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HEARINGS

BEFORE THE

SUBCOMMITTEE ON
FOREIGN AID EXPENDITURES

OF THE

COMMITTEE ON
GOVERNMENT OPERATIONS
UNITED STATES SENATE

EIGHTY-NINTH CONGRESS

SECOND SESSION

ON

S. 1676

A BILL TO REORGANIZE THE DEPARTMENT OF STATE AND THE DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

FEBRUARY 16; MARCH 2 AND 3, 1966

PART 2

Printed for the use of the Committee on Government Operations

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CONTENTS

(This is part 2 of the second series of hearings on S. 1676 entitled "Population Crisis," held during the 2d session of the 89th Congress. The initial hearings, held in 1965, were printed as part 1; parts 2A and 2B; parts 3A and 3B; part 4, the appendix; and an index.)

Page

Opening statements of the Chairman 293, 381, 511

WITNESSES

FEBRUARY 16, 1966

Mr. Richard W. Reuter, special assistant to the Secretary of State; Director, Food for Peace 301

Mr. Edwin L. Harper, guest scholar, the Brookings Institution Center for Advanced Study 373

MARCH 2, 1966

Dr. Donald N. Barrett, professor of sociology, University of Notre Dame, Notre Dame, Ind.; Director of the Notre Dame Institution for Latin American Population Research; and a member of the Papal Commission on Population and Birth Control 384

Dr. André de Bethune, author and professor of chemistry, Boston College, Chestnut Hill, Mass 420

Mrs. André J. de Bethune 426

Prof. Albert P. Blaustein, professor of law and law librarian, Rutgers, the State University, Camden, N.J 465

Dr. Joseph D. Beasley, pediatrician, Department of Child Health and Pediatrics, Tulane University School of Medicine, New Orleans, La 474

MARCH 3, 1966

Hon. Orville L. Freeman, U.S. Secretary of Agriculture; accompanied by Les Brown, staff economist; and Michael Walsh, White House Fellow 514

EXHIBITS

FEBRUARY 16, 1966

No.

44. Letter from Senator George McGovern, Democrat, from the State of South Dakota 295

45. "The Most Important War," a speech made before the Senate by Senator George McGovern, Congressional Record, September 23, 1965, pp. 23918–23924 295

46. Photograph of Mr. Richard W. Reuter, special assistant to the Secretary of State; Director, Food for Peace, former Executive Director of CARE 301

47. Declaration of the World Food Congress assembled at Washington 308

48. "Outlook Dreary as Parliament Opens in India," by Warren Unna, from the Washington Post, February 15, 1966 309

49. "Expert Fears Backfire in U.S. Food Aid Plan," by Jean M. White, from the Washington Post, February 15, 1966 311

50. "The Silent Explosion," by Dr. Philip Appleman, Beacon Press, 1965, chapter 2, pages 20–43, from which an excerpt was taken entitled "The Cornucopian Economists" 311

No. Page

51. "Analysis of Famine," by Barbara Tufty, Science News, volume 90, July 30, 1966, pages 74, 75 ---- 323
52. Letter from Karl Singer to Senator Ernest Gruening ---- 326
53. "The Stork Visits Dorking—1766" an excerpt from "Malthus in Retrospect," Robert C. Cook, editor, Population Bulletin, volume XXII, No. 1, February 1966, published by the Population Reference Bureau, Inc ---- 327
54. "Professor Malthus and His Essay," Judy K. Morris, Population Bulletin, volume XXII, No. 1, February 1966, published by the Population Reference Bureau, Inc ---- 330
55. Excerpts from "First Essay on Population 1798," by Robert Thomas Malthus, reprinted for the Royal Economic Society and published by MacMillan & Co., Ltd ---- 343
56. "An Essay on the Principle of Population," excerpts from Book IV, chapter I, 5th edition, 1817, selected and edited by Lloyd Reynolds and William Fellner, Yale University; published by Richard D. Irwin, Inc., Homewood, Ill ---- 353
57. "I Have Mixed Feelings About This Turn of Events," a cartoon by Herbert Block, Washington, D.C., the Washington Post, Washington, D.C., January 7, 1966. ©, 1966 Herblock ---- 371
58. Photograph of Mr. Edwin L. Harper, guest scholar, the Brookings Institution Center for Advanced Study ---- 372
59. "Questionnaire Submitted to Participants and Observers at the 1965 World Population Conference," by Edwin L. Harper, guest scholar ---- 378

MARCH 2, 1966

60. Photograph of witnesses who testified on S. 1676 before the Subcommittee on Foreign Aid Expenditures ---- 380
61. Letter to Senator Gruening from J. Weaver Hess, Pastor, Grace Presbyterian Church, Carmichael, Calif ---- 382
62. "Authority, Usury, and Contraception," by John T. Noonan, Jr.; "Cross Currents," volume XVI, No. 1, Winter 1966 ---- 399
63. Letter to Senator Gruening from Paul D. Ward, Administrator, Health and Welfare Agency, State of California ---- 417
64. Address by Gov. Edmund G. Brown, given at a symposium in the University of California Medical Center, San Francisco, Calif., January 15, 1966 ---- 417
65. "Child Spacing: The Mathematical Probabilities" by André J. de Bethune, Ph.D.; article in "Science," volume 142, pages 1630–1633, December 27, 1963 ---- 430
66. "Natural Oligospermia and Rhythm," by André J. de Bethune, Ph. D., Cosmos, a science journal of Boston College, volume 7, No. 2, spring 1965 ---- 439
67. Excerpts from "The Scientific Thought of Pius XII—Part I," by André J. de Bethune, Ph.D., "Cosmos," science journal of Boston College, volume 4, 1962 ---- 453
68. The Gallup Poll "Catholics See Approval of Birth Control," from the Washington Post, Washington, D.C., August 20, 1965, ©, American Institute of Public Opinion ---- 456
69. "Catholics and Population," by Garry Wills, "National Review," July 27, 1965 ---- 456
70. Charlie Brown cartoon by Charles M. Schulz, from "Go Fly a Kite, Charlie Brown," Holt, Rinehart & Winston, Inc., ©, United Features Syndicate, Inc., 1959 ---- 463
71. Charlie Brown cartoon by Charles M. Schulz, from "Go Fly a Kite, Charlie Brown," Holt, Rinehart & Winston, Inc., ©, United Features Syndicate, Inc., 1959 ---- 464
72. Charlie Brown cartoon by Charles M. Schulz, from "Go Fly a Kite, Charlie Brown," Holt, Rinehart & Winston, Inc., ©, United Features Syndicate, Inc., 1959 ---- 472
73. "Research Projects Concluded and Those Underway in Topical Medicine and Family Planning," by Dr. Joseph D. Beasley, obstetrician and gynecologist, Department of Child Health and Pediatrics, Tulane University School of Medicine, New Orleans, La ---- 473

No.
74. United Nations No. 2 (1960) "Declaration of the Rights of the Child," adopted by the General Assembly of the United Nations, New York, November 20, 1959; presented to Parliament by the Secretary of State for Foreign Affairs by Command of Her Majesty, June 1960, London; Her Majesty's Stationery Office ---- Page 491
75. Supplemental statement on the rights of the child, submitted by Dr. Joseph D. Beasley, obstetrician and gynecologist, Department of Child Health and Pediatrics, Tulane University School of Medicine, New Orleans, La ---- 493
76. "Supplemental Statement as to What is Prescribed by the Catholic Church Under the Rhythm Method," by Dr. André J. de Bethune, Boston College, Chestnut Hill, Mass ---- 495
77. "Supplemental Statement on SERENA or Sympto-Thermic Method of Temperature Control," by Mrs. André de Bethune ---- 499
78. "The Secret Drama Behind the Pope's Momentous Decision on Birth Control," by Lois R. Chevalier, Ladies Home Journal, March 1966 -- 499

MARCH 3, 1966

79. Photograph of witness who testified on S. 1676 before the Subcommittee on Foreign Aid Expenditures ---- 511
80. Table entitled "Money Cut From 1967 Budget for Land-Grant Colleges" ---- 525
81. Photograph, courtesy of Kaiser Aluminum News, annual report, 1965, and excerpt "She Had So Many Children" from "The Dynamics of Change," part 1 of a series presented by Kaiser Aluminum in observance of its 20th anniversary, December 31, 1965 ---- 530
82. "What—Exit for Asia?" by Pyrrho, "National Review," July 27, 1965 - 533
83. "The Avalanche" by Theodore Sturgeon, "National Review," July 27, 1965 ---- 537
84. "Food—For Peace?" the "New Republic," volume 154, No. 1, January 1, 1966 ---- 542
85. Cartoon entitled "Drag Race," Chicago Sun-Times, © 1964 by Mauldin ---- 544

POPULATION CRISIS

WEDNESDAY, FEBRUARY 16, 1966

U.S. SENATE,
SUBCOMMITTEE ON FOREIGN AID EXPENDITURES,
COMMITTEE ON GOVERNMENT OPERATIONS,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room 3302, New Senate Office Building, Senator Ernest Gruening (chairman of the subcommittee) presiding.

Present: Senators Gruening and McGovern.

Also present: Joseph Lippman, staff director; Herbert W. Beaser, chief counsel; Laura Olson, special consultant on population problems; and Mary A. Miller, clerk.

OPENING STATEMENT OF THE CHAIRMAN

Senator GRUENING. The meeting will please come to order.

Since the Subcommittee on Foreign Aid Expenditures held its last hearing on S. 1676, President Johnson has again, and for the 18th time, expressed his concern about the population explosion. In his "A War on Hunger" message sent to the Congress on February 10, the President said: "Populations are exploding under the impact of sharp cuts in death rates * * *," and

"A balance between agricultural productivity and population is necessary to prevent the shadow of hunger from becoming a nightmare of famine. In my message on international health and education, I described our increased efforts to help deal with the population problem."

SUPPORT GROWING FOR A SLOWDOWN ON POPULATION GROWTH

On no issue has any President spoken before as has President Johnson—so fervently, so urgently, and so repeatedly. This follows, of course, the important declaration of former President Eisenhower which came just before our first hearing some months ago, in which he reversed the opinion which he had expressed as President, that the matter of population control was not a concern of the Government, feeling now, on the contrary, that it is one of the most pressing problems of our time, and that the Government must and should enter into it actively.

So we have the support of both the President and the ex-President, and, of course, a tremendously growing support all through the country and all through the world, with a realization that unless something is done to put a check, put a halt, put a slowdown on population growth, the world is going to be faced with almost insoluble problems, and that those problems are with us today.

DR. RAYMOND EWELL PROPOSES PROGRAM TO MEET FOOD NEEDS

On February 9 the subcommittee heard from Dr. Raymond Ewell, vice president for research of the State University of New York at Buffalo. Dr. Ewell knows a great deal about food fertilizers and food production. He told the subcommittee that the most optimistic appraisal of future trends in agriculture indicated to him that agriculture cannot keep up with the present population growth rates much beyond 1980. He added that making birth control information available now was desirable in order to have some effect in the 1970's and to reduce the severity of the food crisis in the 1980's.

Dr. Ewell had five specfic suggestions for action programs which I will repeat at this time: (1) Step up shipments of food under the food-for-peace program; (2) ship agricultural inputs to food-deficit countries; (3) help food-deficit countries to produce agricultural inputs; (4) supply technical manpower; and (5) step up research on agriculture in the food-deficit countries.

COUNTERPART FUNDS COULD HELP

The subcommittee looks forward to this morning's continuation of the population dialog as it relates to food supplies and food production and welcomes any comments on the suggestions made by Dr. Ewell.

The subcommittee hopes, too, that there can be discussion on the suggestion made by Congressman Paul Todd, of Michigan, that a part of local currency generated in countries overseas by the sale of food-for-peace items be used to combat population problems if the country so desires.

We constantly stress in all our hearings the importance of voluntary acquiescence in this program. There should be, in my view and I think in the view of the members of the subcommittee, no compulsion. This is a matter of making this information available to the people who want it.

Would this earmarking of counterpart funds be sensible? It seems to be a good idea if it could be implemented.

BIOGRAPHIC STATEMENT: GEORGE MC GOVERN

Now, the Subcommittee on Foreign Aid Expenditures is pleased that Senator George McGovern can be present today when testimony is being given by Mr. Richard W. Reuter, special assistant to the Secretary of State, who is charged with the responsibility for the food-for-peace program. Senator McGovern was named Food-for-Peace Director and special assistant to President Kennedy in December 1960, and served with distinction for 3 years.

He is a member of the Agriculture and Interior Committees, and the author of "War Against Want" which describes his work with the food for peace program.

George McGovern was born in Avon, S. Dak., July 19, 1922. Educated in the public schools in Mitchell, S. Dak., he received his B.A. degree from Dakota Wesleyan University, and his M.A. and Ph. D. in history and government from Northwestern University.

In World War II, George McGovern was a B–24 bomber pilot. He received the Distinguished Flying Cross and the Air Medal and three Oak Leaf Clusters. From 1950 to 1953 he was professor of history and government at Dakota Wesleyan.

During the next 3 years he was executive secretary of the South Dakota Democratic Party and in 1956 was elected a Member of the U.S. House of Representatives where he served for 4 years.

Senator McGovern is married. He and his wife Eleanor have four daughters and one son.

I now direct that a letter and speech by Senator McGovern be included at this point in today's hearing record. These two inclusions attest to his creativity and describe the challenge of world hunger and the hoped-for American response to this need.

(The letter and speech follow:)

EXHIBIT 44

LETTER FROM SENATOR GEORGE MCGOVERN

U.S. SENATE,
COMMITTEE ON AGRICULTURE AND FORESTRY.

Dear Friend:

The enclosed speech describes the challenge of world hunger and what I believe should be the proper American response—a greatly stepped up effort on our part to utilize our agricultural abundance and our agricultural know-how to assist the developing countries.

As director of the U.S. Food for Peace Program under the late President Kennedy, I developed a growing conviction that our food-producing capacity is our most valuable instrument in today's world. Food will be an even more powerful weapon than guns in determining the future course of mankind.

Some of the suggestions in the enclosed speech may be of special interest to you. If you agree with the general point of view which I have here advocated, it might be useful for you to stimulate discussion in organizations to which you belong. It might also be helpful to express your views in correspondence with public officials, particularly your representatives in the Congress.

With every good wish, I am,

Sincerely yours,

GEORGE MCGOVERN,
U.S. Senator, South Dakota.

EXHIBIT 45

SPEECH MADE BEFORE THE SENATE BY SENATOR GEORGE MCGOVERN

[From the Congressional Record, Sept. 23, 1965, pp. 23918–23924]

THE MOST IMPORTANT WAR

Mr. MCGOVERN. Mr. President, the most challenging crisis for the rest of this century will be the accelerating race between food and people. We are faced with the specter of widespread hunger and starvation on a scale the world has never before known unless we begin today to plan for tomorrow's food needs. The nations of the earth must do more than they are now doing to meet future food demands or major starvation will be the most painful fact of life on this planet within 10 years.

Even today, human hunger is a much more serious problem than is generally realized. Half a billion people suffer from inadequate quantities of food. Another billion subsist on improperly balanced diets, most notably a shortage of protein foods. Three million children die each year from diseases induced by malnutrition. Countless human beings go through life permanently crippled physically, mentally, and emotionally because of inadequate protein, vitamins, and minerals in their formative years. The ever present companions of mal-

nutrition—lethargy, disease, and premature death—breed a vicious circle of listless human beings powerless to break out of their misery and yet capable of breeding more misery for their children and for generations yet unborn.

During 1961 and 1962, when I was privileged to serve as food-for-peace director for the late President Kennedy, I developed a growing conviction that the most overwhelming paradox of our time is to permit half the human race to be hungry while we struggle to cut back on surplus production and overeating. Science has broken the space barrier, but not the bonds of hunger. Today's hunger, however, is only a mild indication of the enormous food gap that looms on the horizon.

Writing in 1789, Dr. Thomas Malthus, of England, observed that man's capacity to reproduce his kind was so much greater than his capacity to produce food that population would soon exceed available food supplies. Starvation would then be man's lot unless his numbers were kept down by war, pestilence, or other drastic developments.

Although it has been intellectually respectable to scoff at the predictions of Malthus in view of the unforeseen increases in food production during the past 150 years, his warnings may yet prove to be valid. Certainly, one cannot look at the projection of current food production and population growth without a sense of genuine alarm for the future. Multitudes of people are now on a collision course with starvation.

What are the facts behind this disturbing prospect?

Fact No. 1: The population of the world is now accelerating at a faster rate than is food production. It has taken the entire history of the human race from the Garden of Eden to the year 1960 to reach a global population of 3 billion people. But the most careful projection indicates that by the end of this century—35 years hence—the population of the globe will be double its present size, or 6 billion. What required thousands of years to achieve will be duplicated in 35 years.

These figures testify to the marvels of modern medicine, sanitation, and scientific achievement in extending human life. But they also present an arresting outlook because they are not accompanied by a proportionate increase in food production. Because food production is now lagging behind a burgeoning world population, there are more hungry people in the world today than any previous time in recorded history.

Fact No. 2: The prospects for substantial increases in food production in the areas of greatest need, most notably Asia and Latin America, are not encouraging. In three regions of the world—first, the United States and Canada; second, Western Europe; and, third, Australia-New Zealand, plus parts of Argentina and southeast Asia—there are adequate food supplies. These regions have utilized modern technology, an educated rural population, concerned government, economic incentives and fertilizer, pesticides, hybrid seed and other innovations to increase the productivity of the land faster than their population growth.

But the combined population of these food surplus regions includes only one-fifth of the world's people. The other four-fifths live in Asia, Latin America, Africa, and the Middle East. These areas are increasing their populations faster than either the supply of arable land or the productivity of their presently cultivated acreage. There is today only 0.4 of an acre of cropland per person in Asia, as compared to 1.2 acres per person in the United States and Canada—a ratio three times more favorable for North America than for Asia.

This imbalance between people and arable land is greatly complicated by two other factors. First, underdeveloped regions, such as Asia—with the exception of Japan—have not significantly increased the productivity of their cultivated acreage. Primitive farming methods, improper irrigation techniques, the lack of an educated rural population, inadequate credit and land ownership structures, ineffective political leadership, the absence of rural extension services, a shortage of capital, the lack of farm-to-market roads or a cash market for produce, and the generally low priority which many countries have attached to rural development—all of these deficiencies have held agriculture in a primitive state characterized by static productivity in most parts of the world. Secondly, population growth rates are the greatest in the regions that have the least favorable food productivity. In the 1930's Latin America exported more grain than any other region of the world, including North America. Today, three decades later, Latin America imports much more grain than it exports. Its per capita pro-

duction of grain is down 16 percent from the 1930's level. Yet, before another three decades have passed, the exploding population of Latin America will increase two and a half times. By the year 2000, nearly 600 million Latin Americans will compete for the resources that now inadequately feed 250 million. Much the same situation prevails in Asia.

Given the combination of inadequate arable land, low agricultural productivity, and swift population growth of the underdeveloped areas, the prospect for adequate diets is not encouraging. Consider the problem of India. This nation of 450 million inhabitants is now subsisting on a nearly static local production supplemented by 3 or 4 million tons a year in food-for-peace shipments from the United States. Yet, within the next 15 years India's population will increase by an amount equal to the present population of the United States. Six hundred and thirty-seven million Indians will be claiming in 1980 the strained resources that now inadequately feed 450 million. Highlighting recent findings of U.S. Department of Agriculture expert, Dr. Lester Brown, the editors of U.S. News & World Report write:

"In Asia, merely to maintain present meager diets, yields per acre must increase by more than 50 percent between now and 1980. An increase of this magnitude amounts to more than 240 million tons of grain. It would require application of 24 million tons of fertilizer a year to get such yields. In the entire world today, total production of fertilizer is only 28.6 million tons a year."

Fact No. 3: Food reserves in the United States and other food surplus countries are not as large as commonly believed. Even if the United States could find some quick and effective method of utilizing our food surpluses abroad, they would be quickly swallowed in the deepening sea of human need around the globe. So much public attention has been focused on the problem of U.S. farm surpluses that few people are aware that the surpluses are all but gone. Government acreage controls, cropland retirement, increased exports including an expanded Food for Peace effort have worked down surplus stocks in recent years to a level little above that needed for our own national reserves. Dried milk, a high protein food essential to school lunch and other child feeding programs, is in such short supply that our food-for-peace officials have curtailed the programs abroad of voluntary agencies, such as CARE, Church World Service, Catholic Relief Services, and Lutheran World Relief.

Wheat stocks, which constitute the main body of the U.S. food-for-peace program, have been worked down from 1.4 billion bushels in 1960 to 800 million bushels today. Corn and other feed grain supplies have been sharply reduced. Indeed, the composite wheat and feed grain reserve of the United States would scarcely meet our own consumption needs for 6 months if a catastrophe should wipe out our crops in a single growing year.

Recently, President Johnson suggested that the Congress consider setting aside a national strategic food reserve. If we were to carry out this suggestion and establish food reserves sufficient for 6 months consumption, we would have to end our food-for-peace program immediately or launch much greater production.

If we were to distribute our present food stocks evenly to the needy multitudes of the world, they would be exhausted in a few weeks time. We have been shipping approximately 3 million tons of wheat each year to India which is a sizable flow, but one must remember that India consumes 80 million tons of grain yearly and she will need twice that amount in another three decades. Even if we could supply the entire world with food—which we cannot—there would be difficulties to overcome including the necessity of protecting the farm markets of the local producers and the markets of other exporters. Furthermore, in under-developed countries we are confronted with limited port facilities, inadequate storage, a lack of roads and other problems, of distribution. It is not an easy task to distribute food effectively even when a well-meaning Government wants to give it away.

In spite of the magnitude of the problem, however, there is no escaping the challenge of world hunger. Neither our national security nor our moral and political position in the world will permit us to turn our backs on this No. 1 problem of the last third of the 20th century. Furthermore, in spite of difficulties, a nation that can send a man to the moon can unlock the doors to food production and distribution.

Eighty percent of the people of the globe live in rural areas. The majority of them are still scratching a subsistence from the soil with methods little changed

in thousands of years. These are the multitudes that provided the seedbed for the sweeping Communist revolutions that seized Russia and China after the First World War. Marx thought that communism would become as the logical next step after the advanced stages of capitalism. Instead, it came to the primitive peasant societies of China and Russia while largely losing its appeal to the industrialized, urban areas of the Western World.

Guided by these historical developments rather than by Marxist ideology, the ambitious leaders of China are now calling—not for the industrial workers of the world to unite, but for a long-term struggle of rural people against the urbanized Western World. It is significant that the French were driven out of Indochina—not because they lost the cities, but because they lost their support in the countryside. The same situation has plagued U.S. efforts to stabilize South Vietnam for the past decade. Likewise, Castro came to power through the hills and back country of Cuba even while the Batista government held a seemingly firm grip on the urban centers.

The great contest of our time now turns on whether we or the Communists can develop the most acceptable and effective pattern for meeting the hunger and misery of the uncommitted rural world. I firmly believe that we have the capacity to win that contest and in the process to improve our relations even with those peoples who have fallen under the sway of communism in Russia, China and elsewhere.

I believe that we ought to declare an all-out war against hunger for the balance of this century. We should call on our farmers and our agricultural technicians to enlist for the duration in the war against want. We should announce to the world now that we have an unused food producing capacity which we are willing and anxious to use to its fullest potential. Our Government should leave no doubt that we will bend every effort to see that no nation—friend or foe—starves while we permit land and surpluses to remain idle.

Communist China has called for a people's war in Asia, Africa, and Latin America to win the world over to communism. But Red China has failed on the agricultural front and the situation has been worsened by drought and other natural hazards. She cannot win a people's war against the developed world if we will place the welfare of people above short-term goals of military maneuvering and cold war strategy. So let us take the lead in a people's war with corn instead of cannon, with farmers instead of marines, with agricultural technology instead of battle plans, with food instead of fear.

The attack on world hunger must move on two fronts. First, is the short-term effort over the next 10 or 15 years to make more effective use and distribution of our farm abundance abroad. This will require not only stepping up our production at home, which is the easy part of the task; it will require more technical guidance to the receiving countries in building up their port unloading and handling facilities, their storage structures, and the entire system of food distribution. I believe that we can profitably double our existing food-for-peace program within less than 10 years if we will preface this buildup with improved distribution facilities abroad.

It must be recognized that deliberately producing farm commodities for use overseas represents a departure in past policy. Present food-for-peace efforts are based largely on the distribution of surpluses that have accumulated in spite of farm program efforts to prevent them. It must also be recognized that in most cases it is preferable if not essential for the developing countries to supply most of their own food needs. But the fact remains that for the foreseeable future, the people of Asia, Latin America, and elsewhere cannot increase their production fast enough to meet their needs without food shipments from the United States and other surplus food areas. I cannot believe that the American people would want to leave good cropland idle at public expense while they watched hunger spread across the world.

The second and more fundamental front in the war against hunger is the urgent need for a rapid acceleration of food production abroad. We and other advanced states must assist the developing world to undertake the kind of agricultural revolution which we have experienced in the last 100 years. There is an urgent need for the knowledge and skills of our agricultural technicians, research scientists, extension workers, and experienced farmers. An American Farmers Corps consisting of retired farmers or working farmers willing to take leave of their own farms for a time could perform an invaluable service abroad. There is great need, too, for more fertilizer, pesticides, irrigation development,

hybrid seed, and feed-mixing equipment. Enlightened landownership and tax policies and low-cost credit are essential to rural development. So is an improved system of rural education.

This type of aid is not cheap nor is it easy to implement. But food and agricultural assistance are less costly than military hardware and they are much more constructive and helpful to the peoples we assist. As one watches our two impoverished friends, India and Pakistan, shooting at each other with American arms, it is difficult to avoid the conclusion that both countries need our food and our farm know-how more than they need our guns.

Much of the tension and unrest that opens the way for Communist inroads and violent upheavals have roots in hunger and misery. Food abundance, on the other hand, is a powerful instrument capable of replacing despair with hope and converting the seeds of violence into the foundations of peace.

Aside from the political and moral gains that would come from a broad-scale attack on world hunger, the economic benefits to the American economy would be great. We are now spending over $2 billion a year to reimburse farmers for retiring cropland and reducing production. By strenuous, expensive programs we have managed to take 50 million acres of farmland out of production. If we began now to divert a portion of the farm control budget into the purchase, shipment, and distribution of farm commodities abroad, we could double our food-for-peace effort with little increase in overall expenditures. The impact on the American economy would be much better than our present cropland retirement programs. Idle farms and idle acres and idle farm labor mean a loss of income to every farm community. On the other hand, full farm production leads to the purchase of more farm machinery, more gasoline and tires, more trucks and automobiles, more seed, fertilizer, lime, and equipment of all kinds. Thirty million tons of additional business for the merchant shipping industry would be generated by a doubled food-for-peace program.

I have supported acreage controls combined with price supports because such programs are essential until we develop greatly improved distribution methods to utilize our abundance abroad. It will doubtless continue to be necessary to have a farm price stabilization program, given the unorganized pattern of American farm producers. But large-scale cropland retirement is not a viable permanent farm policy for the United States in a hungry world.

Furthermore, the strengthening of the diets and the agricultural economy of the developing countries—far from removing them as potential American markets—would open the way for new U.S. long-range markets. Those nations with advancing agricultural and industrial productivity are also our best commercial customers. Canada with a tiny fraction of the population of India is a larger American customer than India. After assisting postwar Japan develop its agricultural and industrial economy, we discovered that she has become the largest purchaser of American farm produce.

To accomplish the objectives of a 10-year war against want, I introduced on June 17 the International Food and Nutrition Act. That measure would authorize the expenditure of half a billion dollars the first year to first, purchase needed nutritious foods in U.S. markets for use overseas; second, increase the capacity of the developing countries to receive and distribute such food aid efficiently; and third, strengthen the food producing capacity of farm people in the developing world. The bill would authorize a half billion dollars increase for these purposes each year for 7 years to a maximum of $3½ billion.

The bill would authorize the President to create an International Food and Nutrition Office, perhaps an expanded role of the existing food-for-peace office, to administer the proposed program. Also, the legislation authorizes an expanding role for the United States in the United Nations Food and Agriculture Organization Freedom from Hunger Campaign and its related experimental world food program. As director of food for peace and chief delegate to the Food and Agriculture Conference in Rome in April 1961, I was permitted to make the initial U.S. offer which led to the establishment of the $100 million, 3-year world food program. The cooperating nations are hoping to continue and expand this multilateral food assistance program when it is reviewed later this year. Certainly, it is to our advantage and to those we seek to assist, to coordinate our food aid within the family of nations and with full respect for the interests of other concerned countries.

The respected editor of the conservative Farm Journal put the case cogently for using more fully our agricultural abundance to feed the hungry when he wrote recently:

"There will doubtless be times when we will wonder whether anybody could help such people, or should try. But we'll have to try, and keep trying. We're spending decades—and $20 billion—to put a man on the moon. It seems at least as important to help the human race eat."

Then, Editor Carroll P. Streeter added:

"With half the world hungry now, and sure to be a lot hungrier before long, we haven't a moment to lose. We must comprehend this frightening prospect and think about what we will do, both with regard to our farm plant and our program of helping the hungry world."—(October 1965 Farm Journal.)

In a brilliant new book, "The United Nations at Work," a noted authority on development problems, Joseph M. Jones, described the worldwide effort to drive hunger from the face of the planet as "the most hopeful enterprise of our time." To enlist in that enterprise is to enlist on the side of health and hope and life for mankind. It is indeed, the most hopeful enterprise and the most important war of our time.

BIOGRAPHIC STATEMENT: RICHARD W. REUTER

Senator GRUENING. Our witness today will be Mr. Richard Reuter, and we are very glad to have him here. He is concerned about Department of State policy toward overseas use of food, and he continues to coordinate the activities of U.S. Government agencies under Public Law 480, the Agricultural Trade Development and Assistance Act. He has held this responsibility since August 1962, when he was named by the late President Kennedy to be special assistant to the President and Director of Food for Peace.

MORE THAN 100 MILLION PEOPLE NOW BEING FED BY FOOD-FOR-PEACE PROGRAM

The Department of State reports that U.S. food donated under food for peace is now reaching more than 100 million people in the world and the subcommittee hopes Mr. Reuter will tell it more about the program.

In addition, the Department of State reports that sales of American agricultural commodities meet the needs of countries without adequate foreign exchange for normal food purchases.

Mr. Reuter has devoted the past 20 years to the field of food and nutrition in international development. He is a former executive director of CARE, the international voluntary aid agency which he joined in 1946, soon after its founding. He is also a former assistant editor of Town and Country magazine, and has held administrative posts in publishing and retailing.

Born in Brooklyn, N.Y., in 1918, he was graduated from Amherst College in 1938 with high honors in economics. He did graduate work at Columbia University. In 1963 Amherst awarded him an honorary doctorate.

Mr. Reuter has been a director of Consumers Union and the Philippine-American Science Foundation, as well as international welfare organizations serving refugees and relief needs. Decorated by a dozen foreign governments for his welfare activities, Mr. Reuter in 1961 was appointed an associate commander in the Order of St. John. Married and the father of four children, he makes his permanent home in East Setauket, Long Island, N.Y.

We will place in the record at this point a photograph of our distinguished witness.



EXHIBIT 46

Mr. Richard W. Reuter, special assistant to the Secretary of State; Director, Food for Peace, former Executive Director of CARE

Mr. Reuter, we are very happy to have you here. We know that you are very knowledgeable in this field. We would be glad to have you proceed in whatever way you think best.

STATEMENT OF RICHARD W. REUTER, SPECIAL ASSISTANT TO THE SECRETARY OF STATE; DIRECTOR, FOOD FOR PEACE

Mr. REUTER. Thank you, Senator.

Senator McGovern, Mr. Chairman, I am honored to be here today.

This committee has done much to create an awareness in this country that the population/food relationship may well prove to be the challenge of this decade. As many of your witnesses have pointed out in these hearings, these two questions—population and food—are related. It seems to me that U.S. Government programs are increasingly reflecting this fact.

In his important Independence, Mo., speech on January 20, President Johnson said:

> We will increase our efforts in the great field of human population. The hungry world cannot be fed until and unless the growth in its resources and the growth in its population come into balance. Each man and woman—and each nation—must make decisions of conscience and policy in the face of this great problem.
>
> But the position of the United States is clear. We will give our help and support to nations which make their own decisions to insure an effective balance between the number of their people and the food they have to eat * * *.

I am not here as a spokesman for the Department of State on S. 1676. Senator Gruening kindly invited me to report today, as the Director of the Food-for-Peace program, on the food side of the population/food question.

WE STAND AT THE CROSSROADS

Today, as we begin the second decade of food aid programing under Public Law 480, we stand at the crossroads. The direction we take may very well entail basic and fundamental changes in the goal of American agriculture. For we are facing a crisis of monumental proportions in the world's ability to feed itself. For the first time in the history of man we have it within our grasp to make freedom from hunger in the world a reality—and yet, ironically, despite all our progress and all our knowledge there are more hungry people, in numerical terms, than ever before. It is very hard to realize there are twice as many ill-fed as well-fed people on this earth. As witnesses before this subcommittee have emphasized, on a per capita basis the world during the 1960's has been slipping backward in food production. Unless we reverse current trends there will be widespread starvation in little more than a decade. A whole new awareness of the importance of agriculture in the developing world is evolving as these facts are being more broadly understood.

"WE ARE ONE OF A FEW SMALL ISLANDS OF AGRICULTURAL BOUNTY IN A SEA OF HUNGRY HUMANS"

The United States is faced with a challenging paradox: an American agriculture so phenomenally productive that its very productivity has been a vexing problem here at home, at a time when hunger casts an everspreading shadow over the world. Our own surplus production has tended to give the impression the world had enough—or even too much—food. In fact, of course, we are one of a few small islands of agricultural bounty in a sea of hungry humans.

ONE AMERICAN FARMER PRODUCES FOOD FOR 31

The American farmer today produces enough food for himself and 30 other people—operating on only half the number of farms we had 30 years ago, and feeding a nation whose population has grown by 50 percent in the past 30 years. Not only do American farms produce more and better foods than any other country in the world today, but as consumers we pay less for this food than anywhere else in the world.

However, many countries with a majority of their workers engaged in agriculture are not yet self-sufficient in food production. As the world runs out of new lands to plow up, the needed increase in food must come from increased production per acre. But this breakthrough has not yet occurred in the less developed countries.

In analyzing the problem of world food supply, a significant fact is the changing import-export pattern of developing nations. In the 1930's for example, Latin America exported more grain than any

other region of the world, including North America. Today, 30 years later, Latin America generally imports more grain than it exports.

THE SHADOW OF HUNGER LOOMS

Dr. B. R. Sen, Director-General of the United Nations Food and Agriculture Organization, has issued repeated warnings. Last August in a report to Ministers of Agriculture, he pointed out that food production in the developing countries increased little more than 1 percent during the 1964–65 harvest year. It was thus less than the growth of population, now running at the rate of about 2 percent a year. In fact, the developing countries of the world—formerly major grain exporters—are slowly losing the ability to feed their own people. A Department of Agriculture chart standing in my office points up the extent of the changing picture. In the prewar period, the less developed countries of Asia, Africa, and Latin America exported—net—some 11 million tons of grain, largely to the industrialized countries.

"TODAY, THE LESS DEVELOPED COUNTRIES IMPORT FROM THE ECONOMICALLY DEVELOPED COUNTRIES . . ."

By midcentury this had been changed to a net import of 4 million tons, largely from the industrialized countries. Today, the less developed countries import from the economically developed countries 25 million tons. Parenthetically, may I say that there is a major change going on affecting the Communist world. Today the Communist countries import from the West some 22 million tons of grain, with 15 million of this being accounted for by the relatively industrialized countries of Russia and the European bloc. This 15 million is in addition to the 25 million tons less developed countries demand on the industrialized countries of North America, Oceania, and the Common Market.

It is encouraging to insert here that the February report of USDA on world agriculture suggests that we may be turning the corner in Latin America. Calendar year 1965 food production per capita went up in Latin America for the first time in the 1960's.

"THE WORLD WILL BE SEVERELY TAXED TO AVOID WIDESPREAD FAMINE . . . THIS SUMMER IN INDIA"

I was at the United Nations Population Commission meeting in New York last March 24 when Dr. Sen said:

Either we take the fullest measures both to raise productivity and to stabilize population growth or we will face disaster of unprecedented magnitude.

Dr. Sen continued—

The outlook is alarming. In some of the most heavily populated areas the outbreak of serious famines within the next five to ten years cannot be excluded.

Last month I was in India with Secretary Rusk—the food problem is acute there this year. The monsoon, so vital to India's agriculture, failed and the resultant drought is the worst of this century. The world will be severely taxed to avoid widespread famine—not in 10 years—but this summer in India.

67–785—66—pt. 2——2

INDIAN LIFE EXTENDED 14.9 YEARS IN LAST DECADE

India's population today is estimated at 496 million, with 89.3 million people in urban areas and 406.7 million in villages and rural areas. The annual increase in population is estimated for 1965 at 11,800,000 or approximately 2.4 percent a year. It should be emphasized that this is due significantly to an extension of life. Life expectancy in 10 years has increased from 32.6 years to 47.5. This has important implications for many people are living in the productive years of their lives. India each year produces, in number of people, a new Australia.

On the food side, agriculture is the largest single sector of India's economy. It accounts for approximately one-half of India's economy. It accounts for about one-half of India's foreign exchange earnings. An estimated 328 million acres are under cultivation with 48 million acres sown to more than one crop each year. The agricultural labor force in the 1961 census accounted for 70 percent of the total labor force of 188.4 million.

INDIA RATIONS FOOD

Yet India has not become self-sufficient in food. Sixty to sixty-five million cultivators retain two-thirds of the food grain production in the 550,000 villages of India. For most crops, India's yields vary from one-fifth to one-half of those currently achieved in the United States. Last year was a good one with grain production reaching a reported 88 million tons. However, 7 million tons of food imports were required—6 million from the United States under food for peace. This year the Indian Government estimates the drought will reduce grain crops to only 75 or 76 million tons of grain. Through rationing in all cities of over 100,000, about 20 percent of the population, and national voluntary abstinence from one meal a day, the Government hopes to cut requirements to 88 million tons of grain. There will be a shortfall then of from 11 to 14 million tons of food grains at conservative estimates.

The United States has already provided 6½ million tons to help fill this gap. Other nations have provided over $60 million worth of grain, milk, and other foods, in response to an emergency appeal from the Indians. This is roughly a wheat equivalent of about 1 million tons.

U.S. SUPPORTS INDIAN EMERGENCY PROGRAM

Secretary Freeman is representing the President in coordinating U.S. Government efforts to support Government of India emergency programs. Lester Brown, the able USDA economist who has done such important research in this field of food and population, I am sure, will speak in more detail of the Indian picture when he appears before your subcommittee.

AID with USDA technical support is working with the Indian Minister of Food and Agriculture on the requirements for a significant increase in yield per acre for the long-range change in the Indian food picture. Ten percent of the best cropland will be intensively farmed, with coordinated inputs of new seeds, fertilizers, pesticides.

"INDIAN GOVERNMENT IS . . . TRYING TO OVERCOME DEFICIENCIES IN ITS AGRICULTURAL SECTOR"

Fertilizers will be a key factor and the Indian Government is now aware of this and energetically trying to overcome deficiencies in its agricultural sector. President Johnson in December authorized $50 million in AID credit for fertilizer procurement; the Indians have allocated more than $70 million of scarce foreign exchange for further procurement. Both are designed to overcome somewhat the 60-percent shortfall in planned goal for fertilizer production—400,000 tons in place of the projected 1 million tons by 1965.

SIX INDIAN STATES LISTED AS FAMINE AREAS

I have gone into much detail on the Indian situation because this is the key battleground of our war on hunger—right now. The world has come to a recognition that our efforts for freedom from hunger can no longer be postponed. India is highlighting this today. Six States—Andra Pradesh, Gujerat, Madhya Pradesh, Maharashtra, Mysore, and Rajasthan—have 75 percent or more crop damage and are listed as famine areas. The best figures we have at the moment indicate that 12,500,000 children under 14 are seriously affected, and 2,200,000 pregnant women and nursing mothers.

Growing recognition of the danger may, in itself, be the first step in avoiding catastrophe. Certainly a whole new awareness of the importance of agriculture and food in the developing world is beginning to evolve.

One reason why it has perhaps been slow in emerging was given by Under Secretary of State Thomas C. Mann, who remarked:

> It is more difficult to increase agricultural production than it is to build a factory, and this fact has affected the emphasis of our development programs. Yet in a large part of the world the problem of food production demands first priority.

In addition to the growing realization that hunger is indeed the No. 1 problem of mankind, more is being done today than ever before to combat it.

HARVEST FROM 1 OF 4 U.S. ACRES EXPORTED

The United States exports more farm products than any other country in the world—more than the combined agricultural exports of Australia, Canada, and Argentina. Last year, the harvest of 1 out of every 4 acres of U.S. farm cropland was shipped overseas.

But the cruel paradox is still with us. Our Nation is still characterized as an "island of abundance" in a world where too many people go to bed hungry, or malnourished, each night.

True, we have shared our abundance with the world's hungry in an unprecedented manner. At world market prices, more than $14 million in U.S. farm products have gone overseas in the past 10 years under Public Law 480 through outright donation and concessional sales; 14,600 shiploads—3 to 5 ships a day every day in the year for more than 10 years. More than 85 million people this year in the less developed countries of the world are now receiving each day donated food under self-help programs administered by our great voluntary

agencies, or by AID directly. Almost 70 million of these are children—usually in school lunch programs. Nine million participate in food-for-work projects. AID and the voluntary agencies have learned to use food to help eliminate the cause of the poverty that makes donation necessary.

This must be very satisfying to Senator McGovern who worked so hard as Food for Peace Director to make this effective use of American abundance possible.

MENTAL DAMAGE: RESULT OF MALNUTRITION IN YOUTH

May I also suggest that we have become increasingly aware of the importance of nutrition in food for peace. There is a new realization that the quantity of food we provide may not be as important as the kind of food. Malnutrition, in the preschool child particularly, may be mentally as well as physically irreparably damaging. Preschool age children between 1 and 5 constitute 25 percent of the 2 billion population of the developing countries—compared with less than 10 percent of the population of this country; 7 out of 10 of these children suffer from some form of malnutrition.

In all of my experience going overseas, Senator, I have never failed to underestimate the age of children. Even with all of the warnings I have had on this, I still think of the child as being a 12-year-old or an 11-year-old, and find that, in fact, he may well be 16. What has now become increasingly apparent to us is that this kind of a physical damage may also mean a mental damage, and that that child may have the mentality of a 12-year-old and this, in terms of our longer-range goals of independent people, may be one of the most inhibiting factors in development.

"LACK OF ADEQUATE NOURISHMENT IN . . . CHILDHOOD MAY PERMANENTLY IMPAIR THE CHILD'S ABILITY THROUGHOUT LIFE"

Senator GRUENING. I think making that point is a very important contribution. Lack of adequate nourishment in the period of childhood may permanently impair the child's ability throughout life.

Mr. REUTER. Yes, sir.

I believe that under food for peace we are responding more effectively to these nutritional needs of the children of the developing countries.

There is still much to be done, of course.

In the last year we have made significant program improvements in this area. They can go far toward a new potential for children who might otherwise be forever stunted both physically and mentally by an inadequate diet. AID dollars are being used with CCC commodities to provide fortification and enrichment of powdered milk, flour, and cornmeal.

"COMMODITIES . . . ARE NO LONGER . . . IN 'UNLIMITED' SURPLUS"

But the picture may be changing. Many of the commodities on which we have relied are no longer in surplus—or at least "unlimited" surplus. Rice, beans, and butter have been in such limited supply that they are not available for foreign donations programs. Nonfat

dry milk, so important in our child feeding programs, is no longer available in the quantities we formerly programed, or today very much need. Vegetable oil is in short supply, reflecting new tightness in availability for fats and oils.

The "burdensome surplus" in foods, during the last 4 years has been disappearing due to production controls, increased export, expanded domestic welfare use, and Public Law 480. The key food items—the grains—have been reduced 1.5 million bushels. For 4 years we have utilized significantly more than we have grown.

There is no longer the same supply pressure to "move commodities." Surplus stocks have become surplus capacity.

This, then, is the background for the current requests to provide—to the Secretary of Agriculture—authority to acquire commodities needed to maintain programs, regardless of their "surplus" status.

"U.S. CANNOT ALONE DO A FOOD-AID PROGRAM WHILE OTHER COUNTRIES EXPAND FOOD TRADE"

All of us are rethinking the terms of our food-aid programing. Surplus disposal is no longer an easy validity—if indeed it ever was.

There are a few assumptions we can make as we determine our policies:

1. World food needs are going to increase—despite effectiveness of family planning programs now being undertaken. The people who will be hungry tomorrow have already been born.

2. The food needs cannot be met solely through the commercial markets—even though world agricultural trade is at record-breaking levels, and we have more than doubled our exports in the 10 years of food for peace.

3. U.S. surplus stocks have been reduced and will diminish further as we reach a balance of production and utilization.

4. U.S. productive capacity will continue to expand—but despite this, or because of it, the United States cannot alone do a food aid program while other countries expand food trade. Aid and trade are related.

5. Some form of food aid will be required for the foreseeable future—but the food gap will be closed only by new priority to food production in the less developed countries.

6. Nutritional needs will assume new importance as we move away from surplus disposal concepts.

I believe that all of us here today, whether we represent the legislative or the executive branch, should be greatly heartened by the fact that we do have an alternative to world hunger, and that the United States can take a leading role in its solution. I am an optimist.

As the President said last week in submitting to the Congress his message "A War on Hunger," we are proclaiming "our commitment to a better world society—where every person can hope for life's essentials—and be able to find them in peace."

Thank you very much, sir.

Senator GRUENING. Mr. Reuter, thank you for a very effective and helpful presentation.

Before we start asking you a few questions, I would like to introduce into the record the declaration of the last World Food Congress as well as an article from the Washington Post on February 15, by

Warren Unna, from New Delhi, which is entitled, "Outlook Dreary as Parliament Opens in India." It discusses the food program over there.

(The articles referred to follow:)

EXHIBIT 47

DECLARATION OF THE WORLD FOOD CONGRESS

We, the participants of the World Food Congress assembled at Washington under the Freedom from Hunger Campaign to take the measure of the problems of hunger and malnutrition, and to explore the means for their solution;

Having in mind that freedom from hunger is man's fundamental right and that all human beings—without distinction of any kind—are entitled to its realization through national effort and international co-operation;

Conscious that today, in spite of twenty years of effort since the Hot Springs Conference which led to the foundation of FAO, the curse of hunger, malnutrition and poverty still afflicts more than half of mankind;

Alarmed by the extent to which the explosive growth of population, at a rate unmatched by adequate incerases in productivity, is intensifying human needs and is giving still greater urgency to the attainment of freedom from hunger;

Profoundly aware that the recent attainment of political independence by many hundred millions of the world's population gives a new urgency and new dimension to the aspiration for higher levels of living, of which freedom from hunger is the first prerequisite;

Convinced that sicentific and technological progress now make it possible to free the world from hunger, but that such freedom can only be accomplished if all the available human and natural resources of the world are mobilized to this end through balanced economic and social development:

Hereby declare—

That the persistence of hunger and malnutrition is unacceptable morally and socially, is incompatible with the dignity of human beings and the equality of opportunity to which they are entitled, and is a threat to social and international peace;

That the elimination of hunger is a primary task of all men and women, who must recognize their duties as well as their rights as members of the human race, and must fight to achieve freedom from hunger in every corner of the earth; this obligation being also inherent in the pledge of the nations under the United Nations Charter to take joint and separate action, to achieve higher standards of living, full employment and conditions of economic and social progress and development as indispensable elements of peace;

That the responsibility to free the world from the scourge of hunger lies jointly—

With the developing countries themselves who must take all measures within their power which are necessary to achieve this objective;

With the developed nations who must co-operate with the developing countries in their efforts, realizing that freedom from hunger cannot long be secure in any part of this interdependent world unless it is secure in all the world;

With the United Nations and the Specialized Agencies who must intensify and coordinate their efforts to assist the nations in this task;

With other international organizations and with nongovernmental organizations, e.g., religious, youth, women's organizations and other voluntary groups, agricultural and labor organizations and associations of trade and industry, who must inform and stimulate the people so that they can play their part with understanding and vigor:

Therefore urge—

That the task of elimination of hunger from the fact of the earth should be conceived in the framework of a world-wide development dedicated to the fullest and most effective use of all human and natural resources, to ensure a faster rate of economic and social growth, and

That to this effect, speedy and decisive action be taken:

1. By all governments of the developing countries—

(*a*) For a planned and integrated use of resources which at present are largely underutilized;

(b) For the adaptation of their institutions to the requirements of economic and social progress; and, more specifically, to secure the most effective

administrative machinery, to give incentives to increased production through ensuring just and stable prices, and to reform, where required, unjust and obsolete structures and systems of land tenure and land use so that the land might become, for the man who works it, the basis of his economic betterment, the foundation of his increasing welfare, and the guarantee of his freedom and dignity;

2. For the maximum utilization of the stock of scientific and technical knowledge and the promotion of both short- and long-term adaptive research suited to the conditions and requirements of the developing countries;

3. For the massive and purposive education of the rural populations, so that they will be capable of applying modern techniques and systems, and for universal education to expand the opportunities for all:

Further urge—

That to assist national efforts, and allow speedier implementation of development programs within a world-wide framework, international co-operation be strengthened, in particular so that—

1. Present adverse and disturbing tendencies in the trade of the developing countries be reversed and that for that purpose adequate and comprehensive commodity agreements be devised, development plans be co-ordinated and other appropriate measures taken, and

2. The volume and effectiveness of financial, material and technical assistance be increased, and

3. There be a more equitable and rational sharing of world abundance, including an expanded and improved utilization of food surpluses for the purpose of economic and social development:

Express the hope—

That the current efforts for bringing about universal disarmament will succeed and that the vast sums now being spent on instruments of destruction will become increasingly available for the elimination of hunger and malnutrition and the promotion of human well-being:

Therefore pledge ourselves and highly resolve—

To take up the challenge of eliminating hunger and malnutrition as a primary task of this generation, thus creating basic conditions for peace and progress for all mankind;

To mobilize every resource at our command to awaken world opinion and to stimulate all appropriate action, public and private, national and international, for this overriding task, and to this end

Give our wholehearted support to the Freedom from Hunger Campaign until its final goal is achieved.

RESOLUTION OF THE WORLD FOOD CONGRESS

The World Food Congress, considering that the success of the Freedom from Hunger Campaign depends on the active co-operation of the government and the people of every country, recommends:

1. The placing of all national Freedom from Hunger Campaign committees on a continuing basis;

2. The creation of effective national committees in all states and territories members of FAO and of other organizations of the United Nations system; and

3. Holding of a World Food Congress periodically to review a world survery, presented by the Director-General of FAO, of the world food situation in relation to population and over-all development, together with a proposed program for future action.

EXHIBIT 48

OUTLOOK DREARY AS PARLIAMENT OPENS IN INDIA

(By Warren Unna, from the Washington Post, Feb. 15, 1966)

NEW DELHI, Feb. 14.—I. President Sarvekalli Radhakrishnan opened the spring or "budget" session of Parliament here this morning with a glum recitation of India's current food and economic difficulties.

He referred to India's exports of the last two years as having remained "relatively stagnant;" he blamed the "unprecedented drought" and the "suspension of promised (mainly American) economic aid" for having reduced the rate of growth of the national income; and he reminded his countrymen that their underfed, underpaid mass of 480 million people was swelling at the rate of 1 million a month.

Moreover, he warned that because of increased Chinese harassment on India's northern borders in the last few months the nation was simply going to have to spend more on national defense.

On the question of the war in Southeast Asia, Radhakrishnan said India would support "any effort to resolve the Vietnam conflict by peaceful means." The President and other Indian leaders are scheduled to discuss the subject with Vice President Hubert Humphrey when he arrives here Wednesday.

Even the President's arrival at Parliament today was gloomy. Instead of the usual black and gold state coach drawn by horses, he was forced by the overcast and chilly day to use an enclosed Mercedes.

The procession was limited to two Chevrolets behind his car and a Rolls Royce bringing up the rear.

Inside the great central hall of the circular red sandstone Parliament building, the show was a little better. Turbaned, scarlet-coated heralds announced the President's arrival with silver trumpets. Then the President, a 78-year-old South Indian Brahmin who is India's leading philosopher, made a stately entrance down the center aisle with his long white robes and his high white turban.

Then in the most elegant English, Radhakrishnan read the government's policy speech from a highly arched and covered chair.

It could have been Queen Elizabeth reading the regular speech from the throne, for the tradition has been preserved by the Republic of India intact.

Missing from the assembled lawmakers were the Communist members, who disapprove of the government's food program, and United Solialist-Party members, who knew in advance that the President would be speaking in English rather than their preferred Hindi.

Present in the first row center was India's new Prime Minister, Indira Gandhi. And there was a great rapping of approval on desks when the President referred to the 48-year-old woman in the blue sari before him as "one . . . who belongs to the younger generation of freedom fighters."

There also was a rapping of desks in applause when Radhakrishnan thanked "the President of the United States and his Administration for their generous help at this time of need."

To give his audience some sense of confidence despite the dire state of the economy, Radhakrishnan reminded the lawmakers that India's doctors had risen in number from 70,000 to 90,000 in the last five years; that primary schools now are attended by 80 per cent of India's youths instead of the 40 per cent shortly after independence; that the percentage at higher school levels has nearly trebled; and that the once dreaded scourge of malaria has now been virtually eradicated.

Senator GRUENING. I now will introduce in this hearing record a very excellent piece of reporting by Jean White, from the Washington Post of the 15th—Jean White has been covering these hearings effectively since they began—which confirms your view, Mr. Reuter. Jean White records the testimony of Roger Revelle, director of Harvard's Center for Population Studies, that increased food production in the United States will not meet the situation, that food production must be increased in other countries as well, and unless that is done there will not be sufficient food to avert famine.

I also direct that chapter 2 from Dr. Philip Appleman's book, "The Silent Explosion," be included in the record of this hearing.

(Inclusion of a pertinent article "Analysis of Famine," by Barbara Tufty, Science News, printed subsequent to this hearing, has been directed by Senator Gruening.)

(The articles referred to follow:)

EXHIBIT 49

EXPERT FEARS BACKFIRE IN U.S. FOOD AID PLAN

(By Jean M. White, from the Washington Post, Feb. 15, 1966)

The House Agriculture Committee tried hard yesterday, but couldn't get a noted demographer to agree that the best way to meet the world's food famine is to have American farmers grow more and more.

Roger Revelle, director of Harvard's Center for Population Studies, refused to go along with farm-state Congressmen when they put first emphasis on increased American food production to feed the hungry world.

At one point, Revelle told Rep. Harold D. Cooley (D-N.C.), the powerful committee chairman: "You're taking, to some extent, a kind of romantic view of the problem."

Direct food aid from the United States is needed in the current emergency, Revelle agreed. But in the long run, he argued, the "most essential thing to do is to increase the agricultural productivity of the less-developed countries" so they can feed themselves.

The Harvard demographer warned that too much dependence on American food surpluses might backfire—it could discourage the growth of a self-sufficient agriculture in the underdeveloped countries.

He estimated that it will take nearly a 50 percent increase in the world's food production—300 millions tons more—in the next 15 years just to maintain today's inadequate nutritional levels.

This will take an $80 billion capital investment, he said. About $20 billion of this would be in foreign exchange.

But if production isn't increased in underdeveloped countries, he warned, the total cost of meeting the food deficit could be $60 billion over the next 15 years.

Cooley kept coming back to criticism of a provision in the 1965 farm bill designed to take 40 million acres of farmland out of crop production over the next 5 years.

"We already have retired 60 million acres," the Congressman said. "Why retire another 40 million at cost of $8 or $9 billion?"

Cooley said he had written President Johnson a few months ago to suggest suspension of the land-retirement program and that he received a "negative" answer.

He asked if Revelle believed it wise to retire more land when the world was hungry and the Communists might use this for propaganda.

But Revelle insisted that if our food-aid program is to be successful, it should be "self-terminating" because its aim should be to build up food production in the hungry nations and gradually wipe out dependency upon our surpluses.

Cooley did say he was "delighted" with President Johnson's food message last week. Mr. Johnson promised a shift from simple disposal of U.S. farm surpluses to more emphasis on encouraging food-receiving nations to develop their own agricultural capacity. But the President also called for planned increases in American food production to help feed the hungry.

EXHIBIT 50

THE SILENT EXPLOSION

(By Dr. Philip Appleman, Beacon Press, 1965, ch. 2, pp. 20–43)

THE CORNUCOPIAN ECONOMISTS

And they did eat, and were filled: and they took up of the fragments that remained twelve baskets full . . .—Matthew 14: 20.

The land of the ancient Persian Empire is a land of spectacular scenery. Planes flying from Teheran to Shiraz climb over crisp, ragged mountains, then out across vast tan stretches of sand, interrupted here and there by rugged outcroppings of rock or by long shadows from the low desert hills. Dry wadies run from nowhere to nowhere, intersected by hundreds of dried-up tributaries, looking like dishevelled hairs. The smooth flow of wind-sculptured erosion is broken only briefly by the square mud walls and low domes of desert villages, surrounded by little green patches of irrigated land; and the traveler suddenly finds himself thinking, "It's all so empty—where are the people?"

This experience can be repeated in many places: in the barren pink deserts of Jordan, spotted here and there with the black tents of Bedouin shepherd tribes; in the blank sands stretching away from the Nile, the Tigris, or the Euphrates; or in the vast rolling glare of the Sahara. Why worry about overpopulation when it's so empty in so many places?

As a matter of fact, these lands have not always been empty. The ancient Egyptians irrigated and tilled fields that have since become desert. Between the Tigris and Euphrates, the Sumerians, Babylonians, and Assyrians built some of the earliest great civilizations on the rich agriculture of the Fertile Crescent. In the desert south of Teheran lie the ruins of Persepolis, center of the mighty Persian Empire of Darius and Xerxes. Around the straited red, yellow, and purple sandstone ruins of Petra once spread a prosperous domain of the Greeks, of the Nabataeans, of the Romans, of the Byzantines. The sands of Libya now bury the remains of dense forests and of rich, populous colonies that once were the breadbasket of the Roman Empire.

Ironically enough, it is partly *because* these lands were once inhabited that they are now uninhabitable. Man has the unfortunate habit of upsetting natural balances, causing floods, erosion, and dust storms. Seventeen per cent of the world's land area is desert, much of it man-made.[1] Unhappily, there is reason to fear that this process may be, for practical purposes, irreversible; of that, more later.

Nevertheless, there are some economists and agronomists[2] (as well as politicians and businessmen) who hold that the way to eliminate poverty in the world is to ignore population problems and concentrate solely on a more aggressive use of the earth and its materials, and that, given such use, there could be enough of everything to go around, no matter what numbers of people had to be supplied. It is necessary to discuss these men because, although their cornucopian theories do not seem to me to correspond to any observable facts of life in the vast, overpopulated, underdeveloped areas of the world, they are nevertheless sometimes eagerly hailed as economic optimists. "Optimism," in this case, is a euphemism for wishful thinking. Under present circumstances, I should think that the Cornucopians' cheery all-is-well must sound like a voice of doom to people in the underdeveloped countries.

The population explosion is so unnerving that many people have taken to covering their ears when they hear of it. The Cornucopians have been quick to reinforce this natural tendency by offering an assortment of tranquilizing thoughts. I have paraphrased a selected list of these and offer them herewith, complete with cautionary directions.

Tranquilizer No. 1: Misleading Comparisons

> *"Rapid population growth is not a new thing; Europe grew rapidly in the nineteenth century, too. Why worry?"*

Compared to the present population explosion, Europe's growth was a mere pop. World population will probably double in less than forty years—a phenomenon inconceivable before this century. The sheer absolute numbers are also new: the addition of three billion people to the world's population in less than forty years would have been unthinkable before now. To argue, then, that our current population problems are like those of the past is a plain distortion of fact.

Tranquilizer No. 2: The Distrust of Statistics

> *"Census statistics in the underdeveloped countries are unreliable; they can be off by millions. So the so-called 'population explosion' is a hoax."*

Population statistics do vary in accuracy from country to country, but they are becoming increasingly reliable. More than two hundred national or territorial censuses have been taken in the last ten years. Not all of them can be considered perfectly trustworthy; but what is significant and ominous about

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[1] C. Langdon White, "Geography and the World's Population," in Stuart Mudd, ed., *The Population Crisis and the Use of World Resources* (Bloomington, Ind., 1964), p. 20.

[2] For two representatives of this school of thought, see Colin Clark (*The Conditions of Economic Progress* [London, 1957] or "Do Population and Freedom Grow Together?" *Fortune*, LXXII [1960], 136–139, 203–208); and Karl Brandt (*The Reconstruction of World Agriculture* [New York, 1945] or "The Population Dilemma," *Vital Speeches of the Day*, XXIX [1963], 629–631).

the steady increase of demographic data in the underdeveloped areas is that the newer, more accurate figures are almost always higher—often remarkably higher—than the previous estimates. India's thoroughgoing census of 1961, for instance, revealed that the country had eight million more people than had been estimated. Egypt's last census also revealed "extra" millions. So did Pakistan's. So did Brazil's and Ghana's and Mexico's and Venezuela's and those of other countries as well. Where population statistics are not wholly reliable, then, it seems prudent to assume that the situation is worse, not better, than it is estimated to be; when dealing with unknown quantities, we should deal with probabilities, not wishful thoughts.

Tranquilizer No. 3: The Migration Mirage

> *"If some countries, like China or India, seem to have too many people, why not let them move to countries like Australia or Canada, that have too few?"*

"Let them emigrate" is a temptingly simple formula, but, like that other facile solution, "Let them eat cake," it is simply not practical.

In the first place, emigration will not work because on the whole people do not like to uproot themselves. Spectacular natural disasters, such as the Irish potato famine in the nineteenth century, can force large numbers of people to move to foreign lands, but ordinarily people prefer to stay at home, however humble. Even as mobile a person as the American small farmer, currently driven off the land in increasing numbers by the competition of corporate farms, usually feels a wrench at moving just a few miles and undertaking a new life for which he is not well prepared. This natural reluctance has to be multiplied many times to approximate the suspicions and fears that emigration to foreign lands would cause a traditional peasant, living in the same village his forefathers had lived in, tilling the same fields, planting the same crops with the same implements, worshipping the same local deities, talking the same dialect and practicing the same habits as the neighbors with whom he and his relatives have "always" socialized, cooperated, and intermarried. On the island of Java, for instance, the Dutch, like the other colonial Powers after World War II, helped to wipe out diseases; as a result, Java now suffers from severe population pressures. Other nearby islands, notably Sumatra, are less thickly populated, but it is almost impossible to persuade the Javanese to move even the comparatively few miles to these islands.

In the second place, emigration will not work because there are few habitable, underpopulated areas left. Large numbers of people cannot sustain themselves in deserts or swamps, on glaciers or mountaintops. Enormous stretches of the earth's surface are thus unavailable to man. Only with tremendous investment of money and labor can humans extend habitable areas farther up the sides of mountains or into deserts or the sea, and such investment is hard to come by. Asians sometimes mention the "vast" and sparsely-settled island continent of Australia as an area available for emigration. But Australia's size is illusory. Only 7.5 percent of that land mass seems likely ever to be brought into cultivation, and much of that only by tremendous expenditures of capital.[3] Australia might be able to absorb fifteen million more people.[4] But (a) this amounts to only one year's increase in China alone, and (b) Australia's own population (now about eleven million) is growing so fast that it will probably double in about thirty years; the Australians apparently need no outside help in filling up whatever open spaces they can afford to make livable.

Finally, emigration will not work because most nations, with their restrictive immigration quotas, will not permit it. When tens of thousands of Chinese poured out of Red China into Hong Kong in 1962, the United States was willing to accept only five thousand. The British, who have been working diligently to provide places for Chinese refugees, on this occasion alone had to turn back fifty thousand people. But to accommodate the growth of Asian population by emigration, the world would be asked to find room not for thousands or tens of thousands, but for *hundreds of millions*. For purposes of comparison, remember that the United States received from Europe fewer than thirty-five million immigrants during the last century. That is less than one year's population growth in Asia.

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[3] Julian Huxley, "World Population," in C. H. Rolph, ed., *The Human Sum* (London, 1957), p. 37.

[4] Huxley, *The Human Crisis*, p. 65.

Tranquilizer No. 4: The "Automatic" Fallacy

> *"Higher living standards will automatically lower birth rates; this is known as the 'demographic transition.' It happened this way in Europe and the United States—why not in Asia?"*

It would be pleasant to think, as (according to a 1963 Gallup Poll) many Americans apparently do, that "nature will take care of things somehow"—that there is some beneficent mechanism that is now raising living standards, whereupon, like an obliging Rube Goldberg contraption, birth rates will subside, thus causing even greater rises in living standards, and so on. Unfortunately, the standard of living is *not* rising significantly in the underdeveloped countries. During the last ten years, India has managed to expand its Gross National Product by only *one dollar* per person per year.[5] Those hungry, hollow-eyed men, women, and children are not a thing of the past; they are with us today, and they (more and more of them) will be with us tomorrow, and the next day—still hungry, still sickly, still waiting for the chance to be something more than neglected animals.

"But surely, all that American economic assistance . . ."

Economic aid from the developed nations to the underdeveloped ones is a minimal necessity for well-being in our world. But although it is a necessity, it is not in itself sufficient. Two decades ago, as a seaman in the Merchant Marine, I first saw the crumbling houses, the dirt and decay of an underdeveloped country in Latin America. I was shocked at the poverty there; but what is more significant, some of my Latin American shipmates who had not recently seen their home were also dismayed. The place, they insisted, had got worse, not better.

That was in 1946. Since that time various forms of United States aid have been sent to Latin America. The Alliance for Progress proudly reported in 1963 that its programs have resulted in the construction of "an estimated 140,000 low and middle-income homes" in the first two years of its existence.[6] But in the same two years, the population of Latin America grew by about *ten million* people, and (again according to Alliance for Progress figures) about 40 per cent of the population do not have minimally adequate housing. The foreign aid money has done some good, but it has not been sufficient to cope with the population explosion.

> *"But what about the 'demographic transition'? Haven't populations always leveled off as nations became more urbanized?"*

Not always: the United States and the Soviet Union, for instance, are now growing at very rapid rates. A demographic transition did occur in many developing nations in the nineteenth century, but it is not an automatic mechanism, and there is good reason to think that it cannot be repeated in the same way in the currently underdeveloped countries.[7] Furthermore, this transition, when it does occur, characteristically begins with a temporary acceleration of numbers, and this acceleration might well be severe enough, in underdeveloped countries, to frustrate all development strategies.

Moreover, recent studies indicate that urbanization not only fails to lower fertility in underdeveloped countries, but even tends to stimulate it. Asian peasants, by sheer weight of numbers, are now being forced off their inadequate lands and into nearby cities. (From 20 to 40 per cent of the people in many Asian cities are now squatters—former peasants who have simply moved in and found an empty place to build a shack.) But these cities are not as industrialized as Western ones, and so the peasants, once there, do not become "citified," but instead create colonies resembling their old village societies. The Asian city, then, becomes largely an enormous, poverty-ridden cluster of villages. The people there are often no more knowledgeable, no more rational, no more sophisticated, no more cosmopolitan than they were before they moved. Their fertility remains high, and sometimes even get higher.[8]

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[5] Robert Heilbroner, *The Great Ascent* (New York, 1963), p. 111.

[6] Teodoro Moscosco, "The New World of Latin America," *Saturday Review*, XLVI (Oct. 12, 1963), 27.

[7] See *Population and Food Supply*, pp. 7–18.

[8] Grafton D. Trout, Jr., "Urbanization and Fertility" (unpublished paper; Department of Sociology, Indiana University, 1963).

"But if Japan was able to reduce its rate of population growth, why can't other countries?"

Unfortunately, Japan cannot serve as a model for the rest of Asia. Its industrialization began more than three-quarters of a century ago and proceeded during a time of comparatively low population growth. During the same three-quarters of a century, the nation made itself almost totally literate. Also, more than any other Asian people, the Japanese live in industrialized, modernized cities. With these powerful advantages, Japan was able to recognize its population problem and, largely by legal abortions, to revolutionize its birth rate in less than fifteen years. But no other Asian (or any underdeveloped) country has these advantages—and therefore no such country is likely to repeat Japan's experience.

Tranquilizer No. 5: Science Fiction

"In this age of scientific achievement, we can overcome any difficulties caused by population growth. If necessary, we could find new sources of food and migrate to other planets."

We have come to expect great things from the laboratories, but we had better not stretch our luck. The population explosion is happening right now, and will get worse every year. Meanwhile the United States, with its best efforts and after many embarrassing delays, has succeeded in putting only a few men briefly into orbit. To talk about our fledgling space instruments as a means of solving a *current* problem is not only absurd; it is irresponsible. To think of space vehicles as solving future problems is hardly more reassuring. Presumably none of us would be delighted at the prospect of living on Venus, for instance, in temperatures hundreds of degrees above boiling, or on the moon, in temperatures hundreds of degrees below zero. What about reaching other solar systems, where some hypothetical planet might be more hospitable? This is how one scientist describes the possibilities:

Assuming that the world could support a population of 10 billion and that population growth continues at the present rate, in 70 years it would be necessary to move 170 million people each year. Assuming 100 passengers per spaceship, the migration would require 1.7 million spaceships each year—at a cost . . . of $300 million per ship. But if birth control is not to be practiced on earth, it would surely not be practiced on the spaceships. If only one couple started the trip, the number of progency (even allowing for the deleterious effects of inbreeding) would be about 2000 at the end of the trip. Thus it would be necessary to provide 85 million spaceships every year, each with a capacity of 2000 and at a cost of several billion dollars or more per ship.[9]

In short, scientific panaceas—the attractive visions of widespread solar and atomic power, civilian space travel, plentiful and palatable food from new sources, and so on—are still too far in the future to be practicably relevant to the present population problem. It is no help to people who are hungry *now* to advise them that "We'll fix everything tomorrow." I do not mean to foreclose on the future; scientists may yet have some quick and pleasant surprises in store. New plant strains, new pesticides and fertilizers, and better animal husbandry will almost certainly improve agricultural prospects; furthermore, British scientists have reportedly had some success in creating milk directly from green plants; an M.I.T. nutritionist has developed a powder from cottonseed, corn, and sorghum that is nutritionally comparable to milk; American chemists are testing an entirely synthetic diet; cheap and available soybean extracts and fish flour are both high in proteins; protein may even be produced from petroleum; and the sea can be made to supply more food than it has yet yielded. All such developments are more than welcome, but encouraging as they are, they have not yet solved the problem of nourishing the world's expanding population, nor do they seem likely to do so in the near future. In the meantime, we must continue to deal with realities and probabilities, not with science fiction.

Tranquilizer No. 6: The Loaves-and-Fishes Theory of Agriculture

"Let's stop worrying about population and start thinking about production. Better agriculture can provide food for any foreseeable population."

Certainly more food must be produced. Most of the world's people are malnourished now, and with 65 million more mouths at the world's dinner table

[9] Garrett Hardin, quoted in Karl Sax, *Standing Room Only* (Boston, 1960), p. xiii.

annually, the crop equivalent of about 65 million new acres is needed each year, simply to keep the world's people at their current, malnourished level. B. R. Sen, Director General of the U.N. Food and Agriculture Organization, warned in 1963 that improving nutrition throughout the world would require a doubling of world food production by 1980 and a fourfold increase by the year 2000.[10] But at the same time he also reported that the gap between food supplies of the "rich" nations and those of the "poor" nations was widening.

Can new farmland and new agricultural techniques keep pace with the increasing demand? Past experience has often been discouraging. In 1952 Charles Galton Darwin described one major project in what is now Pakistan:

> Not long ago the province of Sind was mainly desert; the ground was quite fertile but there was no rainfall. A great engineering undertaking, the Sukkur barrage, has spread the waters of the Indus over a very wide area, and turned much of the desert into a garden. According to the universally accepted standards this was a great benefit to the world, for it made possible the adequate feeding of a people previously on the verge of starvation. But things did not work out like that, for after a few years the effect was only to have a large number of people on the verge of starvation instead of a small number.[11]

Thus four thousand square miles of the earth's surface were brought into cultivation—and fully settled in one generation, while the density of population in the rest of the country increased.

Egypt is having a similar experience with the Aswan high dam. The rapid expansion of Egypt's population makes it already certain that the spectacular project will be able at best only to check temporarily the falling standard of living in Egypt. For while the high dam may increase agricultural production in Egypt by as much as 45 per cent, Egypt's population will have risen by about that same figure during the time the dam is being built, leaving Egypt with the same problem it had, but on a larger scale.[12] In the underdeveloped countries, Malthus' grim mathematics keeps asserting itself.

While it is possible—in fact, imperative—to make greater efforts to produce more food, the Cornucopians sometimes give the impression that past and present efforts in this direction have been negligible and that therefore any future efforts at all are sure to meet with great success. On the contrary, in many places in Asia an astonishingly thorough use is now being made of the earth. In Formosa, for instance, the mountainsides have been painstakingly terraced high up, in a series of gradations, the farmers growing rice, tea, or vegetables on the lower slopes and bamboo and acacia on the higher, steeper slopes. A Formosan commission for rural development is preparing hundreds of thousands of acres of these hillsides, reclaiming tens of thousands of acres of tidelands, amalgamating farms to eliminate waste, building roads and irrigation canals, improving fertilizers, seeds, and pesticides, and ecouraging two, three, or more crops per year, as well as "intercropping" and "relay planting" (ingenious ways of making the soil produce more than one crop at a time). But Formosa has one of the highest rates of population growth in the world, and, despite all this agricultural activity, has not managed to remain self-sufficient in food production. Formosa now imports more food than it exports.

Similarly, other nations make better use of the sea as a source of food than we do. I became very fond of Japanese seaweed products—of which there are dozens, ranging from something like hard cookies and popcorn to the tasty, pliable wrappings around their raw fish delicacies. Indeed, the Japanese, unlike us squeamish Americans, seem to eat almost anything that grows, swims, or crawls in the water.

There are no doubt better ways of farming the sea than even the Orientals have yet discovered, and some experts think it possible to double present marine production. Cultivating, fertilizing, and transplanting are all concepts which may eventually be more fruitful in sea farming than they now are. But the limitations are also real. Fish production is grossly inefficient. Livestock on land is almost entirely plant-fed, but fish suitable for canning are all carnivores which have fed on other carnivores or on herbivores. Thus most of our seafood is the result of a very inefficient chain of production: to convert food from plants to herbivores to carnivores involves a loss of 99 per cent of the original plant food value. The harvesting of seafoods has its own prob-

[10] *Around the World News of Population and Birth Control*, No. 117 (Sept., 1963).
[11] Charles G. Darwin, *The Next Million Years* (London, 1952), p. 37.
[12] Heilbroner, *The Great Ascent*, pp. 68–69.

lems. The danger of over-fishing to the point of the extinction or near-extinction of some species is already serious, as the decline of formerly thriving canneries in many areas testifies.[13]

But even assuming that the land and the sea could be better used, assuming that the whole world's peasant population could emulate the dogged determination of certain Indian farmers who till land so high up on the Himalayas that they have to carry soil up to their rocky terraces in baskets (and replace it after spring rains), the question would still remain: ought people to extend cultivation to all parts of the earth? Are there good reasons for not trying to farm some areas?

Certainly excessive zeal can cause errors of every degree of seriousness. In Burma, European agricultural experts introduced deep plowing—and in doing so, broke up the hardpan that held the water in the rice paddies. They encouraged weeding the rubber plantations—and thereby reduced the production of sap. In Greece, fertilizing the fields caused wheat to be less resistant to drought.[14]

But the results can be even worse. Remember again the deserts now shifting over Persepolis, over Petra, over Libya. When men cultivate lands that ecologically ought not to be cultivated, or when they overcultivate them or cultivate them badly, it is all too easy for erosion to turn them into dust bowls. The distinguished Belgian botanist Raymond Bouillenne writes of his studies in Africa:

Cultivation is abandoned when the soil becomes unproductive. Then herbaceous plants appear and are generally used as pasture. Because of the need for pastureland, grassland has been burnt off so that it will not become wooded. Where this is done, a great number of useful plants disappear, to be replaced by a small number of pyrophilous varieties that are often not suitable even for pasture. The vegetative cover disintegrates, especially when, as often happens, there is overgrazing. The soil, laid bare, undergoes extensive changes in structure and composition. It loses its colloids, becomes dust, hardens into laterite, or is carried away by erosion. . . . In the Congo agronomists have shown that in 6 years 30,000 square kilometers of soil have been ruined. In Madagascar the drama has been played out over a period of 60 years. This island was once covered with splendid forests; today 70 percent of its area is occupied by an ocean of tough grasses, ravaged by fire and unsuitable even for the feeding of herds. In short, *we are in the throes of an apparently irreversible progressive reduction of the surface of cultivable lands. It is estimated that the area of such lands on the earth has decreased by 20 percent in the last hundred years. Of the 40 billion acres remaining today, at least 20 million disappear irretrievably each year.*[15]

The grandeur that hovers over the ruins of past civilizations is a tragic grandeur. Man has found it possible to change the face of the earth, but the change has all too often been—and to an unfortunate extent continues to be—destructive; in the end, mankind has found it self-destructive. Thus one of the most melancholy aspects of the population explosion is that it not only torments people now with hunger, disease, and all kinds of hardships, but also harshly threatens the next generation, and the next, and the next.

The loaves-and-fishes agricultural theorists will nevertheless insist that more food "could" be produced. And of course it will have to be, if mass starvation is to be avoided. But will it be enough, and soon enough?

Through four nations of Southeast Asia runs the world's tenth largest river, the Mekong. Until recently, virtually nothing had been done by way of developing it: it produced no electricity at all, and only 3 per cent of the surrounding land was irrigated. Now the United Nations Economic Commission for Asia and the Far East (ECAFE) has undertaken the development of the lower Mekong valley. With irrigation, much now useless land could produce two or three crops of rice annually, with high yields; diversification of crops should also be possible. Flood control, navigation, and electrification should be stimulated. This project could change the face of much of Southeast Asia; it could be a pattern for the future.

But lest anyone snap his fingers and proclaim the battle won, consider this. Work cannot begin on dam-building until extensive and accurate engineering

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[13] C. M. Yonge, "Food From the Sea," in S. A. Barnett and Anne McLaren, eds., *Penguin Science Survey, 1963–B* (New York, Penguin Books, 1963), pp. 176–190.

[14] Mead, *Cultural Patterns and Technical Change*, pp. 186–187.

[15] Raymond Bouillenne, "Man, the Destroying Biotype," *Science*, CXXXV (Mar. 2, 1962), 706–712.

investigations are carried out: on elevations, on hydrology, on the effect of tributaries on the main stream. This work must almost always be done from scratch in underdeveloped countries. It is expensive: investigative engineering work on the Mekong project used one-third of the total funds—thirty million dollars—that the United Nations then had available for *all* world development. It is time-consuming: proper hydrological measurements require more than thirty years; a risky minimum is five years. When these preliminaries are finished, final engineering designs require approximately two more years; financing adds a year; *then* building can begin. Building major dams requires at least six years. The problems of land reform, canal-building, and re-education of peasants can be attacked concurrently, but they are almost certain to delay the final development.

