke.

Statistical studies of laryngeal cancer, such as those relied on by the committee, seldom define with precision the location of the various cancers which may be included within the broad term "laryngeal cancer." Because of this, the importance of such data is difficult to evaluate. When clinicians study problems in relation to cancer of the oral cavity and throat they find it necessary to define precisely the location of the cancer since the clinical behavior of cancers at different sites in and near the larynx differs greatly. The exact definition of site is also important when analyzing case histories since a variety of different factors may appear to be important according to whether the cases studied are, say, cancer of the epiglottis, cancer of the tonsil or cancer of the vocal cord. Careful analysis may show that alcohol use or malnutrition may appear to be important as to one site, chronic infection or syphilis as to another, a sex factor or irritation as to still another. The degree of association with smoking may vary greatly from study to study according to the type of cases which are included in or excluded from the category of laryngeal cancer.

There are other curious phenomena noticed in connection with cancer in various parts of the throat which appear inconsistent with the theory of cigarette smoke carcinogenesis.

We can all agree that a case of cancer of the trachea or windpipe is extremely rare and yet this structure is directly in the path of inhaled smoke. The trachea lies immediately below the larynx and should be similarly affected by smoke.

Cancer does occur at the base of the tongue and on the tonsil. Both of these structures are in close proximity to the larynx. Yet it is curious that cancer at these sites occurs more frequently in women than in men. One might infer that because of this sex distribution it is unlikely that smoking is an important factor in producing cancer in these locations.

In heavy cigarette smokers, we often see deposits of tobacco condensate in the vestibule of the nose which remain there over long periods of time. Yet we have never seen cancer develop in this location.

Cancer of the upper end of the esophagus was, until a few years ago, much more common in women than in men. Recently it has been noticed that this ratio is changing and today we find as many cases in men as in women. We know that some part of the cigarette smoke is dissolved in the saliva and swallowed. Inhaled smoke particles are also carried up from the lung in the mucus and swallowed. It has been hypothesized that this explains the statistical association between smoking and esophageal cancer. It is difficult to account for the changing sex ratio for cancer of the upper end of the esophagus on the basis of this hypothesis. Assuming that women are particularly susceptible to cancer in this location, if smoke condensates are the responsible agent we would have expected the ratio in favor of women to persist or even to increase with an increasing proportion of women taking up smoking. Furthermore, if swallowed tobacco condensates produce cancer, it is difficult to account for the fact that stomach cancer has decreased remarkably in recent times.

It is worth noting that there is no experimental evidence of the production of laryngeal cancer by tobacco smoke or condensates.

Dr. Ogura has observed that some families appear to be predisposed to cancer of the larynx and adjacent areas, but no study of the possible genetic basis of this disease has been undertaken to date.

In conclusion, we would say that the attempt to assign causal significance to any one factor that appears with high frequency in case histories is not the way to make a scientific determination of the cause of a disease as complex as cancer. Such information raises many subjects for consideration and further exploration, but no definite statements concerning the cause of cancer of the larynx should be based on such data alone. We believe that it has yet to be proved that cigarette smoke is a causal factor in laryngeal cancer. While we do not say that the evidence to date rules out smoking as a possible factor, we feel that the Advisory Committee's conclusion would have been on a sounder scientific footing if the inconsistent and contradictory evidence had been more fully evaluated and the conclusion had been reached that a statistical association between cigarette smoking and laryngeal cancer in the male may have been demonstrated, but it remains to be proved whether the relationship, if any, is one of cause and effect.

JOSEPH H. OGURA, M.D.
ALDEN H. MILLER, M.D.
GEORGE A. SISSON, M.D.
HAROLD G. TABB, M.D.

CURRICULUM VITAE

Name: Joseph H. Ogura, M.D.
Date and place of birth: May 25, 1915, San Francisco, Calif.
Preliminary education: Lowell High School, San Francisco, 1933.
College: University of California, A.B. Degree 1937.
Medical school: University of California Medical School, M.D. 1941.
Intern: San Francisco County Hospital (University of California), 1940–41.
Postgraduate training:
Assistant resident, pathology and medicine, University of California Hospital, 1941–42.
Resident in pathology, Cincinnati General Hospital, University of Cincinnati College of Medicine, 1942–43.
Assistant resident in medicine, Cincinnati General Hospital, University of Cincinnati College of Medicine, 1943–44.
Senior resident and instructor in medicine, Cincinnati General Hospital, University of Cincinnati College of Medicine, 1944–45.
Assistant Resident in Otolaryngology, Barnes Hospital, 1945.
Postgraduate course in otolaryngoloy, Washington University School of Medicine, 1945–46.
Resident in Otolaryngology, McMillan Hospital, Barnes Hospital, and St. Louis City Hospitals, 1946–48.
Society memberships:
Diplomat American Board of Otolaryngology.
Fellow American College of Surgeons.
American Academy of Ophthalmology and Otolaryngology.
St. Louis Medical Society.
St. Louis County Medical Society.
St. Louis E. N. T. Society.
American Society for Ophthalmologic and Otolaryngologic Allergy.
American Medical Association.
American Laryngological, Rhinological, and Otological Society.
American Society for Head and Neck Surgery.
American Laryngological Association.
American Academy of Facil Plastic and Reconstructive Surgery Inc.
American College of Chest Physicians.
Society of University Otolaryngologists.
American Association of University Professors.
Society office: President, American Society for Head and Neck Surgery.
Committee member:
International Committee for the Study of Cancer of the Larynx.
Head and Neck Surgery, American Academy of Ophthalmology and Otolaryngology.
Laryngeal Physiology, American Academy of Ophthalmology and Otolaryngology.

Staff appointments:

Associate, otolaryngologist, Barnes, McMillan, Maternity, Barnard, Renard, Wohl, and St. Louis Childrens Hospitals.

Consultant in otolaryngology, Jewish Hospital, St. Louis, City Hospitals, Veterans' Administration hospital, and USAF Hospital, Scott Air Force Base.

Consultant, Lackland AFB Hospital, Texas.

National Institutes of Health consultant, Communicative Disorder Research Training Committee.

Medical school appointments:

Instructor of otolaryngology, Washington University School of Medicine, 1948–51.

Assistant professor of otolaryngology, Washington University School of Medicine, 1951–53.

Associate professor of otolaryngology, Washington University School of Medicine, 1953–59.

Professor of otolaryngology, Washington University School of Medicine, 1960.

PUBLICATIONS

Miller, R. B., and Ogura, J. H. Mycotic Aneurysm of the Descending Thoracic Aorta, Ohio State M. J. 39: 353–355, April 1943.

Woolford, R. M., and Ogura, J. H. Atypical (virus) Pneumonia with Cor Pulmonale. Ohio State M. J. 39: 746–747, August 1943.

Ogura, J. H., Fetter, N. R., Glueck, H., and Blankenhorn, M. A. Changes in blood coagulation following coronary thrombosis measured by the heparin retarded clotting test (Waugh and Ruddick Test). Proc. Central Soc. Clinical Research 18: 47, 1945. Journal Clinical Investigation 25: 586–596, July 1946.

Ogura, J. H., and Senturia, B. H. Epistaxis. Laryngoscope 59: 743–763, July 1949.

Senturia, B. H., Ogura, J. H., and Walsh, T. E. The use of absorbable sponge for hemostasis in otolaryngoloy. Laryngoscope 59: 1068–1083, October 1949.

Walsh, T. E., Covell, W. P., and Ogura, J. H. The Effect of Cholesteatosis on Bone. Annals of Otol. Rhin. Laryng. 60: 1100–1113, Dec. 1951.

Ogura, J. H. Laryngectomy and Radical Neck Dissection for Carcinoma of the Larynx. Trans. Amer. Acad. Ophth. and Otol. Nov.–Dec. 786–803, 1951.

Ogura, J. H., and Bello, J. Laryngectomy and Radical Neck Dissection for Carcinoma of the Larynx. Laryngoscope 62: 1–52, Jan. 1952.

Lam, R. L., and Ogura, J. H. An Afferent Representation of the Larynx in the Cerebellum. Laryngoscope 62: 486–495, May 1952.

Ogura, J. H. Surgical Treatment for Carcinoma of the Larynx. Trans. Indiana Acad. Oph. and Otol. 91–108, 1952.

———. New operations in Otolaryngology. Trans. Indiana Acad. Ophth. and Otol. 91–108, 1952.

———. Carcinoma of the Larynx. Eye, Ear, Nose and Throat Monthly, 32: 440–444, August 1953.

Ogura, J. H., and Lam, R. L. Anatomical and Physiological Correlation on Stimulating the Human Superior Laryngeal Nerve. Laryngoscope 63: 947–959, Oct. 1953.

Ogura, J. H. Bone Graft in Atrophic Rhinitis. Laryngoscope 64: 20–28, Jan. 1954.

Ogura, J. H., Roper, C. L. and Burford, T. H. Functional restoration of the food passages in extensive stenosing caustic burns of the pharynx and esophagus. Laryngoscope 71: No. 8, 885–902, Aug. 1961.

Ogura, J. H., Roper, C. L. and Burford, T. H. Complete functional restitution of the food passage in extensive stenosing caustic burns. J. Thoracic and Cardiovascular Surgery. Vol. 42, No. 3. Sept. 1961.

Powers, W. E., Holtz, S., Ogura, J. H., Ellis, B., McGavran, M. Contrast examination of the larynx and pharynx. Am. J. Roentgenol. Rad. Therapy and Nuclear Med. Vol. 86: 169–178, Oct. 1961.

Middlekamp, J. Neal., Cone, Alfred J., Ogura, J. H., Higgins, C. Ronald, Jr., Lower, G. A. Endoscopic Diagnosis and Steroid and Antibiotic Therapy for acutelye lye burns of the esophagus. Laryngoscope 71: No. 11, 1354–1362, Nov. 1961.

Ogura, J. H. and Roper, C. L. Surgical Correction of Traumatic Stenosis of the Larynx and Pharynx. Laryngoscope 72: No. 4, 468–480, Apr. 1962.

Ogura, J. H., Shumrick, D., and Lapidot, A. Some experimental observations on laryngeal substitution in laryngectomized dogs. Annals O.R.L. Vol. 71, No. 2, 532, June 1962.

Ogura, J. H., Walsh, T. E. The transantral orbital decompression operation for progressive exophthalmos. An evaluation of the procedure. Laryngoscope Vol. 72, No. 8, 1078–1097, Aug. 1962.
Ogura, J. H. Cancer of the larynx and hypopharynx. Amer. J. of Med. Science, Vol. 244, No. 4. Oct. 1962.
Holtz, S., Powers, W. E., McGavran, M. and Ogura, J. H. Contrast examination of the larynx and pharynx: glottic, infraglottic and transglottic. Am. J. Roentgenol., Rad. Therapy and Nuclear Medicine, Vol. 89, 10–28, Jan. 1963.
Powers, W. E., Ogura, J. H. and Holtz, S. Contrast examination of the larynx and pharynx: accuracy and value in diagnosis and therapy. New York State J. Med. 63: 1163–1173, April 1963.
Smith, K. R. Jr., Schwartz, H. G., Luse, Sarah A., and Ogura, J. H. Nasal Gliomas: a report of five cases with electron microscopy of one. J. Neurosurgery 1963, Vol. XX, No. 11, pp. 968–982.
Lam, R. L. and Ogura, J. H. Afferent projection of superior laryngeal nerve in the brainstem. Neurology 4: 630, 1964.
Ogura, J. H. and Herweg, J. C. Congenital tracheo-esophageal fistula without esophageal atresia. J. Pediatrics. Vol. 47, No. 3. 298–99, Sept. 1955.
Ogura, J. H. Surgical pathology of carcinoma of the larynx. Laryngoscope 65: 867–926, Oct. 1955.
Walsh, T. E. and Ogura, J. H. Transantral Orbital Decompression for Malignant Exophthalmos. Laryngoscope 67: 544–568, June 1957.
Ogura, J. H. Supraglottic Subtotal Laryngectomy and Radical Neck Dissection—One Stage Operation for Carcinoma of the Epiglottis. Laryngoscope 68: 983–1003, June 1958.
Ogura, J. H. Diagnosis and treatment of hoarseness. J. Ark. Med. Soc. July 1958
Ogura, J. H. Nasal Reconstructive Surgery—Problems that confront the Rhinologist. Laryngoscope 68: 1507–1517, Aug. 1958.
McGavran, M., Spjut, H. and Ogura, J. H. Laryngofissure in the treatment of carcinoma of the larynx. A critical analysis of success and failure. Laryngoscope 69: 44–53, Jan. 1959.
Ogura, J. H. Classification and Staging of Cancer of the Larnyx and Laryngopharynx. Pan-American Otolaryngolia 1958, 435–433.
Ogura, J. H. and Stokstead, P. Rhinomanometry in some Rhinologic Diseases. Laryngoscope Dec. 1958. Vol. 68: 2001–2014.
Ogura, J. H. Cancer of the pharynx, larynx and upper esophagus. Five-year results of laryngectomy and radical neck dissection. Arch. Otol. 72: 66–72, July 1960.
Ogura, J. H., Powers, W. E., Holtz, S., McGavran, M., Ellis, B. M. D. Laryngograms: Their value in the diagnosis of laryngeal lesions. Laryngoscope 70: 780–809, June 1960.
Ogura, J. H., Power, W. E., Carlson, E., Holtz S. Swallowing function following surgical removal of the epiglottis and the supraglottic structures. (Presented as speech and swallowing function following supraglottic subtotal laryngectomy and neck dissection at Amer. Acad. of Ophth. and Otol. October 1959.)
McGavran, M., Bauer, W., Ogura, J. H. Isolated Laryngeal Keratosis; its relationship to Cancer of the Larynx based on a Clinical-Pathological Study of 87 consectutive cases with a long term follow up. Laryngoscope 70: 932–951, July 1960.
Ogura, J. H. Radical and conservative surgical approach for extensive laryngeal cancers. (Presented at the American College of Surgeons, Lousiville, Ky. January 1960).
Ogura, J. H., Watson, R. K., and Jurema, A. A. Frontal Sinus Surgery. The use of mucoperiosteal flap for reconstruction of a nasofrontal duct. Laryngoscope 70: 1229–1243, September 1960.
Ogura, J. H. Cancer of the Throat. Minnesota Medicine. Vol. 43, 589–592, September 1960.
Ogura, J. H., Jurema, A. A., and Watson, R. K. Partial laryngopharyngectomy and neck dissection for pyriform sinus cancer. Laryngoscope 70: 1399–1417, October 1960.
Ogura, J. H., Watson, R. K. and Jurema, A. A. Partial pharyngectomy and neck dissection for posterior hypopharyngeal cancer. Immediate reconstruction with preservation of voice. Laryngoscope 70: 1523–1534, November 1960.
McGavran, M. H., Bauer, W., and Ogura, J. H. The incidence of cervical node metatases from epidermoid carcinoma of the larynx and their relationship to certain characteristics of the primary tumor. A study based on clinical and pathologic findings in 96 patients treated by primary en bloc laryngectomy and radical neck dissection. Cancer Vol. 14. January–February 1961.

Ogura, J. H. Surgical Treatment of Extensive Laryngeal and Pharyngeal Cancers—Laryngectomy and Lateral Pharyngotomy, Chapter 7, Otolaryngology, W. F. Prior, Hagerstown, Md. Edited by Coates, G., Schenck, H. D., and Miller, M.

Ogura, J. H. Experiences with conservation surgery for laryngeal cancer. Laryngoscope 71: No. 3. 258–276, March 1961.

Ogura, J. H. Surgical Decompression of Recurrent Laryngeal Nerve for vocal cord paralysis. Annals Oto-Rhino-Laryngology 70: No. 2. June 1961.

Ogura, J. H. Conservation surgery for cancer of the pharynx and larynx: an evaluation. Trans. Pacific Coast Ophth. & Otol. Soc. 47th Annual Meeting, Seattle, May 1963.

Ogura, J. H. Benign and Malignant Tumors of the Paranasal Sinuses. Trans. Pacific Coast Ophth. & Otol. Soc. 47th Annual Meeting, Seattle, May 1963.

Ogura, J. H. Management of Early Cancer of the Vocal Cord-Laryngofissure, Hemilaryngectomy and Irradiation. Trans. Pacific Coast Ophth. & Otol. Soc. 47th Annual Meeting, Seattle, May 1963.

Ogura, J. H. and Mallen, R. W. Carcinoma of the Larynx. Diagnosis and Treatment. Postgraduate Medicine. Vol. 34, No. 5, November 1963.

McGavran, M. H., Bauer, W. C. and Ogura, J. H. Carcinoma of the Pyriform Sinus. Arch. Otolaryng. Vol. 78, pp. 826–830, December 1963.

Ogura, J. H., Nelson, J. Roger, Dammkoehler, Richard, Kawasaki, M. and Togawa, K. Experimental Observations on the Relationships between upper airway obstruction and pulmonary function. Annals of CRI. Vol. 73, No. 2. 381, June 1964.

Powers, W., Holtz, S. and Ogura, J. H. Contrast Examination of the Larynx and Pharynx: Inspiratory phonation. Amer. J. Roent. Vol. XCII, No. 1, July 1964.

Ogura, J. H. and Powers, W. E. Functional Restitution of Traumatic Stenosis of the Larynx and Pharynx. Laryngoscope Vol. 74, No. 8. pp. 1081–1110, August 1964.

McGavran, M. H., Ogura, J. H. and Powers, W. E. Small dose pre-operative radiation therapy. Radiology Vol. 83, No. 3. pp. 509–519, September 1964.

Murphy, George E., Bisno, Alan L. and Ogura, J. H. Determinants of Rehabilitation following Laryngectomy. Laryngoscope Vol. 74, No. 11, 1535–1549, November 1964.

Ogura, J. H., Kawasaki, M. and Takenouchi, S. Neurophysiologic Observations of the adaptive mechanism of deglutition. Annals CRI. Vol. 73, 1062–1081, December 1964.

Kawasaki, M., Ogura, J. H. and Takenouchi, S. Neurophysiologic observations of normal deglutition. I. Its relationships to the respiratory cycle. Laryngoscope Vol. 74, 1747–1765, December 1964.

Kawasaki, M., Ogura, J. H. and Takenouchi, S. Neurophysiologic observations of normal deglutition. II. Its relationship to the respiratory cycles and allied phenomena. Laryngoscope Vol. 74, 1766–1780, December 1964.

Levitt, M., Dedo, H. H., and Ogura, J. H. The cricopharyngens muscle. An electromyographic study on the dog. Laryngoscope Vol. 75, No. 1, 122–136, January 1965.

Ogura, J. H. Cancer of the Head and Neck. Rocky Mountain Medical Journal 62: 28–32, January 1965.

ACCEPTED FOR PUBLICATION

Ogura, J. H. Management of Head and Neck Injuries. Rocky Mountain Medical Journal, February 1965.

Dedo, H. H. and Ogura, J. H. Vocal Cord Electromyography in the Dog. Laryngoscope, February 1965.

Ogura, J. H. and Dedo, H. H. Rapid Functional Restoration of Large Pharyngostoma utilizing bilateral nondelayed acromio-pectoral pedicle flaps. Laryngoscope, April 1965.

Ogura, J. H. and Dedo, H. H. Glottic Reconstruction following Subtotal Glottic-Supraglottic Laryngectomy. Laryngoscope, May 1965.

Ogura, J. H. and Mallen, R. W. Laryngeal Diseases. A 500-page section in Ballenger and Ballenger Textbook "Diseases of the Ear, Nose and Throat".

Ogura, J. H. and Mallen, R. W. End results of partial laryngopharyngectomy. Trans. Amer. Acad. Ophth. and Otolaryng. 1965.

Powers, W. E., and Ogura, J. H. Combined preoperative irradiation and radical surgery in head and neck cancers. Experimental and clinical observations. Arch. Otolaryngology.

Ogura, J. H. Combined preoperative irradiation and surgery for cancer of the head and neck. Trans. Indiana Academy of Ophth. & Otol.

Ogura, J. H. Present Status of the Decompression Operation for Malignant Exophthalmos. Trans. Indiana Academy of Ophth. & Otol.
Ogura, J. H. Conservation surgery for malignancies of the larynx and pharynx; late evaluation. Trans. Indiana Academy of Opahth. & Otol.
Ogura, J. H. and Mallen, R. W. Cancer of the Epiglottis and Hypopharynx Conservation operation. To be presented at the International Workshop in Cancer of the Head and Neck, Columbia University, New York, May 1965.
Ogura, J. H., Togawa, K. and Nelson J. Roger. An Experimental Study on the Relationships between nasal obstruction and the mechanics of respiration. To be presented to the Triological Society, New York, June 1965.
Ogura, J. H. Management of Acute and Chronic Stenosis after Traumatic Injury to the Larynx and Pharynx. To be presented to the American Society for Head and Neck Surgery, New York, June 1965, and to be published in the Arch. Otolaryngology.
Ogura, J. H. and Mallen, R. W. Surgical Treatment of Cancer of the Laryngopharynx. To be presented at the VIII International Congress of Otolaryngology, Tokyo, October 1965.
Ogura, J. H., Kawasaki, M. and Takenouchi, S. Observations on the transplantation of a dog larynx.
Levitt, M. and Ogura, J. H. Cervical pyriformostomy for long-term nutrition.
Powers, W. E., Ogura, J. H., Levitt, M., Stell, P. and Palmer L. Planned low dose preoperative irradiation and surgery for cancer of the tongue, tonsil, pharynx, and larynx. A study of 110 patients.
Staple, T. W. and Ogura, J. H. Cineroentgenographic evaluation of swallowing following supraglottic laryngectomy.

CURRICULUM VITAE OF GEORGE A. SISSON, M.D.

Name: George Allen Sisson.
Education: Syracuse University, Syracuse, N.Y. A.B. 1942; Syracuse University College of Medicine. M.D. 1945.
Military service: U.S. Army Medical Corps (captain) 1946–48.
Graduate hospital training:
1945–46: Intern, Syracuse Medical Center, Syracuse, N.Y.
1948–49: Postgraduate course, basic sciences, otolaryngology, New York University, Bellevue Medical Center, New York, N.Y. (John F. Daly, M.D.) (9 months course).
1949–50: Assistant resident, otolaryngology, Manhattan Eye, Ear, Throat Hospital, New York, N. Y. (16 months course).
1950–51: Chief resident, otolargynology, Manhattan Eye, Ear, Throat Hospital, New York, N.Y.
1952–53: Fellow (tumor) Head & Neck Service, Manhattan Eye, Ear, Throat Hospital, New York, N.Y. (chief, William L. Watson, M.D.).
Certification: American Board of Otolaryngology, 1952.
Hospital appointments:
Syracuse Memorial Hospital (teaching hospital otolaryngology):
Assistant attendant otolaryngology, 1951–54.
Associate attendant otolaryngology, 1955–56.
Attendant otolaryngology, 1957–date.
City Hospital: Same as Syracuse Memorial.
Syracuse General Hospital:
Assistant Attendant otolaryngology, 1951–56.
Associate Attendant otolaryngology, 1956–57.
Attendant otolaryngology, 1957–1964.
University Hospital:
Junior assistant surgery, 1951–56.
Assistant attendant otolaryngology, 1951–58.
Assistant attendant otolaryngology, 19561–62.
Associate attendant otolaryngology, 1959–date.
U.S. Veterans' hospital, attendant, otolaryngology, 1953–date.
U.S. Veterans' Administration, consultant, otolaryngology, 1955–date.
Community-General Hospital, chief, department of otolaryngology, 1959–date.
Chenango Memorial Hospital (Norwich, N.Y.), consultant, otolaryngology, 1956–date.
Auburn City Hospital (Auburn, N.Y.), consultant, otolaryngology, 1956–date.
Upstate Medical Center Tumor Clinic, attendant, otolaryngology, 1951–53, 1953–date.

Academic appointments: State University of New York, Upstate Medical Center:

Clin. instructor, surgery, 1951–55.
Clin. instructor, otolaryngology, 1951–54.
Clin. assistant professor, otolaryngology, 1955–56.
Clin. assistant professor, surgery, 1955–62.[1]
Clin. associate professor, otolaryngology, 1957–64.
Clin. professor, otolaryngology, 1964–date.

Medical organizations:

1. American Medical Association, 1948.
2. Amercian Academy of Ophthalmology and Otolaryngology:
   Fellow, 1951.
   Faculty member, 1954–date.
   Secretary, Committee on Head and Neck Surgery, 1958–59.
   Chairman, Committee on Head and Neck Surgery, 1960–date.
3. American College of Surgeons:
   Fellow, 1959.
   Board of governors, 1962.
   Advisory Committee on Otolaryngology, 1962–66.
4. American Laryngological, Rhinological, Otological (Triological) Society, 1956–date.
5. American Society for Head and Neck, secretary, 1959–date.
6. American Laryngological Society, 1962–date.
7. James Ewing Society, 1961–date.
8. Manhattan Eye, Ear, Throat Hospital Alumni Association, 1951–date.
9. Pan-American Otorhinolaryngological-Bronchoesophogological Society, 1956–date.
10. National boards, fellow, 1946.
11. Onondaga County Medical Society, 1948.
12. New York State Medical Society, 1948.
13. Syracuse Academy of Medicine, 1948.
14. Central New York Eye, Ear, Nose, and Throat Society, president, 1959–60.

National special committees:

American Board of Otolaryngology, assistant,
Examiner, 1959–62.
Examiner and member of board of directors, 1962–date.

PUBLICATIONS

1. "Anti-Allergic Methods Used in the Restoration of Hearing During Childhood," with Marvin F. Jones, M.D., Richard D. Bellacci, M.D., F. C. Edmonds, Jr., M.D. Annals of Otology, Rhinology, Laryngology, Dec., 1951.
2. "Surgical Treatment of Carcinoma of Cervical Esophagus," New York State Journal of Medicine, January, 1953.
3. "Reconstruction of Hypopharynx and Cervical Esophagus After Radical Excisional Surgery," Laryngoscope. October, 1956.
4. "Carcinoma of Paranasal Sinuses—40 Cases," New York State Journal of Medicine. February 15, 1959.
5. "Problems and Complications in Head and Neck Surgery," Laryngoscope. August, 1960.
6. "Traumatic Medicine and Surgery for the Attorney," vol. 3, part IV, Wounds of the Neck. Butterworth & Co., Ltd., London, England, 1961.
7. "Team Judgment in the Management of Head and Neck Cancer," Amer. Acad. Ophthalmology and Otolaryngology, 1960 instruction section, with Norman E. Johnson, M.D., Frank Batley, M.D., Jack Rose, D.D.S.
8. "Mediastinal Dissection for Recurrent Cancer After Laryngectomy or Radical Surgery," with Clifford J. Straehley, M.D., Laryngoscope, August, 1962.
9. "Cancer of the Maxillary Sinuses—Clinical Classification and Management," with Norman E. Johnson, M.D., Cyrus Amiri, M.D., Annals of Otology, Rhinology, Laryngology, December, 1963.
10. "Cancer of the Larynx—Review of 100 Cases," with Norman E. Johnson, M.D., Laryngoscope. May, 1964.

[1] Terminated by mutual agreement otolaryngology and surgery departments.

11. "Changing Concepts in Treatment of Cancer of the Larynx," New York State Journal of Medicine (in print).
12. Eye, Ear, Nose and Throat Monthly—Feature Article on Cancer of Paranasal Sinuses (to be published in summer of 1965).
13. "Cancer of the Maxillary Sinuses," Year Book of Cancer, vol. 9 (to be published in 1965).

MOVIES

1. A Radical Maxillectomy With Exenteration of the Orbit—Surgical Technique, 1953.
2. Radical Neck Dissection in Continuity With Total Laryngectomy, 1953.
3. Mediastinal Dissection for Recurrent Cancer After Laryngectomy or Radical Surgery, 1962.