Thus a bare minimum of about fifteen years intervenes between the idea and the beginning of productive use of such projects. But what happens to the population in the meantime? Thailand recently took a census and the government was shocked to discover that the nation is growing by more than 3 per cent per year; that is, it will double its numbers in less than twenty-three years. The Malthusian specter reappears: even with this bold international plan, the future is still uncertain in Southeast Asia.

A critical lack of time, then, is a major obstacle to the success of such development projects. But lack of money is equally threatening. The cost of the Mekong development will be about ten billion dollars. Fourteen nations and eleven United Nations agencies are cooperating to bear this cost. Presumably the economic benefits of the project will eventually be greater than the expenditures. Still, how many such projects will available world development funds support, How many are geographically promising? How many will be required to keep up with current population growth? It costs about fifty dollars to bring an acre of new land into high productivity.[16] That means something like seven million dollars a day just to keep up with current population increase in the underdeveloped countries. That figure has to be kept in mind whenever the loaves-and-fishes agriculturists talk about what "could" be accomplished.

A simpler approach would be to intensify yields on presently cultivated land. Some F.A.O. experts think that current yields could be raised by half—in some cases even doubled—by more intensive use of fertilizers, manures, and legumes.[17] But the image this may present to Westerners—of a well-to-do farmer driving his tractor and wagon loaded with chemical fertilizers across a broad, deeply plowed field—is of course misleading. The peasants of underdeveloped societies are not going to be able to use such fertilizers unless they are produced in much greater quantities, and marketed at a price the peasants can afford to pay. Furthermore, the peasants must, in most countries, be taught how to use them—which means training large numbers of technicians who must be able and willing to spend their lives in the countryside, tactfully and patiently demonstrating the advantages of these new and alien products.

Also, once again, there is the stumbling block of expense. Intensifying farming by better fertilization does not mean a sort of salt-shaker sprinkling of cheap chemicals on a hitherto barren earth which then will spring magically into bloom. Bringing an old, worn-out field into high productivity requires considerable investment in labor and materials—about twenty dollars per acre, according to the noted geochemist Harrison Brown, who estimates that to double world food production by a combination of intensifying and extending farming would cost about 100 billion dollars.[18] Where is that much money to come from? (Remember that the average per capita income in many underdeveloped countries is less than one hundred dollars per year.) The fact is that despite the claims of the loaves-and-fishes school that food supplies "could" be doubled, *no one*—from private citizen to national or international organization—is planning practical action on a large enough scale to do it.

Even if these tremendous sums of money were available, however, other problems would be certain to delay agricultural development. Too often, markets are unreliable; prices fluctuate; transport, handling, and storage facilities

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[16] Harrison Brown, *The Challenge of Man's Future* (New York, 1954), p. 147.
[17] See *Population and Food Supply*, p. 39.
[18] Brown, *The Challenge of Man's Future*, p. 147.

are inadequate; sources of fertilizers and other materials are limited; and the farmer's incentive is therefore undermined.

Moreover, underdeveloped societies are often not progressive and idealistic about their development, but feudalistic and corrupt. I once heard Prime Minister Nehru proudly describe his government's protracted legal struggles to achieve land reform in India, where large tracts had been in the hands of wealthy and socially irresponsible landowners. Even there, however, the struggle for land reform has not yet been won, and in many of the underdeveloped countries it has not even begun.

And there is the traditional conservatism of the peasant. India's peasants, Nehru said, are "very much in a rut about everything . . . running the farms as people used to farm a hundred, two hundred, five hundred years ago, hardly any change." Once you have seen the listless women squatting to cut grain with a little sickle, or the men driving skinny oxen around a well, slowly irrigating the fields, you realize the agricultural progress is going to be slow. Consider this true, albeit incredible, case history. Most villages in underdeveloped countries do not have a system of running water; water is carried from wells to the homes. Sometimes the closest well is at some distance from the village itself. In one such village in India a government worker recently tried to persuade the villagers to have water piped into the village. This suggestion was received with deep suspicion, particularly by the village elders, who pointed out that the women had "always" carried the water from the well. After two months of alternating persuasion with studied indifference, the government worker made some headway against this argument, but then encountered a stiffer one: some villagers were very much against people of all castes using the same tap. More months of argument, reinforced by direct appeals to the women, finally won out. But from the first proposal of this seemingly obvious benefit until water finally reached the village, a full year passed. Clearly, new methods of irrigation, fertilization, and farm modernization simply are not going to be thrust upon such people overnight.

Nor will every other apparently reasonable Western plan necessarily work out smoothly in other cultures. The agricultural expert from Iowa, Jonathan Garst, who has many plausible and encouraging things to say about the value of fertilizers, seriously underestimates the cultural problems involved in feeding the world. "People like to eat meat, milk, and eggs," he writes; and "India has more cattle than any other country." [19] But in fact Buddhists do not take easily to drinking milk, and the thought of eating a cow, to the orthodox Hindu, is as repellent as Jonathan Swift's ironic proposal that the Irish eat their babies.

None of this should be taken to imply that underdeveloped countries ought to abandon the task of agricultural development. Quite the contrary: the whole world must make a concerted effort to produce more food—much more food. But to assume that hypothetical future increases in food supplies are at the same level of probability as the present and continuing expansion of population is to ignore the grim realities. For years the loaves-and-fishes agriculturalists have been insisting that underdeveloped countries "could" do better; but in India, since 1960, food production has not increased at all—the only increase has been in the number of hungry people.

Tranquilizer No. 7: The Panacea of Industrialization

> *"If we want to help the underdeveloped countries, we should help them get started on industrialization. Industries create jobs, produce goods, raise living standards, and supply materials for foreign trade. In short, industrialization will solve the economic problems of the presently underdeveloped countries."*

Industrialization is an essential part of economic development, of course. But here again, if we are going to be realistic, serious obstacles must be recognized. The cost must be kept in mind. Creating new industries in the underdeveloped countries is relatively inexpensive—roughly about $1,500 per worker—but calculating at even that modest figure, new industries would cost tens of billions of dollars a year, simply to accommodate the *new* annual entrants into the labor force. No one has yet suggested a realistic source for this much investment

[19] Jonathan Garst, *No Need for Hunger* (New York, 1963), pp. 85–86.

capital. Individual savings are not likely to provide it in countries where annual per capita income is less than one hundred dollars, and normal foreign investments tend to gravitate toward the industrialized, not toward the underdeveloped countries, because (1) foreign investors are often skeptical of local management; (2) the uncertain political future of many underdeveloped countries discourages investment; (3) the lack of acknowledged priorities in local development schemes frustrates potential investors; (4) outside economic help (like that of the United States Agency for International Development or the Alliance for Progress) is sometimes viewed with suspicion by legislators in the lending countries and therefore restricted or limited to short-term projects.

Behind this discouraging picture is an even more discouraging basic problem. An industrial society can only operate properly when it is founded on an "infrastructure," not only of natural resources but of schools, roads and railroads, power sources, public health, irrigation, technical knowledge, and skilled labor—all man-made resources which themselves require years of patient and prudent investment and administration. Financing these things is an extremely difficult task. Long-term lending institutions prefer to finance projects which eventually pay off. And infrastructure, though a necessary foundation of an industrial society, never pays off directly.

Indeed, the very act of building this infrastructure in an underdeveloped society is sometimes self-sabotaging. Education, for instance, is an expensive item in the budget of developing countries. It *must* be promoted: an industrial nation needs a broad base of literacy for even semi-skilled labor; it needs a large number of well-educated people to carry on administrative work; and it needs a considerable number of highly trained educators, medical personnel, and technicians. It is not difficult to find volunteers for these roles. But, as I discovered in Egypt, in Formosa, and elsewhere, many of the educated young people in these countries find ways of emigrating permanently to Europe or the United States; thus their skills (and the cost of their education) are lost to their countries. Even those who remain at home are not always efficiently used, for, quite naturally, young doctors, teachers, and other professional people prefer the comfort and advantages of big cities, where they are less needed, to a Spartan existence in semi-primitive villages, where they are needed very badly.

Finally, the very existence of large numbers of young people creates an enormous strain on investment capital. In many underdeveloped countries, more than half the population is under twenty years of age. Thus education and housing absorb vast amounts of capital that might otherwise be used for industrial investment.

The matter of investment is, of course, crucial. Typically, an underdeveloped country saves and invests only about 5 per cent of its national income. W. W. Rostow writes:

"The difference between a traditional and a modern society is merely a question of whether the investment rate is low relative to population increase—let us say under 5% of national income; or whether it has risen up to 10% or over . . ." [20]

To reach a point of economic "take-off," Rostow says, an underdeveloped society must not only achieve this difficult rate of investment but at the same time develop a high growth rate in the manufacturing sector and, of course, the political, social, and institutional incentives for such growth. Rapid population growth hampers all of these things.

As a rule of thumb, economists generally assume that it takes about three dollars of investment to produce one dollar of net national product; so, if a nation's population is growing by 2 or 3 per cent (as many are), an investment of from 6 to 9 per cent of net national product is needed simply to *sustain* the current per capita national product. To improve upon this—to raise the per capita national product by even 2 per cent per year—would require an investment of 12 to 15 per cent of the net national product; and the prospect of achieving such an investment in most underdeveloped countries, given the difficulties enumerated above, is not at all bright. [21]

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[20] W. W. Rostow, *The Stages of Economic Growth* (Cambridge, England, 1961), p. 20.

[21] John P. Lewis, head of the U.S. AID mission to India, disagrees. In his *Quiet Crisis in India* (Washington, 1962), he argues that there is a considerable capacity to generate savings in India, not only among the wealthier classes but among the peasantry as well. The burden of proof of this opinion, however, seems to me to lie in the Indian economy itself, which will have to be judged by its performance. In the meantime one cannot help feeling the force of Rostow's analysis.

To make matters worse, the prospect of industrial progress in underdeveloped countries is complicated by all sorts of social and political problems. American businessmen who are not familiar with these countries tend to think of them in terms of their own experience and see their expanding populations as "marketing opportunities" or "new demand" or "booming growth." They do not seem to realize how little effective demand there is in a poverty-ridden people. Nor do they distinguish between the healthy dynamism that moderate population increase can stimulate, and the unhealthy strains that too-rapid population increase causes. Nor do they take into account the semi-feudal, oligarchic nature of many of these societies; or the intense and growing nationalism that obstructs trade; or the plaguing balance-of-payment difficulties, especially in the newly independent states; or the extremely low economic base from which these countries are starting.

Americans also need to realize how seriously under-employment affects densely populated countries, even those which are relatively highly industrialized: Tokyo businesses, for instance, hire numerous young women simply to serve tea to the productive workers, and Tokyo department stores hire dozens of pretty girls who do nothing but stand at the tops and bottoms of escalators, bowing to the passing customers while pretending to wipe the moving rail. There are probably seven million such nearly useless "workers" in the Japanese economy.[22] Americans also need to understand how badly wealth is distributed in many of these countries. In Benares, in the midst of ragged, hollow-eyed people, stands an incredible maharaja's palace: huge, ornate, vulgar, filled with gilded statues, crystal chandeliers, and the skins of more than three hundred tigers the maharaja has shot. The day of the maharaja is passing in India, but in most underdeveloped countries his economic counterpart still exists, and in strength.

In short, although industrialization would help to solve some of the economic problems of poor countries, it is highly unlikely that it will come fast enough to overtake unregulated population expansion. Historically, it has taken something like sixty years to move a society from the beginning of economic take-off to maturity. It is improbable that it can be accomplished that fast in the underdeveloped countries. And even sixty more years of unregulated population growth in these countries will almost certainly swamp any conceivable attempt at economic development. Again, this is simply a matter of facing up to probabilities.

Tranquilizer No. 8: Cornucopianism and Conservation

> *"Overpopulation will not exhaust our raw materials; with our new sources of power and improved extracting methods, we may consider our material supplies to be virtually limitless."*

The world's non-renewable resources have lasted as long as they have principally because so few of the world's people have been using them. Americans, who make up only 6 per cent of the world's population, consume one-third of the world's raw material production.[23] The United States uses up eighteen tons of various materials per person per year, much of which is imported. (Eighteen out of twenty-nine principal minerals vital to our economy are now supplied chiefly by imports.) We annually require about half a ton of steel per person, India only about twenty-five pounds.

Aside from the immediate moral question as to whether we have a right to use up these world supplies so voraciously, this raises another, even more far-reaching question: if industrialization does come about in the emerging nations, and the other 94 per cent of the world's multiplying peoples improve their standards of living—as they have every right to—what will happen to the demand for raw materials then? It is instructive to remember that between 1900 and 1950 the population of the United States doubled—but the rising expectations of the American people caused our use of minerals to increase eight times and our use of fuels thirteen times.[24] Engineers, it is true, have displayed remarkable ingenuity in improving extractive processes and finding substitute materials (though, it should be noted, with ever-rising costs); nevertheless, with world

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[22] Minoru Tachi, "Population Trends and Economic Growth in Japan," paper available from the Institute of Population Problems, Ministry of Health and Welfare, Tokyo, Japan.
[23] Stewart L. Udall, *The Quiet Crisis* (New York, 1963), p. 186.
[24] Samuel H. Ordway, Jr., *Resources and the American Dream* (New York, 1953), p. 12.

population simultaneously expanding and going through a revolution of rising expectations, the non-renewable resources of our planet are going to be subject to an unprecedented and devastating drain.

Intelligence and Alternatives

> New [mental] patients were put in a room with concrete walls and floors, and each was given a large mop. An attendant then would turn on a big faucet and go out, closing the door behind him.
>
> The insane would go to work with the mops.
>
> The sane would turn off the tap.—William Vogt.[25]

Since most of us have troubles of our own and are therefore easily attracted to social tranquilizers, we need to be continuously reminding ourselves that the euphemism "underdeveloped" cloaks a desperate cry for help from hungry, sickly people living in mud huts and scrapwood shacks across great stretches of the world; that the population explosion is here and now; and that if it continues, it will doom the poverty-stricken people to even worse conditions. "We are coming to a situation," says Eugene R. Black, President of the World Bank, "in which the optimist will be the man who thinks that present living standards can be maintained. The pessimist will not look even for that." [26]

As a nation we have been, for all practical purposes, ignoring this prospect. We have, it is true, provided for economic assistance to many underdeveloped countries, and such aid is a necessary part of an eventual solution of their problems; but it is only a part, not the whole. What the leaders of government in India and Pakistan have recently and urgently requested of us is something essential and fundamental: a means of limiting population growth so that their economic efforts can have a chance of success. Ambassador Chagla has asked, "If you are willing to give us loans and grants, to give us millions of tons of wheat, why are you not willing to give us the benefit of your scientific and technical knowledge . . . ?" The three billion dollars in past U.S. aid to India, he said, is largely "being nullified by the increase in population." [27]

What the Cornucopians are advocating is a "philosophy-of-could," by which, they claim, "We'll fix everything tomorrow." It would be very pleasant if it became obvious tomorrow that they were right; but so far that has not become obvious. Therefore, if we are going to be practical about the formidable problem of poverty in our time, we must shake off the tranquilizing temptations of the philosophy-of-could and admit frankly that we "can" do only what we actually *do* do. No other definition of our capabilities will serve.

Using such a compellingly honest criterion, we will quickly understand how irresponsible are the hopes of the Cornucopians. For their plans are grounded on the most precarious and improbable assumptions: that serious national and international tensions will not interrupt the progress they so confidently predict; that governments will efficiently use, not misuse, economic assistance; that economic overlords will suddenly begin to act in the interest of the people they are now oppressing; that caste and class barriers will be reduced to insignificance; that peasants will abruptly forsake the "wisdom" of their ancestors in favor of foreigners' technical advice; that corps of civil servants will suddenly spring out of nowhere, rejecting the corrupting influences of caste, clan, and graft, and dedicate themselves efficiently to the welfare of the community; that shrewd investors of capital will begin to risk their money in unpromising areas; that people will, in short, begin acting not just rationally, but even altruistically. Of course everyone hopes that these things will come to pass; but the Cornucopians have to assume that they will occur promptly—before the relentless sweep of unregulated population expansion makes all economic planning useless. They are expecting, in short, not just a miracle, but a whole set of miracles.

The Cornucopians are right to insist that production is an important part of the problem of underdevelopment. Population control by itself will fill no rice bowls. But, as Robert Heilbroner wrote in 1963, underdevelopment has complex causes; "It is not 'just' a lack of capital, or 'just' backward ways, or 'just' a population problem, or even 'just' a political problem, which weighs upon

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[25] William Vogt, *People!* (New York, 1961), p. 169.

[26] Eugene R. Black, "Population Increase and Economic Development," in Fairfield Osborn, ed., *Our Crowded Planet* (New York, 1962), p. 90.

[27] *Around the World News of Population and Birth Control*, No. 87 (Sept., 1960).

the poorer nations. It is a combination of all of these, each aggravating the other." [28]

Given this basic understanding, we should find it possible to recognize more than one approach to the problem. The dilemma of overpopulation-underdevelopment can be seen, from one point of view, as a matter of raising production to meet the demand, or, from another point of view, as a matter of limiting demand so that foreseeable production has a chance of satisfying it. In fact, we must see it both ways; to ignore either approach to the problem is to increase the already formidable chance of failure.

EXHIBIT 51

ANALYSIS OF FAMINE

(By Barbara Tufty, Science News, Vol. 90, July 30, 1966, pp. 74–75)

IN A WORLD WHERE POPULATIONS ARE MULTIPLYING FASTER THAN THE FOOD SUPPLY, THE NECESSITY FOR PREVENTING STARVATION IS URGENT

World population grew 2 percent last year, while food production increased only 1 percent.

These two facts can add up to only one terrible result: mass starvation in many parts of the world, beginning in the next decade. Some experts say the Great World Famine has already begun.

The worst famines in history to date have been in India and China. Over 10 million people perished in the Bengal, India, famine of 1769 to 1770. About 9.5 million Chinese died in a famine lasting from 1877 to 1879, and in 1902 another Chinese famine killed about one million persons. The potato famine of Ireland around 1845 killed about 750,000 people. In India, over one million persons starved to death in the famine of 1866, another 1.5 million perished in Raiputan in 1869, and one million more in 1900. Since 1900, several major famines have been reported in Russia, China, India and the Congo.

Man needs a basic diet of proteins, carbohydrates, fats and minerals in order to function properly and lead a normal life of working, playing and sleeping. The amount of calories a person needs each day depends on his individual physique and activity, but a man's basic daily nutrient requirement is estimated at about 2,500 calories. The populations of Asia, Africa and Latin America subsist on a much lower caloric intake, while people in other countries, such as the United States, Canada, Australia, New Zealand, Russia and areas of eastern and western Europe, have diets exceeding the minimum requirements. The average daily intake of calories per person in the United States is about 3,200.

LOSS RAPID AT FIRST

If a person gets only about 1,600 calories a day (about one pound of cereal), at first he will lose weight rapidly. After a few weeks the process slows down. In two or three months, when the person has lost about 25 percent of his original weight, his body reaches a state of equilibrium at which he may continue to exist for many months. If the calorie content of his diet is lowered still further, the individual loses more weight and the effects of starvation become more apparent. He becomes more and more lethargic, his pulse rate slows down, his blood pressure falls and his heart may become atrophied. His emotions become dulled, and his mind is dominated by a desire for food. When famine spreads over a wide area, moral standards fall, and murder and cannibalism can take place, while epidemics rage throughout the weakened bodies.

The dire prospect of world-wide famine, already developing in Asia, then spreading in the next 10 years to Africa and Latin America, is alarming.

How did the world get into such an appalling situation?

The foremost cause for the nearing catastrophe is the fast-soaring growth of population, due largely to medical discoveries that have lengthened the life span of human beings and kept more babies alive. This is particularly true in newly developing countries, where social and political revolutions have brought new awareness of modern science, health and nutrition. In areas such as India,

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[28] Heilbroner, *The Great Ascent*, p. 72.

Africa and Latin America, many killer diseases such as malaria, chicken pox, yellow fever, tetanus and typhoid have been controlled while basic facts of nutrition and child care have kept millions of children alive.

World population has increased at a breathless rate in recent years. For hundreds of thousands of years, from the beginning of life on earth to the start of this century, the population of the world increased only slowly—by the year 1900, humans numbered only 1.5 billion. Yet in the last 66 years the number of people has doubled to the present total of more than three billion. If present trends continue, the human poulation will more than double itself again in the next 30 years. This means that by the turn of the century, there will be more than seven billion people.

FOOD PRODUCTION LAGS

The production of food to fill these hungry mouths has just not kept the same pace. Prehistoric man ate his food wild as he found it, gathering berries, nuts, roots, grubs, worms and fish like any other animal. When he learned to make spears and stone clubs and later to use fire, his diet included some more items. Gradually he learned to practice agriculture and animal husbandry, and he grew the great staples of food such as wheat, rice, corn, barley and vegetables, as well as cattle and poultry.

Today the world has the potential for a better diet than ever before, thanks to farm machinery, irrigation, fertilizers, pesticides and research that develops new hybrid plants and animals. Dehydration, freezing, radiation, canning and other modern processes have preserved foods to give year-round supplies in the more advanced countries.

Yet even this marvelous progress in food production, preservation and storage has not been applied fast enough to keep up with inrceasing populations.

PRODUCTION INCREASE RARE

Recent reports from the Food and Agriculture Organization (FAO) of the United Nations show that in the past year only a few nations were able to increase their production of food. Among the developed regions, North America and western Europe have had sizable increases in agricultural production. Japan had a small gain, but drought in South Africa and Australia caused serious harvest reductions. Among the developing countries, Latin American production increased sharply, but the rapidly expanding population of the region left the output per person basically unchanged. The FAO reported that unfavorable weather cut food production in Asia, India and parts of Africa. Among Communist regions, mainland China appeared to have maintained grain production at 1964 levels, but severe droughts in Russia and eastern Europe sharply cut production there last year, and food had to be imported.

Over the past several years, large regions such as India, Africa and South America have had to change from exporting food to importing food. This switch has left only a handful of nations remaining that still export food to help fight starvation—the United States, Canada, Australia and New Zealand. Yet even their food supply has certain limitations, and they cannot be expected to continue exporting indefinitely to feed the continuously expanding populations of other nations.

With these realities, disaster for the human race lies just ahead, unless something is done.

What is this "something?"

There are two things to be done, both complex and both taking time: slow down the population growth and speed up the food production.

Obviously putting the brakes on population growth will take time. The momentum creating 30 million more people each year will keep population expanding for many more years before massive birth control programs can become effective throughout the world.

Also, speeding up agricultural production is very difficult in many areas of the world where land is poor, weather is inclement, and agricultural methods are archaic. It will take several years before enlightened leaders in developing countries can get their people to seriously adopt modern agricultural methods and become self-sufficient in producing enough food for themselves, instead of depending on hand-outs from other nations.

Meanwhile, entirely new ideas for food are being tested for future consumption. Protein-rich flour is being made from wheat, barley, glutinous rice and

grain sorghums; nutritious fish flour has been ground from bones and fish parts that formerly were wasted—about two-thirds of the total catch. The corn industry has come out with a spectrum of new ways for using corn—enriched and self-rising cornmeal; ceplapro, a high-protein corn food in kernel form to replace rice; and CSM, a new baby food in powder form. In India the Central Food Technological Research Institute at Mysore is making milk from peanuts and processing mangoes into cereal flakes. A new American process is making wheat into a rice-like grain palatable to Asia's rice eaters, while scientists are trying to make exotic foods sound palatable to Americans—tasty meals of algae, plankton and seaweed from the oceans, and delicacies of fresh fried wax moth caterpillars, chocolate covered bees, broiled grasshoppers and toasted leaf-cutting ants.

"HAVES" MUST SHARE

This is the long-term look at solving the food crisis. In the immediate present, however, the only way to ease the problem for the next few years is for the "have" nations to continue shipping supplies to the "have-not" nations. This state of affairs involves many factors, including the amount of production and surplus foods in the donating nations, the possibilities of war and bad weather, and the bottleneck of transportation, storage and preservation of food in the receiving nations.

The potential of American food productivity is tremendous, says the U.S. Department of Agriculture. The fact that our surplus foods have dropped from the peak year of the 1960 crop in no way implies that we are running low on food supplies, as some extremists have declared. With President Johnson's Food for Freedom program, acreages of crops are now being increased in the United States—13% increase in wheat from 52 million acres to 59 million acres, an 11% increase in rice from 1.8 million acres to 2 million acres, a 1.5% increase in corn from 67 million to 68 million acres, while grain sorghum remains about the same—about 17 million acres.

There are always possibilities that disasters such as war or inclement weather could upset the supply of food in the providing nations, but these are unforeseeable factors.

STORAGE IS INADEQUATE

Much of the immediate problem lies in inadequate transportation and storage facilities in the countries of destination.

Indeed, poor equipment and archaic methods may be prime factors in the spread of famine throughout the world in the future.

An appalling amount of shipped food is wasted along its shipping routes. Ships loaded with grain sometimes have to wait outside foreign ports for days, even weeks, before there is room to berth.

Food shipments are often unloaded on the docks and left unprotected against the heat, rain and humidity of the tropics, while rats, insects and other pests manage to gobble a good share of the shipment.

Sometimes there is no train or other vehicle traveling into the interior of the country, and supplies must be carried by camel, donkey, mule or on the human back.

By the time the food reaches its destination, it may be only half of the original amount.

Thus the impending crisis of famine draws closer. As Dr. Gunnar Myrdal, outstanding Swedish economist and sociologist, said at a recent FAO conference, "Social catastrophies are different from the certainty of death for the individual, as they can and should be averted. And if we do not use foresight and take measures against . . . this unthinkable menacing calamity, the gathering food crisis . . . we will all perish and there will be no posterity."

Senator GRUENING. Then I am in receipt of a letter from a third-year student in Harvard Medical School, my medical alma mater, who was in New Delhi last summer. He writes:

This summer, while carrying out a research project in New Delhi, I was appalled to discover that our Government had only a single health educator in India, and had not begun to formulate any program to assist the spread of

knowledge of family planning even in view of the President's statement in his state of the Union message for 1965.

One of those numerous indications that the wishes of the head of state are not always carried out by his subordinates.

Although I understand that more recently there have been some changes, I am still bothered by the fact that the main effort in this area is being put forth by the Ford Foundation, and not by our Government. I would certainly hope that we could immediately begin a crash program supplying not only knowledge but actual materials.

I ask that this letter be printed in the record at this point.

(The letter referred to follows:)

EXHIBIT 52

LETTER FROM KARL SINGER TO SENATOR ERNEST GRUENING

CAMBRIDGE, MASS., *February 13, 1966.*

HON. ERNEST GRUENING,
Senate Office Building,
Washington, D.C.

DEAR SIR: This summer, while carrying out a research project in New Delhi, I was appalled to discover that our government had only a single health educator in India and had not begun to formulate any program to assist the spread of knowledge of family planning even in view of the President's statement in his State of the Union message for 1965. Although I understand that more recently there have been some changes, I am still bothered that the main effort in this area is being put forth by the Ford Foundation and not our government. I would certainly hope that we could immediately begin a crash program supplying not only knowledge but actual materials.

I also discovered on my return that similar problems exist in this country. In this state, it often requires two letters, a home visit, a trip to a private physician and four months before a woman may receive a birth control device. Such a situation should not be allowed to exist in light of the pressing nature of the problems of an expanding population.

I heartily applaud your efforts to enlighten the public about the nature of this problem and I support your efforts to modify our laws in this area.

I would appreciate, for my further edification, a copy of the testimony given on this matter and of the recommendations and legislation which arises from these hearings.

Sincerely yours,

KARL SINGER.

Senator GRUENING. Many of the words of Thomas Robert Malthus, who published his "First Essay on Population" in 1798, describe situations similar to those which Mr. Reuter has described today. They are concerned with population and food, and the tragedies which occur when population is greater than can be nourished with the available food supply.

The basic theory of Malthus—as presented in the "First Essay" and the five revisions and republications of that book which followed it—was that population will always outgrow the supply of food available to the population because population increases geometrically while food increases arithmetically. In too many parts of the world we are now witnessing this principle in operation.

Perhaps the greatest impetus to population growth between the time of Malthus and the decade in which we now live has been the advance in medicine, advance for which much of the credit goes to Nobel Prize winners, four of whom spoke before this committee earlier. We have now made advances in ways by which population growth can

be controlled. Malthus condemned contraceptives, such as were then available, calling them "improper arts," the checks to population which he considered most important were those of "misery and vice" primarily disease, war, and famine. He later modified this gloomy view, placing more emphasis upon a quality he called "moral restraint," which would encourage a man to wait for marriage until he could support children.

Today, while we still confront and fear disease and famine, we are far better able to control them, and to save lives that in the time of Malthus would have been lost. Today, also, we often have the opportunity to desist from pointless and useless wars, if we would only take advantage of such opportunities.

It is not, however, upon war, disease, and famine that we wish to depend to avoid an overwhelming population growth throughout the world. We have available to us the means to control population growth peacefully, humanely, and effectively. It is of great importance that this knowledge is available to all those who request it.

The increase of our food supplies resulting from agricultural advances through the years has obscured the population problem in this country; the food for peace program has mitigated partially the consequences of the imbalance between agricultural growth and population growth overseas. It is now time for us to see, as Malthus saw so long ago, that unless we check population growth—whether through the prudence Malthus counseled or through modern methods of contraception, we will continue to suffer from the disparity between the numbers of people to be fed and the food available to feed them.

I direct that significant parts of Malthus' writings, as well as two articles describing Malthus and his theories, be made a part of the hearing record.

(The material referred to follows:)

EXHIBIT 53

MALTHUS IN RETROSPECT

(Robert C. Cook, editor, Population Bulletin, Volume XXII, No. 1, Feb. 1966, published by the Population Reference Bureau, Inc.)

THE STORK VISITS DORKING—1766

Thomas Robert Malthus, often regarded as an anti-Cupid, was born on St. Valentine's Day, February 14, 1766.* Outside the circle of his family and their friends, his appearance as a new member of the human race went unnoticed. But 32 years later, Malthus's growing interest in the proliferation of mankind, as set forth in his *Essay on the Principle of Population*, wrenched him from comfortable obscurity and set off a tumultuous controversy which has continued even to this day, two hundred years after his birth.

This debate centers around a simple enough proposition: that there exists a tendency for population to press on the means of subsistence. Malthus formulated this concept: if unchecked, populations had a built-in tendency to increase geometrically—as does money at compound interest.

Malthus equated this to the ascending powers of 2: 1, 2, 4, 8, 16, 32, etc. The "doubling time" for human populations he set at every 25 years—an oversimplification, but no exaggeration, for all that.

The means of subsistence—the primary element being food—had no such built-in multiplier. That the quantity of food could be doubled was certainly

*Sources differ: some give his date of birth as February 13.

not beyond the realm of possibility. That it could be doubled again—and as quickly—appeared to him to be well-nigh impossible.

Malthus's basic premise was elementary to the point of being axiomatic. Obviously, no population of living organisms—be they men or mice—can exist beyond its "means of subsistence." The primary limiting factor is food; the ultimate limit is space. This is the case on occasion in the periodic population explosions experienced by certain species of rodents. Even though food is adequate, the unbearable crowding of a growing multitude triggers compulsive migrations into the sea.

Malthus's "principle of population" grew out of concern with a problem as old as time. "For ye have the poor always with you," Christ said. They were a multitude in Malthus's day. Now, a century and a half later, President Johnson is in the midst of a gargantuan "war on poverty" dedicated to accomplishing what neither prayer nor good works nor legislative fiat has ever managed before.

Poverty was very much in the minds of Englishmen by the end of the 18th Century. The poor laws and the corn laws, dating back to the time of the first Queen Elizabeth attempted to deal with poverty symptomatically. In a shifting and urbanizing world on the threshold of a new era, they were increasingly inadequate.

That something had to be done about poverty was generally agreed. The Establishment was concerned that growing misery could ignite fires of revolution, sparked by a France in turmoil only 21 miles away. Liberal reformers—among them Godwin, Bentham, Hume, and Owen—were busy elaborating roseate plans to establish a new Utopia.

Malthus was concerned with the roots rather than with the branches of this perennial evil: "*How to provide for those who are in want, in such a manner as to prevent a continual increase of their numbers, and of the proportion which they bear to the whole society.*" [The italics are Malthus's.]

Malthus took up his pen to warn that high-flown idealism in the hands of reformers, bemused with alluring theories, was not calculated to decrease the numbers of the poor nor to improve their condition. That hunger had been endemic in England during much of the 18th Century provided a somber backdrop for the controversy generated by Malthus.

By reason of his background and the rigid theology which was his heritage, Malthus was able to accept, apparently with minor humanitarian qualms, the action of direct and ruthless "positive checks," famine, disease, and war as the ultimate and irrevocable and divinely ordained determinants of population growth.

Malthus was quite aware that an alternative solution existed, but this he looked upon with aversion akin to horror. This was the possibility that fertility could be checked by human action. The prudential checks—still seen as a solution by the Roman Catholic Church—he fully approved of, namely delayed marriage and rigid premarital continence. He recognized "vice" as a significant factor in reducing the rate of population growth. In a deep moral penumbra, he alluded to certain "improper arts"—quite clearly contraception—which he considered to be no better than "vice"; perhaps even worse.

In a variety of ways, the "affair Malthus" is rich in paradoxes. As Victor Hugo said, nothing can check an idea whose time has come. Malthus's "principle of population" is a notable example of a badly timed idea. It aggravated and infuriated. It challenged men's minds. Its axiomatic base was bolstered with a rickety supporting structure. And the rigid feudalistic frame of reference in which most of Malthus's discourse was cast repelled acceptance of the very important and significant and relevant parts of his writings.

He expected England and her neighbors to be plagued with mounting hunger. Famine had been endemic in Europe for centuries. Populations were growing, and a grim day of reckoning seemed close at hand. In the 19th Century, the countries of the Western industrial world were to witness a multiplication of people, the like of which Malthus could not have imagined. This was accompanied by an unprecedented improvement in the level of living of the population. A wave of vast and varied technological improvisation badly upset Malthus's schedule.

The substitution of heat-energy for muscle and water power quickly brought about an industrial revolution, and greatly increased productivity. The iron horse and iron ships shrank the continents and made millponds of the oceans. For a time the problem of on-the-spot subsistence was bypassed. Europe could beg the question of multiplying mouths and of the food to fill them by turning to other continents for sustenance.

Now, 168 years after the publication of the famous *Essay*, a new day of reckoning seems perilously near at hand. Recent developments in Asia, Africa, and Latin America strongly suggest that in the century and a half since Malthus took pen in hand, mankind has gone full circle. The collision between geometrical multiplication of people and arithmetical increase in means of subsistence was averted for a time. But the basic problem of those in want—and acutely in want—for the essentials of survival has not been resolved.

There was a time—and not very long ago—when the cornucopia philosophy of indefinite abundance was quite generally accepted. The Food and Agriculture Organization of the United Nations (FAO), established in 1945, rode the crest of the wave of abundance in its early years. Its first Director-General, Sir John Boyd-Orr, wrote in 1952:

"Can the earth provide food on a health standard for this increased number? The author gives well-authenticated facts to show that there is no physical difficulty in doubling or redoubling the world food supply. If the farmers fail us, the chemist has already shown the way to synthetic food. The only practical limitations to food production are the amount of capital and labor human society is willing to devote to it.

* * * * * * *

"But in the last hundred years the rather brutal mercantile age fighting for profits at whatever expense to their fellow men has been with increasing rapidity changing to a social age in which both political and economic freedom are beginning to be regarded as the inalienable rights of every human being. If, by some miracle, there could be absolute guarantee that there would be no war for fifty years, the next generation would see human society well on the way to a world of peace and plenty, with hunger, poverty and preventable disease, which have always afflicted the majority of mankind, banished forever from the earth."

The food inventories of the U.S. Department of Agriculture, published about that time, and in the face of a crisis of local over-production and primitive distribution, took a hopeful view of the future. For a time, per capita food production, world-wide, actually showed a hopeful improvement.

This rosy optimism has collapsed since 1960. A recent Department of Agriculture report sees very little prospect of a quick increase in world agricultural yield:

"Given the projected high population growth rates of nearly all countries in Asia, Africa, and Latin America, the limited possibilities for expanding the cultivated area in most of the densely populated countries, and the lack of success in generating a yield takeoff, it does not appear likely that the downward trends in per capita food output now in evidence in these regions can be easily arrested. Barring a rise in the death rate due to widespread malnutrition in these regions, projections show the fastest population increase in history over the next 10 years. Failure to arrest the downward trend in per capita food output in these regions will leave two alternatives: (1) a continuing decline in consumption levels (narrowing the already thin margin between current consumption levels and survival levels); or (2) growing dependence on food imports—if imports are available."

The futility of attempting to provide for open-ended population growth is now recognized by Lord Boyd-Orr's successor, the present Director-General of FAO, Dr. Binay R. Sen. He recently called the next 35 years "a most critical period in man's history." He warned, "Either we take the fullest measures both to raise productivity and to stabilize population growth, or we will face disaster of an unprecedented magnitude."

FAO data show that, for the world as a whole, population is increasing faster than food. There has been no gain in per capita food production since 1958–59. Dr. Sen reported that between 1959 and 1964 population in Latin America increased by 11.5 percent, while food production rose only by 6.5 percent. In the Far East, population grew by nearly 10 percent during the same period; food production went up by only 8.5 percent.

Before World War II, the less-developed nations exported 11 million tons of grain annually to the developed nations. As their populations grew, developing countries ceased to export. By 1964, they were *importing* an estimated 25 million tons of grain. The only large pool of excess food in the world today is in the United States and Canada.

A National Seminar on the world food outlook with special reference to the role of the United States was held in July 1965. The report of this conference states:

"* * * Some countries of Latin America, for example Brazil, are also food importers, but Argentina, Uruguay and Mexico are net exporters; for Latin America as a whole, imports and exports are just about in balance, but serious imbalances exist locally * * *

"Roughly half the total food imports of the developing countries in 1965 will come from the U.S. on more or less concessional terms under the Food for Peace program. Thus, in thinking about the future of this program, one basic consideration must be an estimate of the future food needs of the developing countries, and the extent to which their needs may have to be met by food exports from developed countries.

"Overall net food imports supply 4% of food consumed in the developing countries. While the percentage seems small, these imports are critically important in supplying food to the cities, to areas of more than average shortage, and to the extremely poor, and in stabilizing food prices in the recipient countries.

* * * * * * *

"There are two reasons why the world food deficit could not be made up entirely by imports: (1) the needed increase per capita in the developing countries could only be obtained by a large increase in agricultural production, since agriculture is the basis of their economies; (2) neither the farm capacity of the developed nations nor the world's shipping and distribution facilities are adequate for the large international food transfers that would be needed."

What these words say is that two hundred years after Malthus's birth, the problem he addressed himself to has not been solved: "to provide for those in want"—and acutely in want. The new powers which "proved Malthus wrong" have been exploited without understanding their limitations, and with no real appreciation of the impact of the reproductive urge in an era of declining mortality and increasing life expectancy.

To evoke science-fiction solutions to solve the crisis is not helpful. Great gains can unquestionably be made in increasing food production, world-wide. At best this will be a slow process involving education, the development of adapted varieties of animals and plants and very large capital expenditures for fertilizers, insecticides, agricultural machinery, food storage facilities, etc.

Malthus's approach—identifying the basic elements essential to a solution and adopting practical steps to implement them—is badly needed in a world where 1.7 billion men, women and children are perilously close to starvation.

* * * * * * *

It has been frequently remarked, that no work has been so much talked of by persons who do not seem to have read it, as Mr. Malthus's Essay on Population.

—John Murray, Publisher to Mr. Malthus

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The importance of the *Essay* consisted not in the novelty of his facts but in the smashing emphasis he placed on a simple generalisation arising out of them. . . . The book can claim a place amongst those which have had great influence on the progress of thought.

—Lord Keynes, 1933

EXHIBIT 54

PROFESSOR MALTHUS AND HIS ESSAY

(Judy K. Morris, Population Bulletin, Vol. XXII, No. 1, Feb. 1966, published by the Population Reference Bureau, Inc.)

> *I think I may fairly make two postulata.*
> *First, That food is necessary to the existence of man.*
> *Secondly, That the passion between the sexes is necessary, and will remain nearly in its present state.*
> *Assuming, . . . my postulata as granted, I say, that the power of population is indefinitely greater than the power in the earth to produce subsistence for man.* —*Robert Malthus, 1798*

The Reverend Robert Malthus,* Professor of History and Political Economy at East India College, Haileybury, England, was not a man one would expect to stir up controversy. He took religious orders, according to the head of his college, because "the utmost of his wishes was a retired living in the country."

*Malthus preferred to drop the "Thomas."

In an age when prolonged public debate was a major British pastime, Malthus avoided the game. Eager for discussion with the economist, David Ricardo, he "took the liberty of introducing himself," hoping that, "as we are *mainly* on the same side of the question, we might supersede the necessity of a long controversy in print respecting the points in which we differ, by an amicable discussion in private."

The first edition of Malthus's famous work, *An Essay on the Principle of Population*, was published anonymously.

But this reticent man, when quite young, stumbled upon a subject which dominated his life and caused his name to be very much on the public tongue: his controversial "principle of population." The essential concept of the principle lay in what Malthus saw as a tendency toward imbalance between the rates of growth of a population and its food supply. To balance the two, Malthus said, nature used both "preventive" and "positive" (war, plague, famine, and the ubiquitous "vice") checks to population.

Interest generated by his pronouncements, as well as a flow of new information, led Malthus to revise and republish his *Essay* five times. Malthus's principle of population appears to be as relevant in 1966—200 years after his birth—as it was in 1798, when the *Essay* first appeared. That Malthus's views remain controversial is perhaps symbolic of the confusion in which the population problem is cast, even in this assumedly enlightened age.

Even today Malthus is still coolly dismissed or roundly denounced in some quarters. But, while population is growing as never before, in most of the world it does not thrive. The number of people now on the verge of falling victim to what Malthus saw as the ultimate check to population—famine—*is twice the total population of the world when he wrote his* Essay.

Malthus's fundamental concept remains unchallenged: *Unchecked population growth accelerates faster than the greatest increases of food that man is able to wrest from the earth on a sustained basis.*

The controversy which this idea engendered has had such wide-ranging consequences that Malthus stands as one of the select few, who have made unique and enduring contributions to man's understanding of himself and of his place on this planet.

THE MISUNDERSTOOD MAN

Any controversial figure is subject to rumor, innuendo, and misunderstanding, and Malthus was no exception. For example, he has come to be known as "the gloomy parson."

Actually, he was rather a cheerful person. It is true that he was not one to gloss over the grim realities of life, as in this statement:

"It has appeared, that from the inevitable laws of our nature, some human beings must suffer from want. These are the unhappy persons who, in the great lottery of life, have drawn a blank."

But he also called life "a blessing." In his introduction to the *Essay*, he attempted to forestall a "gloomy" view of his personality by denying he had "a jaundiced eye, or an inherent spleen of disposition."

Technically, Malthus was a "parson." In 1803, he was appointed to a rectory in Haileybury, a position he held the rest of his life. Actually, he left his parish in the charge of a succession of curates. His real vocation was as a professor of political economy. No less an authority than John Maynard Keynes has given him the highest marks in economics:

"If only Malthus, instead of Ricardo, had been the parent stem from which nineteenth-century economics proceeded, what a much wiser and richer place the world would be today!"

A more serious misconception links Malthus with the movement promoting the use of birth-control devices. In fact, he abhorred even the idea of contraception, which he referred to delicately as "improper arts." As will be noted later in this discussion, he paradoxically advocated large families at the same time forecasting the imminence of mass famine.

Perhaps most surprising, Malthus by no means frowned on large and growing populations. On the contrary, he said:

"That an increase of population, when it follows in its natural order, is both a great positive good in itself, and absolutely necessary to a further increase in the annual produce of the land and labour of any country, I should be the last to deny. The only question is, what is the order of its progress?"

Malthus wanted men to "unite the two grand *desiderata*, a great actual population and a state of society in which abject poverty and dependence are comparatively but little known." In the appendix to the third edition of his *Essay*, he complained of criticism which proceeded:

". . . upon the very strange supposition that the *ultimate* object of my work is to check population, as if anything could be more desirable than the most rapid increase of population, unaccompanied by vice and misery. But of course my ultimate object is to diminish vice and misery, and any checks to population which may have been suggested are solely as means to accomplish this end."

Malthus was concerned with nature's often cruel ways of eliminating "redundant" populations. He never referred to a "population problem," only to the problems of misery and vice, of poverty and labor surpluses, resulting from too-rapid growth.

He frequently discussed the application of his "principle of population" as it related to social conditions in England. His conviction—shocking to many then and now, but based for Malthus on the feudal antecedents of his society—was that the poor, through overbreeding, were largely responsible for their condition. He said, in effect, those who have ceased to have the power to eat or to live, ceased to have the right: that there is no inherent right to sustenance. By pretending otherwise, society misleads and cruelly disappoints the poor. He advised the poor to forego marriage until they could support their offspring, thus limiting their numbers, tightening the labor market, and raising wages.

Malthus was not a prudish person who disapproved of sex. The *Essay* contains occasional hymns to "virtuous love":

"Virtuous love, exhalted by friendship, seems to be that sort of mixture of sensual and intellectual enjoyment, particularly suited to the nature of man, and most powerfully calculated to awaken the sympathies of the soul, and produce the most exquisite gratifications. Perhaps there is scarcely a man, who has once experienced the genuine delight of virtuous love, however great his intellectual pleasures may have been, who does not look back to that period as the sunny spot in his whole life . . ."

He regarded "the passion between the sexes" as mankind's unique characteristic and a great force for potential good:

". . . we appear to have under our guidance a great power, capable of peopling a desert region in a small number of years; and yet, under other circumstances, capable of being confined by human energy and virtue to any limits however narrow, at the expense of a small compartive quantity of evil."

Malthus was indebted to the work of many other men for ideas which contributed to the development of his theories. Conversely, others were indebted to him. For instance, Charles Darwin found the inspiration for his law of evolution by natural selection in the *Essay:*

"I happened to read for amusement Malthus on Population, and being well prepared to appreciate the struggle for existence which everywhere goes on, from long-continued observation in the habits of animals and plants, it at once struck me that under these circumstances favourable variations tend to be preserved, and unfavorable ones to be destroyed. The result of this would be the formation of new species. Here then I had at least got a theory by which to work."

Alfred Russel Wallace, who simultaneously and independently arrived at an identical theory, also found his inspiration in the *Essay.* As the crucial spark for this epochal idea alone, Malthus's place in history is secure.

CURRICULUM VITAE

Depending upon the source one chooses, Thomas Robert Malthus was born, as noted, either on St. Valentine's Day, February 14, 1766, or on the 13th. In any case, according to a brief biography of the essayist by Lord Keynes, Jean-Jacques Rousseau and David Hume visited Malthus's father three weeks after his son's birth. Keynes suggests these "two fairy godmothers . . . may be presumed to have assigned to the infant with a kiss diverse intellectual gifts." The baby was not so lucky in another respect: Malthus had a harelip which rendered his speech defective throughout his life.

Malthus was born into a middle-class family at a small but elegant mansion in farming country near Dorking, just south of London. Among his forebears were the Vicar of Northolt, the apothecary to King William, and a director of

the South Sea Company. Malthus's father, Daniel, was an Oxford-educated country gentleman, who led an earnestly intellectual life. Daniel corresponded with Rousseau and, according to family legend, with Voltaire. Young Robert was brought up in a world of very advanced ideas.

James Bonar, a late 19th-Century biographer, described the England of Malthus's youth:

"The early life of Malthus . . . coincides of necessity with the accomplishment of England's greatest industrial revolution. Malthus was born in 1766, three years after the Peace of Paris. There was an end, for the time, to foreign wars; and trade was making a brave start. The discoveries of coal and iron in nothern England, going hand in hand with the inventions of cotton-spinning and weaving, were beginning to convert the poorest counties into the richest, upsetting the political balance. The new science of chemistry had begun to prove its usefulness. Wedgwood was perfecting his earthenware, Brindley cutting his canals, Telford laying out his roads, Watt building his steam-engines. England in Roman days had been a granary; in later ages she had been a pasture-ground; she was now becoming the land of machinery and manufacture, as well as the centre of foreign trade."

Malthus was tutored at home during his early years, then went to Jesus College, Cambridge, which was then becoming a center of intellectual ferment. He took his Holy Orders about 1788, but spent little time at his ecclesiastical post.

He married in 1804, the year after the second edition of the *Essay* was published. Of his three children, two were daughters, one of whom died young. According to Lord Keynes, Malthus has no descendants today.

In 1805, Malthus was appointed to the college established by the East India Company for the training of young men entering its service. He apparently enjoyed teaching, for he remained in his Chair at Haileybury for the rest of his life. And his students apparently enjoyed him, for they called him "Pop." A Whig, he was by no means isolated from current political and economic ideas and Mrs. Malthus's evening parties drew the elite of the London scientific world.

His duties as a professor included occasional preaching, frequently on the benevolence of God. His continuing religious dedication is obvious, particularly in the conclusion of the first edition of his *Essay*, where he defends God against those who complained that He brought misery, the "checks" to population, into man's life. Even in the more worldly second edition, he saw the Creator's plan thus:

". . . we can have no reason to impeach the justice of the Deity because his general laws make this virtue [restraint from marriage] necessary and punish our offences against it by the evils attendant upon vice, and the pains that accompany the various forms of premature death. A really virtuous society, such as I have supposed, would avoid these evils. It is the apparent object of the Creator to deter us from vice by the pains which accompany it, and to lead us to virtue by the happiness that it produces."

Malthus produced so many books, articles, and papers in his field of political economy as to suggest that early 19th-Century academe had its own version of the "publish or perish" dictum. Perhaps his greatest legacy in the field is the long series of letters exchanged during his friendly debate with David Ricardo. Their friendship, begun with Malthus's hesitant self-introduction in 1811, lasted until Ricardo's death in 1823. Malthus said of Ricardo:

"I never loved anybody out of my own family so much. Our interchange of opinions was so unreserved, and the object after which we were both enquiring was so entirely the truth . . . that I cannot but think we sooner or later must have agreed."

In his biography, Lord Keynes described the varying approaches of Malthus and Ricardo, and then cast his own vote:

"Here indeed, are to be found the seeds of economic theory, and also the divergent lines—so divergent at the outset that the destination can scarcely be recognised as the same until it is reached—along which the subject can be developed. Ricardo is investigating the theory of the *distribution* of the product in conditions of equilibrium, and Malthus is concerned with what determines the *volume* of output day by day in the real world. Malthus is dealing with the monetary economy in which we all happen to live; Ricardo with the abstraction of a neutral money economy . . . .

"One cannot rise from a perusal of this correspondence without a feeling that the almost total obliteration of Malthus's line of approach and the complete domination of Ricardo's for a period of a hundred years has been a disaster to the progress of economics. Time after time in these letters Malthus is talking plain sense, the force of which Ricardo with his head in the clouds wholly fails to comprehend."

Applying his "plain sense" to another field, Malthus believed that authors who were proclaiming the perfectibility of man and society could not ignore the tendency of population to outgrow food supplies. The down-to-earth scholar took on the idealists in 1798, with the publication of the first edition of his *Essay*. He was 32.

His concern for getting to the truth of the human condition led him into extensive research and travel to find evidence to corroborate his theories. His findings and expanded thought led to the second edition in 1803. He continued to expound his themes in additional revised editions, the last in 1826, and in an article for the 1824 supplement to the *Encyclopaedia Britannica*. Malthus died at age 68 in 1834.

THE BEST OF TIMES, THE WORST OF TIMES

Like the rumblings of the scientific revolutions, those of the American and the French revolutions promising universal equality were heard in all Western nations at the turn of the 19th Century. Charles Dickens was to call this "the best of times . . . the worth of times." Liberals dreamed of drastic changes in the social order which would enable man to achieve his potential best. Those in power had nightmares of mass uprisings which would sweep away their established rule. The English Poor Laws—in effect since the time of Queen Elizabeth—quite obviously were not alleviating the lot of the poverty-stricken; rather the poor grew in number. The English aristocracy feared any worsening of conditions might well trigger a revolution.

It was a time when theories abounded—aired in multitudinous phamphlets and shouted in the public houses. An idea was advanced and immediately answered, often with a volley of tracts. Everyone, it seemed, had his own intellectual foxhole. In Malthus's opinion:

"The late rage for wide and unrestrained speculation seems to have been a kind of mental intoxication, arising perhaps from the great and unexpected discoveries which had been made in various branches of science. To men elated and giddy with such successes, everything appeared to be within the grasp of human powers; and under this illusion they confounded subjects where no real progress could be proved with those where the progress had been marked, certain, and acknowledged."

It was a time of war and uneasy peace. Perhaps the radical concepts in Malthus's *Essay* were as widely accepted as they were, despite much dissent, because England was in and out of war, and the island nation could well imagine the horrors of food shortages. Five years of poor harvests preceded the publication of the first edition; severe food shortages continued through the first quarter of the 19th Century.

England's population was growing rapidly, although the surprising dimensions of the growth were not then known. The first British census (1801) was not taken until three years after the *Essay* first appeared. Compulsory registration of births and deaths did not begin until 1837, three years after Malthus died. Until then, church records of baptisms and burials served as the vital statistics of the realm. Nevertheless, with his acute interest in the economic situation, Malthus recognized that the poor were increasing with a consequent growth in unemployment.

Demographers have established that England's death rate began a long and steady decline in 1740 whereas the birth rate remained fairly high until the last quarter of the 19th Century. Offhand references in Malthus's *Essay* bring home sharply what a high death rate meant: "One out of five children is a very unusually small proportion to lose in the course of ten years," he said. And later, "The average age of marriage will almost always be much nearer to the average age of death than marriage is to birth . . ."

In 1740 both birth and death rates were about 36 in England and Wales; in 1840, the birth rate was 37, the death rate was down to 23. In the half century before Malthus wrote his *Essay*, England's population grew sizeably. And, dur-

ing the years he was revising it, the population took on a new pattern of very rapid growth. England and Wales had an estimated population of about 6 million in 1700; the 1801 Census counted 8.6 million; the 1901 Census counted a fourfold increase to 32.5 million. This rapid growth occurred despite massive emigration. Farming techniques improved, industry demanded more people to man its factories, industrial England traded with the world and was able to support her additional millions partly by increased agricultural production but mainly by food imports. Although poverty was not banished, the population of England boomed.

Amid the turmoil of ideas, Malthus's were not new. Forty years earlier, Dr. Robert Wallace mentioned excessive population growth as an obstacle to a more perfect human society. In his first preface, Malthus described his debt to, and differences from, earlier writers:

"It is an obvious truth, which has been taken notice of by many writers, that population must always be kept down to the level of the means of subsistence; but no writer, that the Author recollects, has inquired particularly into the means by which this level is effected; and it is a view of these means, which forms, to his mind, the strongest obstacle in the way to any very great future improvement of society."

THE SIX EDITIONS, AND HOW THEY GREW

Malthus wrote his *Essay on the Principle of Population* to put in order thoughts roused in continuing discussion with his father, Daniel, over the "future improvement of society." The seed of the argument lay in some proposals by William Godwin, a utopian anarchist, political philosopher, and sometime novelist.

Godwin's treatises criticizing established society and proposing a system based on reason and innate human justice rather than on law had attracted a substantial and vociferous following, including the poet Percy Bysshe Shelley. (Ironically, although Malthus often was accused of being against marriage, it was Godwin who attacked that ancient social institution. However, when Shelley ran off with Godwin's daughter Mary without benefit of a proper nuptial ceremony, the free-thinking sage waxed irate. Shelley later married the girl, whose principal claim to fame was her authorship of *Frankenstein.*)

Daniel Malthus supported Godwin's convictions. His son Robert thought Godwin, and others who postulated ideal societies, made a fatal error in ignoring population growth and the forces which checked it. If ideal societies were established, he reasoned, hunger, jealousy, and antagonism would soon mar these perfect states and restore the familiar competitive world.

His *Essay* held that the various proposals for the perfectibility of society had not been subjected to careful and dispassionate scrutiny. This first edition presented an untypically abstract formulation of Malthus's understanding of population growth and checks, with brief references to existing and former societies. It was marked by a philosophic, even theological, acceptance of the demographic situation as Malthus saw it.

The full title of the first edition was: *An Essay on the Principle of Population as it affects the Future Improvement of Society, with remarks on the Speculations of Mr. Godwin, M. Condorcet, and other writers.* The concluding chapter heading suggested a somber outlook indeed: "Moral evil probably necessary to the production of moral excellence."

The second edition took a more hopeful view. It was entitled: *An Essay on the Principle of Population or, A view of its past and present effects on Human Happiness; with an enquiry into our prospects respecting the future removal or mitigation of the evils which it occasions.* The final chapter heading carried a definite banner of hope: "Of our rational expectations respecting the future improvement of society."

Fully half the second edition was devoted to a detailed examination of how the principle of population worked and identification of the checks which operated in past and contemporary societies. In this extensive revision, Malthus adjusted and fleshed out his basic theory. His approach, this time, was altogether worldly. The second edition was cast in the terms of politics, economics, and history.

He refuted the systems of equality suggested by Godwin *et al,* and applied his own analysis to the economic and political problems of contemporary England: the Poor Laws, the Corn Laws, the optimum proportions of agriculture and

67-785—66—pt. 2——4

commerce for a national economy. For instance, Malthus warned England that the new nation, America, would soon be setting up mills and factories and processing its own raw materials. England, he said, must be prepared to cease counting on America both as a supplier of raw goods and as a buyer of finished products.

The last quarter of the book introduced his most important new principle: the possibility of encouraging moral restraint as a means of checking population growth with a minimum of human unhappiness.

Between the first (1798) and second (1803) editions, Malthus developed—from a reading of history, from current records, and from firsthand observations—the factual basis and substantive analysis he preferred to his first rather abstract approach. Among the sources cited are Robertson's *History of America* (1780), *Voyage dans l'Intérieur de l'Afrique*, Cook's accounts of his three voyages, Hume's *Essays*, the *Bible*, Tacitus's *De Moribus Germanorum*, Gibbon's *Decline and Fall of the Roman Empire*, Tooke's *View of the Russian Empire*, and Plato's *The Republic*.

More current sources included parish registries, scientific papers, transactions of meetings, population abstracts, and bills of mortality. While, as Malthus noted, the first edition was written "on the impulse of the occasion, and from the few materials which were then within my reach in a country situation," he completely overcame this deficiency. The second edition—almost 600 pages of small type in the *Everyman* edition—is about four times the length of the first.

In his research on population growth, he found "much more had been done than I had been aware of . . . and the most violent remedies proposed, so long ago as the times of Plato and Aristotle." Many of his contemporaries, he reported, had treated the subject "in such a manner . . . as to create a natural surprise that it had not excited more of the public attention."

Some of the information he gathered during two European tours was too subjective to be of scientific value. About Norway—the country to which he gave highest marks for a robust economy and an awareness of the dangers of rapidly growing population—he said:

"I particularly remarked that the sons of housemen and the farmers' boys were fatter, larger, and had better calves to their legs than boys of the same age and in similar situations in England."

Why the great variation in tone and content between the first two editions? Bonar suggested the "happy coincidence" that England was at war when the first was written and at peace five years later. Whatever the reason, one critic said that Malthus's changes, particularly the advocacy of moral restraint, indicated the essayist had abandoned his original argument. Another suggested it was Godwin himself, in a letter to Malthus (now lost), who recommended prudence to circumvent the dreadful checks.

As new information accumulated, and in order to respond to criticism and questions stirred by his work, Malthus revised and added to his *Essay* through a total of six editions. However, the later editions (1806, 1807, 1817, 1826) differed little from the second.

Joseph J. Spengler, Professor of Economics at Duke University, found increasingly in later editions the assertion that population growth depends on the availability of employment. In Malthus's *Principles of Political Economy* (1820), Spengler found this idea most fully developed: that the availability of sustenance determines the upper bound of population size, but within this limit the amount of available and prospective employment conditions the rise and fall of population.

THE PRINCIPLE OF POPULATION

Malthus's principle is succinct. After stating that "the power of population is indefinitely greater than the power in the earth to produce subsistence for man," he continued:

"Population, when unchecked, increases in a geometrical ratio. Subsistence only increases in an arithmetical ratio. A slight acquaintance with numbers will show the immensity of the first power in comparison of the second.

"By that law of our nature which makes food necessary to the life of man, the effects of these two unequal powers must be kept equal.

"This implies a strong and constantly operating check on population from the difficulty of subsistence. This difficulty must fall some where; and must necessarily be severely felt by a large portion of mankind. . . .

"Among plants and animals [the effects of this great restrictive law] are waste of seed, sickness, and premature death. Among mankind, misery and

vice. . . . This natural inequality of the two powers of population, and of production in the earth, and that great law of our nature which must constantly keep their effects equal, form the great difficulty that to me appears insurmountable in the way to perfectibility of society. . . . I see no way by which man can escape from the weight of this law which pervades all animated nature. No fancied equality, no agrarian regulations in their utmost extent, could remove the pressure of it even for a single century."

In addition to the "positive" population checks (the "misery and vice" of famine, war, pestilence; "vicious customs with respect to women, great cities, unwholesome manufactures, luxury"), Malthus also noted the "preventive" check of restraint from early marriage during hard times, which tended to lower the number of births.

He cited the known doubling of the population in 25 years in the United States of America as proof that such a rate of increase was possible, though perhaps near a maximum.

Malthus said that, with great effort, a country might double its agricultural production in 25 years, but that it was impossible to double production again, to four times the original output, in the succeeding 25 years. The utmost one could hope for, he surmised, was an increase again equal to the original production: an arithmetical increase.

If, to begin with, the food supply met the needs of the population, it would again be sufficient after both had doubled in the first 25-year interval. If, during the succeeding 25 years, population again doubled but food only increased by the original amount; the food available per capita would be reduced by a fourth. With numbers pressing on marginal subsistence Malthus saw the positive and preventive checks rigidly limiting further population growth.

Malthus was positive that in the end the checks would come into action:

"The different modes which nature takes to prevent, or repress a redundant population, do not appear, indeed, to us so certain and regular; but though we cannot always predict the mode, we may with certainty predict the fact. If the proportion of births to deaths for a few years indicate an increase of numbers much beyond the proportional increased or acquired produce of the country, we may be perfectly certain, that unless an emigration takes place, the deaths will shortly exceed the births. . . ."

Actually, this tendency to geometric increase is a property of all living things. The *potential* for rapid increase is much greater in agricultural crops and herds than in human populations. Crop plants have a potential doubling time of less than one year, a fact which is utilized by plant breeders to multiply new strains with fantastic speed.

In agricultural practice, however, making two blades of grass or two bushels of wheat or rice grow where one grew before is no easy matter. Most of the good agricultural land in the world is already under cultivation. The land available for crops remains effectively constant from year to year. It is being farmed by methods—and with resources—which change very slowly. There is no question that improved techniques, better varieties, and increased use of fertilizer could provide an adequate diet for all the world's people. Agricultural production, world-wide, is currently increasing by about 1 percent a year, which will double production in 75 years. By that time, at the present rate of increase, the number of people would have grown to over 13 billion, four times the present population.

In the second edition, Malthus conceded that "the comparison between the increase of population and food . . . had not perhaps been stated with sufficient force and precision." He made less of the ratios and relied more heavily on his many examples of populations which grew when food was plentiful, only to suffer cruel ravages when supplies were scarce.

Malthus held that food scarcity was the ultimate barrier against which population growth faltered. The action of both the preventive and positive checks he related to the food supply.

For instance, as people weakened from hunger, they were more vulnerable to plagues. Thus sickness actually caused death, although scarcity of food had paved the way.* The quantity of employment, he said, while related to food production, did not vary so much from year to year as did food supplies. There-

*WHO has recently stated that in Latin America "among the children aged 1 to 4 about half the deaths are attributable to malnutrition."

fore, it was a much steadier check, and, since it encouraged or discouraged marriage, acted as a preventive, rather than a harsher, positive check.

Malthus dramatically described the awesome power of famine in proscribing man's increase in one of the few highly colored passages in his generally restrained prose:

"Famine seems to be the last, most dreadful resource of nature. The power of population is so superior to the power in the earth to produce subsistence for man, that premature death must in some shape or other visit the human race. The vices of mankind are active and able ministers of depopulation. They are the precursors in the great army of destruction; and often finish the dreadful work themselves. But should they fail in this war of extermination, sickly seasons, epidemics, pestilence, and plague, advance in terrific array, and sweep off their thousands and ten thousands. Should success be still incomplete; gigantic inevitable famine stalks in the rear, and with one mighty blow, levels the population with the food of the world."

MALTHUS'S HOPE: MORAL RESTRAINT

In the first edition, Malthus's proposals for limiting the misery resulting from overpopulation were little more than recommendations of various new measures for dealing with the poor. Not until the second edition did he declare that moral restraint from imprudent marriage should be encouraged in order to stave off, not population growth, but the vices and miseries which are the natural checks to population growth.

He did note, in the first *Essay*, that a preventive check existed in England and in "all old states," when some individuals chose to put off marriage because of financial hardship or the exigencies of social ambition.

Malthus was distressed to note that restraint from marriage, "almost necessarily, though not absolutely," resulted in vice. Although he frowned on imprudent early marriage, he had compassion for those who

". . . guided either by a stronger passion or a weaker judgment, break through these restraints; and it would be hard indeed if the gratification of so delightful a passion as virtuous love, did not sometimes more than counterbalance all its attendant evils."

He was certain, however, that the consequences of imprudent marriages usually justified his forebodings.

Moral restraint, as introduced in the second *Essay*, was no haphazard natural check but a carefully defined series of stages which Malthus hoped would comprise a program to be generally encouraged, especially among the poor. He called it "a restraint from marriage from prudential motives, with a conduct strictly moral during the period of this restraint."

First, then, moral restraint demanded the postponement of marriage until the individuals were sure of sufficient income to support a family without relying on the state for aid. Malthus here meant a purposeful, knowledgeable decision by the parties involved, rather than the preventive check of the first edition, where restraint from marriage was "unconnected with its consequences."

Second, moral restraint imposed complete sexual continence before the postponed marriage. The probability that this requirement would not be met Malthus allowed to be the only plausible objection to his plan. Curiously, he countered this objection by saying that sexual vices were not

". . . the only vices which are to be considered in a moral question; [nor are they] . . . even the greatest and the most degrading to the human character. They can rarely or never be committed without producing unhappiness somewhere or other, and therefore ought always to be strongly reprobated: but there are other vices the effects of which are still more pernicious; . . . Powerful as may be the temptations to a breach of chastity, I am inclined to think that they are impotent in comparison of the temptations arising from continued distress."

Malthus did not believe the greatest threat to chastity came from a code of celibacy before marriage:

". . . marriage has been found to be by no means a complete remedy. . . . Add to this, that abject poverty, particularly when joined with idleness, is a state the most unfavourable to chastity that can well be conceived. The passion is as strong, or nearly so, as in other situations: and every restraint on it from personal respect, or a sense of morality, is generally removed."

The third aspect of moral restraint is most surprising: that within marriage there should be no restriction on family size. While this was not part of the defi-

nition first given in the *Essay*, scholars accept it as part of Malthus's thought. In the *Essay* he referred to contraceptives as "improper arts," and in the appendix to the 1817 edition made his position completely clear:

". . . I should always particularly reprobate any artificial and unnatural modes of checking population, both on account of their immorality and their tendency to remove a necessary stimulus to industry. If it were possible for each married couple to limit by a wish the number of their children, there is certainly reason to fear that the indolence of the human race would be very greatly increased, and that neither the population of individual countries nor of the whole earth would ever reach its natural and proper extent."

Malthus's enthusiasm for the efficacy of moral restraint was unbounded: "the only line of conduct approved by nature, reason, and religion."

He built what looks suspiciously like an entire war on poverty on the single pillar of moral restraint:

"The operation of the preventive check in this way, by constantly keeping the population within the limits of the food, though constantly following its increase, would give a real value to the rise of wages and the sums saved by laborers before marriage . . . all abject poverty would be removed from society; or would at least be confined to a very few."

The chances for establishing a general practice of moral restraint, he felt, were fair. He acknowledged that moral restraint

". . . does not at present prevail much among the male part of society, . . . [but] it can scarcely be doubted that in modern Europe a much larger proportion of women pass a considerable part of their lives in the exercise of this virtue than in past times and among uncivilised nations."

SOCIAL IMPLICATIONS: HARDHEARTED OR HARDHEADED?

Although Malthus believed the government had a "very considerable" obligation "in giving the best direction to those checks which in some form or other must necessarily take place," his conclusion was that the poor themselves must accept responsibility for their condition.

With typical bluntness, he said it was necessary to

". . . impress as strongly as possible on the public mind that it is not the duty of man simply to propagate his species, but to propagate virtue and happiness; and that, if he has not a tolerably fair prospect of doing this, he is by no means called upon to leave descendants."

He condemned the Poor Laws for removing any need for prudent doubts among those poor who might otherwise hesitate to marry. By providing precious food for the poorest, least industrious citizens, the laws deprived those who were more industrious of their just share and thus were likely to push more people into dependence on the state.

"Fortunately for England," said Malthus, "a spirit of independence still remains among the peasantry. The poor-laws are strongly calculated to eradicate this spirit." The laws, he said, diminished "both the power and the will to save, among the common people, and thus to weaken one of the strongest incentives to sobriety and industry, and consequently to happiness."

But it was not only as a weapon against poverty and hunger, or as an incentive to sobriety and industry, that Malthus recommended the practice of moral restraint. He thought it could be a strong buffer to the tide of revolution which many feared would shortly sweep across the Channel. He believed that:

"A mob which is generally the growth of a redundant population goaded by resentment for real sufferings, but totally ignorant, of the quarter from which they originate, is of all monsters the most fatal to freedom."

The poor, who quite rightly disliked their position, tended to blame the government in power, and this was the seed of revolution. The prevention, Malthus said, was to teach the poor the true cause of their condition—imprudent marriage—and explain to them that "the withholding of the supplies of labour is the only possible way of really raising its price, and that they themselves, being the possessors of this commodity, have alone the power to do this."

He stated further:

"If these truths were by degrees more generally known . . . the lower classes of people, as a body, would become more peaceable and orderly, would be less inclined to tumultuous proceedings in seasons of scarcity, and would at all times be less influenced by inflammatory and seditious publications, from knowing how

little the price of labour and the means of supporting a family depend on a revolution."

Malthus's theories, and the political and social views he derived from them, fully supported the *status quo*. He had no doubt that he was revealing a "natural law" of society. He was very skeptical about inherent "natural rights":

"Nothing would so effectually counteract the mischiefs occasioned by Mr. Paine's Rights of Man as a general knowledge of the real rights of man. What these rights are it is not my business at present to explain; but there is one right which man has generally been thought to possess, which I am confident he neither does nor can possess—a right to subsistence when his labour will not fairly purchase it. Our laws indeed say that he has this right, and bind the society to furnish employment and food to those who cannot get them in the regular market; but in so doing they attempt to reverse the laws of nature; and it is in consequence to be expected, not only that they should fail in their object, but that the poor, who were intended to be benefited, should suffer most cruelly from the inhuman deceit thus practised upon them."

In another statement he recognized that "social laws" did enhance the "right to subsist," but that this right appears not to be divinely ordained:

"The Abbe Raynal has said that 'Avant toutes les loix sociales l'homme avoit le droit de subsister.' He might with just as much propriety have said that, before the institution of social laws, every man had a right to live a hundred years. Undoubtedly he had then, and has still, a good right to live a hundred years, nay a thousand *if he can*, without interfering with the right of others to live; but the affair in both cases is principally an affair of power not of right. Social laws very greatly increase this power, by enabling a much greater number to subsist than could subsist without them, and so far very greatly enlarge *le droit de subsister;* but neither before nor after the institution of social laws could an unlimited number subsist; and before as well as since, he who ceased to have the power ceased to have the right."

Obviously, Malthus would stand aghast at the modern welfare state—whose existence has been made possible by the remarkable increases in productivity since his time.

Perhaps in answer to the charges of social injustice, Malthus occasionally stressed his liberal persuasion. For all his claim that imprudent marriage is an "immoral act," for instance, he stated firmly that the nation could not take away a man's right to marry whenever he chooses.

And Malthus wanted to improve the social status of single women, not only so that women would feel less compelled to marry but also in deference to the "plainest principles of equity." Malthus was for a general system of public education, as a means of teaching the poor his own ideas of "the real nature of their condition," and also to render them less vulnerable to the spell of "interested and ambitious demagogues."

Even his suggestion for reducing population growth was basically democratic—if somewhat naive: give the poor the facts and they will surely act wisely in their own best interests.

REACTIONS: RUMPUS AND RESPECTABILITY

Reaction to the *Essay* was instinctively violent. Lord Keynes describes the magnitude of Malthus's suggestion that man restrain his procreative power:

"The voice of objective reason had been raised against a deep instinct which the evolutionary struggle has been implanting from the commencement of life; and man's mind, in the conscious pursuit of happiness, was daring to demand the reins of government from out of the hands of the unconscious urge for mere predominant survival."

The public returned a volley of outraged protest. Typical of the sniping was this comment by William Hazlitt, a combative critic and essayist in London's literary and political world, who said Malthus had produced:

"* * * a complete theory of population, in which it is clearly proved that the poor have no right to live any longer than the rich will let them. * * * Is it an argument that because the pressure of a scarcity does not fall directly upon those who can bear it best, viz. the very rich, that it should therefore fall upon those, (sic) who can bear it least, viz., on the very poor? Unless Mr. Malthus can contrive to starve someone, he thinks he does nothing."

Malthus had brought a new subject to the tireless pamphleteers of London and the universities, a subject relatively unexplored, with overtones of philos-

ophy and politics, and—though who was to say it then—an undertone of psychology. Comments and protests appeared in letters, humor magazines, parliamentary speeches, and scholarly and popular journals. Many responses showed careless reading of Malthus, or no reading at all; some were fanciful exaggeration. Others constituted thoughtful, well-founded criticism.

Opponents attacked Malthus's rather loose and arbitrary exposition of the geometrical and arithmetical growth ratios of food and population. The seeming precision and authority, critics felt, helped popularize his theory. In Hazlitt's opinion: "Mathematical terms carry with them an imposing air of accuracy and profundity, and ought, therefore, to be applied strictly, and with greatest caution, or not at all."

Some dismissed Malthus's argument as a truism. Obviously there can be no more people than the food to feed them; obviously population stays within bounds. Samuel Taylor Coleridge, who attended Cambridge when Malthus was in a position of some authority there and apparently had reason to resent the essayist, made this marginal note on his copy of the *Essay*.

"Are we now to have a quarto to teach us that great misery and great vice arise from poverty, and that there must be poverty in its worst shape wherever there are more mouths than loaves and more Heads than Brains?"

For all the barrage, the *Essay* gathered more and more adherents. By 1820, the nay-sayers had been so ineffectual that Willian Godwin himself felt called upon to publish a lengthy refutation. The good standing of Malthus's theory can be surmised from the fact that the self-aggrandizing Godwin took pains to remind his readers that it was his own work which stimulated Malthus's original effort.

Malthus lived to see the revision of the English Poor Laws in the direction he had suggested. The stern new laws would not encourage anyone to marry out of a certainty that his children would be raised by the state. According to D. V. Glass, Professor of Sociology at the London School of Economics, Malthus's views colored British attitudes towards social services for a century or more.

The reaction in America was preponderantly negative, although far less attention was paid the *Essay*—a scattering of brief comments, mostly in journals. The first American edition, reprinted from the third London edition, was published in 1809. Commentators in the young and optimistic nation simply felt there was no shortage of land. If there ever should be? Well, a man's ingenuity and a little sweat could make the earth yield twice as much and twice as much again.

The *Essay* was translated into German and French during Malthus's lifetime. In Germany, hard times brought on a short-lived and inconclusive government-ordained Malthusian regime of restrictions on marriage.

In England, arguments about the principle of population raged long after Malthus's death in 1834. By the last half of the 19th Century, the brunt of public attack had moved to the neo-Malthusiau proposal that births should be controlled within marriage by what Malthus had once decried as "improper arts."

The manifold developments of the 19th Century had the greatest bearing on the long-term reaction to Malthus's theory. Cities sprang up and spread. Power, production, and transportation facilities were invented and put to use everywhere. By the end of that century, the major checks to population—famine, plague, and war—had been greatly mitigated for that part of mankind living in Europe.

The new inventions and machines led to an outpouring of industrial production which not only revolutionized life at home, but also prodded the major European nations to seek foreign colonies as consumers and to supply raw materials. These colonies shipped a continuing stream of foodstuffs. New methods applied to domestic agriculture greatly increased yields. It seemed that Europe need never again fear empty larders.

Developments in medicine and public health paralleled gains in industry and agriculture. Together with the sustained adequate food supplies, these innovations led to rapid declines in mortality. However, birth rates remained high, and population grew rapidly. Although there was some unemployment and working conditions were horrendous, most of the additional people either were absorbed into the new industrial plants or migrated to the colonies.

While war was not eliminated on the continent in the 19th Century the almost continuous clashes of the 18th Century were over.

In the second half of the century individuals began to limit the size of their families and national birth rates slowly dropped. The gloomy spectre of masses of starving people receded. Malthus was "proved" a false prophet.

Nevertheless, Malthus remained an important figure in economic history. In 1921, The Macmillan Company of New York and London published parallel chapters from the first and second editions in its *Economic Classics* series. In 1926, the Royal Economic Society reproduced the first edition:

"* * * with the least possible change, preserving its features not only in the lines, pages, and spellings but, it is hoped with fair success, in colour of paper and style of binding."

A unique example of the spontaneous application of moral restraint was Ireland. Contrary to the popular view, it was well before the terrible potato famine of 1848–1852 that the Irish people evolved a custom of late marriages which has continued for over a century. Prophetically, Malthus had warned of the dangers of adopting the potato as a one-crop basic staple:

"In Ireland, or in any other country, where the common food is potatoes, and every man who wishes to marry may obtain a piece of ground sufficient, when planted with this root, to support a family, prizes may be given till the treasury is exhausted for essays on the best means of employing the poor. . . . When the commons were all divided, and difficulties began to occur in procuring potato-grounds, the habit of early marriages which had been introduced, would occasion the most complicated distress; and when, from the increasing population, and diminishing sources of subsistence, the average growth of potatoes was not more than the average consumption, scarcity of potatoes would be, in every respect, as probable as a scarcity of wheat at present; and, when it did arrive, it would be beyond all comparison more dreadful."

This is almost an exact description of what was to happen in Ireland. The people of Ireland drastically modified their traditional pattern of early marriage. They adopted, whether or not purely by coincidence, the "preventive checks" which Malthus advocated. Ireland's population has declined from 8 million in 1846 to less than 3 million today. As far as many individuals are concerned this has definitely been a painful and frustrating solution of the population problem. That it is infinitely better than famine can hardly be gainsaid.