CURRICULUM VITAE

Name: Harold Granberry Tabb.
Birthplace: Blaine, Miss.
Birth date: September 8, 1919.
Education:
Undergraduate school—Mississippi State College, 1937–40, B.S. degree.
Medical school—University of Tennessee Medical School, 1940–43, M.D. degree.
Internship, Gallinger Municipal Hospital, Washington, D.C., 1944.
Residency—Eye, Ear, Nose and Throat Hospital, New Orleans, La., 1946–48.
John Gaston Hospital, Memphis, Tenn., 1949.
Postgraduate courses:
Lempert's course in temporal bone surgery, 1950.
Cottle's course in rhinologic surgery, 1956.
Goldman's course in rhinoplasty, 1958.
Certification: Board of Otolaryngology, 1950.
Service: U.S. Army, Medical Corps, captain, 1944–46. Present status, honorable discharge.
Hospital appointments:
Charity Hospital of Louisiana, New Orleans, La., senior visiting surgeon, 1958–present.
Eye, Ear, Nose and Throat Hospital, New Orleans, La., active staff, 1949–present.
Veterans' Administration hospital, New Orleans, La., consultant, 1959–present.
Academic appointments:
Instructor in otolaryngology, Tulane University School of Medicine, 1949–52.
Assistant professor of otolaryngology, Tulane University, School of Medicine, 1952–57.
Associate professor of otolaryngology, Tulane University, School of Medicine, 1957–58.
Professor and chairman, Department of Otolaryngology, Tulane University School of Medicine, 1958–present.
Societies:
Orleans Parish Medical Society.
Cancer Association of Greater New Orleans, board member.
Cottage School for the Deaf, board member.
Louisiana State Medical Society.
Southern Medical Association.
American Medical Association.
Mississippi-Louisiana Ophthalmology and Otolaryngology Society.
American Academy of Ophthalmology and Otolaryngology.
Otosclerosis Study Group.
American Laryngological, Rhinological and Otological Society.
Society of University Otolaryngologists.
American Society for Head and Neck Surgery.
American Laryngological Association.
American Otological Society.
Committees:
Communicative Disorder Research Training Committee.
National Institute of Neurological Diseases and Blindness.
Consultant.

Awards:
Mosher Award, 1957, outstanding candidate's thesis.
American Otological, Rhinological and Laryngological Society.
Honorary member, Sociedad Panamena de Otorrinolaringologia, 1961.

BIBLIOGRAPHY OF HAROLD G. TABB, M.D.

1. Surgery in Deafness. J. La. State Med. Soc., 105:58, February 1953, Tabb, H. G.
2. The Rosen Technique of Stapes Mobilization in Otosclerosis Deafness. Miss. Doctor, 143–146, November 1955, Tabb, H. G.
3. Mobilization of the Stapes for Restoration of Hearing in Otosclerotic Deafness. J. Ark. State Med. Soc., 53–75, September 1956, Tabb, H. G.
4. Carcinoma of the Antrum: An Analysis of 60 Cases with Special Reference to Primary Surgical Extirpation. The Laryngoscope, 67:269–341, April 1957, Tabb, H. G.
5. The Technique of Radical Laryngectomy in Carcinoma of the Larynx. J. La. State Med. Soc., 110:25–28, No. 1, January 1958, Tabb H. G.
6. The Surgical Approach to the Nasopharynx.. Sou. Med. Journal, 51:831–835, No. 7, July 1958, Tabb, H. G.
7. Symposium: Modern Criteria for Diagnosis and Therapy of Malignant Disease in the Upper Respiratory Tract. The Nasal Cavity and Paranasal Sinuses. The Laryngoscope, 68:1540–1544, No. 8, August 1958, Tabb, H. G.
8. Maxillectomy in Carcinoma of the Antrum. The Laryngoscope, 69:119–130, No. 2, February 1959, Tabb, H. G.
9. Closure of Perforations of the Tympanic Membrane by Vein Grafts. A Preliminary Report of 20 Cases. The Laryngoscope, 70:271–286, No. 3, March 1960, Tabb, H. G.
10. Trends in Surgery for Otosclerosis. J. La. State Med. Soc., 112:290–297, No. 8, August 1960, Tabb, H. G.
11. Microscopic Suspension Laryngoscopy. Annals of Otology, Rhinology and Laryngology, 69:1134, No. 4, December 1960, Tabb, H. G.
12. Meniere's Disease. Current Therapy, 1961 edition, McLaurin, J. W., Raggio, T. P., and Tabb, H. G.
13. A Technique of Tympanoplasty. Preservation of the Bony Canal Wall. Use of Vein Grafts. The Laryngoscope, 71:116–130, No. 2, February 1961, Tabb, H. G.
14. Vein Grafts in the Management of Laryngeal Papillomas. Report of Two Cases. The Laryngoscope, 72:1228–1236, No. 9, September 1962, Tabb, H. G., and Kirk, Rodney L.
15. The Surgical Management of Chronic Ear Disease. The Laryngoscope, 73: 363–383, No. 4, April 1963, Tabb, H. G.
16. Vein Grafts in Otologic Surgery. Archives of Otolaryngology, 79:124–30, February 1964, Tabb, H. G., and Rutledge, L. J.
17. Cancer of the External Auditory Canal: Treatment with Radical Mastoidectomy and Irradiation. The Laryngoscope, 74: 634–43, May 1964, Tabb, H. G., Komet, Harvey, and McLaurin, J. W.
18. Restoration of Hearing with Teflon as a Replacement for the Stapes. Southern Med. Journal, 57:756–63, July 1964, Tabb, H. G.

UNIVERSITY OF SOUTHERN CALIFORNIA SCHOOL OF MEDICINE

CURRICULUM VITAE

A. Personal information

1. Name: Alden Herbert Miller, M.D.
2. Business address: 1407 North Vermont Avenue, Los Angeles.
3. Business phone: 663–1211.
4. Home address: 1705 Rancho Avenue, Glendale, Calif.
5. Home phone: CHapman 5–4953.
6. Date of birth: November 27, 1905.
7. Place of birth: Stanley, N. Dak.
8. Citizenship: U.S.A.
9. Sex: Male.
10. Marital status: Married.
11. Wife's maiden name: Agnes B. Jackson.
12. Number of children: Two.

B. Education

1. High school: Missoula High School, Missoula, Mont.
2. College or university: University of Southern California, A.B., 1927.
3. Medical school: Rush Medical College, M.D., 1932.
4. Internship: Los Angeles County General Hospital, 1932–33.
5. Residencies: Los Angeles County General Hospital, otolaryngology, 1933–35; Eye and Ear Hospital, bronchoscopy and laryngoscopy, 1935–39.
7. Honors and awards: General Alumni Association Award of Merit, University of Southern California, 1962; Certificate of Award, American Academy of Ophthalmology and Otolaryngology.
8. Licensure: California, August 30, 1933.
9. Board certification: American Board of Otolaryngology, June 11, 1938.

C. Professional background

1. Academic appointments:
   (*a*) University of Southern California School of Medicine, Department of Otolaryngology, 1934 to present.
   (*b*) University of Southern California School of Medicine, Department of Otolaryngology, clinical professor of surgery, 1955 to present.
   (*c*) University of Southern California School of Medicine, Department of Otolaryngology, head of department, 1961 to present.
2. Teaching responsibilities:
   (*a*) Sophomore, junior and senior students; University of Southern California School of Medicine, otolaryngology.
   (*b*) Residents in otolaryngology: Los Angeles County General Hospital, Childrens Hospital and Hollywood Presbyterian Hospital.
3. Administrative responsibilities: (*a*) Head of Department of Otolaryngology: Los Angeles County General Hospital and Childrens Hospital.
4. Military service:
   (*a*) Active duty: U.S. Navy Medical Corps., commander, December 1941 to March 1946.
   (*b*) Reserve: U.S. Naval Reserve Medical Corps., commander, 1940 to present.

D. Society memberships

1. Local: Los Angeles Society of Ophthalmology and Otolaryngology; Research Study Club of Los Angeles; Los Angeles County Medical Association; California Medical Association; Pacific Coast Oto-Ophthalmological Society; Los Angeles Academy of Medicine and Los Angeles Symposium Society.
2. National: American Academy of Ophthalmology and Otolaryngology; Triological Society; American Broncho Esophagological Association; American Laryngological Association; International Broncho Esophagological Society; Pan American Association of Oto-Rhino-Laryngology and Broncho-Esophagology; American Society Head and Neck Surgery and American College of Surgeons.
3. Officer: Past president, Los Angeles Society of Opthalmology and Otolaryngology, 1950. Past president, American Broncho-Esophagological Association, 1963. President-elect, Pacific Coast Oto-Ohpthalmological Society, 1964.

E. Consultantships

1. Local: (*a*) Santa Fe Coast Lines Hospital, Los Angeles; St. Joseph Hospital, Los Angeles; California Hospital, Los Angeles; Queen of Angels Hospital. Los Angeles; and Shriners Hospital, Los Angeles.

F. Research activities

1. Major areas of research interest:
   (*a*) Laryngology.
   (*b*) Broncho-esophagology.

BIBLIOGRAPHY OF ALDEN H. MILLER, M.D.

"Hemophilus Influenzae Type B, Epiglottitis or Acute Supraglottic Laryngitis in Children." The Laryngoscope, vol. 58, No. 6, pp. 514–526, June 1948.

"Acute Epiglottitis-Acute Obstructive Supraglottic Laryngitis in Small Children Caused by Hemophilus Influenzae, Type B." Transactions American Academy of Ophthalmology and Otolaryngology, May–June 1949.

"Tracheotomy in Bulbar Poliomyelitis." California Medicine, January 1950, vol. 172, No. 1.

"Management of Aspirated Straight Pins in the Bronchi Utilizing the Stereoscopic Fluoroscope." AMA Archives of Otolaryngology, January 1951, vol. 53, pp. 68–76.
"Tonsillectomy and Adenoidectomy and Poliomyelitis." AMA Archives of Otolaryngology, February 1951, vol. 53, pp. 160–166.
"Incidence of Poliomyelitis—The Effect of Tonsillectomy and Other Operations on the Nose and Throat." California Medicine, 77: 19–21, July 1952.
"Relationship of Surgery of the Nose and Throat to Poliomyelitis." Journal of the American Medical Association, October 11, 1952, vol. 150, pp. 532–534.
"Carcinoma in Situ of the Larynx." Annals of Otology, Rhinology and Laryngology, June 1953, vol. 62, No. 2, p. 358.
"Removal of Radio Opaque Foreign Bodies From the Branchi Utilizing the Stereoscopic Fluoroscope." Annals of Otology, Rhinology and Laryngology, September 1953, vol. 62, No. 3, p. 869.
"Symposium: Errors in Early Diagnosis and Treatment of Cancer in the Upper Respiratory Tract—the Larynx." Presented at 60th session of the American Academy of Ophthalmology and Otolaryngology, October 9–14, 1955, Chicago, Ill.
"Laryngeal and Tracheal Emergencies in the Newborn and Young Infant." South Dakota Journal of Medicine and Pharmacy, vol. X, No. 2, pp. 44–47.
"Carcinoma in Situ of the Laryx: A 10-Year Study of its Histopathological Classification, Prognosis and Treatment." Annals of Otology, Rhinology and Laryngology, September 1958.
"H-Type Tracheoesophageal Fistula." Annals of Otology, Rhinology and Laryngology, December 1958, vol. 67, No. 4, p. 1078.
"Congenital Anomalies of the Esophagus In the Very Young Infant." The Laryngoscope, vol. LXXI, No. 6, pp. 654–659, June 1961.
"Presidents Address." Transactions of American Broncho-Esophagological Association, 1963, pp. 7–10.
"Tumors of the Neck." Clinical Classification and Findings: "Cancer of the Larynx." Earliest Stages: Proceedings of the Canadian Otolaryngological Society, 1964.

STATEMENT OF SIGMUND L. WILENS, M.D.

HEART ATTACKS AND CIGARETTE SMOKING

At the outset I should like to make it clear that I will receive no remuneration for this statement, that I have no connection with any tobacco company and that I have never smoked cigarettes. If I have any personal feelings about tobacco companies, it is one of annoyance. I do not care for their television commercials.

My reasons for making this statement are twofold. I believe that the evidence linking heart attacks with cigarette smoking is far from conclusive and that such a relationship should not be presented to the public as an established fact. Secondly, I believe there is a growing tendency to accept without question medical judgments if they are advanced by persons of eminence, if they are published in leading medical journals and if they are supported by a number of investigators. This ought not to be so. The validity of a medical conclusion should be judged entirely on the soundness of the evidence developed to support it. I do not believe that the evidence that has been presented to associate heart attacks with cigarette smoking is indisputable.

This evidence is based almost entirely on the fact that a high percentage of men who are treated for heart attacks are heavy cigarette smokers. This has been found in a number of independent investigations all of which used essentially the same method of study. It may well be true that men whose careers involve more than an average degree of responsibility and who are subject to tensions, anxieties and worries develop symptoms of heart attacks and indulge in heavy cigarette smoking more often than the average person. This does not prove that cigarette smoking causes heart attacks. They may both be the result of the same set of conditions. As men grow older their hair turns gray and their arteries harden. This does not prove that gray hair causes hardening of arteries or vice versa.

The truth of the matter is that these studies examine only a limited segment of the large number of people who have real heart attacks sometime during their lives and assume that this select segment is fully representative of the entire group. A great many persons have real heart attacks and never seek medical

help. When a man has a genuine heart attack a portion of his heart muscle is deprived of nourishment and degenerates. In fact it becomes dead tissue. If he survives, as he very often does, the dead muscle is replaced by scar tissue very similar to that which grows into any healing wound. Unless death occurs on the same day as the first attack, a pathologist who examines such hearts can easily identify the damaged area, which is called an infarct. At least one-half of the infarcts that pathologists find at autopsies are ones whose presence was not suspected during life. This is a widely recognized fact although there may be some difference of opinion as to how frequently it occurs.

In addition, people can have typical symptoms of a heart attack without any real injury to heart muscles. With increasing diagnostic skill it has become possible for the heart specialist to distinguish between genuine and false heart attacks in most instances. Sometimes, however, the heart at autopsy fails to show evidence of a heart attack even though clinical tests during life indicated that such injury was present. From my own experience I estimate that some 15 percent of cases diagnosed as having real heart attacks during life are not confirmed by postmortem examination. It is thus apparent that the clinical studies which show a relationship between cigarette smoking and heart attacks are based on an incomplete, highly selective, and not entirely accurate sample.

In order to confirm their results it is necessary to prove that evidence of heart attacks is found more commonly at autopsy in heavy cigarette smokers than in nonsmokers. To my knowledge there is no report that makes this claim. In my study based on findings in 989 autopsies in men performed at the New York Veterans' Administration hospital and reported in Science (Vol. 138, pp. 975–977, 1962) no significant relationship between cigarette smoking and damage of the heart could be demonstrated. Admittedly this study is also based on a highly selected group of hospitalized veterans and the sample is not large compared to some of the statistical studies based on persons under medical observation but all kinds of heart infarcts are included, the silent one as well as the symptom-producing ones. Furthermore, the spurious ones are excluded. It is obvious that further studies of this nature on autopsy findings is necessary.

Clinicians base their claims on only a fraction of the total number of heart attacks. It may be that this fraction is representative of all heart attacks. My findings would indicate that it is not. You cannot always estimate the size and shape of an iceberg from the portion that protrudes above the water level.

CURRICULUM VITAE

Name: Sigmund L. Wilens, M.D.
Born: January 28, 1905, Hartford, Conn.
Education: Brown School, Hartford, Conn.; Hartford Public High School, 1921; Yale University, 1926, degree Ph. B.; Yale University, 1929, degree, M.D.
Positions and appointments:
Instructor in pathology, College of Physicians and Surgeons, Columbia University, 1929–34.
Assistant resident in pathology, Presbyterian Hospital, New York, 1930–31.
Resident in pathology, Presbyterian Hospital, New York, 1931–34.
Instructor in pathology, New York University College of Medicine, 1934–36.
Assistant professor of pathology, New York University College of Medicine, 1936–46.
Associate professor of pathology, New York University College of Medicine, 1946–49.
Professor of pathology, New York University College of Medicine, 1949 to present.
Associate pathologist, Bellevue Hospital, New York, 1941–46.
Pathologist, Bellevue Hospital, New York, 1946–49.
Director of pathology, Bellevue Hospital, New York, 1949–55.
Consultant in pathology, Bellevue Hospital, New York, 1955–56.
Consultant in pathology, St. Francis Hospital, Poughkeepsie, N.Y., 1956 to present.
Consultant in pathology, New York Infirmary, New York, 1957 to present.
Chief, laboratory service, New York Veterans' Administration hospital, 1957 to present.
Medical licensure: New York No. 43607.
Certified in pathologic anatomy by American Board of Pathology, 1946.

Membership in societies:
New York Pathological Society.
American Association of Pathologists and Bacteriologists.
Society of Experimental Biology and Medicine.
New York Academy of Medicine.
Harvey Society.
Sigma Xi.
American Heart Association.
The American Society for Experimental Pathology.
The American Medical Association.

PUBLICATIONS

1. Wilens, S. L., Wolf, A., "Multiple Hemangioblastomas of the Spinal Cord with Syringomyelin. A Case of Lindau's Disease", Am. J. Path. *10:* 545, 1934.
2. Wilens, S. L., Pappenheimer, A. M., "Enlargement of the Parathyroid Glands in Renal Disease", Am. J. Path. *11:* 73, 1935.
3. Wilens, S. L., Buchbinder, L., Hall, L. and Slanetz, C. A., "Observations on Enzootic Paratyphoid Infection in a Rat Colony", Am. J. Hygiene *22:* 119, 1935.
4. Wilens, S. L., Wolf, A., "Dermatomyositis: A Report of Two Cases with Complete Autopsy", Am. J. Path. *12:* 235, 1936.
5. Wilens, S. L., Sproul, E. E., "Spontaneous Leukemia and Chloroleukemia in the Rat", Am. J. Path. *12:* 149, 1936.
6. Wilens, S. L., "The Postmortem Elasticity of the Adult Human Aorta. Its Relation to Age and to the Distribution of the Intimal Atheromas", Am. J. Path. *13:* 811, 1937.
7. Wilens, S. L., Sproul, E. E., "Spontaneous Cardiovascular Disease in the Rat. I. Lesions of the Heart.", Am. J. Path. *14:* 177, 1938.
8. Wilens, S. L., Sproul, E. E., "Spontaneous Cardiovascular Diseases in the Rat. II. Lesions of the Vascular System.", Am. J. Path. *14:* 201, 1938.
9. Wilens, S. L., "Relation of Elastic Tissue in the Root of the Aorta to the Aortic Valve. Involvement of this Tissue in Syphilis.", Arch. Path. *29:* 200, 1940.
10. Wilens, S. L., Waller, R. K., "Voluntary Intake of Calcium and Phosphorous in Partially Necrectomized and Parathyroidectomized Rats:, Endocrinology *28:* 828, 1941.
11. Wilens, S. L., "The Distribution of Intimal Atheromatous Lesions in the Arteries of Rabbits on High Cholesterol Diets", Am. J. Path. *18:* 63, 1942.
12. Wilens, S. L., "The Effect of Postural Hypertension on the Development of Atheromatosis in Rabbits Fed Cholesterol", Am. J. Path. *19:* 293, 1943.
13. Wilens, S. L., Pearce, J. M., Diaz, M. F., "The Relative Incidence of Rheumatic Valve Disease in New York and Costa Rica and its Bearing on the Rheumatic Origin of Calcareous Aortic Stenosis", Am. J. Heart. *30:* 573, 1945.
14. Wilens, S. L., "Bearing of the Nutritional State on Atherosclerosis", Arch. Int. Med. *79:* 129, 1947.
15. Wilens, S. L., "The Resorption of Arterial Atheromatous Deposits in Wasting Disease", Am. J. Path. *18:* 793, 1947.
16. Wilens, S. L., "The Relationship of Chronic Alcoholism to Atherosclerosis", J.A.M.A. *135:* 1136, 1947.
17. Wilens, S. L., "Orthostatic Influences on the Distribution of Atheromatous Lesions in the Cerebral and Other Arteries", Arch. Int. Med. *82:* 431, 1948.
18. Wilens, S. L., Elster, S. K., "The Role of Lipid Deposition in Renal Arteriosclerosis", Am. J. Med. Sci. *219:* 183, 1950.
19. Sokoloff, L., Wilens, S. L., Bunim, J. J., McEwen, C., "Diagnostic Value of Histologic Lesions of Striated Muscle in Rheumatoid Arthritis", Am. J. Med. Sci. *219:* 174, 1950.
20. Bunim, J. J., Sokoloff, L., Bien, E. J., Wilens, S. L., Ziff, M., "Histologic and Chemical Changes in Skeletal Muscle of Patients with Rheumatic and Non-Rheumatic Diseases", Trans. Assn. of Am. Phys. *62:* 279, 1949.
21. Sokoloff, L., Wilens, S. L., Bunim, J. J., "Arteritis of Striated Muscle in Rheumatoid Arthritis", Am. J. Path. *27:* 157, 1951.
22. Wilens, S. L., Elster, S. K., Baker, J. P., "Glomerular Lipidosis in Intercapillary Glomeruloscerlosis", Ann. Int. Med. *34:* 592, 1951.
23. Wilens, S. L., "The Occurrence of Peripheral Deposits of Lipid in Atheromatous Plaques of Arteries", Am. Heart J. *41:* 718, 1951.

24. Wilens, S. L., Glynn, J., "Hypertensive and Non-Hypertensive Periateritis Nodosa", A.M.A. Arch. Int. Med. *88:* 51, 1951.
25. Wilens, S. L., "The Experimental Production of Lipid Deposition in Excised Arteries", Science *114:* 389, 1951.
26. Wilens, S. L., "The Nature of Diffuse Intimal Thickening of Arteries", Am. J. Path. *27:* 825, 1951.
27. Bunim, J. J., Sokoloff, L., Bien, E. J., Wilens, S. L., Ziff, M. and McEwen, C., "Histologic and Chemical Changes in Skeletal Muscle of Patients with Rheumatic and Non-Rheumatic Diseases", The Path. of Rheumatic Dis., p. 292.
28. Wilens, S. L. and McCluskey, R. T., "The Comparative Filtration Properties of Excised Arteries and Veins", Am. J. Med. Sci. *224*: 540, 1952.
29. McCluskey, R. T. and Wilens, S. L., "The Infrequency of Lipid Deposition in Sclerotic Veins", Am. J. Path. *29:* 71, 1953.
30. Stumpt, H. H. and Wilens, S. L., "Inhibitory Effects of Portal Cirrhosis of Liver on Prostatic Enlargement", A.M.A. Arch. Int. Med. 91: 304, 1953.
31. Wilens, S. L. "The Relation of Diabetes to Atherosclerosis", N.Y. State J. of Med. 53: 2451, 1953.
32. Wilens, S. L. and McCluskey, R. T., "The Permeability of Excised Arteries and Other Tissues to Serum Lipids", Circulation Research 2: 175, 1954.
33. Stumpt, H. H. and Wilens, S. L., "Inhibitory Effect of Cortisone Hyperlipemia on Arterial Lipid Deposition in Cholesterol Fed Rabbits", Proc. Soc. Exp. Biol. & Med. 86: 219, 1954.
34. Wilens, S. L. and Stumpf, H. H., "Nodular and Fatty Glomerular Lesions in Rabbits on Cortisone", Am. J. Path. 31: 275, 1955; also Bull. N.Y. Acad. Med. 31: 857, 1955.
35. Stumpt, H. H., Wilens, S. L. and Somoza, C., "Pancreatic Lesions and Peripancreatic Fat Necrosis in Cortisone-Treated Rabbits", Lab. Invest. 5: 224, 1956.
36. Somoza, C. and Wilens, S. L., "Anterior and Posterior Wall Infarction of the Heart: A Statistical Comparison Based on Autopsy Findings", J. of Chr. Dis. 3: 610, 1956.
37. Wilens, S. L., McCluskey, R. T. and Somoza, C., "Inhibitory Effect of Chlorpromazine on Arterial Lipid Deposition in Cholesterol Fed Rabbits", Proc. Soc. Exp. Biol. & Med. 93: 121, 1956.
38. Wilens, S. L., "The Comparative Vascularity of Cutaneous Xanthomas and Atheromatous Plaques of Arteries", Am. J. Med. Sci. 233: 4, 1957.
39. Wilens, S. L. and Gallo, G., "The Effect of Chlorpromazine on Arterial Lipid Deposition in Rabbits After Cholesterol Feeding", Arch. Path. 64: 570, 1957.
40. Wilens, S. L., "Regression of Traumatic Cutaneous and Aural Lipid Deposits in Cholesterol Fed Rabbits", Am. J. Path. 35: 633–647, 1959.
41. Wilens, S. L. and Redfield, E. S., "Pulmonary Thromboarteritis Associated with Interatrial Defect and Rheumatic Carditis", Am. J. Med. 28: 631, 1960.
42. Budzilovich, G. and Wilens, S. L., "Fulminating Wegener's Granulomatosis", Arch. Path. 70: 653, 1960.
43. Wilens, S. L. and Plair, C. M., "A Method for Equating Age and Arteriosclerosis at Necropsy", Arch. Path. 70: 149, 1960.
44. Wilens, S. L. and Plair, C. M., "The Relationship Between Cortical Hyperplasia of the Adrenals and Arteriosclerosis", Am. J. Path. 41: 225, 1962.
45. Plair, C. M. and Wilens, S. L., "Cancer and Life Span in Smokers and Non-Smokers", Am. J. Med. 34: 88–92, 1962.
46. Wilens, S. L. and Plair, C. M., "Cigarette Smoking and Arteriosclerosis", Science 138: 975–977, 1962.
47. Schwartz, I., Wilens, S. L., "The Formation of Acinar Tissue in Gyneomastia", Amer. J. of Path. 43: 5, 797–807, 1963.
48. Wilens, S. L., "Why, Oh Why, Did He Die?", J.A.M.A. 187: 1020, 1964.
49. Wilens, S. L., "Requiem for a Textbook", J.A.M.A. 188: 249, 1964.

STATEMENT OF FERDINAND C. HELWIG, M.D.

My name is Ferdinand C. Helwig, of Kansas City, Mo. I am a doctor of medicine specializing in pathology. I was certified by the American Board of Pathology in 1936 and am a fellow in the American College of Physicians. In addition

to examining tissue from patients from the Kansas City metropolitan area, as well as patients coming to Kansas City for treatment, I also examine specimens sent to me from other areas, principally cities in Kansas and Missouri. I am clinical professor of pathology and oncology at the University of Kansas School of Medicine where I have been on the faculty since late 1923. Following an internship, I studied with the late Prof. Erwin Christeller at the Rudolf Virchow Hospital in Berlin. German pathology has generally been of a high order and this hospital had one of the finest pathology departments in Europe at that time.

Later, in 1925, 1926, and 1927, I did research in an attempt to produce cancer by the application of tobacco tar to the skin of mice. One of the subjects taught by me at the University of Kansas School of Medicine is oncology, which is the science of tumors. In 1935, I published a book for medical students on cancer and allied diseases entitled "An Introduction to Oncology." I have devoted my major interest to the subject of cancer during my professional career and have studied perhaps as many as 30,000 cases of cancer of all types and sites over the last 42 years. I have been very much interested in cancer of the lung. A list of my qualifications and publications is attached.