The controversy centering around Malthus's views continues. A recent critique of Malthus by a British economist, Kenneth Smith, notes that the world has been unfair to those critics of Malthus who "forecast that population would both grow, and grow richer . . ." This did indeed happen for a time, and in certain fortunate areas.

Smith's disdain of Malthus leads him to posit a principle of indefinite growth which is as naive in its way as some of Malthus:

"Man and his food supplies are governed by similar principles of growth, and which can outstrip the other will depend on the relative rates of growth of each. With regard to minerals, which have been laid down once and for all, the annual produce is great or small according to the effort put in the skill with which it is applied. The limit in regard to plants and animals is space; in regard to minerals the exhaustion of the deposits. But these are long-run positions. In the short run no principle emerges which makes it impossible for man to cater for his growing numbers."

Smith did see another check beginning to operate:

"In the days when Malthus wrote, space was not a limiting consideration. It is possible that it now is; that the long-run position is being reached; that the world is full."

Writing only 15 years ago Smith cited populations, such as some in Asia and Latin America which grew enormously (after medical science reduced the incidence of disease), without having increasing backlogs of food to encourage such growth.

Today the food crisis is engulfing these very populations which obviously did not grow beyond the point of minimal subsistence, but which are now confronting—*in the short run*—the action of the primary checks envisioned by Malthus.

Malthus's ideas of the dynamics of population change were elementary, and his suggestions for checking multiplication of people were naive. Yet the continuing controversy which has centered around his name has highlighted a problem which is central in world affairs today, and for which a solution has not yet been found.

EXHIBIT 55

EXCERPTS FROM "FIRST ESSAY ON POPULATION 1798"

(By Robert Thomas Malthus, reprinted for the Royal Economic Society and published by MacMillan & Co., Ltd.)

PREFACE

The following Essay owes its origin to a conversation with a friend, on the subject of Mr. Godwin's Essay, on avarice and profusion, in his Enquirer. The discussion, started the general question of the future improvement of society; and the Author at first sat down with an intention of merely stating his thoughts to this friend, upon paper, in a clearer manner than he thought he could do, in conversation. But as the subject opened upon him, some ideas occurred, which he did not recollect to have met with before; and as he conceived, that every, the least light, on a topic so generally interesting, might be received with candour, he determined to put his thoughts in a form for publication.

The Essay might, undoubtedly, have been rendered much more complete by a collection of a greater number of facts in elucidation of the general argument. But a long and almost total interruption, from very particular business, joined to a desire (perhaps imprudent) of not delaying the publication much beyond the time that he originally proposed, prevented the Author from giving to the subject an undivided attention. He presumes, however, that the facts which he has adduced, will be found, to form no inconsiderable evidence for the truth of his opinion respecting the future improvement of mankind. As the Author contemplates this opinion at present, little more appears to him to be necessary than a plain statement, in addition to the most cursory view of society, to establish it.

It is an obvious truth, which has been taken notice of by many writers, that population must always be kept down to the level of the means of subsistence; but no writer, that the Author recollects, has inquired particularly into the means by which this level is effected: and it is a view of these means, which forms, to his mind, the strongest obstacle in the way to any very great future improvement of society. He hopes it will appear, that, in the discussion of this interesting subject, he is actuated solely by a love of truth; and not by any prejudices against any particular set of men, or of opinions. He professes to have read some of the speculations on the future improvement of society, in a temper very different from a wish to find them visionary; but he has not acquired that command over his understanding which would enable him to believe what he wishes, without evidence, or to refuse his assent to what might be unpleasing, when accompanied with evidence.

The view which he has given of human life has a melancholy hue; but he feels conscious, that he has drawn these dark tints, from a conviction that they are really in the picture; and not from a jaundiced eye, or an inherent spleen of disposition. The theory of mind which he has sketched in the last two chapters accounts to his own understanding, in a satisfactory manner, for the existence of most of the evils of life; but whether it will have the same effect upon others must be left to the judgment of his readers.

If he should succeed in drawing the attention of more able men, to what he conceives to be the principal difficulty in the way to the improvement of society, and should, in consequence, see this difficulty removed, even in theory, he will gladly retract his present opinions, and rejoice in a conviction of his error.

June 7, 1798.

CHAP. I.

Question stated.—Little prospect of a determination of it, from the enmity of the opposing parties.—The principal argument against the perfectibility of man and of society has never been fairly answered.—Nature of the difficulty arising from population.—Outline of the principal argument of the essay.

CHAP. II.

The different ratios in which population and food increase.—The necessary effects of these different ratios of increase.—Oscillation produced by them in the condition of the lower classes of society.—Reasons why this oscillation has not been so much observed as might be expected.—Three propositions on which the

general argument of the essay depends.—The different states in which mankind have been known to exist proposed to be examined with reference to these three propositions.

CHAP. III.

The savage or hunter state shortly reviewed.—The shepherd state, or the tribes of barbarians that overran the Roman Empire.—The superiority of the power of population to the means of subsistence—the cause of the great tide of Northern Emigration.

CHAP. IV.

State of civilized nations.—Probability that Europe is much more populous now than in the time of Julius Caesar.—Best criterion of population.—Probable error of Hume in one of the criterions that he proposes as assisting in an estimate of population.—Slow increase of population at present in most of the states of Europe.—The two principal checks to population.—The first, or preventive check examined with regard to England.

CHAP. V.

The second, or positive check to population examined, in England.—The true cause why the immense sum collected in England for the poor does not better their condition.—The powerful tendency of the poor laws to defeat their own purpose.—Palliative of the distress of the poor proposed.—The absolute impossibility from the fixed laws of our nature, that the pressure of want can ever be completely removed from the lower classes of society.—All the checks to population may be resolved into misery or vice.

CHAP. VI.

New colonies.—Reasons of their rapid increase.—North American Colonies.—Extraordinary instance of increase in the back settlements.—Rapidity with which even old states recover the ravages of war, pestilence, famine, or the convulsions of nature.

CHAP. VII.

A probable cause of epidemics.—Extracts from Mr. Susmilch's tables.—Periodical returns of sickly seasons to be expected in certain cases.—Proportion of births to burials for short periods in any country an inadequate criterion of the real average increase of population.—Best criterion of a permanent increase of population.—Great frugality of living one of the causes of the famines of China and Indostan.—Evil tendency of one of the clauses in Mr. Pitt's Poor Bill.—Only one proper way of encouraging population.—Causes of the happiness of nations.—Famine, the last and most dreadful mode by which nature represses a redundant population.—The three propositions considered as established.

CHAP. VIII.

Mr. Wallace.—Error of supposing that the difficulty arising from population is at a great distance.—Mr. Condorcet's sketch of the progress of the human mind.—Period when the oscillation, mentioned by Mr. Condorcet, ought to be applied to the human race.

CHAP. IX

Mr. Condorcet's conjecture concerning the organic perfectibility of man, and the indefinite prolongation of human life.—Fallacy of the argument, which infers an unlimited progress from a partial improvement, the limit of which cannot be ascertained, illustrated in the breeding of animals, and the cultivation of plants.

CHAP. .X.

Mr. Godwin's system of equality.—Error of attributing all the vices of mankind to human institutions.—Mr. Godwin's first answer to the difficulty arising from population totally insufficient.—Mr. Godwin's beautiful system of equality supposed to be realized.—Its utter destruction simply from the principle of population in so short a time as thirty years.

CHAP. XI.

Mr. Godwin's conjecture concerning the future extinction of the passion between the sexes.—Little apparent grounds for such a conjecture.—Passion of love not inconsistent either with reason or virtue.

CHAP. XII.

Mr. Godwin's conjecture concerning the indefinite prolongation of human life.—Improper inference drawn from the effects of mental stimulants on the human frame, illustrated in various instances.—Conjectures not founded on any indications in the past, not to be considered as philosophical conjectures.—Mr. Godwin's and Mr. Condorcet's conjecture respecting the approach of man towards immortality on earth, a curious instance of the inconsistency of scepticism.

CHAP. XIII.

Error of Mr. Godwin in considering man too much in the light of a being merely rational.—In the compound being, man, the passions will always act as disturbing forces in the decisions of the understanding.—Reasonings of Mr. Godwin on the subject of coercion.—Some truths of a nature not to be communicated from one man to another.

CHAP. XIV.

Mr. Godwin's five propositions respecting political truth, on which his whole work hinges, not established.—Reasons we have for supposing from the distress occasioned by the principle of population, that the vices, and moral weakness of man can never be wholly eradicated.—Perfectibility, in the sense in which Mr. Godwin uses the term, not applicable to man.—Nature of the real perfectibility of man illustrated.

CHAP. XV.

Models too perfect, may sometimes rather impede than promote improvement.—Mr. Godwin's essay on avarice and profusion.—Impossibility of dividing the necessary labour of a society amicably among all.—Invectives against labour may produce present evil, with little or no chance of producing future good.—An accession to the mass of agricultural labour must always be an advantage to the labourer.

CHAP. XVI.

Probable error of Dr. Adam Smith in representing every increase of the revenue or stock of a society as an increase in the funds for the maintenance of labour.—Instances where an increase of wealth can have no tendency to better the condition of the labouring poor.—England has increased in riches without a proportional increase in the funds for the maintenance of labour.—The state of the poor in China would not be improved by an increase of wealth from manufacturers.

CHAP. XVII.

Question of the proper definition of the wealth of a state.—Reason given by the French Economists for considering all manufacturers as unproductive labourers, not the true reason.—The labour of artificers and manufacturers sufficiently productive to individuals, though not to the state.—A remarkable passage in Dr. Price's two volumes of observations.—Error of Dr. Price in attributing the happiness and rapid population of America, chiefly, to its peculiar state of civilization.—No advantage can be expected from shutting our eyes to the difficulties in the way to the improvement of society.

CHAP. XVIII.

The constant pressure of distress on man, from the principle of population, seems to direct our hopes to the future.—State of trial inconsistent with our ideas of the foreknowledge of God.—The world, probably, a mighty process for awakening matter into mind.—Theory of the formation of mind.—Excitements from the wants of the body.—Excitements from the operation of general laws.—Excitements from the difficulties of life arising from the principle of population.

CHAP. XIX.

The sorrows of life necessary to soften and humanize the heart.—The excitements of social sympathy often produce characters of a higher order than the mere possessors of talents.—Moral evil probably necessary to the production of moral excellence.—Excitements from intellectual wants continually kept up by the infinite variety of nature, and the obscurity that involves metaphysical subjects.—The difficulties in Revelation to be accounted for upon this principle.—The degree of evidence which the scriptures contain, probably, best suited to the improvement of the human faculties, and the moral amelioration of mankind.—The idea that mind is created by excitements, seems to account for the existence of natural and moral evil.

In entering upon the argument I must premise that I put out of the question, at present, all mere conjectures; that is, all suppositions, the probable realization of which cannot be inferred upon any just philosophical grounds. A writer may tell me that he thinks man will ultimately become an ostrich. I cannot properly contradict him. But before he can expect to bring any reasonable person over to his opinion, he ought to shew, that the necks of mankind have been gradually elongating; that the lips have grown harder, and more prominent; that the legs and feet are daily altering their shape; and that the hair is beginning to change into stubs of feathers. And till the probability of so wonderful a conversion can be shewn, it is surely lost time and lost eloquence to expatiate on the happiness of man in such a state; to describe his powers, both of running and flying; to paint him in a condition where all narrow luxuries would be contemned; where he would be employed only in collecting the necessaries of life; and where, consequently, each man's share of labour would be light, and his portion of leisure ample.

I think I may fairly make two postulata.

First, That food is necessary to the existence of man.

Secondly, That the passion between the sexes is necessary, and will remain nearly in its present state.

These two laws ever since we have had any knowledge of mankind, appear to have been fixed laws of our nature; and, as we have not hitherto seen any alteration in them, we have no right to conclude that they will ever cease to be what they now are, without an immediate act of power in that Being who first arranged the system of the universe; and for the advantage of his creatures, still executes, according to fixed laws, all its various operations.

I do not know that any writer has supposed that on this earth man will ultimately be able to live without food. But Mr. Godwin has conjectured that the passion between the sexes may in time be extinguished. As, however, he calls this part of his work, a deviation into the land of conjecture, I will not dwell longer upon it at present, than to say, that the best arguments for the perfectibility of man, are drawn from a contemplation of the great progress that he has already made from the savage state, and the difficulty of saying where he is to stop. But towards the extinction of the passion between the sexes, no progress whatever has hitherto been made. It appears to exist in as much force at present as it did two thousand, or four thousand years ago. There are individual exceptions now as there always have been. But, as these exceptions do not appear to increase in number, it would surely be a very unphilosophical mode of arguing, to infer merely from the existence of an exception, that the exception would, in time, become the rule, and the rule the exception.

Assuming then, my postulata as granted, I say, that the power of population is indefinitely greater than the power in the earth to produce subsistence for man.

Population, when unchecked, increases in a geometrical ratio. Subsistence increases only in an arithmetical ratio. A slight acquaintance with numbers will shew the immensity of the first power in comparison of the second.

By that law of our nature which makes food necessary to the life of man, the effects of these two unequal powers must be kept equal.

This implies a strong and constantly operating check on population from the difficulty of subsistence. This difficulty must fall some where; and must necessarily be severely felt by a large portion of mankind.

Through the animal and vegetable kingdoms, nature has scattered the seeds of life abroad with the most profuse and liberal hand. She has been com-

paratively sparing in the room, and the nourishment necessary to rear them. The germs of existence contained in this spot of earth, with ample food, and ample room to expand in, would fill millions of worlds in the course of a few thousand years. Necessity, that imperious all pervading law of nature, restrains them within the prescribed bounds. The race of plants, and the race of animals shrink under this great restrictive law. And the race of man cannot, by any efforts of reason, escape from it. Among plants and animals its effects are waste of seed, sickness, and premature death. Among mankind, misery and vice. The former, misery, is an absolutely necessary consequence of it. Vice is a highly probable consequence, and we therefore see it abundantly prevail; but it ought not, perhaps, to be called an absolutely necessary consequence. The ordeal of virtue is to resist all temptation to evil.

This natural inequality of the two powers of population, and of production in the earth, and that great law of our nature which must constantly keep their effects equal, form the great difficulty that to me appears insurmountable in the way to the perfectibility of society. All other arguments are of slight and subordinate consideration in comparison of this. I see no way by which man can escape from the weight of this law which pervades all animated nature. No fancied equality, no agrarian regulations in their utmost extent, could remove the pressure of it even for a single century. And it appears, therefore, to be decisive against the possible existence of a society, all the members of which, should live in ease, happiness, and comparative leisure; and feel no anxiety about providing the means of subsistence for themselves and families.

Consequently, if the premises are just, the argument is conclusive against the perfectibility of the mass of mankind.

I have thus sketched the general outline of the argument; but I will examine it more particularly; and I think it will be found that experience, the true source and foundation of all knowledge, invariably confirms its truth.

I said that population, when unchecked, increased in a geometrical ratio; and subsistence for man in an arithmetical ratio.

Let us examine whether this position be just.

I think it will be allowed, that no state has hitherto existed (at least that we have any account of) where the manners were so pure and simple, and the means of subsistence so abundant, that no check whatever has existed to early marriages; among the lower classes, from a fear of not providing well for their families; or among the higher classes, from a fear of lowering their condition in life. Consequently in no state that we have yet known, has the power of population been left to exert itself with perfect freedom.

Whether the law of marriage be instituted, or not, the dictate of nature and virtue, seems to be an early attachment to one woman. Supposing a liberty of changing in the case of an unfortunate choice, this liberty would not affect population till it arose to a height greatly vicious; and we are now supposing the existence of a society where vice is scarcely known.

In a state therefore of great equality and virtue, where pure and simple manners prevailed, and where the means of subsistence were so abundant, that no part of the society could have any fears about providing amply for a family, the power of population being left to exert itself unchecked, the increase of the human species would evidently be much greater than any increase that has been hitherto known.

In the United States of America, where the means of subsistence have been more ample, the manners of the people more pure, and consequently the checks to early marriages fewer, than in any of the modern states of Europe, the population has been found to double itself in twenty-five years.

This ratio of increase, though short of the utmost power of population, yet as the result of actual experience, we will take as our rule; and say,

That population, when unchecked, goes on doubling itself every twenty-five years, or increases in a geometrical ratio.

Let us now take any spot of earth, this Island for instance, and see in what ratio the subsistence it affords can be supposed to increase. We will begin with it under its present state of cultivation.

If I allow that by the best possible policy, by breaking up more land, and by great encouragements to agriculture, the produce of this Island may be doubled in the first twenty-five years, I think it will be allowing as much as any person can well demand.

In the next twenty-five years, it is impossible to suppose that the produce could be quadrupled. It would be contrary to all our knowledge of the qualities

of land. The very utmost that we can conceive is, that the increase in the second twenty-five years might equal the present produce. Let us then take this for our rule, though certainly far beyond the truth; and allow that by great exertion, the whole produce of the Island might be increased every twenty-five years, by a quantity of subsistence equal to what it at present produces. The most enthusiastic speculator cannot suppose a greater increase than this. In a few centuries it would make every acre of land in the Island like a garden.

Yet this ratio of increase is evidently arithmetical.

It may be fairly said, therefore, that the means of subsistence increase in an arithmetical ratio.

Let us now bring the effects of these two ratios together.

The population of the Island is computed to be about seven millions; and we will suppose the present produce equal to the support of such a number. In the first twenty-five years the population would be fourteen millions; and the food being also doubled, the means of subsistence would be equal to this increase. In the next twenty-five years the population would be twenty-eight millions; and the means of subsistence only equal to the support of twenty-one millions. In the next period, the population would be fifty-six millions, and the means of subsistence just sufficient for half that number. And at the conclusion of the first century, the population would be one hundred and twelve millions, and the means of subsistence only equal to the support of thirty-five millions; which would leave a population of seventy-seven millions totally unprovided for.

A great emigration necessarily implies unhappiness of some kind or other in the country that is deserted. For few persons will leave their families, connections, friends, and native land, to seek a settlement in untried foreign climes, without some strong subsisting causes of uneasiness where they are, or the hope of some great advantages in the place to which they are going.

But to make the argument more general, and less interrupted by the partial views of emigration, let us take the whole earth, instead of one spot, and suppose that the restraints to population were universally removed. If the subsistence for man that the earth affords was to be increased every twenty-five years by a quantity equal to what the whole world at present produces; this would allow the power of production in the earth to be absolutely unlimited, and its ratio of increase much greater than we can conceive that any possible exertions of mankind could make it.

Taking the population of the world at any number, a thousand millions, for instance, the human species would increase in the ratio of—1, 2, 4, 8, 16, 32, 64, 128, 256, 512, &c. and subsistence as—1, 2, 3, 4, 5, 6, 7, 8, 9, 10, &c. In two centuries and a quarter, the population would be to the means of subsistence as 512 to 10: in three centuries as 4096 to 13; and in two thousand years the difference would be almost incalculable, though the produce in that time would have increased to an immense extent.

No limits whatever are placed to the productions of the earth; they may increase for ever and be greater than any assignable quantity; yet still the power of population being a power of a superior order, the increase of the human species can only be kept commensurate to the increase of the means of subsistence, by the constant operation of the strong law of necessity acting as a check upon the greater power.

The effects of this check remain now to be considered.

Among plants and animals the view of the subject is simple. They are all impelled by a powerful instinct to the increase of their species; and this instinct is interrupted by no reasoning, or doubts about providing for their offspring. Wherever therefore there is liberty, the power of increase is exerted; and the superabundant effects are repressed afterwards by want of room and nourishment, which is common to animals and plants; and among animals, by becoming the prey of others.

The effects of this check on man are more complicated.

Impelled to the increase of his species by an equally powerful instinct, reason interrupts his career, and asks him whether he may not bring beings into the world, for whom he cannot provide the means of subsistence. In a state of equality, this would be the simple question. In the present state of society, other considerations occur. Will he not lower his rank in life? Will he not subject himself to greater difficulties than he at present feels? Will he not be obliged to labour harder? and if he has a large family, will his utmost exertions enable him to support them? May he not see his offspring in rags and

misery, and clamouring for bread that he cannot give them? And may he not be reduced to the grating necessity of forfeiting his independence, and of being obliged to the sparing hand of charity for support?

These considerations are calculated to prevent, and certainly do prevent, a very great number in all civilized nations from pursuing the dictate of nature in an early attachment to one woman. And this restraint almost necessarily, though not absolutely so, produces vice. Yet in all societies, even those that are most vicious, the tendency to a virtuous attachment is so strong, that there is a constant effort towards an increase of population. This constant effort as constantly tends to subject the lower classes of the society to distress, and to prevent any great permanent amelioration of their condition.

The way in which these effects are produced seems to be this.

We will suppose the means of subsistence in any country just equal to the easy support of its inhabitants. The constant effort towards population, which is found to act even in the most vicious societies, increases the number of people before the means of subsistence are increased. The food therefore which before supported seven millions, must now be divided among seven millions and a half or eight millions. The poor consequently must live much worse, and many of them be reduced to severe distress. The number of labourers also being above the proportion of the work in the market, the price of labour must tend toward a decrease; while the price of provisions would at the same time tend to rise. The labourer therefore must work harder to earn the same as he did before. During this season of distress, the discouragements to marriage, and the difficulty of rearing a family are so great, that population is at a stand. In the mean time the cheapness of labour, the plenty of labourer, and the necessity of an increased industry amongst them, encourage cultivators to employ more labour upon their land; to turn up fresh soil, and to manure and improve more completely what is already in tillage; till ultimately the means of subsistence become in the same proportion to the population as at the period from which we set out. The situation of the labourer being then again tolerably comfortable, the restraints to population are in some degree loosened; and the same retrograde and progressive movements with respect to happiness are repeated.

This sort of oscillation will not be remarked by superficial observers; and it may be difficult even for the most penetrating mind to calculate its periods. Yet that in all old states some such vibration does exist; though from various transverse causes, in a much less marked, and in a much more irregular manner than I have described it, no reflecting man who considers the subject deeply can well doubt.

Many reasons occur why this oscillation has been less obvious, and less decidedly confirmed by experience, than might naturally be expected.

One principal reason is, that the histories of mankind that we possess, are histories only of the higher classes. We have but few accounts that can be depended upon of the manners and customs of that part of mankind, where these retrograde and progressive movements chiefly take place. A satisfactory history of this kind, of one people, and of one period, would require the constant and minute attention of an observing mind during a long life. Some of the objects of enquiry would be, in what proportion to the number of adults was the number of marriages: to what extent vicious customs prevailed in consequence of the restraints upon matrimony: what was the comparative mortality among the children of the most distressed part of the community, and those who lived rather more at their ease: what were the variations in the real price of labour: and what were the observable differences in the state of the lower classes of society, with respect to ease and happiness, at different times during a certain period.

Such a history would tend greatly to elucidate the manner in which the constant check upon population acts; and would probably prove the existence of the retrograde and progressive movements that have been mentioned; though the times of their vibration must necessarily be rendered irregular, from the operation of many interrupting causes; such as, the introduction or failure of certain manufactures: a greater or less prevalent spirit of agricultural enterprize: years of plenty, or years of scarcity: wars and pestilence: poor laws: the invention of processes for shortening labour without the proportional extension of the market for the commodity: and, particularly, the difference between the nominal and real price of labour; a circumstance, which has perhaps more than any other, contributed to conceal this oscillation from common view.

It very rarely happens that the nominal price of labour universally falls; but we well know that it frequently remains the same, while the nominal price of provisions has been gradually increasing. This is, in effect, a real fall in the price of labour; and during this period, the condition of the lower orders of the community must gradually grow worse and worse. But the farmers and capitalists are growing rich from the real cheapness of labour. Their increased capitals enable them to employ a greater number of men. Work therefore may be pentiful; and the price of labour would consequently rise. But the want of freedom in the market of labour, which occurs more or less in all communities, either from parish laws, or the more general cause of the facility of combination among the rich, and its difficulty among the poor, operates to prevent the price of labour from rising at the natural period, and keeps it down some time longer; perhaps, till a year of scarcity, when the clamour is too loud, and the necessity too apparent to be resisted.

The true cause of the advance in the price of labour is thus concealed; and the rich affect to grant it as an act of compassion and favour to the poor, in consideration of a year of scarcity; and when plenty returns, indulge themselves in the most unreasonable of all complaints, that the price does not again fall; when a little reflection would shew them, that it must have risen long before, but from an unjust conspiracy of their own.

But though the rich by unfair combinations, contribute frequently to prolong a season of distress among the poor; yet no possible form of society could prevent the almost constant action of misery, upon a great part of mankind, if in a state of inequality, and upon all, if all were equal.

The theory, on which the truth of this position depends, appears to me so extremely clear; that I feel at a loss to conjecture what part of it can be denied.

That population cannot increase without the means of subsistence, is a proposition so evident, that it needs no illustration.

That population does invariably increase, where there are the means of subsistence, the history of every people that have ever existed will abundantly prove.

And, that the superior power of population cannot be checked, without producing misery or vice, the ample portion of these too bitter ingredients in the cup of human life, and the conpart the distress for want of food chiefly fell; and to what extent it was generally felt; I think we may fairly say, from all the accounts that we have of nations of shepherds, that population invariably increased among them, whenever, by emigration, or any other cause, the means of subsistence were increased; and, that a further population was checked, and the actual population kept equal to the means of subsistence by misery and vice.

For, independently of any vicious customs that might have prevailed amongst them with regard to women, which always operate as checks to population, it must be acknowledged, I think, that the commission of war is vice, and the effect of it, misery; and none can doubt the misery of want of food.

In examining the principal states of modern Europe, we shall find, that though they have increased very considerably in population since they were nations of shepherds, yet that, at present, their progress is but slow; and instead of doubling their numbers every twenty-five years, they require three or four hundred years, or more, for that purpose. Some, indeed, may be absolutely stationary, and others even retrograde. The cause of this slow progress in population cannot be traced to a decay of the passion between the sexes. We have sufficient reason to think that this natural propensity exists still in undiminished vigour. Why then do not its effects appear in a rapid increase of the human species? An intimate view of the state of society in any one country in Europe, which may serve equally for all, will enable us to answer this question, and to say, that a foresight of the difficulties attending the rearing of a family, acts as a preventive check; and the actual distresses of some of the lower classes, by which they are disabled from giving the proper food and attention to their children, acts as a positive check, to the natural increase of population.

England, as one of the most flourishing states of Europe, may be fairly taken for an example, and the observations made, will apply with but little variation to any other country where the population increases slowly.

The preventive check appears to operate in some degree through all the ranks of society in England. There are some men, even in the highest rank, who are prevented from marrying by the idea of the expences that they must retrench,

and the fancied pleasures that they must deprive themselves of, on the supposition of having a family. These considerations are certainly trivial; but a preventive foresight of this kind has objects of much greater weight for its contemplation as we go lower.

A man of liberal education, but with an income only just sufficient to enable him to associate in the rank of gentlemen, must feel absolutely certain, that if he marries and has a family, he shall be obliged, if he mixes at all in society, to rank himself with moderate farmers, and the lower class of tradesmen. The woman that a man of education would naturally make the object of his choice, would be one brought up in the same tastes and sentiments with himself, and used to the familiar intercourse of a society totally different from that to which she must be reduced by marriage. Can a man consent to place the object of his affection in a situation so discordant, probably, to her tastes and inclinations? Two or three steps of descent in society, particularly at this round of the ladder, where education ends, and ignorance begins, will not be considered by the generality of people, as a fancied and chimerical, but a real and essential evil. If society be held desireable, it surely must be free, equal, and reciprocal society, where benefits are conferred as well as received; and not such as the dependent finds with his patron, or the poor with the rich.

These considerations undoubtedly prevent a great number in this rank of life from following the bent of their inclinations in an early attachment. Others, guided either by a stronger passion, or a weaker judgment, break through these restraints; and it would be hard indeed, if the gratification of so delightful a passion as virtuous love, did not, sometimes, more than counterbalance all its attendant evils. But I fear it must be owned, that the more general consequences of such marriages, are rather calculated to justify, than to repress, the forebodings of the prudent.

The sons of tradesmen and farmers are exhorted not to marry, and generally find it necessary to pursue this advice, till they are settled in some business, or farm, that may enable them to support a family. These events may not, perhaps occur till they are far advanced in life. The scarcity of farms is a very general complaint in England. And the competition in every kind of business is so great, that it is not possible that all should be successful.

The labourer who earns eighteen pence a day, and lives with some degree of comfort as a single man, will hesitate a little before he divides that pittance among four or five, which seems to be but just sufficient for one. Harder fare and harder labour he would submit to, for the sake of living with the woman that he loves; but he must feel conscious, if he thinks at all, that, should he have a large family, and any ill luck whatever, no degree of frugality, no possible exertion of his manual strength, could preserve him from the heart rending sensation of seeing his children starve, or of forfeiting his independence, and being obliged to the parish for their support. The love of independence is a sentiment that surely none would wish to be erased from the breast of man: though the parish law of England, it must be confessed, is a system of all others the most calculated gradually to weaken this sentiment, and in the end, may eradicate it completely.

The servants who live in gentlemens' families, have restraints that are yet stronger to break through, in venturing upon marriage. They possess the necessaries, and even the comforts of life, almost in as great plenty as their masters. Their work is easy, and their food luxurious, compared with the class of labourers. And their sense of dependence is weakened by the conscious power of changing their masters, if they feel themselves offended. Thus comfortably situated at present, what are their prospects in marrying? Without knowledge or capital, either for business, or farming, and unused, and therefore unable to earn a subsistence by daily labour, their only refuge seems to be a miserable alehouse, which certainly offers no very enchanting prospect of a happy evening to their lives. By much the greater part, therefore, deterred by this uninviting view of their future situation, content themselves with remaining single where they are.

If this sketch of the state of society in England be near the truth, and I do not conceive that it is exaggerated, it will be allowed, that the preventive check to population in this country operates, though with varied force, through all the classes of the community. The same observation will hold true with regard to all old states. The effects, indeed, of these restraints upon marriage are but too conspicuous in the consequent vices that are produced in almost every part of the world; vices, that are continually involving both sexes in extricable unhappiness.

67-785—66—pt. 2——5

The positive check to population, by which I mean, the check that represses an increase which is already begun, is confined chiefly, though not perhaps solely, to the lowest orders of society. This check is not so obvious to common view as the other I have mentioned; and, to prove distinctly the force and exent of its operation, would require, perhaps, more data than we are in possession of. But I believe it has been very generally remarked by those who have attended to bills of mortality, that of the number of children who die annually, much too great a proportion belongs to those, who may be supposed unable to give their offspring proper food and attention; exposed as they are occasionally to severe distress, and confined perhaps, to unwholesome habitations and hard labour. This mortality among the children of the poor has been constantly taken notice of in all towns. It certainly does not prevail in an equal degree in the country; but the subject has not hitherto received sufficient attention to enable any one to say, that there are not more deaths in proportion, among the children of the poor, even in the country, than among those of the middling and higher classes. Indeed, it seems difficult to suppose that a labourer's wife who has six children, and who is sometimes in absolute want of bread, should be able always to give them the food and attention necessary to support life. The sons and daughters of peasants will not be found such rosy cherubs in real life, as they are described to be in romances. It cannot fail to be remarked by those who live much in the country, that the sons of labourers are very apt to be stunted in their growth, and are a long while arriving at maturity. Boys that you would guess to be fourteen or fifteen, are upon inquiry, frequently found to be eighteen or nineteen. And the lads who drive plough, which must certainly be a healthy exercise, are very rarely seen with any appearance of calves to their legs; a circumstance, which can only be attributed to a want either of proper, or of sufficient nourishment.

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The mass of happiness among the common people cannot but be diminished, when one of the strongest checks to idleness and dissipation is thus removed; and when men are thus allured to marry with little or no prospect of being able to maintain a family in independence. Every obstacle in the way of marriage must undoubtedly be considered as a species of unhappiness. But as from the laws of our nature some check to population must exist, it is better that it should be checked from a foresight of the difficulties attending a family, and the fear of dependent poverty, than that it should be encouraged, only to be repressed afterwards by want and sickness.

It should be remembered always, that there is an essential difference between food, and those wrought commodities, the raw materials of which are in great plenty. A demand for these last will not fail to create them in as great a quantity as they are wanted. The demand for food has by no means the same creative power. In a country where all the fertile spots have been seized, high offers are necessary to encourage the farmer to lay his dressing on land, from which he cannot expect a profitable return for some years. And before the prospect of advantage is sufficiently great to encourage this sort of agricultural enterprise, and while the new produce is rising, great distresses may be suffered from the want of it. The demand for an increased quantity of subsistence is, with few exceptions, constant every where, yet we see how slowly it is answered in all those countries that have been long occupied.

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Notwithstanding then, the institution of the poor-laws in England, I think it will be allowed, that considering the state of the lower classes altogether, both in the towns and in the country, the distresses which they suffer from the want of proper and sufficient food, from hard labour and unwholesome habitations, must operate as a constant check to incipient population.

To these two great checks to population, in all long occupied countries, which I have called the preventive and the positive checks, may be added, vicious customs with respect to women, great cities, unwholesome manufactures, luxury, pestilence, and war.

All these checks may be fairly resolved into misery and vice.

And that these are the true causes of the slow increase of population in all the states of modern Europe, will appear sufficiently evident, from the comparatively rapid increase that has invariably taken place, whenever these causes have been in any considerable degree removed.

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Were a country never to be over-run by a people more advanced in arts, but left to its own natural progress in civilization; from the time that its produce might be considered as an unit, to the time that it might be considered as a million, during the lapse of many hundred years, there would not be a single period, when the mass of the people could be said to be free from distress, either directly or indirectly, for want of food. In every State in Europe, since we have first had accounts of it, millions and millions of human existences have been repressed from this simple cause; though perhaps in some of these States, an absolute famine has never been known.

Famine seems to be the last, the most dreadful resource of nature. The power of population is so superior to the power in the earth to produce subsistence for man, that premature death must in some shape or other visit the human race. The vices of mankind are active and able ministers of depopulation. They are the precursors in the great army of destruction; and often finish the dreadful work themselves. But should they fall in this war of exterminations, sickly seasons, epidemics, pestilence, and plague, advance in terrific array, and sweep off their thousands and ten thousands. Should success be still incomplete; gigantic inevitable famine stalks in the rear, and with one mighty blow, levels the population with the food of the world.

Must it not then be acknowledged by an attentive examiner of the histories of mankind, that in every age and in every State in which man has existed, or does now exist,

That the increase of population is necessarily limited by the means of subsistence.

That population does invariably increase when the means of subsistence increase. And,

That the superior power of population is repressed, and the actual population kept equal to the means of subsistence by misery and vice.

Exhibit 56

An Essay on the Principle of Population

(Excerpts from Book IV, chapter I, 5th edition, 1817, selected and edited by Lloyd Reynolds and William Fellner, Yale University; published by Richard D. Irwin, Inc., Homewood, Ill.)

Of moral restraint, and our obligation to practice this virtue

As it appears that, in the actual state of every society which has come within our review, the natural progress of population has been constantly and powerfully checked; and as it seems evident that no improved form of government, no plans of emigration, no benevolent institutions, and no degree or direction of national industry, can prevent the continued action of a great check to population in some form or other; it follows that we must submit to it as an inevitable law of nature; and the only inquiry that remains is, how it may take place with the least possible prejudice to the virtue and happiness of human society.

All the immediate checks to population, which have been observed to prevail in the same and different countries, seem to be resolvable into moral restraint, vice and misery; and if our choice be confined to these three, we cannot long hesitate in our decision respecting which it would be most eligible to encourage.

In the first edition of this essay I observed, that as from the laws of nature appeared, that some check to population must exist, it was better that this check should arise from a foresight of the difficulties attending a family and the fear of dependent poverty, than from the actual presence of want and sickness. This idea will admit of being pursued farther; and I am inclined to think that, from the prevailing opinions respecting population, which undoubtedly originated in barbarous ages, and have been continued and circulated by that part of every community which may be supposed to be interested in their support, we have been prevented from attending to the clear dictates of reason and nature on this subject.

Natural and moral evil seem to be the instruments employed by the Deity in admonishing us to avoid any mode of conduct which is not suited to our being, and will consequently injure our happiness. If we are intemperate in eating

and drinking, our health is disordered; if we indulge the transports of anger, we seldom fail to commit acts of which we afterwards repent; if we multiply too fast, we die miserably of poverty and contagious diseases. The laws of nature in all these cases are similar and uniform. They indicate to us that we have followed these impulses too far, so as to trench upon some other law, which equally demands attention. The uneasiness we feel from repletion, the injuries that we inflict on ourselves or others in anger, and the inconveniences we suffer on the approach of poverty, are all admonitions to us to regulate these impulses better; and if we heed not this admonition, we justly incur the penalty of our disobedience, and our sufferings operate as a warning to others.

From the inattention of mankind hitherto to the consequences of increasing too fast, it must be presumed, that these consequences are not so immediately and powerfully connected with the conduct which leads to them, as in the other instances; but the delayed knowledge of particular effects does not alter their nature, or our obligation to regulate our conduct accordingly, as soon as we are satisfied of what this conduct ought to be. In many other instances it has not been till after long and painful experience, that the conduct most favourable to the happiness of man has been forced upon his attention. The kind of food, and the mode of preparing it, best suited to the purposes of nutrition and the gratification of the palate; the treatment and remedies of different disorders; the bad effects on the human frame of low and marshy situations; the invention of the most convenient and comfortable clothing; the construction of good houses; and all the advantages and extended enjoyments, which distinguish civilised life, were not pointed out to the attention of man at once; but were the slow and late result of experience, and of the admonitions received by repeated failures.

Diseases have been generally considered as the inevitable inflictions of Providence; but, perhaps, a great part of them may more justly be considered as indications that we have offended against some of the laws of nature. The plague at Constantinople, and in other towns of the East, is a constant admonition of this kind to the inhabitants. The human constitution cannot support such a state of filth and torpor; and as dirt, squalid poverty, and indolence are, in the highest degree, unfavourable to happiness and virtue, it seems a benevolent dispensation, that such a state should, by the laws of nature, produce disease and death, as a beacon to others to avoid splitting on the same rock.

The prevalence of the plague in London till the year 1666 operated in a proper manner on the conduct of our ancestors; and the removal of nuisances, the construction of drains, the widening of the streets, and the giving more room and air to the houses, had the effect of eradicating completely this dreadful disorder, and of adding greatly to the health and happiness of the inhabitants.

In the history of every epidemic it has almost invariably been observed that the lower classes of people, whose food was poor and insufficient, and who lived crowded together in small and dirty houses, were the principal victims. In what other manner can Nature point out to us that, if we increase too fast for the means of subsistence, so as to render it necessary for a considerable part of the society to live in this miserable manner, we have offended against one of her laws? This law she has declared exactly in the same manner as she declares that intemperance in eating and drinking will be followed by ill health; and that, however grateful it may be to us at the moment to indulge this propensity to excess, such indulgence will ultimately produce unhappiness. It is as much a law of nature that repletion is bad for the human frame, as that eating and drinking, unattended with this consequence, are good for it.

An implicit obedience to the impulses of our natural passions would lead us into the wildest and most fatal extravagances; and yet we have the strongest reasons for believing that all these passions are so necessary to our being, that they could not be generally weakened or diminished, without injuring our happiness. The most powerful and universal of all our desires is the desire of food, and of those things, such as clothing, houses, &c. which are immediately necessary to relieve us from the pains of hunger and cold. It is acknowledged by all, that these desires put in motion the greatest part of that activity, from which the multiplied improvements and advantages of civilised life are derived, and that the pursuit of these objects, and the gratification of these desires, from the principal happiness of the larger half of mankind, civilised or uncivilised, and are indispensably necessary to the more refined

enjoyments of the other half. We are all conscious of the inestimable benefits that we derive from these desires, when directed in a certain manner; but we are equally conscious of the evils resulting from them, when not directed in this manner; so much so, that society has taken upon itself to punish most severely what it considers as an irregular gratification of them. And yet the desires in both cases are equally natural, and, abstractedly considered, equally virtuous. The act of the hungry man who satisfies his appetite by taking a loaf from the shelf of another, is in no respect to be distinguished from the act of him who does the same thing with a loaf of his own, but by its consequences. From the consideration of these consequences, we feel the most perfect conviction, that, if people were not prevented from gratifying their natural desires with the loaves in the possession of others, the number of loaves would universally diminish. This experience is the foundation of the laws relating to property, and of the distinctions of virtue and vice, in the gratification of desires otherwise perfectly the same.

If the pleasure arising from the gratification of these propensities were universally diminished in vividness, violations of property would become less frequent; but this advantage would be greatly overbalanced by the narrowing of the sources of enjoyment. The diminution in the quantity of all those productions, which contribute to human gratification, would be much greater in proportion than the diminution of thefts; and the loss of general happiness on the one side would be beyond comparison greater than the gain of happiness on the other. When we contemplate the constant and severe toils of the greatest part of mankind, it is impossible not to be forcibly impressed with the reflection, that the sources of human happiness would be most cruelly diminished, if the prospect of a good meal, a warm house, and a comfortable fireside in the evening, were not incitements sufficiently vivid, to give interest and cheerfulness to the labours and privations of the day.

After the desire of food, the most powerful and general of our desires is the passion between the sexes, taken in an enlarged sense. Of the happiness spread over human life by this passion very few are unconscious. Virtuous love, exalted by friendship, seems to be that sort of mixture of sensual and intellectual enjoyment, particularly suited to the nature of man, and most powerfully calculated to awaken the sympathies of the soul, and produce the most exquisite gratifications. Perhaps there is scarcely a man, who has once experienced the genuine delight of virtuous love, however great his intellectual pleasures may have been, who does not look back to that period as the sunny spot in his whole life, where his imagination loves most to bask, which he recollects and contemplates with the fondest regret, and which he would wish to live over again.

It has been said by Mr. Godwin, in order to shew the evident inferiority of the pleasures of sense, "Strip the commerce of the sexes of all its attendant circumstances, and it would be generally despised." He might as well say to a man who admires trees, strip them of their spreading branches and lovely foliage, and what beauty can you see in a bare pole? But it was the tree with the branches and foliage, and not without them, that excited admiration. It is "the symmetry of person, the vivacity, the voluptuous softness of temper, the affectionate kindness of feeling, the imagination and the wit" of a woman, which excites the passion of love, and not the mere distinction of her being a female.

It is a very great mistake to suppose that the passion between the sexes only operates and influences human conduct, when the immediate gratification of it is in contemplation. The formation and steady pursuit of some particular plan of life has been justly considered as one of the most permanent sources of happiness; but I am inclined to believe, that there are not many of these plans formed, which are not connected in a considerable degree with the prospect of the gratification of this passion, and with the support of children arising from it. The evening meal, the warm house, and the comfortable fireside, would lose half their interest, if we were to exclude the idea of some object of affection, with whom they were to be shared.

We have also great reason to believe that the passion between the sexes has the most powerful tendency to soften and meliorate the human character, and keep it more alive to all the kindlier emotions of benevolence and pity. Observations on savage life have generally tended to prove that nations, in which this passion appeared to be less vivid, were distinguished by a ferocious and malignant spirit, and particularly by tyranny and cruelty to the sex. If, indeed, this bond of conjugal affection were considerably weakened, it seems probable, either

that the man would make use of his superior physical strength, and turn his wife into a slave, as among the generality of savages; or, at best, that very little inequality of temper, which must necessarily occur between two persons, would produce a total alienation of affection; and this could hardly take place, without a diminution of parental fondness and care, which would have the most fatal effect on the happiness of society.

It may be further remarked, and observations on the human character in different countries warrant us in the conclusion, that the passion is stronger, and its general effects in producing gentleness, kindness, and suavity of manners, much more powerful, where obstacles are thrown in the way of very early and universal gratification. In some of the southern countries, where every impulse may be almost immediately indulged, the passion sinks into mere animal desire, is soon weakened and almost extinguished by excess, and its influence on the character is extremely confined. But, in European countries, where, though the women are not secluded, yet manners have imposed considerable restraints on this gratification, the passion not only rises in force, but in the universality and beneficial tendency of its effects; and has often the greatest influence in the formation and improvement of the character, where it is the least gratified.

Considering then the passion between the sexes in all its bearings and relations, and including the endearing engagement of parent and child resulting from it, few will be disposed to deny that it is one of the principal ingredients of human happiness. Yet experience teaches us that much evil flows from the irregular gratification of it; and though the evil of little weight in the scale, when compared with the good, yet its absolute quantity cannot be inconsiderable, on account of the strength and universality of the passion. It is evident, however, from the general conduct of all governments in their distribution of punishments, that the evil resulting from this cause is not so great and so immediately dangerous to society, as the irregular gratification of the desire of property; but placing this evil in the most formidable point of view, we should evidently purchase a diminution of it at a very high price, by the extinction or diminution of the passion which causes it; a change, which would probably convert human life either into a cold and cheerless blank, or a scene of savage and merciless ferocity.

A careful attention to the remote as well as immediate effect of all the human passions, and all the general laws of nature, leads us strongly to the conclusion, that, under the present constitution of things, few or none of them will admit of being greatly diminished, without narrowing the sources of good, more powerfully than the sources of evil. And the reason seems to be obvious. They are, in fact, the materials of all our pleasures, as well as of all our pains; of all our happiness, as well as of all our misery; of all our virtues, as well as of all our vices. It must therefore be regulation and direction that are wanted, not diminution or extinction.

It is justly observed by Paley, that "Human passions are either necessary to human welfare, or capable of being made, and in a great majority of instances are in fact made, conducive to its happiness. These passions are strong and general, and perhaps would not answer their purpose, unless they were so. But strength and generality, when it is expedient that particular circumstances should be respected, become, if left to themselves, excess and misdirection. From which excess and misdirection the vices of mankind (the causes no doubt of much misery) appear to spring. This account, while it shews us the principle of vice, shews us at the same time the province of reason and self-government."

Our virtue, therefore, as reasonable beings, evidently consists in educing from the general materials, which the Creator has placed under our guidance, the greatest sum of human happiness; and as natural impulses are abstractedly considered good, and only to be distinguished by their consequences, a strict attention to these consequences and the regulation of our conduct conformably to them, must be considered as our principal duty.

The fecundity of the human species is, in some respects, a distinct consideration from the passion between the sexes, as it evidently depends more upon the power of women in bearing children, than upon the strength and weakness of this passion. It is a law however exactly similar in its great features to all the other laws of nature. It is strong and general, and apparently would not admit of any very considerable diminution, without being inadequate to its object: the evils arising from it are incidental to those necessary qualities of

strength and generality; and these evils are capable of being very greatly mitigated and rendered comparatively light by human energy and virtue. We cannot but conceive that it is an object of the Creator, that the earth should be replenished; and it appears to me clear, that this could not be effected without a tendency in population to increase faster than food; and as, with the present law of increase, the peopling of the earth does not proceed very rapidly, we have undoubtedly some reason to believe, that this law is not too powerful for is apparent object. The desire of the means of subsistence would be comparatively confined in its effects, and would fail of producing that general activity so necessary to the improvement of the human faculties, were it not for the strong and universal effort of population to increase with greater rapidity than its supplies. If these two tendencies were exactly balanced, I do not see what motive there would be sufficiently strong to overcome the acknowledged indolence of man, and make him proceed in the cultivation of the soil. The population of any large territory, however fertile, would be as likely to stop at five hundred, or five thousand, as at five millions, or fifty millions. Such a balance therefore would clearly defeat one great purpose of creation; and if the question be merely a question of degree, a question of a little more or a little less strength, we may fairly distrust our competence to judge of the precise quantity necessary to answer the object with the smallest sum of incidental evil. In the present state of things we appear to have under our guidance a great power, capable of peopling a desert region in a small number of years; and yet, under other circumstances, capable of being confined by human energy and virtue to any limits however narrow, at the expense of a small comparative quantity of evil. The analogy of all the other laws of nature would be completely violated, if in this instance alone there were no provision for accidental failures, no resources against the vices of mankind, or the partial mischiefs resulting from other general laws. To effect the apparent object without any attendant evil, it is evident that a perpetual change in the law of increase would be necessary, varying with the varying circumstances of each country. But instead of this, it is not only more consonant to the analogy of the other parts of nature, but we have reason to think that it is more conducive to the formation and improvement of the human mind, that the law should be uniform and the evils incidental to it, under certain circumstances, left to be mitigated or removed by man himself. His duties in this case vary with his situation; he is thus kept more alive to the consequences of his actions; and his faculties have evidently greater play and opportunity of improvement, than if the evil were removed by a perpetual change of the law according to circumstances.

Even if from passions too easily subdued, or the facility of illicit intercourse, a state of celibacy were a matter of indifference, and not a state of some privation, the end of nature in the peopling of the earth would be apparently liable to be defeated. It is of the very utmost importance to the happiness of mankind, that population should not increase too fast; but it does not appear, that the object to be accomplished would admit of any considerable diminution in the desire of marriage. It is clearly the duty of each individual not to marry till he has a prospect of supporting his children; but it is at the same time to be wished that he should retain undiminished his desire of marriage, in order that he may exert himself to realize this prospect, and be stimulated to make provision for the support of greater numbers.

It is evidently therefore regulation and direction which are required with regard to the principle of population, not diminution or alteration. And if moral restraint be the only virtuous mode of avoiding the incidental evils arising from this principle, our obligation to practise it will evidently rest exactly upon the same foundation as our obligation to practise any of the other virtues.

Whatever indulgence we may be disposed to allow to occasional failures in the discharge of a duty of acknowledged difficulty, yet of the strict line of duty we cannot doubt. Our obligation not to marry till we have a fair prospect of being able to support our children will appear to deserve the attention of the moralist, if it can be proved that an attention to this obligation is of most powerful effect in the prevention of misery; and that, if it were the general custom to follow the first impulse of nature, and marry at the age of puberty, the universal prevalence of every known virtue in the greatest conceivable degree, would fail of rescuing society from the most wretched and desperate state of want, and all the diseases and famines which usually accompany it.

One of the principal reasons which have prevented an assent to the doctrine of the constant tendency of population to increase beyond the means of subsistence, is a great unwillingness to believe that the Deity would by the laws of nature bring beings into existence, which by the laws of nature could not be supported in that existence. But if, in addition to that general activity and direction of our industry put in motion by these laws, we further consider that the incidental evils arising from them are constantly directing our attention to the proper check to population, moral restraint; and if it appear that, by a strict obedience to the duties pointed out to us by the light of nature and reason, and confirmed and sanctioned by revelation, these evils may be avoided, the objection will, I trust, be removed, and all apparent imputation on the goodness of the Deity be done away.

The heathen moralists never represented happiness as attainable on earth, but through the medium of virtue; and among their virtues prudence ranked in the first class, and by some was even considered as including every other. The Christian religion places our present as well as our future happiness in the exercise of those virtues which tend to fit us for a state of superior enjoyment; and the subjection of the passions to the guidance of reason, which, if not the whole, is a principal branch of prudence, is in consequence most particularly inculcated.

If, for the sake of illustration, we might be permitted to draw a picture of society, in which each individual endeavoured to attain happiness by the strict fulfillment of those duties, which the most enlightened of the ancient philosophers deduced from the laws of nature, and which have been directly taught, and received such powerful sanctions in the moral code of Christianity, it would present a very different scene from that which we now contemplate. Every act, which was prompted by the desire of immediate gratification, but which threatened an ultimate overbalance of pain, would be considered as a breach of duty; and consequently no man, whose earnings were only sufficient to maintain two children, would put himself in a situation in which he might have to maintain four or five, however he might be prompted to it by the passion of love. This prudential restraint, if it were generally adopted, by narrowing the supply of labour in the market, would, in the natural course of things, soon raise its price. The period of delayed gratification would be passed in saving the earnings which were above the wants of a single man, and in acquiring habits of sobriety, industry and economy, which would enable him in a few years to enter into the matrimonial contract without fear of its consequences. The operation of the preventive check in this way, by constantly keeping the population within the limits of the food, though constantly following its increase, would give a real value to the rise of wages and the sums saved by labourers before marriage, very different from those forced advances in the price of labour or arbitrary parochial donations, which, in proportion to their magnitude and extensiveness, must of necessity be followed by a proportional advance in the price of provisions. As the wages of labour would thus be sufficient to maintain with decency a large family, and as every married couple would set out with a sum for contingencies, all abject poverty would be removed from society; or would at least be confined to a very few, who had fallen into misfortune, against which no prudence or foresight could provide.

The interval between the age of puberty and the period at which each individual might venture on marriage must, according to the supposition, be passed in strict chastity; because the law of chastity cannot be violated without producing evil. The effect of any thing like a promiscuous intercourse, which prevents the birth of children, is evidently to weaken the best affections of the heart, and in a very marked manner to degrade the female character. And any other intercourse would, without improper arts, bring as many children into the society as marriage, with a much greater probability of their becoming a burden to it.

These considerations shew that the virtue of chastity is not, as some have supposed, a forced produce of artificial society; but that it has the most real and solid foundation in nature and reason; being apparently the only virtuous means of avoiding the vice and misery which result so often from the principle of population.

In such a society as we have been supposing, it might be necessary for some of both sexes to pass many of the early years of life in the single state; and if this were general, there would certainly be room for a much greater number to marry afterwards, so that fewer, upon the whole, would be condemned to pass their lives

in celibacy. If the custom of not marrying early prevailed generally, and if violations of chastity were equally dishonourable in both sexes, a more familiar and friendly intercourse between them might take place without danger. Two young people might converse together intimately without its being immediately supposed that they either intended marriage or intrigue; and a much better opportunity would thus be given to both sexes of finding out kindred dispositions, and of forming those strong and lasting attachments, without which the married state is generally more productive of misery than of happiness. The earlier years of life would not be spent without love, though without the full gratification of it. The passion, instead of being extinguished, as it now too frequently is, by early sensuality, would only be repressed for a time, that it might afterwards burn with a brighter, purer, and steadier flame; and the happiness of the married state, instead of only affording the means of immediate indulgence, would be looked forward to as the prize of industry and virtue, and the reward of a genuine and constant attachment.

The passion of love is a powerful stimulus in the formation of character, and often prompts to the most noble and generous exertions; but this is only when the affections are centered in one object, and generally when full gratification is delayed by difficulties. The heart is perhaps never so much disposed to virtuous conduct, and certainly at no time is the virtue of chastity so little difficult to men, as when under the influence of such a passion. Late marriages taking place in this way would be very different from those of the same name at present, where the union is too frequently prompted solely by interested views, and the parties meet, not unfrequently, with exhausted constitutions, and generally with exhausted affections. The late marriages at present are indeed principally confined to the men; of whom there are few, however advanced in life, who, if they determine to marry, do not fix their choice on a young wife. A young woman without fortune, when she has passed her twenty-fifth year, begins to fear, and with reason, that she may lead a life of celibacy; and with a heart capable of forming a strong attachment, feels, as each year creeps on, her hopes of finding an object on which to rest her affections gradually diminishing, and the uneasiness of her situation aggravated by the silly and unjust prejudices of the world. If the general age of marriage among women were later, the period of youth and hope would be prolonged, and fewer would be ultimately disappointed.

That a change of this kind would be a most decided advantage to the more virtuous half of society, we cannot for a moment doubt. However impatiently the privation might be borne by the men, it would be supported by the women readily and cheerfully; and if they could look forward with just confidence to marriage at twenty-seven or twenty-eight, I fully believe, that, if the matter were left to their free choice, they would clearly prefer waiting till this period, to the being involved in all the cares of a large family at twenty-five. The most eligible age of marriage however could not be fixed; but must depend entirely on circumstances and situation. There is no period of human life, at which nature more strongly prompts to an union of the sexes, than from seventeen or eighteen to twenty. In every society above that state of depression, which almost excludes reason and foresight, these early tendencies must necessarily be restrained; and if, in the actual state of things, such a restraint on the impulses of nature be found unavoidable, at what time can we be consistently released from it, but at that period, whatever it may be, when, in the existing circumstances of the society, a fair prospect presents itself of maintaining a family?

The difficulty of moral restraint will perhaps be objected to this doctrine. To him who does not acknowledge the authority of the Christian religion, I have only to say that, after the most careful investigation, this virtue appears to be absolutely necessary, in order to avoid certain evils which would otherwise result from the general laws of nature. According to his own principles, it is his duty to pursue the greatest good consistent with these laws; and not to fail in this important end, and produce an overbalance of misery by a partial obedience to some of the dictates of nature, while he neglects others. The path of virtue, though it be the only path which leads to permanent happiness, has always been represented by the heathen moralists as of difficult ascent.

To the Christian I would say that the Scriptures most clearly and precisely point it out to us as our duty, to restrain our passions within the bounds of reason; and it is a palpable disobedience of this law to indulge our desires in such a manner as reason tells us will unavoidably end in misery. The Christian cannot consider the difficulty of moral restraint as any argument against its being his

duty; since, in almost every page of the sacred writings, man is described as encompassed on all sides by temptations which it is extremely difficult to resist; and though no duties are enjoined, which do not contribute to his happiness on earth as well as in a future state, yet an undeviating obedience is never represented as an easy task.

There is in general so strong a tendency to love in early youth, that it is extremely difficult at this point to distinguish a genuine from a transient passion. If the earlier years of life were passed by both sexes in moral restraint, from the greater facility that this would give to the meeting of kindred dispositions, it might even admit of a doubt, whether more happy marriages would not take place, and consequently more pleasure from the passion of love, than in a state such as that of America, the circumstances of which allow of a very early union of the sexes. But if we compare the intercourse of the sexes in such a society as I have been supposing, with that which now exists in Europe, taken under all its circumstances, it may safely be asserted, that, independently of the load of misery which would be removed, the sum of pleasurable sensations from the passion of love would be increased in a very great degree.

If we could suppose such a system general, the accession of happiness to society in its internal economy would scarecly be greater than in its external relations. It might fairly be expected that war, that great pest of the human race, would, under such circumstances, soon cease to extend its ravages so widely and so frequently as it does at present.

One of its first causes and most powerful impulses was undoubtedly an insufficiency of room and food; and greatly as the circumstances of mankind have changed since it first began, the same cause still continues to operate and to produce, though in a smaller degree, the same effects. The ambition of princes would want instruments of destruction, if the distresses of the lower classes of people did not drive them under their standards. A recruiting sergeant always prays for a bad harvest and a want of employment, or in other words, a redundant population.

In the early ages of the world, when war was the great business of mankind, and the drains of population from this cause were, beyond comparison, greater than in modern times, the legislators and statesmen of each country, adverting principally to the means of offence and defence, encouraged an increase of people in every possible way, fixed a stigma on barrenness and celibacy, and honoured marriage. The popular religions followed these prevailing opinions. In many countries the prolific power of nature was the object of solemn worship. In the religion of Mahomet, which was established by the sword, and the promulgation of which in consequence could not be unaccompanied by an extraordinary destruction of its followers, the procreation of children to glorify the Creator was laid down as one of the principal duties of man; and he, who had the most numerous offspring, was considered as having best answered the end of his creation. The prevalence of such moral sentiments had naturally a great effect in encouraging marriage; and the rapid procreation, which followed, was partly the effect and partly the cause of incessant war. The vacancies occasioned by former desolations made room for the rearing of fresh supplies; and the overflowing rapidity, with which these supplies followed, constantly furnished fresh incitements and fresh instruments for renewed hostilities. Under the influence of such moral sentiments, it is difficult to conceive how the fury of incessant war should ever abate.

It is a pleasing confirmation of the truth and divinity of the Christian religion, and of its being adapted to a more improved state of human society, that it places our duties respecting marriage and the procreation of children in a different light from that in which they were before beheld.

Without entering minutely into the subject, which would evidently lead too far, I think it will be admitted, that, if we apply the spirit of St. Paul's declarations respecting marriage to the present state of society and the known constitution of our nature, the natural inference seems to be, that, when marriage does not interfere with higher duties it is right; when it does, it is wrong. According to the genuine principles of moral science, "The method of coming at the will of God from the light of nature is, to inquire into the tendency of the action to promote or diminish the general happiness." There are perhaps few actions that tend so directly to diminish the general happiness, as to marry without the means of supporting children. He who commits this act, therefore, clearly offends against the will of God; and having become a burden on the society in

which he lives, and plunged himself and family into a situation, in which virtuous habits are preserved with more difficulty than in any other, he appears to have violated his duty to his neighbours and to himself, and thus to have listened to the voice of passion in opposition to his higher obligations.

In a society, such as I have supposed, all the members of which endeavour to attain happiness by obedience to the moral code derived from the light of nature, and enforced by strong sanctions in revealed religion, it is evident that no such marriage could take place; and the prevention of a redundant population, in this way, would remove one of the principal encouragements to offensive war; and at the same time tend powerfully to eradicate those two fatal political disorders, internal tyranny and internal tumult, which mutually produce each other.

Indisposed to a war of offence, in a war of defence, such a society would be strong as a rock of adamant. Where every family possessed the necessaries of life in plenty, and a decent portion of its comforts and conveniences, there could not exist that hope of change, or at best that melancholy and disheartening indifference to it, which sometimes prompts the lower classes of people to say, "Let what will come, we cannot be worse off than we are now." Every heart and hand will be united to repel an invader, when each individual felt the value of the solid advantages which he enjoyed, and a prospect of change presented only a prospect of being deprived of them.

As it appears therefore, that it is in the power of each individual to avoid all the evil consequences to himself and society resulting from the principle of population, by the practice of a virtue clearly dictated to him by the light of nature, and expressly enjoined in revealed religion; and as we have reason to think, that the exercise of this virtue to a certain degree would tend rather to increase than diminish individual happiness; we can have no reason to impeach the justice of the Deity, because his general laws make this virtue necessary and punish our offences against it by the evils attendant upon vice, and the pains that accompany the various forms of premature death. A really virtuous society, such as I have supposed, would avoid these evils. It is the apparent object of the Creator to deter us from vice by the pains which accompany it, and to lead us to virtue by the happiness that it produces. This object appears to our conceptions to be worthy of a benevolent Creator. The laws of nature respecting population tend to promote this object. No imputation, therefore, on the benevolence of the Deity, can be founded on these laws, which is not equally applicable to any of the evils necessarily incidental to an imperfect state of existence.

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It may be said, however, that any plan of generally improving the cottages of the poor, or of enabling more of them to keep cows, would evidently give them the power of rearing a greater number of children, and, by thus encouraging population, violate the principles which I have endeavoured to establish. But if I have been successful in making the reader comprehend the principal bent of this work he will be aware that the precise reason why I think that more children ought not be born than the country can support is, that the the greatest possible number of those that are born may be supported. We cannot, in the nature of things, assist the poor in any way, without enabling them to rear up to manhood a greater number of their children. But this is, of all other things, the most desirable, both with regard to individuals and the public. Every loss of a child from the consequences of poverty must evidently be preceded and accompanied by great misery to individuals; and in a public view, every child that dies under ten years of age is a loss to the nation of all that had been expended in its subsistence till that period. Consequently, in every point of view, a decrease of mortality at all ages is what we ought to aim at. We cannot however effect this object, without first crowding the population in some degree by making more children grow up to manhood; but we shall do no harm in this respect, if, at the same time, we can impress these children with the idea, that, to possess the same advantages as their parents, they must defer marriage till they have a fair prospect of being able to maintain a family. And it must be candidly confessed that, if we cannot do this, all our former efforts will have been thrown away. It is not in the nature of things that any permanent and general improvement in the condition of the poor can be effected without an increase in the preventive check; and unless this take place, either with or without our efforts, every thing that is done for the poor must be temporary and partial: a diminution of mortality at present will be balanced by

an increased mortality in future; and the improvement of their condition in one place will proportionately depress it in another. This is a truth so important, and so little understood, that it can scarcely be too often insisted on.

Paley, in a chapter on population, provision, &c., in his Moral Philosophy, observes, that the condition most favourable to the population of a country, and at the same time to its general happiness, is, "that of a laborious frugal people ministering to the demands of an opulent luxurious nation." Such a form of society has not, it must be confessed, an inviting aspect. Nothing but the conviction of its being absolutely necessary could reconcile us to the idea of ten millions of people condemned to incessant toil, and to the privation of everything but absolute necessaries, in order to minister to the excessive luxuries of the other million. But the fact is, that such a form of society is by no means necessary. It is by no means necessary that the rich should be excessively luxurious, in order to support the manufactures of a country; or that the poor should be deprived of all luxuries, in order to make them sufficiently numerous. The best, and in every point of view the most advantageous manufactures in this country, are those which are consumed by the great body of the people. The manufactures which are confined exclusively to the rich are not only trivial, on account of the comparative smallness of their quantity, but are further liable to the great disadvantage of producing much occasional misery among those employed in them, from changes of fashion. It is the diffusion of luxury therefore among the mass of the people, and not an excess of it in a few, that seems to be most advantageous, both with regard to national wealth and national happiness; and what Paley considers as the true evil and proper danger of luxury, I should be disposed to consider as its true good and peculiar advantage. If, indeed it be allowed that in every society, not in the state of a new colony, some powerful check to population must prevail; and if it be observed that a taste for the comforts and conveniences of life will prevent people from marrying under the certainty of being deprived of these advantages; it must be allowed that we can hardly expect to find any check to marriage so little prejudicial to the happiness and virtue of society as the general prevalence of such a taste; and consequently, that the extension of luxury in this sense of the term is particularly desirable, and one of the best means of raising that standard of wretchedness alluded to in a former chapter.

It has been generally found that the middle parts of society are most favourable to virtuous and industrious habits, and to the growth of all kinds of talents. But it is evident that all cannot be in the middle. Superior and inferior parts are in the nature of things absolutely necessary; and not only necessary, but strikingly beneficial. If no man could hope to rise, or fear to fall in society; if industry did not bring with it its reward, and indolence its punishment; we could not expect to see that animated activity in bettering our condition, which now forms the master-spring of public prosperity. But in contemplating the different states of Europe, we observe a very considerable difference in the relative proportions of the superior, the middle and the inferior parts; and from the effect of these differences it seems probable, that our best-grounded expectations of an increase in the happiness of the mass of human society are founded in the prospect of an increase in the relative proportions of the middle parts. And if the lower classes of people had acquired the habit of proportioning the supplies of labour to a stationary or even decreasing demand, without an increase of misery and mortality, as at present, we might even venture to indulge a hope that at some future period the processes for abridging human labour, the progress of which has of late years been so rapid, might ultimately supply all the wants of the most wealthy society with less personal effort than at present; and if they did not diminish the severity of individual exertion, might, at least, diminish the number of those employed in severe toil. If the lowest classes of society were thus diminished, and the middle classes increased, each labourer might indulge a more rational hope of rising by diligence and exertion into a better station; the rewards of industry and virtue would be increased in number; the lottery of human society would appear to consist of fewer blanks and more prizes; and the sum of social happiness would be evidently augmented.

To indulge, however, in any distant views of this kind, unaccompanied by the evils usually attendant on a stationary or decreasing demand for labour, we must suppose the general prevalence of such prudential habits among the poor, as would prevent them from marrying, when the actual price of labour, joined to what they might have saved in their single state, would not give them the prospect

of being able to support a wife and five or six children without assistance. And undoubtedly such a degree of prudential restraint would produce a very striking melioration in the condition of the lower classes of people.

It may be said, perhaps, that even this degree of prudence might not always avail, as when a man marries he cannot tell what number of children he shall have, and many have more than six. This is certainly true; and in this case I do not think that any evil would result from making a certain allowance to every child above this number; not with a view of rewarding a man for his large family, but merely of relieving him from a species of distress which it would be unreasonable in us to expect that he should calculate upon. And with this view, the relief should be merely such as to place him exactly in the same situation as if he had six children. Montesquieu disapproves of an edict of Lewis the Fourteenth, which gave certain pensions to those who had ten and twelve children, as being of no use in encouraging population. For the very reason that he disapproves of it, I should think that some law of the kind might be adopted without danger, and might relieve particular individuals from a very pressing and unlooked for distress, without operating in any respect as an encouragement to marriage.

If at some future period any approach should be made towards the more general prevalence of prudential habits with respect to marriage among the poor, from which alone any permanent and general improvement of their condition can arise; I do not think that the narrowest politician need be alarmed at it, from the fear of its occasioning such an advance in the price of labour, as will enable our commercial competitors to undersell us in foreign markets. There are four circumstances that might be expected to accompany it, which would probably either prevent, or fully counter-balance any effect of this kind. These are, 1st, the more equable and lower price of provisions, from the demand being less frequently above the supply. 2dly, the removal of that heavy burden on agriculture, and that great addition to the present wages of labour, the poor's rates. 3rdly, the national saving of a great part of that sum, which is expended without return in the support of those children who die prematurely from the consequences of poverty. And, lastly, the more general prevalence of economical and industrious habits, particularly among unmarried men, which would prevent that indolence, drunkenness and waste of labour, which at present are too frequently a consequence of high wages.

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In taking a general and concluding view of our rational expectations respecting the mitigation of the evils arising from the principle of population, it may be observed that though the increase of population in a geometrical ratio be incontrovertible, and the period of doubling, when unchecked, has been uniformly stated in this work rather below than above the truth; yet there are some natural consequences of the progress of society and civilisation, which necessarily repress its full effects. These are, more particularly, great towns and manufacturers, in which we can scarcely hope, and certainly not expect, to see any very material change. It is undoubtedly our duty, and in every point of view highly desirable, to make towns and manufacturing employments as little injurious as possible to the duration of human life; but, after all our efforts, it is probable that they will always remain less healthy than country situations and country employments; and consequently, operating as positive checks, will diminish in some degree the necessity of the preventive check.

In every old state, it is observed that a considerable number of grown-up people remain for a time unmarried. The duty of practising the common and acknowledged rules of morality during this period has never been controverted in theory, however it may have been opposed in practice. This branch of the duty of moral restraint has scarcely been touched by the reasonings of this work. It rests on the same foundation as before, neither stronger nor weaker. And knowing how incompletely this duty has hitherto been fulfilled, it would certainly be visionary to expect that in future it would be completely fulfilled.

The part which has been affected by the reasonings of this work is not therefore that which relates to our conduct during the period of celibacy, but to the duty of extending this period till we have a prospect of being able to maintain our children. And it is by no means visionary to indulge a hope of some favourable change in this respect; because it is found by experience that the prevalence of this kind of prudential restraint is extremely different in different countries, and in the same countries at different periods.

It cannot be doubted that throughout Europe in general, and most particularly in the northern states, a decided change has taken place in the operation of prudential restraint, since the prevalence of those warlike and enterprising habits which destroyed so many people. In later times the gradual diminution and almost total extinction of the plagues, which so frequently visited Europe in the seventeenth and beginning of the eighteenth centuries, produced a change of the same kind. And in this country, it is not to be doubted that the proportion of marriages has become smaller since the improvement of our towns, the less frequent returns of epidemics, and the adoption of habits of greater cleanliness. During the late scarcities it appears that the number of marriages diminished;[1] and the same motives which prevented many people from marrying during such a period, would operate precisely in the same way, if, in future, the additional number of children reared to manhood from the introduction of the cow-pox, were to be such as to crowd all employments, lower the price of labour, and make it more difficult to support a family.

Universally, the practice of mankind on the subject of marriage has been much superior to their theories; and however frequent may have been the declamations on the duty of entering into this state, and the advantage of early unions to prevent vice, each individual has practically found it necessary to consider of the means of supporting a family, before he ventured to take so important a step. That great *vis medicatrix reipublicae*, the desire of bettering our condition, and the fear of making it worse, has been constantly in action, and has been constantly directing people into the right road, in spite of all the declamations which tended to lead them aside. Owing to this powerful spring of health in every state, which is nothing more than an inference from the general course of the laws of nature, irresistibly forced on each man's attention, the prudential check to marriage has increased in Europe; and it cannot be unreasonable to conclude that it will still make further advances. If this take place without any marked and decided increase of a vicious intercourse with the sex, the happiness of society will evidently be promoted by it; and with regard to the danger of such increase, it is consolatory to remark that those countries in Europe, where marriages are the latest or least frequent, are by no means particularly distinguished by vices of this kind. It has appeared, that Norway, Switzerland, England, and Scotland, are above all the rest in prevalence of the preventive check; and though I do not mean to insist particularly on the virtuous habits of these countries, yet I think that no person would select them as the countries most marked for profligacy of manners. Indeed, from the little that I know of the continent, I should have been inclined to select them as most distinguished for contrary habits, and as rather above than below their neighbours in the chastity of their women, and consequently in the virtuous habits of their men. Experience therefore seems to teach us that it is possible for moral and physical causes to counteract the effects that might at first be expected from an increase of the check to marriage; but allowing all the weight to these effects which is in any degree probable, it may be safely asserted, that the diminution of the vices arising from indigence would fully counterbalance them; and that all the advantages of diminished mortality and superior comforts, which would certainly result from an increase of the preventive check, may be placed entirely on the side of the gains to the cause of happiness and virtue.

It is less the object of the present work to propose new plans of improving society, than to inculcate the necessity of resting contented with that mode of improvement which already has in part been acted upon as dictated by the course of nature, and of not obstructing the advances which would otherwise be made in this way.

It would be undoubtedly highly advantageous that all our positive institutions, and the whole tenour of our conduct to the poor, should be such as actively to co-operate with that lesson of prudence inculcated by the common course of human events; and if we take upon ourselves sometimes to mitigate the natural punishments of imprudence, that we could balance it by increasing the rewards of an opposite conduct. But much would be done, if merely the institutions which directly tend to encourage marriage were gradually changed, and we ceased to circulate opinions and inculcate doctrines, which positively counteract the lessons of nature.

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[1] 1800 and 1801.

The limited good, which it is sometimes in our power to effect, is often lost by attempting too much, and by making the adoption of some particular plan essentially necessary even to a partial degree of success. In the practical application of the reasonings of this work I hope that I have avoided this error. I wish to press on the recollection of the reader, that, though I may have given some new views of old facts, and may have indulged in the contemplation of a considerable degree of *possible* improvement, that I might not shut out that prime cheerer hope; yet in my expectations of probable improvement and in suggesting the means of accomplishing it, I have been very cautious. The gradual abolition of the poor-laws has already often been proposed, in consequence of the practical evils which have been found to flow from them, and the danger of their becoming a weight absolutely intolerable on the landed property of the kingdom. The establishment of a more extensive system of national education has neither the advantage of novelty with some, nor its disadvantages with others, to recommend it. The practical good effects of education have long been experienced in Scotland; and almost every person who has been placed in a situation to judge, has given his testimony that education appears to have a considerable effect in the prevention of crimes, and the promotion of industry, morality and regular conduct. Yet these are the only plans which have been offered; and though the adoption of them in the modes suggested would very powerfully contribute to forward the object of this work and better the condition of the poor; yet if nothing be done in this way, I shall not absolutely despair of some partial good resulting from the general effects of the reasoning.

If the principles which I have endeavoured to establish be false, I most sincerely hope to see them completely refuted; but if they be true, the subject is so important, and interests the question of human happiness so nearly, that it is impossible they should not in time be more fully known and more generally circulated, whether any particular efforts be made for the purpose or not.

Among the higher and middle classes of society, the effect of this knowledge will, I hope, be to direct without relaxing their efforts in bettering the condition of the poor; to shew them what they can and what they cannot do; and that, although much may be done by advice and instruction, by encouraging habits of prudence and cleanliness, by discriminate charity, and by any mode of bettering the present condition of the poor which is followed by an increase of the preventive check; yet that, without this last effect, all the former efforts would be futile; and that, in any old and well-peopled state, to assist the poor in such a manner as to enable them to marry as early as they please, and rear up large families, is a physical impossibility. This knowledge, by tending to prevent the rich from destroying the good effects of their own exertions, and wasting their efforts in a direction where success is unattainable, would confine their attention to the proper objects, and thus enable them to do more good.

Among the poor themselves, its effects would still be more important. That the principal and most permanent cause of poverty has little or no *direct* relation to forms of government, or the unequal division of property; and that, as the rich do not in reality possess the *power* of finding employment and maintenance for the poor, the poor cannot, in the nature of things, possess the *right* to demand them; are important truths flowing from the principle of population, which, when properly explained, would by no means be above the most ordinary comprehensions. And it is evident that every man in the lower classes of society, who became acquainted with these truths, would be disposed to bear the distresses in which he might be involved with more patience; would feel less discontent and irritation at the government and the higher classes of society, on account of his poverty; would be on all occasions less disposed to insubordination and turbulence; and if he received assistance, either from any public institution or from the hand of private charity, he would receive it with more thankfulness, and more justly appreciate its value.

If these truths were by degrees more generally known, (which in the course of time does not seem to be improbable from the natural effects of the mutual interchange of opinions,) the lower classes of people, as a body, would become more peaceable and orderly, would be less inclined to tumultuous proceedings in seasons of scarcity and would at all times be less influenced by inflammatory and seditious publications, from knowing how little the price of labour and the means of supporting a family depend upon a revolution. The mere knowledge of these truths, even if they did not operate sufficiently to produce any marked change in the prudential habits of the poor with regard to marriage, would still have a

most beneficial effect on their conduct in a political light; and undoubtedly, one of the most valuable of these effects would be the power, that would result to the higher and middle classes of society, of gradually improving their governments, without the apprehension of those revolutionary excesses, the fear of which, at present, threatens to deprive Europe even of that degree of liberty, which she had before experienced to be practicable, and the salutary effects of which she had long enjoyed.

From a review of the state of society in former periods, compared with the present, I should certainly say that the evils resulting from the principle of population have rather diminished than increased, even under the disadvantage of an almost total ignorance of the real cause. And if we can indulge the hope that this ignorance will be gradually dissipated, it does not seem unreasonable to expect that they will be still further diminished. The increase of absolute population, which will of course take place, will evidently tend but little to weaken this expectation, as everything depends upon the relative proportion between population and food, and not on the absolute number of people. In the former part of this work it appeared that the countries, which possessed the fewest people, often suffered the most from the effects of the principle of population; and it can scarcely be doubted that, taking Europe throughout, fewer famines and fewer diseases arising from want have prevailed in the last century than in those which preceded it.

On the whole, therefore, though our future prospects respecting the mitigation of the evils arising from the principle of population may not be so bright as we could wish, yet they are far from being entirely disheartening, and by no means preclude that gradual and progressive improvement in human society, which, before the late wild speculations on this subject, was the object of rational expectation. To the laws of property and marriage, and to the apparently narrow principle of self-interest which prompts each individual to exert himself in bettering his conditions, we are indebted for all the noblest exertions of human genius, for everything that distinguishes the civilized from the savage state. A strict inquiry into the principle of population obliges us to conclude that we shall never be able to throw down the ladder, by which we have risen to this eminence; but it by no means proves, that we may not rise higher by the same means. The structure of society, in its great features, will probably always remain unchanged. We have every reason to believe that it will always consist of a class of proprietors and a class of labourers; but the condition of each, and the proportion which they bear to each other, may be so altered, as greatly to improve the harmony and beauty of the whole. It would indeed be a melancholy reflection that, while the views of physical science are daily enlarging, so as scarcely to be bounded by the most distant horizon, the science of moral and political philosophy should be confined with in such narrow limits, or at best be so feeble in its influence, as to be unable to counteract the obstacles to human happiness arising from a single cause. But however formidable these obstacles may have appeared in some parts of this work, it is hoped that the general result of the inquiry is such, as not to make us give up the improvement of human society in despair. The partial good which seems to be attainable is worthy of all our exertions; is sufficient to direct our efforts, and animate our prospects. And although we cannot expect that the virtue and happiness of mankind will keep pace with the brilliant career of physical discovery; yet, if we are not wanting to ourselves, we may confidently indulge the hope that, to no unimportant extent, they will be influenced by its progress and will partake in its success.

Senator GRUENING. Now, Senator George McGovern, who has been so active and effective in this food-for-peace program, and whose presence we are very happy to have here, I know has a few questions that he would like to direct to you.

Senator MCGOVERN. Thank you very much, Mr. Chairman.

MC GOVERN LAUDS REUTER FOR HIS LONG CAREER

First of all, I want to thank you for making it possible for me to sit in on these hearings this morning—not only because I am very impressed with what this committee has been doing under your personal

leadership, but because I welcome the opportunity to hear the testimony of Richard Reuter, who has done so much, not only during the period that he has been Director of the U.S. food-for-peace program, but because he played a key role as the director of the CARE program, in making that one of the really great worldwide efforts to demonstrate the concern and the compassion of the American people for those in need all over the world. And I think he deserves the confidence and the applause of all of us for the long career that he has had in dealing with the kind of problems this committee is concerned with.

Senator GRUENING. May I say that I share that view.

Mr. REUTER. Thank you very much, sir.

Senator MCGOVERN. I also want to thank you for the generous reading of my biographical sketch.

Mr. Reuter you made what seems to me to be a very interesting point in your testimony about the problem of malnutrition among children.

It has always seemed to me that that is one of the most serious problems that confronts us in our overseas efforts.

I remember when I was traveling in one of the underdeveloped countries in 1957, I observed to the aide from our Embassy who was with me that the people in that country seemed to move in a kind of a lethargy. There was no enthusiasm for anything. And I said in a somewhat critical tone: "These people have no ambition, they show no energy. How can a country of this kind move forward when everyone you see moves with a slowness of pace, a kind of a tired approach to everything they do?"

MALNUTRITION CAUSES LETHARGY

The technician explained to me that about two-thirds of the people in that country were suffering from severe malnutrition and this was the basic cause of their lethargy.

Isn't it true that everything we try to do in the field of overseas aid, whether it be the building of a steel mill or the construction of roads, or educational programs, or efforts to bolster military defenses, is handicapped by this problem of malnutrition?

NUTRITION SPARKS ENERGY

Mr. REUTER. Senator McGovern, President Johnson is making such a major emphasis on the importance of the self-help factor in our aid effort—particularly in the use of this—that I think this is highlighted particularly by your comment.

The inability of many people to have enough energy to do a good day's work is one of the crippling features in any attempts at really raising the standards of living.

I also had an experience in Ecuador, in which I went to one of the small pilot programs we had outside of the capital—primarily an Indian village, in which for a year we had had a program of balanced nutrition for the children. This is the expanded effort in providing school lunches. And I was fortunate enough to be there on the day on which they had their graduation, and like graduation in any country, the parents were there. And the thrill that you could get from looking in the eyes of those children, and then looking in the

eyes of the parents—and you recognized the importance of this nutritional element. These were children who did not have drawn faces, they did not have dull, listless eyes, as their parents seemed so much to have, but they had a sparkle, and they had an enthusiasm.

I have the strong feeling, sir, that we may be on the very essential priority track with our emphasis on nutrition, because it is going to be important to improve the quality of the diet of the people, if they are then going to take an adequate role in the development process.

"IRREPARABLE SCARS OF MALNUTRITION"

Senator McGovern. I was further impressed with your statement that the damage from malnutrition that occurs in the early formative years, particularly in the period after weaning until the child is of school age, may be irreparable.

You are suggesting, then, that a child who suffers from deficiencies in the early years—whether it is a lack of calories, or a lack of the proper kinds of food—will carry those scars for the rest of his life as a somewhat ineffective person, no matter what we do from that point on, or no matter what his government or his family or friends might do to assist him? That is damage that can never again be fully corrected?

Mr. Reuter. Yes, sir; some of the research findings indicate this is damage that may not be correctible.

Senator McGovern. Is it not true that one of the reasons why it has been more difficult for us to see immediate results from the aid we have directed to the underdeveloped countries, unlike the experience we had in Western Europe, is that the people of such areas as India and Pakistan bear these irreparable scars of malnutrition?

Mr. Reuter. I do believe that, sir.

Senator McGovern. I know that in the time I worked with the food-for-peace program and did a considerable amount of lecturing around the country, as you are now doing, frequently there would be a question from the floor from someone who would ask: "What good does it do to provide food assistance in these areas if it is only going to lead to further expansion of the population which will cancel it out anyway?"

FOOD AS AN AID TO FAMILY PLANNING

I tried to answer that question in various ways. But one explanation that was given to me by some of the people who are experts in this field and know a great deal more about it than I do is that it is very difficult to encourage effective family planning and concern about the control of population until the parents come to an assurance that there is some reasonable chance that their children are going to grow to maturity. In many of these countries the only form of social security that the parents have are the children who survive—who can take care of them after they are no longer able to work.

Knowing that because of hunger and disease very few children survive, there is a tendency in areas where there is a shortage of food for parents to have a large number of children on the theory that maybe in that fashion one or two might survive.

Do you think that is a reasonable basis for drawing the conclusion that an adequate supply of food might in fact encourage greater concern—greater willingness to engage in family planning?

"... WE HAVE NO ALTERNATIVE THAN TO DO WHAT WE CAN FOR PEOPLE WHO ARE IN NEED"

Mr. REUTER. Very much so.

May I just insert that I do believe, speaking personally, that in the great Judeo-Christian tradition, we have no alternative than to do what we can for people who are in need. And I think in terms of our whole religious heritage, we must say that.

CHANGE THE ROLE OF MOTHERHOOD

Now, beyond this there is increasing recognition that no form of family planning can be effective until you have the will for controlling the size of families—until the mother herself recognizes the importance of maintaining the kind of a family, the standard of living and the opportunities, that are possible by having a limited number of children that can properly be provided for.

There is no doubt that in many parts of the world families have 12, 15, 18 children in order to have 1 or 2 who would live to take care of the parents in their old age. And one of the exciting things about those Indian statistics to me is that in 10 years the Indians have increased their life expectancy by 12 years. This is a remarkable achievement. And I think this will go far toward giving encouragement to a program of family planning.

I do believe we ought also to say, however, that this does not automatically accomplish the job. I think this starts to provide motivation, if we give the proper information and resources.

"... FAR FROM ASSISTING POPULATION CONTROL, HUNGER AGGRAVATES IT"

Senator MCGOVERN. Yes. I fully agree that that is not the entire answer to Senator Gruening's concern about population growth. But I was just trying to point out that far from assisting population control, hunger aggravates it.

Mr. REUTER. I feel that very strongly. And I would say, sir, that I think this may be an absolute essential before any effective family planning program can be undertaken.

"TWO MOST IMPORTANT TYPES OF OVERSEAS ASSISTANCE ... POPULATION CONTROL AND AGRICULTURAL DEVELOPMENT"

Senator MCGOVERN. I saw a statement in the press yesterday by Mr. David Rockefeller that he regarded the two most important types of overseas assistance to be population control, and agricultural development. He went on to say that he thought perhaps one of the errors of the developing countries is that they have been enamored by sophisticated forms of industrial development to the detriment of basic development in the field of agriculture.

Do you generally think that is an accurate analysis?

Mr. REUTER. Yes, sir.

Senator MCGOVERN. Mr. Chairman, before I yield, I want to take this opportunity to commend you on the hearings that you have been conducting on this problem. I know how I feel about your efforts in terms of the problems of world peace, what you have said about the crisis in southeast Asia. That is an area where both you and I have taken exception to present administration policy. So it is very pleasing to me to meet here with you in this committee room on a subject where we can enthusiastically praise the administration, to laud the President on a really good war, and that is the war against hunger, and the war to bring some degree of responsibility in the control of the world population.

I personally want to commend you for your efforts on the Senate floor on behalf of world peace, and your efforts in this committee room to make life more worth while and happier for all of us.

Thank you very much.

Senator GRUENING. Thank you very much, Senator McGovern. Your presence here has been very helpful. You have made valuable contributions to this whole subject in the past, and are continuing to make them.

I think your testimony, Mr. Reuter, has been very important. It has emphasized that we need to attack this program from both angles. We must produce more food, and we have also got to instill responsibility in parents to understand that they have a definite obligation not to bring more children into the world than can be adequately fed, clothed and educated, and that the two problems are closely interrelated.

We are very grateful to have had you here.

If at any time before the hearings close you wish to make any supplemental statements, we would be very glad to include them in the record.

". . . FOOD PROGRAM IS . . . SUCH A HUMAN PROBLEM"

Mr. REUTER. Senator, I have been very appreciative of the opportunity of being here. I do think that one of the great values in the food program is that it is such a human program, and that this problem essentially is not going to be solved by the citing of global statistics—it is going to be solved in the hearts and minds of individuals. And I think the relationship of food to a satisfying family life is of such importance that it may be, as Senator McGovern so clearly pointed out—it may be very closely related to the aims of these hearings, sir.

Senator GRUENING. I am hopeful that in future hearings there may also be a discussion of the proposal which I alluded to in my opening statement—the recommendation of Congressman Paul Todd, of Michigan, who is a sponsor, in the House, of legislation like this—that a part of the local currency generated in countries overseas from the sale of food for peace can be used to instill the principles and the methods of population control if the recipient country so desires. I think that is a very constructive suggestion.

Mr. REUTER. This, of course, is the responsibility of the Congress.

Senator GRUENING. Thank you again, Mr. Reuter. I think it time at this point to direct that one of Herblock's excellent and pertinent cartoons be inserted into this hearing record.

(The cartoon referred to follows:)

EXHIBIT 57

(By Herbert Block, Washington, D.C., the Washington Post, Washington, D.C., Jan. 7, 1966. © 1966 HERBLOCK)

"I Have Mixed Feelings About This Turn Of Events"



BIOGRAPHIC STATEMENT: EDWARD L. HARPER

Senator GRUENING. We have another witness. Mr. Edwin L. Harper.

Mr. Harper, of Fairfax, Va., is spending this year in residence at the Brookings Institution here in Washington, D.C.

Mr. Harper was born in Belleville, Ill., November 13, 1941. He is married. He received his B.A. degree with honors from Principia College in 1963 and is a candidate for his Ph. D. at the University of Virginia where his principal work has been in the area of public problems, specifically in the field of population.

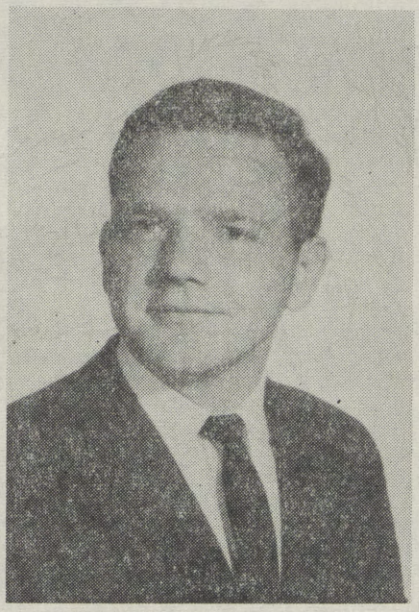

EXHIBIT 58

Mr. Edwin L. Harper, guest scholar, the Brookings Institution Center for Advanced Study

Today Mr. Harper has been asked to report on the survey he made at the United Nations World Population Conference held in Belgrade, Yugoslavia, in September 1965, where he was a participant. At that time he queried Conference participants to learn their reactions to the World Conference.

To the knowledge of the subcommittee his survey of the participants is unique and contains findings which make it useful to the population dialog.

Mr. Harper, by the turn of the century we will be confronted by the distressing problems the subcommittee is discussing if mankind does not find a solution to the population explosion. Please tell us about your participants' poll. What have you discovered?

STATEMENT OF EDWIN L. HARPER, GUEST SCHOLAR, THE BROOKINGS INSTITUTION CENTER FOR ADVANCED STUDY

THE UNITED NATIONS WORLD POPULATION CONFERENCE: AN EMPERICAL ANALYSIS [1]

Mr. HARPER. Thank you very much, Senator.

To say that the Second World Population Conference was an instance of the wrong people talking about the wrong things with the wrong results would be a gross overstatement.

However, this analysis of the Conference suggests that there are some elements of truth in this overstatement.

The analysis is based on a questionnaire distributed to all of the 756 participants at the Belgrade Conference 3 days before the 13-day Conference was to close. One hundred and fifty questionnaires were returned either during the Conference or soon after it closed. While the replies equal only 19.8 percent of the total present, they were fairly evenly distributed in proportion to the number of participants from each region.

The purpose of the Conference, according to the resolution establishing it, was to facilitate the exchange of ideas and experiences among "experts in the field of population and related disciplines."

DISTRIBUTION OF CONFEREES

The largest number of participants were associated with academic institutions. The only large group not so associated were government officials present who represented about 30 percent of the total (n-150).[2] Professionally the participants tended to be demographers (32.2 percent, n-198), statisticians (17.7 percent), economists (15.2 percent), and sociologists (10.6 percent). Only 2.5 percent of the participants cited public health as their profession.

". . . MIGHT THE CONFERENCE HAVE BENEFITED FROM . . . A GREATER NUMBER OF ACTION-ORIENTED PUBLIC HEALTH PROFESSIONALS?"

If one assumes that the time has already come when the population problems must be acted upon as well as studied, the question arises whether or not the right mix of experts attended the Conference. For example, might the Conference have benefited from the presence of a greater number of action-oriented public health professionals? This type of specialist might have focused the attention of the Conference on the problems of putting any kind of policy affecting the basic health patterns of the people into effect.

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[1] The research represented by this statement was made possible through a travel-study grant given me by the Ford Foundation and a leave of absence granted me by Dr. Paul T. David, chairman of the Department of Government and Foreign Affairs at the University of Virginia.

The opinions expressed in this statement are my own and should not be attributed to to the Ford Foundation, the Brookings Institution or Professor David.

[2] n=number of responses to the question. In the profession percent's—the n exceeds 150 because some participants were members of more than one profession.

WAS REGIONAL DISTRIBUTION DISPROPORTIONATE?

The regional distribution of the participants raises a similar question. Did the participants come from the right regions—that is, where the problems are most aggravated? The answer to this question is probably "No." For example, only 17.8 percent of the participants were from Asia where 55.2 percent of the world's population live. The Latin Americans at the Conference represented a portion of the total participants approximately equal that of Latin America's share of the world's population; however, in view of the fact that Latin America's population is the fastest growing in the world—approximately a million every 5 weeks—it might be argued that the number of Latin American participants should have been much greater than it was.

"THE WORLD POPULATION CONFERENCE ITSELF UNDERWENT A POPULATION EXPLOSION"

The nations of North America and Europe whose population problems have not reached the crisis stage were well represented. In fact over 60 percent of the participants were from either the United States or Europe. Should that statement sound surprising, one might reflect upon the fact that at the First World Population Conference held in 1954, 56.5 percent of the participants were from Europe alone. The distribution of the participants has improved since that time.

As can be seen by comparing the 1954 Conference to the one of 1965 the World Population Conference itself underwent a population explosion. Not only did the number of participants increase approximately 170 percent, but 30 additional states sent participants. Despite the fact that much of this expansion came through the increased participation of persons from developing areas, the impression persists that there were not enough participants from the areas most immediately affected by the population problems.

". . . NOT THE WRONG PEOPLE . . . NOT ENOUGH OF THE RIGHT ONES CAME"

In short, it was not that the wrong people came to the Conference, but that not enough of the right ones came.

CONFERENCE FORMAT QUESTIONED

Before discussing the participants' evaluation of the substantive aspects of the Conference a word about the Conference's format and substantive programs should be said.

Twenty-three sessions were held all of which were formal, plenary, and lengthy, that is, 3 hours each without intermission. After brief opening remarks by the organizer of the session, the moderator summarized the usual 20.3 papers submitted to each session. Following this summation, those who had registered their desire to speak 48 hours in advance were allowed to do so.

There were three specific problems with the format:

First, the limitations imposed upon the length (10 pages) of the papers upon which the sessions were based may have limited their scientific value.

Second, if there was a point in summarizing in the meetings the papers which the participants were theoretically supposed to have read, there was inadequate time to do so.

Finally, the requirement that a participant sign up 2 days in advance prohibited the type of spontaneous discussion generally associated with a real exchange of ideas. Instead, the requirement encouraged "complusive speakers" to absorb what might have been valuable discussion time.

"ONLY ONE SESSION WAS DEVOTED TO FAMILY PLANNING"

The program of the Conference included 19 sessions dealing strictly with the problems of studying population growth, movement, composition, and resource needs. Only four sessions contained subtopics considering policy or active solutions to the problems in terms of either food or family planning. Only one session was devoted to family planning.

"INTEREST WAS ALSO EXPRESSED IN DISCUSSIONS OF CONTRACEPTIVE TECHNOLOGY . . ."

These factors may have colored the responses of the participants when they were asked to evaluate the substantive value of the Conference. A plurality of those evaluating the Conference in the survey (42.8 percent, n=150) felt that the Conference should have been narrower in scope. About a third (33.5 percent) felt that it was satisfactory, while 23.7 percent expressed the desire to broaden the scope. A number of those who expressed a desire to change the scope suggested that the discussions be focused in particular areas. The most frequently suggested focal point was that of public health (9.87 percent). Other frequently suggested focal points were the sociological and economic development aspects of population problems. Interest was also expressed in discussions of contraceptive technology, political problems and administrative problems arising from attempts to meet the challenges posed by large scale rapid changes in population. The desire of the participants to focus on these problems suggests that the substantive program might have been improved by a heavier concentration on policy problems.

"SHOULD NOT BE A DEMOGRAPHIC CONFERENCE"

One participant clearly stated this point. He argued that the Conference "should not be a demographic conference." He felt that—

> the main emphasis should be on the interrelationships between population size and growth on one hand and the economic, social and cultural factors on the other . . . (with emphasis) on technological, economic, political, and institutional measures required to bring about optimum living conditions for the population.

QUALITY AND FORMAT OF CONFERENCE FOUND WANTING

The substantive quality of the Conference was called into question by a number of participants. When asked to rate the average quality of the papers presented at the Conference on a 1 to 10 scale most participants rated the papers at a 7. The average rating was even less than seven. With respect to the general level of the Conference the participants were about evenly divided as to whether or not the Conference was "appropriate" or "not scientific enough." Almost no one expressed the opinion that the Conference was "too scientific." In sum the substantive quality of the Conference was not outstanding.

The Conference, then, did not discuss the wrong things; it just did not spend enough time discussing the right things—that is, action oriented topics—at an appropriate level. This was brought about at least in part, by the limitations of the format and substantive program.

The problem of getting the right people to the Conference and getting them talking about the right topics are factors determining the results of the Conference. As might be expected from the discussion above, the participants had mixed reactions about the Conference.

"THOSE FROM DEVELOPING AREAS FELT THEY HAD LEARNED MORE THAN THEIR COLLEAGUES"

Making the assumption that one of the major objectives of the Conference was to impart information, the questionnaire asked the participants to rate on a 1 to 10 scale the amount of information they had gained at the Conference. The greatest number of respondents ranked their information increase at only a five level. Over 70 percent (n=150) of the respondents ranked their increase in knowledge at a five or lower. There was a difference of only 3.4 percent between the responses of the participants from the developed and developing nations. (Those from the developing areas felt that they had learned more than their colleagues.)

IT WAS UNGAINLY FOR MINGLING

On the other hand it might be argued that the most important business at large meetings is done in the halls in the form of making professional contacts and discussing mutual problems. At a large meeting of the world's foremost population experts, one might expect that the experts would substantially increase the number of their professional contacts. Surprisingly this was not the case. The greatest number of respondents ranked on a 1 to 10 scale the number of new contacts they had made at a 5 level (n=145). In contrast to the information question a little less than 50 percent of the respondents ranked the number of new contacts made at less than a 5 level. There was no significant variation in the responses of the participants from the developed and developing areas. Several participants suggested that the immensity of the meeting itself made it difficult for them to find and meet persons they either were particularly interested in meeting or sharing common professional interests.

In addition to the questions regarding new information and contacts the participants were asked if they expected any tangible results from their meeting. The respondents from the developing areas were slightly more optimistic than their friends from the developed areas. While only two-thirds of the respondents from the developed areas expected tangible results three-quarters of those from developing areas expected tangible results.

The questionnaire also invited comments about the results of the meeting. In a humorous vein, one participant said that he expected no tangible result from the Conference unless he could make a profit on his expenses.

Frequently participants echoed the words of one participant who said, "the greatest value of the Conference is that it permits international contacts between scholars interested in the same and related fields of research."

INTERCOMMUNICATION WAS LIMITED

Other participants took a considerably less friendly view. A participant from a developed nation exclaimed this "has been one of the most frustrating and least informative Conferences I have ever attended. The reason for this is that the plan is faulty." A majority (53 percent, n=150) of the participants criticized the length of the meeting. Another frequent criticism of the plan of the Conference was that it did not allow enough discussion. A participant from a developing nation felt that there was so little "free intercommunication between the participants" that "nothing was there which required a Conference." A participant from another developing nation concluded his comments by saying "considering the way this Conference worked out, the participant has every right to demand, 'What are the results?'"

One answer to this question was suggested by a participant who said he expected the Conference to have the result of increasing the "understanding of (population) problems on the part of the public * * * and public officials who will read and be influenced in their thinking and actions in relation to national policies."

The world public had ample opportunity to hear about the Conference through the 43 news agencies which sent reporters to the Conference. Twenty-five of the organizations were from Europe, 3 from the Middle East, 4 from Asia (including 1 from Red China), 11 from North America and 1 from Latin America. This coverage was supplemented by well-written daily dispatches to 16 key U.N. information centers around the world.

To try to define empirically the results of the Conference beyond this point with the data collected in this study is impossible, but what has been presented is sufficient to show that the results of the Conference were not the wrong results. There just weren't enough of them.

The World Population Conference was not an instance of the wrong people discussing the wrong things with the wrong results. Rather it was a case of too few of the right people talking about too few of the right problems resulting in less progress than might have occurred in other circumstances.

"... IMPORTANT MONUMENT MARKING THE BEGINNING OF AN ERA OF UNPRECEDENTED CONCERN ABOUT THE POPULATION PROBLEMS"

My hope in making this presentation was not to criticize those who were responsible for the development of the Conference. My hope was that by pointing out some of the problems and the progress which was made at the last Conference, that future conferences might be even better than the Belgrade Conference. Those responsible for the Belgrade Conference may be proud of the job they did. They built an important monument marking the beginning of an era of unprecedented concern about the population problems.

(The questionnaire referred to follows:)

EXHIBIT 59

QUESTIONNAIRE SUBMITTED TO PARTICIPANTS AND OBSERVERS AT THE 1965 WORLD POPULATION CONFERENCE

(By Edwin L. Harper, Guest Scholar)

Questionnaire, to participant and observers 1965 World Population Conference:

Your cooperation is kindly requested in filling out this questionnaire. It is part of an evaluation of the Conference which I am making with the support of a private foundation.

Your responses will be held in strictest confidence. No statements will be attributed to you, or your country. The purpose is simply to assess the reactions to the Conference.

Tabular results will be made available to those who respond to the questionnaire if they send a request and a self-addressed stamped envelope to the Washington address given below.

Please return this questionnaire to pigeonhole 501 as soon as possible.

Sincerely,

EDWIN L. HARPER,
Guest Scholar.

Home Office: The Brookings Institution, Washington, D.C.
Conference address: Pigeonhole 501.

I. Background Data

Name (if you wish) _____
Country _____ Age _____

A. Circle the following which apply to you:

Male, female; governmental official, university professor, research institution associates, international organization staff, clergyman, lay religious official, others _____ (please specify); demographer, medical doctor, public health officer or practitioner, biologist, economist, sociologist, statistician, political scientist, others _____ (please specify).

B. Circle the highest degree you hold: B.A., LL.B., Ph. D., M.D. (specify others) _____.

II. Conference Organization

A. Length of the Conference: The Conference was (circle one) too long, too short, or OK.

B. Administrative details: Rate the handling of the administrative details of the Conference on a 1 to 10 scale with 10 being perfectly handled in this space._____.

C. Sessions: Rate the intensity of your feeling that the organization of the sessions needs to be improved on a 1 to 10 scale with 1 being no change needed and 10 being a need for a total reorganization in this space._____.

D. Make suggestions for improving the session on the reverse side of this sheet.

E. Size: Are the number of participants too large, too small, or OK? (Circle one): too large, too small, OK.

F. State the ideal size for the Conference in this space,_____.

III. Substantive Matter

A. Quality of the papers: Rate the average quality of the papers presented at the Conference on a 1 to 10 scale with 10 being the top quality in this space._____.

B. Scope: Should the scope of the Conference be broadened to include more subjects or narrowed to include fewer? Circle one of the following: Broader, narrower or *status quo.*

C. If you answered "Broader" to question III, B, circle those problem areas which you feel deserve more attention in relation to population trends: public health, eugenics, improved methods of contraception, economic development, political problems, administrative problems, others (please specify)_____.

D. Is the level of the Conference with reference to its purpose too scientific, appropriate, or not scientific enough? (Circle one) : too scientific, appropriate, or not scientific enough.

IV. Results

A. Contacts: Rate the degree of the increased number of contacts in the population field as a result of this Conference on a 1 to 10 scale with 1 being little increase and 10 being a great increase in this space,_____.

B. Information: Rate the amount of new information which you gained as a result of having attended this Conference on a 1 to 10 scale with 1 being little increase and 10 being a great increase in this space,_____.

C. Tangible results: Do you expect any tangible results from your having attended this Conference? (Circle one) Yes No.

D. If you answered "yes" to question IV, C, what result do you expect?

V. Additional Remarks

You are invited to make additional remarks about the Conference on this sheet.

Please return the questionnaire as soon as possible to Pigeonhole 501.

Senator GRUENING. Thank you very much, Mr. Harper.

"CONSTRUCTIVE CRITICISM OFTEN BLAZES A TRAIL TO IMPROVEMENT"

Your criticism made in the course of this study should be very useful in improving the conduct of future conferences. In that sense I think you have made a very helpful contribution.

Constructive criticism often blazes a trail to improvement. And in that sense, I think your studies have been valuable.

I would assume that you would summarize your impression of the Conference by saying despite its defects, it was a useful undertaking. Would that be correct?

Mr. HARPER. Yes, it certainly was.

Senator GRUENING. Well, thank you very much, Mr. Harper. We are very happy to have you here. You have made an excellent statement.

We will now stand in recess subject to the call of the Chair.

(Whereupon, at 11:40 a.m., the subcommittee was recessed, to reconvene subject to the call of the Chair.)

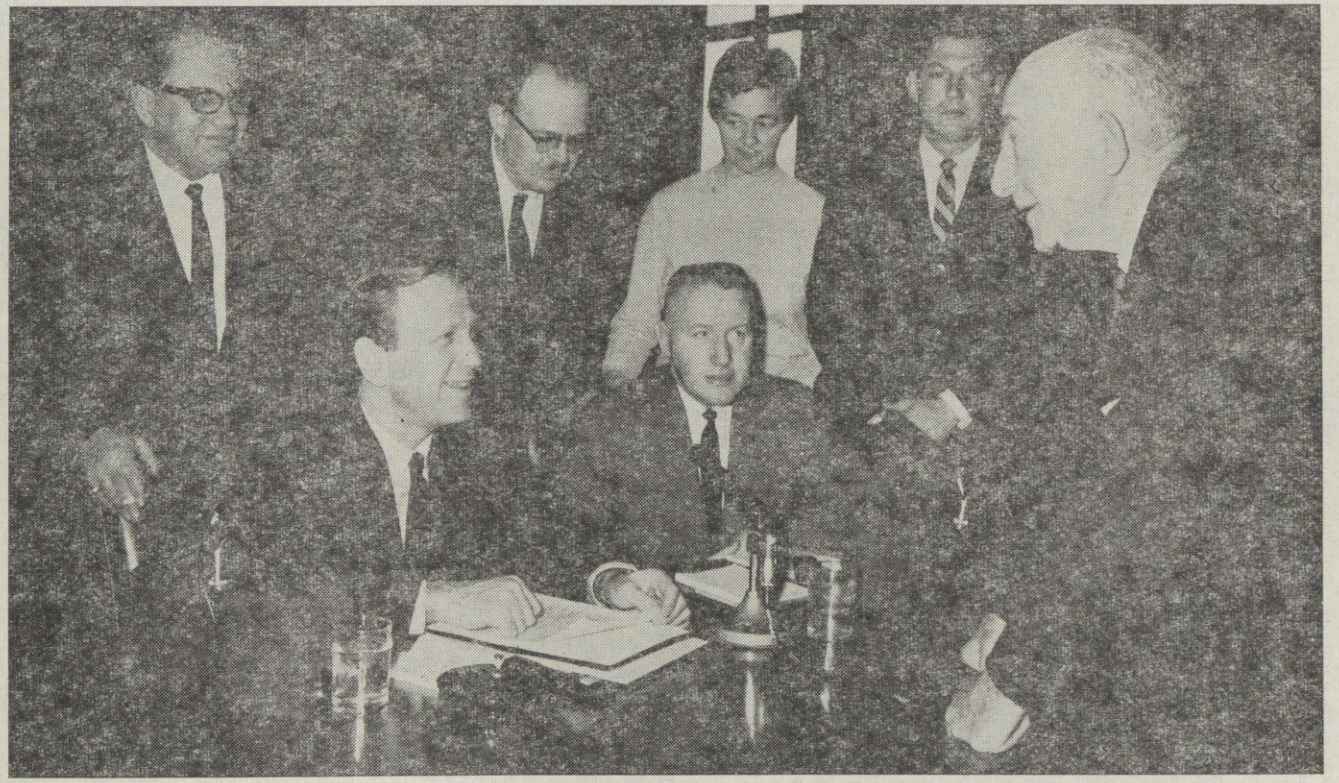

EXHIBIT 60

Witnesses who testified on S. 1676 before the Subcommittee on Foreign Aid Expenditures, March 2, 1966, were: Dr. Donald N. Barrett, Prof. Albert Blaustein, Dr. and Mrs. André J. de Bethune, and Dr. Joseph D. Beasley. (Pictured, left to right, seated: Representative John Brademas, Dr. Barrett; left to right, standing: Professor Blaudstein, Dr. de Bethune, Mrs. de Bethune, Dr. Beasley, and Senator Ernest Gruening, subcommittee chairman.)

POPULATION CRISIS

WEDNESDAY, MARCH 2, 1966

U.S. SENATE,
SUBCOMMITTEE ON FOREIGN AID EXPENDITURES,
COMMITTEE ON GOVERNMENT OPERATIONS,
Washington, D.C.

The subcommittee met at 10 a.m., pursuant to recess, in room 4200, New Senate Office Building, Senator Ernest Gruening (chairman of the subcommittee) presiding.

Present: Senator Gruening.

Also present: Mary A. Miller, clerk; Joyce Polk, assistant clerk; Carole A. Ransom, editor; and Laura Olson, special consultant on population problems.

OPENING STATEMENT OF THE CHAIRMAN

Senator GRUENING. Good morning, ladies and gentlemen. Welcome to the 20th public hearing on S. 1676, a bill to coordinate and disseminate birth control information upon request and one which authorizes President Johnson to call a White House Conference on Population in 1967.

At this time I direct that the photograph taken today of our distinguished witnesses be made part of the hearing record.

We are making some progress in these hearings and today we shall plow some new ground.

Yesterday, President Johnson for the 19th time since his election spoke publicly about the population problem in his message to the Congress on domestic "Health and Education." In section VI of his message he discussed ways to meet special health problems. He said in part 4:

"Family planning:

"We have a growing concern to foster the integrity of the family, and the opportunity for each child. It is essential that all families have access to information and services that will allow freedom to choose the number and spacing of their children within the dictates of indvidual conscience.

"In the fiscal 1967 budget, I have requested a sizable increase in funds available for research, training, and services in this field. The National Institutes for Child Health and Human Development will expand its own research and its grant program to study human reproduction. The Children's Bureau and the office of Economic Opportunity will support family planning to the maternal and infant care programs in local communities when requested. State agencies will be

aided by Federal welfare funds to provide family planning services to mothers."

The Subcommittee on Foreign Aid Expenditures welcomes this positive statement by the President because it is essential that all families have access to information and services that will allow freedom to choose the number and spacing of their children within the dictates of individual conscience.

ADMIRAL NIMITZ WAS CONCERNED ABOUT "PRIME PROBLEM OF POPULATION"

I do not know how many Americans have had the opportunity to read the news accounts of an interview the late Fleet Adm. Chester W. Nimitz gave to radio newsman Fred Goerner. As I read the account of part of that interview which appeared in the Anchorage, Alaska, "Daily Times" on Wednesday, February 23, I learned that Admiral Nimitz had been greatly concerned about population growth.

This is what Admiral Nimitz said in response to the question, "Do you feel World War III is inevitable?"

"I'm afraid it is * * * for one reason—population. If man is not able to control population growth, and that battle is being lost now, the pressures in coming decades will be immense. When people are starving, uneducated, without housing, they will eventually explode * * * they can be manipulated by any despot with a promise of something better. War is the most repugnant product of the human mind, but unless we solve that prime problem of population—there will be war."

Let us hope that man is smart enough to prove otherwise. This is a great statement by a great soldier and sailor.

At this time I will insert in the hearing record a copy of a letter written on February 15, 1966, by the pastor of the Grace Presbyterian Church, of Carmichael, Calif. This letter was written by Mr. J. Weaver Hess and sent to the subcommittee. Mr. Hess wrote originally to Senator George Murphy, of California who thoughtfully sent me a copy of the letter which advises that the ruling elders of Grace Presbyterian Church, acting on their own behalf had on February 8 passed a resolution recommending the speedy passage of S. 1676. The subcommittee is glad to receive this information and appreciates the support of the Grace United Presbyterian Church.

(The letter mentioned above follows:)

EXHIBIT 61

LETTER FROM J. WEAVER HESS, PASTOR, GRACE PRESBYTERIAN CHURCH, CARMICHAEL, CALIF.[1]

FEBRUARY 15, 1966.

Hon. Senator GEORGE MURPHY,
Senate Office Building,
Washington, D.C.

DEAR SENATOR MURPHY: On February 8, 1966, the Session, (the Ruling Elders acting on their own behalf), of Grace United Presbytarian Church, Sacramento, California, passed the following resolution.

"We recognize that the rapidly increasing population of the world is creating a grave and most serious problem for everyone. We believe world wide population control, including the United States, is necessary for the well being of all."

[1] The original was sent to Senator George Murphy advising him that the Ruling Elders of Grace United Presbyterian Church recommended speedy passage of S. 1676.

We therefore recommend the speedy passage of Senate Bill No. 1676, introduced by Senator Ernest Gruening, providing information and assistance for those requesting it. "This will help the United States to help herself and other nations in population control."

We therefore urge your consideration and affirmative vote on this proposal.

We are, in this open letter, asking each member of our congregation to write to you, to communicate his intent in this matter.

Sincerely yours,

J. WEAVER HESS,
Pastor.
LEWIS B. PERRY, Jr.
Clerk of Session.

BIOGRAPHIC STATEMENT: DONALD N. BARRETT

Senator GRUENING. The initial contribution to the population dialog this morning will be given by Dr. Donald N. Barrett, professor of sociology at the University of Notre Dame, director of the Notre Dame Institute for Latin American Population Research, and a member of the Papal Commission on Population and Birth Control.

Dr. Barrett's Congressman, Representative John Brademas, of Indiana, appeared before the subcommittee this past September 15 to describe the first Western Hemisphere Population Assembly held in 1965 in Cali, Colombia. When Congressman Brademus reported on the Cali Conference he mentioned the work of Prof. Donald N. Barrett.

Subsequently, as chairman of the subcommittee, I contacted Dr. Barrett to ask if he would like to contribute to this dialog on S. 1676. He accepted the subcommittee's invitation.

Much can be said about Dr. Barrett's work. If Representative Brademas is here this morning, I shall ask him to enumerate Dr. Barrett's accomplishments in further detail.

STATEMENT OF HON. JOHN BRADEMAS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF INDIANA, INTRODUCING DONALD N. BARRETT

Mr. BRADEMAS. Thank you very much indeed, Mr. Chairman.

You will recall, Mr. Chairman, that you gave me the opportunity to appear before the members of this subcommittee last year on the 15th of September to describe the first Western Hemisphere Population Assembly, held in 1965, in Cali, Colombia. My distinguished colleague, Donald Irwin of Connecticut, and I were both delegates to that Conference. In my report to you and members of this subcommittee, I mentioned the work of our distinguished witness here today, Dr. Donald Barrett of the University of Notre Dame. And I am delighted, Senator Gruening, as chairman of the subcommittee, that you were thoughtful enough to invite Dr. Barrett to contribute to this dialog on Senate bill 1676.

Professor Barrett is a sociologist-demographer. He was born in Norfolk, Va. He is married and the father of 10 children.

He received his Ph. D. from the University of Pennsylvania and is an active member in the Population Association of America, the American Sociological Association, and the Society for International Development.

67-785—66—pt. 2——7

Professor Barrett has at present a contract with the Agency for International Development to study "Family and Fertility Change in Colombia, Peru, and Brazil."

He is president-elect of the American Catholic Sociological Society and the author of "Values in America" and the "Problem of Population," a two-volume series published in 1964–65.

His previous research includes the following studies:

1. "Fertility Regulation in England," under a grant from Population Council.

2. "The Study of Catholic Education," senior research staff, Carnegie Foundation sponsored.

3. "Demographic Work on Three Catholic Diocesan Census Surveys."

And he has done demographic analysis of the Spanish-speaking in the United States for the President's Civil Rights Commission.

I might say, Mr. Chairman, that I am very proud, indeed, to have the honor of representing the University of Norte Dame in the Congress of the United States, and it has been a source of great encouragement to me to see the leadership that this university and the members of its faculty are bringing to a number of important fields of concern in our country. Two of these fields are population studies and Latin American affairs. Our witness here today is one of the most distinguished constituents of my district. He is uniquely equipped by experience and background to address himself to both these areas.

So, Mr. Chairman, I am very pleased to present to this subcommittee Dr. Donald Barrett.

Senator GRUENING. We are very grateful to you, Congressman Brademas, for coming and introducing Dr. Barrett and, Dr. Barrett, you may proceed in your own way.

STATEMENT OF DR. DONALD N. BARRETT, PROFESSOR OF SOCIOLOGY, UNIVERSITY OF NOTRE DAME, NOTRE DAME, IND.; DIRECTOR OF THE NOTRE DAME INSTITUTION FOR LATIN AMERICAN POPULATION RESEARCH; AND A MEMBER OF THE PAPAL COMMISSION ON POPULATION AND BIRTH CONTROL

Dr. BARRETT. Thank you very much, Senator. I do want to thank Congressman Brademas. His friendship and representation of our district has been most effective and I am delighted that he was able to take out time this morning to introduce me to this subcommittee, and to help in the very important work of this subcommittee.

With deep appreciation of the honor given me by this distinguished group I propose to speak to you as a sociologist and demographer, as well as a citizen and Catholic. The record of this subcommittee in obtaining as many different viewpoints on the issues as possible merits ever greater recognition and respect from everyone. The questions of rapid population growth in modern times, and especially today and for the foreseeable future, are both central and critical. It may even be tragic, as the future may show, that our common concern has become strident in expression, sometimes acrimonious in public statements and threatening from many sides.

". . . SUBCOMMITTEE'S REPORTS ARE SERVING AN IMPORTANT EDUCATIONAL FUNCTION"

The fashion of demographers is to attempt to overwhelm an unwary audience with human growth figures, vital statistics, and population projections whether by competent methods or simple slide rule. The recent Gallup organization study showed that large proportions of U.S. citizens have comparatively little accurate information on population growth, so this subcommittee's reports are serving an important educational function. Thus, I hope to avoid taking up your time by repeating such data and wish to restrict myself to two issues: (1) the need for fertility regulation, and (2) the dilemmas of public policy.

NEED FOR FERTILITY REGULATION

Unquestionably every society in human history has been concerned about its numbers, but the important feature of Western man is that the connection between human numbers and the quality of human existence is both recognized by most and decided upon freely and with dignity. The studies by Rowntree in England, by semiofficial surveys in France, by research groups in Germany, Italy, and the low countries, by many opinion polls and population research efforts in the United States and Canada, all reveal that voluntary family limitation has become characteristic. Further, the evidence shows that over 90 percent of Catholic women in the United States attempt some form of regulation before passing beyond the fecundity period. Catholic Church norms regarding specific methods of control are firmly observed by the majority of Catholics, but, it must be said, at least one-third do not observe the rules completely. The latter is not meant to be dramatic, or indelicate, but merely to show the pressing demand for effective, voluntary forms of regulation.

OPINION POLLS AND DEMOGRAPHIC DATA AFFIRM A NEED

The contrast between this widespread, expressed need for limitation in the promotion of qualitative family values, and the reality of family and fertility experience in other parts of the world is both dramatic and delicate. It is one thing to talk of cold demographic data showing crude birth rates in developing nations of 40 to 50 per thousand, compared to 16 to 22 in developed nations. The discrepancy between high birth rates and rapidly tumbling death rates yields a veritable "population crisis." Thus, current growth rates of 2.5, 3.5 percent, and higher rates for some countries, mean doubling of their populations in 30, 20, and even fewer years.

LATIN AMERICAN FAMILIES DISINTEGRATE IN SEARCH FOR SURVIVAL

But the reality of this crisis can only be deeply appreciated and understood by coming to know poverty and subsistence existence on a person-to-person level. The wonderful families in Latin America who have taken the risk, by the hundreds of thousands, to cut off their family and community ties in extremely poor rural areas to migrate to the cities—in these cities they find even less material and spiritual

resources very often. I have come to know some of their despair, particularly on this research financed by the Agency for International Development, their fatalism, their feelings of hopelessness in favelas, barriadas, where life is literally a daily fight for existence for scraps of food which would shock any American. Here few marriages are celebrated by religious or civil ceremonies, and consensual and visiting relations are most common. At times sexuality is a means by which a woman keeps herself and her children alive, by attracting a man even for a short time. While young, the children are happy and wonderfully carefree, although most have skin and other diseases. But they suddenly change, around 10 to 14 years, to persons with adult responsibilities, if they avoid death at all—in one slum the story was told of two or three children dying per week because of the ravenous dogs in the slums.

So the question can be put: How voluntary are their choices of marriage partners, and families, or children? The remarkable fact is, nonetheless, that these men, women, and children maintain a magnificent inner dignity, a sense of personal worth, and a deep religiosity, as shown in their prayers, their devotions to San Martin, to the Sacred Heart, to the Rosary, and so forth.

MANY LATIN AMERICAN WOMEN USE FERTILITY CONTROL METHODS

This committee, also, I am sure, has on record some of the data from the CELADE studies in Latin America which show that between 35 and 65 percent of the Catholic women in Bogotá, Caracas, Rio de Janeiro, San Jose, and so forth, have used some fertility control methods, that those who have completed secondary schools or had some university education are four to five times more likely to have used some form of contraceptive, that reception of communion has no uniform relation to the use of contraception, that the proportion who use a method increases with the age of the woman, that rhythm is most commonly tried, but withdrawal, condom, and douche are also employed. The evidence for a rising abortion rate, amounting to one-third and one-half of all pregnancies in some countries, is becoming very strong.

". . . THE CONCLUSION . . . IS RELATIVELY SIMPLE"

Consequently the conclusion from my point of view is relatively simple: the need for effective voluntary fertility regulation is very great indeed. But the arguments most compelling are not those of slide rule projections of human populations to the year 2100 A.D. or 5000 A.D. These clearly have no relation to the foreseeable and realistically predictable future. They are simple, accurate exercises in compound interest rates, geometric progressions, or parabolic curves of different degrees, all being mathematical abstractions. The persuasive argument can be found in the demand for human dignity, for freedom of choice in family quality, for a good life in the pursuit of happiness—principles common to all human beings in the world and especially recognizable in our American revolutionary values. These values are our proud and personal heritage which we wish to share with others.

THE DILEMMAS OF PUBLIC POPULATION POLICY

And secondly, the dilemmas of public policy.

In the same way that historically every human society has counted its population as important, so also historically every culture has had some population policy, be it partially or totally expansionist or restrictive. Such control has been formal, as in legislation, or informal, as in the rise of abortion, contraception, sterilization, and the like in parts of the world where men and women decide for themselves. It is also an historical fact that no human society has allowed its numbers to run on unchecked so that this feature has destroyed the total society. Despite the arguments that man has removed himself through the technological revolution from his natural ecological checks and balances, I would insist that man will inevitably use his God-given powers of ratiocination to control population. This will not need the disasters foreseen so easily by users of demographic slide rules. The projections of 6 to 7 billions by 2000 A.D. are realistic enough to encourage the development of policy on this issue.

"BREAKTHROUGHS IN CATHOLIC THINKING . . . MAKE CHURCH AND STATE DIALOG FEASIBLE"

As a crucial principle which bears on what has been said previously and on what will follow, I would like to make clear that the basic principles stated before this subcommittee by Rev. Dexter Hanley, S.J., last August 24th have my own concurrence. In an earlier statement Rev. Thomas McDonagh gave a report arriving at these conclusions, as reported in our second Notre Dame volume on this question: "The Population Problem: Practical Catholic Applications." The point at issue consists in the moral licitness for Catholics to approve of noncoercive public legislation establishing a general fertility regulation program.

This appears central for Catholics in the United States to participate effectively in the development of public policy on this issue. The Catholic subcommunity in the United States is not unanimous on this ethical principle, yet it has not been demonstrated to be erroneous. Thus, it merits serious consideration by all Catholics in view of the need for birth regulation. Also it is permissible ethically for Catholics to use, in certain circumstances, publicly supported clinics for regulation purposes. In a sense, these represent breakthroughs in Catholic thinking which make church and State dialog feasible. In this perspective, then, it would be possible for Catholics, without giving moral approval to all methods of conception control, to approve of certain kinds of legislation such as Senate bill 1676.

"SUBCOMMITTEE HAS . . . BROUGHT THE DEBATE OUT INTO THE OPEN"

It is at this point that the dilemmas of public policy divide many citizens in the United States. First, it is evident to many that voluntary control is needed, but the massive effort by powerful Federal Government, backed by an unconvincing set of humanitarian values, strongly suggests that the cure could be worse than the disease. This

subcommittee has effectively and rightly brought the debate out into the open and your insistence that the debate be public, calm, representative, and reasoned forms a ground for the formation of solid public policy. The difficulties of getting adequate representation are well known, since strong and voluble supporters of a principle are only too happy to speak, while dissenters are at times apathetic, difficult to locate or attract, and suspicious or overly self-protective in the system. For many of the estimated 15 million Catholic adults in the United States there is further difficulty due to the fiasco of the population section of the recent White House Conference on International Cooperation where the Catholic Church was untactfully demeaned and the response from a few Catholics on the other side was not as constructive certainly as it could have been. The hundreds of Catholic newspapers and magazines gave this much space.

WHAT IS THE IMPORT OF "HUMANITARIAN VALUES" ON A PUBLIC POPULATION POLICY?

The second dilemma of policy in this area confronts the humanitarian values which many of us appear to support. When the point is made that "morals will not be legislated," this can be taken in several ways. When Government acts with understanding and freedom, this may be considered moral action. Those whose responsibility it is to carry out the law must interpret the will of Congress carefully. Much has been heard and read about such things as a second and "secret-classified" action policy on population used by the Agency for International Development for many months. I raise the question and I think others raise the question—whose secret was this and who are the persons insisting on it, as distinguished from the announced policy? Senator Clark, before this committee, was more than candid saying that he could not advocate the principles of S. 1676 until after his election in 1962.

Further, Senator Clark insisted to Secretary of State Rusk and AID Director Bell that developing nations receiving assistance from the United States be strenuously pushed to adopt birth control programs, even to letting them make profits on the instruments. The values represented in the "Food for Family Planning" proposal made before this subcommittee may appear to be using the proven grocer's tie-in on sales, but it raises a basic question on how far insistence on family planning values will go as effective policy.

In a similar vein this subcommittee has remarked on the "unfortunate" recourse to abortion in cases where children are not wanted. The same could be said for sterilization and, despite the fact that we realize birth control forms of abortion and sterilization to be illegal (although doctors know the frequency of their occurrence), the question of "policy" determination in HEW through Senate bill 1676 on these matters raises some serious questions. Several persons who have appeared before this committee have shown some approval of these forms of birth control, so again there is a dilemma for those who see the need for family planning but reject abortion and sterilization as routes thereto.

"EVERY PERSON HAS THE RIGHT TO A BASIC FREEDOM FROM GOVERNMENT COERCION"

Perhaps the basic dilemma underlying everything is the matter of coercion and possible invasion of privacy. Every person, be he poor or rich, and every foreign nation whether poor or rich has the right to a basic freedom from government coercion. Personally, I feel that this subcommittee has clearly, time and again, rejected this possibility and perhaps some criticism has been unfamiliar with these statements of principle. It may be that, due to the delay in printing of the committee hearings, these issues have been already clarified, but let me cite some questions which I know are very common.

CAN A PROGRAM HAVE ENOUGH INCENTIVES TO WORK AND STILL BE NONCOERCIVE?

The program involving family planning among the poor both in this country and in other countries, such as in India, attract comparatively small numbers of clients unless the program's inducements are made rewarding in ways other than family planning. In some countries money payments have been made and in others, such as my experience in Ireland, all hospital obstetrical patients are routinely approached, being asked whether they would like to receive the medical counseling on rhythm. The latter, of course, which has been recommended by the 1965 Committee on Population of the National Academy of Sciences, simply would not reach most of the more urgent families in developing nations. Thus, how strong can incentives be without being coercive?

The amount of influence upon a potential client is recognized to be a very delicate question, requiring supervision and limits if the program is to avoid the accusation of coercion, in spite of desperate need. Another facet of this same point, which is quite common among the poor in the United States such as is to be found in L. Rainwater's book—"And the Poor Get Children"—involves the situation where husband and wife disagree on family limitation and family size values. The intrusion of Government representatives in a persuasive way can simply exacerbate the disagreement. Or if family planning is tied to food or joined with the payment of welfare money, the family's decision is strongly influenced. If the program has few other incentives, however, ignorance of the poor regarding the relation between quantity and quality in family life will cut appreciably into the program's effectiveness. I am aware of the communication and motivation studies, but longitudinal followup research is quite scarce.

CAN A PROGRAM BE MADE AVAILABLE FOR THOSE MOST IN NEED AND STILL ESCAPE THE STIGMA OF PREJUDICE?

Quite candidly some contributions before this committee have pointed out that family planning in the United States is to be largely directed to minorities, such as the Negro, the Spanish speaking, and the like. My own research on the sociological and demographic aspects of the more than 5 million Spanish speaking in the United States shows their fertility to be twice as high as that of Anglo in

the SMSA's (metropolitan areas), higher than Negro fertility, having more families which are broken (one-third to one-half of all families), and even lower average incomes than Negroes. A family planning program coming out of the Office of the Assistant Secretary of HEW could be persuasive indeed, but such programs beamed at minorities can appear quite prejudicial indeed.

Many authors are keenly aware of this problem internationally and the leaders of other nations are quite sensitive to the issue. William Vogt says very bluntly in his book "People, the Challenge to Survival" that he could be charged with prejudice, but he insists that the fact remains, Negro and oriental races simply must reduce their fertility, if, as Dr. Cook said before this committee, the world runaway growth is to be curbed.

SOME GOVERNMENTS, GROUPS, LEADERS DO NOT WELCOME FAMILY PLANNING PROGRAMS AT THIS TIME

It is similarly clear that many of the newly independent nations of sub-Sahara Africa are simply not interested at this stage of their existence in developing strong family planning programs. Similarly in a recent conference at Notre Dame, representatives from the Christian Democratic Movement in Latin America pointed out that they consider birth control to be more of a long-range solution, having very little effect on their total economies in the near future. They also stated that birth control from the United States is often viewed within their countries as a method of alleviating the basic problems without getting at the basic roots of injustice, maldistribution of wealth, exploitation of resources, and the like.

Thus, in spite of the White House Conference papers on population growth, it appears grossly inaccurate to give the impression that family planning is most welcome and has a favorable public image in such countries. Their statement of birth control programs, and here I am referring to the statement in the White House Conference documents, in Peru and Colombia (as well as Chile) can be discounted as misleading, since many of these programs are conceived, financed, and supervised from the United States. Full development and execution by local country citizens is rare indeed in Latin America.

Pressure from the U.S. Government upon these countries regarding family planning programs can be viewed as placing our State Department and the Agency for International Development in a very unenviable position. As Senator Tydings and others have pointed out, there is good interest in the population problems on the part of some Latin American leaders, but the cross-pressures within their own countries are similar to those of some Congressmen in the United States whose constituencies are quite divided on the issues. If the statement by the Senator from Oregon at the White House Conference has the ring of political reality, as contrasted with that of Senator Clark, then it would be poor politics to insist that friendly political leaders in Latin America risk their very important influence over a broad range of international and national issues simply by reason of a family planning program emergency now. Our State Department—and AID—is admittedly involved in these issues at the present time.

(See Secretary of State's testimony before another Senate committee, as cited in the first volume of reports by this committee.)

The White House Conferences on Public Health and International Cooperation have insisted, as this committee also does, that family planning will only be "offered" and that "all methods" of fertility control will be available for free choice according to the conscience of each person. From study of the research literature and especially my inquiries on rhythm in the United States, a number of Latin American, and other countries, there are serious programmatic questions. The technical, medical aspects of rhythm still need investigation, to be sure, but with Palmer's and CLER's reports in France, Marshall's in England, and a number in Canada and the United States we realize that failure rates of rhythm in controlled field situations can be as low as 2 percent (here I am talking about the use of the temperature rhythm method system). The prediction of ovulation is a key factor which is quite feasible for breakthrough, if competent personnel are obtained for the job, as the National Academy of Sciences pointed out. Although there is comparatively less profit in rhythm systems for business firms to invest their money, the money for such research has been available for quite some time through the National Institutes of Health, Population Council, et cetera.

PROGRAM REQUIREMENTS FOR INCLUDING RHYTHM METHOD

A key question regarding rhythm concerns the ability of a family planning program to invest more of its personnel, time, and money in rhythm, rather than other, cheaper forms and systems of fertility regulation. Quite simply rhythm requires more. The Planned Parenthood Federation has tried to communicate and motivate women to use rhythm, through medical advice and printed literature, but this has inherent shortcomings compared to other methods. Much research has to be done regarding education and training in regard to rhythm, for example, in the simple matter that rhythm must include motivation and education of both husband and wife or its failure is a foregone conclusion.

Of particular relevance are the economic reasons given for family planning. The point is consistently made that population growth tends to exceed or at least diminish the major portion of growth in gross national product or national incomes of specified countries. This is the national parallel of the family growth problem where increasing numbers of children eat up greater proportions of the total income. On the integral relation between population growth rates and growth of GNP there is some important debate among economists.

Kuznet's study of the southeast Asia countries resulted in showing that the Philippine economic problems were related inversely with population growth, a point made before this subcommittee, but that Thailand's showcase of economic growth was directly related to population growth. Professor Coale of Princeton, however, feels that the inverse relation is the basic one, but again, the demonstration is not conclusive. The argument is also made that population growth is an aid to economic growth only where a given economy has reached a certain stage of development, as in Rostow's description of economic

takeoff. But in some specific countries, where the theory has been tested, the concatenation of specific features of the infrastructure are so varied that demonstration is yet to be persuasive.

GROWTH RATE FIGURES DO NOT TELL WHOLE STORY

Similarly the fact that the growth rate of the United States population has been declining significantly over the past number of years is ignored largely in favor of outlining the "echo effects" of the postwar baby boom. By this I mean the demands on education and other resources, but the question on just how long term this is has not been discussed. So also, the Chicago debate over family planning aid to persons on welfare ignored largely the fact that Chicago's birth rate by 1965 was the lowest it has been in 19 years and that even the total number of births had been declining consistently at least since 1959. The problem seemed to be that nonwhite births remained fairly steady over this period at around 30,000 per year, while white births declined from 67,000 in 1959 to 46,000 in 1965. The rapidly increasing proportion of Chicago births were thus nonwhite births and many of these were born in families on public welfare. Thus, the basic problem of employment opportunities and training was minimized and given less backing. These are questions which arise when family planning values are used to define a situation which has many other features in addition.

WHAT IS A DESIRABLE GROWTH RATE, AND WHO WILL DECIDE?

A final point among the dilemmas of public policy on family planning concerns similar uses of economic data. As this subcommittee has shown that population growth rates absorb large proportions of the per capita economic growth of developing nations, then the question arises as to how high a population growth rate would be desirable and who is to decide. Surely, if birth rates were lowered to the same levels as death rates, the economic growth rates in many developing nations would be staggering. Figures released just last month indicate that Latin America's GNP rose 5.7 percent in 1965 and 5.3 percent in 1964, but the per person increase was less than half this percentage because of the rapidly expanding population. The delicate issue in this argument is the persuasion of the 19 Alliance for Progress countries to come to some definite commitment on the relative balance or imbalance of population growth and economic growth. Who is to decide regarding whom—is the question.

Further, the Latin American Free Trade Association and the Central American Common Market are just beginning to show optimistic results and the pressures from the United States to set population growth targets would be politically explosive enough to defeat further results from these major efforts. Communists and anti-American sentiment in Latin America already have a powerful slogan to combat American-based family planning; namely, "the United States already has control of and is exploiting our rich natural resources, but now they want our children." In countries with high rates of illiteracy it is obvious how such slogans and nationalistic appeals can be greatly effective. When these dilemmas are combined with the economists'

disagreement on the relation between economic growth and population growth, the question of insistence on family planning now in major national and international programs becomes a matter of legitimate debate. As the British economist, Barbara Ward, has said, "Lower birth rates are more likely to be a consequence than a cause of economic expansion. It is above all by the thrust of development (especially agricultural) and literacy in the modernizing economy that conditions can be achieved in which parents begin to choose smaller families." ("Rich Nations, Poor Nations.")

Do not misunderstand me on that quote. I am not trying to say that family planning is not important. It is terribly important and clearly needed for humanity and has many values, but I merely want to show that economists strongly disagree on which comes first and which is essential.

CONCLUSIONS

My conclusions are brief.

What has been done here is not to promote a strictly negative and laissez-faire view of family planning, but rather the overriding points are three in nature:

"FAMILY PLANNING IS AN ESSENTIAL NEED"

(1) Family planning is an essential need arising out of the universal demands for human dignity, freedom of choice, and desire for personal and family pursuit of happiness—arguments on economic levels and on demographic and political levels meet with confounding differences of interpretation, but common agreement is to be found on the basic values which have characterized the revolutionary thrust of this great Nation of ours from its very beginning. It is important or it is hoped that this revoluntionary image will be strengthened in place of the common view of the United States by developing nations as a monolith of economic, political, and military power.

THERE HAS BEEN A BREAKTHROUGH IN CATHOLIC THINKING . . .

(2) From these common values the feasibility of Catholic participation in the development of national policy on family planning becomes real and helpful, rather than simply negative; the Notre Dame conferences and other sources have concluded that is quite licit under certain circumstances for Catholics to participate in family planning programs which offer all methods of birth regulation in a noncorecive manner; the importance of this breakthrough cannot be minimized in the development of national dialog, which is attempting to implement the courageous and forward-looking statements of President Johnson on this issue.

. . . BUT "CURRENT DILEMMAS" MUST BE CONFRONTED

(3) At the same time this committee is most open and helpful in getting the variety of viewpoints on public policy questions expressed; there is need for greater national consensus on family planning and responsible parenthood and it is with the conviction, my own, that this

can be achieved that some of the current dilemmas have been candidly outlined, these dilemmas in the press and the minds of many sectors of our Great Society appear to require greater and more direct confrontation for public consumption if this Nation is to move forward in its generous mission to itself and to the world.

"THIS COMMITTEE IS DOING MORE . . . THAN ANY PREVIOUS EFFORT IN THE HISTORY OF THE UNITED STATES"

It is my belief, Senator Gruening, that this committee is doing more to effect this consensus than any previous effort in the history of the United States. Again, I would like to say that it is more than unfortunate that your efforts and those of this very active committee are met all too often with acrimonious debate, and less than accurate press coverage.

THE PRO AND CON OF S. 1676

Let me add one final point which has reference to the specific provisions of Senate bill 1676. There is no doubt at all that the provision calling for a national population conference in 1967 responds to a recognized need and that it will obtain excellent results if it is not planned the way some previous public conferences have been. Your specifications regarding State preparatory committees show solid insight and expertise in achieving the successful goal.

On the other hand, the provisions calling for Assistant Secretaries of State and HEW, with the functions defined in Senate bill 1676, raise considerable questions about the legislative authorizations, limits and the like, such as have been outlined previouly. As a constructive note, the previous suggestions before this committee using the OEO intranationally and the United Nations internationally for family planning programs appears more acceptable to a broader span of citizens of the United States. The use of political power at the Assistant Secretary level raises serious questions, such as those mentioned. But more importantly the proposal for a national population consensus, which would not jeopardize or alienate the position of large sectors of the United States.

The vital issue, it appears to me, is not to defeat or weaken the movement of responsible parenthood. Catholics disagree with many others not only in the area of techniques or methods of fertility control, but in the broad spectrum of family values, but some working consensus is forseeable quite soon. It would be unnecessary to have it break down by reason of a sense of urgency which forces division 6 months before the national conference and the arrival at the working consensus.

Again, Senator Gruening, I would like to thank you and this committee for the honor and the privilege of speaking to you on such an important question. I sincerely hope that these remarks have been helpful and will be taken in a constructive vein.

Senator GRUENING. Dr. Barrett, you not only have been helpful; you have been more than that. You have given us a great deal of very valuable comment and suggestion. I have a few questions and I believe one could profitably question you for many hours, but there are a number of things I would like to touch on.

UNDER WHAT "CIRCUMSTANCES" CAN CATHOLICS PARTICIPATE . . .?

On page 393 in your second conclusion you say "the Notre Dame conferences and other sources have concluded that it is licit under certain circumstances for Catholics to participate in family planning programs which offer all methods of birth regulation in a noncoercive manner." What would be the certain circumstances under which it would be licit or not licit?

Dr. BARRETT. This is a very good question. I am delighted you have raised it because I think this is part of the breakthrough in which at least Catholics will be able to enter into this discussion constructively. I would direct myself directly to your question.

At the present moment, the policy of the Catholic Church considers, shall we say, the older forms or methods of contraception to be morally unacceptable for Catholics. Similarly, the present rule applies to the pill when used directly for contraceptive purposes. The certain circumstances referred to in conclusion number two, is that Catholics cannot indicate approval of such methods, morally. Now we have got to remember the Catholic Church is not a physically coercive institution in the way in which a government or a state can be coercive. It is morally coercive. No one compells Catholics physically to use or not use the specific method. It is moral persuasion, however, for Catholics, and very effective, as statistical evidence and research studies indicate. So the circumstances are that Catholics who are attempting to remain good Catholics, in conscience following the teachings of this moral institution which we call the Catholic Church, must not give any approval of these methods themselves. These are the certain circumstances I referred to.

WHEN THEY SEEK COUNSEL ON THE RHYTHM METHOD

This does not mean, however, that they cannot participate in a clinical program in which a rhythm operation is the basic operation for which or to which Catholics are appealing to this clinic.

50 CATHOLIC RHYTHM CENTERS IN THE UNITED STATES: "A VERY RECENT EFFORT"

Now this distinction may sound somewhat fine and abstract to those who have not studied and read Catholic theology on this point. It is, however, an important theological principle. I would merely like to suggest that as recently as 6 months ago this principle was not discussed among Catholics as a whole. But there is a mounting and express need on the part of Catholics for fertility regulation counseling within the orbit of the rhythm method. My own studies indicate that there are approximately 50 such operations under Catholic auspices going on now in the United States. To give you some idea of the recency of this, the average life span or existence of these operations is probably less than 1 year. This is a very recent effort.

"WE HAVE ARRIVED AT A POINT WHERE COOPERATION CAN OCCUR"

There is coming recognition, therefore, on the part of many church organizations and leaders, of family planning and responsible parenthood, for programs of this sort. Consequently, this is a basis by which

Catholics can participate with those objectives which we have in common with, I think, Senate bill 1676. I am trying to emphasize value principles and this is why I say "in certain circumstances." I cannot be false to Catholic principles. But I do believe that we have arrived at a point where cooperation can occur and this is what I want to emphasize in conclusion No. 2.

Senator GRUENING. In the use of the rhythm method against using any other method, is there not a pretty close consensus now that family planning under those circumstances is desirable and pretty widely accepted by Catholics?

Dr. BARRETT. Yes. I have no question in my own mind and every time that a research study is done, the research shows that among Catholics, well over 90 percent use some form of fertility regulation. It has only been very recently, however, that Catholic agencies have been doing something formally about this. This is the innovation, this is the change to which I am referring. The recognition that the need, the express need on the part of Catholic families is there. I am delighted that you stressed that point and I would like to just confirm it.

"ONE GREAT BREAKTHROUGH . . . IS THE FREEDOM OF DISCUSSION"

Senator GRUENING. Dr. Barrett, obviously there has been one great breakthrough in this whole problem and that is the freedom of discussion. It is no secret that up until very recently this was a problem that could not be freely discussed, could not be freely discussed by men in public office for fear of adverse results—and by newspapers for fear of reprisals of advertisers, and so forth. To what do you attribute, how do you trace the change that has come in this thinking. It certainly is here.

Dr. BARRETT. Yes, a change is visible. I do not think, however, the change is powerful enough at this point to say that it is an effective change. I think I can say this, also. I personally foresee the probability, not just possibility, of greater Catholic participation in the effort, national effort, of family planning within the next year and certainly within the next 2 years in a positive and constructive way and not just in a negative way. It is still not very powerful yet, but it is coming and I think the work of this subcommittee has helped to bring this about. This, I think, is a very important explanation to the credit of this subcommittee.

The thinking of Catholics is slow on this issue because, again, we have felt, I think, that there has been so much propaganda in regard to family planning that we are prepared to say that we will not cooperate with certain kinds of agencies who feel no moral compunction in supporting abortion and sterilization as birth control measures. It is because some leaders of the birth control movement of the United States have been abundantly clear that they are willing to support such methods that Catholics are reluctant at all in supporting a general family planning movement. So long as this is understood and so long as some differentiation from this sort of ideology with which Catholics cannot ally themselves is understood, then I think Catholics will participate in the dialog much more effectively.

HOW DOES BASAL BODY TEMPERATURE RHYTHM METHOD WORK?

Senator GRUENING. You have reference to temperature control and rhythm method. Will you comment on that? I am not sure I understand what that is.

Dr. BARRETT. Yes. Dr. John Rock—who testified before this committee in 1965—with his coworkers around 1951 in an article reported the effectiveness rate of rhythm, use of the infertile period as approximately 80 percent, in this sense. It is applicable and useful for about 80 percent of couples provided that they are intelligent, provided that they are well motivated, and so forth.

However, since Dr. Rock's research, there has been a very important change and innovation in the whole approach to rhythm as I am quite sure the medical personnel which follow me here this morning will be able to tell you better than I. But this change is largely the use of the basal body temperature method [1] mainly at the point, around the time of ovulation. Roughly, toward the middle of the menstrual cycle there is a measurable change in the temperature of the woman. Usually, not always, but usually, there is a drop in temperature and then distinct rise above the general average for the entire menstrual cycle period. The new system is usually predicated upon the reasoning that this does not prove exactly when ovulation occurred. Ovulation may have occurred 3, or 4 or 5 or more days before this drop and rise, but at least 4 days after the rise it has maintained itself at a high level of temperature, the woman is effectively sterile, and, therefore, safe.

DATA FROM MONTREAL SHOW "BBT" METHOD WORKS

Now the application of this reasoning has been shown by Palmer in France, by Marshall in London, and by another friend of mine, Dr. Claude Lanctot now at Harvard. He is working on a set of data from Montreal showing that the failure rate using this system is extremely small, comparable to any known form and method of fertility regulation with the possible exception of the newer pills. But the difference of failure rates between the temperature system of rhythm and the pills is a difference of about 1 to 1½ percent.

Senator GRUENING. Thank you very much. On page 386, the end of the second paragraph, speaking of Catholic women in Latin America, you say that rhythm is most commonly tried, but withdrawal, condom, and douche are also employed. I would assume, of course, that both condom and douche would be methods not morally acceptable to the church. But what about withdrawal? Would that be a licit method?

Dr. BARRETT. No; it is not a licit method for Catholics.

Senator GRUENING. It is not a mechanical means.

Dr. BARRETT. No; it is not a mechanical means. The term that is used on this formal Catholic teaching is coitus interruptus which means withdrawal with ejaculation after withdrawal. This being the case, it may be contraceptive. Research studies in the United States on all women show that it has some effect but it is highly unreliable. For a Catholic, it is not acceptable morally.

[1] Commonly abbreviated "B.B.T."

May I suggest something, a key question?

Senator GRUENING. You may.

". . . MORE SOLID GUARANTEES THAT INFLUENCE IS NOT COERCIVE"

Dr. BARRETT. This matter of coercion, I understand, has been argued before this subcommittee as a central problem. I have already indicated in my presentation that I am not sure myself that this is a valid point. All social work or casework involves influence by the caseworker upon the client. The difficult question is where does influence by the caseworker upon the client go from influence to coercion? I am not saying I have a solution to this distinction. It is a terribly important distinction as I am sure this subcommittee realizes. I do have a suggestion, however, and this is twofold.

One is that if the argument on coercion is taken to mean that any kind of Government participation in family planning is thereby unconstitutional, then the argument would seem to imply (remember that I am not a lawyer) that all social casework would be unconstitutional. What is most significant to me, however, is what I indicated in my paper; namely, that there have to be more solid guarantees that the influence is not coercive. Consequently, if in some way in the legislation there could be some guarantee that this influence would not be coercive, I think we are in the right direction and have great probability of greater consensus.

My second point is that to achieve this objective it could well be useful to have caseworkers or clinic workers which are now operative such as in Texas with the OEO program involving family planning and in local community operations such as Chicago to testify before this subcommittee in which the subcommittee could ask about the question of coercion. I think this would be very useful.

SUBCOMMITTEE WANTS TO HEAR ALL POINTS OF VIEW

Senator GRUENING. The subcommittee would be very glad to have that. We welcome the suggestion.

The subcommittee wants to make sure as long as these hearings go on that every point of view is represented. There was a recent conference in Chicago at which I addressed the Planned Parenthood Association. Its officials had arranged for various TV and radio broadcasts. It seems that one of the foremost Catholics, a city official in one of the suburbs, had been asked to appear at a roundtable discussion of the population problem and then his invitation was withdrawn. I knew nothing about this until I heard from him after I left Chicago. I wired the newspaper which contained his protest saying that I would be glad to have him appear before this committee, if he wishes to. I would want this subcommittee to be all-inclusive of every point which bears on this subject. I think this particular individual, Dr. Ratner, had the feeling, expressed to me when I telephoned him, that the presentations had been on one side. They need not be. The subcommittee has extended invitations to testify to qualified witnesses—as widely as possible—and I repeat it now. We would like to hear opponents as well as proponents.

Dr. BARRETT. I know Dr. Ratner very well and I know he represents a view quite different from my own.

Senator GRUENING. I hope that point of view will be presented and I think it should. It is only through full discussion that we make progress.

SUBCOMMITTEE PRAISED

Dr. BARRETT. That is why I have suggested in my presentation one of the most constructive things I find in Senate bill 1676 is the proposal of the National Population Conference. I think this will inevitably develop a massive condensation of the issues of a large number of people, whereas it is quite difficult for this subcommittee to attract people so effectively. And I must say, again, too, that I have a tremendous admiration for the work you have given, Senator Gruening, and for this whole committee involving time and effort and interest. This cannot be praised enough from my own thinking.

Senator GRUENING. Thank you very much, Dr. Barrett. If it is convenient to you, I would appreciate your staying here during the balance of this hearing in case other questions come up which we want to ask you about. Would you be able to do that?

Dr. BARRETT. Yes. Thank you very much.

Senator GRUENING. Thank you very much for a fine presentation.

Since too few of us, I believe, are as well informed as we should be about the historical position on contraception of the Catholic Church, I will direct at this time that there be placed in the record a study on the Catholic Church's past and present attitudes and statements on contraception, with suggestion of possible future courses open to the Catholic authorities as they examine the population crisis. The study was written by John T. Noonan, Jr., professor of law in the Notre Dame Law School. Professor Noonan compares the development of the doctrine on usury and the doctrine on contraception, to see if an examination of one might not shed some light on the other. He suggests that one approach to the rule on contraception would be to say: "The command to 'love one another as I have loved you' may be made specific in particular environments by the rule of the church on contraception, but the church is always free to look again, to see if, in a new environment, the rule is still the best specification of the commandment to love." The Noonan study and his conclusions will, I believe, be of interest both to Catholics and to those of other faiths. We must all work together if we are to solve "the multiplying problems of our multiplying populations."

(The article referred to follows:)

EXHIBIT 62

AUTHORITY, USURY, AND CONTRACEPTION

(By John T. Noonan, Jr.;* Cross Currents, Vol. XVI, No. 1, Winter 1966)

In the current controversy on contraception, parallels with the development of doctrine on usury are often alluded to, alleged, or challenged. It seems useful, therefore, to explore systematically the possible parallels. This article will compare the authority supporting the usury rule and the rule on contraception and

**John T. Noonan is a professor of law in the Notre Dame Law School and the author of* Contraception: A History of its Treatment by the Catholic Theologians and Canonists *(Cambridge, Mass.: Harvard University Press, 1965). This article is also appearing in* TIJDSCHRIFT VOOR THEOLOGIE, *March 1966.*

discuss the implications of the comparisons. "Authority" will be examined in terms of the conventional divisions made by the moral theologians: Scripture, the Fathers, the Councils, the Popes, the ordinary magisterium.[1]

In analyzing the authority on usury it seems appropriate to take it when the old rule was most fully in vigor, that is about 1450. It is the rule as it flourished as this date which was supported by the most formidable authority. It is in the following century and a half that the leading moral theologians worked out the modifications, alternatives, and changes which effectively sapped the force of the old rule so that by the seventeenth century almost every modern credit transaction could be accommodated within the revised framework. What is of contemporary significance is the structure of authority facing the theologians who effected the development. The authority on contraception will be analyzed as the rule stands today, at the threshold, perhaps, of a development analogous to that on usury.

What was the prohibition which authority in 1450 supported? It was the prohibition of profit on a loan. Profit on an investment in a partnership where the investor took the risks of a partner as to capital and profit was not forbidden. Profit on credit transactions in the form of the purchase of annuities based on designated revenues was not forbidden. A minority of theological opinion even permitted profit on the credit transactions involved in the purchase of foreign exchange. Interest in the sense of compensation for a loss actually incurred by the lender was permitted.[2] But the main lines of the prohibition were clear. On a loan to a poor man or a rich man, to help the starving or to finance a mercantile enterprise, nothing could be sought or even hoped for. The risk inherent in lending was not a ground for taking interest; that would have been to circumvent the prohibition and destroy the normal gratuitousness of the loan.[3] Interest could never be lawfully sought as profit. To hope for interest, to seek profit, was to commit the sin of mental usury.[4] Usury, mental or actual, was a mortal sin against justice.[5]

What was meant by usury was not extortionate, excessive, or high charges for a loan. Relying on definitions going back to the Fathers, Gratian had fixed the meaning of usury for the canonists and scholastic theologians. St. Ambrose had said, "Whatever is added to the principal is usury." St. Augustine had defined lending at usury as "giving your money in a loan from which you hope to receive more than you have given." St. Jerome had declared that usury is "whatever you receive in excess of what you have given." These statements, intended as formal definitions of sinful usury by their authors, were marshalled by Gratian in his own formal treatment of usury. He concluded by exclaiming, "Behold it is shown clearly that whatever is demanded beyond the principal is usury."[6] It must be remembered that every reference of authority, biblical, patristic, or ecclesiastical, to usury was understood in 1450 to be to usury as so defined.

A. BIBLICAL AUTHORITY

The Old Testament texts relied on to condemn usury were, of course, used as they appeared in the Vulgate. There were five texts of paramount importance. Two seemed to ask only charity or moderation in interest-taking. Ex 22.25 and Lev 25.35–37. One text confined the prohibition to the tribe, "You shall not put money nor grain nor any other thing out at usury with your brother, but with the alien" (Dt. 23.20–21). Two texts spoke with a sweeping generality. Ezekiel defined the just man as one who "will return the pledge of the debtor, take nothing by force, give his bread to the starving, clothe the naked, not lend

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[1] This conventional division does not, of course, necessarily imply acceptance of a "two-source" theory of revelation.

[2] On these permitted transactions, see John T. Noonan, Jr., *The Scholastic Analysis of Usury* (Cambridge, 1957) [hereafter *Scholastic Analysis*], pp. 115–128, 134–154, 154–164, 182–184.

[3] St. Bernardine of Siena, *De contractibus et usuris* 39.1.3 in *De evangelio aeterno, Opera* (Quarrachi 1959–1963).; *Scholastic Analysis*, pp. 128–131.

[4] St. Raymond of Pennaforte, *Summa casuum conscientiae* (Verona, 1744) 2.7.3; William of Auxerre, *Summa aurea in quatuor libros sententiarum* (Paris, 1500) 3.21; St. Antoninus, *Summa sacrae theologiae* (Venice, 1581–1582) 2.1.7; *Scholastic Analysis*, p. 115.

[5] St. Antoninus, *Summa* 2.1.16.

[6] Ecce evidenter ostenditur, quod quicquid ultra sortem exigitur usura est." Gratian, *Decretum* 2.14.3.1, *Corpus juris canonici*, ed. E. Friedberg (Leipzig, 1879–1881).

at usury nor accept increase."[7] The unjust man is one "grasping loot, not returning a pledge, raising his eyes to idols, doing abominations, putting his money at usury and accepting increase" (Ez 18:5–9).[8] In this categorization the later scholastic line between charity and justice was not visible, but it was made evident that usury-taking was a very serious transgression of the moral law, on a par with idolatry and robbery. The affront of usury to God, and the consequence of divine punishment, were emphasized. The unjust man, Ezekiel taught, "shall die." The just man, not guilty of usury, "shall live and ascend the mount of the Lord." The same theological teaching was given in the fifth text, Psalm 14. "Who shall dwell in your tabernacle?" the psalmist asked the Lord. The question was answered by an enumeration of the actions of the just man: he "speaks truth in his heart, takes an oath and does not deceive—has not put out his money at usury."[9] Again usury was set on a plane with other serious moral offenses, and avoidance of this sin was made a condition of being approved by the Lord.