I do not believe that cancer is caused by smoking cigarettes. Those who do believe it are forced to rely principally on statistics. Statistics, in my judgment, show only an association between cigarette smoking and cancer; they certainly do not prove causation. Even the Surgeon General's report, which really presents only one side of the controversy, admits that "Statistical methods cannot establish proof of a causal relationship in an association" (p. 20). As a matter of fact, even many of the available statistics seem inconsistent with a theory that cigarette smoking causes lung cancer. Why, for instance, is cancer of the lung in men twice as common in Britain as in the United States when British men smoke only half as many cigarettes as do men in the United States? Why is there a higher incidence of cancer of the lung among men in lower economic brackets than among those in higher economic brackets when the latter are reported to smoke more cigarettes? Why has there been no increase in the occurrence of lung cancer in women at all comparable to the increase in men when there has been a tremendous increase over the past 40 years in the number of women who smoke (it would seem that if smoking were a cause of cancer, there should have been an equally tremendous increase in female lung cancer)?

All sorts of smoking experiments and even painting of the lining of the bronchial tubes with concentrated tobacco smoke extracts have been totally negative in producing a single lung cancer in experimental animals. In 1925, 1926, and 1927, in studying cancer of the lip, I personally treated a small area of the skin of a series of mice with concentrated tobacco tars without producing a single cancer. Many years after my negative results, some success was obtained by Wunder and Graham in the production of small skin cancers in the area of application on the skin of susceptible mice. Immediately this was hailed by some as evidence of the cause of cancer of the lung. This claim would seem to have been rendered rather untenable by (1) the basic problem of extrapolating or applying such findings to man, (2) the further problem of extrapolating findings from one site to another site even in the same species, (3) the total failure to produce cancer in experimental animals by inhalation of cigarette smoke, and (4) the failure of tobacco tar to produce cancer of the skin in man.

With regard to reasons (1) and (2), the danger inherent in reaching conclusions applying experimental data either to a different location or site in the same animal species, or to the same location or site in another species, is universally recognized. To seek to apply data from the skin of a mouse to the lung of a man is not scientifically sound. If any mouse data were applicable to the lungs of man it would be the data relating to the lungs of mice, all of which has been negative as to cigarette smoke, as mentioned in reason (3). With regard to reason (4), a human cigarette smoke experiment involving millions of cases has been going on for years. That is, the intense brown discoloration of the skin of the fingers where, over many decades, the smoke from cigarettes has deposited tobacco tar. In all of my experience I have never seen a skin cancer on a cigarette smoker's fingers in the smoke stained areas. On the other hand, skin cancer on the back of the hand, an area not involved by cigarette smoke, is an extremely common type of lesion. I agree with Dr. Ian Macdonald who concluded that the concentration of tobacco tar applied to the backs of experimental mice could be equaled only by smoking 100,000 cigarettes a day. One reason for such conclusion is that the exposed area of the lungs is many thousands of times greater than the exposed area of the mouse's skin. Certainly the concentration of tobacco tar over the small area on the fingers must be

literally thousands and thousands of times greater than that spread over the much larger area of the bronchial tubes of the lungs.

With regard to the amount of smoke reaching the lungs, and the distribution of such smoke, it is interesting to note the site of cancers occurring in the respiratory system. In the last three decades the prevalence of cancer of the mouth and pharynx has significantly decreased in spite of the fact that the concentration of smoke is higher in these areas than in the lungs. Why? The major windpipe or trachea carries air to the lungs. Exposure to all of the inhaled cigarette smoke is greatest in this location, and the lining of this large tube is the same as that in the smaller branches of the bronchial tree. Yet the trachea, before it branches into the bronchial tubes, is the site of cancer in only extremely rare circumstances. Why? Furthermore, it is now generally recognized that a high percentage of cancers of the lung originates in smaller branches of the two main divisions of the bronchial tree, where the concentration of cigarette smoke is not nearly so great as in the trachea and larger branches. Why?

I do not believe that there has been nearly so great an increase in cancer of the lung as may at first appear. For example, some of the reasons for the increase in reported cases of cancer of the lung are as follows: (1) a greater interest in the subject after Dr. Graham cured the first case by removal of a lung (previously it was always fatal); (2) greater skill in direct examination of the bronchi by the use of the bronchioscope; (3) greatly refined X-ray techniques; (4) the use of the Paponicolaou smear, which is the microscopic study of cells in washings and sputum from the bronchial tree; (5) the great refinements in anesthesia which make open exposure of the lungs and exploring of the chest a relatively innocuous procedure; (6) more widespread facilities for carefully and thoroughly investigated post mortem examinations, such as were common in Berlin at a much earlier time; and (7) the increasing age span of the population in general, bringing more patients into the cancer age. Increased awareness of the disease and the improved methods of diagnosis, when coupled with the increasing age span of the population, may account for most, if not all, of the increase in cases reported during recent years. In Germany, where careful post mortem examinations have long been the rule, the increased incidence of lung cancer was reported about the turn of the century, long before cigarette smoking became popular.

The highest incidence of lung cancer is at approximately 57 years of age in smokers and nonsmokers alike. This peak incidence is maintained very strictly regardless of smoking habits. If cigarette smoking were a factor, one would expect heavy and prolonged smokers to develop cancer at an earlier age than others. One would also expect that lung cancer incidence in smokers would continue to increase with advancing age, yet lung cancer shows a sharp decline after 65, regardless of cigarette consumption.

In respect to the tissue changes reportedly observed in post mortem examinations of the lungs of heavy smokers, it should be pointed out that similar changes are not uncommon in the lungs of nonsmokers, have been produced experimentally in animals by a variety of agents completely unrelated to tobacco smoke, and have been demonstrated to be reversible so that the bronchial tubes may return to normal and no cancer develops. If these changes were always premalignant, they should not be reversible.

During my years as a practicing doctor I have seen many changes in the general population of this country. Medical advances have certainly not been limited to diagnostic facilities, but have also included the discovery of the so-called miracle drugs that are so effective in combating many respiratory diseases. This very advance, however, may be contributing to the increase in the number of lung cancer cases that we see. Thirty years ago pneumonia was a highly fatal disease, influenza epidemics were not unusual, and tuberculosis, or consumption, was still rampant. By curing such respiratory diseases as these, medicine has undoubtedly saved the lives of many persons who would not otherwise have survived to the cancer age. It may also have saved the lives of persons who were susceptible to respiratory diseases. In other words, that person who, in earlier times, may have contracted and died of consumption in his youth, now survives to contract lung cancer in his fifties or sixties.

It is my firm conviction that a virus agent causes the majority of cancers in the human. Stanley, the Nobel Prize winner in medicine for 1935, who was the first to crystallize a virus and has done much work on cancer, feels that most, if not all, cancers are caused by a virus. Cancers known to have been caused in lower animals by a virus are often indistinguishable from the same gross and microscopic lesions in man. Well documented and carefully controlled experimental evidence has indicated not only that cancer may be caused by a virus

in animals, but that an immunity to the virus may also be set up. This extremely significant area should be fully explored. I would deeply regret any action that would stifle research in this and other fields of endeavor. I have seen many changes in medicine. I have heard many theories that were supposed to account for certain observed effects which turned out to be quite incorrect in the long run. I have honestly and earnestly reviewed a great deal of the literature relating to smoking and lung cancer and have considered it in the light of my own experience of over 42 years. While I am always ready to entertain further evidence, it is my opinion that the case against cigarettes has not been proved.

CURRICULUM VITAE

Ferdinand C. Helwig, M.D.

University of Kansas, A.B. 1921, M.D. 1922.

Special training in Pathology at Rudolph Virchow Krankenhaus, Berlin, 1923 (Prof. Erwin Christeller) and University of Kansas School of Medicine 1924–28.

Chief of laboratory AAF Regional Hospitals, August 2, 1942 to October 1, 1945, Lt. Col. M.C.

Consultant at Wadsworth Veterans Hospital, Wadsworth, Kans., 1946 to date.

Consultant at K. C. Veterans Hospital, Kansas City, Mo., 1952 to date.

Consultant at K. C. General Hospital, 1938 to date.

Pathologist at Childrens Mercy Hospital, Kansas City, Mo., 1925 to date.

Pathologist at St. Luke's Hospital, Kansas City, Mo., 1928 to date.

Clinical professor of pathology and oncology, University of Kansas School of Medicine 1948 to date.

Certified by American Board of Pathology, pathologic anatomy 1936, clinical pathology 1937.

Practice limited to pathology.

Member of:

American College of Physicians (fellow).
American Medical Association.
Kansas State Medical Society.
Jackson County Medical Society (corresponding).
Johnson County Medical Society.
American Society of Clinical Pathologists.
American Association of Pathologists and Bacteriologists.
American Board of Pathology.
Kansas City Southwest Clinical Society.
Kansas City Academy of Medicine.
American Association for Cancer Research.
Fellow of College of American Pathologists.
Pan-American Cancer Cytology Society.
Dean's Committee for VA Resident training at Wadsworth and Kansas City.

BIBLIOGRAPHY

1923: Halstead Hospital, Halstead, Kans. Syphiloma of the Rib: Review of the Literature and Report of a Case. J. Ks. Med. Soc. May 1923, 23: 5, 127–129.

1925: University of Kansas, School of Medicine, Kansas City, Kans.:

(With H. L. Dwyer) Phosphorous Poisoning in Children from Ingestion of Fireworks; A.M.A. April 25, 1925. Vol. 84, p. 1254–1256.

Actinomycosis of the Ovary and Tube: SGO, April 1925, p. 502–509.

(With Ralph H. Major) Clinical and Pathological Studies on Chronic Nephrosis. Bull. Johns Hopkins Hospital, April 1925, 3614.

Arachnid Infection in Monkeys (Pneumonyssus Foxi of Weidman) Am. J. Path. 1: 4, July 1925.

(With H. L. Dwyer) Intrathoracic Tumors in Children. Am. J. Diseases of Children, Dec. 1925, Vol. 30, p. 799–803.

1926:

Abdominal Actinomyosis: Report of a Case; J. Ks. Med. Soc. May 1926, 26: 5, 157–160.

(With Ralph H. Major) Diabetes Mellitus and Status Thymolymphatious; JAMA, June 5, 1926, Vol. 86, p. 1766–1767.

1927:

(With F. C. Neff and L. P. Engel) Primary Carcinoma of the Liver in Children: J. Ks. Med. Soc. July 1927, 27: 7, 225–229.

Carcinoma of the Breast Combined with Giant Cell Sarcoma. Arch. of Path. & Lab. Med., Aug. 1927, V. 4, p. 162–167.

Influence of Tobacco and Other Extracts on the Epithelial Cell. J. Ks. Med. Soc. Vol. 27, p. 37–40, Feb. 1927.

1928: St. Luke's Hospital, Kansas City, Mo.:

Layman's Conception of Cancer Distorted by False Myths. Bull. Health Conservation Assn., May 1928, 1: 9, p. 2.

(With H. L. Dwyer) Agranulocytic Angina; Am. J. Diseases of Children, June 1928, V. 35, p. 1041–1047.

Growth-Producing Effects of Extracts of Tobacco on Mice; JAMA, July 21, 1928, V. 91, p. 150–151.

1929:

Tissue Diagnosis in Tumors of the Breast; Jackson County Med. Soc. Bull., January 1929, 23: 2, 7–9.

(With H. P. Kuhn) Multiple Colonic Polypi with Two Engrafted Carcinomata; J. Missouri State Med. Assn., March 1929, p. 111–113.

Imperforate Anus with Exit through Prostatic Uretha; Am. J. Disease of Children, Sept. 1929, Vol. 38, p. 559–561.

Undulant Fever; J. Missouri State Med. Assn. Sept. 1929, p. 449 to 451.

Multiple Spleen Combined with Other Congenital Anomalies; Arch. of Path., Nov. 1929, Vol. 8, p. 757–761.

(Editorial) Transactions of K. C. Path. Soc., Jackson County Med. Soc. Bull., Nov. 23, 1929, 23: 40, p. 8–10.

Pancreatic Cysts; Jackson County Med. Soc. Bull.; 24:8, Feb. 22, 1930, p. 8–10.

Frequency of Mastoiditis in Infants, Arch. of Otolaryngology, Feb. 1930, Vol. 11, p. 169–177. (With O. Jason Dixon).

Bacteriophage, A Parasitic Disease of Bacteria, Jackson County Med. Soc. Bull., March 8, 1930, 24: 10, 7–8.

1930: St. Luke's Hospital, Kansas City, Mo.

(With W. W. Wilholmy) Mycotic Aneurysm of Superior Mosentoric Artery Complicating Bacterial Endocarditis. Arch. Path., March, 1930, Vol. 9, p. 638–653

(With O. Jason Dixon) Thrombophlebitis of Internal Jugular Vein as a Complication of Tonsillitis: Jackson County Med. Soc. Bull., 24:12, p. 7–8 March 22,1930

(With Paul F. Stookey and J. K. Howles) Edema of External Genitalia of the Female as a Complication of Primary Syphylis. Southern Med. J., 23:8, 708–710, Aug., 1930.

A Classification of the Anemias with Brief Notes on their Chief Diagnostic Features Booklet—Postgraduate Course Southwest Clinical Soc. (Kansas City), October, 1930.

Obliterating Sclerosis of the Basilar Artery with Thrombosis following Tooth Extraction and Cerebral Aneurysm in a Young Man. Jackson County Med. Soc. Bull., 24:39, 8–9 Nov. 15, 1930

(With N. F. Ockerblad) Primary Carcinoma of the Ureter. J. Urology, 24:5, Nov. 1930.

(H. P. Kuhn and C. B. Schutz) Cystadenoma of the Pancreas: J. Missouri State Med. Assn., Dec. 1930, p. 570–572

(With O. J. Dixon) Thrombophlebitis of the Internal Jugular Vein as a Complication of Tonsillitis. Ann. Otology, Rhinology, and Laryngology, 39:4, 1137, Dec., 1930.

Editorial Work: Transactions of K. C. Path. Society Jackson County Med. Soc. Bull. 24:3, 6–10, Jan. 18, 1930; Feb. 15, 1930, 24:7, 8–10; Mar. 1, 1930, 24:9, 7–8; Mar. 29, 1930, 24:13, 6–10; May 17, 1930, 24:20, 7–9; Nov. 8, 1930, 24:38, 7–10; Dec. 27, 1930, 24:45, 7–12.

1930: St. Luke's Hospital, Kansas City, Mo. Transactions of St. Luke's Hospital Staff, Jackson County Med. Soc. Bull.

Necropsy Report of 6 cases, Mar. 15, 1930, 24:11, 7–12
Necropsy Report of 2 cases, Apr. 19, 1930, 24:16, 7–9
Necropsy Report of 2 cases, Apr. 26, 1930, 24:17, 7–8
Necropsy Report of 2 cases, June 14, 1930, 24:24, 9–12
Necropsy Report of 2 cases, June 21, 1930, 24:25, 6–8
Necropsy Report of 5 cases, Oct. 25, 1930, 24:36, 6–13
Necropsy Report of 2 cases, Nov. 29, 1930, 24:41, 7–10
Necropsy Report of 2 cases, Dec. 6, 1930, 24:42, 6–8
Necropsy Report of 2 cases, Dec. 13, 1930, 24:43, 6–12

1931:

(With G. H. Hoxie and E. Lee Miller) A Primary Malignant Tumor of the Solar Plexus; Arch. of Neurology & Phsychiatry, January, 1931, Vol. 25, 162–167

(With J. Edward Burns) Bladder Disturbances in Relation to Abnormalities of the Lumbosacral Spine. American Assn. of Genito-Urinary Surgeons, 1931, p. 323–340

(O. Jason Dixon) Lipoma of the Larynx Arch. Otolaryngology, September, 1931, Vol. 14, p. 284–290

Analysis of 1000 Appendices from the Viewpoint of the Pathologist. J. Missouri State Med. Assn., Dec. 1931, p. 574–577

(With R. R. Wilson) Esophageal Ectasia in a Newborn Infant; Bull. University of Kansas School of Medicine, 1:4, April 1931, p. 3

(With H. P. Boughnou) Acute Nonsuppurative Thrombosis of the Portal Vein with Unusual Clinical Manifestations; Bull. University of Kansas School of Medicine 1:3, 4–6, Jan. 1931.

1931: St. Luke's Hospital, Kansas City, Missouri. Editorial: Transactions of K. C. Path. Soc. Jackson County Med. Soc. Bull., Feb. 14, 1931, 25: 7, 10–13; Feb. 21, 1931, 25: 8, 10–12; Apr. 11, 1931, 25: 25. 8–11; May 16, 1931, 25: 20, 8–11; June 6, 1931, 25: 23, 10–11; Sept. 5, 1931, 25; 30, 12–13.

Transactions of St. Luke's Hospital Staff Jackson County Med. Soc. Bull.

Necropsy Report of 1 case, April 18, 1931, 25: 16, 9–10.

Necropsy Report of 1 case, June 20, 1931, 25: 25, 8–10.

Necropsy Report of 2 cases, Oct. 17, 1931, 25: 36, 10–13.

Necropsy Report of 1 case, Oct. 24, 1931, 25: 37, 8–9.

1932: (With T. G. Orr) Traumatic Necrosis of the Liver with Extensive Retention of Creatinine and High Grade Nephrosis; Arch. Surg., Jan. 1932, Vol. 24, p. 136–144; abstracted in JAMA April 2, 1932, 94: 14, 1222.

Frequency of Anomalous Reticula in the Right Atrium of the Human Heart—"Chiari Network"; Am. J. Path, Jan. 1932, viii: 1; abstracted in JAMA, March 19, 1932, 98: 12, 1027.

Contributions to Pathology in 1931; Jackson County Med. J., Jan. 2, 1932, 26: 1, 10–11.

(With R. R. Wilson) Generalized Fetal Edema (Hydrops Fetus Universalis); J. Ks. Med. Soc. May, 1932; abstracted in JAMA, July 30, 1932, 99: 5, 422.

Relationship of Rheumatic Fever, Subacute Bacterial Endocarditis and Chronic Arthritis; K. C. S. W. Clin. Soc. Bull., April, 1932, viii: 4, 2–4.

(With H. P. Kuhn) Diverticulum of the Female Urethra; K. C. S. W. Clin. Soc. Bull, July, 1932, viii: 6, 4.

(With C. B. Schutz and H. P. Kuhn): A Contribution to the Study of So-Called Liver Death; JAMA, Aug. 20, 1932, 99: 8, 633–636.

1932: St. Luke's Hospital, Kansas City, Missouri:

(With C. B. Schutz) A Liver-Kidney Syndrome Clinical, Pathological and Experimental Studies SCO, Nov. 1932, V. IV, 570–580.

Unusual Pathogenesis of Subphrenic Abscess—Case Report: J. Ks. Mod. Soc. Nov. 1932, xxxiii: 11.

Liver in Juvenile Diabetes; Jackson County Med. J., Jan. 16, 1932, 26: 3, 8–11.

Discussion of Two Cases: Mutiple Embolic Brain Abscesses as a Complication of Old Healing Empyema; Metastatic Liver Carcinoma with Unusual & Obscure Clinical Manifestations Simulating Nephritis and Encephalitis; Jackson County Med. J., Feb. 27, 1932, 26: 9, 7–9.

Lymphatic Varices of the Jejunum; Jackson County Med. J.,

Discussion of Case of Panopthalmitis With Brain Involvement; Jackson County Med. J., July 9, 1932, 26: 28, 12–13.

Discussion of Two Cases: Gall Stone Obstruction in Ileum at Site of Previous Partial Stenosis; Enormous Hair Cast Filling the Stomach & Duodenum and Extending into the Jejunum; Jackson County Med. J., Sept. 24, 1932, 26: 38, 11–14.

Discussion of One Case: Unusual Complication in Pulmonary Tuberculosis Arrested by Pneumothorax; Jackson County Med. J., Sept. 24, 1932, 26: 39, 14–16.

Discussion of Two Cases: Acute Encephalitis with Obscure Clinical Manifestations; Thrombosis Involving only the Left Branches of the Portal Vein with Unilateral Hepatic Infarction; Jackson County Med. J., Dec. 17, 1932, 26: 51, 8–15.

Editorials: Transactions of K. C. Path Soc. Jackson County Med. J., Jan. 16,

1932, 26 : 3, 8–11 ; Jan. 23, 1932, 26 : 4, 9–11 ; July 9, 1932, 26 : 28, 11–13 ; July 16, 1932, 26 : 39, 9–14.

Transactions of K. C. Academy of Medicine Jackson County Med. J., Feb. 20, 1932, 26 : 8, 10–17 ; May 28, 1932, 26 : 22, 7–15 ; June 11, 1932, 26 : 24, 7–12.

1932 : St. Luke's Hospital Kansas City, Mo. July 23, 1932, 26 :30, 7–15 Aug. 20, 1932, 26 :34, 8–15 Aug. 27, 1932, 26 :35, 7–14 Dec. 10, 1932, 26 :50, 7–14 Oct. 29, 1932, 26 :44, 10–13

Transactions of St. Luke's Hospital Staff Jackson County Mod. J. Feb. 27, 1932, 26–9, 7–9 Dec. 17, 1932, 26–51, 8–15 Sept. 17, 1932, 26 :38, 11–14 Sept. 24, 1932, 26 :39, 14–16

1933 :

(With H. P. Kuhn and G. F. Webb) Major Tragedies Following Extraction of Teeth : A Clinical and Necropsy Study with Report of 10 Cases J. Amer. Dental Assn. V. xx, 2155–2163, Dec. 1933.

Relationship of the Liver to Other Visceral Organs in Disease J. Missouri State Med. Assn., Sept. 1933, p. 359–362

A Review of the Recent Advances in the Knowledge of the Pathology of the Liver and their Clinical Application. AM. J. Surg., 19 :3, 462–473, March 1933.

Congenital Aspiration Pneumonia in Stillborn and Newborn Infants Am. J. Ob & Gyn., 26 :6, 849, Dec. 1933.

(With Nicholas Jaime) Laryngeal Scleroma in a Native Missourian : Report of a Case Arch. Otolaryngology, Sept. 1933, V. 18, 310–315

Fenestrated Hammock-Like Structure in the Left Cardiac Atrium : Review of the Literature and Report of a Case. Arch. Path. Jan. 1933, V. 15, 8–18

Retrograde Thrombosis of the Renal Vein with Total Anemic Infarction of the Left Kidney Bull. of University of Kansas School of Medicine 4 :1, 6, July, 1933

1934 :

Tumors of the Heart : Report of Nine Cases Bull. of University of Kansas School of Medicine 5 :2, 1, Dec. 1934

Reaction of Tumors to Irradiation J. Kansas Med, Soc., May, 1934, 35 :5

1935 : St. Luke's Hospital Kansas City, Mo :

(With E. W. Wilhelmy) Clinical and Pathologic Studies of Coronary Disease J. Missouri State Med. Assn., Dec. 1935, p. 476–480

(With C. B. Schutz and D. E. Curry) Water Intoxication : Report of a Fatal Human Case with Clinical, Pathologic and Experimental Studies

Prolonged Retension of Fetus from an Extrauterine Pregnancy Am. J. Ob. & Gyn., 29 :6, 893, June 1935

Radio-Sensitivity and Radio-Resistance in Tumor Therapy J. Kansas Med. Soc. November 1935 Reprinted in Bull. Amer. Soc for Control of Cancer, 18 :1, Jan. 1936.

(With C. B. Schutz) Further Contributions to the Liver Kidney Syndrome J. Lab. & Clin. Med., 21 :264–277, Dec. 1935

"An Introduction to Oncology" : A Test for Medical Students Privately printed and copyrighted 1935.

1936 :

Determination of Type of Treatment for Cancer from Pathologic Studies J. Missouri State Med. Assn. 33 :11, 413, Nov. 1936

Role of Dentistry in the Control of Cancer J. Amer. Dental Assn. V. 23, Sept. 1936

1937 :

Relative Importance of Histological Analysis in Tumor Therapy Am. J. Roentgenology & Radium Therapy, 37 :3, March, 1937

Histopathologic Studies of the Brain in Delayed Death Following Strangulation J. Southern Med. J. 30 :5, 531, May, 1937

Importance of Endocrine Activity in Tumor Pathology & Therapy K. C. Med. J., 13 :6, p. 5, June, 1937

Ovarian Influence in Cancer, Its Diagnostic, Prognostic and Therapeutic Implications K. C. Med. J., January, 1938

1938 : St. Luke's Hospital, Kansas City, Mo. :

Autopsy from the Standpoint of the Undertaker Hospitals, June 1938

Late Advances in Hematology. Bull. K. C. Clin. Lab. Assn. 5 : 1, June, 1938, P. 7

(With C. B. Schutz) Water Intoxication ; Moribund Patient Cured by Administration of Hypertonic Saline Solution. JAMA 110–644–45, Feb. 26, 1938

1939:
Sudden and Unexpected Death from Acute Interstitial Myocarditis: Report of Three Cases. Ann. of Int. Med., 13: 107–114, July, 1939 (With E. W. Wilhelmy)
(With T. G. Orr) Liver Trauma and the Hepatorenal Syndrome. Ann. Surg., 110: 4, Oct. 1939
1940:
Some Medicolegal Aspects of Alcoholic Intoxication. Southern Med. J., 33: 6, 648–656, June, 1940
Western Equine Encephalomyelitis Following Accidental Innoculation with Chick Embryo Virus: Report of A Fatal Human Case with Necropsy. JAMA 115: 291–292, July 27, 1940
(With T. G. Orr) Is there a Hepatorenal Syndrome? Editorial reprinted from Surgery, St. Louis 7: 1, 136–137, Jan. 1940
Beverage Alcohol and Heart Disease. J. Missouri Med. Assn., May 1940, p. 204–206. Abstracted JAMA, July 9, 1940, p. 85
(With F. D. Dickson and R. L. Diveley) Thyroid Tumor of the Humerus without Demonstrable Goiter: Report of a Case with Biological Assay of the Tumor. J. Bone & Joint Surg., 22: 1, 151–156, Jan. 1940
(With T. G. Orr) The Hepatorenal Syndrome. Frank Howard Lanoy Birthday Volume, June 1, 1940, p. 339–349. Charles C. Thomas, Publisher, Springfield, Ill., 1940
1941: St. Luke's Hospital, Kansas City, Mo.:
Medionocrosis Aortae Idiopathica Cystica with Spontaneous Rupture. J. Missouri State Med. Assn. March, 1941, p. 86–88
Advances in our Knowledge of Liver Disease and Some Associated Clinical Applications. Nebraska State Med. J. 26: 2, 37 Feb. 1941
1942:
Death Following Blunt Chest Injury in Experimental Coronary Sclerosis. K. C. Med. Journ. March–April, 1942.
(With F. A. Carmichael, Jr. and J. H. Wheeler) Craneal Chordoma: Report of a Case in Which Surgical Intervention Was Successful. Am. J. Surg. iv: 3. 583–587, March, 1963
Etiology of Hypertension. J. Missouri State Med., March 1942, p. 65–66. Abstracted Internation Med. Digest May, 1942. 40: 286
(With T. G. Orr) Discussion Sobre el Sindrome Hepatorrenal. De: "El Dia Medico" Ano xiv, #33, Buenos Aires. 1942
1943: St. Luke's Hospital (Army Air Force) (Maj. F. C. Helwig) later lieutenant colonel Medical Corps:
(With Lt. Edward D. Freis) Cold Autohemagglutinins Following Atypical Pneumonia Producing the Clinical Picture of Acrocyanosis. JAMA, 123: 626–628, Nov. 6, 1943
1944:
(With J. E. M. Thompson and Eugene Sire) Sympathetic Block in the Treatment of Local Shock; An Experimental Study. J. Bone & Joint Surg., 26: 1, 198–196, Jan. 1944
A Simple Rapid Method for Paraffin Tissue Preparations Utilizing the Kahn Shaker. J. Lab. & Clin. Med. 29: 304–305, March, 1944
1945:
(With E. C. H. Schmidt) Filter-Passing Agent Producing Interstital Myocarditis in Anthropoid Apes and Small Animals. Science 102: 31–33, July 13, 1945. Editorial—JAMA, 129: 213, Sept. 15, 1945.
(With John T. Read) Infectious Mononucleosis: An Analysis of 300 Cases with Three Characterized by Rare Hematologic Features. Arch. Int. Med., 75: 376–380, June, 1945
1946: St. Luke's Hospital (Army Air Force). (E. J. Ockuloy) Endometriosis of the Urinary Bladder: Report of a Case. J. Urology, 55: 464–469, May, 1946.
1948: St. Luke's Hospital:
(With M. G. Berry) Marked Insulin Resistance in Diabetes Mellitus. Am. J. Med., 4: 923–926, June, 1948.
Role of the Pathologist in the Diagnosis of Polypoid Lesions of the Colon and Rectum; Am. J. Surgery, Vol. ixxvi No. 6, 728–732; Dec., 1948.