The teaching on usury of the Old Testament was explicitly confirmed by the New Testament. The text of the Vulgate was clear and phrased with legal exactness to condemn all profit on a loan: *Mutuum date, nihil inde sperantes*, "Lend hoping nothing thereby." The words were taken to be an express commandment. They were taken as the words of the Lord himself. Absolutely, unequivocally, without exception, all return on a loan was condemned.[10]

That both the Old and New Testaments condemned usury in this absolute and all-inclusive sense was the teaching of Fathers, Councils, and Popes. But before considering the weight of these authorities confirming the interpretation of the Bible and testifying themselves against usury, we may now turn to the present scriptural authority against contraception. Here reliance has been chiefly set on one text, Genesis 38:8–10, the story of Onan, his father Juda, and his widowed sister-in-law Thamar: "Then Juda said to Onan, 'Go to your brother's wife, perform your duty as brother-in-law, and raise up seed for your brother.' Onan knew that the descendants would not be his own, so whenever he had intercourse with his brother's wife, he let the seed be lost on the ground, in order not to raise up seed for his brother. What he did displeased Yahweh, who killed him also." Some theologians have interpreted this story to embody a commandment against contraception. Onan, they have argued is killed by God for practicing coitus interruptus. His punishment shows that the act was a heinous one and a sin offensive to God. They go on to imply that any other contraceptive act, or at least any act preventing normal coitus is implicitly included in the condemnation of Onan.[11]

Accepting this exegesis, it is apparent that the teaching of the Old Testament is less clear on contraception than on usury. The Old Testament text does not generalize about all contraception; it does not even focus on a single act of contraception; it deals only with a pattern of contraceptive acts frustrating any possibility of offspring. To argue that condemnation of such a pattern of conduct implies condemnation of all contraceptive acts in all circumstances is to take a very large step beyond the text.

In 1450 no one disputed that the Old Testament condemned usury. On the contrary as to contraception, there is vigorous dispute as to the sense of Genesis 38. It has been variously suggested that Onan's displeasing act was to disobey

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[7] "pignus debitori reddideret, per vim nihil raperet, panem suum esurienti dederit, et nudum operuerit vestimento, ad usuram commodaverit, et amplius non acciperit" (*Biblia sacra iuxta latinam vulgatam versionem ad codicum fidem*, ed. H. Quentin, Rome, 1926). The Vulgate translation was the authority. Modern scholarship has done nothing to challenge its essential accuracy in rendering the Hebrew here.

[8] "rapientem rapinas, pignus non reddetur, et ad idolos levantem occulos suos, abominationem facientem, ad usuram dantem et amplius accipientem."

[9] "Qui pecuaniam suam non dedit ad usuram."

[10] Modern exegesis here offers an alternative translation, "Lend never despairing" (Revised Standard Version). This alternative was unknown to medieval exegesis. Post-medieval exegetes were also to argue that "lend hoping nothing" was a counsel, not a command. Some support for this position might be found in its association with such sayings as "If one strikes you on the cheek, offer him the other" (Lk 6:29). On the other hand, the immediately preceding words in Lk 6:35 are "Love your enemies and do good to them," and verses 36–37 read, "Be merciful as your Father is merciful. Judge not and you will not be judged; condemn not and you will not be condemned, forgive and you will be forgiven." No Christian would have said that love of one's neighbor including one's enemy, mercy, abstention from judgment, and forgiveness were anything else but commandments. Doubtless today few exegetes, however, would sustain that "Lend, hoping nothing" were the *ipsissima verba* of the Lord, as medieval theologians supposed.

[11] *E.g.*, Francis Hürth, S.J., *De re matrimoniali* (Rome, 1955) pp. 101–103; J. P. Schaumberger, "Propter quale peccatum morte punitus sit Onan?" *Biblica* 8 (1927) 209–212.

the levirate law requiring a brother to marry a deceased brother's wife; to take an obligation and then deceitfully avoid it; to act egotistically without regard for his family.[12] Above all, he had disobeyed his father, and this disobedience occurs in the context of the descent of the tribe; he disobeys his father's command to perpetuate the name of the elder son.[13] To say that the contraceptive acts as such are what displeased Yahweh is to isolate them from their context and to suppose a focus on sexual morality in the narrative which does not otherwise appear. Moreover, sexual sins were dealt with specifically by the Mosaic law. Not only adultery, but homosexuality and bestiality, were expressly condemned. Surely, it has been reasoned, if it were necessary to legislate against these acts, it would have been at least equally necessary to condemn contraceptive behavior in marriage, if it was indeed God's will that the Hebrews be instructed that contraception was a serious offense.[14] The omission of contraception from any code of Hebrew laws underlines the ambiguities of the story of Onan. The conclusion that this story can furnish no basis for a general prohibition of contraception is at least as plausible as the interpretation which finds the rule within the tale. No consensus of exegetical or theological opinion in 1965 finds Genesis 38 to contain a commandment.[15]

Little attention has been given at any time to the New Testament as authority against contraception. It has been suggested that St. Paul's denunciation in Romans 1:25 of women who "have changed the natural use of that which is against nature" could be read as including a criticism of anal intercourse.[16] But this suggestion has not been generally accepted. It has also been noted that *pharmakeia*, the use of drugs ordinarily associated with magic, is condemned in Gal 5.20, Apoc 21.8 and Apoc 22.15. Abortifacients and contraceptive potions were sometimes classed with such drugs in Greek and Roman usage. It is not plain, however, that the New Testament authors intended to include contraceptive drugs by using a general term capable of including them; it is also not plain whether the focus of the condemnation is on the use to which the drugs were put or on their association with magic.[17] In any case, in the long history of theological writing on contraception, no appeal has been made to Galatians or the Apocalypse to demonstrate that contraception is a sin. The absence of any decisive New Testament text on contraception contrasts with the usury rule where a precisely formulated command enunciated by the Lord Himself ratified the interpretation which found an absolute prohibition of usury in the Mosaic law.

B. THE FATHERS

The three Fathers most responsible for shaping morality in the Western Church were strong witnesses against usury. St. Ambrose devoted a series of sermons to the depiction of its evil, and these sermons were collected as a treatise, *De Tobia*. Having described the misery to which debtors were reduced by their creditors, he continued, "Neither new nor small is this evil, which is prohibited by the prescription of the old and divine law." Exodus 22.25 and Leviticus 25.36 he found to be general prohibitions of usury. Loans to businessmen were not exempted: "Some, evading the precepts of the Law, when they give money to businessmen do not demand usury in money but take something from their merchandise as emolument." This is usury: "Whatever is added to the principal is usury."[18] The commandment of Christ even forbade taking of security by creditors. The Lord has "commanded that nothing ought to be hoped from those to whom we lend."[19] Comprehensively, exactly, and passionately, with a close knowledge of Roman law, Ambrose denounced taking any-

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[12] See John T. Noonan, Jr., *Contraception: A History of Its Treatment by the Catholic Theologians and Canonists* (Cambridge, 1965) [hereafter *Contraception*], pp. 34–35.

[13] David Daube, "Consortium in Roman and Hebrew Law," *Juridical Review* 62 (1950) 72–73, 79, 89, 96.

[14] *Contraception*, p. 35.

[15] André Snoeck, S.J., "Morale catholique et devoir de fécondité," *Nouvelle revue theologique* 75 (1953) p. 909.

[16] Hermann L. Strack and Paul Billerbeck, *Kommentar zum Neuen Testament aus Talmud und Midrash*, (3rd ed., Munich, 1961) vol. III, *Die Buefe des Neuen Testament und die Offenbarung Johannis*, pp. 68–69.

[17] *Contraception*, p. 44–45.

[18] "et quodcumque sorti accedit, usura est," Ambrose, *De Tobia* 14.49, *Opera*, ed. P. A. Ballerini (Milan, 1875) vol. I, col. 781. The first two quotations are, respectively, from 14.46 (col. 779) and 14.49 (col. 780).

[19] "Cum Dominus nihil ab iis quibus mutuum dederimus sperandum esse praecipiat, quod recipere debeamus, quomodo pignus secundum Legem putant esse retinendum" (*ibid*, 17:58 col. 786).

thing on a loan as a violation of the law of God. To this special series of sermons may be added his testimony in his treatise. *The Good of Death.* Here he describes the just man entering heaven. But the infidels descend into hell. Among them is the usurer: "If one takes usury, he is a robber, he does not live with life, as you have it in Ezekiel." [20]

St. Jerome was equally emphatic on the absolute prohibition contained in Scripture. Commenting on Ezekiel, he wrote,

"In the beginning of the Law only usury from brothers was disallowed. In the Prophets, usury from anyone is prohibited, as Ezekiel says, 'He did not put out his money at usury.' Finally, in the Gospel there is an increase in virtue, the Lord commanding 'Lend to those from whom you hope to receive nothing * * *' Some think usury consists only in money. But divine Scripture foreseeing this, disallows surplus of any property, so that you may not receive more than you gave." [21]

In the New Law, there is, then, a commandment against usury, and usury is any surplus above the sum loaned.

St. Augustine, preaching, said that he forbids one to lend and receive more because God does not will it. "Where does it appear that God does not will it? It is written, 'Who has not given his money at usury,' Ps. 14.5. How detestable it is, how odious, how execrable I think the usurers themselves know." [22] In the same sermon, he defined the taking of usury as follows: "You have given your money in loan from which you expect to receive something more than you gave." [23] In a general discussion of the duty of restitution in a letter to Macedonius, an imperial official, Augustine taught that all usury was subject to restitution. Its retention brought into the play the rule, "The sin is not forgiven if what has been taken is not restored." [24]

The Greek Fathers were not silent on usury either. Usury from one's coreligionist or fellow citizen was declared contrary to the law of Christ by Clement of Alexandria.[25] St. Basil devoted to the prohibition of all usury a major homily, some of which Ambrose borrowed.[26] His brother, St. Gregory of Nyssa condemned increase on a loan as "wicked union, which nature does not know," for God the creator has given fertility only to sexually differentiated animals.[27] In the so-called *Canonical Letter* to Letoius, bishop of Melitene, Gregory taught that "divine Scripture prohibits usury and increases." [28] St. John Chrysostom preached that civil laws were no excuse for the Christian to seek usury.[29] God forbade a creditor to give more. Luke 6:35 was absolute.[30] This array of genuine patristic texts was supplemented by another text incorrectly attributed to St. John Chrysostom in Gratian: "Of all merchants, the most cursed is the usurer, for he sells a good given by God." An analysis distinguishing usury from ordinary rent followed, and it was made plain that to take profit on a loan was both sinful and unnatural.[31]

The patristic testimony on contraception is less absolute than on usury. St. Jerome denounced the use of contraceptive potions by unmarried girls as homicide. St. Epiphanius cried out against the ritual practice of coitus interruptus as the sin of Onan. St. Augustine condemned the avoidance of all procreation by the Manichees. None of these statements testifes to opposition to limited contraception in marriage. St. Ambrose has a passage criticizing married couples who

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[20] Ambrose, *De bono mortis* 12.56, in *Opera*, vol. 1, col. 529.

[21] "In principio legis a fratribus tantum fenus tollitur; in propheta ad omnibus usura prohibetur, dicente Ezechiele, 'Pecunium suam non dedit ad usuram.' Porro in Evangelio virtutis augmentum est, praecipiente Domino, 'Feneramini his a quibus non speratis recipere.' Sequitur in tertiodecimo loco, 'Et amplius non acceperit,' Purtant quidam usuram tantum esse in pecunia. Quod praevidens divina Scriptura, omnis rei aufert superabundantiam, ut plus non recipis quam dedisti." (Jerome, *On Ezechiel* 6.18, *Corpus christianorum. Series Latina* 75:240.)

[22] "Unde apparet Deum hoc nolle? Dictum est alio loco: 'Qui pecuniam non dedit ad usuram?' Eet quam detestabile sit, quam odiosum, quam exsecrandum, puto quia et ipsi feneratores noverunt" (Augustine, *On Psalm 36.3, Patrologia latina*, ed. J. P. Migne, [hereafter PL] 36:386.

[23] "'Fineratur' quidem latine dicitur, et qui dat mutuum, et qui accipit." (*Idem*).

[24] Letter 153, To Macedonius 20.25, *Corpus scriptorum ecclesiasticorum latinorum* [hereafter CSEL] 44:419, 425.

[25] Clement, *Stromata* 2.18, *Patrologia graeca*, ed. J. P. Migne [hereafter PG] 8:204.

[26] St. Basil, *Homily 2 on Psalm 14*, PB 29:266.

[27] St. Gregory of Nyssa, *Homily 2 on Ecclesiastes*, PG 44:674.

[28] St. Gregory of Nyssa, *Canonical Letter*, PG 45:234.

[29] St. John Chrysostom, *Homily 56 on Matthew*, PG 58:556.

[30] *Ibid.* at 558.

[31] Gratian, *Decretum* 1.88.11.

use potions to prevent transmission of life; in this context contraceptives are not distinguished from abortifacients. Unambiguous opposition to contraception in marriage is not extensive. St. John Chrysostom sharply condemns the avarice of those for economic reasons practice contraception in marriage.[32] St. Augustine applies the story of Onan to acts of contraception in marriage and puts as a general proposition that it is lawless and shameful to lie with one's wife when the conception of children is avoided.[33] In addition to these negative statements, there was one positive rule: the only purpose for which a Christian may lawfully initiate intercourse is procreation. Ambrose, Jerome, and Augustine all adopted this rule, which had been most authoritatively set out in the second century by Clement of Alexandria.[34] This rule, if still honored as the patrimony received from the Fathers, would be of great authority against contraception. But the rule began to be attacked in the fifteenth century and was defunct by the end of the eighteenth century. It has no standing today.[35] Consequently, the chief testimony of the Fathers against contraception has already been rejected as authority. The contrast with usury in 1450 is apparent. There the principal testimonies of the Fathers were enshrined in the canon law; on contraception, only Augustine's negative statements, largely influenced by his anti-Manichean polemic, are appealed to as authority today.

C. CONCILIAR AUTHORITY

A theologian of 1450 was confronted not only by the express words of Scripture but by the interpretation and confirmation given these words by decrees of infallible organs of the Church. If he had any questions on the meaning of biblical texts on usury, these appeared to be answered by three general councils. They spoke with force, clarity and authority.

In 1139 the Second Council of the Lateran, presided over by Innocent II, enacted this canon: "We further condemn what has been rejected as detestable and repugnant to divine and human laws by Scripture in the Old and New Testaments, to wit, that insatiable rapacity of usurers, and we separate them from every consolation of the Church."[36] It might be argued that the condemnation touched only "rapacious usury," but this interpretation would be to misunderstand the style used. All usury was deemed rapacious. It was usurers generally who were denied the benefits of the Church. It was usury as contemporaneously defined by Gratian, that is whatever is added to principal, which was condemned. The Council presupposed, and taught, that both Testaments showed usury to be a sin.

The Third Council of the Lateran in 1179, under the presidency of Alexander III, enacted a canon denying Christian burial to manifest userers. In the first portion of this canon where the reason for its enactment is adduced, it is stated that many practice usury "as if it were licit to practice usury and as if they never noticed how it is condemned by the pages of both Testaments."[37] The indirect teaching was that usury was condemned by Scriptures. The distinction between manifest and hidden usurers was made only to measure the sanctions employed; both manifest and hidden usurers were assumed to be sinners.

In 1314 Clement V at the Council of Vienne decreed, "with the holy council approving," that rulers enforcing the payment of usury by debtors or preventing the restitution of usury should be excommunicated. The decree continued, "If anyone falls into that error so that he presumes pertinaciously to affirm that to practice usury is not a sin, we decree that he is to be punished as a heretic."[38] This joint papal and conciliar action stops just short of saying that to deny the sinfulness of usury is heresy. The focus is on the treatment to be accorded the person affirming this; he is to be treated "as a heretic." Stopping short of

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[32] St. John Chrysostom, *Homily 28 on Matthew 5*, PG 57 : 537.

[33] St. Augustine, *Adulterous Marriages* 2.12.12, CSEL 41 : 396.

[34] Clement of Alexandria, *Pedagogus* 2.10.95.3, *Die griechischen christilichen Schriftsteller der ersten drei Jahrhundert* 15 : 228. On Ambrose, Jerome, and Augustine, see *Contracention*, pp. 79–80, 129–131.

[35] *Contraception*, pp. 306–321.

[36] "Porro detestabilem et probosam divinis et humanis legibus per scripturam in veterem et in novo testamentum abdicatam: illam, inquam, insatiabilem foeneratorum rapacitatem damnamus, et ab omni ecclesiastica consolatione sequestramus" (G. D. Mansi, ed., *Sacrorum conciliorum nova et amplissima collectio* [hereafter Mansi] 21 : 529–530).

[37] "quasi licet usuras exerceant et qualiter utriusque testamenti pagina condemnentur nequaquam attendant." (Mansi 22 :231).

[38] "Sane, si quis in illum errorem incideret ut pertinaciter affirmare praesumat exercere usuras non esse peccatum, decernimus eum velut haereticum puniendum" (Clementine Constitutions, 5.5, *Corpus juris canonici*).

defining the sinfulness of usury to be a matter of faith, this solemn denunciation indicated that this proposition is proximate to being a matter of faith.

In addition to these acts of general councils there were numerous condemnations of usury by local synods.[39] But for most theologians of 1450 it was unnecessary to consider these acts when the decisions of three general councils, taken over a period of one hundred and fifty years of intense theological activity, reinforced each other and testified so clearly. It might have been said that each council action was only disciplinary. Lateran II excommunicated usurers, Lateran II denied them sepulture, Vienne prescribed a method of punishment for defenders of usury. Yet that sanctions were the focus scarcely lessened the force of the decrees. Much authoritative teaching by the Church on morals has been in the form of legislation which culminates in the penalties set out for its violation. The laws would not be made, the penalties would not be given, if it were not believed that the acts condemned were sinful. These solemn acts of general councils, providing extreme sanctions for the practice or defense of usury, seemed to theologians of the fifteenth century to constitute irrefutable evidence that usury, the taking of profit on a loan, was mortal sin.

On contraception, in contrast, no general council of the Church has ever spoken, ever punished by sanctions, ever condemned the defense of it in theory. The strongest conciliar actions against contraception have been those ascribed to local councils. The two most famous and most influential ones are apocryphal. Martin of Braga erroneously ascribed a condemnation to the Council of Ancyra of 314; Burchard of Worms erroneously ascribed another to the Council of Worms of 830.[40] These two apocryphal texts were much circulated and much relied on in the Middle Ages. Today their fictitious quality has been established. Only a comparatively few local synods have legislated against contraception, and this local legislation has played no substantial part as decisive authority on doctrine. In the twentieth century several national hierarchies have condemned contraception by letter or by statement;[41] these episcopal acts, though of obvious importance, have not been in the form of canons of a council. The teaching of three general councils on usury, as it stood in 1450, is overwhelming in comparison with the slight and scattered synodal authority on contraception.

D. PAPAL AUTHORITY

The phrase of Lateran II to describe usury, "rejected as detestable in the Old and New Testament" was adapted and put to use by Alexander III. The Archbishop of Palermo wrote, asking if he might dispense from the prohibition to raise funds to ransom captives from the Saracens. It was a touching cause, but the Pope stuck to principle. No dispensation was possible, he replied, "since the crime of usury is detested by the pages of each Testament."[42] The Archbishop of Canterbury inquired about the obligation of debtors to pay usury they had sworn to pay. The Pope averred that the debtors were not bound, since "the crime of usury is detestable and fearful in general, and is condemned by the pages of both Testaments."[43]

The reference to the New Testament by Lateran II and Alexander III was made specific by Urban III in 1196. A priest of Brescia asked, "Whether, in the judgment of souls, he ought to be adjudged usurious who gives his money in a loan to receive more than the principal, without any agreement to this effect, although he would not otherwise lend." Replying to this and two similar questions, Urban III declared, "But what should be held in these cases is obvious from the Gospel of Luke, in which it is said, 'Lend, hoping nothing thereby.' Men of this sort are to be adjudged to act evilly on account of the intention of profit which they have, for all usury and increase is prohibited in the law."[44]

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[39] *E.g.*, Canons 3 and 4 of Avignon (1209); canon 30 of Chateau-Gontier (1230); Canon 2 of Reims (1231) for which see Gabriel LeBras, "Usure," *Dictionnaire de théologie catholique* 152 : 2342.

[40] See *Contraception*, pp. 149, 169.

[41] Belgian bishops (1909); German bishops (1913); Austrian bishops (1919); French bishops 1919 and 1961); bishops of the United States (1920 and 1959); bishops of India (1957); bishops of England and Wales (1964). See *Contraception*, 420–422, 473, 510.

[42] "quum usurarum crimen utriusque testamenti pagina detestetur," in Gregory IX, *Decretals*, 5.19.4, "Super eo," *Corpus juris canonici*.

[43] "cum sit usurarum crimen destalcle plurimum et horrendum, et utriusque testamenti pagina condemnatur" (Mansi 22 :231).

[44] "Verum quia quid in his casibus tenendum sit ex evangelio Lucae manifeste cognoscitur, in quo dicitur, 'Mutuum date nihil inde sperantes.' Huiusmodic homines pro intentione lucri quam habent, cum omnis usura et superabundantia prohibeatur in lege, judicandi sunt male agere et ad eo, quae taliter sunt accepta, restituenda, in animarum iudicio effaciter inducendi," *Decretals*, 5.19.5, *Consuluit*.

Urban III thus took the Gospel text, authoritatively applied it to answer the questions of a priest, and taught that his answer, excluding the hope of profit from a loan, "should be held."

The pope not only affirmed that Scripture condemned any addition to principal; they also condemned attempted evasion of the usury rule, Eugene III in 1148 struck at a favorite practice of the monasteries. He wrote that mortgages, in which the lender enjoyed the fruits of the mortgaged property without counting them towards the principal, were usurious and consequently unlawful.[45] Alexander III instructed the Archbishop of Genoa that sales on credit at a higher price than cash sales were usurious and condemned.[46] Gregory IX in 1232 attacked a favorite device of the Italian traders by finding usurious and hence unlawful the so-called sea loan where the lender assumed a partner's risk of loss of capital.[47]

The actions of the popes in conjunction with the three general councils has already been noticed. Alexander III made plain his conviction that the act of Lateran III was not mere positive law by writing the Archbishop of Salerno that usury taken before as well as after the Council was subject to restitution.[48] The acts of earlier popes were given the form of legislation binding on the universal Church by Gregory IX. Title 19 of book 5 of his Decretals was devoted to usury, and there, immediately after "Thefts" and immediately before "Falsifiers," nineteen separate canons on usury were inserted. With this legislative act the papacy set out a comprehensive teaching. Usury was condemned as contrary to Scripture, as a sin which no power could make right. Subterfuges in which usury was practiced were denounced. A range of sanctions from confession for hidden usurers to excommunication for public usurers was provided. There are few moral rules of the Church which have been so fully articulated by papal decree.

Were any of the papal statements on usury made *ex cathedra* and so marked by that infallibility which is also enjoyed by a general council teaching on faith and morals? According to many theologians, no special formula is necessary for *ex cathedra* statements, but the Pope must be acting as Supreme Pastor; he must manifest the intention of defining or passing definitive judgment; he must intend to bind the universal church; and he must be speaking on a matter of faith or morals within the deposit of divine revelation.[49] It would seem that each of these qualifications is met in the statements of Alexander III on dispensation from usury, on credit sales and on the necessity of restitution from usury; in the statement of Eugene III on mortgages; in the statement of Urban III on mental usury and the application of Luke 6:35; and in the statement of George IX on the sea loan. It might, however, be objected that only in the last instance, where Gregory IX wrote a decretal for insertion in the *Decretals*, was there an intent to bind the universal church. The insertion of the papal statements of the twelfth century into the Decretals did not, it could be argued, change their original character of responses to particular inquiries, and Gregory IX in inserting them would only have intended to take them as they were and not extend their scope. It might be urged against these objections to infallibility that the Popes surely intended to deal with more than the immediate case when they determined that a man commits mental usury by hoping for profit from a loan or that restitution of all usuries was a condition for salvation. It might also be urged that by putting the earlier responses in the form of universal legislation Gregory IX invested them, by his own authority, with the character of infallible papal teaching

It might be further objected to the *ex cathedra* character of the statements that their matter is not "faith or morals within the deposit of divine revelation." Yet the confident appeal to Scripture is evidence that the popes making some of these statements believed that the matter fell within the scope of deposit. Other statements interpreted the scope of infallible decrees of general councils. Yet, to apply the criteria of some modern theologians, the failure of the popes to use such solemn formulas as "We define and declare to be divinely revealed dogma" or their failure to anathematize persons holding contrary views is evidence that the papal determinations here were not infallible. Opinions might,

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[45] Eugene III *Epistolae* 550, *PL* 180 :1567.
[46] *Decretals* 5.19.6, *In civitate tua.*
[47] *Ibid.*, 5.19.19, *Naviganti.*
[48] *Ibid.*, 5.19.5, *Quum tu.*
[49] Cf. Infallibility in *Theological Dictionary*, Rahner-Vorgrimler, (New York, 1965).

then, differ among theologians as to whether any of the usury decretals could be considered an *ex cathedra* pronouncement. If short of infallible exercises of papal power, these statements on sin in lending, based on an interpretation of Scripture, carried a very high degree of authority.

In contrast to the papal decisions on usury grounded on the Bible and conciliar action, the first papal treatment of contraception was the decretal *Si aliquis*, a condemnation, of uncertain origin, adopted by Gregory IX for the *Decretals*.[50] This papal approbation gave the text a universal force which it had not formerly possessed. It was a condemnation of contraception by potion; it reflects the ancient and justified association of contraceptive potions with magic and with abortifacients. It provided that the person causing contraception by potion or by "doing something" should be treated as a homicide. Its present force as authority is lessened by the total abandonment of the old "homicide" approach to contraception. At the same time Gregory IX approved a new version of an old canonist teaching and made this new draft into the decretal *Si conditiones*, a canon making an agreement to use contraceptives a ground for annulment of a marriage.[51] *Si conditiones* constituted explicit papal teaching that a plan of avoiding all procreation in marriage was seriously evil.

Over three hundred years later, in 1588, Sixtus V issued a bull, *Effraenatam*, providing excommunication and punishment as murderers for abortioners and for those committing acts of contraception by means of "cursed medicines."[52] This bull took for granted the evil of contraception without defining it; like *Si aliquis* it assimilated contraception to homicide as far as sanction was concerned. Two and one half years later its penalties against contraception were retroactively revoked by Gregory XIV and *Effraenatam* lost thereby most of its force as papal teaching on contraception.[53]

Three hundred and fifty years later, in 1930, there issued a third papal statement on contraception, the encyclical *Casti connubii of* Pius XI. Speaking as vicar of Christ, as supreme pastor, as teacher, the Pope spoke "to turn sheep from poisoned pastures." Referring to the acceptance of contraception by the Anglican bishops as a withdrawal "from the Christian doctrine as it has been transmitted from the beginning and always faithfully kept," the Pope went on to state.

"The Catholic Church, to whom God himself has committed the integrity and decency of morals, now standing in this ruin of morals, raises her voice aloud through our mouth, in sign of her divine mission, in order to keep the chastity of the nuptial bond free from this foul slip, and again promulgates:

"Any use whatever of marriage, in the exercise of which the act of human effort is deprived of its natural power of procreating life, violates the law of God and nature, and those who do such a thing are stained by a grave and mortal flaw."[54]

This statement has been held by some theologians to be an *ex cathedra* pronouncement, invested with infallibility.[55] Others have taught that the Pope only purports to repeat the teaching of the Church; the Church "again promulgates."[56]

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[50] "Si aliquis causa explendae libidinis vel odii meditatione homini aut mulieri aliquid fecerit, ut non possit generare aut concipere vel nascere soboles, ut homicida teneatur." *Decretals* 5.12.5. On the origin of the canon with Regino of Prüm see *Contraception*, pp. 168–169.

[51] *Decretals*, 4.5.7.

[52] "Quis denique non damnet gravissimus supliciis illorum scelera, qui venenis, potionibus, ac maleficis, mulieribus sterilitatem inducunt, aut ne concipiant, ne pariant, maleficis medicamentis impediunt?—Divinum donum est fecunditas parentis, eodemque tempore diro hoc flagitio privantur liberis parentes qui generaverant.—[After prescribing punishments for abortioners] Praeterea eisdem peonis teneri omnino statuimus eos, qui sterilitatis potiones ac venena mulieribus propinaverint, et quominus foetum concipiant impedimentum praestiterint, ac ea facienda et exequenda curaverint, sive quocumque modo in his consuluerint, ac mulieres ipsas quae eadem pocula sponte ac scienter sumpserint," *Effraenatam, Codicis iuris canonici fontes*, ed. Peter Gasparri (Rome, 1923) I, 308–310.

[53] Gregory IV, *Sedes Apostolica*, in *ibid.*, I 330–331.

[54] "Cum igitur quidam, a christiana doctrina iam inde ab initio tradita neque umquam intermissa manifesto recedentes, aliam nuper de hoc agendi modo doctrinam sollemniter praedicandam censuerint, Ecclesia Catholica, cui ipse Deus morum integritatem honestatemque docendam et defendendam commisit, in media has morum ruina posita, ut nuptialis foederis castimoniam a turpi hac labe immunem servet, in signum legationis suae divinae, altam per os Nostrum extollit vocem atque denuo promulgat: quemlibet matrimonii usum, in quo exercendo, actus, de industria hominum, naturali sua vitae procreandae vi destituatur, Dei et naturae legem infringere, et eos qui tale quid commiserint gravis noxae labe commaculari." *Acta Apostolicae Sedes* 22:560 [hereafter AAS].

[55] These theologians include Arthur Vermeersch, S.J., Felix Capello, S.J., A. Genaro, SS., A. Piscetta, S.S., Francis Ter Haar, C.SS.R. See John C. Ford, S.J. and Gerald Kelly, S.J. *Contemporary Moral Theology II: Marriage Questions* (Westminster, Md.) 263–264.

[56] Joseph Creusen, S.J., L'Onanisme conjugal, *Nouvelle revue théologique* 59 (1932) 132.

The Pope may then be understood as repeating the teaching of the Church without giving it more authority than it already possesses. It is noticeable, moreover, that no solemn formulas of definition were employed and that defenders of contraception were not anathematized. Finally, despite the introductory reference to "Christian" tradition, it is not beyond debate whether the Pope means to assert that his teaching is an exposition of the deposit of revelation. The only appeal to Scripture is to the story of Onan and the interpretation given of its authority against contraception is qualified as being that of Augustine. The sin of contraception is said to violate "the law of God and nature" but it is not clear that this expression signifies more than "natural law." The Church acts "in sign of her divine mission," but this description applies to the act of teaching rather than to the content of what is taught. It cannot be said with certainty that Pius XI proclaims the condemnation of contraception as a portion of revealed truth.

Casti connubii is the papal pronouncement of greatest authority on contraception. Its scope was enlarged by two less formal statements of Pius XII. Addressing the Italian Catholic Society of Midwives, Pius XII interpreted *Casti connubii* to mean that "any attempt by the spouses in the completion of the conjugal act or in the development of its natural consequences, having the aim of depriving the act of the force inherent in it and of impeding the procreation of a new life is immoral." This precept, he added, "will be the same always, because it does not imply a precept of human law, but is the expression of a law which is natural and divine." [57] Addressing an international congress of hematologists in 1957 he described as an "illicit direct sterilization" the use of progesterone pills to prevent ovulation.[58] Neither of these statements was invested with supreme authority. They were intended as guidelines by the Pope. In 1961 a broad and somewhat vague reference to contraception was made by John XXIII in his encyclical *Mater et magistra*, in the course of which he rejected solving the population problems of the underdeveloped countries by methods violating "the moral discipline determined by God" and violating "the procreation of human life itself." [59]

These strong papal statements on contraception since 1930 must, however, be considered as limited by four other papal declarations. In the Address to the Midwives in 1951, Pius XII was the first pope to approve positively and unreservedly the use of rhythm for "serious motives," motives which would be a response to the "so-called 'indications'—medical, eugenic, economic, and social." [60] A month later Pius XII said that the Address to the Midwives was meant to affirm "the lawfulness and at the same time the limits—in truth quite broad—of a regulation of offspring." [61] Pius XII thus accepted the principle of regulation. Paul VI implied that the statements of Pius XII as to mean interfering with the natural consequences of the act were not unchangeable. Speaking to the College of Cardinals on June 23, 1964, he said that "up to now we have not sufficient reason to consider the rules laid down by Pius XII in this matter to be out of date and therefore not binding." [62] In 1965, Paul VI indicated that a broader range of

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[57] [Pius XI taught] "che ogni attentato dei coniugi nel compimento dell atto coniugale o nello sviluppo delle sue consequenze naturali, attentanto avente per scopo di privarlo della forza ad esso inerente e di impedire la procreazione di una nuova vita, è immorale; e che, nessuna indicazione o necessita può mutare un azione intrinsamente immorale in un atto morale e lecito.

Questo prescrizione è in pieno vigore oggi come ieri, e tale sara anche domani e sempre, perchè non è un semplice precetto di diritto umano, ma l'espressione di una legge naturale e divina" (Pius XII, Address to the Italian Catholic Society of Midwives, *AAS* 43:843).

[58] "Mais on provoque une stérilisation *directe*, et donc illicite, lorsqu'on arrête l'ovulation, afin de preserver l'uterus et l'organisme des consequences d'une grossesse, qu'ils ne sont pas capables de supporter" (Pius XII, Address to the Seventh International Congress of Hematology, *AAS* 50:735).

[59] "non ea profecto via consilii est invenienda, qua, prater morum disciplinam a Deo statutam, item humanae ipsius vitae proceatio violetur." John XXXIII, *Mater et magistra*, *AAS* 53–446.

[60] "Da quella prestazione positiva obligatoria possono esimere, anche per lunga tempore, anzi per l'intera durata del matrimonio, seri motivi, come quelli che si hanno non di rado nella considetta 'indicazione' medica, eugencia, economica, e sociale. Da cio consique che l'osservanza dei tempi infecondi quo essere *lecita* soto l'aspetto morale; a nelle condizioni menzionate e realmente tale" (*AAS* 43–846).

[61] "Perciò nell' ultima Nostra allocuzione sulla morale coniugale abbiamo affermato la legittimatà e al tempo stesso I limiti—in verità ben larghi—di una regolazione della prole, la quale, contrarimente al cosidetto 'controllo delle nascite' e compatible con la legge di Dio." (Address to the Association of Large Families and the Family Front, *AAS* 43:859.)

[62] *AAS* 56–588.

questions was open for examination and reexamination. Speaking to his Commission on Problems of the Family, Natality, and Population he defined the question they were to advise him on as follows: "In what form and according to what norms ought spouses to accomplish in the exercise of their mutual love that service to life to which their vocation calls them?" [63] This papal opinion that the question of norm and the question of forms may be examined, as well as the papal opinion that Pius XII's "rules" may not be eternally binding, operated to limit and hedge in the apparent absoluteness of the papal strictures of 1930 and 1951.

In addition to the statements of the Popes themselves there has been a series of decrees emanating from the Holy Office and the Penitentiary. Beginning in 1816 and running to recent times these decrees take a premise that contraception is seriously evil. They are largely concerned with three subjects: Cooperation, instruction in the confessional, and sterilization. They taught that formal cooperation in contraception is evil.[64] At the same time by postulating the concept of "passive cooperation" by a woman in coitus interruptus, they gave practical tolerance to women cooperating with husbands who engaged in this form of contraception.[65] They assumed that a confessor must instruct a penitent who could foreseeably be weaned from contraception.[66] At the same time, from 1842 to 1886, they encouraged confessors to tolerate the good faith of penitents practicing contraception who, it was foreseeable, would not be turned from the practice.[67] With this approach encouraged from Rome, contraception spread widely, especially in France. On sterilization they taught that "direct sterilization" was wrong.[68] The qualification "direct" led to a thorough casuistry which distinguished many operations as "indirect" with the malice or innocence of the act turning on the person's intention.[69] These Roman decrees neither carry the full authority of the Sovereign Pontiff acting *ex cathedra*, nor do they, in fact, constitute clear and certain testimony in behalf of the absolute prohibition of contraception.

The papal authority on contraception is, in short, not any stronger than the papal authority which existed in 1450 on usury. It may not be considered as strong. There is only one clear statement by a Pope himself, speaking to the universal Church, which condemns the contraceptive interruption of a coital act in marriage. This single statement, *Casti connubii*, may be evaluated as less authoritative than the repeated teaching of Popes from Lateran II to Vienne, spoken in general councils or gathered in the *Decretals*. It would be difficult to demonstrate that more papal authority was attached to *Casti connubii*, which was primarily based on natural law, than was attached to the repeated statements of medieval popes, primarily based on Scripture, that it was unlawful to seek profit on a loan.

E. THE ORDINARY MAGISTERIUM

In 1450, as far as can be determined from any written record, the bishops and theologians were unanimous in teaching that to seek or take profit on a loan was to commit the mortal sin of usury, condemned by divine and natural law. The unanimity had prevailed for many centuries. Before the condemnation of the ecumenical councils, national or regional synods had denounced usury; more did so after the general councils had spoken. The theologians who wrote on the subject unhesitatingly affirmed the main teachings on it of popes and councils, and their works circulated with ecclesiastical approval in the universities and schools. No theologian was found to deny that Luke 6:35 was a commandment, forbidding all usury; that risk was no reason for a lender to charge for a loan;

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[63] "Dans le cas present, le probleme pose peut se resumer ainsi: dans quelle forme et selon quelles normes les époux doivent-ils accomplir, dans l'exercice de leur amour mutuel, ce service de la vie auquel leur vocation les appelle?" *L'Osservatore romano,* March 29, 1965.

[64] Response of the Sacred Penitentiary November 15, 1816, in *Decisiones Sanctae Sedis de usu et abusu matrimonii*, ed. Hartman Ratzill (Rome, 1943), p. 11; Decree of the Holy Office, April 19, 1933, in *ibid.*, p. 21. Response of the Sacred Penitentiary, in *ibid.*, p. 35.

[65] Responses of the Sacred Penitentiary dated November 15, 1816, April 23, 1822, February 1, 1923, in *ibid.*, pp. 11–15.

[66] Responses of the Sacred Penitentiary June 8, 1842 and 1886 in *ibid.*, p. 18 and p. 30.

[67] Responses of the Sacred Penitentiary June 8, 1842, in ibid., p. 30. For a discussion, see *Contraception*, pp. 400–405, 416–419.

[68] Decree of the Holy Office, 1931, in Hürth, *De re matrimoniali*, p. 105. Decree of the Holy Office, February 21, 1940, *AAS* 32:73.

[69] See *Contraception*, pp. 457–460.

that the very hope of profit constituted the sin of moral mental usury.[70] If, as is commonly done, the ordinary *magisterium* is identified with the common teaching of other theologians, accepted by the bishops and disseminated in the educational institutions of the Church, the teaching of the *magisterium* was indisputable.

At the same time there were signs of discontent with the rule as stated—discontent on the part of the laity most affected by the rule. As early as 1316, when Vienne declared that secular laws could not legitimate usury, it may be inferred that there were some bankers contending that the law of the prince gave them a moral right to usury. By mid-fifteenth century St. Bernardine had to deal with a chorus of protest in Siena, a city built on banking and commercial credit. The upper classes here, by application of the rule on usury and the supporting rules requiring restitution of usury by the heirs and donees of usurers, were almost to a man stained with sinful guilt. Bernardine faced the objection of this financial center that the state could not exist without usury. This objection, he declared, was a blasphemy against God, who would not have commanded the impossible.[71] Bernardine affirmed the old rule; the degree of lay resistance is clear.

Another instance is afforded by trading in the shares of the city debt in Florence. The debt itself had been the result of forced loans, on which, because of their compulsory character, it was deemed proper by some theologians to pay interest. But what was the position of a person purchasing a claim against the city at a discount? He was, in effect, a lender profiting both from the discount and from the interest. Did the usury rule apply to him? Some of the best Tuscan moralists wrestled with the question without being able to reach a result. All was confusion and doubt. St. Antoninus, the well-informed Archbishop of Florence, believed the traffic in city debt illicit, but would not impose this opinion on others. In preaching, he declared, the opinion that the contract was mortal was not to be rashly urged, yet neither was the contract to be publicly approved. It would be best, he concluded, to avoid the topic altogether.[72]

A fourth instance is provided by the actual practice of Catholics in the leading banking centers. They observed the usury rule as it condemned "manifest usury," that is, public pawnbroking or lending at high rates to the poor. In large part, they ignored the rule where loans to businessmen, bankers, or governments were concerned. According to the common opinion of theologians, deposits with banks were just another form of loan, on which profit was forbidden. Yet, according to the disapproving testimony of St. Antoninus, the deposits were a favorite form of investment of monied Florentines.[73] The largest banking organization the world had yet known, the Medici bank, developed with these deposits.[74] Strikingly, the laity made attempt to comply with what seemed to them the basic thrust of the usury rule: interest on the deposits was ordinarily payable only "at the discretion" of the banks; that is, assured profit on the loan was eliminated.[75] But while this common provision was a response to the one purpose of the usury rule, it was not of a kind to satisfy common theological opinion which held that any hope of profit constituted usury. In short, there was a sharp divergence between the theologians' understanding of the usury rule and what the faithful, in a commercial center, found applicable in their own practice.

The lending operations of the Medici bank itself illustrate the same split. The Medici, believing and sometimes pious Catholics, avoided manifest usury; more than that, they avoided direct discounting of bills of exchange, which, though not manifest usury, would still have technically constituted the sin.[76] Yet while the law of the Church was observed to this extent, the Medici carried on an im-

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[70] The first theologian to challenge Urban III's interpretation of Luke 6:35 as a commandment of Christ was Dominic Soto in the first quarter of the sixteenth century (see *The Scholastic Analysis*, p. 346). Soto also made serious inroads on the doctrine of mental usury by teaching that if a man had a right to interest he had a right to hope for it (*ibid.*, p. 257). The first theologian to defend risk as a ground for charging interest was another Spanish innovator, John Medina in the early sixteenth century. This basis was accepted by a Roman congregation only over 100 years in a decision by the Congregation of the Propaganda for Chinese Christians (*ibid.*, pp. 283–285, 289).

[71] St. Bernardine, *De contractibus et usuris* 43.3.1.

[72] St. Antoninus, *Summa* 2.1.11 (at the beginning). For a discussion of the controversy, see *The Scholastic Analysis*, pp. 166–169.

[73] St. Antoninus, *Summa* 2.1.6, 2.1.7.

[74] Raymond De Roover, *The Rise and Decline of the Medici Bank* (Cambridge, 1963), p. 100.

[75] *Ibid.*, p. 102.

[76] *Ibid.*, p. 108–109.

mense business in the extension of credit for a profit.[77] As far as can be observed, they were undeterred and perhaps untroubled by the thought that, according to the unanimous teaching of the theologians, they were often committing sins of mental usury. In other words, they seem to have discriminated between teaching of the theologians and popes which they thought binding and teaching which, in good faith, they could not accept.

The *magisterium*, then, if it is taken to include the conscious acceptance of doctrine by committed Christians affected by it, was not in 1450 absolute in its condemnation of usury in all circumstances. According to the *Dogmatic Constitution of the Church* enacted by Vatican II, the laity have been given "a sense of the faith," and Christian believers announce Christ "by a living testimony" when in the ordinary surroundings of the world they live a life springing from faith.[78] If the laity have a prophetic role to play in the teaching of Christian doctrine, then, it may be argued, the refusal of some of the faithful acting in good conscience to apply the absolute prohibition in special cases in which they had peculiar competence—government bonds, deposit-banking, commercial banking—qualified and limited the apparently absolute rule proposed by the theologians.

The rule on contraception has also not been given full adhesion in the last century by many of the faithful affected by it. Contraception was first practiced on a wide scale in France at the end of the eighteenth century. Although it appears to have begun in areas lacking Christian instruction, by the middle of the nineteenth century it was practiced by many Catholics.[79] Jean Baptiste Bouvier, bishop of Le Mans, writes Rome in 1842 that "almost all the younger couples" of his diocese practice it.[80] Throughout the rest of the nineteenth century there are repeated statements by French clergy to Rome on the wide extent of contraceptive practice among the faithful.[81] There is also widespread testimony to the good faith of those who practice it. The Christian couples who practice contraception in his diocese generally assert their innocence, writes Bouvier. They cannot see what is wrong with an act which "favors mutual love." They appeal to the "more common feeling of Christian parents, otherwise known to be persons of integrity." [82] The advice from Rome until 1886 was to respect the good faith of these couples who will not be convinced to the contrary.

In 1930 Pius XI took notice of the complaint that in some cases the rule was impossible, and rejected the objection.[83] Again, in 1951, speaking to the midwives, Pius XII spoke of the case in which for medical reasons maternity had to be absolutely avoided. For such cases, he taught, sexual abstinence alone was the answer. "But one will object that such abstinence is impossible, that such heroism is unattainable." Like his predecessor, he answered the objection: the commandment of God is not impossible.[84] Like the objections of the Sienese to St. Bernardine, these heartfelt complaints of impossibility to the modern popes constituted testimony from the laity that they found the absolute rule inconsistent with their appreciation of their duty in specific cases. The assertion of "impossibility" has, of course, to be evaluated. Is it only the language of greed, sloth, or cowardice, or does it reflect a reasoned conviction that, given the facts as the person affected by the rule experiences them, God could not have wanted the rule to apply? In the latter case, the cry of "impossible" rises to the dignity of Christian testimony.

In the last decade contraception has been reported to be practiced on a large scale by Catholics in Italy, Spain, Germany, and the Netherlands.[85] The statistical estimates do not afford any light on the good faith of those practicing it, so that it would be hazardous to draw any theological conclusions from this practice alone. After all, Christians every day violate the commandment to love one's neighbor, and no one concludes therefore that the commandment has been repudiated by the Church. The practice of the faithful becomes significant only

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[77] *Ibid.*, pp. 132–135, 141.
[78] *Dogmatic Constitution on the Church*, 4.35. *AAS* 57.30.
[79] Philippe Ariès, *Histoire des populations françaises et de leurs attitudes devant la vie depuis le XVIIIe siècle* (Paris 1948), p. 470.
[80] Jean Baptiste Bouvier, *Dissertatio in sextum decalogi praeceptum et supplementum ad tractatum de matrimonio* (Paris, 18th ed., n.d.) 2.1.3.4.
[81] See *Contraception*, pp. 401–405, 415–419.
[82] Bouvier, *Dissertatio*, 2.1.3.4.
[83] Pius XI, *Casti connubii*, *AAS* 22:559.
[84] Pius XII, Address to the Midwives, *AAS* 43 : 846–847.
[85] See *Contraception*, p. 504 ; Bernard Häring, *Ehe in dieser Zeit* (Salzburg, 1960) p. 365.

if undertaken in good faith, with the conviction that it conforms to Christian law. But if practice alone is not cogent, there has been testimony in several books and articles that educated Christian laymen find no rational basis for the present absolute prohibition of contraception.[86] While some laymen have supported the prohibition, it seems fair to say that in the last two years of candid speech the preponderant voice has been that of rational criticism of the absolute rule. The rule is accepted by many not as a statement of conduct necessary to salvation but as a disciplinary provision of the Church. It seems possible that, since 1840, as many Catholics actually affected by the rule have rejected it as part of the permanent deposit of faith as did Catholics actually affected by the usury rule reject its absolute application in 1450.

In summary, there was authority on usury in 1450 which constituted, apparently, a formidable barrier to departing one jot or tittle from the rule, Usury is the sin of taking profit on a loan. Yet the rule was revised. In 1965 there is authority, though somewhat less authority, which constitutes a formidable barrier to modifying the rule, Any act of impeding the act of marital coitus or its generative consequences is the sin of contraception. Can a consideration of the force of the authority on usury teach us anything on the force of the authority on contraception?

II. IMPLICATIONS

There are three major ways of interpreting the state of authority on usury in 1450. One way is to state that the Church was irrevocably committed by the infallible teaching of the three general councils, by the highly authoritative teaching of popes, by the testimony of the Fathers, by the unanimous agreement of the theologians, by the absolute moral commandments of the Old Testament, by the words of the Lord Himself, to this proposition: It is a mortal sin to take or to seek profit on a loan. This view of the matter has been taken from time to time by traditionalists within the Church—Peter Ballerini in the eighteenth century, Jeremiah O'Callaghan in the nineteenth century, Hilaire Belloc in the twentieth century.[87] These men have been puzzled or outraged by the fact that so many Catholics, so many bishops, so many papal administrations have lived on profits from loans. Evasion, forced compliance with the times, or actual sin have been the discription these men have applied to the behavior of their fellow Catholics and their pastoral leaders.

This view that the Church was committed to the absolute rule of usury was also that of a number of rationalist critics of the Church in the nineteenth century. Andrew White, William Lecky, Henry Charles Lea all pointed to the case of usury as the case where the Church had made infallible pronouncements on moral conduct, where the Church had had to eat its words, where the Church had, in short, been proved wrong.[88] The usury rule was, for these literal readers of the ancient texts, the classic example of an about-face by the Church which disproved forever its vaunted claim to be the infallible arbiter of morals.

The traditionalist Catholics and the rationalist critics agreed in one respect: in a reading of the documents of the tradition as though the prohibitions stated were identical with dogmatic truths, as though the rules were put as eternal guides to eternal values. This way of approaching the documents cannot seem very satisfactory for Catholics today who would have to conclude that either the Church in 1450 or the Church in 1965 was in error and so deny a fundamental Catholic belief in the Church. It is, perhaps, understandable for a nonbeliever to take this approach to the documents. But the nonbeliever has not grasped the secret, that the Church is a living organism and that her law grows. Looked at as an inert rule, intended to fix the behavior of Christians for all times,

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[86] E.g., Louis Dupré, *Catholics and Contraception* (Baltimore, 1964); William Birmingham, *What Modern Catholics Think About Birth Control* (New York, 1964); Michael Novak, ed. *The Experience of Marriage* (New York, 1964).

[87] Pietro Ballerini found most of Italy sunk in usury by application of the medieval rules, Ballerini, *De jure divino et naturali circa usuram* (Bologna, 1747). Jeremiah O'Callaghan's quixotic work attacking all banking as usury and finding it practiced in nineteenth-century America by Catholic bishops and laity alike in *Usury* (New York, 1856). Hilaire Belloc taught that all consumption loans were usurious and that the present world economy was dominated by international usurers, *The Restoration of Property* (New York, 1936).

[88] See Andrew White, *The History of the Warfare of Science with Theology in Christendom* (New York, 1922) II, 264; William Lecky, *History of the Rise and Influence of the Spirit of Rationalism in Europe* (London, 1904) II, 258 ff; Henry Charles Lea, *The Ecclesiastical Treatment of Usury, Yale Review* 2 (1894) 375–385.

the usury prohibition conflicts inexplicably with the subsequent life of the Church. To those who believe in the Church, and who consequently do not believe that error on a massive scale could dominate her teaching, there must be another approach to the documents.

A second approach then, which might recommend itself to Catholics, would be to urge that the teaching in 1450 was not as absolute as it appeared because it was limited by its partial nonacceptance by those most vitally affected by it. This solution would point to the conscious, good-faith rejection of the rule by Catholics in the financial centers as testimony that the rule was never taught by the Church with all the force that a simple inspection of its language would convey, that always there was an implicit exception for cases where the main purpose of the rule was not jeopardized. The *magisterium*, it would be argued, was never committed beyond what all believers assented to. The teaching proposed by the *magisterium* was not an absolute prohibition.[89]

This approach, it may be felt, runs too much the risk of making moral law in the Church depend on democratic adhesion. After all, there had been statements by popes and councils which recognized no exceptions; after all, these statements had been accepted by those most trained to recognize the requirements of Christian moral law, that is, the theologians. If the rule on usury failed to be infallibly taught only because small, specialized minorities of Catholics failed to accept it, what other moral doctrines might not also be put in question? The doctrine on the just war might, for example, be considered fallible because so many Catholic generals at least appear never to have adhered to it. The appeal to good faith has its evident dangers. Moreover, to give practice moral validity, it is necessary to ask, Why was the rule limited? In the case of usury what was the basis on which the bankers and their deposit might legitimately claim an exception? These questions are answered only by posing, in turn, the question, What was the purpose of the usury rule? This question inescapably leads to a different, a third approach.

The third approach is to look at the purpose of the rule, to ask not, What was absolutely prohibited? But, Why was an absolute prohibition enacted? This question may be subdivided further: What goods was the Church attempting to protect? What goals was the Church seeking to achieve? What was the function of the rule? If these questions are posed, it may be answered that the goods the Church was protecting were justice and charity; that the goals it sought were the protection of the poor from exploitation, the encouragement of the avaricious to share their wealth, and the proper distribution of capital for the life of the community. The function of the usury rule was to achieve these ends, to protect these values. In the medieval village economy, the Church's rule functioned as it was intended to. Western Europe never knew the plague of village usurers that stifled ancient Greece or twentieth-century China.[90] Money was channelled into risk ventures. The poor were helped in gratuitous ways. The usury rule was a good rule for this society.[91] But this working rule, designed in the form of and absolute prohibition, was not to be confused with the unchanging moral law. The third approach, then, looks at the goods protected, the purposes of the rule enacted. Generalized, it takes the form of the proposition that specific moral rules enacted by the Church may be taken as sure guides for the periods for which they are enacted, but that they are not beyond reexamination and revision to preserve their purpose and to protect the permanent goods they safeguard.

The Church is committed to proclaim to the end of time the example of Christ, to repeat to each Christian His "new commandment" to love other men "as I have loved you." The proclamation of the Gospel necessarily invloves the teaching of justice and charity. But what acts are just and charitable depends

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[89] This kind of reasoning would start from the proposition that "The entire body of the faithful annointed as they are by the Holy One, cannot err in matters of belief. They manifest this special property by means of the whole people's supernatural discernment in matters of faith when, 'from the bishops down to the last of the lay faithful' they show universal agreement in matters of faith and morals" (*Constitution on the Church* 2.12). But if all the faithful can't be wrong in such a case, does the dissent of some of the faithful mean that the bishops are wrong? An affirmative answer is not compelled by the propositions quoted.

[90] For a comparison of medieval Europe and ancient Greece, see Henri Pirenne, *Medieval Cities* (trans. F. D. Halsey, Princeton, 1925), p. 126. On the extremely high interest rates that existed in China, see Lien-sheng Yang, *Money and Credit in China* (Cambridge, 1952), pp. 93–98.

[91] *Scholastic Analysis*, p. 195.

on the concrete circumstances of a society. If the economy changes, the requirements of justice and charity will change; some acts will receive more moral emphasis, others less; the moral attitude toward certain activities will be altered; the rules prescribing certain acts and proscribing others will undergo reexamination. What has been thought to have been essential may be seen as essential only in a given context. Such reexamination occurred with respect to the usury rule. The purpose of the rule, to guide men in economic transactions with each other to love each other, was better realized by a new rule, and the absolute prohibition of usury in the old sense was effectively rewritten by the theologians from 1450 to 1600. The third approach explained how this was possible without error by the Church.

Any one of the three approaches might also be taken to the rule on contraception. It might be argued that the Church by reason especially of the unbroken theological teaching, authoritatively reaffirmed by Pius XI in *Casti connubii*, is irrevocably committed to the absolute prohibition of contraception. This view has been expressly stated by some moral theologians.[92] Uppermost in their minds has been the thought that for the Church to relax its prohibition would be for the Church to change. To modify the rule would be to admit error. The infallibility of the Church would be disproved. The Church would have been wrong. These conservative voices within the Church have not been joined by those of skeptical critics outside the Church (but it is reasonable to hypothesize that if the absolute prohibition were modified, a host of unsympathetic enemies, including some now urging the Church to change, would point to the modification as evidence of fallibility. The modern counterparts of Lecky, Lea, and White would reappear to cite the case as an about-face proving the relativity of morals and unmasking the pretensions of the Church. Again conservatives and skeptics might find themselves in the same camp.)

The second approach to the documents of the tradition might also be attempted. It could be argued that the *magisterium* is not clear, because, at least in the modern era beginning in the nineteenth century, many of the faithful affected by the law have refused adherence to it as a requirement of revelation and have, at most, taken it as a provisional disciplinary law of the Church. The utterance of Popes, bishops, and theologians would then be read as limited by the sense of the faithful, and it would be maintained that the clear articulations of ecclesiastical authority could never go beyond what the Church as a whole believed, and that the lack of true consensus among the faithful prevented the Church from pronouncing infallibly or certainly upon the subject. Again, the objection to this approach is evident. The failure of the faithful to put moral teaching into practice cannot be the test of its validity. The failure of a portion of the faithful most affected by the teaching to accept is cogency may not be a proper criterion if bias or self-interest can be found to infect their response. The lack of unanimous assent to a teaching only raises a question: On what grounds is the teaching found inapplicable? To answer this question is to turn to the third approach, which looks at the purpose of the rule.

The third approach here looks at the goods the absolute prohibition of contraception has sought to protect and the goals it has sought to achieve. These goods may be summarized in four propositions. Procreation is good. Innocent life may never be directly attacked. The personal dignity of a spouse must be respected by the other spouse. Sexual love is holy in marriage. In the context of an assault on procreation, carried on by various dualist groups for over twelve hundred years, the rule on contraception functioned to protect the value of the procreative act. In the context of environments where embryonic life was held cheap and where methods of abortion and contraception were not sharply distinguished, the rule functioned to protect innocent young life by treating every step in the process of generation as sacred. In the context of environments where personal freedom in the choice of a spouse was rare, and danger of exploitation of the woman great, the rule operated to save the procreative dignity of the wife. In the context of the close association of contraception with adultery and fornication, the prohibition reinforced marital fidelity.[93] If these goods could be safeguarded without an absolute rule on contraception, then the rule might be revised if a shift in the environment made revision desirable.

The rule on contraception worked without any criticism until the end of the eighteenth century. It very gradually became an object of criticism in the nine-

[92] See Ford and Kelly, *op. cit. supra*, n. 55 and authorities collected there.
[93] *Contraception*, pp. 532–533.

teenth century, and only after 1850 did environmental changes begin to accumulate which affected its validity. These changes include the immense increase in the rate of population growth largely brought about by the control of disease, the change in the legal and social status of Western women, making them in little need of paternalistic protection, and the development in the West of college education on a mass scale. The cultural environment in which marriage takes place is not that of the Roman Empire in which the rule on contraception was adopted, nor that of medieval Europe in which the rule was reaffirmed.[94] If the rule was framed to respond to the dangers of particular environments it might be reconsidered in relation to our own.

The third approach refuses to identify the rule on contraception with the content of Christian revelation. It denies that the rule here, any more than the rule on usury, is part of the eternal gospel of Jesus Christ. The command to "love one another as I have loved you" may be made specific in particular environments by the rule of the Church on contraception, but the Church is always free to look again, to see if, in a new environment, the rule is still the best specification of the commandment of love. It is with that sense of freedom that Pope VI asked his Commission on Problems of the Family, Natality, and Population: "According to what norms and in what form should the spouses in their exercise of mutual love accomplish that service to life to which their vocation calls them?" The question, it seems, could not have been asked if the third approach had not seemed open.

CALIFORNIA MOVES TO MEET THE CHALLENGES OF POPULATION GROWTH

Senator GRUENING. Earlier this year an international convocation on the subject of population control was held at the University of California Medical Center in San Francisco. One of the speakers was California's able and farsighted Gov. Edmund G. (Pat) Brown.

Governor Brown thoughtfully had the administrator of the State of California's Health and Welfare Agency send the Subcommittee on Foreign Aid Expenditures a copy of the speech he made at the symposium so that the subcommittee would have a better idea of what California is doing in this vital area.

Because the work of California is important and of general interest, I ask unanimous consent that the full text of Administrator Paul D. Ward's letter of January 19, 1966, and Governor Brown's remarks be printed in the hearing record at the close of my remarks.

According to Governor Brown the population of California increases by nearly 600,000 each year. Today these are 18½ million Californians. Population projections indicate that by 1970 the number will be 21,750,000 and by 1980, nearly 28 million. Today the growth demands in California are heavy.

CALIFORNIANS BUILD 15 SCHOOLS A MONTH TO MEET GROWTH DEMANDS

Governor Brown said on January 15:

"To meet it, we build three elementary schools a week and three high schools a month. We put down enough highway to take care of half a million new cars a year and hire about 2,500 new policemen to enforce the law. Every year, we provide new and expanded government services for enough new residents to fill the city of San Diego."

Governor Brown emphasized that about 40 percent of California's population growth is due to natural increase—intensified, of course, by migration.

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[94] On these environmental changes, *Contraception*, pp. 476–480.

Governor Brown described the progressive steps his State has taken to meet the population explosion. These include:

1. The offering of family planning services in health departments in 33 counties or cities. The services range from distributing devices to referring families to family planning agencies;

2. Action by the State legislature repealing an archaic law against dissemination of information on family planning which the Governor signed into law;

3. Adoption by the State legislature of two resolutions: one urging the Congress to provide funds for the National Institutes of Health to launch a major research program on fertility control; the other recommending that Public Health Service programs should include family planning services.

Said Governor Brown:

"There is, in short, a growing realization in California that uncontrolled population growth is a serious public problem and that limiting births is an acceptable means—if not the only means—of dealing with it.

"Our people see with increasing clarity the question is at once a medical problem, a social problem, and an economic problem."

Added Governor Brown:

"It also has a spiritual aspect which is of equal importance but is an aspect which each person must decide within his own conscience."

LACK OF INFORMATION "FORGES SOCIAL AND ECONOMIC CHAINS" FOR THE POOR

California is also taking steps to make information available to the poor who lack the freedom of choice available to the affluent Californian. Governor Brown correctly said that the lack of information "forges social and economic chains" for the poor.

He said:

"The California approach to helping the poor gain freedom of choice in determining the size of their families has been largely through the medical aspect of the question. We are pursuing that approach because we believe it is an avenue of progress."

He hopes the State's new medical care program which began on March 1 will help because:

"Through access to their own physician, we hope they will gain the freedom of choice in family planning which the doctor-patient relationship has gained for others. If our expectations for this program are met, California will have moved far along the road toward a compassionate, reasoned, and effective program of population control."

But Governor Brown does not believe that a State growing as fast as California can rest on its present programs. California, he reasons, "must anticipate the challenges and the potentials of the future. This is particularly so in the field of population growth and planning."

GOVERNOR BROWN TO APPOINT A POPULATION STUDY COMMISSION

He then announced his intention to name a panel of distinguished Californians as a Population Study Commission to "review what the State and counties are doing to increase freedom of choice in family

planning for all Californians. I will ask this broadly representative group to present its conclusions and recommendations to me in advance of the 1967 general session of the legislature."

Governor Brown has asked the California Population Study Commission "to make clear to all Californians the danger which unbridled population growth pose to all our resources" because he believes that the exhaustion of a single resource such as clean air, livable cities, schools, natural beauty, to name but a few, will lower the quality of life in California.

He said in conclusion: "Only when we are clear on the alternative to population control can we exercise our freedom of choice intelligently for the good of ourselves, our families, and our communities."

EXHIBIT 63

LETTER TO SENATOR GRUENING FROM PAUL D. WARD, ADMINISTRATOR, HEALTH AND WELFARE AGENCY, STATE OF CALIFORNIA

JANUARY 19, 1966.

HON. ERNEST GRUENING,
U.S. Senate,
Chairman, Subcommittee on Foreign Aid Expenditures,
Committee on Government Operations,
Washington, D.C.

MY DEAR SENATOR: Knowing of your interest and very able advocacy of improved birth control programs in the United States, Governor Brown has asked me to send you the enclosed copy of a speech which he gave last week in San Francisco to an international convocation on the subject of population control. He hopes this will be of some help to you in your continuing hearings on your bill and in knowing what California is doing in this very vital area.

Sincerely,

PAUL D. WARD,
Administrator, Health and Welfare Agency, State of California.

EXHIBIT 64

ADDRESS BY GOV. EDMUND G. BROWN

(Given at a symposium in the University of California Medical Center, San Francisco, Calif., January 15, 1966)

California is honored by the presence of this distinguished company. On behalf of the people of our State, it is a pleasure for me to bid you welcome. We are honored by this event and we are grateful to our great university for once again bringing the finest minds of the world to bear on a problem of our State and our World.

Very briefly, I would like to tell you how the government of 18½ million Californians shares the concern which has brought you together; what we have done to translate that concern into action; and what we consider remains to be done.

Your subject is of special interest to this State and to its public officials. California is the destination of one of the greatest mass migrations in history.

Each year our population increases by nearly 600,000. This growth has been the chief concern of State government. To meet it, we build three elementary schools a week and three high schools a month. We put down enough highway to take care of half a million new cars a year and hire about 2,500 new policemen to enforce the law. Every year, we provide new and expanded government services for enough new residents to fill the city of San Diego.

And population will continue to be State government's chief concern long after its present leaders are gone. For projections indicate that by 1970 there will be 21,750,000 Californians; by 1980, nearly 28 million.

Because migration has played such a dramatic role in California's population growth, it has been easily assumed that it plays far and away the largest role; that California's growth cannot be controlled short of sealing off our borders.

But that easy assumption is not true. Around 40 percent of California's population growth is due to natural increase.

The fact is that the large social, economic, and governmental problems associated with California's population growth are related to natural increase here as elsewhere. And in California they are intensified by population growth due to migration. There is an added dimension—a certain poignance—about the question of unbridled population growth in California and its effect upon us.

It stems, I believe, from two factors. The first: our traditional role in the American history as the last frontier, the western terminus of great transcontinental movement. The second: the nearly incredible and varied resources of natural beauty for which California is known. I will say more about the importance of these resources in the face of population growth in just a moment.

In the midst of our growth to preeminence among the States in terms of population and wealth, California government has not been unmindful of the need for population control. Through the leadership of our State department of public health, health departments in 33 counties or cities have developed programs offering some type of family planning services. Those services range all the way from distributing devices to referring families to family planning agencies.

The California Medical Association has resolved: "That an adequate medical program should include family planning education and services."

Our State legislature just last session took three steps of interest in this area. It passed and I signed into law Assembly Bill 219 wiping off the books an archaic law against dissemination of information on family planning. Further, it adopted two resolutions: one urging the Congress to provide funds for the National Institutes of Health to launch a major research program on fertility control; the other recommending that public health service programs should include family planning services.

Additionally, some cities and counties are taking advantage of funds from the Federal War on Poverty and other programs to launch various family planning services.

There is, in short, a growing realization in California that uncontrolled population growth is a serious public problem and that limiting births is an acceptable means—if not the only means—of dealing with it.

Our people see with increasing clarity that the question is at once a medical problem, a social problem and an economic problem.

As such, it bears with disproportionate weight on poor Californians. But because how population increase is controlled is the key to what life will be like in California in the future, it bears on all Californians regardless of station.

I have called attention to the medical, social, and economic aspects of population control. It also has a spiritual aspect which is of equal importance but is an aspect which each person must decide within his own conscience. In California, the leaders of the major religious faiths have made it clear that while family planning is a moral and religious question, it is also a question for human reason, human compassion, and human action. I believe we are fortunate to have such leadership among the religious of our State.

Because this is a moral question, it seems to me the State's action should be limited to providing and insuring the freedom of choice without which the individual cannot make a truly moral decision. That freedom of choice does not seem to be lacking in any serious degree for the affluent Californian. But for the poor Californian, the lack of freedom of choice is great.

And his lack of freedom in the planning of his family forges social and economic chains for him.

In an exhaustive study of the nature of poverty and dependency on welfare, the State social welfare board last year found three main reasons for unemployment: low occupational skills; little education; and large family size. The board found that about 15 percent of California's intact families with children under 18 have six or more members in the family. But about 60 percent of the intact families on welfare have six or more members.

The California approach to helping the poor gain freedom of choice in determining the size of their families has been largely through the medical aspect of the question. We are pursuing that approach because we believe it is an avenue of progress. In addition to strengthening family planning services through

public health departments, we hope that our new medical care program which begins March 1 will take us a long way forward in the field of family planning. This program will use new Federal funds provided under title 19 of the 1965 amendments to the Social Security Act to build a system of prepaid medical insurance for many of California's poor. Because they will be guaranteed free choice of doctors and hospitals under this program, they will have access to the mainstream of high quality American medical and health care from which they have been excluded up to now. Through access to their own physician, we hope they will gain the freedom of choice in family planning which the doctor-patient relationship has gained for others.

If our expectations for this program are met, California will have moved far along the road toward a compassionate, reasoned, and effective program of population control.

But a State which is growing as fast as ours cannot rest on present programs. It must anticipate the challenges and the potentials of the future. This is particularly so in the field of population growth and planning.

For this reason, it is my intention to name a panel of distinguished Californians as a Population Study Commission. It will be their task to review what the State and counties are doing to increase the freedom of choice in family planning for all Californians. I will ask this broadly representative group to present its conclusions and recommendations to me in advance of the 1967 general session of the Legislature.

It also will be the task of this commission to make clear to all Californians the dangers which unbridled population growth pose to all our resources. I believe we have too frequently interpreted those dangers in terms of pressures on our supplies of food and fiber. That is the least concern in California, the nation's leading agricultural producer. But we have other resources which have less flexible limits: clean air, livable cities, open space, natural beauty; and cultural facilities such as schools, libraries, recreational facilities. All of these resources contribute to the quality of life in our State. The exhaustion of any one of them will lower that quality.

Only when we are clear on the alternatives to population control can we exercise our freedom of choice intelligently for the good of ourselves, our families and our communities.

BIOGRAPHIC STATEMENT: ANDRÉ J. DE BETHUNE

Senator GRUENING. The Subcommittee on Foreign Aid Expenditures calls as its next witness Dr. André J. de Bethune. Dr. de Bethune is a professor of chemistry at Boston College, Chestnut Hill, Mass., and the author of numerous scientific papers.

The attention of the subcommittee was first directed to Dr. de Bethune when his article entitled "Rhythm—Mathematical Probability of Success and Failure" came to its attention. If the population dialog now underway in our country is to be meaningful then it must include research findings which have been conducted by concerned citizens who seek acceptable and reliable methods of family planning which are in keeping with the beliefs of the individuals concerned.

Professor de Bethune's article to which I have referred was placed in the hearing record last year.

Dr. de Bethune, his wife, and their nine children live in Wellesley, Mass. He was born in Brussels, Begium, on August 20, 1919. He came to the United States at the age of 8, and in 1933 became an American citizen. Dr. de Bethune was educated in public and parochial schools, at St. Peter's College in Jersey City, N.J., and at Columbia University where he earned his Ph. D. degree in physical chemistry and did war research on the Manhattan project under Prof. Harold C. Urey.

He has been a National Research Council fellow at the Massachusetts Institute of Technology and a Guggenheim fellow at Yale.

Since 1947 he has been a member of the faculty of Boston College, a university of 14 colleges and schools conducted by the Jesuit Fathers, located in the cities of Boston and Newton and in the postal district of Chestnut Hill. Professor de Bethune is acting chairman of the chemistry department. His research is in kinetic theory of gases, in theoretical electrochemistry, and in population problems.

His more than 30 scientific papers include:

(1) "Child Spacing—the Mathematical Probabilities," Science, 142, 1629–1634 (1963).

(2) "Rhythm Method—Mathematical Probability of Success and Failure," Journal of the International College of Surgeons, 43, 327–333 (1965).

(3) "Natural Oligospermia and Rhythm," Boston College Cosmos, 7, 113–134 (1965).

Dr. de Bethune, the subcommittee understands that your wife Margaret is with you today and has a contribution of her own to make to the population dialog.

The subcommittee has learned Mrs. de Bethune was born August 8, 1927, in New York City. She was educated in parochial schools and studied at St. John's University in Brooklyn and at Grailville Community College, Loveland, Ohio.

We understand today that you and your wife speak as private citizens, and, most important, as a father and a mother.

We would like very much to have you come forward and testify in whatever way you see fit. We are very happy to have you here and very happy you could come.

STATEMENT OF DR. ANDRÉ J. DE BETHUNE, AUTHOR AND PROFESSOR OF CHEMISTRY, BOSTON COLLEGE, CHESTNUT HILL, MASS.

Dr. DE BETHUNE. Thank you very much, Senator. My name is André J. de Bethune. I live at 223 Weston Road, Wellesley, Mass. I am professor of chemistry and acting chairman of the Chemistry Department at Boston College, but today I wish to speak only as a private citizen and as the father of a family.

A year ago, President Lyndon Johnson, in his state of the Union message to Congress and to the people said:

> I will seek new ways to use our knowledge to help deal with the explosion in world population.

Pope John XXIII addressed the same problem in his encyclical letter "Mater et Magistra" when he showed his concern over the "aucta cumulatius hominum multitudo"—the ever-increasing multitude of men piling up.

THE DE BETHUNES EXPERIENCE "POPULATION EXPLOSION AT HOME"

Today, my wife, Margaret, here present, and I propose to speak to you about our experience with the population explosion at home. My wife and I were married in June 1949, according to the rites of the Roman Catholic Church. We were well acquainted with our church's disapproval of artificial birth control on moral grounds, but we also knew that our church permitted child spacing via the rhythm

method. Our first experience of child spacing via rhythm began after the birth of our first child, a girl, in September 1950. Our first attempts were made by the calendar method. This resulted in two more children, a second girl and a boy, within the next 36 months, after spacings of 14 and 22 months, respectively. These spacings included periods of 5 months and 13 months, respectively, of total abstinence or rhythm divorce. We computed Ogino rhythm calendars with wide safety margins, calling for 2 full weeks, and 3 full weeks, respectively, of abstinence in cycles of 30 to 35 days in length. In both cases, *the rhythm method failed in the very first month of its application*, evidence that my wife had had each time a late ovulation.

WHEN THE "CALENDAR METHOD" FAILED THEY TRIED THE "BBT" METHOD

After our third child, our obstetrician put us on the thermometer, without, however, guaranteeing any results. The temperature method of rhythm is based on the daily morning observation of a woman's temperature, at the moment of awakening, before rising—this is known as the basal body temperature or BBT. An ordinary fever thermometer may be used; many people prefer a special BBT thermometer with an expanded scale in the interval from 95° to 100° Fahrenheit. Special BBT thermometers could not be sold in the State of Connecticut under that State's recently invalidated birth control laws—courses of instruction in the use of BBT are still illegal in Massachusetts under the birth control laws of the Commonwealth.

A woman's basal body temperature normally shows a small but definite temperature rise of about one-half to three-quarters of a degree Fahrenheit at ovulation, and an equal temperature drop at menstruation. Thus, in principle, the temperature chart gives the timing of ovulation. In practice, there are many difficulties and pitfalls—false rises, multiple rises—which obscure the chart and make it difficult to interpret.

NINE CHILDREN IN ELEVEN YEARS

With, or despite, the help of the thermometer as a child-spacing device, we were to have six more children during the next 99 months: a second boy after 17 months, a third girl after 16 months, a third boy after 16 months, a fourth girl after 16 months, a fifth girl after 17 months and a fourth boy, our ninth child, after 17 months. The difficulties we had with the thermometer are best illustrated by the last of this group of cycles. In this cycle, we entered rhythm divorce on the seventh day, the day after cessation of menstrual bleeding. The temperature rose about two-thirds of a degree Fahrenheit on the 16th day, dropped, and recovered from the 19th through the 22d day going up to its normal high level. We then broke the rhythm divorce. The temperature then unexpectedly dropped about one-third of a degree Fahrenheit until the 33d day when it rose again to its previous high level, and stayed high, and my wife was pregnant. Here is an instance of an ovulation which occurred, as proved by pregnancy, some 12 to 14 days later than the timing deduced from the temperature chart. My wife's cumulative pregnancy rate, from the birth of our

first to the birth of our ninth child, was eight pregnancies in 11¼ years for a pregnancy rate of 71 per 100 woman-years total time. The normal pregnancy rate is 100, or one child per year, for a fertile population that practices no family limitation. A medically acceptable method of family limitation should have a pregnancy rate no higher than 10 per 100 woman-years.

Our ninth child is now 4 years and 2 months old. If we have had no more children since, it is no thanks to the rhythm method. I would like to put into the record the type of cycles my wife has been experiencing since the birth of our baby in December 1961. There was first a period of 104 days of amenorrhea, this was followed by a cycle of 83 days in which ovulation, as detected by BBT, occurred on the 80th day; then a cycle of 39 days; then a cycle of 19 days with ovulation on the 11th day; then a cycle of 36 days with ovulation on the 29th day; then a cycle of 43 days with ovulation on the 36th day; then a cycle of 28 days with ovulation on the 21st day; then a cycle of 41 days with ovulation on the 32d day; then a cycle of 32 days with ovulation on the 28th day; then a cycle of 36 days with ovulation on the 31st day; then a cycle of 44 days with ovulation on the 32d day; then a cycle of 34 days with ovulation on the 28th day; then a cycle of 74 days with ovulation on the 65th day; then a cycle of 34 days with ovulation on the 24th day; then a cycle of 45 days which was anovulatory; then a cycle of 20 days with ovulation on the 17th day; then a cycle of 52 days with ovulation on the 48th day; then a cycle of 34 days with ovulation on the 24th day; then a cycle of 48 days with ovulation on the 42d day; then a cycle of 46 days with ovulation on the 37th day; then a cycle of 32 days which was anovulatory; then a cycle of 20 days with ovulation on the 16th day; then a cycle of 43 days which was anovulatory; then a cycle of 38 days which was anovulatory; then a cycle of 40 days with ovulation on either the 29th or the 36th day; then a cycle of 33 days with ovulation on the 30th day; then a cycle of 43 days with ovulation not recorded; then a cycle of 32 days with ovulation not recorded; then a cycle of 36 days with ovulation not recorded; then a cycle of 50 days with ovulation on the 33d day; then a cycle of 49 days with ovulation not recorded; then a cycle of 38 days with ovulation not recorded; then a cycle of 30 days with ovulation not recorded; then a cycle of 53 days with ovulation on the 44th day; then a cycle of 53 days with ovulation on the 31st day; then a cycle of 34 days with ovulation on the 26th day.

CONCLUSION: RHYTHM METHOD "COMPLETELY IMPRACTICABLE" FOR DE BETHUNES

It is clear from the record presented to you that rhythm—calendar or BBT—is completely impracticable for my wife and for me. The advice that we use the rhythm method to regulate the further growth of our family must be considered either a bad joke or a display of invincible ignorance. The etiology of our recent infertility remains obscure. It is only this year that my wife has found time, at the urging of friends and at my urging, to undertake a long-needed course of gynecological treatment.

SOME "LITTLE KNOWN" PAPAL STATEMENTS ON FAMILY PLANNING

In bringing this personal tale to a close, I would like to base my further reflections on certain authentic, but little known and poorly understood statements of the popes. Pope Paul VI has repeatedly let it be known that he is waiting for his papal population commission to reach a workable consensus before he can "feel obliged in conscience to change" previous papal norms. It is my belief that these existing papal norms can be used to justify much more extensive research and development in family planning than has usually been thought to be the case. Let me show you how.

In his address of October 29, 1951, to the Italian Union of Obstetrical Nurses, Pope Pius XII said:

> To spouses, who make use of the specific act of the marriage state, nature and the Creator enjoin the function of providing for the preservation of mankind. This is the "gift of children" which gives to their state its proper value. From the positive obligation of procreation, married couples may be exempted, for a long time, or even for the whole marriage, by serious motives such as those often found in the medical, eugenic, economic and social "indication".

On November 26, 1951, Pope Pius XII spoke to the Italian Family Front. Here he said:

> The primary office of marriage is to be at the service of life. But the Church can consider with sympathy and comprehension the real difficulties of married life in our own day. We have affirmed the legitimacy and the truly broad limits of a regulation of births, which, unlike so-called "birth control," is compatible with the law of God. One may even hope that medical science will succeed in giving to this licit method of sufficiently secure foundation, and the most recent information seems to confirm such a hope.

POPE PIUS XII SPEAKS OF "THE REGULATION OF BIRTHS"

In this address to the Italian Family Front, Pope Pius XII coined the expression "the regulation of births" to emphasize the moral legitimacy of intentional family limitation and to distinguish it from so-called "birth control," as condemed by the Roman Catholic Church. Wherein does the distinction between the two lie? To establish this distinction, Pope Pius XII went back to the writings of his predecessor, Pope Pius XI, in his encyclical letter of 1930 on marriage. In this encyclical, Pope Pius XI had condemned birth control "by human industry," but did approve of conjugal relations "conducted in a rightful and natural manner, even though a new life cannot spring forth because of natural causes." Later on, in his address of October 29, 1951, already alluded to, Pope Pius XII expressed his approval of "the observance of times of infecundity." In his address of September 12, 1958, Pope Pius XII approved of "the taking advantage of natural temporary sterility."

NATURAL TEMPORARY STERILITY FOR MALES: A NEW APPROACH

There is nothing in these papal words that restricts these principles to the female sex. Yet for the past 36 years, studies on the natural methods of family limitation have been concentrating almost exclusively on the regular or irregular rhythmic cycle of fertility and sterility of woman. The "taking advantage of natural temporary

sterility," to use Pope Pius XII's own expression, in the male sex is equally valid in the light of the papal principles.

CLOTHING MAY AFFECT MALE FERTILITY

Pioneering research by Dr. Watanabe of the Kyushu Medical School and by Drs. Rock and Naville of Harvard Medical School on the natural reversible oligospermia (or reduced sperm count) of men was reviewed by me in the Boston College "Cosmos" for the spring of 1965. These researches suggest that, in oligospermia, man has access to a temporary natural reversible condition of reduced fertility, brought about by the regulatory function of natural body heat on the rate of spermatogenesis in the testes. This is something which can apparently be achieved through a judicious selection of clothing. The effect is reversible: there are instances, recorded in medical history, where oligospermic men were enabled to achieve fatherhood through a change in their type of clothing. What we can learn in the future about natural reversible oligospermia in human males may well prove to be the adjunct needed to transform the natural rhythm from a statistically unreliable into a statistically reliable method of "regulation of births," to use Pope Pius XII's own expression, in fulfillment of a fervent hope publicly expressed by that great pontiff as far back as 1951.

The use of hormonal therapy, that is to say, of hormone pills, to regularize cycles, is also an area that should be mentioned, but I have no competence to discuss it.

CARDINAL SUENENS AND PRESIDENT JOHNSON CALL FOR "NEW WAYS"

I should like to close with three brief quotations.

From the address of Cardinal Leon Joseph Suenens, archbishop of Brussels and Malines, to the World Catholic Health Congress, held in Brussels in 1958. Cardinal Suenens was then bishop, and professor of moral theology at the Catholic University of Louvain. He said:

> We cannot ask men to respect a law, without doing all in our power to make obedience possible, without teaming up all our energies to open up new ways.

I would like to bring out the parallelism between Cardinal Suenens' statement and President Johnson's. Both the cardinal and the President called for *new ways* of dealing with this problem.

From the Second Vatican Council's constitution on the church in the modern world, promulgated by Pope Paul VI in December 1965.

"THE CHURCH WELCOMES 'THINGS NEW AND OLD' (MATTHEW 13:52)"

> Those skilled in biological, medical, social and psychological sciences can contribute greatly to the good of marriage and of the family and to the peace of consciences, if by pooling their studies, they strive to elucidate the conditions favorable to an honest ordering of human procreation.

From Pope Paul VI's address of March 27, 1965, to the Special Papal Commission on Population Problems:

> The Church at all times has been concerned to give adequate answers to the great problems facing men. For this purpose, and according to the advice of

the Lord, the Church welcomes "things new and old" (Matthew 13:52). While very difficult problems are raised, is there not also the heralding of solutions for problems which seem today so difficult to solve? We want to believe and hope so.

DR. DE BETHUNE EXPRESSES "WHOLEHEARTED SUPPORT FOR S. 1676"

These purposes, as expressed by Cardinal Suenens, by the Second Vatican Council, by Pope Paul VI, as well as by President Johnson, can well be subserved by Senator Gruening's bill calling for the creation of Offices of Population Problems in the Department of State, and in the Department of Health, Education, and Welfare, and for the holding of a White House Conference on Population Problems. Therefore, as an individual citizen of the United States and of the Commonwealth of Massachusetts, as an individual Catholic, and as the father of nine children, I wish to express my wholehearted support for S. 1676.

Senator GRUENING. Well, thank you very much, Dr. de Bethune. You have made a very real contribution to this discussion. May we conclude from your very detailed and careful testimony that the rhythm method so far as Mrs. de Bethune and you are concerned was a failure?

Dr. DE BETHUNE. In our own personal experience, as an individual family, it was a failure.

Senator GRUENING. Would you make any general deduction from that as to its fallibility or nonfallibility in general? Would you say that your experience was unusual, exceptional or not?

"DIVORCE WITHIN THE SAME HOUSE"

Dr. DE BETHUNE. I would like to qualify my answer under two headings, Senator.

We know many other families whose experience have paralleled ours. We know some families where—one family, specifically, of six children—where the husband and wife finally decided to live a life of what I would call divorce within the same home, and this has been going on for 4 or 5 years now. They cannot trust the rhythm method and they feel in conscience they can do nothing else. This is by no means uncommon.

It is also true, as Professor Barrett pointed out, that medical research on the temperature method has been applied with increasing success for certain groups of people. With proper motivation and guidance, a certain measure of success can be achieved. I believe my wife would like to tell you something about that, the experiences of other people, not ours.

HOW EFFECTIVE IS RHYTHM METHOD AMONG POOR?

Senator GRUENING. We would be very happy to hear from Mrs. de Bethune.

I would like to make this observation in your case and the case of those people you know. You are people of intelligence, education and clearly with a firm determination based on your religious belief to make this rhythm method work. Is it fair to conclude that in the case

of people with less education, less restraint, the probabilities of failure would be even greater, particularly in the slums, the favelas and barriadas to which Dr. Barrett referred where people do not have the opportunity to watch the calendar or take these regular observations. Would not the probability of failure be infinitely greater?

". . . THE WHOLE PROBLEM OF FAMILY PLANNING . . . HINGES UPON MOTIVATION . . ."

Dr. DE BETHUNE. I would answer affirmatively. I think the whole problem of family limitation, regardless of the methods, hinges upon motivation and motivation in the case of rhythm must be extremely strong if any success is to be achieved.

Senator GRUENING. Does not this divorce within the same home to which you alluded impose a great deal of hardship and distress and deprivation on the part of those people? It is a great tribute to the quality of their faith that they are willing to undergo that.

Dr. DE BETHUNE. I would answer affirmatively—it does cause a great deal of hardship. I do not want to get emotional about it. I will just say yes.

Senator GRUENING. Mrs. de Bethune, we would be very happy to hear from you.

STATEMENT OF MRS. ANDRÉ J. (MARGARET) DE BETHUNE

Mrs. DE BETHUNE. Senator Gruening, it is very nice of you to listen to me because I am not an expert, but I have some very definite views about these things. And I would like to say about this particular case you are referring to: It is a sin against the marriage to live in this way, it brings disintegration within the family for this to go on. I mean, self-restraint may be good but it is not the nature of marriage to be this way. And tensions are created in such a way that, I think, it cripples the family to some degree. I would never really recommend a prolonged length of abstinence for anyone.

A MOTHER SPEAKS

I would like to make four main points here and some of them are very short.

First, information on methods of family limitations should be freely and readily available to married couples, as they may need this information, and as they feel they can conscientiously make use of it.

This is particularly needed by the underprivileged members of our society, who may not be able to afford the services of a private physician.

Secondly, the purposes of the bill S. 1676 should be clarified to make it clear that the proposed Offices of Population Problems will promote the well-being of the family, as a social unit, as well as the need for family limitation. What I am saying is that the right to bear and rear children is a fundamental, basic, natural, human right for a married couple, and that this right should always be safeguarded and protected and that no legal stigma should ever attach to the hav-

ing of children. This is a point of fundamental importance on which the purposes of the bill, as they stand, need to be made clearer.

Thirdly, the right to have and to bear children needs to be safeguarded especially for underprivileged families, together with their right to free access to information on family limitation. Families in less favored circumstances should not be pressured by the full weight and prestige of the Government into not having the children that a married couple would normally and naturally desire. They should also be free from any official pressure, or express or implied coercion, to limit their families in a manner that violates their own conscientious beliefs. The purposes of the bill need to be clarified on this point.

Fourth, the temperature—BBT—method of rhythm, as described by my husband, can become potentially a source of great benefit to families, as a means of growth in self-knowledge and mutual love by husbands and wives. In our case, the method did not succeed as a child spacing device, but it has still proved invaluable as a source of information much appreciated by my gynecologist.

FAMILY PLANNING OVER THE PHONE

I would like to discuss briefly the French and French-Canadian approach to the BBT-rhythm method. This method is known by them as the sympto-thermic method, and does not rely solely on the use of the thermometer. It has been developed by such groups as CLER in Paris and SERENA in Montreal. Using their methods, a woman takes her early morning temperature, but she does not attempt to interpret her own chart. Rather, she phones in her temperature to a trained monitor couple in her city. She also reports certain symptoms, such as changes in vaginal mucosity, abdominal pains, breast fullness, increased affection, spotting, and so forth, which together and separately can be indications of ovulation. The monitor couples keep the charts and interpret them for the many couples under their guidance. I think the fact of the monitor couples is a very important point, too.

"JUST ORDINARY PEOPLE HELPING ORDINARY PEOPLE"

In this day of mechanization, where people are so separated, you know, where things tend to be so mechanized, the idea of people coming again to help people personally is, I think, a very great idea. Just ordinary people helping ordinary people rather than an organization helping the people. The monitors give the "green light" when they judge the safe period has been entered. They judge the safe period in many ways. According to the needs of the couple, the length of the abstinence is judged and the amount of chance involved is either made greater or less depending upon the degree of motivation that the people express.

If the chart presents anything unusual or uninterpretable, the monitors refer the couple to a gynecologist for professional advice. This method relieves a woman of the need of interpreting her own charts, with all the possible errors of subjective judgments, and it also provides a rapid means of detecting gynecological disorders that need referral to a doctor.

BBT RHYTHM METHOD IS NATURAL AND INEXPENSIVE

I firmly believe that the observation and recording of the BBT and allied symptoms is a health practice that all women should be taught to adopt, starting in adolescence. The gain in self-knowledge that a woman acquires of her own reproductive functions and cycles, and she has these cycles whether she is single or married, can bring a tremendous boost to her physical and emotional well-being. A young woman who has been keeping a sympto-thermic chart for a year or more has at least a fighting chance to make the rhythm method work when she marries—and the rhythm method does have the advantages, if it can be made to work, of being natural and inexpensive. The French and French-Canadian groups have concluded, from their experience, that the calendar method of rhythm is just about useless. The BBT method of rhythm has its best chance with a well-trained woman who started to keep the charts well before her marriage. The CLER and SERENA groups agree that to advise rhythm as a method of family planning to a mother of many small children in rapid succession is to demand the physiologically impossible of her reproductive functions.

RECENT BBT STUDY SHOWS FEWER "SURPRISE" PREGNANCIES

Recently, I heard the French Jesuit demographer, Father Stanislas de Lestapis, of the Paris CLER group, report a recent use-effectiveness test of BBT-rhythm on 16,735 cycles in the island of Mauritius, which has an acute population explosion of its own. These cycles resulted in 102 wanted pregnancies and 112 "surprise" pregnancies, as the French so nicely put it. The total pregnancy rate was 15 per 100 woman-years. Of these 15 pregnancies, 7 were wanted, and 8 were surprise pregnancies. This is by far the best result that has ever been posted by the rhythm method—much better than anything anywhere else—and it shows what can be done with education, motivation, and followup.

MEN AND WOMEN WANT TO LEARN

Also, it was interesting to notice when he talked about this group, he mentioned that the women and the men were so very grateful for learning something about themselves. These people were on a cultural level such that the man often did not know that he was responsible for the wife bearing a child. This is a very basic misunderstanding, and if these people could be educated, I believe this method could work elsewhere with enough monitor couples working with them. Also the women expressed gratitude in being able to tell their husbands how they can regulate their relations and in gaining self-knowledge in how their relations work.

Therefore, I would like to recommend that the proposed Offices of Population Problems undertake, as one of their tasks, the education of women in the art and science of the basal body temperature chart, or sympto-thermic chart, starting as early as adolescence.

BBT METHOD LEADS TO A GAIN IN SELF-KNOWLEDGE

To a young woman, what better introduction to womanhood than to come to recognize the fact that she has ovulated and possesses within

herself the forces by which she can become a mother—a positive outlook as opposed to the negative and often repugnant reaction to the onset of the menses.

It is my opinion that the sympto-thermic method of rhythm can offer, not only a natural method of family limitation, but also a gain in self-knowledge that can generate emotional and physical well-being in a woman, and in her husband also. Her husband can learn from the sympto-thermic charts how to know and understand and appreciate the forces that dominate the life of his wife—the ebb and flow of fertility and sterility that her body is constantly subject to. They can learn together how to understand each other. Since the relationship of husband and wife is such a basic one, the most basic relationship in our society for married people, if there can be no integration at this level, how can we have integration in levels beyond this.

If you can educate married people how to act in an integrated way at this very fundamental level of their being, then perhaps this will have repercussions in the affairs they come in contact with outside of their relationships. Because disintegration of society is mainly what causes all the troubles we are having, I believe integration for men and women living together starts here.

I feel that the BBT-sympto-thermic tools can contribute to integration of marriage at all levels; to self-knowledge, to physical, emotional, and intellectual well-being, and, therefore, to the well-being of children and to the strength and health of society. The integration of the husband and wife relationship should gain through this self-knowledge, and as I have just said, this has wider implications than just their personal relationship. It will form their actions in other spheres like the ripples in a pool.

A CATHOLIC MOTHER'S PLEA TO THE CHURCH

I would also like to say—and I am going to stick my neck out on this, and, at this point, I really do not care, I think it needs to be said—as far as the Catholic Church is concerned, I know the teaching of the church in regard to artificial means of birth control. I am not speaking here of attacks on a life already started, on abortion or on mutilation of the body by sterilization, but as far as the usual means of contraceptive devices, these practices are considered to be serious sins in the eyes of the church. It is my firm belief that if you want to teach people how to be good and integrated, you cannot beat them morally in this way because they are looking for something good. I believe that every man and wife when they marry want the goodness of society through their children. And I believe that the church—maybe we will never be able to reach a common denominator for this—I believe that if the church could regard these artificial methods of birth control as a less perfect means of achieving good rather than a sin, which is an awful load on the conscience of so many people, if they could regard it as a less perfect means progressing toward the more perfect and integrating means, they would perhaps begin to talk to the souls of people.

And I believe that is all I have to say and I must thank you again for listening to me.

Senator GRUENING. Well, thank you very much, Dr. and Mrs. de Bethune, for a very moving presentation and a very vital one. I do not think that I could add anything by any comments I might make. You have made a very important contribution to this problem. Thank you very much.

Dr. DE BETHUNE. Thank you very much, Senator.

Senator GRUENING. I direct that the following three papers written by Dr. de Bethune be included in the record of these hearings because they are pertinent: "Child Spacing, the Mathematical Probabilities," Natural Oligospermia and Rhythm," and selected parts of "The Scientific Thought of Pius XII, Part I."

(The papers referred to follow:)

EXHIBIT 65

CHILD SPACING: THE MATHEMATICAL PROBABILITIES

(By André J. de Bethune, Ph. D., article in Science, Vol. 142, pages 1630–1633, December 27, 1963)

THE CHANCES OF SPACING CHILDREN BY THE RHYTHM METHOD ARE ANALYZED THEORETICALLY AND EXPERIMENTALLY

In an address delivered 26 November 1951, Pope Pius XII stated (*1*), "We have affirmed the legitimacy as well as the . . . limits of a regulation of offspring which . . . is compatible with the law of God. One can even hope . . . that medical science will succeed in giving to this licit method a sufficiently secure foundation (*una base sufficietemente sicura*), and the most recent information appears to confirm such a hope." The licit method referred to by Pope Pius XII was described elsewhere by him (*2*) as "the taking advantage of natural temporary sterility (*la mise à profit de la stérilité temporaire naturelle*)."

The hope expressed by Pope Pius XII that natural methods may be given a more secure foundation—that is, made less uncertain, less subject to the vagaries of chance—justifies an investigation into the mathematical probability of the spacing of children for normally fertile couples, particularly for those who choose to use natural methods only.

The spacing of children has itself been approved by Cardinal Suenens, formerly professor of moral theology at the Catholic University of Louvain, who says (*3*, p. 99) that it can "help a mother get used to the duties of motherhood in a more balanced way and aid her in taking on responsbilities with a greater reserve of generosity and, at the same time, more physical strength."

THE MONTHLY SECURITY FACTOR Q

Let us define q as the probability that a nonpregnant, normally fertile married woman can go through one single specified monthly cycle without conceiving. Obviously, q is a variable dependent upon many factors, such as the frequency and timing of coitus, the natural fertility of the woman and her husband, and the presence or absence of safeguards against conception. If there is no coitus during the specified cycle, q is exactly 1. If there is coitus, q will be somewhat less than 1, even with safeguards. Further on, an attempt will be made to evaluate q. For the present, let us merely assume that this factor q exists, and that it remains substantially constant, from cycle to cycle, for a given couple using a particular method of child spacing.

The probability of q may be conveniently referred to as the monthly security factor, in deference to Pope Pius XII's expressed hope for a more *secure* foundation for natural methods. In an extremely valuable paper, Potter (*4*) has introduced the concept of the monthly risk p of pregnancy—that is, the probability p that conception will occur during a single specified monthly cycle. The monthly security factor q is clearly $q=1-p$. Potter has also given the mathematical equations that permit projection of the monthly security factor q into a security factor Q for a longer period [Q in this article is $F(0, n)$, in Potter's notation].

Let us consider a normally fertile, normally affectionate married couple at the beginning of one specified monthly cycle. The probability of their going through that cycle without conception is the monthly security factor q, defined above. Let Q be the probability that no conception will occur within some specified interval in the immediate future. Take the next two or three cycles, for example. The probability Q that no conception will occur within the next two cycles is q^2; within the next three cycles, q^3. The probability Q that no conception will occur within the next n cycles is q^n, according to Potter's law (Eq. 1, below).

If, for example, the monthly security factor q is 0.90, the probability that no conception will occur within the next single cycle is 0.90, and the odds against conception are 9 to 1. The probability Q that no conception will occur during the next two cycles is $q^2=0.81$, and the odds against conception are now shortened to 9 to 2. The probability Q for the next three cycles is $q^3=0.729$, and the odds against conception are shortened further to 8 to 3. For the next six and seven cycles, $Q=q^6=0.531$ and $Q=q^7=0.478$, respectively, and the odds are about even. For the next 12 and 13 cycles, $Q=q^{12}=0.282$ and $Q=q^{13}=0.255$, respectively, and the odds now *favor* conception by about 3 to 1. From this simple statistical law it becomes evident that, for a couple whose monthly security factor is 0.90, there is an *even* chance that conception will occur within the next 6 months or so, and a 3-to-1 chance that conception will occur within the next year or so.

From Potter's law it is possible to ascertain how low q can be allowed to go before the couple has less than an even chance of spacing its children (from birth to birth) by an interval of N calendar months. The equations for this purpose are

$$Q=q^n \tag{1}$$

with $Q=\frac{1}{2}$, and

$$N=(28/30.5)n+9, \tag{2}$$

where n is the number of cycles from the birth of the last child to the conception of the next child, 28 is arbitrarily taken as the typical number of days in a cycle, 30.5 is the average number of days in a calendar month, and 9 months is the normal period of pregnancy before the birth of the next child. Equations 1 and 2 can be solved for various values of N and q to yield the results given in Table 1. They are based on the assumption that fertility returns soon after childbirth.

TABLE 1.—*Values of the monthly security factor q needed to give an even (1-to-1) chance of spacing births by N calendar months*

Desired spacing between births, N (in months) :	*Monthly security factor q (percent)*
12	80.9
18	93.2
24	95.8
30	97.0
36	97.7
48	98.4
60	98.8

Table 1 is quite revealing in that it shows that spacings of 2 years or more cannot reasonably be expected if the monthly security factor is allowed to drop more than a few percentage points below unity. A monthly security factor of 97 percent or better must be maintained with unremitting vigilance to achieve just an *even* chance of spacing the birth of the next child 2½ years away from that of the last.

Thus, Table 1 explains in a rational way the repeated disappointments experienced by many couples who have endeavored to regulate births by means of the rhythm method alone. A number of such couples (*5*) have found that the rhythm method, as practiced by them, results at best in spacings of 1 to 2 years between births. If 18 months is taken as a median, this observation would place the monthly security factor of the rhythm method, as practiced by these couples, at about 93 percent.

In order to lengthen the spacings from 18 months to 2½ to 3 years, the monthly security factor must be raised consistently to the 97- to 98-percent level. The vigilance demanded of a couple, using the rhythm method alone, to attain and to

maintain such a high security level, can prove quite taxing emotionally. This vigilance requires a degree of personal and conjugal asceticism that can make severe demands on the emotional stability of two people legitimately united in marriage and naturally impelled biologically, physically, psychologically, spiritually to heed the scriptural injunction (*6*): "Defraud ye not one the other." Any deviations from vigilance will significantly lower the q value and greatly shorten the spacing that can reasonably be expected (Table 1).

EVALUATION OF THE MONTHLY SECURITY FACTOR Q

The estimate of 93 percent for the monthly security factor with the rhythm method, as practiced by certain couples, can be compared with two theoretical calculations of the probabilities of no conception for couples who use no contraceptive safeguards.

In a recent paper, C. Tietze (*7*) suggested that the probability of no conception after c acts of unprotected coitus within a given cycle should be given by the formula

$$q=[(25-f)/25]^c \qquad (3)$$

where f is the fertile period (in days) and 25 is taken as the number of days normally open to coitus. Tietze calculated values of $p(=1-q)$ for values of f of 0.5, 0.75, 1, 1.5, and 2 days, and for values of c ranging from 4 to 12. He also calculated q by a more complicated formula that yielded slightly lower but not significantly different values. Tietze then compared his results with the observation that couples desirous of achieving conception have, on the average, a probability p of conception of 0.2 to 0.3 per cycle. By assuming that such couples could reasonably have 7 to 11 copulations during the cycle, he showed that a pregnancy rate of 0.2 to 0.3 per cycle is consistent with an f value of 0.5 to 1.0 day. He thus concluded, as very probable, that fertilization is possible only during 12 to 24 hours per cycle, and that the probability that conception will result from a single act of unprotected coitus appears to lie between 1 in 50 (2 percent) and 1 in 25 (4 percent).

Tietze's formula (Eq. 3), with f values of 0.5 day and 1.0 day, gives the limits within which q should fall as a function of frequency of coitus when no contraceptive safeguards are used. These values are given in Table 2.

TABLE 2.—*Values of the monthly security factor q derived from Tietze's formula (Eq. 3): (f)=length of fertile period (in days); (c)=number of acts of unprotected coitus*

c	q	
	f=0.5 day	f=1 day
1	0.980	0.960
2	.964	.922
3	.941	.885
4	.922	.850
5	.904	.815
6	.886	.783
8	.850	.722
10	.817	.665
12	.784	.612

Thus, on the basis of Tietze's formula (Eq. 3), a 93-percent monthly security level would be consistent with about three to four acts of coitus per cycle if the fertile period is only 12 hours, and with only one to two acts of coitus per cycle if the fertile period is as long as 24 hours. Three to four acts of coitus per cycle appear to be a reasonable estimate for the couples, discussed earlier (*5*), who use the rhythm method. Yet with a monthly security factor of 93 percent, these couples cannot reasonably hope, on statistical grounds alone, to space their children by more than about 18 months between births, as shown by Potter's law (Table 1). If they wish to space their children by 2½ years or more—that is, to maintain a q value of better than 97 percent (Table 1)—

statistics indicate that they must limit themselves to one, or two at the very most, acts of coitus per cycle if the fertile period is 12 hours, and to a maximum of one act of coitus per cycle if the fertile period is as long as 24 hours.

Tietze's formula (Eq. 3) is based on two assumptions: (i) the fertile period occurs randomly during the cycle; (ii) any unguarded coitus on a fertile day must lead to conception. These assumptions are, however, open to question. As regards assumption i, the theory of the Ogino-Knaus method is that the fertile period, which coincides with the onset of ovulation, occurs toward the middle of the cycle. Coitus occurring more than 72 hours before or 24 hours after the (unknown) time of ovulation should not lead to conception. Therefore, a single act of coitus should be less likely to lead to conception if it occurs early or late in the cycle than if it occurs in the middle. To this extent Tietze's formula is too pessimistic, from the standpoint of spacing births, when couples can be reasonably certain that ovulation will occur regularly in the middle of the cycle. Basal temperature charts, when normal in pattern, indicate the 3- to 4-day period during which ovulation probably did occur during a given cycle (but they give only statistical indication as to when ovulation will probably occur during the current cycle). When the temperature charts (*5*, *8*) show no rise, per cycle, the timing of ovulation during past cycles becomes highly conjectural and almost hopeless during the current and future cycles. The evidence from temperature charts suggests that ovulation sometimes occurs early in the cycle (on the 9th day) or late in the cycle (on the 5th day before the menses) as well as in the middle, and it suggests a situation in which assumption i tends to be more nearly valid than the Ogino-Knaus theory. Moreover, assumption ii is not necessarily valid. Nelson (*9*) has reviewed some of the natural factors inimical to fertilization. Coitus at the time deemed optimum for fertility does not necessarily result in conception. Furthermore, frequently coitus reduces the fertility potential of each act, since it takes several days to rebuild the sperm count. To the extent that assumptions i and ii are not valid, Tietze's formula yields values of the monthly security factor q that are too low, and too pessimistic from the standpoint of spacing births (see *10*).

If, therefore, Tietze's estimate of the probability of conception from a single act of unprotected coitus were to be cut in half, 1 to 2 percent, it would still take only four to seven acts of coitus per cycle to attain the 93-percent monthly security level attained in practice by a number of couples using the rhythm method and these couples would then have to restrict themselves to two to three acts of coitus per cycle to maintain the 97-percent level demanded by a spacing of 2½ years between births.

On the other hand, Ogino and Knaus have suggested that fertilization can occur only during certain "unsafe" days in the middle of each cycle (*11*). From several cycles of observation, a woman's shortest and longest cycles are to be determined. The first unsafe day is computed from the number of days of the shortest cycle minus 17 (Knaus) or 18 (Ogino); the last unsafe day, from the number of days of the longest cycle minus 13 (Knaus) or 11 (Ogino). Recently, Tietze and Potter (*11*) have presented an analysis of the reliability of this calendar method based on a number of statistical models of the menstrual cycle. Take, for example, a woman whose cycles exhibit medium variability (standard deviation, ± 2 days—that is, 95 percent of the cycles do not vary in length by more than 8 days); whose ovulation date, counted from the beginning of the cycle, exhibits a standard deviation of ± 1⅔ days (that is, 95 percent of all ovulation dates fall within a span of 6⅔ days); and who can undergo fertile coitus on her day of ovulation and the two preceding days with an assumed 50-percent chance of success. Tietze and Potter calculate that this hypothetical model woman could achieve a monthly security level q of better than 99 percent with either the Knaus or the Ogino calendar after 13 cycles of observation. However, when the Ogino-Knaus calendars are based on only a few monthly cycles of observation (1 to 4 cycles), the monthly security q drops catastrophically—to the 71- to 94-percent level for the Knaus formula and to the 87- to 98-percent level for the Ogino formula. These model calculations show that the 93-percent security level estimated earlier from the rhythm-method experience of a number of couples is realistic.

Many couples who use the rhythm method cannot achieve 13 cycles of observation without encountering a pregnancy first. To them, the higher security levels potentially attainable by the calendar method after prolonged observation are

of only academic interest. Since the menstrual pattern changes after childbirth and can become increasingly erratic after repeated pregnancies, the mother of many children, who is most in need of a reliable method of child spacing, is the one for whom the calendar method is most likely to fail. Furthermore, with the menstrual rhythm, as with the weather or the stock market, paid performance is no guarantee of what is going to happen in the immediate future. No matter how long or how regular the base of observation, the Ogino-Knaus method is never proof against the vagaries of an erratic fluctuation in the current cycle.

The use of contraceptives should raise the monthly security factor q, and the fact that many married couples consistently space their children 3 to 4 years apart by using contraceptives indicates that security factors q of 98 percent or better are readily attainable (Table 1). Here again, the security factor q will drop with an increase in the frequency of coitus and, more significantly, will drop markedly with any relaxation of vigilance. Tietze and Potter (*11*) report monthly security factors q of better than 99.8 percent when contraceptive safeguards are consistently applied. However, Potter (*4*) reports an observed monthly q value of only 97.5 percent for a group of normal urban two-child couples who use contraceptives. This finding suggests that these couples omit safeguards perhaps once (or twice) in each cycle and are willing to tolerate the risk of having another baby within the next 2½ to 3 years (Table 1).

STATISTICAL PROBABILITY OF A GIVEN BIRTH SPACING

Let the probability factor Q be defined as the probability that a birth will not occur during the next N calendar months. The corresponding number n of cycles during which no conception should occur is then given by Eq. 2. Let these cycles be numbered consecutively 1, 2, 3, . . . n. If the monthly security factors of these cycles are $q_1, q_2, q_3, \ldots q_n$, respectively, the desired probability is

$$Q = q_1, q_2, q_3 \ldots q_n \qquad (4)$$

If the security factor is maintained constant during all of the cycles, Eq. 4 reduces to Potter's law—Eq. 1. Equation 1 has been used, in conjunction with Eq. 2, to construct Table 3, which shows the probability Q of attaining birth spacings of N=12, 18, 24, 30, 36, 48, and 60 calendar months with monthly security factors q ranging from 80 to 99 percent. For each probability Q in Table 3 are given (in parentheses) the corresponding odds against a birth occurring within the specified N months.

TABLE 3.—*Statistical probability Q of achieving a spacing of N calendar months between births at different levels of the monthly security factor q. The numbers in parentheses are corresponding approximate odds against a birth occurring within the specified N months. Odds above the line favor no birth within N months; odds below the line favor at least one birth*

N (months)	Q										
	$q=0.80$	$q=0.85$	$q=0.90$	$q=0.92$	$q=0.93$	$q=0.94$	$q=0.95$	$q=0.96$	$q=0.97$	$q=0.98$	$q=0.99$
12	0.482 (14/15)	0.588 (7/5)	0.708 (7/3)	0.762 (3/1)	0.789 (4/1)	0.817 (9/2)	0.846 (11/2)	0.875 (7/1)	0.905 (9/1)	0.936 (15/1)	0.968 (30/1)
18	.112 (1/8)	.203 (1/4)	.356 (5/9)	.441 (4/5)	.492 (1/1)	.545 (6/5)	.605 (3/2)	.670 (2/1)	.742 (3/1)	.820 (9/2)	.906 (9/1)
24	.027 (1/36)	.070 (1/13)	.179 (2/9)	.256 (1/3)	.305 (3/7)	.364 (4/7)	.432 (3/4)	.513 (20/19)	.608 (3/2)	.719 (5/2)	.848 (11/2)
30	.006 (1/160)	.024 (1/41)	.090 (1/10)	.148 (1/6)	.190 (1/4)	.242 (1/3)	.309 (4/9)	.392 (2/3)	.498 (1/1)	.630 (5/3)	.794 (4/1)
36	.0014 (1/700)	.008 (1/120)	.045 (1/21)	.086 (1/11)	.118 (1/7)	.162 (1/5)	.222 (2/7)	.301 (3/7)	.408 (2/3)	.552 (5/4)	.744 (3/1)
48	.00008 (1/12000)	.001 (1/1000)	.011 (1/90)	.029 (1/33)	.046 (1/20)	.072 (1/13)	.114 (1/8)	.177 (2/9)	.275 (3/8)	.425 (3/4)	.653 (2/1)
60	.000004 (1/250000)	.00014 (1/7000)	.0028 (1/350)	.010 (1/99)	.018 (1/55)	.032 (1/30)	.058 (1/16)	.103 (1/9)	.184 (2/9)	.325 (1/2)	.562 (9/7)

For example, with a monthly security factor of 95 percent, the probability of spacing the next birth at least 18 months from the preceding one is 0.605, and the odds against a birth occurring in this period are therefore 3 to 2. But for a spacing of 24 months, the probability drops to 0.432, and the odds are now 4 to 3 in favor of at least one birth during the given period. A broken horizontal line divides Table 3 into two regions. Above the line, the odds favor no birth in the given interval. Below the line, the odds favor at least one birth in the given interval. Table 3 shows, for example, that a monthly security factor of 99 percent must be maintained in order to have a 2-to-1 chance of spacing the next child 4 years away from the preceding one. Such a high security factor is not attainable with the rhythm method alone, to judge from the experience of the couples discussed earlier (*5*).

SIMULATED STATISTICAL EXPERIMENTS OF CHILD SPACING

The child spacings to be expected, on statistical grounds alone, with a certain monthly security factor, can also be determined experimentally by means of a simple game of chance with children's marbles. Take g green marbles and r red marbles of the same size. Let each green marble denote a cycle in which conception occurs, and let each red marble denote a cycle in which conception does not occur. The monthly security factor can be adjusted by changing g and r. In the set of experiments described below, the numbers chosen were $g = 2$ green marbles and $r = 26$ red marbles, corresponding to a monthly security factor q of $26/28 = 93$ percent. Now, mix the marbles and draw one at random; if it is red, return it to the pot, mix and draw again. The object of the experiment is to count the number of draws needed to draw a green marble. This number is statistically equivalent to the total number of cycles in a sequence without conception, terminating in a cycle in which conception occurs.

In the actual series of 200 experiments, the numbers of draws were, respectively, as follows: 1, 24, 21, 13, 6, 1, 4, 1, 9, 4, 6, 2, 17, 8, 12, 11, 1, 5, 9, 12, 29, 19, 2, 2, 14, 3, 2, 63, 10, 14, 23, 10, 13, 6, 28, 16, 8, 56, 4, 12, 15, 2, 3, 2, 21, 9, 7, 3, 3, 32, 1, 2, 2, 13, 1, 8, 22, 10, 3, 20, 18, 5, 10, 34, 25, 46, 22, 40, 12, 6, 3, 1, 7, 12, 7, 3, 6, 21, 3, 21, 9, 11, 17, 1, 1, 5, 10, 27, 3, 2, 28, 1, 1, 16, 9, 2, 37, 2, 6, 14, 1, 24, 10, 2, 36, 21, 19, 16, 2, 4, 24, 33, 6, 16, 9, 3, 7, 11, 44, 1, 2, 13, 13, 9, 16, 2, 3, 11, 37, 1, 12, 4, 59, 5, 26, 21, 4, 25, 5, 5, 1, 21, 2, 14, 6, 19, 7, 31, 8, 7, 33, 3, 11, 22, 7, 6, 7, 1, 1, 17, 48, 41, 25, 13, 26, 3, 26, 22, 1, 6, 11, 18, 7, 2, 2, 9, 15, 15, 50, 27, 13, 6, 3, 7, 3, 3, 23, 36, 10, 23, 17, 30, 23, 28, 1, 17, 34, 15, 45, 12.

The distribution obtained from these 200 experiments with a monthly security factor of 93 percent, is shown in Table 4. The total number of draws in all 200 experiments was 2686, and the average number of draws per experiment (the average number of cycles to conception) was 13.4, close to the statistically expected average of exactly 14.

The experiment with the marbles gave a statistical indication for conception in the first cycle in 19 out of 200 cases (9.5 percent, as compared with an expected 7 percent at 93-percent security); in the first six cycles in 76 out of 200 cases (38 percent, as compared with an expected 36 percent); in the first 12 cycles in 118 out of 200 cases (59 percent, as compared with an expected 59 percent); in the first 18 cycles in 145 out of 200 cases (72.5 percent, as compared with an expected 73.4 percent); in the first 24 cycles in 167 out of 200 cases (83.5 percent, as compared with an expected 82.8 percent); in the first 30 cycles in 180 out of 200 cases (90 percent, as compared with an expected 89 percent); and after the first 30 cycles in 20 out of 200 cases (10 percent, as compared with an expected 11 percent). The expected percentage is derived from the statistical formula $1-q^n$, with $q=26/28$.

The probable number of cycles to conception was found, from the experiments, to be between 9 and 10 (1 to 9 draws were required in 98 cases; 10 to 63 draws, in 102 cases), as compared with 9.3 cycles from the statistical formula $\frac{1}{2}=1-q^n$. This corresponds to a probable spacing of 17.5 months between births.

Thus, the simulated statistical experiments carried out with marbles show that the laws of mathematical statistics are indeed applicable to the problem and indicate typical numbers of cycles to conception (at 93 percent security level) that might be expected in actual cases, to the extent that the occurrence of conception is governed by the laws of mathematical statistics alone. These

laws are themselves nothing more than the laws governing the numerical relationships of repetitive probable events.

This series of simulated experiments can also be used to check the spacing expectancy table (Table 3) at the 93-percent security level. By converting from the number of cycles to pregnancy to the number of months between births (Eq. 2), the odds against the next birth occurring within N months of the preceding birth can be calculated from results of the 200 simulated experiments, and these odds can be compared with the approximate odds given in Table 3, which are based on the statistical formulas (Table 5).

The two sets of odds are virtually the same, except for minor deviations attributable to the limited number (200) of the experiments performed with the marbles. The marbles experiments also illustrate the statistical fluctuations to be expected, whereby an occasional long sequence of cycles without conception becomes possible with the rhythm method and does not "prove" the reliability of the method.

TABLE 4.—*Distribution of draws in 200 experiments with marbles at the 93-percent security level*

Number n of draws:	*Number of times observed in 200 experiments*
1	19
2	18
3	16
4	6
5	6
6	11
Ranges	
1–6	76
7–12	42
13–18	27
19–24	22
25–30	13
31–36	8
37–42	4
43–48	4
49–54	1
55–60	2
Over 60	1

DISCUSSION

There are many national or ethnic groups whose members, on religious, moral cultural, or economic grounds, find contraception unacceptable, unesthetic, too expensive, or impossible in practice (*12*). The needs of these people make the appeal of Pope Pius XII for more "secure" methods (*1*), based on "taking advantage of natural temporary sterility" (*2*), more urgent now than when it was uttered by that great Pontiff in 1951. This appeal was echoed by Cardinal Suenens (*3*, pp. 144, 149) at the Brussels Health Congress of 1958. American Roman Catholic churchmen have, in their turn, propounded the doctrine of responsible parenthood and denounced "unreasoned, unlimited, unrestrained, uncontrolled biological fertility" (*13*). The challenge to today's researcher remains more urgent than ever.

Pius XII distinguishes (*1*, *2*) between what he terms direct sterilization, indirect sterilization, and the taking advantage of natural temporary sterility. Direct sterilization he condemns on moral grounds. Indirect sterilization he approves, for good and sufficient reasons, by the moral principle of actions with a double effect (*14*). The taking advantage of natural temporary sterility he approves for serious motives such as those "found * * * in the medical, eugenic, economic and social indication" (*15*).

TABLE 5.—*Odds from the experiments with marbles compared with the odds from table 3*

N months	Odds	
	Experiments with marbles	From Table 3 (93% security)
12	147/53	4/1
18	102/98	1/1
24	62/138	3/7
30	40/160	1/4
36	21/179	1/7
48	8/192	1/20
60	3/197	1/5[illegible]

The taking advantage of natural temporary sterility has, heretofore, meant the use of methods based on the natural regular or irregular rhythmic cycle of fertility and sterility of the wife. The crux of the method resides in finding as accurately as possible the exact timing of ovulation. When this timing is to be determined from an extrapolation, to the current cycle, of the pattern of previous cycles, whether by the Ogino-Knaus method or from the record of temperature charts, the success of the rhythm method in spacing children will always be limited by the laws of statistics: Potter's law (Eq. 1) and Tietze's equation (Eq. 3). Even if the fertile period is as brief as 12 hours, these laws show that a couple who desire a 2-year spacing are limited, statistically, to two acts of coitus per cycle. Couples who desire a 4-year spacing are limited to a maximum of one act of coitus per cycle. It is not surprising that the rhythm method has become a source of mental torture to many couples.

An accurate ovulation-prediction test is needed. As Rock points out (*16*), such a test should give a dependable signal 3 days in advance of ovulation. Alternatively, an accurate method of precipitating the occurrence of a late ovulation on a controlled day is also needed. This has recently been done by means of certain hormone injections, but only on an experimental basis (*16*). The moral objections to the suppression of ovulation as a direct sterilization (*2*) do not apply to control of the timing of ovulation. H. J. O'Connell, a distinguished Roman Catholic professor of moral theology (*17*), has proposed the use of anovulant pills, not to suppress ovulation but to restrict its occurrence to the first 14 days of each cycle. This proposal merits careful scrutiny by doctors, physiologists, and psychologists as a potential solution to the problem of making the rhythm method reliable for those couples who are motivated to use it.

Much work remains to be done on the natural temporary sterility of the husband. Nelson (*9*, *12*) has described the various stages in the development and evolution of the male germ cell. A man's fertility has been found to undergo variations in a purely natural way. Nelson (*18*) has pointed out the correlation between small variations in scrotal temperature and inverse variations in fertility. Such variations occur naturally in the course of a man's normal round of activities: working, exercising, dressing, bathing. Hartmann (*19*) has suggested that dietary factors and psychological factors may play a role, as yet unknown, in relation to fertility.

The laws of nature governing the reproductive processes involve the contributions not only of physiology, of psychology, and of ethics but also of mathematical statistics, since the reproductive processes are the consequents of repetitive probable events. If the monthly security factor q of methods based on natural temporary sterility is to be raised, in accordance with Pius XII's expressed wish, to a level (97 to 99 percent) such that effective child spacing (as described by Cardinal Suenens) is no longer a statistical impossibility for many couples, the natural variations in the fertility and sterility of man and of woman will have to be learned and mastered, so that mankind can, in Pius XII's own words, take advantage of them.

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EXHIBIT 66

NATURAL OLIGOSPERMIA AND RHYTHM

(By André J. de Bethune, Ph. D., Cosmos, a science journal of Boston College, Vol. 7, No. 2, Spring 1965)

> "We have affirmed the legitimacy as well as the truly broad limits of a regulation of births compatible with the law of God. Pius XII (1951b).
>
> "The Church will have to proclaim this law of God in the light of scientific, social and psychological truths, which in recent times have had new and extensive study and documentation. The question is under study, a study as broad and deep as possible, that is, in the serious and honest manner a question of such importance demands." Paul VI (1964).
>
> "The Church at all times has been concerned to give adequate answers to the great problems facing men. For this purpose, and according to the advice of the Lord, the Church welcomes 'old things and new.' While very difficult problems are raised, is there not also the heralding of solutions for problems which seem today so difficult to solve? We want to believe and hope so." Paul VI (1965).

INTRODUCTION

Oligospermia, from the Greek *oligos*, few, and *sperma*, seed, denotes a natural condition observed in human and animal males by medicine and veterinary medicine, respectively, which can best be described as "low sperm count." Human males whose count drops below 6×10^7 spermatozoa per cubic centimeter are described as oligospermic—the oligospermia can become acute when the count drops below a number variously estimated between 6 and 2×10^7 per cm^3. An oligospermic male, human or animal, has difficulty in becoming a father, and the

difficulty becomes more acute the lower the sperm count. This is true, notwithstanding the fact that only a single spermatozoon is necessary to fertilize an ovum, while two spermatozoa penetrating the same ovum fail to produce a viable embryo. The target area presented by an ovum is very small—of the order of 10^{-4} cm^2, the cross-section of a spermatozoon is even smaller, of the order of 10^{-7} cm^2. Since the spermatozoon, when not swept along by uterine wall contractions, progresses by the motion of its tail in a "random walk," the encounter of a spermatozoon and an ovum can be an extremely chancy event. The fantastically large numbers of spermatozoa observed in semen, sometimes over 10^9 in a single ejaculation, improve the statistical probability of such an encounter (Hartman, 1962).

The increasing importance of oligospermia lies in the fact that it has been shown to be naturally reversible, to a degree, in both directions. This information is proving of value, not only in the cure of certain cases of childlessness, but also as a possible basis for a new improvement in existing natural methods of family limitation.

In 1951, and again, in 1958, Pope Pius XII (1951ab, 1958) affirmed the legitimacy as well as the truly broad limits of a family limitation for serious motives by natural methods, i.e., of a "regulation of births, compatible with the law of God," distinct from what is commonly called "birth control" (1951b, p. 859). Pius XII based his teaching on the doctrine given by Pope Pius XI in his Encyclical *Casti Connubii*. Pius XI had said (1930, pp. 560–561):

"The Catholic Church . . ., in witness to its divine commission, raises its voice and proclaims again: any use of marriage, in the exercise of which, the act is deprived by human industry of its natural power to procreate life, violates the law of God and of nature, and those who act in this way are guilty of a grave offense."

Pius XI then added:

"But those spouses should be accused of acting against nature, who make use of their right and in a rightful and natural manner, even though a new life cannot spring forth because of natural causes either of time or of whatever defect. For there are, in marriage itself and in the use of the marriage right, further ends such as mutual help, the fostering of mutual love, the calming of desire, which spouses should least of all be forbidden to intend, as long as the intrinsic nature of their act, and its due ordination to its primary end, remain safeguarded."

Pius XII affirmed that birth regulation becomes morally legitimate, when carried out "either for a time, or even for the entire duration of the marriage, for serious motives based on medical, eugenic, economic and social indications." This regulation is to be achieved by the "use of the marriage right only on days of natural sterility" (*anche nei giorni di sterilità naturale*), by the "observance of times of [natural] infecundity" (*l'osservanza dei tempi infecondi*), or by the "taking advantage of natural temporary sterility" (*la mise-à-profit de la stérilité temporaire naturelle*) (1951a, pp. 843–846; 1958, p. 736).

Abuses which consist in the "perversion of the marriage act itself," Pius XII reproved as immoral, as well as any "direct attack (*attentato*) of preventive maneuver against the life and development of the seed." He also reproved the long standing use of natural methods for the persistent avoidance of children, without a grave justifying motive, as a "sin against the very sense of married life." (1951a, pp. 843–846).

Pope John XXIII, in His social Encyclical *Mater et Magistra* (1961, pp. 445–446), addressed the problem of the "increasing multitudes of men piling up" (*aucta cumulatuis hominum multitudo*). He pointed out that the solution does not rest in a "violation of the procreation of human life itself," but rather in man's task of "acquiring, by the use of arts and sciences of every kind, a deeper knowledge of the forces of nature, so that he may control them ever more extensively from day to day," adding that, in any case, "the dignity of man" is to be preserved at all costs.

In June 1964, Pope Paul VI, while promising a renewed study by the Roman Catholic Church, of "the problem everyone is talking about—that referred to as birth control, i.e., of population growth on the one hand, and of family morality on the other," urged on all Catholics continued adherance to the "norms given by Pius XII . . . until we feel bound in conscience to modify them. . . . No one should, for the time being, take upon himself to issue pronouncements at variance with the present rules."

In the present paper, we wish to review the various natural methods of family limitation that have come to be used and accepted by Catholics, or that are presently under examination by the Church, or that are being developed by current medical research. These methods are: Ogino rhythm, basal body temperature (BBT), various ovulation tests, hormonal therapy, and natural oligospermia.

We shall endeavor to examine these methods in the spirit of Pope Pius XII who expressed the hope that medical science would give natural methods a "sufficiently secure foundation," and rejoiced that "new information seems to confirm such a hope" (1951b, p. 859), being ever mindful of Pope Paul VI's (1964) appeal for a continued respect for the norms of his predecessors.

THE OGINO-KNAUS LAW OF RHYTHM

Around 1930, two gynecologists, Dr. Kyusaku Ogino of Japan and Dr. Hermann Knaus of Austria independently published clinical and physiological observations on the time of ovulation in women (Hartman, 1962). These observations provided the basis for the law of rhythm, i.e., that ovulation normally occurs on the 15th day (Knaus), or on the 14th day ±2 days (Ogino), preceding the following menses (counting backwards from the first day of menstrual flow as day 1). According to this principle, variations in the length of the menstrual cycle are due principally to variations in the post-menstrual (follicular, estrogenic, preovulatory) phase of the cycle, the pre-menstrual (luteal, progestational, postovulatory) phase remaining substantially constant (12 to 16 days).

This rhythm law can be used, in conjunction with a record of a woman's past menstrual cycles (a written calendar record of the first day of menstrual flow, including, preferably, a daily record of basal body temperature, BBT) to predict the probable span within which her ovulation date should occur during the current cycle.

Carl Hartman (1962) the celebrated 83-year old physiologist, who has devoted a life-time to the study of mammalian reproduction, has recently reexamined the evidence supporting the rhythm law from the medical record of several thousand menstrual cycles in which the date of ovulation could be estimated, either from basal temperature charts, from mittelschmerz, from cervical mucus, or from the Farris (1956) rat hyperemia test. The data do confirm that the premenstrual phase is less variable than the postmenstrual phase. They do, however, point out that the premenstrual phase is considerably more variable than the 12 to 16 days that the Ogino law of rhythm suggests. The data reviewed in detail by Hartman are here summarized as follows:

> Ogino's study of 270 cycles ranging from 20 to 75 days showed premenstrua ranging from 8 to 19 days, 83% of these were of 12 to 16 days, according to the rhythm law of Ogino, 6% were shorter, 11% were longer.
>
> Fluhmann's study of 221 cycles ranging from 21 days to 60 days showed premenstrua ranging from 7 to 21 days, 80% of these were of 12 to 16 days, 11% were shorter, 9% were longer.
>
> Vollman's study of 77 long cycles of 50 to 162 days showed premenstrua ranging from 4 to 18 days, 54% were of 12 to 16 days, 43% were shorter, 3% were longer.
>
> Williams' study of 615 cycles showed 13% anovulatory and 87% with evidence of ovluation. The latter gave premenstrua of 5 to 26 days, 55% were of 12 to 16 days, 14% shorter, 18% longer.
>
> Farris' study of 150 cycles with the rat hyperemia test showed premenstrua ranging from 10 to 23 days, 68% were of 12 to 16 days, 3% shorter, 29% longer.
>
> Vollman's study of 2800 cycles showed 17% anovulatory and 83% with evidence of ovulation. In the latter, the premenstrua ranged from 3 to 19 days, 32% were of 12 to 16 days, 51% were shorter, 1% longer.

In addition to these, two remarkable studies of single patients are recorded by Hartman:

> Vollman's patient number 6015 recorded 234 cycles with premenstrua of 8 to 17 days, 87% were of 12 to 16 days, 12% shorter and 1% longer.
>
> Sorel's patient recorded 225 cycles with mittelschmerz ranging from 14 to 84 days, with premenstrua of 3 to 26 days, 87% were of 12 to 16 days, 7% shorter and 6% longer.

John Marshall, a foremost expert on the infertile period in British medical circles has independently reported (1963) a study of 1088 cycles with premenstrua of 5 to 28 days, 75% were of 12 to 16 days, 18% shorter and 7% longer.

Cumulatively, in over 5100 cycles, ranging from 14 days to over 150 days, the premenstrual phase was found to vary from 3 to 28 days. The rhythm law of Ogino (premenstrum 14±2 days) was verified in 59% of these cases. In 35%, the premenstrum was shorter (3 to 11 days) ; in 6% it was longer (17 to 28 days).

Thus, in a general sense, the rhythm law of Ogino and Knaus is seen to be verified—premenstrua are less variable than postmenstrua, or cycles. Statistically, slightly over half of all observed premenstrua satisfy the law of Ogino. The law of Knaus (premenstrum of 15 days without variation) is not verified by the data. Premenstrua that deviate from the law of Ogino tend to be shorter rather than longer. Short premenstrua are sometimes due to hormonal deficiencies—they may then be infertile. The daily records on two individual women of remarkable regularity, and singular devotion to science for periods of over 20 years each, showed that ⅞ths of the premeustrua satisfied the law of Ogino, Even these remarkably regular women encountered deviations in about ⅛ of their cycles, i.e., on the average, about 3 times every 2 years.

The law of rhythm has provided the basis of a natural method of family limitation, i.e., "the use of the marriage right only on days of natural sterility" (Pius XII 1951a) in the wife's cycle. During the past 30 years, this method has met with a number of successes, some of which have been described in detail by Dr. Hermann Knaus, who has done a great deal to popularize it (1950ab). It has also met a considerable number of failures, failures that have remained largely unrecorded in the lives of many families, failures that have left bitter memories of utter frustration, physical exhaustion, and unspeakable nervous tension (de Bethune 1963, 1964, 1965ab, Jubilee Symposium 1964, Novak 1964).

Hartman's collation of the medical data regarding the relative lengths of the post- and pre-menstrual phases show that, in anywhere from ⅛ to ½ of all cycles, the premenstruum deviates from the law of Ogino. When the deviation is on the short side, ovulation tends to be delayed beyond the Ogino span. With a late ovulation, fertile coitus can take place at at time when ovulation should already be over according to the Ogino calendar. Married couples, using rhythm for family limitation, have been known to enter their rhythm divorce as early as the 5th or 6th day of the cycle, they have observed it until as late as the 25th or 30th day, or even beyond, and they have, nevertheless, engendered a pregnancy in that very cycle, evidence of a delayed ovulation.

There is no justification for statements that couples for whom rhythm fails are 1) lacking in self-control, 2) insufficiently trustful in God's providence, or 3) unable to do accurate calculations, when the simple fact is that the law of God and of nature, as revealed in medical research, shows that ovulations can, and often do, deviate markedly from the "rhythm" law of Ogino.

While the late part of the cycle is subject to the pitfall of a late ovulation, the early part of the cycle is not necessarily safe either. An early ovulation is always possible. Early ovulations have been shown to be a cause of persistent childlessness among certain orthodox Jewish couples who, out of religious motives, practice abstinence until after the 8th day after the cessation of menstrual flow (Guttmacher, 1964). Other difficulties with the early part of the cycle include ovulations triggered by coitus (i.e., so-called rabbit women, Baillargeon and Baillargeon, 1963), persistence of sperm cell activity for up to 6 or 7 days, instead of 2 to 3 days (this is medically controverted), the occurence of double ovulations (this is also medically controverted, except for twin ovulations). The hormonal events that lead up to ovulation can remain poised for several days and then suddenly come to a climax in the rupture of the follicle and the release of the ovum. While the system is poised, the ovulation can come at any time, sometimes earlier, sometimes later (Rock, 1963). There is thus a finite probability that coitus outside of the Ogino fertile period can nevertheless lead to pregnancy. A child born in this way is known, in Paris and Montreal, as *mon petit Ogino.*

Couples who try to limit their families by the Ogino calendar, often develop an acute fear of pregnancy, a fear that colors their whole married life, that creeps in as a wall of separation between husband and wife. Even couples who have achieved some success with the rhythm method become subject to this fear. Pregnancy sometimes intervenes as a welcome relief, as the only time during which husband and wife can develop a normal, affectionate, loving relationship, and pregnancy is a time of natural sterility, during which further pregnancies are blocked by the natural action of the luteal hormone progesterone.

Couples who follow the Ogino calendar can never know, with any assurance, whether the wife is pregnant or not. This is one of the most unendurable trials

of the Ogino rhythm method, because this uncertainty is ever present, it never goes away. Let the mensis be delayed, and the couple begin to expect, half in fear, and half in anticipation, a new baby. Let the mensis come, sometimes after 40, 50, or even 60 days, and the reaction is, first, one of relief that the pregnancy is off, and, secondly, one of disappointment that the baby is not there, and that the renewed struggle with the vagaries of the Ogino calendar must begin immediately. The emotional roller-coaster engendered by the rhythm method has made it a source of mental torture to many couples who have applied it in good faith.

THE USE OF RHYTHM—RELIABILITY VERSUS PRACTICABILITY

The discussion given above was intended to describe the *reliability* of rhythm as a natural method of family limitation, sometimes good, as attested by Dr. Hermann Knaus, sometimes very poor, as attested in the experiences of many families, in any case, usually erratic. One further aspect of the Ogino rhythm method that needs discussion is its *practicability.*

The law of Ogino identifies the 12th, 13th, 14th, 15th and 16th premenstrual days as possible ovulation dates. By counting back three more days for possible sperm survival, the 17th, 18th and 19th premenstrual days are also included in the Ogino fertile period. We have seen how this law of Ogino has been verified, from medical records, in about 60% of all cycles. The problem is how to translate the eight-day Ogino fertile span from a premenstrual count of day to a post-menstrual count, i.e., to days of the cycle.

Supposing that a woman has an invariant 28 day cycle, i.e., menstrual flow begins, like clock-work, on day 29 which becomes day 1 of the new cycle, and is also day 1 for the reverse counting of premenstrual days. Then premenstrual day x becomes day (30—x) of the cycle. The Ogino fertile span, stretching from premenstrual day 19 to premenstrual day 12, runs from day 11 through 18 of the cycle. Therefore, day 1 through day 10 and day 19 through day 28 are labelled sterile by the law of Ogino .

An invariant cycle of 28 days is a rarity among women, even though more 28 day cycles are observed than any other length (about 13–15% of all cycles). For the sake of argument, allow a variation of ±3 days, i.e., of 25 through 31 days. As reviewed by Hartman (1962), 25-through-31 day cycles have been observed in 77% of all cases (Haman), 66% (Vollman), and 66% (Ogino). Thus they provide a norm for the practical application of the Ogino law to at least a majority of all women. For 25-through 31-day cycles, premenstrual day x can become anything from day (26—x) through day (32—x) of the cycle. Premenstrual day 19 becomes day 7 in the shortest cycle, and premenstrual day 12 becomes day 20 in the longest cycle. Therefore, the Ogina fertile span now runs from day 7 through day 20 (a total of 14 days). Day 1 through day 6 and day 21 through days 25-to-31, are labelled sterile by the law of Ogino.

In general, if the shortest anticipated cycle has S days, and the longest has L days, the earliest Ogino fertile day is—

$$\text{day } (S+1-19) = \text{day } (S-18),$$

and the last Ogino fertile day is—

$$\text{day } (L+1-12) = \text{day } (L-11).$$

Thus for the cycles expected to vary from 24 through 34 days, the Ogino fertile span would include days 6 through 23 of the cycle.

Two remarks are in order at this point. First, even women who menstruate regularly can ovulate irregularly. This is brought out by data of Ogino himself (1957, cf, Hartman, 1962), who reported 270 cycles followed by the basal temperature method. Of these, 178 (66%) were of 25-through-31 days. Of these 178 normal cycles, 146 (82%) showed premenstrua of 12-through-16 days, in accordance with law of Ogino; 12 (7%) showed late ovulations (2 on premenstrual day 11, 3 on day 10, 5 on day 9, and 2 on day 8); and 20 (11%) showed early ovulations (12 on premenstrual day 17, 5 on day 18, 3 on day 19). In terms of days of the cycle, the early ovulations occurred on days 10 through 15 and would have been protected by the day 7-through-20 Ogino calendar, while the late ovulations occurred on days 17 through 23 of the cycle (1 on day 17, 1 on day 18, 2 on day 19, 1 on day 20, 2 on day 21, 3 on day 22, and 2 on day 23). The ovulations on days 21, 22 and 23 of the cycle (7 out of 178, or about 4%) were unprotected by the day 7-through-20 calendar.

Thus, even this highly select group of 66% of all women who menstruate regularly had a 4% incidence of ovulations unprotected by the Ogino law (at least to the extent that the basal temperature correctly identifies the day of ovulation).

Secondly, what about the other 23% to 34% of all women who do not menstruate regularly! For them, the Ogino law rapidly crosses out practically every day of the calendar. A woman who has cycles of 20 to 40 days, must cross out, as fertile, days 2 through 29 of her cycles. And since she can't be sure that her 40 day cycle won't stretch out to 50 days, she might as well cross out the days after 29 also. For these irregular women, the Ogina rhythm method is not even *practicable* to begin with, let alone *reliable*.

In addition to these, mention must also be made of the occurrence of anovulatory cycles (menstruation without ovulation) and of amenorrhea (no menstrual flow, with or without ovulation). All mothers experience either one or the other or both of these during the *post-partum* period, some women may experience them, even persistently, at other times. The law of Ogino throws no light on either of these cases, and is therefore impracticable to women in these situations.

In defense of the law of Ogina, it should be stated that, as a statistical law, it correctly describes a majority of all the actually observed cases. Its discovery, in 1930, corrected a serious error long prevalent in physiology books which had placed ovulation immediately prior to menstruation.

Two mathematical studies of Ogino-Knaus rhythm reliability have recently been reported (Tietze and Potter, 1962; de Bethune, 1963). Tietze and Potter assumed that variations in menstrual cycle lengths and in ovulation dates could be fairly represented by normal Gaussian distributions with well-defined standard deviations. They calculated, on these assumptions, that the Ogino-Knaus calendar could be expected to attain well over 99% monthly security after some 13 cycles of observation. However, when the Ogino-Knaus calendar is based only on a few monthly cycles of observation, the monthly security (i.e., the probability of avoiding pregnancy within a specified monthly cycle) drops sharply to a level (71–98%) at which spacings of more than a few months between a birth and the next pregnancy become unlikely on statistical grounds (de Bethune, 1963). Tietze and Potter's basic assumptions are not borne out by the facts: menstrual-cycle statistics are not Gaussian. Even Vollman's most regular patient, number 8742, who recorded 225 cycles of 21-through-33 days (including 61 cycles of 28 days, and 213 cycles of 25-through-31 days, Hartman, 1962, p. 128) fails to give a normal distribution with a single well defined standard deviation when her data are plotted on Gaussian-coordinates (de Bethune, 1965c). Tietze and Potter's assumption of Gaussian distributions only, fails to make allowance for those erratic (non-Gaussian) cycles that are at the root of many Ogino rhythm failures. de Bethune (1963, 1964, 1965ab) applied the laws of mathematical statistics to the situation of a couple who cannot be certain as to when ovulation will occur. He showed that such couples cannot reasonably hope to attain spacings of more than 18 months between births at a coital frequency of 3 to 4 per cycle (monthly security 93%) and that they must limit themselves to a maximum coital frequency of 1 to 2 per cycle (monthly security 96 to 98%) to lengthen the probable spacing to 30 to 36 months, on statistical grounds alone. He pointed out that the laws of mathematical statistics are just as much a part of the Law of Nature as are the laws of physiology, of psychology, and of ethics.

THE BASAL TEMPERATURE METHOD OF FAMILY LIMITATION

An early record of woman's basal body temperature (BBT) was published in 1905 by the Dutch gynecologist Van de Velde, who suggested that the noted "thermal shift" at mid-cycle might give a clue to the timing of ovulation (Hartman, 1962). As a method of family limitation, a number of gynecologists started introducing it into their practice in the 1930's notably, Dr. Raoul Palmer in Paris, concurrently with Knaus' introduction of the Ogino rhythm method. The method did not begin to gain any popularity until the 1950's with the publication of Dr. M. Edward Davis' book (1953), and in the 1960's through the work of Roman Catholic groups such as C.L.E.R. (Centre de Laison des Equipes de Recherches) in Paris, and SERENA (Service de Regulation des Naissances) in Montreal. For a long time, many Catholics wondered about the morality of BBT in view of the Roman Catholic Church's stand against birth control "by human industry" (Pius XI, 1930). Pope Pius XII's allocutions of 1951, with His encouragement to medi-

cal researchers to develop greater security for natural methods (1951b), seem to have set their conscientious doubts at rest. As far as BBT is concerned, the Catholic consensus is that the use of the thermometer for family limitation is not contraceptive human industry (Suenens, 1960, 1961; Baillargeon, 1963). However, special BBT thermometers may not be sold in the State of Connecticut under its anti-birth control law (Sears Roebuck, 1964).

With BBT, as with rhythm, the basic idea is simple. The practicability and reliability are another matter. What is BBT? It is the awakening temperature, taken before any physical activity sends the body temperature up.

The BBT can be taken orally, or rectally, with a fever thermometer. Some people prefer a special BBT thermometer with an expanded scale. Some insist that only the rectal temperature should be used (Marshall, 1963). Certain types of BBT thermometers that do not register degrees, but attempt to give a reading of "SAFE" or "UNSAFE" (or "PLUS" or "MINUS") should be rejected as giving a meaningless indication.

In a man, the BBT undergoes only small fluctuations. In a woman, the BBT goes through two distinct phases: in the early part of the monthly cycle, a hypothermic or low temperature phase, where the BBT is usually around 36.5±0.3°C(97.7±0.6°F), followed by a thermal shift at mid-cycle and a rise to a hyperthermic or high temperature plateau, where the BBT is usually around 36.9±0.3°C(98.4±0.6°F). The high temperature plateau persists during the premenstrual part of the cycle until the first day of menstrual flow, or one or two days before, when the temperature usually drops back to the hypothermic level. The two temperature levels in a woman have been clinically identified with hormonal activity, follicular estrogens tend to pull the temperature down, luteal progesterone tends to pull it up. Since progesterone is released in the corpus luteum (yellow body) of ovulation, the appearance of the hyperthermic plateau has been taken as an indication that ovulation has occurred, and the thermal shift has been interpreted as giving the approximate timing of ovulation (Hartman, 1962).

What is the pattern of the thermal shift? Sometimes it is abrupt, rising in one day, and sometimes preceded by a sharp temperature drop below the normal hypothermic level. Sometimes, it is gradual, rising in a series of steps over several days. Sometimes it rises in a succession of ascending and descending steps in a sawtooth pattern. The thermal shift is usually easy to recognize in the BBT chart of completed menstrual cycle. To recognize it from the day-to-day pattern of the temperature readings while the cycle is in progress is a considerably more difficult matter (Laennec, 1961; Baillargeon, 1963).

The BBT chart makes no predictions about when ovulation is going to take place. It does give an indication that ovulation is already over. Doctors appear to be agreed that after the "true" BBT plateau has been reached and maintained for x days (where x=2, 3, 4 or 5 depending on the doctor, Laennec, 1961; Vincent and Vincent, 1964; Geller, 1964), the balance of the cycle (premenstruum) is safe from pregnancy, and only one instance of a bona-fide exception to this rule has been reported, as yet (Lanctot, 1965). Thus, to couples whose wife's BBT chart is normal in pattern, and who can unambiguously recognize the thermal shift and the "true" hyperthermic plateau as they develop from day to day, there are available a few days (8 to 12 or less, depending on the length of the premenstruum) of virtually complete safety in each cycle (Southam, 1964).

The postmenstrual phase of the cycle remains as hazardous as ever. The BBT chart gives no advance information about the onset of ovulation.

The BBT chart does give, however, invaluable information about the onset of a new pregnancy. If the BBT remains low, the wife is *not* pregnant. If coitus is immediately followed by the thermal shift, the chances of a new pregnancy are extremely good, and if the hyperthermic plateau persists beyond two weeks, the new pregnancy is virtually certain. Thus the BBT chart permits a new baby to herald his arrival practically on the date of his conception, an important piece of information for the emotional well-being of his parents.

Is BBT the answer to the search for a reliable natural method of "regulation" of births? It certainly is an answer and the BBT charts provide, in any case, a valuable diagnostic guide to the gynecologist about a woman's hormonal condition. But it certainly is not *the* unique answer for a number of reasons which will now be examined.

1) There are women whose temperature charts do *not* follow the normal biphasic BBT pattern—their charts often show *two* or *more* thermal shifts per

cycle, each shift followed by a well-defined hyperthermic plateau of several days' duration. This observation has led to the belief in double or multiple ovulations during a single cycle. Medically, double ovulations (outside of twin ova) are held to be impossible. The progesterone from the corpus luteum of the actual ovulation should successfully block any further ovulation. Rock, in the microscopic examination of over 100 surgically removed ovaries, has never found two corpora lutea of different gynecological age (Laennec, 1961, p. 136). The origin of the double or multiple thermal shift which sometimes occurs in the BBT chart is obscure. But its occurence renders BBT impracticable as a natural method of family limitation.

2) The relation between the thermal shift and the timing of ovulation is not unambiguous. Hartman (1962) has reviewed the data, largely from the record of successful artificial inseminations. These suggest that ovulation occurs anywhere from 9 days before, to 1 day after, the beginning of the thermal shift, but most ovulations seem to occur the 2 days before and the day after. Thus there is still every reason to believe that a well defined hyperthermic plateau, unmasked by multiple thermal shifts, indicates a period of natural infertility.

3) Mild fevers show up as temperature rises that may be mistaken for a genuine thermal shift. An experienced BBT chart reader can usually distinguish between them, but an inexperienced one may have trouble.

4) The observation, recording, and plotting of the BBT involve activities that many women find distasteful. The thermometer tends to get broken or lost, days are skipped, and the fragmentary charts that result may fail to give any of the desired information.

5) In houses with many children, the early morning demands of the children, getting ready for school, etc., often make the observation and recording of the BBT a *practical* impossibility. This leads again to fragmentary charts of reduced usefulness.

6) Anovulatory cycles (13% to 17%) are the safest of all for natural family limitation. The BBT does not recognize these cycles until they are over and it is too late to "take advantage of the natural temporary sterility" (Pius XII, 1958).

Judged from the criteria of practicability, and reliability, BBT has much to recommend it over rhythm. It is practicable for women whose BBT chart is normally biphasic, even though their menstrual cycles are too irregular to apply the law of Ogino. It can give some couples a few days per cycle of virtually complete security. Most important of all, it gives an immediate indication regarding the probable presence or certain absence of a new pregnancy.

BBT is not practicable, as a method of familiy limitation, for women whose temperature charts deviate from the normal biphasic pattern, for women with an incidence of anovulatory cycles, for nursing mothers, and, in general, during the amenorrheic post-partum period, for women who object temperamentally or aesthetically to the BBT routine, and for women whose many children may lose or break the thermometer or force her out of bed before the BBT has been determined.

THE USE OF OTHER OVULATION TESTS

Hartman (1962) reviews the many criteria used to detect the occurrence of ovulation: BBT cervical mucus, cervical glucose, spinnbarkeit, hormonal assays, the Farris (1956) rat hyperemia test. The latter seems to have been the only test to give a reliable indication of ovulation a day or so in advance. In the late Dr. Farris' hand, this test permitted the cure of many cases of childlessness in couples with oligospermic husbands. The test was possible only to a woman who could promply deliver a daily early morning sample of urine to Dr. Farris' clinic in Philadelphia, and who could afford the daily sacrifice of an immature female Wistar-strain rat, for several days per cycle, for an examination of the reddening of the rat's ovaries in response to the woman's luteinizing hormone, the immediate precursor of ovulation. The test has failed in the hands of others, perhaps because of the mongrel nature of their rats, and is no longer used. It is mentioned here only as an illustration of the fact that an ovulation test, accurate enough to cure cases of infertility, can still be quite impracticable as a basis for natural family limitation.

More attention has been devoted recently to tests for cervical glucose, which reaches a maximum around the time of ovulation. Dr. J. B. Doyle (1959) of Boston invented a "Fertility Testor" or chromotestor designed to introduce the sugar testing paper into a woman's cervical canal. The test is masked by several

false positives and false negatives, which tend to make it unreliable for natural birth regulation. It does have its place, however, in the arsenal of medical weapons against involuntary childlessness (Hartman, 1962).

The viscosity of the cervial mucus drops sharply for the 2-to-3 day period surrounding ovulation (as detected by BBT). This is made manifest by the phenomenon of "Spinnbarkeit," or threadability, of the mucus, a test which a trained woman can carry out in herself (Hartman, 1962). The use of spinnbarkeit in conjunction with BBT is advocated and taught in the Montreal SERENA symptothermic method (Baillargeon, 1963; Lanctot, 1965).

One practical difficulty about all ovulation tests was already anticipated by Pope Pius XII, when he objected against the need of "converting the home and hearth, the sanctuary of the family, into a biological laboratory." (1951a, p. 850; 1956).

HORMONAL THERAPY AS A METHOD OF FAMILY LIMITATION

The first sex hormones to be detected and quantitatively assayed were the estrogens by E. A. Doisy, a Nobel-prize biochemist at the Saint Louis University Medical School (Allen and Doisy, 1924). The estrogens, and the progesterones, constitute the two main classes of female sex hormones. The estrogens preside over the events of the follicular phase of the cycle which lead to the onset of ovulation. The progesterones, related in the corpus luteum, govern post-ovulatory events: the descent of the ovum into the oviduct, fertilization and nidation of the egg, and pregnacy, or alternatively, the disintegration of the corpus luteum, followed by menstruation. The progesterones naturally inhibit further ovulations during pregnancy. Ovulation appears to occur as the result of a synergistic action of estrogen and progesterone (Hartman, 1962).

The development, since the 1930's of synthetic hormone preparations (Fieser and Fieser, 1944) has placed in the hands of the gynecologist a number of potent weapons for the treatment of many disorders of the female reproductive organs. Hormone treatments have been used to correct irregular bleeding, menstrual pain, endometriosis, childlessness, and spontaneous abortion (Hartman, 1962).

Starting in 1954, synthetic progesterone-like compounds began to be used as oral contraceptives (Rock, 1963). A woman takes a synthetic progesterone pill, e.g., norethynodrel, sold under the trade name of *Enovid*, every day for 20 days, from the 5th through the 24th day of the cycle. She should menstruate almost exactly on the 28th day. If the hormone is taken daily, without exception, her cycles should be anovulatory (in better than 99% of the cases) and she has, at hand, an effective quasi-natural method of family limitation. On the other hand, if the treatment is terminated, or interrupted, she experiences periods of markedly enhanced fertility during which her chances of achieving motherhood are greatly increased—this is known as the Rock rebound effect.

Anovulatory cycles are not unnatural—they occur in about 17% of all cycles and in over 50% of the cycles of adolescent women as recorded by Vollman (Hartman, 1962). The action of progesterone is not unnatural—progesterone is necessary to permit descent of the ovum into the oviduct, and it prepares the lining of the uterus for nidation of the fertilized ovum—endogenous progesterone comes from the corpus luteum—exogenous progesterone acts in the same way. Some gynecologists, who are opposed to the use of the "pill," maintain that the exogenous hormones also act as abortifacients, by "burning up" the endometrium (lining) before nidation is accomplished. Other gynecologists deny this, affirming that all the fertilized ovum needs is access to one mother blood vessel in the uterine wall in order to survive and develop. This point must be regarded as moot. It is not moot, however, to recall that the "pill" has been used, in cases of threatening abortion, to save the life of the foetus and to bring the baby to full term. In this case, the "pill" provides hormonal support to the continuation of pregnancy where deficiencies in the natural progesterone level threaten to abort the baby.

What about the intentional use of exogenous hormones to achieve anovulatory cycles for the purpose of family limitation? Is this natural? It can be looked upon as quasi-natural, at the very least. Does the intentional swallowing an artifact, namely, a "pill," for the purpose of avoiding pregnancy, constitute an unnatural action that should be morally condemned as contraceptive human industry, or does it constitute merely an action intended to permit the observance of a time of natural infecundity, the same infecundity that exists during all progestational periods in a woman's life?

Pope Pius XII addressed this important question in 1958. He permitted the use of the "pill," when taken "under doctor's orders as a necessary remedy be-

cause of a malady of the uterus or of the organism," by the principle of actions with a double effect. But he reproves the use of the pill for the direct purpose of avoiding pregnancy as "direct sterilization" (1958, pp. 734–735).

Many Catholics have been conscientiously troubled by Pope Pius XII's judgment of what they genuinely feel to be a natural method (Birmingham, 1964; Dupre, 1946; Roberts, 1964). John Rock (1963) points out that the use of exogenous hormones is basically different from the classical sterilization procedures, since it involves no mutilation of the reproductive organ or function which is simply put to rest and emerges from the treatment more active than before. Certain Beneluxian Theologians, Canon Janssens, Fathers van de Marck and Stillebeeckx have echoed Dr. Rock's plea (Dupre, 1964), as has also the American theologian, Father Felix Cardegna, S.J. (1964). In the ensuing debate, Pope Paul VI has recalled to the attention of all the norms of Pius XII, and has promised a reexamination of conscience, by the entire Church, of the question (1964).

Another method of using exogenous hormones for family limitation without direct sterilization has been gaining increasing attention by doctors since 1961, this is luteal phase therapy (de Bethune, 1965a; Goldfarb, 1964; Groden, 1965). In this treatment, a woman takes a progesterone pill every day for 10 days, from the 15th through the 24th day of the cycle. She should menstruate almost exactly on the 28th day. The exogenous progesterone is taken to supplement the action of the possibly insufficient level of endogenous progesterone released by the corpus luteum, starting about the 14th day, if the Ogino law is being followed. From day 15 on, the cycle is naturally infertile by the action of progesterone. The luteal phase therapy has a beneficial effect on the estrogenic part of the cycle, so that, by the Rock rebound effect, ovulation tends to become regularized and days 10 to 14 tend to become days of enhanced fertility in which a desired pregnancy has good chances of success (Goldfarb, 1964). The moral legitimacy of luteal phase therapy was defended, as far back as 1961, by a moral theologian, Father H. J. O'Connell, C.Ss.R. (1961), since it provides a regularized rhythm cycle. Luteal phase therapy is still too new to have generated any adverse comments or experiences. Time will tell as to how satisfactory it is. Needless to say, it should not be undertaken by *anyone* except under the guidance of a gynecologist. Dr. Alvin F. Goldfarb of Jefferson Medical College, Philadelphia, has had patients following this treatment for about two years, and has thus far encountered no unfavorable experiences among them, both from those who successfully achieved a desired pregnancy, and from those who wished to postpone pregnancy (1964).

Hormonal therapy as a method of family limitation, while effective, is, nevertheless, of limited practicability. Pending Papal reevaluation, it may not be used by Catholics as a matter of principle, except as a byproduct to a primary medical purpose under doctor's orders, or else in the form of nonsterilizing regularized rhythm cycle of luteal phase therapy. There are some women who react unfavorably to the hormone drugs, and cannot use them. Their cost introduces an economic limitation on their practicability. Their long range effects are still unknown, so that the maximum permissible time for their use, under present U.S. Food and Drug Administration rules, is four years for *Enovid* and three years for *Enovid-E* (Searle, 1964). All these factors indicate that the "pill" is not the complete answer to the search for a reliable, practicable, natural method of birth regulation.