1950:
Pathology of Chest and Modiastinal Tumors; South Dakota J. Med. & Pharm., 3: 321–326; 348; Nov., 1950.
(With Hamilton & Higgins) Experimental Studies on Proteolytic Enzymes in the Endometrium of Pregnancy to Explain Certain Clinical Phenomenon in Endometriosis; Am. J. Ob-Gyn, 60: 2, August 1950, p. 251.
Conductor University of Kansas Med. Center Case Reports-Tumor Conferences; Ks. State Med. J.; Ca. of Stomach 51: 5; 246–248, May, 1950; Ca. of Uterus, 51: 10; 484–488, Oct., 1950; Ca. of Breast, 51: 12, 576–580, Dec. 1950.
1951:
Importance of Histologic Examination of Miniature Pathologic Lesions; Brief Discussion of 15 Illustrative Cases; AM. Surgeon. 17: 448–454, May 1951.
Pathology of New Growths of Thyroid Gland; South Dakota J. Med. & Pharm. 4: 109–114; 131, May, 1951.
Conductor University of Kansas Med. Center Case Reports-Tumor Conferences; Ks. State Med. J.; Ca. of Cervix Uteri. 52: 5; 231–236, May, 1951; Homangioblastoma of Cerebellum in 2 brothers; 52: 2; 74–80, Feb. 1951; Ca. of Colon; 52: 7; 334–336, July, 1951.
1952:
Gynecologic Pathology Seminar, F. C. Helwig Conductor, J. Mo. State Med. Assn., 49: 9; 757–770, Sept. 1952.
1952: St. Luke's Hospital, Kansas City, Mo.:
Conductor Case Reports from University of Kansas Medical Center Tumor Conference; J. Ks. Med. Soc.; Ovarian Tumors 53: 8; 388–391, August 1952; Ca. of Rectum and Rectosigmoid 53: 10; 478–481; Oct. 1952; Medical Thyroid Crisis 53: 11; 528–533, Nov. 1952; Germinal Tumors of Testis 53: 12; 578–583, Dec. 1952.
(With J. Milton Singleton) Exhibit on Studies on Exfoliative Cytology of Cervix; K. C. S. W. Clin. Soc., October, 1952.
1954:
Conductor Case Reports from Univ. of Kansas Med. Center—Tumor Conference; J. Ks. Med. Soc.
Adenocarcinoma of the Prostrate 55: 1; 25–30; Jan. 1954.
Parotid Tumors, 55: 3; 144–149, March, 1954.
Diagnosis of Management of Breast Tumors; Chicago Med. Soc. Bulletin, 57: 7; 93–38, August 14, 1954.
1955:
Conductor—CPC—Abstract—CPC No. 15, Thursday; April 28, 1955, 36th Ann. Session of Am. College of Physicians, Philadelphia, 1955; Ann. of Int. Med., Vol. 43, No. 2, Aug. 1955; p. xxxvii.
1956:
Clinical Pathologic Discussion of Interesting Urologic Conditions Trans.; South Central Section of Amer. Urological Asso.; p. 15–32, 1956.
1958:
Cytoplasmic Inclusion Bodies in Chronic Ulcerative Colitis: Their Relationship to Polyps and Cancer of the Colon and Rectum; Diseases of Colon and Rectum, Vol. 1, No. 2 and 4, July-August, 1958 Presented before the third Annual Conference on Cancer of Lower Gastrointestinal Tract, at Memorial Center for Cancer and Allied Diseases, New York City, March 8, 1957.
1959:
Epithelial Cytoplasmic Inclusion Bodies of Possible Viral Origin in Clinically Early Ulcerative Colitis Diseases of Colon & Rectum, Vol. 2, No. 1, Jan. Feb. 1959, Read at the Meeting of the American Cancer Society Scientific Session Program, New York City, October 20, 21, 1953.
1959: St. Luke's Hospital, Kansas City, Mo. (with A. G. Petersen and M. Dodgem) Pulmonary changes associated with hexaothonium therapy. Arch. of Int. Med., Feb. 1959, Vol. 103, p. 285–288
1960: The Association of Benign and Malignant Polyps of the Large Intestines Dis. of Colon & Rectum, Vol. 3, No. 4, July–August, 1960.
1961: The Changing Ratio of Cervical to Corpus Carcinoma: A 32 Year Survey Amer. J. of Obstetrics and Gynecology, Feb. 1961

STATEMENT OF WILLIAM H. CARNES, M.D.

I am Dr. William H. Carnes, professor of pathology and head of the department of pathology at the University of Utah and pathologist in chief of the Salt Lake County General Hospital. Following graduation from the Johns Hopkins University School of Medicine, I have been engaged in teaching and research in pathology for 27 years at Johns Hopkins, Columbia and Stanford Universities prior to my present appointment. During this time I have been interested in a large variety of medical problems, as shown by my list of publications, among which are pulmonary diseases and cancer. My other qualifications are indicated by my special training, hospital appointments and membership in medical and scientific societies that are listed in my curriculum vitae.

It is my privilege to speak to you today on the significance of pathological changes in the respiratory epithelium in relation to lung cancer. I was 1 of 12 pathologists in medical centers throughout the United States who began a joint investigation in 1954 to explore the possibility of correlating abnormalities of the bronchial epithelium in post mortem lung specimens with smoking habits and other environmental and medical factors of the deceased patients. This group (whose names and institutions at that time are appended) was called together initially by Dr. Stanley P. Reimann, director emeritus of the Institute of Cancer Research of the Lankenau Hospital, Philadelphia, and member of the Scientific Advisory Board of the Tobacco Industries Research Committee. The participants pursued their investigations independently for several years with periodic conferences until the pathological findings and medical and historical data had been collected and classified. In 1959 the collation and analysis of the results was begun under a contract between the Air Pollution Division of the Public Health Service and the University of Utah, of which I was the project director. There have been several publications of portions of that study (Carnes, 1961; Knudtson, 1960; Reimann, 1960; Weller, 1953; Wilson and Burke, 1957, 1959, 1960) and a final report "The Respiratory Epithelium in Relation to Selected Diseases and Environmental Factors" has been submitted to the Public Health Service, although the entire study has not yet been published. I am speaking today on my own authority. My colleagues deserve the credit for my information but no responsibility for my interpretations.

The principal objective of that study was to determine the relationship of observed changes in the bronchial epithelium to (*a*) smoking, (*b*) air pollution as reflected in residence and occupation and (*c*) other variables including age, sex, race, and disease, especially lung cancer. Reports of other investigators, before and since this study began, have approached the same problem with disparate findings. Reference has been made to many of these in the Report of the Advisory Committee to the Surgeon General of the Public Health Service on "Smoking and Health" (Public Health Service Publication No. 1103, pp. 167–173). The very circumspect conclusion of that report concerning this evidence may be overlooked by some in their effort to find a final answer to the question of the role of smoking in lung cancer; namely, that "It may be concluded on the basis of human and experimental evidence that *some* of the advanced epithelial hyperplastic lesions with many atypical cells, seen in the bronchi of *some* cigarette smokers are *probably* premalignant" (the italics are mine). Even this restrained statement goes further than the results of my study of the data would warrant. The crux of the matter is the identification of "premalignant" changes.

The concept of premalignant lesions is not new but it has had a prolonged and difficult birth. It is reasonable to conceive of cancer being preceded by some *precancerous* state since it is known that in many instances there is a long lag between the time of exposure to a carcinogenic agent and the advent of the cancer. Several examples are known of pathological abnormalities that are followed with significant frequency by cancers at the same site. The best document examples of this phenomenon are in the skin and mucous membrane of the mouth. There is also strong evidence of a recognizable precancerous stage in the development of cancer of the uterine cervix and of the alimentary tract. The evidence that these lesions are precancerous is the *relatively* high frequency with which cancer develops in them. It is by no means *inevitable* that cancer develops in them. An incidence of cancer development in even 20 percent of such lesions is regarded as extremely strong evidence of their precancerous nature. The chief difficulty in establishing the incidence of cancer development in such lesions is that they must be examined continuously or serially over a considerable period of time without modifying their course in order to observe their outcome. This has rarely been done and, indeed, it is impossible to do it in any post mortem or other retrospective study.

A related concept is that of preinvasive cancer or carcinoma-in-situ. The hallmark of cancer is its invasiveness of other tissues upon which its major serious consequences depend. It is reasonable to expect that early in the course of cancer development there may be a more or less prolonged period of its growth before it spreads to an invades other tissues. This expectation is realized in the well-known example of the transformation of cervical epithelium into a structure resembling cancer in all other respects excepting that it remains in situ; i.e., in place in the epithelium, and does not invade the deeper tissues. The confirmation of its essentially cancerous nature, however, depends ultimately upon the demonstration of its invasion after more or less prolonged observation. A deliberate experiment of this type has been carried out in Denmark (Petersen: Acta Radiologica 38, 49, 1952) with the result that some 26 percent of the cases with "carcinoma-in-situ" developed invasive cancer within 5 to 12 years. It is a fine point of judgment whether to regard these lesions as cancerous or precancerous, therefore, but in either event their practical significance is the same.

What then do we know of precancerous lesions and preinvasive cancer of the lungs? It is significant, I think, that during the past 30 years while the widespread interest in carcinoma-in-situ of the uterine cervix has flourished there has been no comparable experience with a similar preinvasive stage in the development of bronchial cancer. A few investigators have stressed its existence but there continue to appear in the literature reports of single or few cases with the diagnosis of carcinoma-in-situ of the bronchus as testimony to the rarity of the condition in the average pathologist's experience. Any large experience must perforce be derived from postmortem studies since the bronchial epithelium is not sufficiently accessible to permit adequate serial observations during life. Two observations, at most, may be made in those cases in which a lung is removed surgically and this is followed by postmortem examination.[1]

Our only recourse in this situation is to establish an association between the parameters in question and then to attempt a judicious interpretation of any correlations discovered. Such an association has been sought, on the one hand, between lung cancer and certain lesions of the bronchial epithelium and, on the other, between the same lesions and a history of smoking or other personal or environmental factors. The nub of our problem is that the primary observations on which an association must be established are, to a considerable degree, subjective interpretations. Discrepancies between the observations of different examiners of the same material are so great (vd. Wilson and Burke, 1957) as to seriously reduce the accuracy of our information. Comparing the observations of different examiners on different material becomes a formidable challenge, indeed.

The joint study, in which I served as the coordinator during the final stages, involved the examination and correlation of pathological and epidemiological data of 2,339 autopsied cases from 12 geographical areas (vd. appended list of participating institutions). These included subjects of all ages (after infancy) and both sexes. They had suffered from a wide variety of diseases represented by 480 different dianoses. Some 35 percent of the patients had cancer and one quarter of those had cancer of the respiratory tract. There were 203 cases of cancer of the lung or bronchus. Two-thirds of the subjects had lived in large cities (greater than 100,000 population) and at least 60 percent of them had been employed in occupations about which some suspicion of significant exposure to air pollutants might be entertained. About 80 percent of the male subjects had been smokers and at least half of these had smoked heavily for more than 20 years. Only about 40 percent of the female subjects had smoked; fewer than 20 percent of them had smoked heavily and fewer than 10 percent for as long as 20 years.

The correlation of the pathological lesions found with such a large number of variables in the population studied was a major feat of statistical analysis. Our consultant statistician, Prof. Lincoln E. Moses of Stanford University (coauthor of "Elementary Decision Theory," John Wiley & Sons, New York, 1959) chose the method of multiple regression to analyse these relationships. He made a separate study of each city so that the significant correlations represent, in essence, the repeated confirmation of a finding. A broad statement of the results may be made that some abnormality of the bronchial epithelium was most closely correlated with age, sex, and amount of smoking. There was also an overall

[1] This is not to deny the usefulness of bronchoscopic examination for the diagnosis of certain types of lesion for which standards of diagnosis are established. We are concerned here with the establishment of the standards which requires a more extensive examination than bronchoscopic biopsies generally permit.

correlation of the presence of some abnormality of the bronchial epithelium with lung cancer, but the correlation of this diagnosis with the two commonest types of epithelial lesion (hyperplasia and metaplasia) was not strong. These findings fall short of confirming the results of Auerbach and others who have imputed a dominant role of smoking in the causation of all these lesions.

Most important to our present inquiry, the lesions that most regularly have been regarded by other investigators as precancerous or as preinvasive cancer were found so rarely that no statistical correlation with smoking or other epidemiological variables could be made. Carcinoma-in-situ was diagnosed in only 26 cases divided between 9 cities. Twenty of these had invasive lung cancer. The other six cases were uniformly spread among the smoking classes from a nonsmoker to the heaviest smoker. The extent of the "carcinoma-in-situ" bore no relationship to the smoking class.

Atypical epithelium, of the sort which has given rise to the greatest disagreement in interpretation among investigators, was diagnosed with high variability by the different pathologists. In one city it was not diagnosed at all. In the rest it was diagnosed in from 1 to 27 percent of all cases. In 6 of the 11 cities it was much more frequent in the cases with lung cancer than it was in those without lung cancer. (In one the reverse was true.) It was found in 15 of the 26 cases with the diagnosis of "carcinoma-in-situ." This type of lesion may qualify, by its association, as the much sought precancerous stage in the development of bronchial cancer. We are much interested, therefore, in its relationship to smoking. In order to assess this, a tabulation has been made to show the incidence of atypical epithelial lesions in nonsmokers and in smokers of various classes. Cases with lung cancer were omitted from this tabulation because they were already known to have a positive correlation with atypical metaplasia and their smoking habits would have biased the distribution of smoking classes among the whole series. Among 2,136 cases without lung cancer, 190 had a diagnosis of atypical metaplasia, and overall incidence of this lesion of 8.9 percent. Among 1,105 smokers the incidence of the lesion was more than twice that among 778 nonsmokers and there was a small increment in incidence among the heavier as compared to the lighter smokers. However, the point of this study is to estimate the reproducibility and hence the accuracy of findings and so we took a look at the results in each city in turn. In only 5 of the 12 cities was the lesion diagnosed with sufficient frequency to give any basis of comparing the smoking histories. In each of the 5 cities with 10 or more cases of atypical metaplasia, there was a higher incidence of the lesion among the smokers than among the nonsmokers and the difference on the average amounted to about 50 percent more cases. In the other seven cities the incidence of the lesion was insignificantly different between the smokers and nonsmokers.

We must, therefore, seek the reason for the differences in the results in the several series of cases. It was decided to eliminate the variability of the pathologists by having a portion of the cases reexamined by one pathologist according to more sharply defined standards. For this purpose the cases of lung cancer from six of the cities having the largest number of such cases, were matched with controls from the same city according to age, sex, race, and date of death. In this way several of the other strongest variables were eliminated together with the variable of the pathologist. The result was a reduction in the diagnosis of atypical lesions to one-fifth its incidence in the larger series.[2] In only eight cases distributed among three cities was this diagnosis made. Five of these cases had lung cancer. One of them was a nonsmoker. The smoking histories were unknown in the three cases without lung cancer. Thus, we had no basis for assessing the correlation of this lesion with smoking.

The significance of this study has been to raise a serious question as to the strength of the association between the abnormalities of the bronchial epithelium and the variables investigated. All these lesions tend to vary together and there is a weak correlation between the sum total of them and smoking. There is grave doubt as to the identification of precancerous lesions of the bronchus and a demonstrated lack of agreement among experienced pathologists in the recognition of lesions that are suspected of being precancerous. As a result of these vicissitudes the interpretation of the correlations is open to question.

In summary, it may be said that our efforts to relate pathological lesions of the bronchial epithelium to lung cancer, on the one hand, and to smoking and

---

[2] It is highly unlikely that a difference in sampling could have produced this result. It is almost certainly a result of a difference in judgment between the different pathologists examining the same material.

other environmental and medical factors, on the other, have met with limited success. The epithelial lesions most strongly correlated with lung cancer have not been strongly correlated with smoking in cases without lung cancer. The correlations in this study have depended upon the reproductibility of observations among a large number of pathologists and it is hoped that what has been sacrificed in precision by this method may have been gained in accuracy.

I will close with a quotation from that venerable statistician, Prof. Edwin B. Wilson (vd. Wilson & Burke, 1960) who said "The distinction between precision and accuracy, between accidental and systematic errors * * * is not emphasized as much as it should be * * * although sciences advance by introducing better definitions and better methods, and thus reduce guesswork, estimate, and personal opinion to narrower limits, none has succeeded in eliminating them, or is likely to, and least of all those whose subjects require the use of statistics in complicated situations in which measurement and even classification is far from precise, where causation is not known but sought, and error too often has social implications of right or wrong instead of merely its scientific significance."

The respiratory epithelium in relation to selected diseases and environmental factors

Pathologist	Institution	Hospital or office	Location
R. W. Weller, M.D.	Hahnemann Medical College.	Hahnemann Hospital	Philadelphia.
		Chester County Hospital	West Chester.
T. C. Laipply, M.D.	Northwestern University	Wesley Memorial Hospital	Chicago.
K. R. Cross, M.D.	State University of Iowa	Veterans' Administration Hospital.	Iowa City.
M. Kuschner, M.D.	New York University	Bellevue Hospital	New York.
W. H. Carnes, M.D.	Stanford University	Stanford-Lane Hospital	San Francisco.
H. R. Pratt-Thomas, M.D.	Medical College of South Carolina.	Roper Hospital	Charleston.
D. M. Connors, M.D.	University of Wisconsin	State University Hospital	Madison.
E. M. Butt, M.D.	University of Southern California.	Los Angeles County Hospital.	Los Angeles.
R. L. Holman, M.D.	Louisiana State University	Charity Hospital	New Orleans.
K. P. Knudtson, M.D.	University of Washington	Veterans' Administration Hospital.	Seattle.
R. S. Fisher, M.D.	University of Maryland	Medical examiner office	Baltimore.
W. O. Russell, M. D.	University of Texas	M. D. Anderson Hospital	Houston.

References

Carnes, W. H. (1961) "The Respiratory Epithelium of Patients With Lung Cancer." In the Morphological Precursors of Cancer, Proc. Internat. Conf., University of Perugia.

Cross, K. R., Walz, D. V., Palmer, G. K. and Warner, E. D. (1961) "The Tracheobronchial Epithelium and Changes Related to Smoking." J. Iowa Med. Soc. 51: 137–140.

Knudtson, K. P. (1960) "The Pathologic Effects of Smoking Tobacco on the Trachea and Bronchial Mucosa." Amer. J. Clin. Path. 33: 310–317.

Reimann, S. P. (1960) "The Pathologic Anatomy of the Bronchial Tree and Lungs. Methods Used for a Cooperative Study." Arch. Path. 70: 757–762.

Weller, R. W. (1953) "Metaplasia of Bronchial Epithelium. A Postmortem Study." Amer. J. Clin. Path. 23: 768–774.

Wilson, E. B., and Burke, M. H. (1957) "Some Statistical Observations on a Cooperative Study of Human Pulmonary Pathology." Proc. Nat. Acad. Sc. 43: 1073–1078.

Wilson, E. B., and Burke, M. H. (1959) "Some Statistical Observations on a Cooperative Study of Human Pulmonary Pathology." II. Proc. Nat. Acad. Sc. 45: 389–393.

Wilson, E. B., and Burke, M. H. (1960) "Some Statistical Observations on a Cooperative Study of Human Pulmonary Pathology." III. Proc. Nat. Acad. Sc. 46: 561–566.

Curriculum Vitae

Date of Birth: November 2, 1909.
Place of Birth: Ft. Worth, Tex.
Degrees:
1932: A.B., Columbia University.
1936: M.D., Johns Hopkins University.

Training:
1936–38: Assistant resident fellow and resident, pathology, Baltimore city hospitals.
1943: On leave, fellow, Saranac Laboratory of the Edward L. Trudeau Foundation (director, L. U. Gardner).
1962–63: On leave, Commonwealth fellow, Bland-Sutton Institute of Pathology; the Middlesex Hospital Medical School, London (laboratory of Dr. M. A. Epstein).
Teaching appointments:
1938–39: Associate in pathology, Johns Hopkins University.
1939–41: Instructor in pathology, Columbia University.
1941–45: Assistant professor of pathology, Stanford University.
1945–47: Associate professor of pathology, Stanford University.
1947–50: Assistant professor of pathology, Johns Hopkins University.
1950–51: Associate professor of pathology, Johns Hopkins University.
1951–55: Associate professor of pathology, Stanford University.
1955–56: Professor of pathology, Stanford University.
1956– : Professor of pathology and head of department, University of Utah.
Hospital appointments:
1939–41: Assistant pathologist, the Presbyterian Hospital, New York.
1947–51: Pathologist, the Johns Hopkins Hospital, Baltimore.
1956–65: Pathologist-in-chief, Salt Lake County General Hospital, Salt Lake City.
1956– : Chief consultant in pathology, Veterans' Administration Hosptal, Salt Lake City.
Medical and scientific consultantships:
1946–56: Consultant to the Johns-Manville Corp.
1946–56: Consultant to the Great Lakes Carbon Corp.
1958–59: Consultant to the Air Pollution Division, Public Health Service.
1962– : Consultant to the Surgeon General, Public Health Service.
Licensures for practice of medicine and surgery: Maryland, 1937; California, 1941; Utah, 1956.
Certification by the American Board of Pathology: Pathological anatomy, 1946.
Professional scientific and honorary society memberships: American Association for the Advancement of Science; American Association of Pathologists and Bacteriologists; American Medical Association; American Society for Experimental Pathology; Histochemical Society; International Academy of Pathology; Johns Hopkins Medical and Surgical Association; Salt Lake County Medical Society; Society of the Sigma Xi; Utah Society of Pathologists; Utah State Medical Association; Western Society for Clinical Research.

BIBLIOGRAPHY

1. Effect of Testosterone proprionate on the development of tuberculosis in immature male guinea pigs. Bull. Johns Hopkins Hosp., *66*, 297, 1940. W. H. Carnes and G. R. Biskind.
2. Androgenic assay of human fetal adrenal. Proc. Soc. Exp. Biol. and Med. *45*, 502, 1940. W. H. Carnes.
3. The present incidence of tuberculosis. Am. J. Path., *17*, 632, 1941. W. H. Carnes.
4. Effects of desoxycorticosterone acetate in the albino rat. Endocrinology, *29*, 144, 1941. W. H. Carnes, C. Ragan, J. W. Ferrebee and J. O'Neill.
5. Replacement of potassium by sodium in muscles of normal dogs receiving desoxycorticosterone aceate. J. Clin. Invest., *20*, 445, 1941. J. W. Ferrebee, D. Parker, W. H. Carnes, M. K. Gerity, D. W. Atchley, and R. F. Loeb.
6. Certain effects of desoxycorticosterone; development of "diabetes insipidus" and replacement of muscle potassium by sodium in normal dogs. Am. Jour. Physiol., *135*, 230, 1941. J. W. Ferrebee, D. Parker, W. H. Carnes, M. K. Gerity, D. W. Atchley, and R. F. Loeb.
7. Present incidence of tuberculosis infection. Bull. Johns Hopkins Hosp., *70*, 101, 1942. W. H. Carnes.
8. Skeletal changes associated with erythroblastosis foetalis. Jour. Pediatrics, *21*, 80, 1942. R. H. Follis, Jr., D. Jackson, and W. H. Carnes.
9. Treatment of hypoparathyroidism. Stanford Med. Bull., *1*, 61, 1942. W. C. Cutting, R. W. Wells, and W. H. Carnes.

10. The volume of the parathyroid glands in relation to dietary calcium and phosphorus. Proc. Soc. Exp. Biol. and Med., *51*, 314, 1942. W. H. Carnes, A. M. Pappenheimer, and H. C. Stoerk.
11. Parathyroid function in the hypophysectomized rat. Am. Jour. Physiol., *139*, 188, 1943. W. H. Carnes, J. Osebold and H. C. Stoerk.
12. Obstruction of the hepatic veins (Chiari's syndrome). Am. Jour. Med. Sc., *208*, 470, 1944. C. D. Armstrong and W. H. Carnes.
13. Relation of dietary calcium-phosphorus ratio to serum calcium and to parathyroid volume. Jour. Nutrition, *29*, 43, 1945. H. C. Stoerk and W. H. Carnes.
14. Pathological results in cases of bacterial endocarditis treated with penicillin. Stanford Med. Bull., *4*, 78, 1946. W. H. Carnes and C. M. Tinsley.
15. Serologic reactions of patients with sarcoidosis to antigens of Mycobacterium tuberculosis. Am. J. Path., *24*, 697, 1948. W. H. Carnes and S. Raffel.
16. The syndrome of pulmonary stenosis with patent foramen ovale. Am. J. Med., *6*, 3, 1949. A. Selzer, W. H. Carnes, C. A. Noble, Jr., W. H. Higgins, Jr., and R. O. Holmes.
17. The types of pulmonary stenosis and their clinical recognition. Mod. Concepts of Cardiovascular Disease, *18*, 45, 1949. A. Selzer and W. H. Carnes.
18. A comparison of sarcoidosis and tuberculosis with respect to complement fixation with antigens derived from the tubercle bacillus. Bull. Johns Hopkins Hosp., *85*, 204, 1949. W. H. Carnes and S. Raffel.
19. The demonstration of an effect of parathyroid extract on bone matrix. Am. J. Path., *26*, 736, 1950. W. H. Carnes.
20. Lack of correlation between tuberculin sensitivity and specific antibody formation induced by BCG in sarcoidosis. Am. J. Path. *27*, 743, 1951. W. H. Carnes, J. B. McKewen, A. M. Fisher and S. Raffel.
21. Reabsorption of bone matrix induced by parathyroid hormone. Bull. Johns Hopkins Hospital, 1951, *88*, 566. W. H. Carnes, P. S. Rubin, and D. S. Bernstein.
22. Metachromasy of toluidine blue induced by nucleic acids. J. Am. Chem. Soc., *74*, 1423, 1952. N. Weissman, W. H. Carnes, P. S. Rubin, and J. Fisher.
23. Nuclear metachromasy. J. Nat. Canc. Inst. *12*, 240, 1952. W. H. Carnes, N. Weissman, and P. S. Rubin.
24. Desoxyribonucleic acid (DNA) content of tumor cells determined microphotometically. Fed. Proc. *11*, 410, 1952. W. H. Carnes, N. Weissman, and B. Goldberg.
25. A method to supplement microphotometry for the quantitative determination of desoxyribonucleic acid (DNA) in tissues. J. Nat. Cancer Inst. *13:* 265, 1952. W. H. Carnes, N. Weissman, and B. Goldberg.
26. The role of pulmonary stenosis in the production of chronic cyanosis. Am. Heart Journ. *45*, 382, 1953. A. Selzer and W. H. Carnes.
27. Effect of thioacetamide on the desoxyribonucleic acid content of liver cells. Federation Proc. *12*, 385, 1953. W. H. Carnes, D. S. Bernstein, and L. J. Rather.
28. Desoxyribose nucleic acid changes in the rat liver produced by thioacetamide: a microphotometric study. Bull. Johns Hopkins Hosp., *93*, 56, 1953. D. S. Bernstein, W. H. Carnes, and L. J. Rather.
29. Relation of nuclear desoxypentose nucleic acid content of mouse thymus cells to recovery from x-radiation. Federation Proc. *13*, 425, 1954. W. H. Carnes, B. R. Forker and E. Lier.
30. Pattern of nuclear desoxypentose nucleic acid content of thymic lymphomas induced by x-radiation. Proc. Am. Assoc. Cancer Res. *1*, (#2) 8, 1954. W. H. Carnes, B. F. Forker and E. Lier.
31. Hypothyroidism and hyperplasia of the thyroid in patients treated with cobaltous chloride. Am. J. Med. *17*, 107, 1954. J. P. Kriss and W. H. Carnes.
32. Alimentary tract in disseminated scleroderma with emphasis on small bowel. Arch. Int. Med. *94*, 61, 1954. H. L. Abrams, W. H. Carnes, and J. Eaton.
33. Hypothyroidism and hyperplasia of the thyroid in patients treated with cobaltous chloride. Stanford Med. Bull. *12*, 278, 1954. J. P. Kriss, W. H. Carnes and R. T. Gross.
34. The metachromasy of amyloid. J. Histochem. and Cytochem. *2*, 469, 1954. W. H. Carnes and B. R. Forker.
35. Bacterial endocarditis with repeatedly negative blood cultures. A clinical-pathological conference. Stanford Med. Bull. *12*, 266, 1954. L. A. Rantz, W. H. Carnes, and R. W. Bernhard.

36. Hypothyroidism and thyroid hyperplasia in patients treated with cobalt. J. Am. Med. Assoc. *157*, 117, 1955. J. P. Kriss, W. H. Carnes and R. T. Gross.
37. Diatomaceous earth pneumoconiosis. Stanford Med. Bull. *13*, 62, 1955. W. H. Carnes.
38. Further studies on lymphoma development in non-irradiated thymic implants in thymectomized, irradiated C57BL mice. Proc. Am. Assoc. Cancer Res. *2*, 27, 1955. H. S. Kaplan, M. B. Brown, B. B. Hirsch and W. H. Carnes.
39. The metachromasy of amyloid. A spectrophotometric study with particular reference to the dye: chromotrope bond. Laboratory Invest. *5*, 21, 1956. W. H. Carnes and B. R. Forker.
40. Indirect induction of lymphomas in irradiated mice. I. Tumor incidence and morphology in mice bearing non-irradiated thymic grafts. Cancer Research *16*, 422, 1956. H. S. Kaplan, W. H. Carnes, M. B. Brown and B. B. Hirsch.
41. Indirect induction of lymphomas in irradiated mice. II. Factor of irradiation of the host. Cancer Research *16*, 426, 1956. H. S. Kaplan, M. B. Brown, B. B. Hirsch and W. H. Carnes.
42. Indirect induction of lymphomas in irradiated mice. III. Role of the thymic graft. Cancer Research *16*, 429, 1956. W. H. Carnes, H. S. Kaplan, M. B. Brown and B. B. Hirsch.
43. Relation of lymphoma induction to cortical differentiation in thymic grafts in irradiated C57BL mice. Federation Proceed. *15*, 510, 1956. W. H. Carnes and H. S. Kaplan.
44. Histogenesis of lymphonas in irradiated C57BL mice bearing non-irradiated thymic grafts. Proceed. Am. Assoc. Cancer Res. *2* (2), 99, 1956. W. H. Carnes and H. S. Kaplan.
45. Alterations in chick thyroid function induced by cobalt. Endocrin. *59*, 555, 1956. J. P. Kriss, F. S. Greenspan, W. H. Carnes and W. Lew.
46. Basic protein in cytoplasm of Ehrlich ancites tumor cells. Federation Proceed. *16*, 353, 1957. W. H. Carnes and B. R. Forker.
47. A follow-up study of hereditary chronic nephritis. Arch. Int. Med. *102*, 733, 1958. G. T. Perkoff, C. A. Nugent Jr., D. A. Dolowitz, F. E. Stephens, W. H. Carnes, and F. H. Tyler.
48. Brisket Disease. I. General aspects of pulmonary hypertensive heart disease in cattle. Trans. Assoc. Am. Physicians *72*, 157, 1959. H. H. Hecht, R. L. Lange, W. H. Carnes, H. Kuida and J. T. Blake.
49. Occurrence of retinal pigmentation, ophthalmoplegia, ataxia, deafness and heart-block: Report of a case with autopsy findings. Am. J. Med. *29*, 888, 1960. B. V. Jager, H. L. Fred, R. B. Butler and W. H. Carnes.
50. Selective hypopituitarian with deficiency of anterior pituitary basophils: A case report. J. Clin. Endocrinol. & Metabolism *20*, 1269, 1960. G. T. Perkoff, K. Eik-Nes, W. H. Carnes and F. H. Tyler.
51. The dietary induction of cardiovascular lesions in swine. Clin. Research *9*, 62, 1961. G. S. Shields, W. H. Carnes, G. E. Cartwright and M. M. Wintrobe.
52. Vascular lesions in copper deficient swine. Federation Proceed. *20*, 118, 1961. W. H. Carnes, G. S. Shields, G. E. Cartwright and M. M. Wintrobe.
53. Connective tissue changes in aortas from pigs on a copper deficient diet. Federation Proceed. *20*, 160, 1961. N. Weissman, G. S. Shields and W. H. Carnes.
54. The respiratory epithelium of patients with lung cancer. Proceedings of II. International Cancer Conference: The Morphological Precursors of Cancer. Univ. of Perugia, 1962. W. H. Carnes.
55. Some properties of aortic elastin of copper deficient swine. Federation Proceed. *21*, 121, 1962. D. A. Kimball, W. F. Coulson and W. H. Carnes.
56. Studies in copper metabolism. XXXII. Cardiovascular lesions in copper deficient swine. Amer. J. Path. *41*, 603–21, G.S. Shields, W. F. Coulson, D. A. Kimball, W. H. Carnes, G. E. Cartwright and M. M. Wintrobe.
57. Cardiovascular lesions in copper deficient swine. II. Mechanical properties of the aorta. Lab. Invest., *11*, 1316–21, 1962. W. F. Coulson and W. H. Carnes.
58. Coronary artery lesions in copper deficient swine. Proceedings of IV Congress, International Academy of Pathology, Zurich, Switzerland 1962, p. 11. W. F. Coulson, W. H. Carnes.
59. Urethan induction of thymic lymphoma in C57BL mice. Nature, *194*, 588–89, 1962. Ruth G. Doell and W. H. Carnes.

60. Effects of elastase digestion and formic acid extraction on aortas from copper deficient pigs. Fed. Proc. *22*, 161, 1963. D. T. Reay, N. Weissman, and W. H. Carnes.
61. Cardiovascular studies on copper deficient swine. III. Properties of isolated aortic elastin. Exper. Molec. Path., *3*, 10–18, 1964. D. A. Kimball, W. F. Coulson and W. H. Carnes.
62. Cardiovascular studies on copper deficient swine. IV. Content and solubility of the aortic elastin, collagen and hexosamine. J. Biol. Chem. *238*, 3115–3118, 1963. N. Weissman, G. S. Shields and W. H. Carnes.
63. Cardiovascular studies on copper deficient swine. V. The histogenesis of the coronary artery lesions. Amer. J. Path., *43*, 1945–54, 1963. W. F. Coulson and W. H. Carnes.
64. Cardiovascular studies on copper deficient swine. VI. The mucopolysaccharide composition. J. Biol. Chem., *239*, 1960, 1964. A. Linker, W. F. Coulson and W. H. Carnes.
65. Cardiovascular studies on copper deficient swine. VII. Mechanical properties of aortic and dermal collagen. W. F. Coulson, N. Weissman, and W. H. Carnes. Lab. Invest. (in press).
66. Cardiovascular studies on copper deficient swine. VIII. Elastin content of aorta determined by elastase digestion and formic acid extraction. N. Weissman, D. T. Reay, W. F. Coulson and W. H. Carnes. Lab. Invest. (in press).
67. The amine oxidase of pig plasma in copper deficiency. II. Blaschko, F. Buffoni, N. Weissman, W. H. Carnes, and W. H. Coulson.

STATEMENT OF HENRY I. RUSSEK, M.D.

I am Dr. Henry I. Russek, former Director of Cardiovascular Research at the U.S. Public Health Service Hospital, Staten Island, N.Y., and currently Consultant in Cardiovascular Disease at that hospital. I am a fellow of the American College of Physicians, the American College of Cardiology, the Council on Clinical Cardiology of the American Heart Association, the American College of Chest Physicians, and the International College of Angiology. I am certified by the American Board of Internal Medicine and hold certification in the subspecialty of cardiovascular disease. I am the author of many publications concerned with disease of the heart. My qualifications and publications in greater detail are attached herewith.

RESEARCH INTO THE CAUSES OF CORONARY HEART ATTACKS

All authorities agree that coronary heart disease has a multi-factorial origin. In a continuing study since 1956 we have sought to determine the relative significance of various factors in the causation of coronary heart attacks. Today in the United States many persons in apparent good health are struck down, even before the age of 40, by a coronary attack. Careful study of these young people afford us an opportunity to assess the relative importance of the many factors held suspect in this disease. Our own study of 100 young coronary patients has revealed that emotional stress associated with occupational activity appears far more significant than heredity, dietary fat, tobacco, obesity or physical inactivity in the development of heart attacks. We found that 91 percent of our young coronary victims as compared with only 20 percent of healthy controls had been holding down two jobs, working more than 60 hours per week or experiencing unusual fear, insecurity, discontent, frustration, restlessness or inadequacy in relation to employment (table 1). No other factor considered showed such a striking disparity between the healthy and afflicted groups.

In order to test the apparent relationship between occupational (emotional) stress and coronary attacks new studies were undertaken to compare the prevalence of heart disease in selected occupational categories in which striking differences exist with respect to job responsibilities.

To date a survey has been carried out in over 25,000 professional persons in 20 occupational groups. General practitioners and specialists in medicine, dentistry, and law provided the major source of our material. Independent evaluations of qualified judges indicated that among physicians, stressfulness of occupation increases in the following order: dermatologists, pathologists, anesthesiologists, and general practitioners.

Among dentists, emotional stress was prejudged to increase in the following order: periodontists, orthodontists, oral surgeons and general practitioners.

For the attorneys, job responsibility was considered to increase in the following order: patent attorneys, lawyers in selected specialities, trial lawyers and general practitioners.

In addition to these groups comparison was made between security analysts and security traders on the New York Stock Exchange, and between certified public accountants, pharmacists and optometrists. From the completed returns it is clearly evident that a striking correlation exists between stressfulness of occupation and coronary heart disease (fig. 1).

TOBACCO STUDIES

In spite of clear statistical evidence that overindulgence in smoking is far more prevalent among candidates for coronary attacks than among normal controls there is at present little else to support a causal relationship between tobacco consumption and heart disease.

Statistical findings linking the tobacco habit to coronary disease afford no proof of a causal relationship since excessive smoking, like overeating and failure to obtain adequate exercise, is often an undeniable manifestation of psychological stress.

Thus, while each of these factors show a correlation with heart disease, emotional influences could alone be implicated in its causation. For example, "nail biting" could be far more common among coronary heart disease victims than among healthy controls but no one would seriously consider this habit as a causative factor.

Yet, the stress which underlies this nervous habit could well be an initiating or aggravating influence in coronary disease. Our data clearly indicate not only that the smoking habit is more prevalent in occupations of greater stressfulness, but also that heavy smoking is more frequent when tensions increase (fig. 2).

Obviously, if smoking is assumed to be an important factor in early disability and death from coronary attacks, and if the causative factor is something toxic in the tobacco, then we should expect to find the lowest occurrence of coronary attacks among persons who never smoked, a somewhat higher occurrence in those who have stopped, and increasingly high occurrence rates with advance in current exposure to the harmful elements in tobacco.

Our results do not conform to this hypothesis. In our series those who reported never to have smoked showed a greater frequency of heart attacks than those who stopped smoking before their attack or before the time of the questionnaire; if there was no attack (fig. 3).

These findings cast doubt upon the alleged role of smoking in the causation of coronary heart disease. The recognition of the importance of emotional factors in initiating or precipitating coronary attacks permits a logical explanation for the unexpectedly low occurrence of heart disease observed in former smokers.

The ability of such individuals to terminate the smoking habit reflects their unusual capacity for adapting to the stress of life and offers an explanation for their diminished vulnerability to coronary attacks.

From our studies to date it appears quite clear that tobacco consumption alone does not differentiate the smoker from the nonsmoker. There are marked differences between these groups in hereditary, constitutional and environmental characteristics which must be considered in the interpretation of any scientific data. From what is already known, are we justified in assuming that persons addicted to the use of narcotics, alcohol, or even the excessive intake of food are identical in all other respects to subjects not so addicted? New studies will undoubtedly clarify these issues with respect to the tobacco habit.

Current acceptance of a causal relationship between smoking and coronary heart attacks rests solely on statistical correlation. No evidence to date has excluded the possibility that, in the development of coronary disease, smoking may be but a symptom of the real cause. Data is presented which does not appear to conform to the concept that tobacco consumption predisposes to coronary attacks.

TABLE 1.—*Incidence of various factors in coronary and control groups*

	Number	Heredity (positive)	High-fat diet	Stress and strain (occupational)	Obesity	Tobacco (30 cigarettes plus)	Exercise
		Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
Coronary group	100	67	53	91	26	70	58
Control group	100	40	20	20	20	35	60
Ratio		1.7 to 1	2.7 to 1	4.6 to 1	1.3 to 1	2 to 1	1 to 1

FIGURE 1. CORONARY PREVALENCE BY AGE AND STRESS GROUP

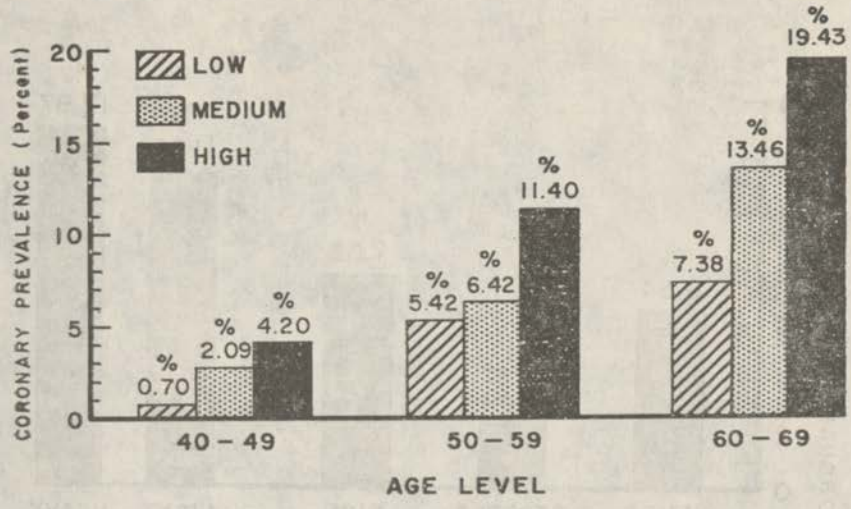


FIGURE 2. SMOKING INCIDENCE BY STRESS GROUP

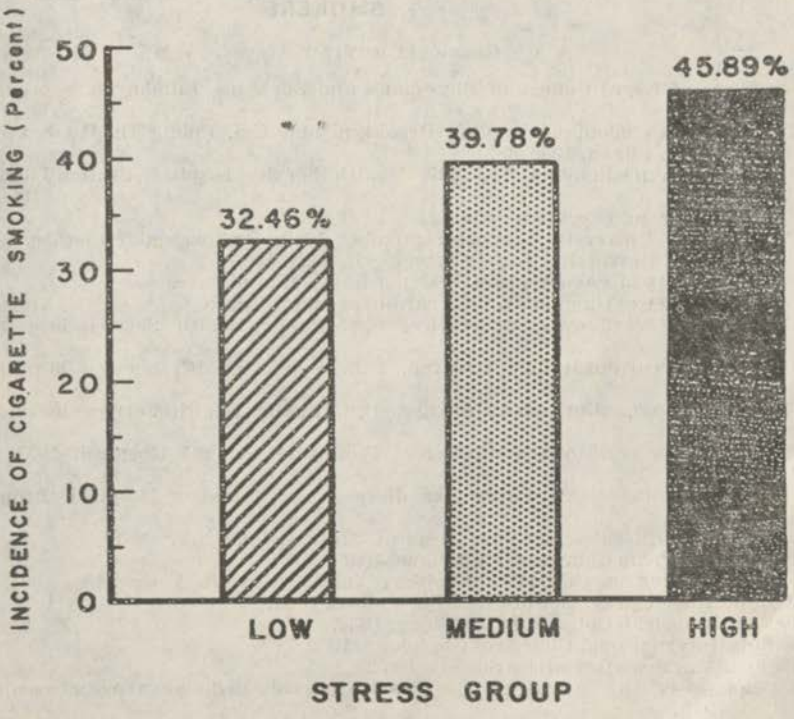
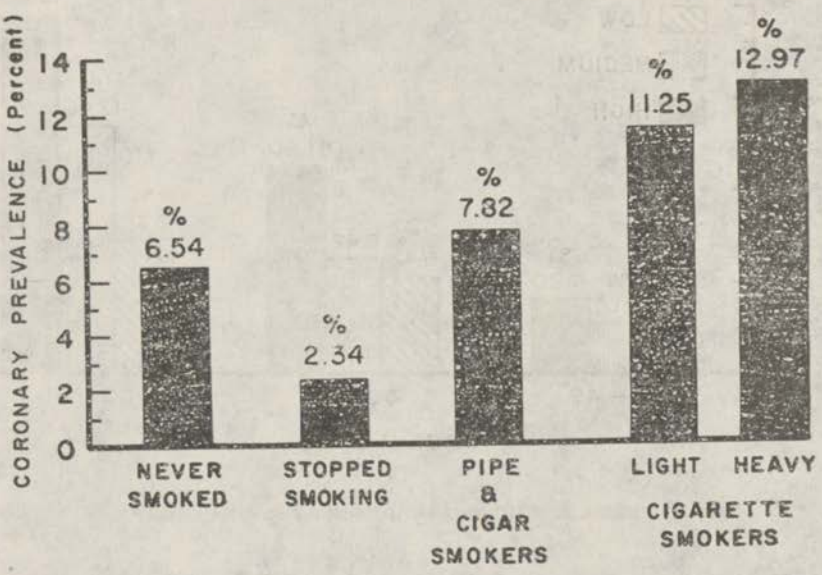


FIGURE 3. CORONARY PREVALENCE BY SMOKING HABIT



CURRICULUM VITAE

Graduate of Royal College of Physicians and Surgeons, Edinburgh, Scotland, 1936.

Internship: Caledonian Hospital, Brooklyn, and U.S. Public Health Service hospital, Staten Island, 1936–38.

Residency in medicine, U.S. Public Health Service hospital, Staten Island, 1938–41.

Postgraduate professional training:

Harvard University, August–September 1939, cardiovascular disease.
Harvard University, July 1940, endocrinology.
University of Pennsylvania, 1941, cardiovascular disease.
University of Cincinnati, 1942, cardiovascular disease.

Chief of the cardiovascular service, U.S. Public Health Service hospital, 1941–46.

Director of cardiovascular research, U.S. Public Health Service hospital, 1946–54.

Consultant in cardiovascular disease, U.S. Public Health Service hospital, 1956 to present.

Consultant in cardiovascular disease, Peninsula General Hospital, 1955 to present.

Senior attending in cardiovascular disease, St. Barnabas Hospital, Bronx, N.Y., 1964.

Associate cardiologist, Sea View Hospital, Staten Island, N.Y.

Fellow, American College of Physicians, 1945.

Fellow, Council on Clinical Cardiology, American Heart Association, 1963.

Fellow, American College of Chest Physicians, 1952.

Fellow, American College of Cardiology, 1952.

Fellow, International College of Angiology, 1962.

Fellow, American Geriatrics Society, 1962.

Diplomate of the American Board of Internal Medicine (cardiovascular disease), 1943.

Treasurer of the American College of Cardiology, 1961.

Senior member, American Federation of Clinical Research and American Therapeutic Society.

Member, Harvey Society, 1961.

PUBLICATIONS IN THE CARDIOVASCULAR FIELD

1. Interrelationship between tobacco consumption, emotional stress, and coronary heart disease, Geriatrics, June 1964.
2. Current Myths and Realities in Anticoagulant Therapy, Coronary Heart Disease, Medical Clinics of North America, March 1964.
3. The Therapeutic Role of Coronary Vasodilators, Proceedings of Hahneman Symposium.
4. Present Status of Anticoagulant Therapy in Acute Myocardial Infarction, Diseases of the Chest, May 1963.
5. Critical Choice of Drug Therapy in Angina Pectoris, GP, August 1963.
6. Emotional Stress and Coronary Heart Disease in American Physicians, Am. J. Med. Sc., 240: 711, 1960.
7. Environmental Factors, Coronary Artery Disease, Angiology, 12: 239, 196.
8. Comparative Responses to Various Nitrites in the Treatment of Angina Pectoris. J. Kan. C. SW Clin. Soc., 36: 14, 1960.
9. Emotional Stress in the Tiology of Coronary Heart Disease. Minn. Med., pp. 154, April 1961.
10. Clinical Application of Amino Oxidase Inhibitors in Angina Pectoris and Hypertension, J. Am. Ger. S., 9: 426. 1961.
11. Evaluation of the Nitrites in the Treatment of Angina Pectoris. Am. J. Med. Sc., 239: 478, 1960.
12. Are the Xanthines Effective in Angina Pectoris? Am. J. Med. Sc., 239: 187, 1960.
13. Meprobamate in the Treatment of Angina Pectoris., Am. J. Card., 3: 547, 1959.
14. Relative Significance of Heredity, Diet, and Occupational Stress in Coronary Heart Disease of Young Adults, Am. J. Med. Sc., 235: 266, 1958.
15. Emotional Factors in Atherosclerosis. Geriatrics, 14: 479, 1959.
16. Role of Heredity, Diet, and Emotional Stress in Coronary Heart Disease, J.A.M.A., 171: 503, 1959.
17. What's New in Congestive Heart Failure? Minn. Med., 42: 1443, 1959.
18. Emotional Stress and the Etiology of Coronary Artery Disease. Am. J. Card., 2: 129, 1958.
19. Effect of MER-29 on the Pain Experience and the Electrocardiographic Response to Standard Exercise in Patients with Coronary Artery Disease, Progress in Card. Dis., 2: 578, 1960.
20. Shoulder-Hand Syndrome following Myocardial Infarction. M.C. No. Amer., pp. 1555, November 1958.
21. Master Two-step Test in Coronary Artery Disease, J.A.M.A., 165: 1772, 1957.
22. Treatment of Coronary Thrombosis Followed by Myocardial Infarction with Particular Respect to the Use of Anticoagulants, Mod. Med., 25: 1, 1957.
23. Limited Use of Anticoagulants in Acute Myocardial Infarction, J.A.M.A., 163: 922, 1957.
24. The Place of Anticoagulant Therapy in Acute Myocardial Infarction, J. Am. Ger. S., V: 255, 1957.
25. Hazards in the Treatment of Acute Myocardial Infarction. Am. J. Med. Sc., 232: 403, 1956.
26. Evaluation of Drugs Used in the Treatment of Angina Pectoris by Means of Exercise-Electrocardiographic Tests. Annals of N.Y. Acad. of Sciences, 64: 533, 1956.
27. Drug Therapy in Angina Pectoris, J. Am. Ger. S., IV: 877, 1956.
28. Evaluation of Coronary Vasodilator Drugs, Postgrad. Med., 19: 562, 1956.
29. Evaluation of Status and Results of Management in Coronary Heart Disease, Minn. Med., 38: 391, 1955.
30. Anticoagulant Therapy—Its Present Status in Acute Myocardial Infarction., Conn. State Med. J., XIX: 939, 1955.
31. Cortisone in immediate Therapy of Apoplectic Stroke, J.A.M.A., 150: 102.
32. Long-Acting Coronary Vasodilator Drugs: Metamine, Paveril, Nitroglyn and Peritrate, Circulation, XII: 169, 1955.
33. Paradoxical Action of Glyceryl Trinitrate (Nitroglycerin) in Coronary Patients. J.A.M.A., 158: 1017, 1955.
34. Effects of Tobacco and Whiskey on the Cardiovascular System, J.A.M.A., 157: 563, 1955.
35. The Cerebral Manifestations and Complications of Hypertension: The Question of Cerebral Angiospasm. Transactions of Am. College of Card., V. 1955.

36. Objective Evaluation of Coronary Vasodilator Drugs. Am. J. Med. Sc. 229: 46, 1955.
37. Selective versus Routine Use of Anticoagulants in Acute Myocardial Infarction. J.A.M.A., 156: 1130, 1954.
38. The Place of Anticoagulants in Coronary Thrombosis, Lancet, pp. 910, 1954.
39. Selection of Patients for Anticoagulant Therapy in Acute Myocardial Infarction., Am. J. Med. Sc., 228: 133, 1954.
40. Risk of Thromboembotic Complications From Cortisone Therapy, Am. Heart J., 47: 653, 1954.
41. Cortisone in the immediate Therapy of Apoplectic Stroke, J. Am. Ger. S., 11: 216, 1954.
42. Editorial—Anticoagulant Therapy in Acute Myocardial Infarction. A.J. of Med., XIV: 651, 1955.
43. Choice of Coronary Vasodilator Drugs in Clinical Practice. J.A.M.A. 153, 1953.
44. Therapeutic Considerations and Controversial Issues in the Modern Management of Acute Myocardial Infarction., Am. J. Med. Sc., 225: 589, 1953.
45. Cortisone in Treatment of Shoulder-Hand Syndrome Following Acute Myocardial Infarction. A.M.A. Archives of Internal Med. 91: 487, 1953.
46. Anticoagulant Therapy in Acute Myocardial Infarction. A Survey of Specialists Opinions Concerning Indications. Results and Dangers. Am. J. Med. Sc., 225: 8, 1953.
47. A Critical valuation of Anticoagulant Therapy in the Treatment of Acute Myocardial Infarction. Med. Annals of District of Columbia, XXII: 7, 1953.
48. Prognosis in the "Uncomplicated" First Attack of Acute Myocardial Infarction. A.J. Med. Sc., 224: 496, 1952.
49. An Evaluation of Anticoagulant Therapy in the Treatment of Acute Myocardial Infarction., Am. Heart J., 43: 871, 1952.
50. Indications for Bishydroxycoumarin (Dicumarol) in Acute Myocardial Infarction, Circulation, V: 707, 1952.
51. Effect of Khellin in Coronary Artery Insufficiency as Evaluated by Electrocardiographic Tests., N.Y. State J. of Med., 52: 437, 1952.
52. Effect of Heparin in Cases of Coronary Insufficiency., J.A.M.A., 149: 1008, 1952.
53. The Present Status of Anticoagulant Therapy in Acute Myocardial Infarction. Quarterly Review of Med., 9: 1, 1952.
54. Age and Survival in Cases of Acute Myocardial Infarction. J.A.M.A., 147, 1951.
55. Significance of the Nitroglycerin Flicker Fusion Response in Normal Subjects and Patients with Cardiovascular Disease, Circulation, 1951.
56. Indications for Bishydroxycoumarin (Dicumarol) in Acute Myocardial Infarction., J.A.M.A., 145, 1951.
57. Prophylactic Value of Papaverine in Insulin Shock Therapy. N.Y. State J. of Med., 50, 1950.
58. One Hundred Percent Oxygen in the Treatment of Acute Myocardial Infarction and Severe Angina Pectoris. J.A.M.A., 144, 1950.
59. The Influence of Insulin Shock Therapy on the Electrocardiogram. Am. Heart J., 39, 1950.
60. Alcohol in the Treatment of Angina Pectoris., J.A.M.A., 143, 1950.
61. The Syndrome of Bernheim as a Clinical Study. Circulation 1, Part II,1950
62. Influence of Saline, Papaverine, Nitroglycerin and Ethyl Alcohol in Electrocardiographic Response to Standard Exercise in Coronary Disease. Circulation, 1: 700, Part II, 1950.
63. Papaverine in Epilepsy. N.Y. State. J. of Med., 49, 1949.
64. Penicillin in Cardiovascular Syphilis., N.Y. State J. of Med., 49, 1949. Twenty additional publications prior to 1949.