NATURAL OLIGOSPERMIA

Natural oligospermia was first discovered by C. R. Moore in the 1920's in studies in veterinary medicine. The growing practice of artificial insemination in animal husbandry made evaluations of semen potency necessary for bulls, rams, and other species. Moore pointed out that the scrotum provides a temperature regulating mechanism for the testes. By its large evaporative surface, the naked scrotum normally maintains the testes 4 to 5 degree centigrade below body temperature. This temperature difference appears necessary for optimum spermatogenesis. This has been shown by the following evidence: 1) cryptorchidism, i.e., the failure of the testes to descend into the scrotal sac with the testes remaining in the abdominal cavity, a not infrequent occurrence among male animals, renders such males permanently sterile; 2) insulation of a bull's scrotum by woolens resulted, within about 6 weeks, in a markedly lowered sperm count in the bull's semen. After removal of the insulation, the lowered sperm

count (which had dropped from 1.4 x 10^9 per cm^3 to less than 5 x 10^7 per cm^3) persisted for about 3 months, then the sperm count recovered and returned to its normal level within the next 6 weeks; 3) male animals have been temporarily sterilized by exposure of their testes to heat treatments of varying durations at various levels in the moderate temperature range of 40 to 45°C. (Hartman, 1962).

Among baby boys, cryptorchidism is a rare occurrence which is generally self-correcting when the boy begins to secrete the sex hormone testosterone upon reaching puberty. Other cases can be treated by hormonal therapy or by surgery. Among married men, a number of cases of childlessness have been attributed to the man's habitual wearing of tight-fitting suspensories which maintained the testes at or close to body temperature. In some of these cases, the desired cure, namely, fatherhood, was attained after the tight fitting garments had been replaced by loose fitting ones. A Japanese proverb says that "Charcoal-makers are childless" (Watanabe, 1959). High fevers in men have also led to marked depressions in the sperm count, with full recovery after 60 to 80 days (Hartman, 1962). (Parenthetically, reference should also be made to Mills and Senior's (1930) study of the effect of climate on the conception rate. These investigators reported a seasonal drop in the summer months in southern cities of the United States and practically no variation in northern cities. Whether this is a genuine oligospermic effect is hard to tell).

Induced oligospermia and azoospermia can also result from the use of certain drugs (Nelson, 1961). The method does not appear to be acceptable on medical grounds, and is open to the same moral difficulties as the use of the "pill." Induced oligospermia and azoospermia will not be discussed in the present paper.

Two scientific studies of natural oligospermia have been reported by Dr. Akira Watanabe of Kyushu Medical School in Fukuoka in 1959, and by Drs. John Rock and Aloys Naville of Harvard in 1963. Dr. Watanabe studied the effect of scrotal hot water baths on healthy unmarried male medical students. Drs. Rock and Naville used natural body heat only, by applying scrotal insulation to 2 subjects.

Rock and Naville (1963) found that the human scrotum is about 2.5 to 4.7°C cooler than rectal body temperature (37°±½°C), the average temperature drop being 3.25°C. By using a tight-fitting cotton suspensory with an outer plastic covering, the scrotal temperature was raised by 1.7 to 2.8°C, the average temperature drop being reduced to 1.5°C. In one subject, the sperm count varied as follows: initially: 150 million per cm^3; after 2 weeks of insulation, no change; after 4 weeks, 23 million; after 7½ weeks, less than 1 million. The insulation was then removed, the count remained at 1 to 2 million per cm^3 for the next 5 weeks. After 6½ weeks, it was up to 33 million; after 8½ weeks, up to 93 million per cm^3, i.e., full recovery was obtained in about 2 months after the removal of the insulation. The other subject went through a parallel experience.

Watanabe's experiments were more complicated, and his results more difficult to describe. His subjects used scrotal baths for 30 minutes daily in moderately hot water at 44–46°C according to different time schedules. Single shot heat treatments of 1 day, or 2 or 3 consecutive days showed some lowering of the sperm count after about 5 to 9 weeks, followed by a marked rise (or rebound) after about 13 weeks, and recovery of the initial level thereafter. Single shot heat treatments of 6 or 12 consecutive days, showed an initial rise after about 2–3 weeks, followed by a sharp drop from the 5th to the 9th week, followed by a fantastic rebound about the 13th week, and a return to the initial level about the 16th to the 20th week. With repeated heat applications every 4 weeks, low levels could be maintained for several months in 4 out of 8 subjects. The 4 other subjects required repeated heat applications at 3 week intervals to attain and maintain low levels. Full recovery was attained in 3 to 7 months after cessation of the heat treatments. In all cases, the initial levels ranged between 50 and 125 million sperms per cm^3. The lowest levels attained ranged between 0.5 and 20 million sperms per cm^3 in 18 of 22 cases, and between 20 and 50 million per cm^3 in the remaining 4 cases. Initial rises, where observed went to as high as 174 million per cm^3, rebound figures to as high as 394 million per cm^3.

This fragmentary information shows that the natural variation in fertility and sterility in man is different from that in woman. Woman is fertile practically only at the time of ovulation, the presence of spermatozoa in the ampulla of the oviduct appears to be necessary to insure fertilization and survival of the ovum, which otherwise succumbs promptly, in a matter of hours, certainly no

more than 24 hours, probably much less. In the female rabbit, guinea pig, rat, hamster, and cow, the fertilizability and survival of the ovum drops off rapidly after 6 hours. Animal studies have shown that the number of spermatozoa in the female genital tract drops off from a half-billion or so in the vagina after copulation to a mere couple of dozen or so in the ampulla where fertilization takes place. The survival time of sperm cells in woman has been estimated as: 2 hours in the vagina with its low pH of 4.5, 48 hours in the cervix, 24 hours in the uterus, and 48 hours in the oviduct and ampulla with a higher pH of 8.0. Thus the day of ovulation, and the two days preceding, define the actual fertile period of a woman. The remainder of the cycle, she is naturally sterile (Hartman, 1962; Marshall, 1963).

In a man, the variations in fertility and sterility are much more gradual, and depend primarily on the sperm count per cubic centimeter, the total semen volume and total sperm count and, secondarily, on sperm motility and morphology. A normal concentration falls in the range of 50 to 150 million sperms per cm^3, while the total ejaculate of 3 to 6 cm^3 may range from 200 million to over 1 billion sperms. Oligospermia begins at anywhere between 60 and 20 million per cm^3. Below 20 million per cm^3, the man is definitely subfertile, and has difficulty in becoming a father. Childlessness in oligospermic men has been cured, by changes in a man's clothing, and also, in Farris' practice, by having the man refrain from coitus until the imminent onset of ovulation in his wife could be pinpointed by the rat hyperemia test (Hartman, 1962).

What is the natural process in the male reproductive system that is so temperature sensitive? It appears to be spermatogenesis; the process by which the spermatozoa are formed from the primordial spermatogonia in the testes, then mature in the epididymis, pass through the vas deferens, and finally combine in the prostate gland with semen from the seminal vessicle on the way to the urethra from which ejaculation occurs. The time of spermatogenesis and sperm maturation has been identified in rat and mouse at about 43 to 48 days (Hartman, 1962). In man, the corresponding time interval is not known, from direct experimental evidence. It appears to be about the same (6 to 8 weeks) both for the establishment of oligospermia after application of heat and for the recovery of a highly fertile sperm count after cessation of heat, from the data of Rock and Naville (1963) discussed above. The initial rise observed in 2–3 weeks' time by Watanabe (1959) after 6 or more daily hot water baths has been attributed to a hastened maturation of sperms in the epididymis coupled with a slowing down of the primary spermatogenetic process. The marked rebound observed after some 13 weeks suggests an intensified activity of the spermatogenetic processes after a slow down of some 5 to 7 weeks.

Of what practical value can be the sparse scientific information reviewed above about oligaspermia. The hot water immersion technique of Watanabe is not practicable except as a research tool. It has revealed, in succession, periods of enhanced fertility, reduced fertility, and enhanced fertility again.

To couples who are limited to the use of natural methods: Ogino rhythm and BBT, to couples who have been on the "pill" for a while and who now must, for medical and/or consciencious reasons, forego the "pill" and face a period of enhanced rebound fertility in the wife, the discovery of oligospermia and its natural reversibility bring out one very important and promising fact, namely, that nature has provided in body heat a built-in natural regulatory mechanism on the rate of spermatogenesis. The closer the testes are brought to body temperature, the slower this rate. Since it is no longer considered unnatural for homo sapiens to cover his body with clothes, even though mankind does possess the ancient record of a time when "they were both naked, the man and his wife, and were not ashamed" (Genesis 2:25), a man has, through the type of clothing that he adopts to cover and protect his genital organs, what may well prove to be a means of naturally regulating his rate of spermatogeneisis and the level of his fertility.

No claim is here made regarding the ultimate effectiveness of natural oligospermia as a method of regulating births. Nothing at all is known about this at the present time. Thirty years ago, Ogino rhythm was introduced with great fanfare as the "Catholic" solution to the problem of birth control, and ten years ago, BBT. Today we are much wiser about the limited practicabilities of rhythm and of BBT. Thirty years from now, we shall undoubtedly be much wiser about what can be done or not done with natural oligospermia.

NATURAL OLIGOSPERMIA—A MORAL EVALUATION

It is well known that the Roman Catholic Church, speaking through the voice of its Chief Bishop, has reproved artificial birth control by human industry on natural moral grounds, and has also defended the moral legitimacy and the truly broad limits of a natural regulation of births for serious motives (Pius XI, 1930; Pius XII, 1951ab). With every advance in our knowledge and understanding of reproductive physiology, the boundary between these two approaches to family limitation has become narrower and narrower, virtually to the point of overlap. It is of the highest importance that the distinction between artificial birth control and natural birth regulation be thoroughly explored and re-examined.

The Popes do disapprove, on natural moral grounds, of certain forms of voluntary family limitation. What do they disapprove of? They disapprove of the use of "human industry" to deprive the marriage act of its procreative power, they disapprove of any "attack" against the natural integrity of the conjugal union or against the development of its natural consequences, they disapprove of any "perversion" of the marriage act itself, they disapprove of "preventive maneuvers" or "direct attacks" against the life and development of the foetus. The word *attentato* used by Pius XII gives a key to the Papal thought. This word has been consistently mistranslated as "attempt" (which is not its meaning, the Italian for "attempt" is *tentativo*). Rather *attentato* means an "armed attack with an intention to kill." In the present context, it means the use of an instrument, or an artifice, of an unnatural action for the purpose of rendering coitus infecund.

But, because of the "further" ends of marriage, "mutual help" and "mutual love," the Popes have approved of coitus "in a rightful and natural manner, even though a new life cannot spring forth because of natural causes," they have approved of the use of "days of natural sterility," they have approved of the "observance of times of natural infecundity," they have approved of "the taking advantage of natural temporary sterility." They have approved of these, and, by logical implication, of the direct intentional activities required to make such a "use" or such an "observance" or such a "taking advantage" effective, when there is need to limit the family for a "serious motive" such as that found in the "medical, eugenic, economic and social indication."

Nothing in the Popes' words restricts these principles to the female sex. Nowhere did the Popes say that only the natural temporary sterility of the woman might be taken advantage of. The intentional use of the natural temporary sterility of man is just as valid, morally. In oligospermia, man has access to a temporary natural reversible condition of reduced fertility, brought about by the regulatory function of natural body heat on spermatogenesis in the testes. The intentional use of oligospermia can aptly be described as the "observance of a time of natural infecundity" or the "taking advantage of natural temporary sterility." Therefore, its intentional use as a natural method of family limitation can be as moral as the use of Ogino rhythm or of BBT. When used in conjunction with rhythm and BBT, it may (but only time will tell) help to place the latter methods on a "sufficiently secure foundation," as explicity hoped for by Pope Pius XII in 1951(b).

One objection will undoubtedly be raised by some, namely, that the intentional use of oligospermia is direct sterilization. But Pope Pius XII has declared direct sterilization to be illicit under the natural law (1958). Therefore, the intentional use of oligospermia is illicit under the natural law. This syllogism, when examined more attentively, is seen to suffer from a *defectus maioris*, and a *defectus minoris*. Let us look at the latter first.

Pope Pius XII (1958) did declare direct sterilization to be illicit under the natural law, but this declaration must be read in the context of his entire allocution in which he also declared that the taking advantage of natural temporary sterility does not violate the natural order. The Pope cited the Ogino-Knaus method as an example of the latter. Now the Ogino-Knaus method and direct sterilization have the same objective, namely, to permit coitus without pregnancy. They differ only in the means used to this end. Therefore, it is clear that Pius XII exempted the Ogino-Knaus method, and in the same breath, any intentional taking advantage of natural temporary sterility, from the moral stigma that attaches to direct sterilization. Since the intentional use of natural oligospermia is taking advantage of natural temporary sterility, it also is exempt from this moral stigma.

As to the *defectus maioris*, Pope Pius XII, in the same allocution (1958), defined direct sterilization as "the act of him who proposes, as an end or as a means, to render procreation impossible" in coitus. Now natural oligospermia does not render procreation impossible. It merely tends to render it less probable. Oligospermic husbands have become fathers, although with difficulty (Hartman, 1962, p. 53). A husband who gives his wife two million spermatozoa in natural coitus, instead of two hundred million, does nothing positive to prevent the union of *one* of these spermatozoa with an eventual ovum. This union is not rendered impossible, it remains as possible as before. The will of the Creator is not thwarted, to satisfy a moral criterion of Pius XII (1958, p. 736). The conjugal relations retain their intrinsic naturalness, and their due ordination to their primary end, to satisfy a moral criterion of Pius XI (1930, p. 561). Two distinguished moral theologians, Fathers John C. Ford, S. J. and Gerald Kelly, S. J. (1963, pp. 220–224, 362–363) already have addressed the question of an intentional reduction in fertility, short of total sterilization. They affirm that, according to most theologians, it is only "venially sinful" to reduce the chances of conception "without a proportionate reason," and it is "not sinful at all" when done for a "justifying reason."

Thus the way should be clear, for a conscientious, thoughtful Catholic, mindful of Pope Paul VI's (1964) appeal for a continued respect for the norms of his predecessors, to a moral acceptance of natural reversible oligospermia as still another natural method of regulation of births.

Scientifically and clinically, it is too early to say whether, in practice, natural oligospermia will actually fulfill Pius XII's hope (195 lb) for a sufficiently secure foundation for natural methods of birth regulation. But the knowledge of natural oligospermia deserves the critical examination of Catholics, and of all men, even as rhythm has experienced the examination of the people over the past 30 years, and BBT over the past 10 years.

Cardinal Suenens (1960, p. 170) echoed Pius XII's appeal when he urged: "We cannot ask men to respect a law, without doing all in our power to make obedience possible, without teaming up all our energies to open up new ways." The moral justification for natural family limitation as a safeguard to the physical and mental health of married couples is well founded in the Papal teaching. The troubling question remains: What about our young people? What will be the effect on them of new medical research on natural birth regulation at a time when the strident voices of hedonism are urging our youth to embrace contraceptive fornication and adultery as a way to sexual freedom and happiness (Ellis, 1962).

The remedy for fornication and adultery must lie, as ever, in the arduous task of a healthy, forthright, wholesome sex education of our youth, an education based on an *accurate* science of sexology (Suenens, 1960, 1961). Our young people must come to learn that fornication and adultery are a glittering fraud, a worthless bauble, that rob them of their personal freedom, of their human dignity, that give nothing in return. The New York psychiatrist, Dr. Max Levin (1965), in his review of Ellis' book, says:

"Preaching promiscuity to the young does not promote freedom. It does the opposite. It hinders freedom, for it degrades sex. From being an instrument which develops good husbands and wives, good fathers and mothers, sex is degraded into a mere self-indulgence, a plaything."

Sex (as an instrument which develops good husbands and wives, good fathers and mothers, is not fully mastered on the first night, even in the first year, of marriage. Sexual fulfillment and happiness demand a continuous process of education in loving self-control by a man with his wife, by a woman with her husband, an education that continues every day of their married life, an education that many rhythm users have scarcely ever had a chance to begin, even after four or six children, because of the ceaseless tension of their prolonged rhythm divorces (Novak, 1964).

Our young people need to be educated to the ideal of human monogamy, of the deep personal commitment of one man and one woman, as coming from God. Saint Paul says "Man is not without woman, woman is not without man, in the Lord" (1 Cor. 11:11). He urges that a Bishop of the Church be "mias gynaikas andra—the man of one woman" (1 Tim. 3:2). Loving dedicated celibates may share in this ideal by becoming mystically "the bride, the wife of the Lamb" (Apoc. 21:9).

The right of every child to a known father demands that every woman have only one man. The human equality of man and woman demands that every

man have only one woman. Such is the natural moral foundation of human monogamy, of its chastity—it is a foundation in justice—justice to the child by the mother, justice to the mother by the father. This natural moral foundation cannot but be made firmer by the availability to carried couples of simple, natural, effective methods of child spacing, for the preservation of their physical strength and emotional health (Suenens, 1960, 1961) in fulfilment of a hope publicly expressed by Pope Pius XII in 1951(b).

The author must express his thanks to his wife Peggy for her suggestion of this study four years ago and also for her love, encouragement, enlightenment and support during the prosecution of this work. To our nine children go our thanks for making our home a happy, boisterous, and funloving microcosm of mankind. The author is deeply grateful to Rev. Felix Cardegna, S.J., John Donovan, Ph. D., Gary Miller and Anna Southam, M.D., for valuable criticisms and helpful discussions.

EXHIBIT 67

EXCERPTS FROM "THE SCIENTIFIC THOUGHT OF PIUS XII—PART I"

(By André de Bethune, Ph. D., "Cosmos," a Science Journal of Boston College, Vol. 4, 1962)

Pius XII has left us a rich legacy of thought on the human aspects of science, in his allocutions to scientific, technical, and medical groups. A bibliography is presented listing 45 titles for the years 1954 through 1958. A sampler includes newly translated quotations from the Pope's addresses of 1958 to meetings on psychology, otorhinolaryngology, health, neuropsycho-pharmacology, blood transfusions, hematology, and philosophy.

Pius XII has left us a rich legacy of thought on the human aspects of science. Born 2 March 1876, elected to the Chair of Saint Peter on 2 March 1939, Pope Pius XII died on 9 October 1958. During the twenty years of his pontificate, he received numerous delegations from congresses, conventions, academies, societies, representing practically every walk of life and country of the globe. Deeply conscious of Christ's admonition to Saint Peter: "Confirm thy brethren," (Luke 22:32) and of Our Lord's own prayer: "They shall hear my voice," (John 10:16) the Pope gave to each group a brief allocution on the human and divine dimensions of their secular vocation, stressing the relation between their professional occupations and the twin commandments: "Thou shalt love IHVH thy God with thy whole heart . . ." (Deut. 6:5, Matth. 23:37) and "Thou shalt love thy neighbour as thyself," (Lev. 19:18, Matth. 23:39) sending his visitors home with words of inspiration and ecouragement, love and blessing.

Many of Pius XII's visitors represented the scientific, technical, and medical professions. The collection of his allocutions to these groups constitutes not only a general survey, whose intellectual depth is breath-taking, of up-to-date developments in the various sciences from a layman's point-of-view, but also a precious *ensemble* of moral considerations and spiritual insights on the *rôle* of each science in human life and for the welfare of man.

In an effort to unlock this treasury of Pius XII's scientific thought, and to make it more widely available throughout the world of science and scholarship, the "Cosmos" herewith presents the first installment of a bibliography of the Pope's allocutions on science, and, also a sampler of the Pope's own words. The bibliography given in this Part I covers all scientific titles in *Acta Apostolicae Sedis* (A.A.S.), the official Journal of the Pope, for the five years 1954–58, the last five years of the Pope's life. In future installments of this bibliography, the "Cosmos" intends to search out available English translations of these addresses (the bulk of which were given in French or Italian), and also to review the earlier years of Pius XII's pontificate.

The sampler given below is newly translated and selected from the last year of Pius XII's life, the year 1958. Of 45 allocutions and radio-messages for that year, during which the Pope was often gravely ill, 9 deal with science. Of 9 allocutions delivered during the last five weeks of his life, no less than 6 deal with science. The Pope's last allocution, delivered on 4 October 1958, five days before his death, was on a scientific topic: plastic surgery, while the last allocution that he prepared, but never delivered, was on another topic close to his heart: the formation of priests (published posthumously in A.A.S., 50, 961–971 (1958)).

The Pope's addresses on science, generally given in French, are marked by a style that is both simple and subtle, lucidly clear and strikingly elegant, a style that is the despair of the English translator. The translations to be found below in the sampler strive to render the Pope's words accurately, they scarcely do justice to his style. For their defects, the present author must take the full burden of responsibility. Yet these brief samples are not intended to do more than to whet the appetite. The serious student of Pius XII must return to the complete original text of the Pope's own words.

It is impossible, in these few lines, to give a thorough analysis of the scientific thought of Pius XII. If there is one dominant theme throughout the Pope's approach to science, it is that science is essentially human, a creation of man, an activity of a human person, a most noble activity indeed in which man comes closest to sharing in the joy and exultation of the Creator as He contemplates His own handiwork, as when IHVH answered Job out of the whirlwind and said: "Where wast thou when I laid the foundations of the earth? Declare, if thou hast the understanding." (Job 38: 4)

This human approach of the Pope's is most refreshing indeed when one considers how impersonal science ordinarily is, how severely and chastely impersonal is the scientific literature, how a scientific result usually acquires validity only when it can be reproduced time and again by myriad observers in many different laboratories quite independently of their individual personalities. This is quite in contrast to art and literature whose end result is profoundly affected by the personality of the artist or writer. Yet personality has a *rôle* to play in the art of scientific discovery—who among us is not grateful, e.g., to Laura Fermi for her warmly personal account, "Atoms in the Family," of the scientific work of her husband Enrico (who was one of my own great teachers! R.I.P.).

Science, like any other activity of a free human person, can be pursued or used for good or for ill. Its pursuit can affect, for better or for worse, man's temporal welfare and his eternal destiny with or without God. To this thought, the Pope returns again and again and again. Let us close with Pius XII's exhortation to the Pontifical Academy of Sciences (24 April 1955):

"You have in hand a powerful instrument for good. Endeavour to understand the unutterable joys you give to other men, when you unveil for them the mysteries of nature and reveal its secret harmonies: the hearts and eyes of your listeners hang at your very words, ready to sing a hymn of praise and of thanksgiving." (A.A.S., 47, 401 (1955)).

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Pius XII to the International Congress for Blood Transfusions, 5 September 1958, A.A.S., 50, 726–732 (1958):

ON PROBLEMS OF BLOOD GENETICS

Hematology—the science of the blood and its diseases—is of the greatest interest to biology, physiology and medicine. Blood is, indeed, the medium where the exchanges of organic life occur; to all cells it brings oxygen and the elements that feed them, at the same time, it assures the elimination of wastes. . . . (p. 727).

It is generally well known today that red blood cells have their own proper characteristics, and that mankind is divided into four blood groups: A-B-O-AB. If we denote by the name "antigen" the capacity of inducing within an organism the formation of substances called "antibodies," capable of uniting with the antigen, and of inducing agglutination, followed by the destruction of the red cells, the four groups can be explained as follows: groups A and B possess each a proper antigen, but not the corresponding antibody, while they possess the antibody of the antigen that they lack; group AB has both antigens and no antibodies in the system; group O has no antigen, but has the two antibodies. During the last decades, the discovery of other systems has made the typing of human blood considerably more complex. But what interests us even more is the discovery of the "Rhesus" factor, which cleared up the pathogenesis of the hemolysis of newborn infants, until then of unknown origin. An "Rh negative" mother will produce antibodies for "Rh positive" cells, and if the child she bears within herself is "Rh positive," she may do him harm. Since blood groups are transmitted according to Mendel's laws of heredity, to have an "Rh positive" child, the mother will have to have an "Rh positive" husband; if he is the son of parents one of whom was "Rh positive" and the other "Rh negative," he will have a

50% probability of having "Rh positive" children, but if both parents are "Rh positive," all his children will be so too. When an "Rh negative" woman marries an "Rh positive" man, she is in the "Rh situation" and in potential danger of having sick children. (pp. 727–728)

Better informed of the problems of genetics and of the gravity of certain hereditary diseases, men of today, more so than their forebears, have the obligation of taking this increased knowledge into account, and to avoid, for themselves and for others, many physical and moral difficulties. They must be attentive to anything that could cause to their offspring lasting damage or drag it into an interminable succession of miseries. Let us recall that a community of blood between persons, in families, or in larger communities, imposes certain duties. Even though the formal elements of every community belong to the psychological and moral orders, the offspring constitute its material basis which must be respected and not damaged. (p. 731)

Pius XII to the VIIth International Congress of Hermatology, 12 September 1958, A.A.S., 50, 732–740 (1958) :

ON HEMATOLOGICAL PROBLEMS AND STERILIZATION

The problems of blood, inherited from earlier generations, of which today's men are becoming conscious, not without wonder nor even fear, bear a universal character, which amply justifies your efforts, and which is underlined by the international representation of your Congress. The work We already cited in Our previous allocution about genetic consultation (*Sheldon C. Reed, Counseling in Medical Genetics*) exposes the different modes of solution currently considered for the problems of a defective heredity. (p. 732)

We have exposed in substance that direct sterilization is not authorized by the right of man to dispose of his own body, and cannot therefore be considered a valid solution for preventing the transmission of a diseased heredity. (p. 734)

By direct sterilization, we intended to designate the action which proposes, as an end or as a means, to render impossible procreation; but We do not apply this term to every action that in fact renders impossible procreation. Man, indeed, does not always intend the result of his action, even if he foresees it. Thus, for example, the removal of diseased ovaries will have as a necessary consequence to render impossible procreation, but this impossibility can be not willed neither as an end nor as a means . . . The same principles . . . (pp. 734–735)

. . . permit the solution to a question much discussed today by medical doctors and by moral theologians: Is it licit to prevent ovulation by means of pills utilised as remedies for the exaggerated reactions of the uterus and the organism even thought this medicine, by preventing ovulation, also renders impossible fecundation? Is this permitted to the married woman who, despite this temporary sterility, wishes to have relations with her husband? The answer depends on the intention of the person. If the woman takes this medicine, not with a view to preventing conception, but solely on the advice of the medical doctor, as a remedy necessary because of a maladay of the uterus or of the organism, she brings about an *indirect* sterilization which remains permitted according to the general principle of actions with a double effect. (p. 735)

In Our Allocution of 1951, we have clarified that spouses, who make use of their conjugal rights, have the positive obligation, by virtue of the natural law proper to their state, not to exclude procreation. The Creator indeed has willed that the human race should propagate precisely through the natural exercise of the sexual function. But to this positive law. We applied the principle which is valid for all others: they do not oblige to the extent that their fulfillment involves notable inconveniences, which are not inseparable from the law itself, nor inherent in its fulfillment, but comes from elsewhere, and which the legislator therefore did not intend to impose on men when he promulgated the law. (p. 737)

With sagacity and perserverance, you attempt to explore all possible ways out of so many difficult situations; you are ever occupied in forestalling and healing an infinity of human sufferings and miseries. Even if precisions or modifications appear desirable on certain points, this does not substract from the undeniable merit of your labors. We encourage them with good will. We highly appreciate the active and serious collaboration, which enables diverse opinions to be expressed with freedom, but never stops at negative criticism. This is the only

way open to real progress, both in the acquisition of new theoretical knowledge, as well as in its clinical application. (p. 740)

* * * * * * *

Senator GRUENING. At this time I direct that the Gallup Poll "Catholics See Approval of Birth Control," which appeared in the Washington Post, August 20, 1965, be included as a part of this hearing as well as the article "Catholics and Population," by Garry Wills, that appeared in the National Review, July 27, 1965.

(The articles referred to follow:)

EXHIBIT 68

CATHOLICS SEE APPROVAL OF BIRTH CONTROL

[From the Washington Post, Washington, D.C., August 20, 1965, © American Institute of Public Opinion]

THE GALLUP POLL

PRINCETON, N.J., Aug. 19.—More than six Catholics in ten today believe that the Church will eventually approve of some method of birth control such as the use of pills. And, of those Catholics who hold this view, 81 per cent believe this will happen within ten years.

The official doctrine of the Catholic Church forbids birth prevention by contraceptive devices, though family planning by "natural" means is accepted. At recent Vatican ecumenical sessions, however, the use of pills as a birth preventative has been considered.

Gallup Poll interviewers put these questions to a cross-section of the Nation's Catholics:

"Do you think the Catholic Church will ever approve of some type of birth control, such as the use of pills?"

	Percent
Yes	61
No	26
No opinion	13

Those persons who said "yes" were asked:

"How long do you think this will be—5 years, 10 years, 25 years, 50 years, or more than 50 years?"

	Percent
Within 5 years	55
Within 10 years	26
Within 25 years	6
Within 50 years	1
More than 50 years	1
Don't know	11

EXHIBIT 69

CATHOLICS AND POPULATION

(By Garry Wills, National Review, July 27, 1965)

A PROMINENT SCHOLAR NAVIGATES OVER TREACHEROUS SHOALS IN DISCUSSING CATHOLIC THOUGHT ON BIRTH CONTROL; AND, THROUGH THE MISTS, MAKES A LANDFALL

This is a hot one; fated to grow hotter. In fact, the closer men come to some control of the birth rate, the more intense will the conflicts with (and within) Catholicism become. Non-Catholics will predictably resent the action of men they must consider the last of the old-time detonators of our "population explosion." Some Catholics will just as predictably resent the intrusion of others in what they take to be a matter of personal conscience; they will anticipate a 1984 in which men can be punished for the Orwellian crime of "Overbirth." Other Catholics will resent the Catholics just described (and their hostility may be the bitterest of all).

The range and depth of Catholic reaction to this problem can be almost frightening. On the highest level of opposition, a theologian at one of America's most progressive seminaries says he must in conscience give up teaching if the official stand of Rome is altered—so little can he reconcile such alteration with the norms he has been taught, and has been teaching, throughout his scholarly career. At quite another level, an apocalyptic nincompoop in Ohio fires off letter after letter to all Catholic writers denouncing the enemies of God who want to rob Him of the babies He demands (as you see, the man's deity seems to resemble Moloch). In the name of orthodoxy, this ebullient boob concocts ingenious heresies—as when he writes that God needs men as "co-creators" and we are frustrating Him by not pulling the oar on our side. (There the weird crew-master sits, megaphoning at you and me and God, "Stroke! Stroke!")

Is anyone a fool, then, to rush into an area so clearly marked "Off Limits" for angels? It is no wonder that pacific men throw up their hands in despair and adopt this attitude. They feel that any attempt to clarify the matter will only confuse it. They have a point; most attempts have perhaps done this—not because of incompetence on the part of those Catholics who have suggested lines of development in the Church's teaching, but because it is so difficult to engage the real issues and so easy to ignite fiery resentment. In such a situation, a few minor flareups prompt my epistolary Savonarola to write that *devils* are rushing in where angels fear to tread; and the American bishops cancel a television series that simply presented the alternative views of Catholic theologians without advocating any single stand.

CATHOLICISM VS. HEDONISM

As I say, the difficulty is to engage the issue at all, to make minds mesh. In the coming debate, I am afraid that Americans generally must resign themselves to the task of acquiring some knowledge of the structure of Catholic thought. It is true that Catholic authority pronounces with full stringency only on revealed matters or on "natural truths" necessarily related to the revelation. But subsidiary guidance on moral problems is also given by the hierarchy; and this guidance has a binding quality extensively calibrated, ranging from very serious to very light. Such calibrations are easily blurred; the binding force of any teaching by authority is easily exaggerated. This is something the general public has had a taste of with regard to social encyclicals, where cries of "disloyalty" are used by Catholics on other Catholics. The same thing can be expected in the area we are dealing with.

Furthermore, aside from the hierarchic *social* structure of the Catholic teaching enterprise, the *content* of Christian teaching makes for a necessary resistance to change. The Catholic tradition is first of all an act of preservation of the revealed history of salvation; and, arising out of that first duty, it is an act of gradual *penetration* of further meanings contained in the redemptive history left to us in Scripture. The tradition advances, therefore, as a continued meditation on a set of events symbolic in themselves, and recorded in the further symbols of biblical style, and transmitted through the witness of many different ages (each using its own symbolic equipment of transmission). This means that Catholic thought involves an endless retracing of different strands in the traditional teaching. These strands unite and intertwine, and their entire force cannot be felt if isolated issues are dealt with. The economy of revelation must be considered as a whole; separate moral insights attain validity only as enunciated within this economy, as emerging out of a large and providential pattern, as interdependent with many other moral truths.

Obviously, this kind of consideration, spanning the centuries and using many different languages, is moral and ascetic and mystical as well as "philosophical" in the narrow sense. When a Christian school—the Augustinian, for instance, or the Thomist—moves some of the teaching out of its theological sphere and into a philosophic isolation, certain kinds of precision are achieved; but the entire effort must be resubmitted to the tradition, which has been formulated in the vocabulary of different ages and different schools without becoming identified with any one of them. Christian thinking develops, as Newman argued, not syllogistically but historically, by a reliving of the redemptive history in new eras.

At this point, impatient reader, you have a perfect right to your impatience. What has all this to do with the countdown on living-space? The clock is ticking, humanity is silting up on every continent, while I indulge in a theological

revery. Yet it is just my point that these considerations are acutely relevant to the problem of engaging Catholics in a discussion of birth control. It is the most practical thing in the world to understand the sources of Catholic resistance to the general position of modern Americans and Europeans on contraception. Anything that has been part of the Catholic teaching or experience will not lightly be extruded from its place in that tenacious texture. And, whatever its technical status, the ban on contraceptives is clearly a large part of the Christian experience in modern times—(until *very* recent times, of Protestant as well as Catholic experience). Any religious norm that has worked itself into such a position has been related to the spiritual life in a thousand ways. This is especially true of a teaching with the obvious ascetic and social and familial repercussions of the ban on contraceptives. The large family had become a kind of badge of the Catholic faith; in a sense, it had its martyrs. An important indictment was issued by many of those holding this position: the rooted family, the view of love as creative and outgoing, is in grating conflict today with a hedonism that depends upon divorce, upon the total mobility (and separability) of individuals, upon the destruction of woman's unique role and dignity, upon the devaluation of the child to the level of an anchor impeding that essential state of *drift* that contemporary man lives in and for.

TEACHING STEMS ATOMIZATION

Of course, many people have stood up for the family and for social duty without being Catholic or accepting the Catholic position on birth control; but many Catholics have accepted that teaching precisely as the point from which to oppose the atomistic tendencies of our time, and their moral resistance to the world has been a courageous and corrective one. Whatever can be said against large families, there are spiritual values that were customarily demanded and expressed in them; and we must not be foolishly confident that we will keep the values while dismissing their old matrix. It would be faddism to reject the entire Christian witness involved in the position of many churches on this subject, or to mock those who have upheld it (often at great personal cost, or by extraordinary sacrifice). As I say, these considerations all have tremendous weight in a moral-theological tradition; but they are bound to seem irrelevant to the man who wants to win a vote for the public dispersion of condoms or pills without being subjected to a course in Catholic theology. To him, it will seem that Catholics are evading the issue or talking about five other things when he only wants to talk about point x or y. Sometimes, of course, they *will* be evading the issue; but at other times they will be engaging it at the points that are most vital to them, however tenuously connected they may seem to others.

PAPAL AUTHORITY STRONG CONCERN

What, specifically, will Catholics be thinking about as the public debate over birth control advances? Let me list some of the concerns, valid and invalid, moving from the most serious to the most trivial:

1. The preservation of authority, of the purity of doctrine, is obviously the prime concern of Catholic teaching authority as such. As a Christian, as a priest, as a man, a Pope will have concerns more humane and pastoral. But as a teacher he must keep the large symbolic revelation to man from becoming amorphous at its few points of fixity. Theologians must give men the instruments for maintaining this permanence of tradition. They, too, have a discipline not co-terminous with their own spiritual concerns. For such men, any change in the position on birth control touches the subject of ecclesiastical authority at its most sensitive points—the authority of the Pope, and the authority of bishops.

There is no *ex cathedra* (infallible) papal pronouncement on the subject of contraceptives, but there are some very strong papal directives, including Pius XI's encyclical *Casti Connubii* (1930), which condemns "any use whatsoever of matrimony exercised in such a way that the act is deliberately frustrated in its natural power to generate life." The statement is, in its form, as solemn as anything to be found in encyclicals; and, since encyclicals have recently become popular, and great emphasis has effectively been put on their importance, it would disturb many to depart from this strongest papal teaching short of *ex cathedra* pronouncement. Others remark that it *is* short of infallible (and

that this distinction has to *mean* something); that many past bulls and decrees of equal weightiness proved in time to be non-essential parts of the tradition; that the scriptural argument adduced in the encyclical is based on a misunderstanding of the Onan story; and that Church authority itself moved away from the strict interpretation of the encyclical when Pius XII approved the practice of "rhythm," which is certainly a deliberate attempt to use matrimony in such a way as to frustrate the individual sex act of its generative consequences.

2. The other area of authority affected by changes in the birth-control position is the *magisterium* (teaching office) of bishops. This *magisterium* is usually divided into "extraordinary" (pronouncements of the episcopal college assembled in a Council) and "ordinary" (the consensus of bishops exercising their teaching role around the globe). There has been no extraordinary teaching on the subject of birth contol; but clearly the normal position of the majority of bishops has for some time been one of opposition to the use of contraceptives. The tricky point here is that, although the Pope's ordinary teaching is not infallible, the ordinary teaching of the bishops is considered to be that of the Church itself, and therefore certain. Since this is a time when the idea of "collegiality" is being emphasized by theologians in order to counter the "papalism" of Vatican I, a consideration of the birth-control problem carries us into the whole tortured question of collegial authority. Is the question settled by the infallible consensus of the bishops in union with their head (Pius XI in his encyclical, Pius XII in various addresses)?

Those who think the question is *not* settled point out that a teaching of the magisterium cannot be casual. It must be considered, framed solemnly, and addressed precisely to the issue of *the magisterial weight to be given* a certain doctrine. A Pope, for example, must intend and say that he is pronouncing solemnly in order to do so. Some partial equivalent of this must exist when bishops form an infallible teaching, even of the "ordinary" sort. Otherwise, the unquestioned assumptions of any age would all become infallible by the fact that a majority of bishops hold them. These men point out that the conditions for conscious formulation of a magisterial teaching did not exist in the period of episcopal condemnation of contraceptives. For one thing, collegiality as a concept *was* in eclipse; most bishops were not exercising their own authority in conjunction with the Pope's, reaching a consensus after independent consideration; but simply relaying the Pope's instructions according to the papalist concepts of Vatican I. Furthermore, the challenge to the common position had not been framed in such a way that the response of authority was a reflective one based on thorough discussion. Yet formal definition comes in almost all cases as an answer to debate that presents the whole range of problems—again, to distinguish the ordinary magisterium from simple, unchallenged, widespread assumptions. And debate of the subtlety required for this problem is only now getting under way. In short, even the "ordinary teaching" of the bishops is obviously something more conscious and solmen than "common opinion." Otherwise a thousand questions treated as open to dispute would have been settled long ago by the homilies of a majority of the college.

3. Another concern of Catholics is with the concept of creation as good in itself and bearing traces of the Creator's intentions. This doctrine is, at its vital sources, a scriptural one; but Thomist theologians have framed the concept in philosophic terms drawn largely from Cicero's reporting of the Stoic arguments for a "natural law" in the universe. Thus anyone trying to understand the Catholic position on birth control must advert to the fact that there is a ticklish debate in progress over the various meanings of the term "natural law."

Put in its simplest terms, the Catholic argument has been this. The sex act is functional: it has its place in an amazing concatenation of physical processes that cooperate to produce a child. It has a *natural* purpose; and entirely to frustrate that purpose would be to go counter to the will of nature's Creator.

In its broad terms, all Catholic thinkers accept this position, though they would give different theoretical underpinnings to it and debate the meaning of terms like "*entirely* to frustrate." Disagreement begins with the application of this abstract rule to real situations. For instance, though procreation is the general end of marriage, must it be the specific end of each sex act? Moralists for years, indeed for centuries, held that it must; but a clear line of development has established that it need not be. Once it was considered sinful to have sex relations during pregnancy or after menopause because the act was divorced from

conception in such circumstances. The great leap in the development of thought along these lines was the approval of "rhythm," which deliberately plans times when the individual sex act can be separated from procreation—plans it indeed with great care, vast expenditure of time, and skilled use of mechanical paraphernalia (thermometers, sugar tapes, charts). The *expertise* required by this system has even led some to charge that only the educated Catholic can have recourse to this approved method of family control—thus introducing a class distinction into sexual ethics.

APOLOGISTS EMBARRASSED

Since all Catholics now hold that, for good reasons, men can separate the sex act from its consequences (though this was expressly forbidden in *Casti Connubii*) by *temporal* interposition, the question arises whether, for the same good reasons, they may accomplish the same thing, and do it more intelligently and efficiently, by *medico-glandular* interposition (*e.g.*, the pill) or *physical* interposition (*e.g.*, condoms or diaphragms). The answer to this has so far been that in such circumstances the *end* is not being frustrated (any more than in a successful rhythm scheme), but the very *nature of the act* is violated. Note that this argument from "the integrity of the act" is *not* the argument of Pius XI against frustrating the end of marriage. By their use of the term "integrity" moralists suggest that there is only one natural way to accomplish the sex act; that any other way of doing it is a perversion which, like all perversions, degrades man. Opponents of this position answer that no other physiological process has this ritual untamperability; that it is, in fact, *natural* to man to transcend physical limits by the use of intelligence (otherwise the whole practice of medicine is "unnatural," as Christian Scientists claim) and to turn brute functions to a higher use (otherwise the wine and carefully prepared banquet of good fellowship are "unnatural" and we should all subsist on a tasteless nutritional minimum); that it is characteristic of the human sex act not to be limited only to fertile periods and the necessities of survival but to have a spiritual function as symbolic of married union (so that "rhythm," by making intercourse a cyclic temporal phenomenon, returns human sexuality to the bestial level); that this symbolic function is a sufficient end for the sex act during infertile periods or pregnancy or after menopause; that there is no reason why it should not be a sufficient end when pills or contraceptives are used for the same motives that justify the practice of rhythm; that the only remaining objection to the use of these devices, as opposed to the scientific exploitation of infertile periods, is, in the case of the pill, a tabu about fiddling with the reproductive system (a tabu constantly violated in common medical practice) and, in the case of contraceptives, a tabu about the untamperability of the intercourse process.

This latter tabu has put some priests in the embarrassing position of creating a symbolic *spiritual necessity* for the entrance of semen into the female reproductive system in every act of intercourse—a necessity entirely separate (because of rhythm theory) from the immediate aim of procreation. One Jesuit put it this way in a recent book on the subject: "The woman who uses a diaphragm seals off physically the most intimate part of her body and thus, in symbol, closes the depths of her spirit to her husband." This physical cult of the female pudenda belongs in the textbooks of comparative anthropology. It is magic, and the priest-witchdoctor seems on the verge of prohibiting surgery because it would allow a doctor to penetrate "the depths of a woman's spirit." In fact, by this priest's "symbolic" standard of morality many women practicing rhythm are really married to their sugartesters.

INTERCOURSE "THE EASY WAY"?

4. The conventional teaching is that procreation is the chief aim of intercourse, and pleasure a secondary one. Some fear that the separating of the sex act from the immediate possibility (or, as the irreverent might say, the immediate threat) of procreation will remove the pleasure from its subsidiary position. The answer to this is that the "primary-secondary" terminology looks, in a simplistic way conditioned by the cultural milieu of the Church Fathers, at the secondary aim as *sheer* physical pleasure, as an "indulgence," a "concession to concupiscence"; that the sex act, if it is used morally at all, is a human

act expressive of love, of the shared joy with which man and woman become "one flesh"; that the marriage act is the natural superlative in the language of love and not simply a biological bribe to make men procreate; that, in this light, the "pleasure" and the procreation are aspects of a single thing. The proponents of the primary-secondary terminology think of the two aims as rivals, and maintain that the secondary aim must be reduced or "kept down" or minimized in all possible ways lest it cancel the "primary." One member of the Pope's study commission on birth control put it this way in a recent public interview. "I can't quite see opening up the act to greater love between the husband and wife and making this perhaps the more important end of marriage."

Of course this attitude often masks a feeling that sexual pleasure is not the expression of human love but a rather inhuman concession to man's evil body. This view was deeply imbedded in the works of the early Fathers, especially of the Platonist St. Augustine, and celibate theologians of the middle ages did not have the experience or the will to purge the tradition of these marks of cultural inadequacy. They have not been purged even yet. The current controversy shows, in embarrassing ways, that many Catholics defend the "natural law position" from motives that deny the very basis of the natural law—a belief that nature is good. (*America* magazine ran an article by a man who scorned intercourse as "the easy way" of showing love—and did this precisely in the name of what is "natural." He might as logically have scorned walking as the easy way to exercise the privilege of locomotion and advanced a "natural law" argument for walking on one's hands. This man would never have advocated the forswearing of conversation as an "easy way" of communicating with one's spouse; his argument makes no sense except on the basis of a tacit belief that intercourse is not only "the easy way" but an ignoble way.)

SOME FURTHER CONSIDERATIONS

5. Others oppose any discussion of "change," since the suggestion that the Church's teaching on this point is not perfectly formed will lead some Catholics, when they notice the theologians of standing believe the pill or other devices are moral, they follow their own consciences in this matter. The response is to ask whether this is bad. Only those with a frivolous view of "Protestant" belief in the primacy of conscience think that Catholics have made, and will make, and should make, decisions in the light of their own conscience as that is informed by all sources, revealed and authoritative and natural. No one has the right to prevent this; what one can do is make the conscience better informed—by all the means open to the reason of man. This, too, is part of the natural law.

6. The close texture of Catholic thought tends, at its best, to make people think in large terms, of the total balance, of the repercussion of any single view upon the spiritual lives of others. It also tends, at its worst, to a partisanship that does not treat issues according to their internal merits. People are for or against things because an Ottaviani or a Küng have taken this side or that. The close fellowship of the Church turns into partisanship, making men decide theological matters on grounds that are primarily political, opposing or approving suggestions on birth control because they are "conservative" or "liberal." This trend should be noticed; but there is no need to dignify it with criticism.

7. Some argue that the social and spiritual consequences of encouraging the small family are undesirable, that this would be an encouragement of "selfishness." In some circumstances this might be true, but these are hardly grounds on which to decide a question of objective morality. Furthermore, the arguments for the large family are historicaly conditioned Modern life puts severe demands upon parents and children which sheer *numbers* cannot solve (as they did in the days of hunting and physical struggle with a reluctant environment). In fact numbers add to the problems. Education is no longer a matter of putting a bow and arrow in a child's hand. The aim of marriage is children; not babies (as many as possible), but *children*—nurtured at the breast as well as in the womb, trained in and outside of schools, brought into an arena of severe spiritual challenge at each of those crises that make up the slow, complex maturation of the human animal in our time. The large family—often aided with tutors and nannies—was geared to survival at a different level. The duty toward children is often, today, a duty not to bring more children into a

family in which the mother is overburdened already and able to give less than the proper amount of time to each of her offspring. Those Catholic women who are asking for a reconsideration of family life today are not ones who have no children and want none; they are precisely the mothers of children who would be cheated of even minimal attention by the immediate addition of more. In such circumstances, the true aim of marriage is itself the standard that requires parents to limit their families. This *is* marriage-as-procreation. We are not put here to run quantitative fertility races.

NOT SIMPLY QUESTION OF FOOD

8. Some argue that to alter one's theological perspective under the pressure of "overpopulation" is to make spiritual values give way to mere physical inconvenience. They say that the demographic problems can be solved by technological means; that the truths of theology should not fluctuate under such vicissitudes; that any inconvenience caused during the lag between physical challenge and technological response must be borne as a testimony to man's superiority over his environment.

But this is not a simple question of finding food. This is a spiritual problem. Man, because he is man, develops skills and needs and demands, spheres of activity and awareness, that are increasingly subtle and complex; and "self-preservation" applies to these spiritual activities just as much as to physical limbs. The generation of life does not stop at the moment of conception or parturition or weaning; it extends to the development of the child's capacity for enjoying a truly human life in the context of humanity's current tasks and aspirations. This is true entirely apart from the physical crowding of the globe or the discovery of new foods.

9. Some argue that a change in the Catholic position on birth control would be a sign of, or would induce, an expanding permissiveness. The exaltation of the value of sex will, they say, lead to premarital intercourse, "petting," masturbation. The devices analysed and permitted will make extra-marital sex "too safe." This objection is the least justifiable of those we have considered, and one of the most common. In its essentials, it argues that truth should be suppressed for tactical reasons; that, whatever the force of arguments for or against contraceptives, men should be maintained in a safe ignorance. Adults should close their minds to anything that might cause trouble for tomorrow's adolescents. Admittedly, thinking is a dangerous occupation. But those who use arguments like these are not only trying to spare others the risks involved; they have forsworn the hazardous enterprise themselves.

The nine headings under which I have arranged a sampling of Catholic concerns are, of course, somewhat arbitrary. They could easily be doubled, rearranged, reduced to more basic matters. But these seem to me the most frequently proposed matters of debate, put in the terms that most often recur. Different Catholics, in different circumstances, will oppose new ideas on the end of marriage as a threat to the Pope's authority, or to that of bishops; as an offense against the natural law; as hedonistic, permissive, even "left-wing"; as a substitution of selfishness for the spirit of sacrifice, or a premature concession to social difficulties. I think it must be clear by now where my sympathies are in all these questions. But I also want to make it clear that these are serious questions, with serious arguments on either side, and deep spiritual consequences resting on the decision. The decision should not be rushed; and those outside the Church should muster whatever sympathies they can while advancing the political and social claims the modern world can and must make upon the family.

For this is not a theological problem only. It is a civil-social one—a fact that cuts two ways. We have given the state great responsibility for the social welfare of those brought into the world but unable to support themselves. Under increasing pressure, the state is bound to counter this with demands for responsibility to *it*. The temptation to use means like sterilization to punish the "indiscriminately fertile" will become severe. In such circumstances, the boasted Liberal tolerance of individual conscience will have to prove itself under fire. Catholics and others who refuse to use contraceptives, to submit to sterilization,

to accept a eugenics code (or quota) dictated by the state, *must* have their freedom guaranteed, even if this slows down the dreams of social planners.

On the other hand, Catholics must not try to inflict their code on others (as they have in the past). The right of conscientious objection is not the same as license for sabotage. The rights of minorities should be protected; but so should the rights of majorities. The social processes formulated by the many should be neither imposed on the few nor frustrated by the few. Furthermore, though others are bound to respect the freedom of Catholics in this area, they have a right to demand a full and candid discussion of Catholic citizens' attitudes toward every aspect of the controversy. The rights of minorities cannot be recognized unless the extent of their claim is made clear. Catholics as citizens can act to maintain their moral freedom in this area; and they must, as citizens make clear to their fellow Americans the limits they place upon their exceptional stand *vis-a-vis* the rest of our society. This means, I believe, that there must be fewer secret commissions, fewer canceled TV shows, fewer Catholic attacks upon those who would discuss this question outside the Curia or the chancery.

Senator GRUENING. I direct now that two of Charles M. Schulz' succinct "Charlie Brown" cartoons concerning the topic under discussion be entered into the hearing record.

(The cartoons referred to follow:)

EXHIBIT 70

CHARLIE BROWN CARTOON

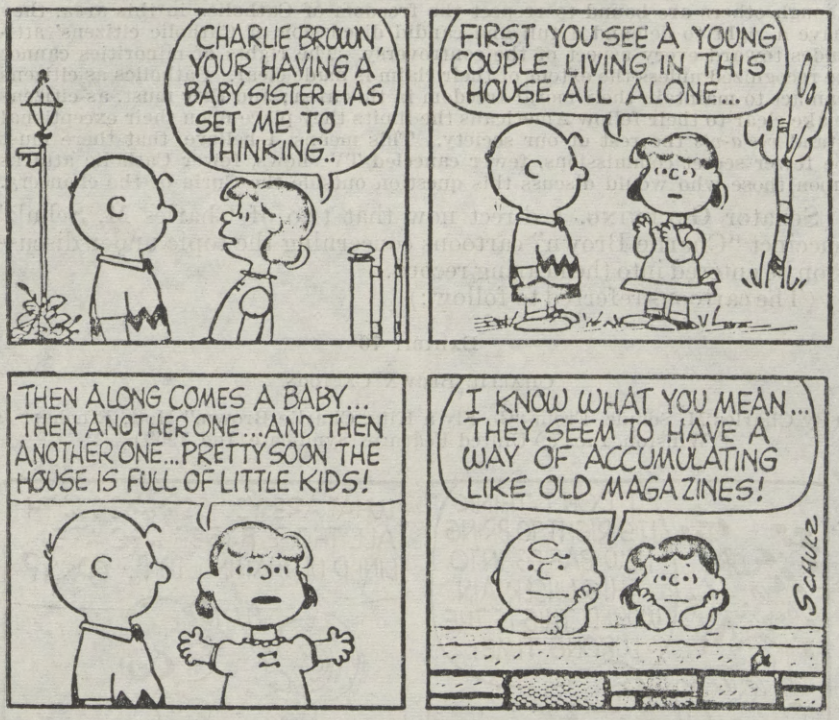
(By Charles M. Schulz, From "Go Fly a Kite, Charlie Brown," Holt, Rinehart & Winston, Inc., © United Features Syndicate, Inc. 1959)



EXHIBIT 71

CHARLIE BROWN CARTOON

(By Charles M. Schulz, From "Go Fly a Kite, Charlie Brown," Holt, Rinehart & Winston, Inc., © United Features Syndicate, Inc. 1959)



BIOGRAPHIC STATEMENT: ALBERT P. BLAUSTEIN

Senator GRUENING. Is American law in need of revision in light of new problems caused by multiplying populations?

The question is serious and the answer is overdue. The subcommittee's next witness is Prof. Albert P. Blaustein, professor of law at Rutgers, The State University, Camden, N.J. Professor Blaustein teaches courses in legislation and in legal research and writing. He was born in Brooklyn, N.Y., October 12, 1921. He received his bachelor's degree from the University of Michigan in 1941, and, following military service, received his law degree from Columbia University in 1948.

The subcommittee understands Professor Blaustein became interested in population problems as an outgrowth of his work in civil rights.

He is probably best known for his book, "Desegregation and the Law." Following its publication in 1957, he served as a consultant to the U.S. Commission on Civil Rights, preparing reports on the prob-

lems of segregation in the Philadelphia school system and in the schools of south Jersey.

Since no one can possibly study and make recommendations in connection with school problems without knowing something of the demographic situation, he naturally became interested in this field.

He is the author of seven books, including "The American Lawyer," a study of the legal profession in the United States, and a study on foreign legal periodicals. He has spent the major part of his last three summers traveling in Africa under the auspices of the Institute of International Education.

He resides in Cherry Hill, N.J., is married, and has three children.

Professor Blaustein, we are very happy to have you here. Please proceed.

STATEMENT OF PROF. ALBERT P. BLAUSTEIN, PROFESSOR OF LAW AND LAW LIBRARIAN, RUTGERS, THE STATE UNIVERSITY, CAMDEN, N.J.

Professor BLAUSTEIN. I am much honored by the invitation to appear before this committee to express the viewpoint of a lawyer who is interested in the population problem.

It is obvious that overpopulation is the most critical social problem of our time. As such, it is necessarily the greatest legal problem of our time and the greatest challenge which faces the legal profession today. Since the population problem is fast becoming the population crisis, it is essential that our laws and our legal order must now be subject to reexamination. We dare wait no longer in studying, formulating, and augmenting the proper and precise laws and legal machinery both to help restrain the population growth and to alleviate the ills inherent in overpopulation and unwanted population.

"OUR . . . GOAL . . . ENRICHMENT OF HUMAN LIFE, NOT ITS RESTRICTION"

But we must, in our quest for the best laws, be wary of the trap of talking solely in terms of population curtailment. We must take as our guiding principle the words of population expert, John D. Rockefeller III: "Our constant goal is and must be the enrichment of human life, not its restriction." In other words, our new laws on the population problem must at the same time make for a better society.

The laws and legal structure which must now be studied and developed—and changed—fall under four broad, generalized classifications.

First: We must have legislation designed to close the knowledge gap and to provide the governmental administrative machinery to handle the population problem. This is the necessary first step and we are fortunate in having this type of bill before your committee at this time.

Second: We need laws designed to encourage family limitation.

Third: We need legislative changes and changes in legal rules in light of the newly perceived and newly recognized social value of population control.

Fourth: We need laws to help alleviate the problems inherent in a society with a greatly expanded population—problems involving conservation of natural resources and the like.

S. 1676 THE CLOSING OF THE KNOWLEDGE GAP

The keystone of our American democracy is the principle summarized and adopted as the theme of the 1954 Columbia University Bicentennial. It reads: "Man's right to knowledge and the free use thereof." With this principle there can be no reasoned dissent. The bill before this committee, S. 1676—I wish that the number for this new declaration of freedom were S. 1776—is the vital, necessary first piece of legislation in the first category. It is the logical legislative followup of the efforts of able lawyers who, with the cooperation of equally able men of medicine and demography, have fought outmoded laws in legislative halls and courtrooms in order to advance birth control knowledge. The importance of the dissemination of this vital knowledge—the closing of the knowledge gap—has already been ably presented by many other, better qualified witnesses. I can add nothing to this part of the dialog except to express support.

As to the fourth category—dealing with laws to alleviate the problems of a much expanding population—there is likewise little reason to comment. There already exists a vast literature on what laws must be passed to revitalize our cities, save our water reserves, prevent air pollution, and so forth. However, we might also want to think at some point in terms of new tax laws providing depletion allowances or other incentives in order to encourage the kinds of production we will need for our new expanding population.

But little has yet been said or done about the second category, laws to encourage family limitation, and the third category, legal changes which should be made in light of the new social value of population control.

LAWS LIMITING POPULATION GROWTH MUST BE BASED ON STUDY AND ANALYSIS

Laws designed to limit population growth must meet two criteria: they must, first, actually accomplish that objective; and, second, they must do so without reducing the significance of human life and the value of individual dignity. Such laws must not be enacted on an ad hoc basis. They must not be based on a "feeling" on the part of legislators that these laws can do the job; such laws must not come in response to emotion-based public sentiment or reaction. They must rather be laws based upon study and analysis—the results of efforts of lawyers, working together with men of medicine, demography, sociology, and so forth.

And what is specifically not wanted are State-imposed population controls. A law directly limiting the number of children which a family can have would be repugnant to American ideals. The lawyer's job today is to find the best laws to encourage population limitation, at the same time minimizing the number of unwanted children and advancing the Great Society.

We have already heard legislative proposals that any woman who bears two illegitimate children should be sterilized following a court

order. We have already heard proposals that welfare payments should be denied for the support of those who have illegitimates. But would such laws have any effects? Even disregarding our ideals and our other social values, certainly we should not pass laws of this type until we analyze their effects and know that they will work to curtail population.

A GOOD PART OF THE SOLUTION WILL COME FROM LAWS ENCOURAGING EDUCATION

Desirable laws designed to encourage family limitations must be analyzed under four headings: (A) age; (B) economics; (C) knowledge; and (D) medicine. And in regard to all four, it seems that a good part of the solution will come from laws encouraging education. Now to each of these four areas of consideration:

MARRIAGE AGE AFFECTS POPULATION GROWTH

A. We start with age. There is a definite correlation between marriage age and population growth. One of the best ways to help limit the population explosion is to encourage proper delays in marriage. And this is certainly not an evil.

The tendency to marry young is peculiar to the United States, among the advanced countries of the world. Only in Asia is there a marrying young pattern comparable to that of the United States. More girls marry at age 18 than at any other. Half of all brides this year will be under 20. Further, it has been estimated that half of all young men in America are married before they are 25. And not only are they marrying young, but they are having their first babies soon after marriage and are having their children closely spaced. One-half of all mothers have their first child at age 21. And it is interesting to note that the average mother has her last child by age 26, and that there is a very sharp reduction in child production which comes before age 30. So it is a serious business to consider raising the marriage age in order to reduce population growth.

ONE OUT OF EVERY SIX BRIDES IS PREGNANT ON HER WEDDING DAY

Unfortunately, when one speaks about the marriage-age situation it is also necessary to speak about unwanted, unplanned first children. Sociologists have estimated that at least one out of every six brides is pregnant on her wedding day. And probably one-third to one-half of all teenage marriages involve pregnancies.

One law-legislative solution is to raise the age at which persons may marry. Certainly, it should be no less than 18. Those States which permit marriages below that age should increase the figure to 18. Equally important is not lowering age limitations which already exist, despite pressures in that direction. Kentucky has not changed the age at which its children may be married, but it has, I believe, taken a step in the wrong direction by lowering the legal age from 21 to 18 for the purchasing of homes, opening of charge accounts, and so forth. The waiting periods between announcing intention of marriage and the actual marriage ceremony should also be increased by law and that law should be enforced.

EDUCATION HAS LONG BEEN RECOGNIZED AS A REGULATOR OF FERTILITY

Probably the best way to raise the marriage age is through laws fostering more education. By building more schools, by providing more scholarships, by raising the compulsory education age, and so forth, we can keep children in school longer. And this will limit the exploding population in still another way. Education has long been recognized as a regulator of fertility. Those with more schooling are far more likely to plan activities more efficiently, and this includes family size. And more education also makes for a better America.

This would make a good beginning—a good beginning which further study and investigation can make still better.

WHAT ECONOMIC MEASURES SHOULD NOW BE TAKEN TO ENCOURAGE FAMILY LIMITATION?

B. Let me talk about economics. Almost all the countries in our Western civilization, outside of the United States, have, at one time or another, adopted family allowance systems in order to prevent population declines. But what economic measures should now be taken to encourage family limitation?

It has been said that increased availability of mortgage credit, plus social security benefits, unemployment and disability compensation, minimum wage laws, and so forth, do encourage early marriages and more children. However, it is not consistent with our ideas of the Great Society to take away any of these benefits. Nor is it demographically certain that curtailment of any of these benefits would curtail any significant population growth. Certainly, studies by lawyers, public opinion experts, demographers, sociologists, economists, and so forth, are necessary to know what effect such laws actually have on our population growth.

EMPLOYMENT—LIMITING FACTOR WITH WOMEN

We do know as a fact that population declined in an earlier era when legislation forbidding child employment reduced the value of children as income-earning assets. What does this mean to us in terms of future laws? Shall we further change child labor laws? This is certainly something that must be investigated. We also know that working women have fewer children than those who are not employed. Thus from the point of view of population control, as well as our struggle to achieve the equality of all citizens, removing discrimination against women in employment is of great importance.

CREATE A TAX DEDUCTION FOR MONEY SPENT ON EDUCATION

The population problem also calls for a reexamination of our tax structure. Should we continue to have a marital deduction? We now allow a $600 income tax deduction per child. Should this be continued? Will its repeal actually have an effect on population growth? My point is that we should find out first, before taking away such a deduction because we "*think*" it might have a population-reducing effect. I am inclined to think that the better alternative is to create a tax deduction for money spent on education. But I am not really

sure about the effect this would have on population growth. Certainly, we should find out.

WHAT ARE OTHER WAYS TO CLOSE "THE KNOWLEDGE GAP"?

C. Knowledge: Under this heading we must think about ways to close the knowledge gap other than those provided for under the present bill. Here we must think in terms of laws setting up State medical clinics and social agencies where data on population control can be disseminated to those who want such information. And we must think about laws which will speed the communication of such knowledge. At the same time, we must phrase such laws with care, with appropriate precision, so that those whose moral or religious convictions are opposed to contraception will be free *not* to take advantage of such information or such services. This is best done in advance—and not at a time when a legislature is being rushed to pass such legislation.

D. Medical: Under this heading must come the further study and analysis of laws connected with abortion and sterilization. Much intelligent legal work has already been done. More must be done. Here we start with the realization that there are probably more than 1 million illegal abortions per year in the United States and that at least 5,000 women lose their lives annually through such practices.

CRAZY-QUILT PATTERN OF LEGISLATION

We are told by the very great population expert, Dr. Alan F. Guttmacher, that the "abortion laws in the United States make hypocrites of all of us." And another expert tells us that when it comes to abortion, that he knows "of no other instance in history in which there has been such frank and universal disregard for criminal law." Dr. Guttmacher also criticizes what he calls our "national crazy-quilt pattern of legislation" on the laws governing sterilization. He says "most of us do not know whether we are being legal or illegal when we carry out a sterilization without strict medical necessity, such as a serious heart disease."

A PLEA FOR FURTHER STUDY

Steps in the right direction have been taken by the highly respected American Law Institute in its model penal code. And there is legislation in Virginia and in a number of other States which must be examined as possible models for the future. This is not testimony now advocating the passage of laws on either abortion or sterilization, but it is a plea for further study as to the possible role of such laws in our society.

REEVALUATION OF EXISTING LAWS

Lastly is the recommendation that we reconsider and reevaluate all our laws in light of the newly recognized objective of population control. Laws are expressions of our social values. And quite properly, in the days before the automobile, our social values were such that we made it a greater crime to steal a horse in Texas than to steal a horse in Massachusetts. Today we have this new social value of population limitation—a value which did not exist at the time that

our present-day laws were put into effect. As each new law is proposed, it must be analyzed in view of this new objective. And the time has come to engage in a comprehensive study of *existing* laws in light of our population goals.

LET US THINK ABOUT THE RELATIVE EFFECT ON POPULATION CONTROL

A few moments ago, I mentioned the new law of Kentucky which has reduced the legal age from 21 to 18. Kentucky is the first State to have done so, although several other States have set the legal age at 18 for women, while keeping the legal age at 21 for men. My immediate reaction is that such laws tend to increase population. When those who are only 18 are permitted to buy homes, open charge accounts, and obtain loans under their own signature, school dropouts and early marriages may be encouraged. Let us find out. Let us think about the relative effect on population control before we pass such laws. Of course it is a good argument on the other side to say that if a person is old enough to vote and join the Armed Forces then he is old enough to enter into contracts. But I suggest that the social value of population limitation was not considered in the passage of this law. And it should have been.

There are many laws which need reconsideration in light of our social desire to limit population growth. Marriage laws have already been noted, but we must also consider laws on divorce and on annulment. In many jurisdictions, annulments will be granted if one of the parties refuses to have children. Is such a legal rule valid in view of today's thinking? We need to reexamine our laws concerning illegitimate children. And, very important, we must reconsider our family support laws. What rules shall we enact regarding the financial responsibilities of fathers of both legitimate and illegitimate children? We must reevaluate our welfare laws and the way relief payments are handled. We must also examine our criminal laws dealing with such matters as the age of consent and homosexuality. Should we make changes in laws on joint bank accounts, on laws involving land ownership, on laws dealing with employment, on laws dealing with inheritance? I believe that we will want to make changes in all of these laws after we restudy them in view of the population problem.

OUR FURTHER CONSIDERATION OF THE EDUCATION LAWS IS IMPORTANT

Perhaps more important is our further consideration of the education laws. At what age can we permit dropouts? How much compulsory schooling—at what kinds of schools—should be demanded? Is it advisable to give single persons preference in obtaining scholarships? And we should even look into the question, as has been suggested by one group of demographers, as to whether we should continue to have coed junior and senior high schools or replace them with all-boy or all-girl schools.

There is almost no limit to the number of laws which should be reexamined in view of the additional criterion of the social value of population control. This should make us take even stronger steps to enforce the laws prohibiting racial discrimination. For as we provide employment for, and advance the education of, the nonwhites in

our population, we shall have an automatic reduction in numbers of children—as well as making for a better and more prosperous America.

PUBLIC OPINION IS READY

In his essay on "Population, Space, and Human Culture," Henry B. van Loon says this: "The scientist and the lawyer must work together closely in the interest of mankind; the scientist to give us facts, the lawyer to help us make them useful." And the sociologist wants to give us surveys of knowledge and attitudes or practices concerning reproduction so we can find out what people really know, believe, and do. As Julian Huxley has pointed out, "public opinion is ready."

WE HAVE REACHED THE STAGE WHERE WE CAN IMPLEMENT A SOUND POPULATION POLICY

We have reached the stage where we must bring all of our disciplines together so that we, in this great developed country can implement a sound population policy—one which can then be readily transferred as part of our great contribution in helping the lesser developed nations of the world.

Senator GRUENING. Well, thank you very much, Professor Blaustein for a very fine contribution to this discussion.

You emphasized throughout the need of study before we hastily proceed with new legislation. How do you propose these studies will be made, how can we initiate such studies, and where should it be done and by whom?

SOMETIMES WE LAWYERS CONSIDER OURSELVES THE SOCIAL SCIENTISTS WHO CREATE THE MACHINERY

Professor BLAUSTEIN. Senator, if under your bill, a governmental agency—HEW, for example—decides that this is a study to be undertaken, something practical can be done. I would guess at a quarter of a million dollars for the initial pilot study. This would provide for a team of lawyers and assistants to work on proposed laws, together with doctors, demographers, and public opinion experts and experts in other fields. It must be so set up that the scientific ideas of all of these disciplines can be translated efficiently into laws. Sometimes we lawyers consider ourselves the social scientists who take the views of other scientists and then create the machinery to make them work. Thus, I think it important that lawyers be there to head such a project. There are a number of foundations which are likewise interested in what we can do specifically. And this might be an effort which would appeal to one of them. I do not know at the moment; I have not pursued the matter.

We do have law revision commissions in many States which study proposed legislation and legal rules and make recommendations to our legislatures. One of the most important laws of recent years is the Uniform Commercial Code. This was the result of the efforts of law professors, working with men in banking and in the business area. Their recommendations were the result of quiet study and research. On the basis of their thought and their supporting documents, the State legislatures had something solid to work with. I suggest that this might serve as a model as we plan our population control laws.

LAWS SHOULD NOT BE EMOTION-BASED

Senator GRUENING. In your first paragraph on page 2 under the heading "Laws Limiting Population Growth," you counsel against laws stemming from emotion-based public sentiment. They should rather be laws based on study and analysis, the result of efforts of lawyers working together with men of medicine, demographers, sociologists, and so forth. In view of the testimony that has been given this morning by Dr. Barrett and by Dr. and Mrs. de Bethune, do you think it might be well to add another category, that of theologians?

Professor BLAUSTEIN. Yes, sir; by all means.

Senator GRUENING. I think that would be very desirable.

Professor BLAUSTEIN. By all means. Even better might be the appointment of a lawyer-theologist to the central board. Someone like a law professor from a Catholic university might be ideal—one who is educated in the common and canon law with a knowledge of theology as well. The combination of disciplines might be most useful.

Senator GRUENING. Thank you very much, Professor Blaustein. You have been very helpful. We appreciate your coming and giving us this very fine statement.

Professor BLAUSTEIN. Thank you, sir.

Senator GRUENING. I direct that at this time another pertinent "Charlie Brown" cartoon be inserted into the record.

(The cartoon referred to follows:)

EXHIBIT 72

(By Charles M. Schulz, "Go Fly a Kite, Charlie Brown," Holt, Rinehart & Winston, Inc., © United Features Syndicate, Inc. 1959)



BIOGRAPHIC STATEMENT: JOSEPH D. BEASLEY

Senator GRUENING. The population crisis is not confined to one region, one nation, or one hemisphere, and the findings in one community may often be helpful to another, just as the research conducted by one nation can be more useful when it is shared, thereby enabling comparisons.

The next witness is Dr. Joseph D. Beasley, of New Orleans, La. Dr. Beasley is assistant professor of maternal and child health and pediatrics at the Tulane University School of Medicine. He is associated with the department of tropical medicine and public health.

Dr. Beasley was a participant at the White House Conference on Health which was held this past November. At that time the Subcommittee on Foreign Aid Expenditures learned of the studies by Dr. Beasley and his colleagues which concerned family planning in one instance and in another the attitudes and knowledge relevant to family planning among Negro females in New Orleans. Dr. Beasley will tell the subcommittee about his findings this morning.

Dr. Beasley received his B.A. and M.A. degrees from Emory University in 1952 and 1956, respectively. In 1962 he received his D.T.M. & H. from the London School of Hygiene and Tropical Medicine where his special interests were public health and international tropical medicine. Two years ago he received his M.P.H. in maternal and child health from Tulane University.

His professional experience includes general practice and residency at the Charity Hospital in New Orleans. He has received his certification from the American Board of Pediatrics.

He is a member of the Family and Population Planning Committee of the Maternal and Child Health Section of the American Public Health Association.

I shall direct that at this time there be placed in the record the research experience and publications in which he has particpated and which is now in progress.

Thank you very much for coming, Dr. Beasley. Please proceed in your own way.

(The material referred to follows:)

EXHIBIT 73

RESEARCH PROJECTS CONCLUDED AND THOSE UNDERWAY IN TOPICAL MEDICINE AND FAMILY PLANNING

(By Dr. Joseph D. Beasley, Obstetrician and Gynecologist, Department of Child Health and Pediatrics, Tulane University School of Medicine, New Orleans, La.)

Research Experience and Publications

1. Research and training post-doctoral fellowship from Institute of Allergy and Infectious Diseases, National Institutes of Health. Served under Dr. A. W. Woodruff, Professor and Head, Department of Tropical Medicine. Thesis for D.T.M. & H. (Lond.) "Incidence of Parasitological Infections in Recent Immigrants to England from Tropical Areas."

2. A study of Oxacillin absorption, metabolism and excretion in premature and term infants, older children. Research conducted jointly with Dr. Margaret H. D. Smith. Tulane University Department of Pediatrics. For Bristol Laboratories.

3. Platou, Ralph V., Lennox, R. H. and Beasley, J. D., "Battering," May, 1964. Tulane Medical Bulletin, May, 1964, Vol. 23 No. 3, p. 157–165.

4. Beasley, J. D. "The Design of Preliminary Studies Necessary for the Initiation of a Family Planning Program for Orleans Parish, Louisiana. Unpub-

lished thesis for the Masters of Public Health, Division of Hygiene and Tropical Medicine, New Orleans, 1964.

5. "Attitudes and Knowledge Relevant to Family Planning Among New Orleans Negro Females," J. D. Beasley, M.D., C. L. Harter, M.S., Ann Fischer, Ph. D., Tulane University. Paper presented at the 93d Annual Meeting of the American Public Health Association, Chicago, Ill., Oct. 18–22, 1965. Submitted to Journal of American Public Health Association for publication.

Research in Progress

1. Project Director of Children's Bureau Grant H–40, Family Survey of Metropolitan New Orleans.
2. Project Director of Children's Bureau Grant H–40, The Lincoln Parish Family and Fertility Study.
3. Research Director of Children's Bureau Grant PH–900, A Study to Describe the Characteristics of Deaths Associated with Childbirth in Metropolitan New Orleans and Subsequently in the State of Louisiana.

STATEMENT OF DR. JOSEPH D. BEASLEY, PEDIATRICIAN, DEPARTMENT OF CHILD HEALTH AND PEDIATRICS, TULANE UNIVERSITY SCHOOL OF MEDICINE, NEW ORLEANS, LA.

Dr. BEASLEY. Mr. Chairman and members of the subcommittee, I am grateful for your invitation to appear before this subcommittee to discuss some aspects of research now being carried out by the faculty and staff of the maternal and child health section.

WE WANT A BETTER UNDERSTANDING OF BIRTH RATES AND INFANT MORTALITY RATES

Since July of 1964 we have been concerned with two major studies—the "Family Survey of Metropolitan New Orleans" and "A Study of the Characteristics of Deaths Associated With Childbirth in Metropolitan New Orleans During 1964." Both of these studies are funded by the Research Division of the U.S. Children's Bureau. Both studies have been concerned with charactistics of mortality and fertility in all socioeconomic classes, but we are especially interested in gaining a better understanding of the high birth rates, stillbirth rates, and infant mortality rates in the lower socioeconomic segment of the Metropolitan New Orleans population. The infant mortality rate—number of infants born alive who die before reaching 1 year of age per 1,000 live births—in 1964 was about 100 percent higher in the lower socioeconomic segment of the population. The birth rate—number of live births per 1,000 of the population—in 1964 was approximately 50-percent higher in the lower socioeconomic segment of the population. I will first explain the New Orleans family study and present some of the data from this study. After these results have been presented I will present some of the data from the mortality study and develop some of the relationships which exist between the studies.

A DISCUSSION CONCERNING ATTITUDES AND KNOWLEDGE RELEVANT TO REPRODUCTIVE PHYSIOLOGY AND FAMILY PLANNING

The New Orleans family study was designed to obtain information which would afford a better understanding of—

(*a*) Attitudes and knowledge relevant to reproductive physiology and family planning.

(*b*) The extent and nature of differential fertility.

(*c*) Family structure and family stability in two generations.

This presentation will be limited to a discussion of information concerning attitudes and knowledge relevant to reproductivity physiology and family planning. The hypothesis examined in this aspect of the study is that many couples are unable to plan the size of their families because they lack sufficient knowledge of reproductive physiology, of the ovulatory cycle or of effective family planning techniques. Consequently they are subject to economic and emotional problems resulting from random procreation.

INTERVIEWING THROUGH HOME VISITS

Method and sample: To obtain data about fertility and attitudes and knowledge relevant to fertility in Metropolitan New Orleans, 24 interviewers were carefully selected and trained. Interviews were carried out in home visits at a representative sample of 1,124 households from February through July of 1965. In selecting the sample, all of the census tracts in the New Orleans standard metropolitan statistical area were assigned on one of eight socioeconomic groups and a proportionate sample of households was drawn from each group. Interviews, averaging about 1 hour and 15 minutes each, were sought from all of the ever-married persons and ever-pregnant women between ages of 15 and 45 who lived in homes included in the sample.

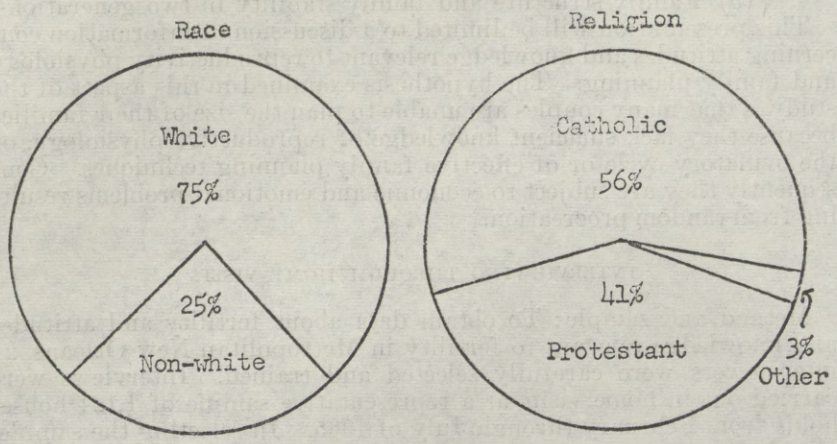
In all but 34 of the homes (3 percent), the interviewers were able to determine the eligibility status of the occupants. In 554 homes (49 percent) there were no eligibles, and the remaining 536 homes (48 percent) contained an average of 1.9 eligibles each. This was in close agreement with our estimate that 50 percent of a random sample of homes would contain at least one eligible and the average would be two eligible per home. Interviews were obtained from 908 (89 percent) of the 1,021 eligibles identified. The sex-race distribution of those interviewed is as follows: 398 white females, 142 Negro females, 281 white males, and 87 Negro males. I have presented the method of selecting the sample in some detail because it is important for the members of the subcommittee to realize that the sample was designed to represent attitudes and knowledge relevant to reproductive physiology and family planning in a metropolitan area of over one million population.