STATEMENT OF DR. DARRELL B. LUCAS

My name is Darrell B. Lucas. I am chairman of the marketing area at the Graduate School of Business Administration of New York University. I received my Ph.D in psychology at New York University in 1928, and I am a licensed psychologist in New York State. I taught at Iowa State University before joining the faculty of New York University in 1930. I served as chairman

of the marketing department at the undergraduate school of commerce from 1950 to 1961, and became chairman of the marketing area at the graduate school of business administration in September of last year.

From 1944 to 1959, I was technical director of the Advertising Research Foundation, and I have been a research adviser to Batten, Barton, Durstine & Osborn, a leading advertising agency in New York, since 1943. I am the coauthor of "Measuring Advertising Effectiveness" (1963), "Advertising Psychology and Research" (1950), and "Psychology for Advertisers" (1930). In addition, I have contributed numerous articles to professional journals on advertising psychology and advertising research. My professional interests have centered on the function and measurement of advertising.

The Federal Trade Commission has issued a rule which would require cigarette manufacturers to include in advertising and on package labels a statement to the effect that cigarette smoking is dangerous to health. This proposal raises unprecedented questions with regard to the nature and purpose of advertising. These questions should be carefully analyzed before a final decision is made. This statement is submitted to the committee to present my views on the proposal to require a warning in advertising.

I should say at the outset that I am not a medical expert, and I am therefore not in a position to make any judgment on the accuracy of the conclusion of the Surgeon General's Advisory Committee that cigarette smoking is a sufficient health hazard to warrant remedial governmental action. For the purposes of discussion, I have assumed the accuracy of this conclusion. My comments are directed only to the question of the desirability of the remedial action with respect to advertising that has been proposed.

I

The proposed requirements relating to warnings in cigarette advertising should be appraised in light of certain basic principles of advertising and marketing which may seem obvious, but which may be overlooked.

1. Advertising is a promotional activity. Favorable promotion of the advertised brand is the very purpose of the advertising expenditure.[1] Examination of current advertising will quickly reveal that all messages perform this promotional function.

2. By tradition and practice, an advertising message emphasizes the positive features of the sponsoring brand. It does not undertake to describe the brand in every respect, and it seldom undertakes to present a complete, objective report.

3. The consumer understands that advertising messages are biased in favor of the brand. In fact, consumers frequently view advertising skeptically and discount the enthusiasm of the advertiser and the promotional bias in his message.

Because consumers are used to dealing differently with advertising claims than with editorial substance and program content, advertising messages are required by most media and, in the case of broadcasting, by Federal law, to be clearly identified as such.[2] If the message itself is not obviously a paid commercial, a statement to this effect must be included. The ban on subliminal advertising—advertising that would have been flashed on the television screen too rapidly to be consciously perceived—is an example of this requirement. Identification of a message as an advertisement is a signal well understood by consumers to treat the representations as biased and self-serving.

4. Advertisements are legally required to avoid misstatement or exaggeration of facts.[3] On subjective claims, such as those regarding taste, beauty or prestige, a degree of trade puffery has traditionally been permitted and is expected. Because the consumer knows that advertisements are intended to promote the sponsoring brand, he does not expect an unfavorable postscript, such as a health warning in all cigarette advertisements. The situation may be accurately com-

---

[1] "Advertising * * * includes all sorts of public messages for *commercial purposes, paid for and avowed by those who expect to profit from them.*" G. B. Hotchkiss, "An Outline of Advertising" 3 (1950). [Emphasis supplied.]

[2] Sec. 317(a) of the Federal Communications Act, 47 U.S.C., sec. 317(a) (as amended, 1960).

Emphasis on clear identification is found in the definition of advertising developed by the American Marketing Association: "Advertising is any paid form of nonpersonal presentation and promotion of ideas, goods, or services by an *identified sponsor.*" "Definitions of the American Marketing Association," 1960, p. 9 (1960). [Emphasis supplied.]

[3] Sec. 5 of the Federal Trade Commission Act, 15 U.S.C., sec. 45 (1958).

pared with a letter of recommendation from a voluntary reference. Such a letter is expected to be honest but is not expected to stress the applicant's shortcomings. Similarly, unless the representations in an advertisement are misleading, the public is not deceived merely because the undesirable features of the product are not enumerated.

A warning concerning health hazards in cigarette advertising would contradict these basic advertising principles. It would compel the advertiser to stress negative aspects, and would therefore be inconsistent with the traditional functions of advertising in a free economy.

A requirement that cigarette manufacturers publicize information adverse to cigarette smoking would, I believe, set a precedent with far-reaching implications for advertising in general. There are many products for which similar requirements could be imposed and with similar justification. For example, automobile manufacturers could, with equal logic, be required in car advertising to state the rate of death or other serious injury connected with driving, distillers of alcoholic beverages could be bound to state the risk of liver ailments or the risk of accidental injury while under the influence of alcohol, and the manufacturers of private aircraft could be required to disclose in advertising that the rate of death per passenger-mile in private planes is 22 to 1 compared with commercial airlines.[4] Countless other examples could be noted. It is doubtful that requirements of this type would be of any value to the consumers or would be welcomed by them.

It is important to recognize that a requirement that a warning be included in every cigarette advertisement would set a dangerous precedent in product regulation. Regulation of the sale or usage of a product is normally accomplished by forbidding the sale of a product, or by requiring a prescription, or by voluntary codes imposed by media or adopted by the industry itself. Where codes are applied, they usually ban the use of specified words, phrases, and visual devices. Thus, a product may be banned or restricted to prescription sale or advertisers may be told that they cannot make or imply certain claims. But, to force an advertiser to make specified negative assertions in all of his messages is a basic contradiction of the advertising function.

II

In appraising proposed warning requirements in cigarette advertising, the crucial question is that of the effect of this requirement—the effect on cigarette smoking generally, the effect on cigarette brand competition, and the effect on advertising media.

Since there is no empirical evidence on which to judge the warning requirement, it is necessary to speculate as to its consequences. However, based on experience in analogous situations, certain predictions concerning the effect of requiring a health warning in cigarette advertising can be made with some degree of assurance.

First, if warning requirement is imposed in cigarette advertising, it is likely that it would have a more radical impact on radio and television than on newspapers and magazines. While the warning requirement would be detrimental to advertising in printed media, advertising in this form would probably continue. Readers quickly accustom themselves to scanning or skipping repeated slogans and phrases, even those that are prominently printed.

The situation in radio and television, however, is strikingly different. All else presumably would be suspended while the warning is broadcast. The spoken message requires the same amount of time for presentation, no matter how often the listener has heard it. The fact that he soon knows the statement by heart may give it increasing prominence as he anticipates each familiar phrase. The negative aspect of a repeated warning could easily vitiate the entire advertisement on radio or television, and disqualify those media for cigarette promotion.

Second a substantial reduction in cigarette advertising would not necessarily have a measurable impact on total consumption of cigarettes. Cigarette advertising is concerned more with popularizing a particular brand than with including people who do not smoke to do so. To put it another way, cigarette advertising is primarily addressed to people who already smoke and is designed to persuade them to smoke one brand in preference to another. The advertising practices in other industries underscore this point.

Advertising once built markets for such products as toothpaste and body deodorants. Today, however, toothpaste advertisers compete for a larger share

[4] FAA, Statistical Handbook of Aviation (1963 edition).

of a relatively steady market and stress one brand over another. Toothpaste advertising is not addressed to persons who do not use toothpaste because it is too costly to teach nonusers to acquire the tooth brushing habit. Specifically, it has been estimated that the average advertising expenditure necessary to cause one person who uses toothpaste to switch to the advertiser's brand of toothpaste is less than $1. But it may cost as much as $100 in advertising to cause one adult to begin using toothpaste. Advertising for liquors is even more competitive, with almost exclusive emphasis upon features of the brand. Similarly, cigarette advertising is essentially brand advertising.

Third, if a warning requirement in cigarette advertising were to be imposed and advertising were substantially to decline, as I have predicted, brand competition would be seriously injured. Advertising is the primary instrument of brand competition in the cigarette industry. If a warning requirement were to force a substantial reduction in cigarette advertising, market positions are likely to become frozen and individual brands would lose the potential for market growth. The successful introduction of a new brand without the benefits of advertising would be virtually impossible.

If the Congress determines that cigarette manufactures should be required to publish a health warning, it would be far more logical to place the warning on the cigarette packages rather than in advertisements. Traditionally, consumer packages carry instructions, and in many cases statements of warnings or limitations. For this reason the appearance of a warning on the package would not be as incongruous as it would in advertising. Since the consumer expects to find information of this type on the package, the communicative function of a warning could be achieved in this context without the undesirable consequences that might be associated with warnings in advertisements.

Another reason why it would be preferable to place a warning on the package, rather than in advertisements, is that every smoker is exposed to cigarette packages. Not every smoker is equally exposed to the advertising. If the introduction of a warning on advertisements should eliminate a great deal of advertising, consumer exposure to the message would decrease accordingly. A warning on the package, on the other hand, would function equally well regardless of any reduction in advertising.

IV

I should like to sum up my conclusions as follows:

1. A warning requirement in cigarett advertising is inconsistent with the basic function of advertising as we have known it. The public does not expect advertisements to publicize the negative aspects of the promoted brand.

2. Application of the warning requirement to advertising would probably cause a substantial reduction of cigarette advertising, without assurance of a significant or measurable reduction in smoking.

3. Requirement of a warning in advertising would cause disproportionate injury to television and radio broadcasting as advertising in these media would be most drastically impeded.

4. Since advertising is basic to competition in American business, and is a particularly important tool of competition in the cigarette industry, a reduction in cigarette advertising would seriously restrain competition in that industry.

5. A warning statement is more appropriate to the cigarette package since the consumer is accustomed to instructions and warning on packages.

STATEMENT OF DR. CHARLES WINICK

I am Dr. Charles Winick. I am a psychologist, with special interests in mass media, social problems, and health matters. I am a member of the faculty at New York University and have taught social psychology and research methods at the University of Rochester, Massachusetts Institute of Technology, City College of New York, and Columbia University. I have written 8 books and over 100 articles in professional journals and conducted many studies of social and consumer behavior and attitudes toward health problems. From 1959 to 1961, I was director of basic research for the J. Walter Thompson Co., the world's largest advertising agency.

My purpose in appearing before this committee is to discuss from the point of view of a psychologist the proposal pending before the committee that all cig-

arette advertisements contain a warning statement concerning the health hazards of cigarette smoking.

I should like to summarize my conclusions at the outset.

First, it is likely that a great many cigarette smokers would repress or "block out" a health warning, even when frequently repeated through cigarette advertisements. It is thus doubtful that imposition of a warning requirement would have any substantial effect on the overall level of cigarette smoking.

Second, for many of those smokers that would not ignore a warning in cigarette advertising, a warning is likely to have an effect that is the opposite of what is intended by its proponents. Although a warning may reduce smoking among some persons, it is also likely to increase the commitment of many adult smokers to the habit. There is also the likelihood that some young persons will begin to smoke cigarettes as a result of the warning.

Third, a warning in cigarette advertising would be inconsistent with the basic function of advertising. In the cigarette industry, competition is waged to an important degree through brand advertising. A requirement that cigarette advertising contain a health warning would reduce the effectiveness of cigarette brand advertising to such a point that it could not serve as an effective vehicle for cigarette brand competition. As a result, the public, to a substantial extent, would be deprived of the benefits of competition in the industry.

These conclusions are based on studies of how people respond to various kinds of communications, on how advertising is planned by its creators and how it is received by its audiences. I believe these conclusions to be valid even though we cannot point to a previous situation exactly analogous to this one.

I

The most important question in evaluating the proposed warning requirement is that of its effect on the public. Certain basic psychological principles are germane to this question. It is well established that a message that arouses anxiety beyond a critical point tends to be repressed by those to whom it is directed. In other words, a highly anxiety-producing message may not be an effective method of changing behavior. There can be little doubt that the warnings proposed are likely to develop a great deal of anxiety in many people who are exposed to them. A common method of avoiding or relieving this anxiety is to ignore the warning message.

What would be the effect of such a warning on those persons who did pay attention to it? Different kinds of people would respond to a warning statement in different ways. Undoubtedly, there is a group that would either stop smoking or would reinforce a prior decision to stop smoking. It is important to bear in mind, however, that the great majority of the public knows about the smoking and health controversy, and it is difficult to predict whether a warning in advertising would influence behavior of persons who already have such knowledge.

Another response to the proposed authoritative warning statement might be the boomerang effect: A message has a boomerang effect when it reinforces existing attitudes and produces reactions that are the opposite of those intended. (1)

One group that is especially likely to react negatively to any warning statement is the teenage population. Several decades ago, many young people began smoking because it was not an accepted activity in our society and represented an obvious avenue of rebellion. Today, with a majority of the adults in the United States smoking, it is no longer a symbol of nonconformity. (2) A warning in advertisements could, however, cause many teenagers to identify smoking with rebellion. Such identification may assist in the development of a new group of smokers, attracted by smoking as an opportunity for defying authority.

Although this would be exactly the opposite of the intent of the proposed message, comparative studies of the relative effectiveness of various educational programs designed to discourage smoking among students found that the authoritative approach was one of the least useful methods for doing so. (3) This may be one reason for the relative failure of the authoritative campaign in Great Britain to discourage young people from smoking. Although the campaign has been underway for several years, surveys in schools show that 35 to 55 percent of boys over 12, and 27 to 40 percent of girls over 12 are regular smokers. (4)

We do not know the underlying causes of the boomerang effect, but we can speculate that it is especially likely to occur in young people. For example, a study of effects on attitudes of an antinarcotics film, "The Man With the Golden

Arm," found that a considerable proportion of young people who had seen the film developed more favorable attitudes toward narcotics. (5)

Even among adults, cigarette smoking has long been associated with expressions of protest, and it was so associated in what may be one of the few situations in which advertising for cigarettes was linked with a warning. (6) In England in the 1930's, "Tufuma" brand cigarettes were introduced. The word "tufuma" suggests "you smoke," and the brand's advertising themes were "Everybody Smokes Tufuma," and "You Must Try Tufuma." The cigarette was a failure. A study revealed that at about the same time that Tufuma was introduced, "Abdullah" brand cigarettes purchased advertising space under the "No Smoking" signs in the London subways, and placed a sign reading "Not Even Abdulla" under them. The signs reading "No Smoking, Not Even Abdullah," helped to get the attention of those smokers to whom smoking represented a form of doing something forbidden. There were enough of them to make it a successful brand, while the Tufuma brand languished. A lesson suggested by this experience is that a negative message about cigarette smoking may have unexpected effects.

II

I have stated my conviction that the proposed warning would be of doubtful utility in reducing cigarette consumption on an overall basis and, indeed, it may have the opposite effect. A distinct question in evaluating the proposals to include warnings in ads concerns the effect of the warnings on competition in the industry. The question is raised because advertising is a primary tool of competition in the cigarette industry.

The competitive effect of a warning can best be understood in light of certain general observations concerning advertising. The goal of any advertiser is to communicate about his brand in a way that will cause the audience to buy it. This goal requires that the advertisement be a carefully conceived totality, in which every element contributes to the desired effect. Each detail of headlines, text, models, illustrations, color, and other factors must be carefully integrated into the finished message to enhance its impact. The finished advertisement is then placed in a context, carefully selected for its relevance to the advertising message. (7). Every attempt is also made to communicate an appropriate atmosphere for a product, so that the advertisement is as evocative as possible.

Great care in the preparation and placement of an advertising message is necessary because of the tremendously competitive nature of advertising. The average consumer in this country is exposed to perhaps as many as 700 advertising messages daily. The consumer of necessity screens out and ignores the great majority that are not of interest to him. Cigarette advertising containing a health warning would be seeking the attention of the very selective eyes and ears of consumers who are extremely alert to what they do not want to see and hear.

In light of this background, it would be safe to predict that many consumers would not pay attention to cigarette advertisments that included a health warning. Any statement that appears to be extraneous to the main theme of an advertisement is likely to be jarring to a consumer, to destroy the image or mood that the message is intended to create and to lead to a screening out of the entire advertisement. When the extraneous material deals with a subject that is as unpleasant as disease, it is likely to be especially destructive of the message.

We can expect that many consumers will not want to expose themselves to cigarette advertisements that contain any warning statement even though they know the possible hazards of smoking. Cigarette advertising—with a warning of the proposed type—would be so dissonant that it would handicap itself almost irretrievably in its effort to gain the attention of the consumer.

In another respect, a warning in cigarette advertising would weaken the impact of that advertising. One method of advertising any product where the outer appearance of all brands is similar is to stress the characteristics that are unique to each brand and that provide its special identity. But any attempt to stress differences among brands is likely to be largely canceled by the continuing repetition of the same statement in the advertising for all brands. The ability of advertising to communicate brand differences would thus be substantially undercut, and the impression created by the advertising could be the opposite of what it was intended to achieve.

In still another respect, the inclusion of the warning statement could impair the usefulness of cigarette advertising. It is likely that cigarette advertise-

ments that include warning statements would be ridiculed by becoming the butt of jokes. Such humor would certainly operate to blunt whatever advertising effectiveness might otherwise survive the warning. A number of advertising slogans have become identified with humor, and in some cases, the force of the ridicule was so great that the slogans were abandoned. (8)

In short, the imposition of a warning requirement is likely to cause a substantial reduction in cigarette advertising, and a blunting of the impact of the advertising that remains. The result would be to cripple competition in the industry, but this does not mean that there would be a direct reaction in terms of reduction of the level of cigarette consumption.

In the cigarette industry, advertising is almost exclusively an instrument of brand competition. Advertising messages are not in any respect directed to nonsmokers, but rather are designed to win over persons who smoke competing brands. While overall consumption will probably not be substantially affected by the elimination of advertising or the inclusion of health warnings in advertising, there will naturally be a very substantial lessening of competition in the industry as manufacturers will be unable to compete effectively in the existing market of cigarette smokers. Wherever effective competition is weakened, the public is likely to be the loser.

If it is the intent of Congress to communicate information about the possible health hazards of smoking, it is far more appropriate to include the warning on the package. The consumer has been conditioned to expect warnings about a product on its label or package. A warning is more consistent with a label than with an advertisement, and for this reason, it is more likely to receive positive attention in this context.

REFERENCES

(1) Carl I. Hovland, *et al.*, *Experiments in Mass Communication*. Princeton: Princeton Univ. Press, 1949, pp. 46–50.
(2) Daniel Horn, *et al.*, "Cigarette Smoking Among High School Students," *American Journal of Public Health*, 49, 1959, pp. 1497–1511.
(3) Daniel Horn, "Modifying Smoking Habits in High School Students," *Children*, 7, 1960, pp. 63–65.
(4) Anthony Carthew, "John Bull Goes Right on Smoking," *New York Times Magazine*, January 19, 1964, pp. 17–18, 65–66.
(5) Charles Winick, "Tendency System and the Effects of a Movie Dealing with a Social Problem," *Journal of General Psychology*, 68, 1963, pp. 289–305.
(6) Charles Winick, "A Realistic View of Motivation Research," in Dan H. Fenn, ed., *Management In A Rapidly Changing Economy*. New York: McGraw-Hill, 1958, pp. 178–184.
(7) Charles Winick, "Three Measures of the Advertising Value of Media Contest," *Journal of Advertising Research*, 2, 1962, pp. 28–33.
(8) Charles Winick, "A Content Analysis of Orally Communicated Jokes," *American Imago*, 20, 1963, pp. 271–291.

COMMONWEALTH OF PENNSYLVANIA,
DEPARTMENT OF HEALTH,
Harrisburg, April 14, 1965.

Hon. OREN HARRIS,
Chairman, Interstate and Foreign Commerce Committee,
House of Representatives,
Washington, D.C.

MY DEAR MR. HARRIS: Last week the House Interstate and Foreign Commerce Committee held hearings concerning labeling and advertising of cigarettes. I understand that a number of bills on this subject are being considered, including H.R. 3104 and H.R. 4007. Bills considered in the Senate on the matter include S. 547 and S. 555.

In regard to this legislation, may I first point out that at the 1964 annual meeting of the Association of State and Territorial Health Officers a recommendation was passed that, since cigarette smoking is a proven health hazard, the U.S. Public Health Service and the various State health departments need to develop comprehensive programs to help bring under control the habit of cigarette smoking. In Pennsylvania, we have been attempting to bring this about by an educational program.

I would, therefore, like to urge the passage of a Federal law which would assure that the people who smoke cigarettes would be able to read on the label of the cigarette package the dangers to their health they are facing by continual cigarette smoking. It would be advisable also to have such warning included in advertising material used for selling cigarettes.

There is a feature of H.R. 3104 and H.R. 4007 which I respectfully request be deleted. This feature is generally referred to as the "preemption approach." Included in the bills is a clause which would preclude a State or local jurisdiction from passing labeling or advertising requirements. This precluding would be effective whether or not action was taken at the Federal level. If there is Federal action, there is no need for State or local action, but should there be no Federal action, then each State should be permitted to take action on the matter. I would hope that this preemption clause could be removed from any legislation which might be passed on this subject.

If possible, I would appreciate this letter being considered as part of the testimony before the Interstate and Foreign Commerce Committee. If this is not possible, may I ask that you keep these thoughts in mind in determining the wording of the final bill?

Sincerely yours,

C. L. WILBAR, Jr., M.D.,
Secretary of Health.

[Telegram]

NEW ORLEANS, LA., *April 14, 1965.*

Representatives JAMES H. MORRISON,
House Office Building, Washington, D.C.:

It has come to our attention that the Rogers (Democrat, Texas) bill, the key House proposal under consideration in congressional hearings, differs from Senate bills by specifically proposing to withhold from the FTC and from State and local governments, as well as the right to consider any action relating to health warning on cigarette advertising. We feel that health warnings on cigarette labeling and advertising are indicated and correct in principle, but object to any Federal legislation that would withhold from State and local governments the right to consider any action relating to health warning on cigarette advertising.

T. N. ARMISTEAD, M.D.,
State Health Officer, Louisiana State Board of Health.
C. GRENES COLE, M.D.,
Secretary-Treasurer, Louisiana State Medical Society.

ROSWELL PARK MEMORIAL INSTITUTE,
NEW YORK STATE DEPARTMENT OF HEALTH,
Buffalo, N.Y., April 16, 1965.

Mr. OREN HARRIS,
Chairman, Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D.C.

DEAR MR. HARRIS: The staff of this institute are greatly interested in the deliberations of the Senate and the House of Representatives in relation to the Neuberger S. 547, the Magnuson S. 559, the Rogers H.R. 885, and the H.R. 3014 bills presently before the Congress. I strongly support the proposals of the Neuberger and Magnuson bills and feel that any acceptance of the proposals of Mr. Rogers would be extremely shortsighted. Mr. Rogers' attempt to seek preemption of subject matter at this time is inconsistent with the magnitude of the smoking and health problem and the great amount of scientific research presently underway. Most of the scientific and medical community is deeply conscious of the public health hazards of smoking and recognize it as probably the greatest public health problem of known cause in the country today. The 46,000 annual smoking-related lung cancer deaths are well known but there is early yet strong indications that there may be far more premature deaths from smoking related to heart disease than there is to lung cancer. The validity of this relationship will probably be established within the next 4 or 5 years. If this latter relationship of heart disease and smoking proves to be real, both the Congress and the Federal Trade Commission will have to review the present legislation with the intent of strengthening it.

On the other hand, there are many agencies that are attempting to devise filters and other means of making cigaretes safe. Should this area of research be successful, the Congress as well as the Federal Trade Commission might desire to review the present decisions in the light of these new scientific findings. As of this time, the accumulation of scientific data on smoking and health is sufficient to warrant the early passage of the Neuberger bill S. 547.

I respectfully submit this statement on behalf of the Cigarette Cancer Committee of Roswell Park and would be pleased to be advised of any further way in which we can assist in the passage of the Neuberger bill.

Sincerely yours,

GEORGE E. MOORE, M.D.

JOHNSON CITY PRESS-CHRONICLE,
Johnson City, Tenn., April 12, 1965.

Hon. OREN HARRIS,
Chairman of the Committee on Interstate and Foreign Commerce,
House Office Building, Washington, D.C.

DEAR CONGRESSMAN HARRIS: It has been brought to my attention that your committee has begun hearings on bills, some of which would impose special restrictions on the advertising of cigarettes.

As you no doubt know, the American Newspaper Publishers Association expressed its view in opposition to such restrictions in a communication dated July 2, 1964. The position of the ANPA and the majority of its member newspapers has not changed since that time.

Therefore, it will be appreciated if you will make certain that the original letter is made a part of the current hearing record.

Also, as a member of ANPA and a member of its Federal laws committee, I would like to point out that since last year there has been a new development. It is the National Cigarette Advertising Code, sponsored by the major manufacturers of cigarettes in the United States.

This code provides that advertising may not be used in any media, including newspapers, unless it has been submitted to the administrator and determined by him to be in compliance with the code. The code also bars the use of testimonials for endorsements from athletes and celebrities, if such use would have a special appeal to young people, and categorically prohibits all advertising designed to appeal to persons under 21. It is my request, sir, that you add this further expression of mine, that our association and its member newspapers believe the code is praiseworthy and that it provides self-policing by an important taxpaying segment of American industry. We believe the code process is deserving of an opportunity to prove its worth.

Respectfully submitted.

CARL A. JONES, *Publisher.*

CONNECTICUT HEALTH LEAGUE,
Hartford, Conn., March 29, 1965.

Hon. OREN HARRIS,
Chairman, Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D.C.

DEAR MR. HARRIS: The Connecticut Health League, in January of 1964, at its membership, meeting passed a resolution noting the scientific information supporting the evidence that cigarette smoking is a health hazard of significant proportions and suggesting that all possible methods be taken to disseminate this knowledge concerning the dangers of cigarette smoking. This resolution was the considered opinion of a substantial number of health agencies as this letterhead indicates.

It is my understanding that your committee is reviewing proposed Federal legislation on label warnings on cigarette packages in the form of H.R. 885 and H.R. 3014. After reviewing the language of these bills, the board of directors of the Connecticut Health League authorized this letter to inform you that the restrictions implied in these bills are such as to fail to allow full information concerning the hazards of cigarette smoking to be on the labels. This legislation, therefore, is not in keeping with the spirit of the resolution passed by the Connecticut Health League and not desirable legislation.

Sincerely yours,

MILTON GEYER, *President.*

AMERICAN PHARMACEUTICAL ASSOCIATION,
OFFICE OF THE EXECUTIVE DIRECTOR,
Washington, D.C., April 20, 1965.

Hon. OREN HARRIS,
Chairman, Interstate and Foreign Commerce Committee,
House of Representatives,
Washington, D.C.

MY DEAR MR. HARRIS: It is our pleasure to bring to your attention the positions and policies of the American Pharmaceutical Association as they relate to the topic of labeling and advertising of cigarettes—a subject on which your committee is currently holding hearings. We hope that you might include this letter in the record of your hearings.

As you know from previous testimony that we have presented to your committee, the American Pharmaceutical Association is completely representative of the pharmacists of this country, both vocationally and geographically. Through its house of delegates, in which all State pharmaceutical associations are represented, the association speaks for the pharmacists of the United States.

For 112 years, we have devoted our energy to maintain and achieve higher standards of professional practice as well as assuring the highest standards in public halth and patient safety. It is important to emphasize that the American Pharmaceutical Association is a professional society of individuals; it has no financial or business interest in any pharmaceutical product, manufacturer, wholesaler or drugstore. Its sole interest is public health.

For years, the association and its various sections and committees have been concerned with and interest in the problem of smoking and the effects thereof on health. Eleven years ago, at our annual meeting in Boston, an address was presented by E. Cuyler Hammond before our general session, and subsequently published in the September 1954 issue of the Journal of the American Pharmaceutical Association on "Smoking and Death Rates." That same year, we publicized through the pages of our Journal a proposal by the Federal Trade Commission on the adoption of advertising standards by the tobacco industry.

It should not be surprising therefore that our association read with great interest the 1964 Report of the Advisory Committee of the Surgeon General of the United States on "Smoking and Health" and gave wide publicity to this report in the pages of our Journal. This is consistent with our continuing policy of providing pharmacists with pertinent information on all health problems to the end that all pharmacists may have current authoritative information in counseling patrons on various public health matters. Based upon the recommendations in the Surgeon General's report, and upon the advice of our own Committee on Professional Relations, our house of delegates adopted the following resolution at our 1964 annual meeting:

"*Be it resolved*, That the American Pharmaceutical Association encourage pharmacists to educate young adults on the medical evidence implicating cigarette smoking as a causative factor in certain diseases and illnesses."

At the same time, our association was engaged in a national experimental study, financed by a community health services and facilities project grant (CH 55 9A–63) of the U.S. Public Health Services, to evaluate the pharmacy as a health education center. Upon the release of the Surgeon General's report, 1 of some 85 different health brochures which were distributed to the public through the 400 participating pharmacies in all sections of the country was the pamphlet by the American Cancer Society entitled "To Smoke or Not To Smoke." The results of this experimental study revealed that the pharmacist was second only to the physician as a source of family health information, and that the program provided the necessary stimulus for many more patrons to ask their family pharmacist about all types of health matters.

Since our 1964 annual meeting, the APhA Council authorized our association to officially join the National Interagency Council on Smoking and Health—a voluntary association of national agencies and organizations whose functions are to develop and implement effective plans and programs dealing with smoking as a health hazard. On April 8, you received testimony from Emerson Foote, chairman of this National Interagency Council on Smoking and Health, with which we concur wholeheartedly. At the recent meeting of our house of delegates in Detroit (April 2, 1965) the association was officially commended for its support of the interagency council, and the work in particular of our official representative, Dr. Thomas J. Macek, immediate-past first vice president and now

councilor of the association. The house of delegates, at the suggestion of our association's committee on public health, noted in particular "the great opportunity that lies ahead for both the interagency council as well as for the pharmacists of this country in helping to save lives by improving health."

The experimental program which we previously mentioned has now been expanded into a full program whereby pharmacies in all sections of the country are being established as health education centers; the new program, which officially began on April 1, 1965, has included among the first brochures being made available to the public the U.S. Public Health Service's 12-page pamphlet (Public Health Service Publication No. 1103-D) entitled "Summary of the Report of the Surgeon General's Advisory Committee on Smoking and Health." Furthermore, the newly established Academy of Pharmaceutical Sciences of the American Pharmaceutical Association is in the process of developing a slide-talk on "Smoking and Health" which will soon be available for pharmacists around the country to present before local lay audiences, particularly to high school and college groups. The association has also lent support to local groups who are active in health education programs of this type. Of particular note is the program in Pennsylvania where Arnold Snyder, one of our active members and a community pharmacist of Philadelphia, has successfully involved pharmacists in a comprehensive State educational program in cooperation with the department of health, the colleges of pharmacy, and the local chapters of the American Cancer Society, the American Heart Association, and the National Tuberculosis Association.

In this regard, we wish to emphasize that our association is not necessarily against the sale of cigarettes, but it is against the unrestrained promotion of cigarettes and the sale of cigarettes without adequate warnings to the consumer of their potential effects. This is particularly true of the use of cigarettes by our American youth. We therefore urge the speedy enactment of legislation requiring health warnings in cigarette advertising and on cigarette packages, much in the same manner that all potentially harmful drugs are properly required to carry warning on their use.

We particularly ask that your committee not approve any legislation which will prevent the Federal Trade Commission from carrying out its reaffirmed intention of requiring health warnings in cigarette advertising.

It seems to us unwarranted and unthinkable that there might be further delay in giving the American people adequate information about the hazards of cigarette smoking, and to this end we pledge our support.

Sincerely,

WILLIAM S. APPLE, *Executive Director.*

THE AMERICAN ASSOCIATION FOR THORACIC SURGERY,
St. Louis, Mo., April 13, 1965.

Mr. OREN HARRIS,
Chairman, Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D.C.

DEAR MR. HARRIS: I am enclosing a copy of a resolution passed at the recent meeting of the American Association for Thoracic Surgery. This is a subject of considerable interest to the association, including among its members all the leading thoracic surgeons in the country.

Yours very truly,

HENRY T. BAHNSON, M.D.

RESOLUTION

Whereas there is irrefutable evidence associating cigarette smoking with such lethal and disabling disorders as cardiovascular disease, pulmonary emphysema, and cancer of the lung; and

Whereas this evidence has accumulated largely from the observations of physicians and surgeons concerned with vascular diseases; and

Whereas the overwhelming evidence of alarming increase of cigarette-caused death and disability is most apparent to thoracic surgeons; and

Whereas the other branches of medicine and the public look to thoracic surgeons for leadership in dealing with this vast public health problem: Therefore be it

Resolved, That the American Association for Thoracic Surgery urge all its members to intensify an educational campaign directed toward the public in

general, and youth in particular, relative to the health hazards of smoking; and be it further

Resolved, That the association recommend to the Congress of the United States passage of legislation that will regulate advertising and require a warning label on merchandise as a necessary and important step in leading the citizens of the United States and the world toward an eventual understanding of this dangerous habit; and be it further

Resolved, That copies of this resolution be presented to the congressional committees which are involved with legislation in this field.

STATEMENT ON BEHALF OF THE TOBACCO WORKERS INTERNATIONAL UNION

This statement is filed on behalf of the Tobacco Workers International Union. The TWIU, whose headquarters are at 1522 K Street NW., Washington, D.C., is the principal labor organization in the tobacco industry, having collective bargaining agreements with all but one of the major tobacco manufacturing companies. These agreements cover 76 plants in 25 cities, and approximately 30,000 employees representing 43 companies. The plants, in the main, manufacture cigarettes, scrap chewing tobacco, pipe tobacco, snuff, as well as plug and other tobacco products.

It is obvious that any action by Congress with respect to the labeling or advertising of cigarettes could profoundly affect the level of employment, wages, and standard of living of our members. Such action could also, of course, have much broader repercussions, for the tobacco industry is important to the economy as a whole. As this committee knows, the tobacco industry has, since the first English settlements on this continent, played a vital role in the growth and development of our commercial life. Today millions of people depend in whole or in part on tobacco for their livelihood. Federal, State, and local taxes on tobacco run into billions of dollars. As one of America's principal exports, tobacco is an important weapon in the current battle to correct our balance-of-payments deficit.

The TWIU is sympathetic to the inquiry which this committee is conducting into the question of tobacco and health. Tobacco is a subject of controversy, and we think it is right and proper that all persons having views on the matter should have an opportunity to present them to Congress. At the same time, we oppose some of the particular proposals that have been made. We oppose the proposal to require a warning on cigarette packages; we oppose the proposal to require warnings in cigarette advertising. The latter is not a provision of any bill pending before the committee but is provided by an FTC "Trade Regulation Rule." The rule, unless countermanded by Congress, is expected to take effect on July 1, 1965.

The advertising warning strikes us as particularly unjustified. It would be grossly discriminatory and tantamount, we believe, to prohibiting cigarette advertising altogether. Indeed, mandatory advertising warnings would strike a punitive and possibly crippling blow to an important and historic American industry.

Warnings in cigarette labeling are a somewhat different matter. However, we believe that they, too, though not representing so violent a departure from precedent and traditional marketing requirements, are unnecessary and unwarranted.

The relationship, if any, that may exist between smoking and disease is still a matter of sharp medical dispute. To be sure, there are distinguished doctors and researchers who believe that smoking can in some cases contribute to the development of lung cancer. At the same time, there are others—among them scientists of equal distinction and achievement—who question whether smoking is a cause of disease. For example, one of our Nation's leading medical statisticians, Dr. Joseph Berkson, chief medical statistician at the Mayo Clinic, has said that he personally thinks it is very doubtful that smoking causes lung cancer. Many other distinguished scientists, including several who have testified before either this committee or the Senate Commerce Committee, share Dr. Berkson's view.

Under these circumstances, we think it is wrong—from the standpoint of both justice and public policy—for the Government to require cigarette manufacturers to characterize their product as a cause of disease. Medical opinion is divided on the basic of scientific issues involved.

Another factor argues against requiring warnings in connection with the marketing of cigarettes. The consuming public is well aware of the tobacco and

health controversy. For more than a decade of tobacco-health controversy has been in a spotlight of publicity. As a result, the public is eminently aware of the reports linking smoking to disease. Indeed, we doubt if there are many persons alive who have not heard that cigarette smoking may not be good for them. If there are, we think the chances are that they are persons so oblivious of the world around them that a warning statement on cigarette packages would not be likely to reach them, either.

Let us add just one thought. We think no one would disagree with the proposition that, if diseases such as cancer are ever to be conquered, they will be conquered through medical research. Let us concentrate our energies and resources on this one potential salvation.

For centuries tobacco has been a source of pleasure and comfort to millions. Tobacco workers are proud of the contribution that this product has made, both to our civilization and to our economy. We hope that Congress will not penalize this important and historic industry by legislatively imposing mandatory warnings. We particularly hope that Congress will direct the FTC to withdraw its cigarette "trade regulation rule," which would impose such warnings, not only on cigarette packages but in cigarette advertising as well.

We appreciate the opportunity to present these views, and we respectfully request that this statement be included in any printed record of the committee's hearings.

Respectfully submitted.

JOHN O'HARE,
President, TWIU.
R. J. PETREE,
Secretary-Treasurer. TWIU.

STATEMENT OF VINCENT T. WASILEWSKI, PRESIDENT OF THE NATIONAL ASSOCIATION OF BROADCASTERS

This statement is presented by Vincent T. Wasilewski as president of the National Association of Broadcasters. The National Association of Broadcasters, or NAB, is a nonprofit corporation whose members include 2,152 AM, 852 FM, and 459 television stations, and all the national radio and television networks in the United States.

The NAB is grateful for the opportunity to present this statement and shares with the committee its concern for the public health. Broadcasters are sensitive to the nature and effect of all of their programing upon the listening and viewing public because they are highly responsible citizens of their communities and of this Nation. Commercial messages advertising cigarettes are, of course, a part of that programing.

One of the issues presented by the bills pending before the committee is whether cigarettes sold in interstate commerce should be required to bear some kind of warning statement on the package. H.R. 3014 and H.R. 4007 each so provides, as does, in somewhat different way, H.R. 4244.

A second issue is whether cigarette advertising should be required to include warnings. No bill including such a requirement is pending in the House, but a Federal Trade Commission "trade regulation rule," currently scheduled to go into effect on July 1, 1965, purports to lay down this requirement.

NAB takes no position on the labeling issue but does oppose mandatory warnings in advertising. We believe that mandatory warnings in advertising would impose an altogether new kind of restraint, and one which we believe to be undesirable from several standpoints. Thus, NAB urges appropriate congressional action to make clear that the FTC has no authority to require warning statements in cigarette advertising. To the extent that both H.R. 3014 and H.R. 4007 include provisions that would accomplish this purpose, we support them.

Our first objection to mandatory warnings in cigarette advertising is that they would constitute a significant departure from the current pattern of responsibility for maintaining high advertising standards. This is a pattern in which both Government and private industry play important roles.

In our judgment, a substantial expansion of the role now played by Government could seriously impair the effectiveness of industry self-regulation by undermining incentive.

The Government-imposed rule would then become the standard and there would no longer be any reason for the industry to act to meet special problems

as they become better identified. It is our firm belief that the public would lose much in such a reassignment of responsibility.

The NAB, through its Radio Code of Good Practices and its Television Code, has for many years, led all media in setting and maintaining high advertising standards for product advertising on radio and television. Moreover, the NAB has consistently endeavored through frequent revision of its codes, to keep its standards abreast of significant changes in social attitudes and scientific thought.

Accordingly, following publication of the Report on Smoking and Health the Television Code Review Board in January 1964 recommended specific amendments to the Television Code which were approved by the Television Board of Directors of NAB on January 29, 1964, as follows:

Television code, section IV, program standards, paragraph 12:

"Care should be exercised so that cigarette smoking will not be depicted in a manner to impress the youth of our country as a desirable habit worthy of imitation."

Television code, section IX, general advertising standards, paragraph 7:

"The advertising of cigarettes should not be presented in a manner to convey the impression that cigarette smoking promotes health or is important to personal development of the youth of our country."

At a meeting on April 5, 1964, the Radio Code Board adopted a resolution proposing two amendments to the Radio Code. The proposed amendments were approved by the Radio Board of Directors on June 17, 1964, as follows:

Radio code, I, program standards, section H, 13:

"The use of cigarettes shall not be presented in a manner to impress the youth of our country that it is a desirable habit worthy of imitation in that it contributes to health, individual achievement or social acceptance."

Radio code, advertising standards, section C(g):

"The advertising of cigarettes shall not state or imply claims regarding health and shall not be presented in such a manner as to indicate to the youth of our country that the use of cigarettes contributes to individual achievement, personal acceptance, or is a habit worthy of imitation."

Among the concerns which led to the action taken by the broadcasting industry through its codes were such matters as the health implications inherent in testimonials by sports figures; implied medical or scientific endorsements; and the appearance of youthful performers, or settings primarily identified with their age group.

Since the adoption of standards in the Radio and Television Codes, the Cigarette Advertising Code of the cigarette industry has, in fact, been established and its provisions are being implemented.

The NAB Code Authority has an informal liaison with Governor Meyner's office in order that we might be kept fully informed on areas of mutual interest and concern. We believe that because the Cigarette Advertising Code deals with all forms of cigarette advertising prior to submission to media, it is anticipating and appears to be resolving problems before they come within the jurisdiction of code subscribers and the code authority. However, this neither precludes nor abrogates our own responsibility to evaluate and interpret cigarette advertising under the Radio and Television Codes, irrespective of any other action.

Industry should be permitted to regulate itself in those areas where it has demonstrated a willingness and ability to do so. We believe broadcasting has demonstrated its willingness and ability. We oppose the imposition of any requirement that cigarette advertisements include a warning statement with respect to the possible health hazards in smoking. We believe that such a requirement would go far beyond what is necessary to prevent deception and this, we think, is the only proper standard for Government to enforce.

If a mandatory warning in advertising were required by law, the Government would thereby affirmatively dictate advertising standards. It would cast Government in a new role in that it would prescribe a course of conduct in advertising rather than proscribe undesirable conduct.

The requirement of such a statement in advertising would be discriminatory in its effect upon the various media. The differences in form of presentation of the print and broadcast media would make the proposed rule grossly unfair in its application to broadcasting. The greatest discrimination would fall upon a radio.

We do not believe that a sufficient showing has been made, or can be made, demonstrating the need for a departure from traditional standards for advertising. Warnings on cigarette packages should be sufficient to alert the public to the possible dangers of smoking, if the Congress determines that some form of warning is necessary.

If cigarette advertising were required under law to warn of the possible dangers to health that might result from smoking, consumers could be led to expect similar warnings in the advertising of other products whose use may present some risk to health. Thus, the Government would be impelled to assume a radically new and more comprehensive role in the supervision of product advertising, and no one could foresee where such an expanding concept might stop.

We urge this committee to encourage industry self-regulation by refraining from the adoption of novel burdens upon advertising. We assure you that the radio and television broadcasters of this country will continue to discharge their responsibilities to the public more effectively in an atmosphere of freedom.

NATIONAL EDITORIAL ASSOCIATION,
Washington, D.C., May 4, 1965.

HON. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce, U.S. House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: On behalf of the members of the National Editorial Association, I wish to express the basic opposition of our association to the imposition by Congress or any other governmental agency of compulsory health warnings in cigarette advertising. To our knowledge, no such proposal is currently pending in the House of Representatives; however, as you know, such warnings would be required under the Federal Trade Commission's cigarette advertising "Trade Regulation Rule," which is currently scheduled to go into effect in July. We urge that Congress, whatever other action it may take with respect to the tobacco and health controversy, take some affirmative action to make clear that the FTC's "Trade Regulation Rule" does not enjoy congressional authorization or approval.

The National Editorial Association is a national association of newspaper publishers and editors from each of the 50 States and the District of Columbia. Organized in 1885, the NEA today represents more than 6,600 newspapers. Of these, more than 5,800 are weeklies, most of the remaining being dailies. In addition, 44 State newspaper associations are affiliated with NEA.

Our opposition to compulsory health warnings in cigarette advertising like those which the FTC's "Trade Regulation Rule" would impose does not reflect any special interest in the cigarette industry, or indeed even in cigarette advertising.

Cigarette advertising provides significant revenue for certain media but has not contributed substantially to the advertising income of smaller city newspapers which comprise the overwhelming majority of this association.

We oppose compulsory health warnings in cigarette advertising on principle and in the conviction that, if imposed, such restrictions would establish a precedent with potential application to a wide range of product advertising, including advertising for liquor, over-the-counter drugs, airlines, automobiles, athletic equipment, coffee or tea, and indeed any product whose use may be claimed to involve some risk to health. Compulsory warnings could render product advertising ineffective and thereby reduce the incentive of businessmen to rely on advertising as a sales tool. This could not only deprive the economy of an important stimulant but would pose a special threat to our Nation's free press, a significant segment of which is represented by the members of our association. Product advertising is our members' economic lifeblood, and a substantial reduction in such advertising could obviously imperil our members continued existence and independence.

In endorsing the right of businessmen to advertise effectively any legal product, the National Editorial Association, of course, does not advocate deceptive advertising or suggest that a right to advertise deceptively exists. Our association has consistently fought deceptive advertising. Indeed, we have often acted as a kind of "Better Business Bureau" in helping our members to guard against inadvertently accepting deceptive advertising in their advertising columns.

Most certainly, however, we do not subscribe to the notion that advertising which fails to set forth possible arguments against use of the advertised product is false or misleading. Indeed, should Government presume to dictate to advertisers the content of their advertising, it would tread upon rights that are not only long accepted but, in our view, constitutionally protected. We believe that the right to advertise legitimate articles of commerce, in as persuasive terms as possible, is a necessary incident to the right to sell such articles.

Of course we applaud the efforts of any business group to regulate its own advertising. In this connection, we note that cigarette manufacturers last year adopted a cigarette advertising code, which became officially effective on January 1, 1965. In our society and economy, self-regulation has traditionally been preferred to Government intervention. It would be particularly regrettable for compulsory advertising warnings to be imposed at a time when the cigarette industry has taken steps to regulate itself.

In expressing our opposition to the advertising provisions of the FTC's "Trade Regulation Rule" and in urging Congress to cause the rule's withdrawal, we wish to make clear that our association has no view on the basic scientific issues involved; i.e., whether cigarette smoking is or is not a significant health problem. We also wish to state that we take no position whatsoever with respect to the various labeling provisions under consideration, such as those set forth in H.R. 3014, H.R. 4007, and H.R. 4244. Labeling is outside our area of interest, and we believe it would be inappropriate for us to take a position on labeling. Our concern is only with advertising. We oppose compulsory warnings in advertising.

We respectfully request that this letter be included in any printed record of the committee's hearings.

Respectfully yours,

THEODORE A. SERRILL, *Executive Vice President.*

STATE OF SOUTH CAROLINA,
DEPARTMENT OF AGRICULTURE,
Columbia, S.C., April 28, 1965.

U.S. HOUSE COMMITTEE ON COMMERCE,
Rayburn House Office Building,
Washington, D.C.

GENTLEMEN: The State department of agriculture, in conjunction with South Carolina tobacco growers and related interests, seriously urges the House Committee on Commerce to desist from legislation requiring health warnings in cigarette advertising, or on packaged cigarettes.

Tobacco growers and cigarette processors have endured 10 years of harassment based entirely on statistical information. During this period, multimillions of local, State, and Federal funds, plus gifts made by industry and individuals have been spent in research in an effort to obtain definite evidence to support the statistical claims. Research still fails to find contestable evidence.

To single out the tobacco interest is not only gross discrimination but could promote mass demands for similar declaration to be made on other consumer products which occupy a health suspect status in laboratories, both Federal and otherwise.

There is no greater urgency today than that of the health "scare" started 10 years ago. An arbitrary stand by Congress is ill advised and could result in punitive legislation.

Yours very truly,

WILLIAM L. HARRELSON,
Commissioner of Agriculture.

DISTINCTIVE ADVERTISING SERVICE,
Albany, N.Y., April 16, 1965.

Representative OREN HARRIS,
House of Representatives,
Washington, D.C.

DEAR CONGRESSMAN HARRIS: As committee chairman conducting hearings on cigarette ad labeling, here are some facts I think you should consider.

The Labor government of Britain has banned all television cigarette advertising, and may ban it in newspapers, magazines, billboards, etc., in an effort to combat the growing problem of lung cancer. They feel the health of their citizens may be endangered according to facts complied, and refuse to take chances of the advertising producing more smokers, especially among the young.

Several of the Iron Curtain countries have also banned smoking in restaurants and other public places, since they have learned about the hazards of smoking. And these are the countries who are not supposed to have any consideration for the welfare of their citizens.

In view of these actions by other countries—and the fact that the tobacco companies have greatly stepped up their advertising programs here, can our Government do less to protect its citizens from this hazard, or is the "buck" more important to us?

Ever since the Surgeon General's adverse report on cigarette smoking was issued, the tobacco companies have left no stone unturned in their advertising efforts to convince every man, woman, and child in this country that smoking is "manly * * * chic * * * romantic * * * athletic * * * etc."

That they are succeeding is evidenced by their financial reports for the year 1964 just issued. Also, by the fact that more and more young teens are smoking now than ever before, in their efforts to imitate the wonderful "images" they see in the cigarette ads on television and other media.

I realize that it has not been definitely proven that cancer is the direct result of smoking, but it has been proven that it is hazardous, and I would much prefer to take the word of the Surgeon General and his people, than that of the tabacco companies.

And since there is sufficient evidence to prove that it is hazardous, can we, as a government, be less interested in the health of our citizens than these other countries? Or, is the "buck" more important in this country today? One wonders, when they read how the representatives of the tobacco States react to all this.

I would like to urge you as committee chairman to do all you can to help protect your people against this hazard, for I feel that one human life saved is worth all the revenue of all the tobacco companies combined.

Thanks for your kind interest.

Respectfully,

JOHN W. FLANIGAN.

P.S.—The enclosed article will show you what I mean by these tobacco companies leaving no stone unturned in their efforts to get everyone in the country smoking, if possible. One company alone spends $55 million in advertising to try to gain first place, which means more smoking—more smokers.

[From the Advertising Age, Apr. 12, 1965]

TAREYTON HELPED AMERICAN TOBACCO 1964 SALES: WALKER

FLEMINGTON, N.J., April 7.—American Tobacco Co. has served new notice on R. J. Reynolds Tobacco Co. that it is out to win the cigarette industry race.

At the annual meeting today, Robert B. Walker, president of American, told stockholders that "perhaps the single most significant event for your company in 1964 was that the year marked for us the turning point with respect to our largest competitor.

"For 10 years your company continuously lost a fractional share of the market to this competitor. In 1964 the situation was reversed. We gained in share of market. As I said soon after taking office, the American Tobacco Co. is going to regain industry leadership."

The company's biggest marketing success story in 1964 was Tareyton filters, Mr. Walker said. After making slow, but steady, progress, Tareyton really came into its own last year. Independent analysts have Tareyton increases of 26 to 28 percent, the highest rate of gain among all established brands.

The striking part of Taryeton's showing last year was that its momentum increased from quarter to quarter, so that its rate of gain was greater in the last half than it was in the first 6 months.

"During 1964, advertising costs increased only 5 percent in spite of increased market testing and brand introduction," acording to American's chief. "Because of improved marketing strategy and efficiency, our advertising and promotional costs for 1964 will not vary greatly from last year's level," he said. In 1963 American was estimated to have spent $55,200,000 in measured and unmeasured media.

STATEMENT OF THE AMERICAN DENTAL ASSOCIATION CONCERNING THE HEALTH HAZARDS OF SMOKING

Members of the dental profession have been deeply concerned for some time about the health hazards of smoking. This concern has been deepened and strengthened as a result of the American Dental Association's activities as a founding member of the National Interagency Council on Smoking and Health.

At its 105th annual session, held November 9–12, 1964, in San Francisco, the American Dental Association House of Delegates passed the following resolution:

"*Resolved*, That members of the American Dental Association be called upon and encouraged to undertake an educational effort to inform their patients of the health hazards of the use of tobacco and, especially with young people, to warn against acquiring the habit of cigarette smoking."

The available evidence makes it abundantly clear that smoking is injurious to health. Federal action to alert and educate the public about this fact would be of material assistance to the dental profession in the educational effort it has already undertaken and expects to intensify in coming months.

It is the association's firm belief that such action should be directed toward both labeling and advertising of cigarettes. The association believes that Congress should give the most sympathetic consideration to the positive role that the appropriate Federal agencies can play in this matter.

SAN JUAN BASIN HEALTH UNIT,
Durango, Colo., April 5, 1965.

INTERSTATE AND FOREIGN COMMERCE COMMITTEE,
House of Representatives,
Washington, D.C.

SIRS: On March 25, 1965, members of the Board of Health of the San Juan Basin Health Unit, representing La Plata, Dolores and Archuleta Counties in southwestern Colorado, unanimously voted to advise the various committees of the U.S. Congress that the health board is in favor of the labeling of cigarettes as hazardous to health.

Legislation requiring such labeling is desirable because:

(1) Evidence made available to the public by medical and scientific sources is voluminous and conclusive in warning of the health hazards of cigarette smoking; and

(2) Education to advise the public of such health hazards is in the public interest; and

(3) Prevention of addiction to cigarette smoking is established as one of the primary methods to reduce such a health hazard in the future; and

(4) Labeling of the cigarette as to the health hazard of usage is in keeping with the need for public education; and

(5) Such labeling would aid in the prevention of addiction.

The health board has initiated a cooperative educational program with local school authorities, medical representatives and mental health personnel to advise the youth of the community about the recent data on the health hazards of addiction to smoking.

The health board feels that precautionary labeling of cigarettes is in keeping with the education objectives of our program, and we respectfully urge the committee to consider such needed legislation.

Yours very truly,

MRS. ROBERT L. MCKENNA,
Vice Chairman, Board of Health.

COLORADO TUBERCULOSIS ASSOCIATION,
Denver, Colo., March 29, 1965.

HON. OREN HARRIS,
Chairman, Interstate and Foreign Commerce Committee,
House of Representatives,
Washington, D.C.

DEAR REPRESENTATIVE HARRIS: I am writing to you at the request of the tuberculosis associations in Colorado to express opposition to House bills 885 and 3014 by Representative Walter Rogers of Texas, which are designed to provide labeling of cigarette packages calling for warnings that excessive use of these products is harmful to health.

We are particularly concerned that these bills do not include a means whereby the harmful effects of cigarette smoking should also be pointed out in cigarette advertising. We believe this is a necessary adjunct to the warning to be placed on cigarette packages.

Through the National Interagency Council on Smoking and Health and the Colorado Interagency Council on Smoking and Health, we have learned of Senate bills 559 and 547 which provide more adequately for the labeling or advertising of cigarettes wherein the health hazards are clearly delineated. For this reason we believe we must favor the Senate versions over those of the House.

We trust that you will lend your influence to the opposition expressed in these letters to the Rogers bills.

Respectfully yours,

RONALD A. MILLER, *Executive Director.*

AMERICAN ASSOCIATION FOR HEALTH,
PHYSICAL EDUCATION, AND RECREATION,
Washington, D.C. April 15, 1965.

HON. OREN HARRIS,
Chairman, Interstate and Foreign Commerce Committee,
Rayburn Building, Washington, D.C.

DEAR CONGRESSMAN HARRIS: On behalf of the American Association for Health, Physical Education, and Recreation, a department of the National Education Association, which now includes more than 42,000 members who are the health education and physical education teachers and supervisors, and the athletics and recreation leaders in the schools and colleges of our country, I would like to point up the association's concern regarding proposed legislation on the labeling of cigarettes and respectfully request inclusion of this letter in the official record of the hearings of your committee.

As a profession concerned primarily with promoting the health and well being of youngsters through education programs, smoking has long been a problem of considerable interest to our membership and to school personnel generally. Many States require instruction in the schools on the effects of tobacco on health. The National Education Association has recognized this need in its official platform by including the following statement under the general heading, "Policies and Goals":

"4. Curriculums adapted to individual and social needs * * *

"(*b*) Curriculums designed to improve both mental and physical health, including attention to research regarding effects of narcotics, alcohol, and tobacco."

The joint committee on health problems in education of the National Education Association and the American Medical Association adopted the following resolution on smoking and health at its 1964 meeting:

"Whereas the Surgeon General's report on smoking and health has reported that there is a causal relationship between smoking and cancer, smoking and bronchitis, smoking and emphysema, and strong evidence of an association between smoking and cardiovascular disease; and

"Whereas the AMA has recognized the need to point out the effect on the young of the use of toxic materials including tobacco, and recommends that this information should be disseminated in our schools; and

"Whereas the NEA has encouraged education about the harmful effects of tobacco and investigation into the relationship between intellectual achievement and emotional adjustment and the smoking habit in teenagers: Therefore be it

"*Resolved*, That the joint committee urge elementary and secondary schools to include comprehensive and sequential programs on smoking in their health education curricula starting in the elementary grades; and be it further

"*Resolved*, That schools, physicians, health departments, and other community agencies cooperate in an aggressive program designed to discourage children from starting the smoking habit and to influence youth who are smoking to discontinue the habit."

Many other groups concerned with health and education have made statements on this problem. In 1963 the American Association for Health, Physical Education, and Recreation adopted the attached resolution urging professional athletes to refrain from endorsing the sale of tobacco and requesting that manufacturers, distributors, advertisers, and news disseminating media not use athletes in advertisements to promote the sale of tobacco. The tobacco industry is to be commended for removing such appeals to young people from advertising in recent months.

Perhaps this association's current interest in the topic is best expressed by the attached position statement, "Smoking: the school's responsibility" which was

officially adopted in 1964. This statement spells out the responsibilities of the school with regard to the smoking and health issue as seen by a professional education organization concerned with promoting the health of schoolchildren.

In carrying out education programs regarding smoking, the school is faced with the problem of providing instruction aimed at helping boys and girls develop a sound basis for making a decision about smoking, while cigarette advertising on every side works to create an acceptance of smoking as a desirable practice. To the young mind, this inconsistency between the hazards of smoking as presented in the research and the image of smoking as a desirable, even glamorous habit, as created through mass media is confusing and contradictory. The latter is often further augmented by the adults—parents, teachers, and others— who most directly influence the child. If it is the desire of the tobacco industry to reduce the incidence of smoking in young people—and this is implied in their efforts to remove certain kinds of approaches aimed at the teen and preteen groups, then clearly the labeling of cigarettes and the indication in advertising that smoking is a serious health hazard is a step which needs to be taken. If education programs are to be successful in our schools, the children must see that adults really believe that smoking is dangerous to health. Enactment of legislation requiring health warnings in cigarette advertising and on cigarette packages would be a significant step in assuring youth that those elected to govern are carrying out their responsibilities in protecting and informing the public regarding this serious health hazard.

The American Association for Health, Physical Education, and Recreation wishes to go on record as—

1. Supporting the labeling of cigarettes as an important first step in a broad program aimed at reducing the appeal to the teen and preteen groups.
2. Supporting the addition of a warning in all cigarette advertisements which would reinforce labeling especially in the eyes of young people.
3. Opposing legislation which would prohibit the Federal Trade Commission from carrying out authority to require a cautionary health statement in cigarette advertising.

The position of educators would be enhanced and school programs on smoking and health strengthened through legislation embodying these provisions.

Respectfully,

JOHN H. COOPER, P.E.D.,
Assistant Executive Secretary,
Consultant in School Health.

RESOLUTION OF THE AMERICAN ASSOCIATION FOR HEALTH, PHYSICAL EDUCATION, AND RECREATION

Whereas a principal purpose of interschool athletics is to contribute to the establishment of the benefits of physical fitness, and

Whereas the abstinence from the use of tobacco and alcoholic beverages is considered to be desirable on the part of teenage athletes, and

Whereas the use of tobacco and alcoholic beverages is not accepted as contributing to healthful living for youths, and

Whereas high-school-age students are at a most impressionable stage given to hero worshipping, and

Whereas there is need for great dedication on the part of school-age athletes to accepted training rules which have traditionally included an abstinence from the use of tobacco and alcoholic beverages: Be it hereby

Resolved by the delegates assembled at the Conference on Secondary School Athletic Administration, That professional athletes be earnestly requested to refrain from endorsing and/or to decline to permit the use of their names and/or pictures in the promotion of and/or the sale of tobacco or alcoholic beverages; and be it further

Resolved, That the manufacturers, distributors, advertisers, and news disseminating media refrain from soliciting athletes to endorse tobacco and alcoholic beverages; and be it further

Resolved, That organizations providing athletic programs for television, radio, and movie not employ athletes to advertise or recommend the use of tobacco and/or alcoholic beverages in such programs; and be it further

Resolved, That all organizations sponsoring programs in the area of growth and development of boys and girls aggressively support this resolution by indi-

cating their disapproval of the practice of athletes endorsing the use of tobacco and alcoholic beverages.

This resolution was officially adopted by the board of directors of the American Association for Health, Physical Education, and Recreation at their meeting in Minneapolis, Minn., in May 1963.

STATEMENT OF THE AMERICAN ASSOCIATION FOR HEALTH, PHYSICAL EDUCATION, AND RECREATION

SMOKING: THE SCHOOL'S RESPONSIBILITY

The report of the Surgeon General's Committee, "Smoking and Health," published in January 1964, is clear and unequivocal in its indictment of cigarette smoking as a health hazard. The schools must, therefore, accept their responsibilities for providing programs consistent with the known facts. The actions of the schools should be directed toward several different areas of the total school program, and consideration should be given to each of the following: (1) the importance of adult behavior as an example to youth; (2) the timeliness and nature of the instructional program; (3) the utilization of the motivational potential inherent in sports participation; and (4) the elimination of the practice of providing school smoking facilities.

The fact that most of those who smoke regularly start during the school years points up the role the schools must play. The development and continuation of the smoking habit by children and youth is related to emulation of what appears to be accepted adult behavior. Efforts to educate in home and school begin with the example. School personnel, particularly teachers and coaches, frequently serve as models which will be imitated by many children. Thus the school's fundamental responsibility in providing an effective smoking education program involves behavior by teachers which will reinforce the more formal learning experiences. The American Association for Health, Physical Education and Recreation urges all school personnel who smokes to recognize the inevitability of education by example, and to take appropriate action to provide an image consistent with the facts regarding smoking and health.

If present and future generations are to be educated concerning the effects of smoking on health, an effective educational program must anticipate the problem and thus begin prior to the teen years. The AAHPER urges a program of instruction throughout the primary grades emphasizing experiences which will provide children with an opportunity to develop the foundations essential to self-understanding and self-acceptance. Such a program should be carried out with an awareness and understanding of the child's developing and emerging system of values which will ultimately serve as a sounding board for weighing facts and making choices. The effectiveness of later educational efforts related to smoking will in large measure depend upon the nature as well as the quality of the primary school program.

In the intermediate grades a clearly identified segment of the schoolday should be devoted to a health instruction program in which the effective physical, social, and mental functioning of the human organism provides the content. Boys and girls should be given opportunities to study many topics with which they will be concerned, including smoking. The making and testing of decisions and the evaluation of alternatives should have prominent places in the intermediate grade school program.

The health instruction of the junior and senior high school student should provide an opportunity to explore in depth the psychological, physiological, and sociological factors to be considered in making a decision regarding smoking. Evaluation of pressures such as those present in advertising should be a part of such experiences, and the importance of basing decisions on facts should be emphasized.

Additional learning experiences should be planned and provided through correlated or integrated materials in other courses, to reinforce and expand understandings. Responsibility for the coordination of the school's efforts should be assigned to the individual responsible for the school health program.

For all age levels, it would be wise for schools to recognize that evidence continues to mount supporting the position of coaches and trainers that athletes should not smoke. The acute impairment of cardiopulmonary efficiency resulting from smoking is not compatible with the striving for maximal performance inherent in competitive athletics. The association urges those responsible for

sports programs to utilize the motivational potential of sports participation in educating youth to refrain from smoking during the years when the decision to smoke or not to smoke is most likely to be made.

Many schools have provided smoking rooms for students and staff. However, the provision of such rooms must be justified on the broad base of effect on the total educational effort of the school. As a societal institution the school has an obligation to children to provide experiences which contribute to their effective function as citizens and health is one of the most important factors in enabling the individual to assume the responsibilities of citizenship. Certainly no child should be exposed to practices in the school which are likely to influence his behavior in an undesirable way. Often cited as the reason for having smoking facilities in the school is that with such a room available the educational program is less likely to be disrupted by enforcement of no-smoking regulations which may occupy disproportionate time and effort of administration and faculty. A short-range disciplinary problem should not, however, prevent consideration of a long-range health objective. The association recommends that all schools presently providing facilities for smoking reexamine this practice and take appropriate steps to eliminate such facilities.

A mandate for action is thus provided for those professionally concerned with the health and education of children and youth. Further research is necessary to make possible the elimination or control of the harmful substances present in tobacco smoke and to aid in the development of the most effective and appropriate educational programs for youth. The AAHPER commends those persons and organizations engaged in or supporting such research, and recommends that such research efforts be intensified.

MAYO CLINIC,
Rochester, Minn., April 28, 1965.

Hon. OREN HARRIS,
Chairman, House Committee on Interstate and Foreign Commerce, House of Representatives Office Building, Washington, D.C.

DEAR SIR: Your committee is considering legislation that may have a profound effect on the health of many of our fellow citizens. I refer to the bills to require warning labels on cigarette packages and warnings in cigarette advertising so that the American public will be fully aware of the hazards of cigarette smoking. I urge you and your committee to act favorably on these bills.

Many investigations have revealed that cigarette smoking is associated with several diseases, especially lung cancer, bronchitis and emphysema, and cardiovascular diseases. The evidence was carefully reviewed by a Special Advisory Committee to the Surgeon General of the Public Health Service. This Committee was approved in advance by the tobacco industry as impartial and unbiased. The report of the committee, which has been made available to you, concluded that cigarette smoking was, indeed, a cause of disease and that something should be done to protect the American public.

As might be expected in view of the billions of dollars at stake, the tobacco industry has repudiated the report and urges that more research be done. More research is, indeed, desirable, not to determine whether cigarette smoking causes lung cancer—that question has already been settled. The research that is needed is to determine how cigarette smoking causes lung cancer and how to prevent it. In the meantime, we should at least label the packages of cigarettes with appropriate warnings of the danger of smoking and the advertising should be required to include a warning that cigarettes may cause cancer as well as give pleasure.

Some physicians have testified before your committee that they knew of no good evidence that smoking caused disease. I am certain that they represent a very small minority of the medical profession and are mistaken in their evaluation of the facts. As a specialist in lung diseases at the Mayo Clinic, it has been my painful duty to make the diagnosis of lung cancer many hundreds of times. This clinical experience, together with an extensive study of the problem, has convinced me that cigarette smoking is one of the causes of lung cancer and is, in fact, the most important known cause. To support this statement, I shall enclose a copy of a report on the subject that I published in the Proceedings of the Mayo Clinic several years ago.

If I could be of any help to your committee in its considerations of this problem, please let me know.

Sincerely yours,

DAVID T. CARR, M.D.

MAYO CLINIC,
Rochester, Minn., April 30, 1965.

HON. OREN HARRIS,
Chairman, House Committee on Interstate and Foreign Commerce, House of Representatives Office Building, Washington, D.C.

DEAR SIR: I am writing you to lend my support to those urging you and your committee to act favorably on proposed bills requiring cigarette packages and cigarette advertising to display prominently the hazards to health of continued smoking. I do this in the knowledge of your dedication to the public interest, and I believe these bills are most definitely in the public interest.

I am aware that your committee has already heard a great deal of testimony. I am sure that you are fully familiar with the history of the Surgeon General's Report on Smoking and Health. I am sure that you realize that the Committee selected to prepare this report was made up of a group of recognized authorities and respected investigators who had, up to that point, taken no public stand on the relationship of smoking to disease. I am sure that you realize that the members of this Committee were selected from a large group of candidates, and that every member selected had to be approved by the Government, whom you represent, by the medical profession, of which I am a member, and by the tobacco industry. I am sure that you realize that the 10 men finally selected for the Committee were charged to review all available data and instructed to determine only whether there was a relationship between smoking and disease, and that they were not instructed to make recommendations regarding any action to be taken as a result of their report.

I am sure that you realize that this Committee, appointed by the Surgeon General at the direction of the President, and with the sanction of the Government, the medical profession, and the tobacco industry, carefully reviewed all data for many months. I am sure that you realize that the report submitted by the Committee, and now known as the Surgeon General's Report, represented, not a majority, but a unanimous opinion of the Committee, and that the opinion expressed was that cigarette smoking is indeed a hazard to health.

I am sure that you also realize that the Committee went beyond its instructions and further stated that the hazard of cigarette smoking was sufficiently great to warrant remedial action. This action, I hope, will be taken by your committee in the form of favorable action on the bills now under consideration.

I believe that the tobacco industry, by its repudiation of the Committee's report, has shown that it chooses to place monetary considerations above the health and welfare of the public. I believe that many scientists, however well intentioned, have chosen to place their own personal opinions and reputations above the unanimous opinion of a respected group of colleagues who had devoted long months to a review of all published experience concerning smoking and health.

I, too, have a personal opinion, and it is that cigarette smoking is a serious detriment to health. This opinion is based on extensive personal experience. Nevertheless, it seems to me that any individual opinion becomes rather insignificant when compared to the massive evidence reviewed by the Surgeon General's Committee and the unequivocal recommendations this Committee made.

Now that the facts are in—and they are in—are we to be told that which is really needed is more careful review—or are we now at long last to have some action?

Respectfully yours,

ROBERT S. FONTANA, M.D.

STATEMENT OF THE NATIONAL CONGRESS OF PARENTS AND TEACHERS, CHICAGO, ILL., ON LEGISLATION CONCERNING SMOKING AND HEALTH

The National Congress of Parents and Teachers, now comprising approximately 12 member memberships in 50 States, the District of Columbia, and the European Congress of American Parents and Teachers, has consistently supported legislation considered helpful in the protection of the health and welfare of children and youth.

Of increasing concern to the National Congress of Parents and Teachers is the established health hazard of cigarette smoking, particularly as it affects children and youth.

The report of the Surgeon General's Advisory Committee on Smoking and Health has given data showing that among men who began smoking when teenagers, the death rate was about 100 percent higher than it was among nonsmokers—whereas among those who began after they were 25, the death rate was only about 35 percent higher.

Concerning deaths from lung cancer, the report gives the following specific conclusion:

"Cigarette smoking is causally related to lung cancer in men; the magnitude of the effect of cigarette smoking far outweighs all other factors. The data for women, though less extensive, point in the same direction."

Lung cancer, according to the American Public Health Association, will kill an estimated 1 million school-age children now alive before they reach age 70, if present trends continue.

Under the mandate of resolutions adopted at the 1963 and 1964 national conventions, the National Congress of Parents and Teachers has participated actively in programs related to smoking and health. These resolutions, concerning (1) education on the hazards of smoking, and (2) the advertising of tobacco and its use by minors, are being submitted with this statement.

In keeping with its resolution to "make every possible effort to cooperate in education of children and youth regarding the hazards of smoking," the National Congress of Parents and Teachers was among the 16 organizing members of the recently formed National Interagency Council on Smoking and Health. The purpose of this organization is to combat smoking as a health hazard.

We believe that the overwhelming majority of the medical profession are convinced of the hazards of smoking; that the majority of the organized bodies of medicine and science accept this evidence. We believe that the monumental and authoritative study of the U.S. Public Health Service firmly establishes the fact that cigarette smoking is a serious hazard to health. We are now petitioning the U.S. Congress for some decisive action regarding this health hazard, particularly as it affects our youth.

We oppose H.R. 3014 and H.R. 4007, which would strike out any authority at Federal, State, and local levels to require warning messages on advertising—thus precluding Federal as well as State and local action in regard to cautionary health messages in cigarette advertising. We believe that this authority should be at the Federal level, because of the many problems in administering any advertising regulations that might differ from State to State.

Labeling, we believe, is not enough. Warning on advertising should also be included, and the right of the Federal Trade Commission and the State and local health authorities charged with the responsibility of protecting the public health should not be preempted in any way. We would, however, support legislation that requires a clear and unequivocal labeling message indicating a health hazard.

The National Congress of Parents and Teachers—guided by the overwhelming weight of scientific evidence implicating cigarette smoking as a major producer or promoter of various diseases such as lung cancer, bronchitis, emphysema, coronary heart—respectfully urges this committee and this Congress to enact legislation requiring cautionary labeling and advertising of cigarettes as proposed in bills S. 547 and S. 559. We feel that this is a necessary function of Government in view of the evidence now gathered on this health hazard.

RESOLUTION ON ADVERTISING OF TOBACCO AND ITS USE BY MINORS

(Adopted by the delegates at the 1963 national convention)

Whereas the use of tobacco by minors is of great concern to parents and teachers: Therefore be it

Resolved, That the National Congress of Parents and Teachers with its State congresses, districts, councils, and local units intensify efforts to strengthen health education programs related to the use of tobacco by minors; and be it further

Resolved, That the National Congress of Parents and Teachers invite representatives from the tobacco industry, the advertising field, and the mass media to meet with representatives of the national congress to consider the effects of glamorized tobacco advertising directed to teenagers.

RESOLUTION CONCERNING EDUCATION ON HAZARDS OF SMOKING

(Adopted by the 1964 convention delegates)

Whereas the U.S. Surgeon-General's report has defined the health hazards of smoking; and

Whereas young people are especially susceptible to group pressure regarding smoking: Therefore be it

Resolved, That the National Congress of Parents and Teachers make every possible effort to cooperate in the education of children and youth regarding the hazards of smoking.

[Telegram]

NEW YORK, N.Y., *April 15, 1965.*

Representative OREN HARRIS,
Chairman, Interstate and Foreign Commerce Committee,
House of Representatives, Washington, D.C.

DEAR CONGRESSMAN HARRIS: An estimated 2,000 citizens of New York City will die of lung cancer caused by cigarette smoking this year. In behalf of the board of directors of the American Cancer Society, New York City division and its 30,000 volunteers we urge opposition to bills H.R. 885 and its successor H.R. 3014, both proposed by Representative Walter Rogers of Texas. However, we would like at this time to go on record in support of Senate bills, S. 559, proposed by Senator Warren G. Magnuson and S. 547, proposed by Senator Maurine Neuberger, both of which have the full approval and endorsement of the American Cancer Society and the National Interagency Council on Smoking and Health. It is our belief that legislation of the type proposed by Magnuson-Neuberger will provide the best solution to the problem of Federal action on the labeling and/or advertising of cigarettes. Passage of such bills will benefit not only the citizens of New York City but everyone in the United States.

GRAY H. TWOMBLY, M.D.,
President, American Cancer Society, New York Division.

AMERICAN CANCER SOCIETY, INC.,
New York, N.Y., May 12, 1965.

Hon. OREN HARRIS,
Chairman, Committee on Interstate and Foreign Commerce,
Rayburn House Office Building, Washington, D.C.

Dear Mr. HARRIS: At the recent hearings held by your committee on bills to provide warning labels on cigarette packages and cigarette advertising, a statement was made which left an impression that should be corrected in the report of these hearings.

The statement was that the figure of approximately 40,000 deaths annually from lung cancer in this country is a gross exaggeration. The basis for the statement was that "Vital Statistics of the U.S., 1962," vol. 2, "Mortality," part A (HEW) report that only 18,866 deaths are due to malignant neoplasms (cancer) of the bronchus, trachea and lung, specified as primary.

This is correct (item No. 162, p. 1–45). However, item No. 163 on the same page, states that 22,510 deaths were due to malignant neoplasms (cancer) of the lung which were unspecified as to whether primary or secondary. This is because the physicians who filled out these death certificates failed to state whether the cancer was primary or secondary in the lung.

This has occurred for many years so the Biometry Branch of the National Cancer Institute conducted a detailed investigation of the deaths included under this classification and found that 96.1 percent of them were primary lung cancers.

For this reason, public health officials include categories Nos. 162 and 163 in any analysis of death certificates as due to primary lung cancer.

In the recent hearings before the Senate Commerce Committee a similar effort, using the same figures, was made to discredit the statements of witnesses relative to the seriousness of the lung cancer problem in the United States. I wrote to Senator Magnuson about this and I understand that my letter was included in the published testimony of the Senate committee hearings.

I hope that in the interest of giving a true picture of the situation, you will include this letter of explanation in the record of the hearings of your committee.

If you wish to verify my statement, you can do so by checking with the Biometry Branch of the National Cancer Institute.

Respectfully,

HAROLD S. DIEHL, M.D.

AMERICAN CANCER SOCIETY, INC.,
New York, N.Y., April 20, 1965.

Hon. OREN HARRIS,
Congressman from Arkansas,
House of Representatives,
Washington, D.C.

DEAR CONGRESSMAN HARRIS: As further evidence of the essentially unanimous opinion of physicians that cigarette smoking is a serious health hazard, I am taking the liberty of sending you the attached statements which have just come to my attention, one by the American Academy of Pediatrics and one by the American Association for Thoracic Surgery.

With warm regards,

Very sincerely,

HAROLD S. DIEHL, M.D.

[From the News Letter of the Academy of Pediatrics, March–April 1965]

COMMITTEE STATEMENT

Section Committee on Diseases of the Chest

SMOKING OF TOBACCO IN CIGARETTES

Smoking of tobacco in cigarettes is clearly related to the induction of lung cancer and brings about other serious cytologic and emphysematous changes in the respiratory tract and induces detrimental changes in the cardiovascular system. Deleterious effects from cigarette smoking are directly related to both the intensity and the duration of smoking. A majority of individuals acquire the habit of smoking during childhood or adolescence; therefore, individuals acquiring the habit at this time in life undertake the greatest risk to health. The American Academy of Pediatrics should join other health agencies and the Surgeon General of the United States in every effort to discourage acquisition of the habit of cigarette smoking during childhood and adolescence.

Each member of the academy should be supplied with information exposing the problem and should be expected, as a part of his preventive medical care, to raise the question with older children and adolescents and their parents. Because of the strong bond of friendship usually present between the pediatrician and the parents and children in the families he serves, his counsel and advice might be far more readily accepted than that of any other individual. The pediatrician also should be expected to take leadership or join with other physicians in school and community programs to discourage cigarette smoking.

JOSE E. SIFONTES, M.D., *Chairman.*
CHARLES D. COOK, M.D.
WILLIAM E. LAUPUS, M.D.
ROBERT H. PARROTT,, M.D.
EDWARD M. SEWELL, M.D.
SAMUEL STONE, M.D.

SMOKING BIBLIOGRAPHY PREPARED

In the article above is a statement on the smoking of tobacco in cigarettes, prepared by the committee of the section on diseases of the chest.

The committee recommended that pediatricians be provided with information about the hazards of cigarette smoking and methods of combating it. A bibliography of generally available materials was prepared in the central office to meet the committee's recommendation. It appears on the following page.

It was compiled to help inform the practicing pediatrician for his discussions of the problem of cigarette smoking with patients and their parents and for carrying out his role in community programs to combat smoking.

While the bibliography is by no means complete, it does list some publications that may not be familiar to most physicians, according to Dr. Stanley L. Harrison, secretary for committees.

These publications were selected, he said, because (1) they will provide background information for the physician; (2) because they might be given to patients and parents; or (3) because they provide information on techniques of dealing with the problem of cigarette smoking.

Basic to the list is the report of the Surgeon General's Advisory Committee on Smoking and Health, which was mailed to all U.S. physicians in early 1964. This remains an excellent source of basic information about the hazards of cigarette smoking.

Of particular interest are the two publications outlining special curricula on smoking for teachers in Illinois and Michigan. They are typical of several such curriculums being developed in various States. The Illinois Department of Public Instruction and the Michigan Council on Smoking and Health have kindly agreed to send copies to academy members; however, the supply in both cases is somewhat limited, Dr. Harrison said.

These are listed because they tell the physician what children are being taught in school about cigarette smoking; because they may suggest some techniques that would be useful in talking with patients, and because they might suggest some ways in which the physician can support the school's education programs about cigarette smoking.

Also of special interest is Dr. Howard B. Sprague's article, "What I Tell My Patients about Smoking," which is available from the American Heart Association.

In most cases, single copies of the publications are free. They may be ordered from the publishers; they are not available from the academy.

RESOLUTION OF THE AMERICAN ASSOCIATION FOR THORACIC SURGERY

Whereas there is irrefutable evidence associating cigarette smoking with such lethal and disabling disorders as cardiovascular disease, pulmonary emphysema, and cancer of the lung; and

Whereas this evidence has accumulated largely from the observations of physicians and surgeons concerned with pulmonary and cardiovascular diseases; and

Whereas the overwhelming evidence of alarming increase of cigarette-caused death and disability is most apparent to thoracic surgeons; and

Whereas the other branches of medicine and the public look to thoracic surgeons for leadership in dealing with this vast public health problem: Therefore be it

Resolved, That the American Association for Thoracic Surgery urge all its members to intensify an educational campaign directed toward the public in general, and youth in particular, relative to the health hazards of smoking; and be it further

Resolved, That the American Association for Thoracic Surgery recommend to the Congress of the United States the passage of legislation that will regulate advertising and require a warning label on merchandise as a necessary and important step in leading the citizens of the United States and the world toward an eventual understanding of this dangerous habit; and be it further

Resolved, That copies of this resolution be presented to the congressional committees which are involved with legislation in this field.

Resolution passed at the 45th annual meeting, in executive session, March 30, 1965, New Orleans, La.

(Whereupon, at 12 noon, the committee was adjourned, subject to the call of the Chair.)

○

KANSAS STATE UNIVERSITY LIBRARY
AUG 4 1965
MANHATTAN, KANSAS