Now if you would remove the gem clip and follow along looking at figure 1 (p. 476) as I read the text, I think you will get the impact of what I am going to say.

THE FINDINGS OF THE STUDY

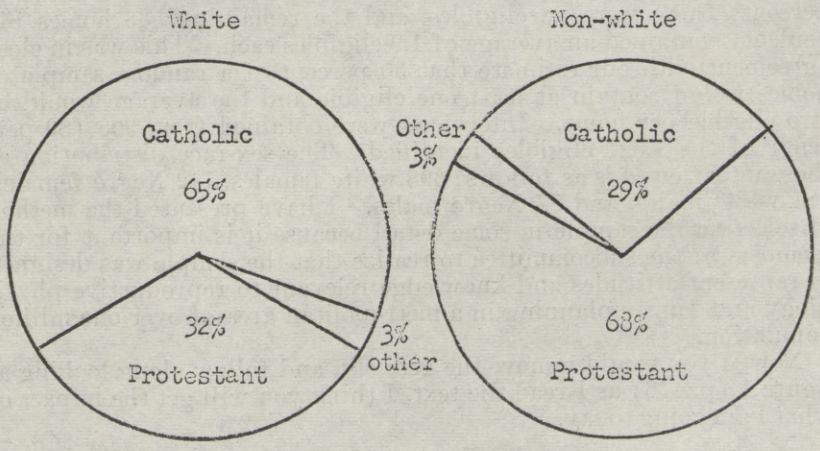
Findings and discussion: In figure 1 (p. 476) the racial and religious distributions of the sample are presented—75 percent of the respondents were white and 25 percent of the respondents were nonwhite. A Catholic faith was claimed by 56 percent of the sample, the Protestant faith by 41 percent, and 3 percent listed some other religious preference.

FIGURE 1.—*Racial and religious distribution of the sample.*



In figure 2 (see below) the religion of the sample, by race, is presented. A Catholic faith was claimed by 65 percent of the white respondents and the Protestant faith was claimed by 32 percent. A Catholic faith was claimed by 29 percent of the nonwhite respondents and 68 percent claimed the Protestant faith.

FIGURE 2.—*Religion of sample, by race.*



GOOD UNDERSTANDING OF THE FUNDAMENTALS OF PROCREATION IS IMPORTANT

Although a basic knowledge of reproductive physiology and the ovulatory cycle is not a necessary requirement for the effective use of family planning methods, a good understanding of the fundamentals of procreation is conducive to an awareness of the possibility of controlling fertility and to the effective use of birth control techniques—93 percent of our respondents said they knew when they were first married or pregnant that babies came as a result of sexual relations.

Yet when we asked them to tell us their idea of how sexual relations cause pregnancy only 68 percent knew that pregnancy was caused by a seed or sperm or something from the man meeting inside the woman with an egg or ovum or something from the woman. Probes related to the initial responses were used to obtain detailed answers.

In figure 3 (see below) the percentage with some knowledge of reproductive physiology is broken down by socioeconomic class. Socioeconomic class of the respondents was assigned by means of a formula based on medium family income, educational level obtained, and occupation. For purposes of this discussion upper socioeconomic class involved a yearly family income of $7,500 or more, middle socioeconomic class a yearly family income of $3,000 to $7,500, and lower socioeconomic class a yearly family income of $3,000 or less. Only 12 percent of the respondents in the upper socioeconomic category did not have a good understanding of the fundamentals of procreation but 53 percent of the respondents in the lower socioeconomic group did not possess this fundamental information.

FIGURE 3.—*Q. Would you tell me your idea of what happens when a couple have sexual relations that causes pregnancy?*

A. Percentage with some knowledge of reproductive physiology, by socioeconomic class

Upper (206), 88%; Middle (467), 70%; Lower (223) 47%.

SIXTY-ONE PERCENT OF RESPONDENTS DID NOT UNDERSTAND ABOUT THE OVULATORY CYCLE

The assess knowledgeability of the ovulation cycle, a more sophisticated concept, respondents were asked the question printed on figure 4 (see below): "Do you think a woman is just as likely to become pregnant at one time as at another?" and regardless of whether a "yes" or "no" answer was given they were asked: "Why do you say that?" Probes related to the response given were then used to determine if they knew that the "fertile" period is approximately the middle 7 days between the menstrual flows—39 percent of the respondents were knowledgeable about the ovulatory cycle; 61 percent of the respondents interviewed did not have a functional concept of the ovulatory cycle. Not only was there lack of knowledgeability, but many of the respondents were grossly misinformed.

In figure 4 (see below) knowledge of ovulatory cycle is broken down by socioeconomic class.

FIGURE 4.—*Q. Do you think a woman is just as likely to become pregnant at one time as at another? Why do you say that?*

A. Percentage with some knowledge of ovulatory cycle, by socioeconomic class.

Upper (206), 65%; Middle (459), 39%; Lower (220), 15%.

Again the marked difference between the three groups is apparent. Only 15 percent of the lower socioeconomic group of respondents were knowledgeable about the ovulatory cycle. Typical responses of those who were not aware of the cyclical nature of ovulation are:

The women said:

"I think any time you sleep with a breathing man you've had it." No. 486101, five pregnancies, age 37.

"Because it just happens with the nature of God. If He wants to bless us, we shouldn't complain." No. 498207, six pregnancies, age 34.

"I think you can get pregnant at any time. (P). That's all I know about it." No. 500107, one pregnancy, age 22.

"Any time; I know that egg comes down and stays there just waiting to be fertilized." No. 534101, five pregnancies, age 28.

Examples of responses given by those who thought there were times when a woman was more likely to get pregnant, but who gave insufficient or incorrect reasons, are as follows:

"There is a certain time of the month when you can but not at other times. (P). I wished I knew when. I don't know." No. 497107, four pregnancies, age 27.

"A lot of times if you're dwelling on it it's hard to get pregnant. If you relax, it is more likely to happen." No. 526201, two pregnacies, age 30.

"I believe it's a certain time of the month; I don't know how to count it. (P). It looks to me like you feel more loving at certain times of the month. This is the time you can get pregnant." No. 429201, eight pregnancies, age 37.

Figure 5 (below) indicates that, an estimated 20 percent of the first children born after legal marriage were conceived prior to time of marriage. This estimate was checked indirectly by comparing dates of marriage and date of birth of first child and directly by questioning the respondents. This estimate is therefore considered to represent a minimal estimate of the incidence of this phenomenon.

FIGURE 5.—*Months between wedding and birth of the first child*

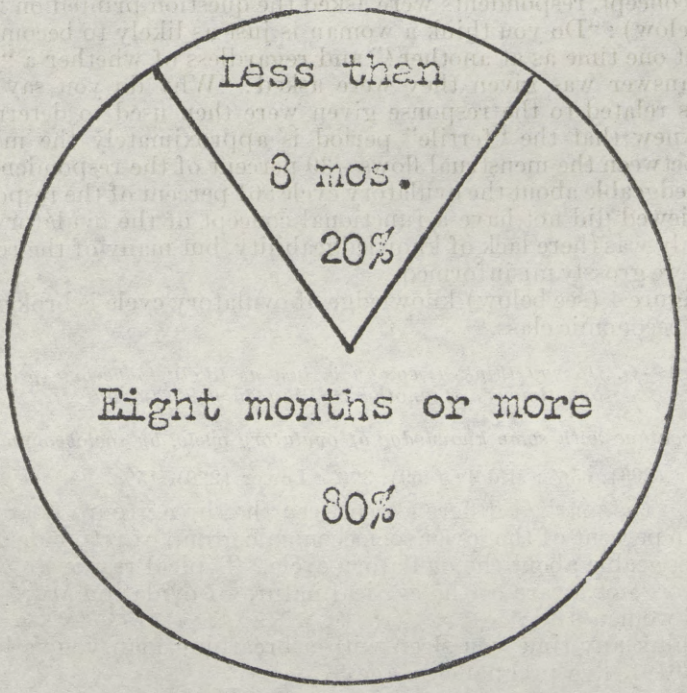
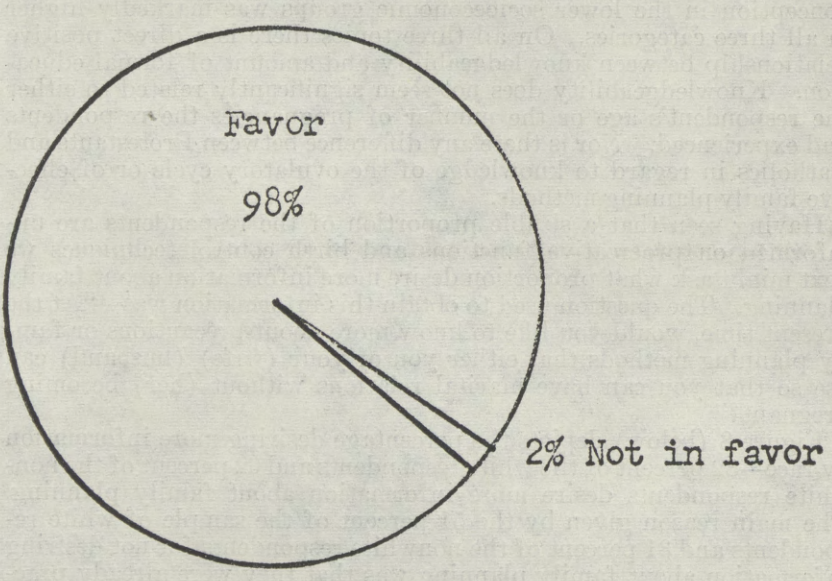


Figure 6 (below) represents the percentage of respondents favoring teaching reproductive physiology in junior high school—98 percent of the respondents were in favor of including this subject in the school curriculum.

FIGURE 6.—*Percentage favoring teaching reproductive physiology in junior high school*



NINETY-EIGHT PERCENT FAVORED TEACHING REPRODUCTIVE PHYSIOLOGY IN JUNIOR HIGH

With respect to knowledge of effective family planning techniques we asked the respondents the following question: "Do you know of any way in which a husband and wife can have sexual relations and the wife still not get pregnant?"

Figure 7 (below) summarizes the results obtained.

FIGURE 7.—*Q. Do you know of any way in which a husband and wife can have sexual relations and the wife still not get pregnant?*

A. Percentage without knowledge of effective family planning methods, by race and class

White:	Non-white:
Upper (202), 4%.	Upper (3), insufficient number.
Middle (375), 3%.	Middle (94), 12%.
Lower (93), 15%.	Lower (131), 33%.

Eleven percent of the total sample, 7 percent of white respondents and 25 percent of the nonwhite respondents either did not know any effective means of family planning or were using a non-scientific method under the illusion that the method was effective. The ineffectual methods being used ranged from aspirin placed in the vagina to potash douches.

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THERE IS A DIRECT POSITIVE RELATIONSHIP BETWEEN KNOWLEDGEABILITY AND AMOUNT OF FORMAL EDUCATION

To sum up knowledgeability of fertility related matters, 61 percent lack essential knowledge of ovulatory cycle, 32 percent lack essential knowledge of reproductive physiology and 11 percent know of no effective family planning methods. The level of ignorance and misconception in the lower socioeconomic groups was markedly higher in all three categories. On all three topics there is a direct positive relationship between knowledgeability and amount of formal education. Knowledgeability does not seem significantly related to either the respondent's age or the number of pregnancies the respondents had experienced. Nor is there any difference between Protestants and Catholics in regard to knowledge of the ovulatory cycle or of effective family planning methods.

Having seen that a sizable proportion of the respondents are uninformed on procreative functions and birth control techniques we next might ask what proportion desire more information about family planning. The question used to obtain this information was—"At the present time, would you like to know more about precautions or family planning methods that either you or your (wife) (husband) can use so that you can have marital relations without (her) becoming pregnant?"

Figure 8 (below) depicts the percentage desiring more information by race—32 percent of the white respondents and 62 percent of the nonwhite respondents desire more information about family planning. The main reason given by the 51 percent of the sample of white respondents and 31 percent of the nonwhite respondents for not desiring information about family planning was that they were already practicing some method with which they were satisfied.

FIGURE 8.—*Q. At the present time, would you like to know more about precautions or family planning methods that either you or your (wife) (husband) can use so that you can have marital relations without (her) becoming pregnant?*

A. Percentage desiring more information about family planning, by race

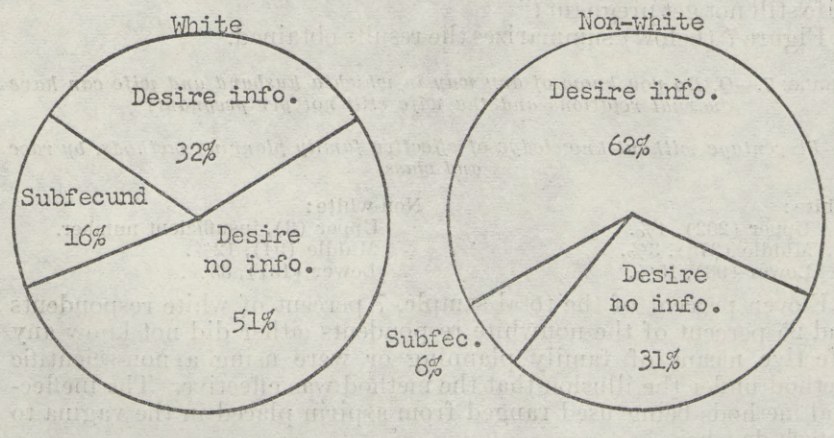
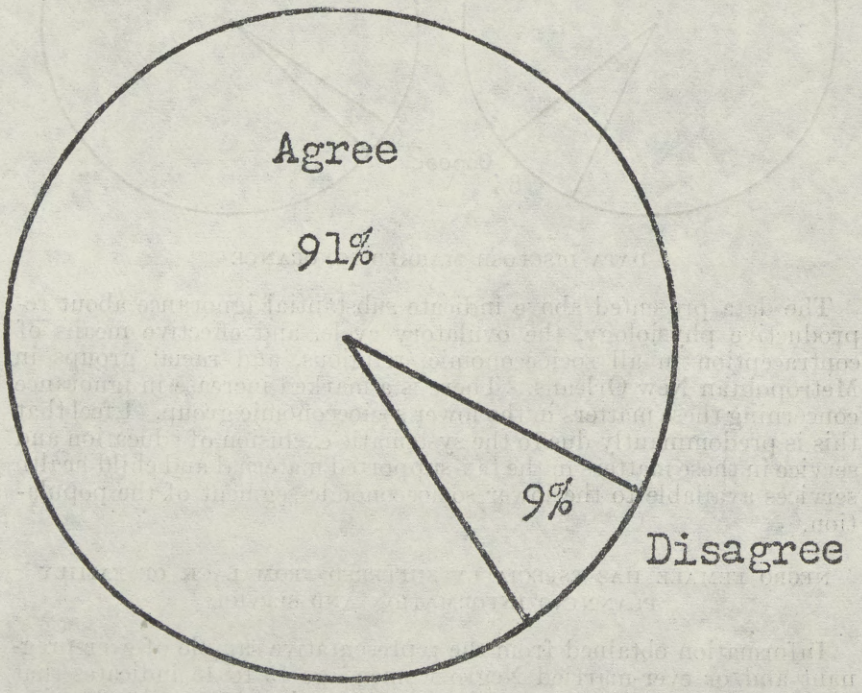


Figure 9 (see below) depicts the response to the question "Do you feel that couples have the right to decide for themselves when to stop having children?"—91 percent agree with this proposition and 9 percent disagree.

FIGURE 9.—*Q. Do you feel that couples have the right to decide for themselves when to stop having children?*

A. Response to proposition that couple has right to decide when to stop having children

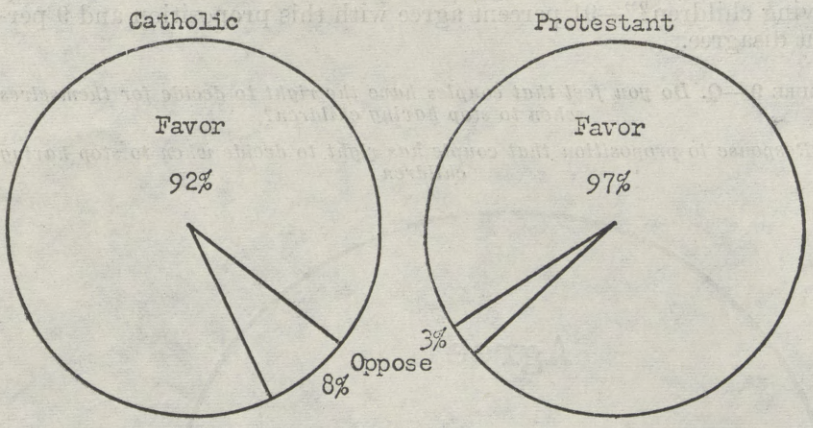


There are no family planning services of any type available to the estimated 30 percent of Metropolitan New Orleans families who, because of their economic status, must depend upon tax-supported facilities for their medical care.

OVER 90 PERCENT OF BOTH CATHOLIC AND PROTESTANT RESPONDENTS FAVOR FAMILY PLANNING SERVICES

Figure 10 (p. 482) depicts the percentage favoring and opposing the provision of tax-supported family planning services for the medically indigent, by religion of the respondents. Ninety-two percent of the Catholic respondents and 97 percent of the Protestant respondents stated that they would be in favor of providing tax-supported family planning services for the medically indigent who could not afford these services from private sources.

FIGURE 10.—*Percentage favoring and opposing provision of family planning services for the medically indigent, by religion*



DATA DISCLOSE MARKED IGNORANCE

The data presented above indicate substantial ignorance about reproductive physiology, the ovulatory cycle, and effective means of contraception in all socioeconomic, religious, and racial groups in Metropolitan New Orleans. There is a marked increase in ignorance concerning these matters in the lower socioeconomic group. I feel that this is predominantly due to the systematic exclusion of education and service in these matters in the tax-supported maternal and child health services available to the lower socioeconomic segment of the population.

NEGRO FEMALE HAS ESPECIALLY SUFFERED FROM LACK OF FAMILY PLANNING INFORMATION AND SERVICE

Information obtained from the representative sample of ever-pregnant and/or ever-married Negro women age 15 to 45 indicates that the Negro female has especially suffered from lack of family planning information and service. This discrimination is primarily of an economic nature because a large percentage of these women must depend on tax-supported medical services for their medical care. This discrimination added to the burden of poor housing, past and present inadequate educational opportunities and employment discrimination serves, in my opinion, as one of the principal basic causes of one of the major problems, if not the major problem, facing Negroes, across America; namely, the instability of family structure and particularly the absence of a paternal family head.

In our sample of 142 ever-married and/or ever pregnant Negro women aged 15 to 45, 59 percent did not graduate from high school, and only 10 percent had some college education. In 1964, 27 percent of them lived in families that had per capita incomes of less than $500; for 33 percent the per capita income was $500 to $899; for 17 percent it was $900 to $1,299, and for the remaining 23 percent the per capita income was $1,300 or more.

Fifty percent of these women were married before conception occurred. An additional 27 percent were married by the time they

terminated their first pregnancy, but data supplied to us by the respondents indicated that conception had occurred prior to marriage. The remaining 23 percent terminated their first pregnancy out of wedlock.

FAMILY STRUCTURE DATA PINPOINTS BIRTH-RATE FACTORS

At the time of the interview, 32 percent of these ever-married or ever-pregnant women did not have a husband or mate living with them, and 11 percent had never had a husband or "living-in" mate. An analysis of the data on family structure by Dr. Ann Fischer indicates that women in this group who begin their families with pregnancy are contributing more to the Negro birth rate than are those who begin with marriage. Thus, if patterns which produce early and illicit conceptions are learned in the family of orientation, it means that this group may be a constantly increasing proportion of the population; and disrupted families will increase proportionately with the fertility advantage of this group within each generation.

FERTILITY CONTROL KNOWLEDGE IS UNKNOWN TO HALF OF SAMPLED WOMEN

Specific data on the Negro females is included in figures 11 through 22 (following).

FIGURE 11.—*Percentage of respondents with some knowledge of reproductive physiology (Negro females in New Orleans)*

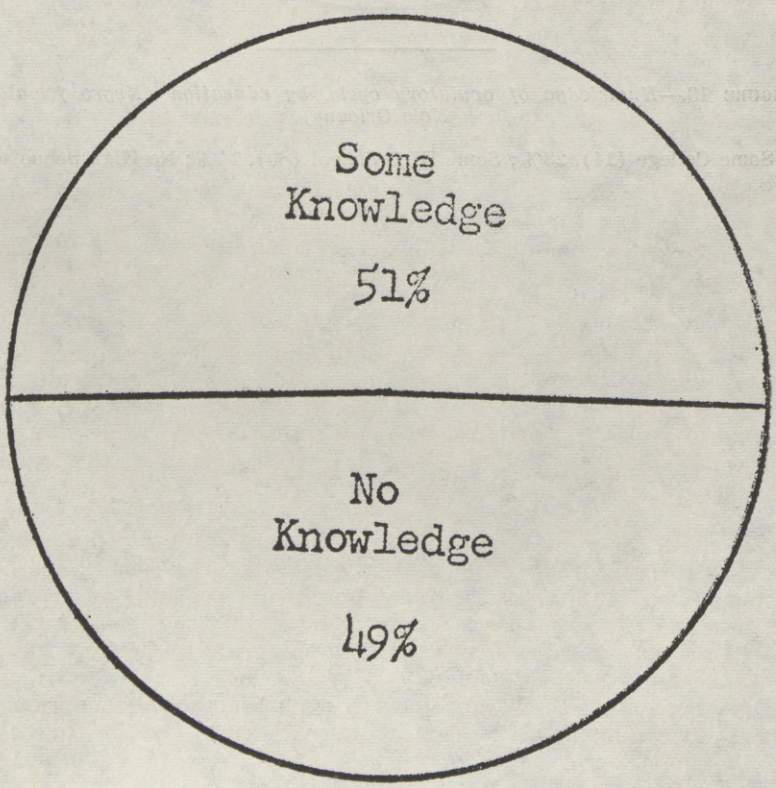


FIGURE 12.—*Knowledge of ovulatory cycle (Negro females in New Orleans)*

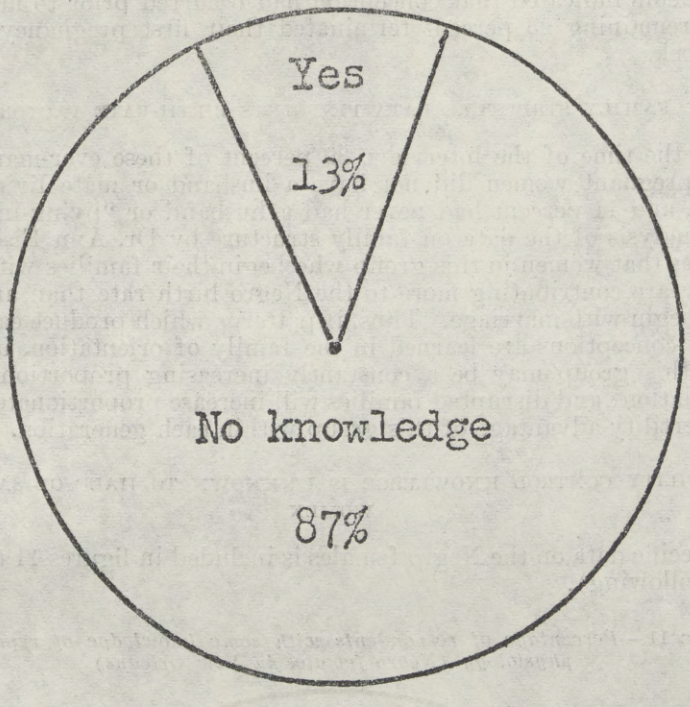


FIGURE 13.—*Knowledge of ovulatory cycle, by education (Negro females in New Orleans)*

Some College (14), 28%; Some High School (89), 14%; No High School (38), 5%.

FIGURE 14.—*Response to proposition that couple has right to decide when to stop having children*

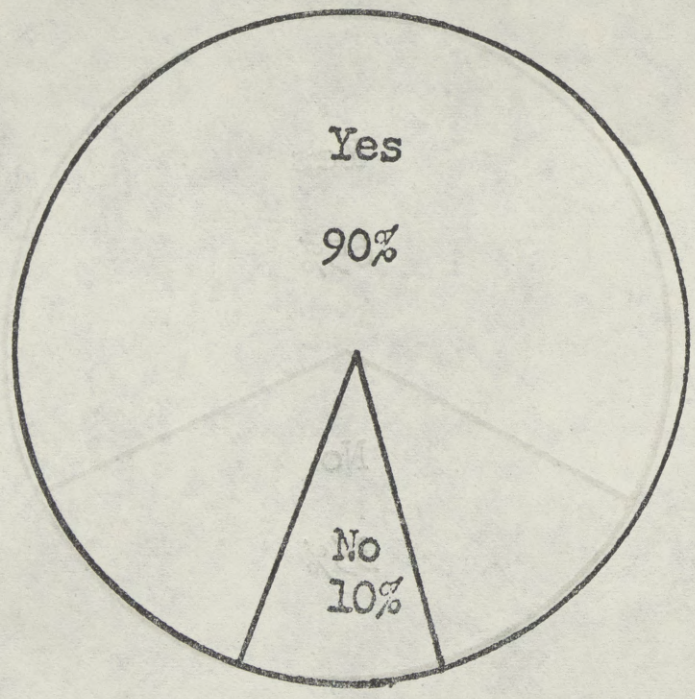


FIGURE 15.—*Q. When you were first married (pregnant), how many children did you think you would like to have altogether by the time you stopped having children?*

A. Percentage desiring four or more children when first married or pregnant, by education (Negro females in New Orleans)

Some College (14), 64%; Some High School (89), 33%; No High School (38), 34%.

FIGURE 16.—*Percentage with four or more pregnancies, by education (Negro females in New Orleans)*

Some College (14), 36%; Some High School (89), 34%; No High School (38), 68%.

FIGURE 17.—*Percentage knowing any effective family planning method, by education (Negro females in New Orleans)*

Some College (14), 93%; Some High School (89), 80%; No High School (38), 48%.

FIGURE 18.—*Percentage desiring more information about family planning (Negro females in New Orleans)*

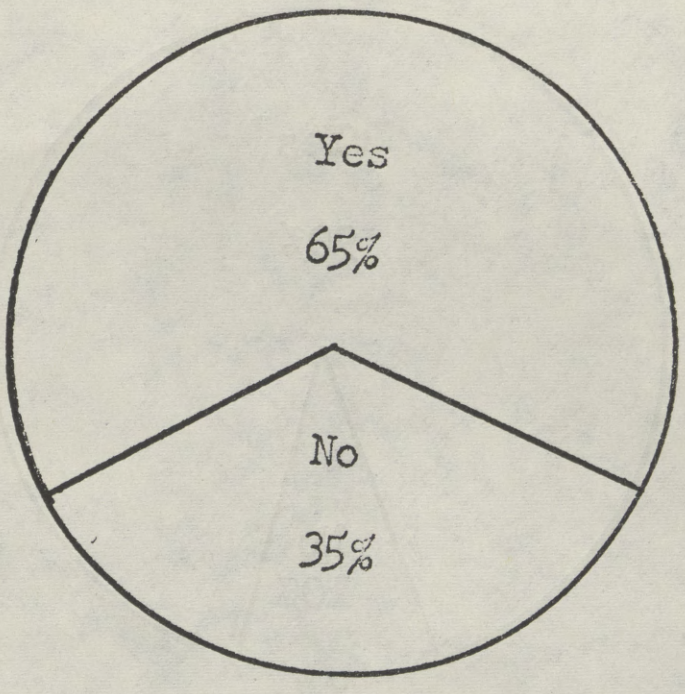


FIGURE 19.—*Percentage desiring more information about family planning by number of pregnancies experienced to date (Negro females in New Orleans)*

Four or more pregnancies (57), 72%; 1 to 3 pregnancies (66), 65%; No pregnancies (10), 30%.

FIGURE 20.—*Percentage holding opinion that couples have right to determine family size (Negro females in New Orleans)*

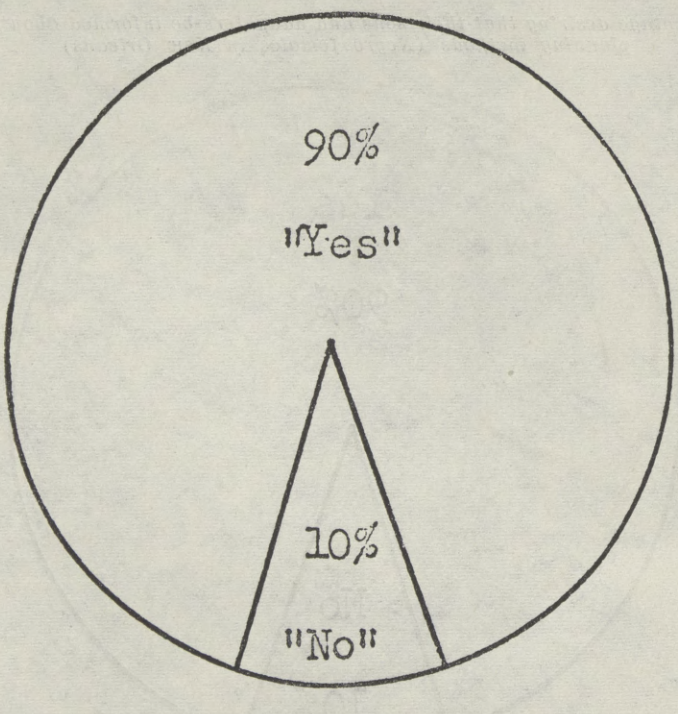


FIGURE 21.—*Q. Would you want your sons and daughters to be informed on methods of family planning or on use of precautions?*

A. Percentage desiring that their sons and daughters be informed about family planning methods (Negro females in New Orleans)

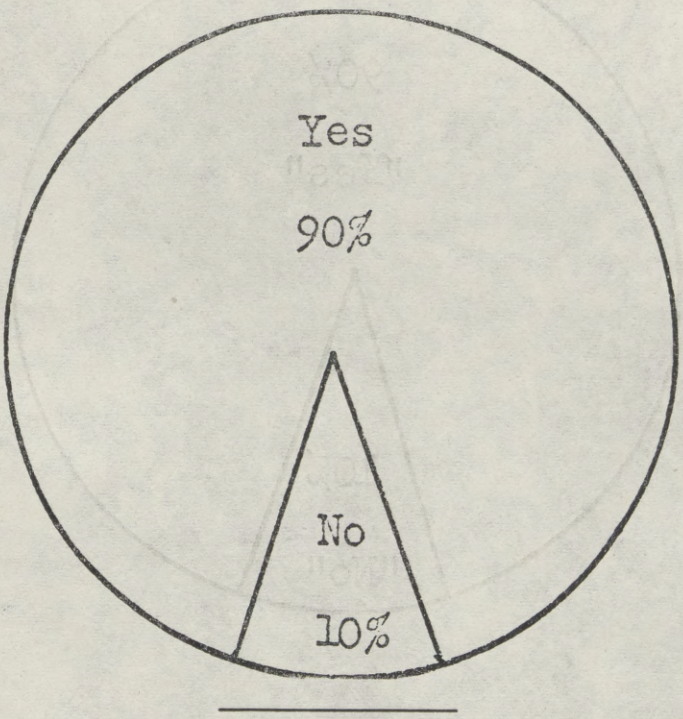


FIGURE 22.—*Percentage of Negro females who—*

Believe one has right to decide family size: Catholic (44), 91%; Protestant (95), 90%.

Favor provision of family planning information and service for indigent: Catholic (44), 96%; Protestant (95), 94%.

Desire information about family planning: Catholic (41), 73%; Protestant (90), 62%.

Want offspring to be informed about family planning: Catholic (44), 93%; Protestant (95), 88%.

Time does not permit evaluating this data systematically for the members of the subcommittee, therefore I will summarize these findings from the representative sample of Negro women aged 15 to 45 in Metropolitan New Orleans—49 percent did not have a rudimentary knowledge of reproductive physiology and 86 percent did not know the time of the fertile period in relationship to the ovulatory cycle; 29 percent knew of no effective birth control techniques, and an additional 42 percent knew of only one or two methods. Excluding the nine women who have had sterilization operations, 57 percent used no method of family planning during their most recent year of cohabitation. Minimally, then, about one-half of these women lack sufficient knowledge or means to control their fertility.

These data indicate that about three-fourths of these women do not ever want to get pregnant again, two-thirds of them want more

information about how to keep from getting pregnant, and about nine-tenths think they have the right to plan the size of their families. Furthermore, nine-tenths of the sample think family planning clinics should be available for the indigent, and nine-tenths of them want their sons or daughters to be informed of birth control techniques. These data indicate that motivation to use effective family planning techniques is present to a marked degree, but such motivation is apparently stymied by the lack of information and the unavailability of services needed to control fertility.

BEASLEY SAYS DATA VINDICATE NEGRO FEMALE AGAINST "RESPONSIBLE PARENTHOOD CHARGES"

These data serve to vindicate the Negro female against charges of irresponsible parenthood and demonstrate the fallaciousness of the assumptions underlying legislation which has been introduced in State legislatures designed to make it a felony to have more than a specified number of children out of wedlock.

Infant and stillbirth mortality study: A portion of the study to describe the characteristics of deaths associated with childbirth in Metropolitan New Orleans in 1964 has been concerned with gathering detailed data about the clinical and pathological aspects in a one-in-four random sample of all infant deaths and stillbirths occurring on the Tulane Services of Charity Hospital in New Orleans.

FAMILY PLANNING KNOWLEDGE COULD REDUCE MATERNAL AND INFANT MORTALITY

Careful analysis of the death in question and a review of characteristics of the reproductive history of the mothers of the stillbirths or infants who died was carried out jointly by an obstetrician, a pathologist, and a pediatrician from the faculty of the Tulane University School of Medicine.

An assessment was made after this analysis as to preventability of each of the 123 stillbirths or infant deaths. The results of this assessment are presented in summary form in table 1.

TABLE 1.—*Assessment of infant deaths and stillbirths as to preventability of that death of 123 selected deaths at Charity Hospital, New Orleans, 1964*

Method of preventable care	Number			Percent of total		
	Infant deaths	Still-births	Total deaths	Infant deaths	Still-births	Total deaths
Prenatal care	2	14	16	2.7	29.2	13.0
Better obstetrical management at delivery	3	0	3	4.0	0	2.4
Better well-child care or medical management of terminal illness	5	0	5	6.7	0	4.1
Not preventable by any category	63	29	92	84.0	60.41	74.8
Not in mortality study	2	5	7	2.7	10.41	5.7
Total	75	48	123	100.0	100.0	100.0

The assessment of these highly trained specialists was that 74.8 percent of the deaths could not have been prevented by ideal prenatal care, better obstetrical management at delivery, or better well-child care or medical management of the terminal illness. The principal

reason for the majority of the judgment of unpreventability was that the mothers were suffering from a preexisting serious medical condition prior to the time the pragnancy in question took place. Ninety-six of these 123 mothers were located and all of them were administered a carefully structured interview. We have been unable to locate the other 27.

The levels of ignorance about reproductive physiology, the ovulatory cycle, and effective means of family planning in this group of lower socioeconomic patients was even greater than that observed in the data presented for the lower socioeconomic segment of the entire Metropolitan New Orleans study. Over 50 percent of the pregnancies which had occurred to the 96 women were, by their admission unplanned. This preliminary analysis of a study still in progress justifies in my opinion the hypothesis that a rapid and significant reduction in the high stillbirth and infant death rates which now prevail in the lower socioeconomic segment of the population would be brought about if family planning information and service could be made available to mothers proven medically "high risks" for death to themselves or their infants in the event of another pregnancy.

STRENGTHEN PRESENT EFFORTS TO PROVIDE MATERNAL AND CHILD CARE

We must continue and greatly strengthen present efforts to provide maternal and child care for every mother and infant in our population; however family planning must be provided as a major part of these comprehensive services if we are to significantly reduce national morbidity and mortality rates.

DECLARATION OF THE RIGHTS OF THE CHILD MUST BE RECOGNIZED

Summary: The United Nations proclaimed a declaration of the rights of the child on November 20, 1963. This highly civilized declaration said in essence that a child once conceived should be provided by family and society with the opportunity to develop its maximal physical, intellectual and emotional potential as a human being. A representative of the U.S. Government signed this document signifying that this Nation recognized the importance of this concept to its and the world's present and future welfare. I believe that all of us would agree that the intent expressed in this declaration should have a high place as we assign priorities to our long-range national and human goals.

WE ARE PROVIDING INADEQUATE SERVICES

As a pediatrician I am especially concerned with the caliber of maternal and child care. It is my opinion that we are providing inadequate services for an estimated one-fifth of the mothers who become pregnant in our society at this time and for the children that these pregnancies produce. Conservative estimates of U.S. population growth predict an increase in our present population 14 years of age and under from around 50 million in 1960 to about 100 million in the year 2000.

In the next decade, we must redefine and elevate our current standards of adequate maternal and child care, eliminate our current gross inadequacies and begin to prepare for the estimated 100-percent increase in our childhood population which will in all probability occur in the next 35 years.

CURRENT GROWTH RATES ERASE CHILDREN'S RIGHTS

If one looks at the present and projected problems of maternal and infant care in developing countries such as India or the nations of Latin America, the probability of fulfilling the rights of children set forth in the United Nations declaration at any time during the next several decades appears to be slight indeed. It is my opinion that the current growth rate of the world population, if continued, will erase the possibility that the present or future generations of the world's children will ever be the recipients of the rights set forth in the "Declaration of the Rights of the Child."

We must therefore begin to recognize that there is a fundamentally important aspect of the rights of the child which was not included in the declaration; namely, the rights of the potential child prior to its conception. It is my opinion that the neglect of this all-important right may place all subsequent rights of the child in jeopardy.

For these reasons, I endorse the proposed legislation.

I thank you for the honor of your invitation and the courtesy you have extended me.

Senator GRUENING. Thank you very much, Dr. Beasley, for a splendid statement.

I will direct that the "Declaration of the Rights of the Child" by the United Nations be placed in the record at the conclusion of your testimony.

And I wonder whether you would, in consultation with others, draw up a declaration concerning the rights of the prenatal child as you suggested. I feel that would be a very useful contribution. You would get the medical, literary, and sociological people at the university to draft such a declaration and present that as an original contribution to the record. I think that would be very helpful.

Dr. BEASLEY. Senator Gruening, I have been concerned with this aspect of this declaration for a good while and I actually have such a draft available. I will see that it is presented to the committee.

Senator GRUENING. Thank you very much, Dr. Beasley. I have no further questions at this time.

(The "Declaration of the Rights of the Child" by the United Nations and a further statement from Dr. Beasely follow:)

EXHIBIT 74

UNITED NATIONS NO. 2 (1960) DECLARATION OF THE RIGHTS OF THE CHILD

(Adopted by the General Assembly of the United Nations, New York, November 20, 1959; presented to Parliament by the Secretary of State for Foreign Affairs by Command of Her Majesty, June 1960, London; Her Majesty's Stationery Office)

DECLARATION OF THE RIGHTS OF THE CHILD ADOPTED BY THE GENERAL ASSEMBLY OF THE UNITED NATIONS

(New York, November 20, 1959)

Preamble

Whereas the peoples of the United Nations have, in the Charter,[1] reaffirmed their faith in fundamental human rights and in the dignity and worth of the

[1] "Treaty Series No. 67 (1946)", Cmd. 7015.

human person, and have determined to promote social progress and better standards of life in larger freedom,

Whereas the United Nations has, in the Universal Declaration of Human Rights,[2] proclaimed that everyone is entitled to all the rights and freedoms set forth therein, without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status,

Whereas the child, by reason of his physical and mental immaturity, needs special safeguards and care, including appropriate legal protection, before as well as after birth,

Whereas the need for such special safeguards has been stated in the Geneva Declaration of the Rights of the Child of 1924, and recognised in the Universal Declaration of Human Rights and in the statutes of specialised agencies and international organisations concerned with the welfare of children,

Whereas mankind owes to the child the best it has to give,

Now therefore,

The General Assembly

Proclaims this Declaration of the Rights of the Child to the end that he may have a happy childhood and enjoy for his own good and for the good of society the rights and freedoms herein set forth, and calls upon parents, upon men and women as individuals, and upon voluntary organisations, local authorities and national Governments to recognise these rights and strive for their observance by legislative and other measures progressively taken in accordance with the following principles:

Principle 1

The child shall enjoy all the rights set forth in this Declaration. Every child, without any exception whatsoever, shall be entitled to these rights, without distinction or discrimination on account of race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or other status, whether of himself or of his family.

Principle 2

The child shall enjoy special protection, and shall be given opportunities and facilities, by law and by other means, to enable him to develop physically, mentally, morally, spiritually and socially in a healthy and normal manner and in conditions of freedom and dignity. In the enactment of laws for this purpose, the best interests of the child shall be the paramount consideration.

Principle 3

The child shall be entitled from his birth to a name and a nationality.

Principle 4

The child shall enjoy the benefits of social security. He shall be entitled to grow and develop in health; to this end, special care and protection shall be provided both to him and to his mother, including adequate pre-natal and post-natal care. The child shall have the right to adequate nutrition, housing, recreation and medical services.

Principle 5

The child who is physically, mentally or socially handicapped shall be given the special treatment, education and care required by his particular condition.

Principle 6

The child, for the full and harmonious development of his personality, needs love and understanding. He shall, wherever possible, grow up in the care and under the responsibility of his parents, and, in any case, in an atmosphere of affection and of moral and material security; a child of tender years shall not, save in exceptional circumstances, be separated from his mother. Society and the public authorities shall have the duty to extend particular care to children

[2] "United Nations No. 2 (1949)", Cmd. 7662.

without a family and to those without adequate means of support. Payment of State and other assistance towards the maintenance of children of large families is desirable.

Principle 7

The child is entitled to receive education, which shall be free and compulsory, at least in the elementary stages. He shall be given an education which will promote his general culture, and enable him, on a basis of equal opportunity, to develop his abilities, his individual judgment and his sense of moral and social responsibility, and to become a useful member of society.

The best interests of the child shall be the guiding principle of those responsible for his education and guidance; that responsibility lies in the first place with his parents.

The child shall have full opportunity for play and recreation, which should be directed to the same purposes as education; society and the public authorities shall endeavour to promote the enjoyment of this right.

Principle 8

The child shall in all circumstances be among the first to receive protection and relief.

Principle 9

The child shall be protected against all forms of neglect, cruelty and exploitation. He shall not be the subject of traffic, in any form.

The child shall not be admitted to employment before an appropriate minimum age; he shall in no case be caused or permitted to engage in any occupation or employment which would prejudice his health or education, or interfere with his physical, mental or moral development.

Principle 10

The child shall be protected from practices which may foster racial, religious and any other forms of discrimination. He shall be brought up in a spirit of understanding, tolerance, friendship among peoples, peace and universal brotherhood and in full consciousness that his energy and talents should be devoted to the service of his fellow men.

EXHIBIT 75

SUPPLEMENTAL STATEMENT OF THE RIGHTS OF THE CHILD

(Submitted by Dr. Joseph D. Beasley, obstetrician and gynecologist, Department of Child Health and Pediatrics, Tulane University School of Medicine, New Orleans, La.)

At the beginning of our history as an independent nation, our forefathers proclaimed a philosophy of human rights and implemented it: The human rights expressed in the Declaration of Independence and guaranteed by the Constitution of the United States and the Bill of Rights imply the rights of the child which are to be expressed below; however, the justification for these rights is not only philosophical and legal, but is also founded in the empirical fact that the total health of the child, parent, and society is injured when the rights of the child are transgressed.

The time has come to make explicit the rights of the child which were implied in the historic documents cited above. The Geneva Declaration of the Rights of the Child was adopted by the League of Nations in 1924. A revised version was adopted by the United Nations on November 20, 1963. A copy of the United Nations Declaration appears in the appendix of this paper. The writer agrees with the content of this declaration; however, he feels that there is a fundamentally important aspect of the rights of the child which was not included in the United Nations Declaration; namely, the rights of the child prior to its conception. It is his opinion that the neglect of these rights may place all subsequent rights of the child in jeopardy.

The following statements are respectfully submitted for the consideration of the committee.

A REVIEW OF SOME RIGHTS OF CHILDREN

A. The obligations of parents and society to the child prior to its conception

1. Prior to conceiving, parents of a first child should be married and should have had sufficient experience in marriage in a childless state to establish with reasonable certainty that their marriage will be permanent.

2. Both parents should want the child, and thereby conception should be a willful act within the context of that desire.

3. Parents should have reasonable prospects that they will be able to provide adequate resources to meet the child's emotional, intellectual, and physical needs during development of his individual potential as he grows and matures, and finally enters adult life.

4. Parents considering conception of a child should have the right, and owe it to the conceptus, to obtain genetic counseling in order to avert more than a random chance for transmitting significant crippling or lethal genetic defects.

B. Rights of children from conception to birth

1. Every child has the right of adequate care for his mother during its intra-uterine life. Preventable or avoidable problems likely to compromise the adequacy of maternal, and thus fetal care, must not be permitted to infringe upon each conceived child's chance for normal development.

2. Every child who has been conceived and who has survived intra-uterine life has the right of an adequate delivery and birth into an environment in which every possible opportunity is taken to sustain his life during the critical period of neonatal birth adaptation. Technological advances regarding the prevention of prematurity and the support of the prematurely born child must not be denied any conceptus. Likewise, other perinatal problems that are likely to compromise the future of the individual as an effective person must be identified and all efforts must be taken to effect their control.

C. Rights of children following birth

1. Every child surviving birth has the right to enjoy optimal development of physical, emotional and intellectual potential.

Such a statement of the rights of the child is at once idealistic, difficult to realize, yet vital to implement. There are, as there were when Jefferson wrote, "many inequalities in American life." But the unlikelihood that this, or any other society, will be fully able to live up to such an ideal does not invalidate the ideal, and such a doctrine of the rights of the child once agreed upon by the people and vigorously proclaimed could work as a leaven in American thought.

Senator GRUENING. Has Dr. Barrett gone? Sorry, I thought he was still here.

Dr. de Bethune and Mrs. de Bethune, I think it would be helpful to the record if you would be willing to prepare a statement as to exactly what is prescribed by the Catholic Church under the rhythm method. In other words, this record contains a great deal of very valuable information and it will contain more and so I believe it would be very helpful in connection with your testimony to have for the record what is prescribed for those who want to follow the rhythm method.

Do you think that would be helpful?

Dr. DE BETHUNE. Yes, I think so. I think it would and it is not too much trouble to prepare.

Senator GRUENING. If you would prepare that and send it to us, the record will be kept open until you have time to do it.

Dr. DE BETHUNE. I will.

Senator GRUENING. Thank you very much.

EXHIBIT 76

SUPPLEMENTAL STATEMENT AS TO WHAT IS PRESCRIBED BY THE CATHOLIC CHURCH UNDER THE RHYTHM METHOD

(By Dr. André de Bethune, Boston College, Chestnut Hill, Mass.)

The rhythm method of family limitation is based on the medically proven principle that a woman cannot conceive a child at any time, but only at or about the moment of ovulation which normally occurs only *once* in each menstrual cycle. The ovum released at ovulation must be fertilized by a spermatozoon within a time interval not longer than 24 to 48 hours if it is to survive and grow into a human foetus. Otherwise, the ovum dies and is discharged at menstruation. The lifetime of spermatozoa discharged at coitus into a woman's genital tract is estimated to be usually not longer than 48 to 72 hours (although there is evidence that indicates, exceptionally, a prolonged activity of up to 5 to 9 days). Therefore, if the exact moment of ovulation in any given cycle could be accurately predicted, sexual abstinence beginning 72 hours before and ending 48 hours after ovulation should insure, with a high degree of probability, freedom from an undesired pregnancy.

The crux of the rhythm method lies in the attempt to predict the moment of ovulation. Two methods are generally used: the calendar method, and the temperature method.

The calendar method rests upon a discovery published in 1930 by Dr. Kyusaku Ogino of Japan, and confirmed by Dr. Hermann Knaus of Austria. After several years of clinical examination of ovaries, conducted during surgery on 83 women, Dr. Ogino announced the principle that ovulation alway occurs on the 14th day, plus or minus two days, before the following menses. By allowing three more days for possible sperm survival, Ogino identified the 19th, 18th, 17th, 16th, 15th, 14th, 13th and 12th pre-menstrual days as fertile days, during which coitus should be avoided to avoid pregnancy. To determine the fertile days in a future cycle, Ogino recommended keeping a record of a woman's menstrual cycle lengths. If the longest cycle in the women's menstrual experience has L days, and the shortest cycle S days, the Ogino formula identifies days S—18 as the first day of the fertile period, and day L—11 as the last day of the fertile period. For example, if the woman has cycles ranging from 25 to 31 days, subtract 18 from 25 to get 7, the 7th day is the first day of the Ogino fertile period. Then subtract 11 from 31 to get 20, the 20th day is the last day of the Ogino fertile period. Therefore, such a woman can expect to avoid pregnancy by restricting coitus to days 1 through 6 and days 21 and beyond, of the cycle.

The Ogino method fails for three reasons:

(A) Some women are so irregular in their cycle lengths that the Ogino formula effectively wipes out entire cycles at a time. For example, a woman whose cycle lengths vary from 20 to 40 days (and this is not uncommon) must abstain from day 2 through day 29. Even after day 29, she can not be certain that ovulation is actually over, it may be unusually delayed. An undesired pregnancy would be a high price to pay to find out.

(B) During the post-partum period, or during lactation, when a woman has no cycles, or poorly defined cycles, the Ogino method cannot be applied. So the method is quite inapplicable to the mother of a new baby.

(C) The medical evidence regarding the timing of ovulation was reviewed by me in the Boston College "Cosmos" for the Spring, 1965. This was based on the work of nine medical observers in three continents who reported data on over 5100 cycles in which ovulation could be detected from external evidence such as temperature rises, cervical mucus, intermenstrual pain, or hormonal assays. Their cumulative data showed that the law of Ogino (ovulation on premenstrual days 16-to-12) was verified in 59 percent of the cases. In 35 percent of the cases, ovulation occurred late, on premenstrual days 11-to-3. In 6 percent of the cases, ovulation occurred early, on premenstrual days 28-to-17.

Thus, with a 41 percent incidence of ovulations outside the Ogino time span, the odds favoring success of the Ogino method in any given cycle are only 3-to-2. As any gambler or statistician can easily show, the odds favoring continued success in a series of cycles become very small indeed after only a few cycles. The repeated failures encountered by families that attempted to apply

the Ogino calendar method can be rationally explained as method failures, without the necessity of accusing the couples involved of lack of self-control. This was shown by me in the papers "Child Spacing—the Mathematical Probabilities" (Science: *142*, 1629–1634, 1963), and "Rhythm—Mathematical Probability of Success and Failure" (Journal of the International College of Surgeons: *43*, 327–333, 1965).

The basal body temperature (B.B.T.) method provides a great improvement over the calendar method: the temperature chart, especially when coupled with observations of symptoms such as vaginal mucus, intermenstrual pain, increased affection, etc., provides a method whereby a trained observer can determine the fact that ovulation has occurred and that the balance of the cycle is infertile. The temperature chart method can therefore provide a high degree of security, if sex relations are restricted to the clearly recognizable high temperature post-ovulatory phase in the cycle. The B.B.T charts cannot predict the date of ovulation in advance, so that the preovulatory phase of the cycle remains as hazardous as ever. The B.B.T. method therefore demands a great deal of perseverance and tenacity since it often provides only five to eight days of security in cycles that may range 30 to 50 days in length.

The B.B.T. method has its own difficulties and pitfalls:

(A) The interpretation of the charts, on a day to day basis, is a difficult task, especially for a woman to apply to herself. The use of monitor couples can be a great help here, as in the CLER and SERENA approaches.

(B) The relation between the temperature rise and the actual occurrence of ovulation is not unambiguous. Data obtained largely from successful artificial inseminations suggest that ovulation can occur anywhere from 9 days before, to 1 day after, the beginning of the temperature shift. Most ovulations seem to occur the 2 days before and the day after. There is no evidence to show that ovulations have ever occurred in any significant number after the temperature shift has become well developed on the chart. Thus there is still every reason to believe that a well defined high temperature plateau, unmasked by multiple thermal shifts, indicates a period of natural infertility.

(C) Multiple thermal shifts, that make the temperature chart look like a mountain profile, or a Wall-Street chart, obscure the chart, and make the recognition of ovulation impossible. These multiple shifts have been interpreted by many people to mean multiple ovulations in a single cycle. Medically, this interpretation is not accepted. All the clinical and hormonal evidence suggests that ovulation does indeed occur only *once* (or as simultaneous *twin* ovulations) in each cycle. The origin of the multiple thermal shifts remains obscure.

(D) Mild fevers can obscure the temperature chart.

(E) The daily routine of observing and recording the temperature can become distasteful, so that days are skipped and fragmentary charts of reduced usefulness result.

(F) The B.B.T. chart does not recognize anovulatory cycles (about 15% of all cycles) until they are over and it is too late to "take advantage of the natural temporary sterility," to use Pope Pius XII's expression.

(G) The B.B.T. chart provides no protection during the post-partum period, or during periods of lactation.

In conclusion, it should be stated that the basal body temperature (B.B.T.) chart is of definite value to a woman, married or single, as a health index, since it provides information about the functioning of her reproductive system and about the hormonal balances that govern it. The B.B.T. chart can also provide, in certain cases, under proper guidance, and with proper motivation, a basis for natural family limitation that has been used successfully by some families. The B.B.T. chart can be used, even by users of contraceptive devices, as a method of growing in self-knowledge and of eventually acquiring mastery of natural approaches with greater confidence of success. Therefore I believe that widespread education in B.B.T. (Symptothermic) rhythm is a desirable public health measure for single and married women and for families that should be undertaken by the Federal Government and could be so undertaken under the proposed Offices of Population Problems.

Dr. DE BETHUNE. May I add one remark, Senator?

Senator GRUENING. You may.

Dr. DE BETHUNE. You have had a number of very distinguished people appearing before these hearings, medical people, sociologists,

demographers, Members of the Congress, statesmen from other countries, Nobel Prize winners, and I wish to thank you for receiving my wife and me. We are coming here only as a father and mother. I believe the fathers and mothers also need to be heard by this subcommittee.

Senator GRUENING. I suggest the thanks is due to you and not to the subcommittee. I think your testimony will be of great value. I was hoping that Dr. Barrett would be back because I had wanted to get his views on the very important suggestions made by Dr. de Bethune that there should be a changed attitude on the part of the theologians in view of the very obvious shortcomings and possibility of failure of the rhythm method to meet this problem. In previous hearings I have discussed—we have discussed—the difference, at least in my personal opinion, in the morality of abortion in which a nascent life is actually destroyed and contraception in which no life is destroyed but merely birth prevented. And I have been hopeful that sometime the church would find a distinction there and move into this field.

Mrs. DE BETHUNE. Senator Gruening.

Senator GRUENING. Please come forward.

Mrs. DE BETHUNE. I would like to make a distinction between a fertile marriage, that is a marriage in which fertility is possible, and each individual being fertile. I think this is another thing the theologians have been somewhat glossing over and not looking into enough. That is all I wanted to say.

Senator GRUENING. May I ask you this question? Do you find that there is a growing feeling among Catholics that some change should come on the part of the church?

HEALTHY RELIGION CREATES HEALTHY MARRIAGE

Mrs. DE BETHUNE. Most of the intelligent Catholics that I know are people who are very devoted to their faith and have tried very hard to bring about a healthy religion. And these people are most unhappy with the state of affairs now and with what the council has done about this problem. In other words, they have effectively shelved it.

Senator GRUENING. Do these Catholic laymen communicate their views to their priests?

Mrs. DE BETHUNE. In some cases, yes. I suppose I am going to get myself in a lot of hot water in saying this.

Senator GRUENING. No, you are not. Freedom of speech is a basic tenet of our society in America.

Mrs. DE BETHUNE. But I think at this point it is best to be honest. In most cases these priests are saying to these people who come to them in confession, "Do what your conscience tells you to do." And they are not spelling it out for them.

Senator GRUENING. Well, I think that sounds like very enlightened advice.

Dr. DE BETHUNE. I might add the point: When the priest takes it upon himself to give this advice in the confessional, he is also following his own conscience rather than rules which have been spelled out for him by higher authority on this point.

Mrs. DE BETHUNE. But I must also add to that the weight of the psychological pressure that is on the back of the normal Catholic—one that is schooled from the beginning, a cradle-Catholic—is tremendous. I mean, to get this monkey off your back and to be able to think as an integrated human being is very difficult. It is a great problem for these people.

Senator GRUENING. Well, I suppose some of them cannot resist the temptations of the flesh and veer away from the prescription of the Church, is that correct?

Mrs. DE BETHUNE. Well, I am sure this happens. There are no statistics that I know of that are available in this area.

Dr. DE BETHUNE. Senator, may I add one remark to this?

Senator GRUENING. Certainly.

Dr. DE BETHUNE. Of course, allied to this problem is the whole problem of sex education, especially of young people. This is a problem Mrs. de Bethune and I face actually, since our oldest daughter is now 15 years old. We know we cannot in conscience teach her what we were taught at her age. We also do not know exactly what we ought to teach her at this time or whether we ought to teach her anything at this time. And when I say I do not know what I ought to say, I dare say I can say that even Pope Paul VI said the same thing in a recent newspaper interview to an Italian newspaper man in Milan. He said the problem is very serious. It demands an answer and I do not know what answer to give. This was an honest admission from the highest authority of the Catholic church and here is a problem that faces all of us for which we are seeking answers. And I sincerely believe your bill can make a significant contribution in the search for answers.

Senator GRUENING. Well, you have all made very significant contributions to this dialog. I thank you very much. And if you would, fill out this little assignment which I have wished upon you, and you, too, Dr. Beasley, on your supplement to the Declaration of the United Nations on the Rights of the Unborn Child.

Thank you very much.

INCREASED PROGRAM SUGGESTED

Mrs. DE BETHUNE. Senator Gruening, on this CLER and SERENA business I was talking about where you have monitor couples, this, I think, has great possibilities. Would there be some room in these offices you are trying to establish to assist such work?

Senator GRUENING. I think it would be very desirable. Could you give me a suggestion along those lines?

Mrs. DE BETHUNE. We can send you the literature from the SERENA people but it is in French for the most part.

Senator GRUENING. That will not pose any problem.

Mrs. DE BETHUNE. We have some from Yale. New Haven has an active group there that is quite successful. I think the only one around. Maybe I could get their information for you.

Senator GRUENING. Very good.

Mrs. DE BETHUNE. I think we will try to digest this for incorporation into the record, Senator.

(The material requested by Senator Gruening and subsequently submitted by Mrs. de Bethune follows:)

EXHIBIT 77

SUPPLEMENTAL STATEMENT ON SERENA OR SYMPTO-THERMIC METHOD OF TEMPERATURE CONTROL; SUBMITTED BY MRS. ANDRÉ DE BETHUNE

The SERENA or sympto-thermic method of temperature rhythm, initiated as a popular family movement among the French-Canadian people of Montreal in the late 1950's, was successfully transplanted to the United States by a group of interested families, with the help of doctors and priests, in the New Haven, Connecticut, area in the past year or two. The initial public conference was held in New Haven in December 1964, and led to the establishment of the Natural Family Planning Association of Connecticut, P.O. Box 250, New Haven, Connecticut, 06502, as a voluntary, non-profit organization, incorporated under the statutes of the State of Connecticut. Its methods are based mainly on the use of trained couple—to untrained couple counseling in the use of temperature rhythm, backed up by professional medical advice when there are indications of its need. The Association strives to implement a morally acceptable method of family planning that is in keeping with the individual conscience. While the Association is non-sectarian in purpose and membership, it was funded, de-facto, by a group of interested Roman Catholics in order to deal specifically with the problem of the Roman Catholic family in the realm of family planning.

Leaders among the Association include State Senator and Mrs. Frank Piccolo of New Haven; Claude Lanctot, M.D., of the Yale Medical School (now a resident in Hartford), and Mrs. Lanctot; James Brady, M.D., and Mrs. Brady of New Haven; and Father Randall Blackall, Director of the Archdiocesan Marriage and Family Apostolate of the Archdiocese of Hartford. The work of the Association was recently recognized by the grant of research funds by Archbishop Henry F. O'Brien of Hartford.

Senator GRUENING. It has come to my attention that the March issue of the Ladies' Home Journal has a timely, interesting, and provocative article on the Papal Commission on Birth Control. Because of Dr. Barrett's participation on the Commission, and because the contents of this article fits in so well with the testimony of Dr. and Mrs. de Bethune, I now direct that "The Secret Drama Behind the Pope's Momentous Decision on Birth Control" by Lois R. Chevalier be included in the record of this hearing.

EXHIBIT 78

THE SECRET DRAMA BEHIND THE POPE'S MOMENTOUS DECISION ON BIRTH CONTROL

(By Lois R. Chevalier, Ladies' Home Journal, March 1966)

"Emotionally and psychologically the rhythm method has been harmful to our marriage. Our love, which is continually deepening in Christ and in each other, must, of its nature, seek union. This union is almost continually denied, and the frustration is great."

These are the words of one faithful American Catholic, written especially for the eyes of a secret group with a task unprecedented in all history: the Papal Commission for the Study of Population, the Family and Birth.

Another said: "Ten children in twelve years—it hardly seems as if it works. After a complete nervous breakdown and an attempted suicide, we have nothing left to do but abstain."

The anguish of these Catholic couples, along with many other grave considerations, is the special burden of Pope Paul VI, who must decide if the Church can change a teaching that it has upheld for nearly 2,000 years—that contraception is a serious sin.

Perhaps never has one man faced a decision that so intimately affects so many lives. The Roman Catholic Church numbers 580 million members—the largest

religious denomination in the world. They are of all colors, all nationalities and varying degrees of faithfulness. And it can now be documented that the Church's position on birth control divides them far more violently than has hitherto come to light.

What will Paul VI do? Originally, almost two years ago, he said he would decide the question himself. Last June, after his study commission had been greatly enlarged and charged by the Pope in person to find "an answer," he said: "We hope soon to be able to say our word, supported by the light of human science." Last fall he said, "The documents on this question are piling up on my desk." Then, last December, he approved a report of the Ecumenical Council announcing that the matter needs "more diligent study."

Meanwhile, the members of the birth-control commission are in turmoil. "We have had only one meeting, and that was too short," an American member told the *Journal.* "The Pope asked us to hurry and complete our work. Why are we inactive now? We are trying to work by correspondence. We have had a regional meeting of Americans. But this is not enough. Many of us are frustrated and impatient. The Church is in chaos. We can't delay."

The man who said this, and much else, is a normally calm, respected professor at a great American university. He may not be identified because all commission members were told to be silent. Indeed, the commission's membership was never made public. Its meeting place was supposed to be secret, and so were its deliberations. And its procedures. And its report to the Pope—83 pages under a salmon-colored paper cover, distributed in several languages, including Latin. Even the fact that there is a small standing executive committee which has had at least one supremely private meeting, last June, was never officially disclosed.

Behind the delay and the official silence, it now develops, there is considerable gnashing of teeth and whispered rage. This intense feeling is of the kind not found in other theological controversies of modern times.

Liberal commission members, who favor some changes in the teachings of the Church, assert that the commission's work is being sabotaged by a denial of funds to hold meetings and provide such essential working tools as adequate translation services. They say that some documents fail to reach the higher authorities for whom they are intended and that the texts of others have been tampered with in transmission. They freely impugn the motives of the opposition. For example, they charge that three archconservative commission members are not fighting for a cause so much as for vindication of themselves and of ideas that they have taught so long they just cannot give them up.

Canon Victor Heylen, a professor of moral theology at the University of Louvain, Belgium, and secretary of the Ecumenical Council's subcommission on marriage, is even ready to point a finger at the three: the Rev. Father Jan Visser, rector of St. Alphonsus College, and the Rev. Father Marcelino Zalba, a moral theologian from the Pontifical Gregorian University, both in Rome; and the Rev. Father John C. Ford, S.J., of Catholic University in Washington, D.C.

"They obey the Pope when the Pope obeys them," says Canon Heylen.

In return, Father Ford charged the liberals with "theological situationalism," a polite phrase meaning weakness of character, and Father Ford has been joined by such other conservatives as Monsignor George A. Kelly, director of the Family Life Bureau of the New York Archdiocese.

Thus, in his secret speech to the commission last March 25, Monsignor Kelly granted that "the anticontraceptionists" sometimes "understate the human problems" and "resist new conceptions." But he accused "the contraceptionists" of behaving "after the mannor of politicians"; giving too much weight to "emotion"; and engaging in "rationalizations" that are "quite dangerous." At that, the other American delegates had prevailed upon Monsignor Kelly to temper his remarks before delivery.

Even the Pope has not remained immune in the remarkably personal conflict. An American member of the birth-control commission describes the Pontiff as one who tends to believe the last expert who talked to him. A Belgian complains of the Pope's narrow training ("the Pope is a juridic theologian, and that is the difficulty"). And a conservative American member accuses him of imprecise speech which has opened the doors to change wider than the Pope intended.

The extraordinary feeling displayed by these wise and honorable men is rooted in the vastness of the issues that are at stake. In essence, the conservatives, championed by such powerful Vatican insiders as Alfredo Cardinal Otta-

viani, Secretary of the Holy Office, fear that the authority of the Church would be shamefully eroded if it treats contraception with less than the most ringing condemnation. On the other hand, when a leading liberal on the commission, Bishop Josef Maria Reuss of Mainz, Germany, was asked whether the Church woud not also lose authority if it refuses to change, he nodded sadly and said, "Naturally."

Indeed, the liberals argue that the Church's authority will be even more drastically reduced if there is to be no change, because million of Catholics are even now defying the teachings of their Church by practicing contraception, and millions more are sure to follow suit, no matter what the Pope decides. All the while Catholic demographers are warning the theologians of a runaway population explosion. And, to complicate the situation even further, the physicians on the birth-control commission have advised the Pope that the contraceptive pill is neither safe nor practical.

"The pill is dangerous for long-term use," an American commission member told the *Journal*. "I say that as a physician, not as a Catholic." This doctor and his colleagues also told their fellow commissioners that follow-up studies have shown that many women, especially in underdeveloped countries, simply will not keep on taking the pill. In effect, therefore, the Pope's medical advisers have all but written off the pill as a world-wide solution to the birth-control problem, no matter what the theologians may eventually decide about its moral acceptability.

The delay in the long-anticipated pronouncement by the Pope, while it may come at any time, is really a measure of the complexity of the problem. He asked his commission for the facts. In investigating the facts, the commission found more questions than answers.

Ironically, the epochal drama that is now unfolding was actually set off by the pill—so much so that, as one commissioner points out, "In some of the Vatican offices they called us 'The Pill Commission.'" The scene was set at the turn of the year 1963–64 when three European theologians, writing independently, each published articles favoring use of the pills. One was a Belgian professor, one a Dutch Dominican, and one a German auxiliary bishop. Soon other voices were raised. Since contraceptive pills did not interfere with the sexual act, and since their action was supposed to imitate nature by putting the ovaries in a resting phase, why wouldn't the pill be just as moral as calculating a woman's infertile period?

According to the best available information, it was the Rev. Father Bernard Häring, a German theologian and now a member of the birth-control commission, who convinced the Pope that the Church had to face up to the population problem, and that new discoveries in medical science had to be taken into account by the moral theologians.

A small group of experts had already been appointed to advise the Vatican on the population question which was being debated in the United Nations. They were reconvened in February 1964 and then summoned again in May. They were unable to come to any clear-cut conclusion and after their meeting, the Pope made his first major statement, saying that there was a "grave moral problem" still under study.

In the fall of 1964, after a world-wide and highly discreet investigation of candidates, the Pope appointed a number of other experts to his secret advisory group. The urgency of the situation was apparent from the manner in which some of the appointments were made. The Most Rev. Leo Binz, the unapproachably austere archbishop of St. Paul, Minn., learned one Friday that he was due in Rome the following Sunday to become the commission's chairman.

The full membership of the commission remains unknown. However, 57 members from 20 countries have been identified. There are sociologists, physicians, economists, biologists, moral theologians, parish priests, four married couples (from the United States, Canada, France, and India) as well as one unmarried woman, a statistician from the Philippines. Certainly there has never been a group like it in the history of the Church. It is the first Papal commission where scientists debate on equal footing with theologians. It is the first whose majority consists of laymen. And it is the first to include women, a fact that even the Pope had difficulty adjusting to; when he received the group for an audience, he repeatedly addressed them as "Dear Sons."

The married couples, including three doctors and their spouses who have been instructing other couples in the rhythm method of birth control, impressed the commission particularly. Dr. John Marshall, a British physician member

of the group who attended without his wife, said that the husband-and-wife teams gave the commissioners "great pause." As Dr. Marshall put it, "What they said had the ring of common truth."

The truth was human, and it was hard. It had to be, coming as it did from such commissioners as Patrick Crowley who, with his wife Patricia, is executive secretary of the Family Life Movement in Chicago. Mr. Crowley told about husbands who told him they had had no sexual relations with their wives for two or three years because they feared further pregnancies. "When you meet Catholic couples like that in person," he says, "you can feel the tension. It's terrible. It's no atmosphere in which to raise the children they do have."

Last March 25, these highly diverse representatives of diverse cultures and diverse professions converged on Rome for their first full meeting. They were delighted to come, and for a very promising—even liberating—reason. "Only two sides ever got heard before," said an American physician member, "the professional Catholics and the Planned Parenthood people. You'd think it was a duel between the Pope and Dr. Alan Guttmacher [the president of Planned Parenthood]. But, of the 57 members of the commission, only about six are adamantly against birth control. And only about six are in favor of any and all kinds of birth control. The rest of us are in the large middle group that sees this as a very broad problem."

All the commissioners checked into a school building on the outskirts of the city, the Collegio San José, just completed as a seminary for Spanish theological students. The building looked like any contemporary Italian institutional structure. It was not yet in operation, and so Vatican officials hoped that no one would notice that anything unusual was happening there.

For four days and nights the commission members lived secretly, debated, slept, and ate within the confines of the building—except the five women members, who were not allowed to sleep in the Collegio. Husbands and wives separated every evening. The men went to sleep in their own small single-bed rooms. The women were taken to a nearby convent for the night and for breakfast.

The atmosphere was one of intense concentration and hard work. Every morning the members met for Mass at 7:30. There were morning and afternoon coffee breaks, which were supposed to last 10 minutes, but usually stretched to half an hour while the commissioners huddled informally for shop talk. Coffee was served with very rich, sweet cookies. At dinner they sat 10 at a table. The Collegio was run by Spanish nuns, and so the food was Spanish, highly seasoned and containing too much fish for the liking of some of the conferees. Wine was served *before* the 8 p.m. dinner, but there was no attempt to hold an American-style cocktail hour. The day finished with a speech on some pertinent topic that occupied the rest of the evening. Every night, at 10, the Collegio doors were locked.

"We began to feel out of touch with the world," says an American college professor. "Several of us escaped one evening, and went down to sit in a sidewalk café and watch the crazy Italian traffic—just to escape from the intensity of the atmosphere." These escapees had to pay the Collegio porter time and a half to keep the door open until 11.

The influence of the American delegation upon the commission was strong, and the group reflected every shade of Catholic theological opinion and professional expertise in the United States. To begin with, the U.S. delegation was the largest. Besides the chairman, Archbishop Binz, the conservative Father Ford, Monsignor Kelly, and the Crowleys from Chicago, it included Donald Barrett, a sociologist from Notre Dame University; Dr. André Helligers, a gynecologist from Johns Hopkins University; Dr. John R. Cavanagh, a Washington, D.C., psychiatrist; and Thomas Burch, a demographer from Georgetown University, now on leave at the University of California, who is only 31 years old.

The Americans were important on other counts. The key roles of Father Ford and Monsignor Kelly have already been noted (the liberals became particularly annoyed with Father Ford, and charged that he was actively lobbying against them on "the fourth floor"—the site of the Pope's Vatican offices). The scientific paper delivered by American delegates also dealt with some of the most crucial subjects. It was the Americans who raised their voices against the translation and interpreting services. And, finally, it was the principal outside consultant of the commission, John T. Noonan, Jr., a Notre Dame University law professor, who possibly made a greater impact on the delegates than any other individual.

"I think Noonan made a lot of people see things in a new light," says one expert who heard this consultant's secret after-dinner talk.

Equally articulate—and effective in a more informal way—were Mr. and Mrs. Crowley.

"We are the only pedestrians on the commission," says Patrick Crowley. "Everyone else was there in the capacity of an expert in medicine, social science or theology. The other three couples were doctors and spouses. We felt we would have nothing to contribute unless we could report on the experience of some of the thousands of Catholic couples whom we represent."

The Crowleys solicited expressions of opinion from couples in the Christian Family Movement. They confess that they themselves were shocked to discover how much difficulty couples have had with the rhythm method of contraception, the only one the Church considers licit, apart from self-denial. "The letters would break your heart," Mrs. Crowley says. "They represent so much anguish and suffering. When there is this much widespread unhappiness, this much that is destructive of the very ideals of marriage the Church wants to preserve, something is wrong."

The Crowleys took copies of several hundred letters to Rome for distribution to other commission members. While nothing in the letters would surprise a parish priest, they may well have been eye-openers for moral theologians and scholars whose lives are remote from family problems.

The 57 commission members were all a bit stiff and formal with one another at first. As one American put it, "You'd look a bit askance at your neighbor, thinking, 'He's a Spanish Jesuit. I won't be able to communicate with him.'" But the close association and the strong desire to solve the problem broke down some of the formality.

The Crowleys tried to bring greater warmth into the daily Masses by suggesting that the entire group sing—although it was quickly discovered that the repertoire had to be limited: the only hymns that people from 20 countries knew in common were the familiar Latin ones, *Salve Regina* and *Tantum Ergo*. It was the Crowleys, too, who suggested that commissioners learn more about each other by making a deliberate attempt to circulate and not always to sit with the same colleagues at meals.

The commission's women members, too, made a historic contribution, and they were deeply grateful for the attention that the male commissioners devoted to the ideas of the women. "They were receptive to what the women thought and felt," reports Mrs. Crowley. "They realize this is, in large measure, a woman's problem." Indeed, the women had several private sessions among themselves after they returned to the convent in the evenings, and they drafted a petition to the chairman asking that even more married couples be appointed to the commission.

The commission could well be grateful for these leavening influences, because its business sessions were necessarily formal. After Mass and breakfast, members settled down to section meetings: theologians in one classroom, doctors and other scientists in another, social scientists in still another. The rooms were furnished with chairs equipped with lift-up arms for notetaking. The doctors found that the arrangement of the chairs in long rows made it difficult to hear the speakers from the rear of the room, and so they arranged their chairs in a large circle.

Each commission member had been assigned a subject in advance, and each had prepared a paper. Father Ford delivered a talk on the history of the rhythm method. Dr. Helligers, who is an associate professor of obstetrics and gynecology, delivered an all-inclusive paper on known methods of birth control, covering statistics on the effectiveness of each method as well as the advantages and disadvantages of each. Dr. Cavanagh, the psychiatrist, explained what is known about the physiologic action of birth-control pills.

A secretary kept minutes for each of the three groups and presented a summary at the afternoon sessions of the full commission. At each of these meetings, a particular subsection was in charge, and questions were allowed only in writing.

In keeping with the procedures of European scientific meetings, no one was allowed to speak after the presentation except those who had previously given their names to the chairman for inclusion on a list of those who wanted the floor. One American placed his name on every list, although he never knew in advance if he wanted to speak or not. "It was a precaution, in case I heard any 'Catholic biology' that needed to be set straight," he said. Those permitted to speak were allowed only five minutes.

Many currents and cross-currents quickly appeared among commission members. As one of them put it, "The French still remember when the Papal See was on their territory, and they have a suspicion that the Italians don't know how to run the Church. American Catholics, with their breezy acceptance of religious freedom for all denominations, seem very strange to the Spanish."

Another delegate says, "A statement on conjugal love is all right to have, but it's pretty hard to apply it uniformly to a couple living in the slums of Bogotá, a rich Italian family and a middle-class American couple. Even we Westerners don't understand one another when we talk about love. The French are wild. They have a full-blown mystique about sex and love: Their expositions were poetry and prose—absolutely incomprehensible to an Anglo-Saxon."

The Westerners were taken aback by the depth of the differences between their culture and that of the Asians and Africans. In discussing the ideals of marriage, for example, they were surprised to realize how little personal choice there is even today in Indian marriages; almost all are still arranged by the parents. They were surprised to learn how much the Africans still prize large families as a status symbol. And they were shocked by the widespread practice of abortion in Japan.

National and cultural differences were no deeper than the differences between representatives of different disciplines. Theologians talked about contraception being "against nature." Scientists asked, "What do you mean by nature? Isn't much of man's activity interfering with nature—from building dams to performing surgery?" The unsuccessful attempt to reconcile these viewpoints was described as one of the commission's most perplexing problems.

One French Jesuit proposed, as a solution to the population problem of India, that the government raise the legal age for marriage from 14 to 21. He said it would cut the fertility by about 20 to 30 percent. Social scientists were horrified. The average age of marriage in India is about 15 or 16, they said. If you make it illegal for people to marry at the age that is their cultural norm, you will encourage illegitimacy.

In spite of their differences, most of the commission members managed to learn from one another. The amount of factual information collected and presented, was, in itself, staggering—a compendium of all the laws of all the countries of the world relating to sterilization, abortion and birth control; current figures and projections on world population and food production; data on birth-control programs, from English rhythm clinics to Korean centers for inserting intrauterine devices (I.U.D.'s).

"The problem is not just whether the Church should endorse a particular form of contraception," says a Dutch gynecologist, "but also how the world's population can be effectively controlled."

One of the most impressive experiences for many commission members was to learn how the Church arrived at its current stand on birth control. Law historian Noonan was brought in to make a presentation based on his book, *Contraception, a History of Its Treatment by the Catholic Theologians and Canonists.*

Noonan spent an evening with the commission explaining that the early Christian Church existed in a pagan world where abortion and infanticide were commonplace. Early Christian doctrine on the sacredness of each individual life was revolutionary in its time. The early Church also had to contend with two groups of its own members whose ideas about sex and procreation were unorthodox. One group thought all sexual intercourse was sinful and that all Christians should be virgins. The other believed that Christ had freed his followers from all the laws of Moses and that unlimited sexual freedom was therefore permissible. Obviously, either of these beliefs could be quite damaging to society. Looking for a rational position between these two extremes, the Church fathers proclaimed that it was right and proper for people to marry and to have sexual intercourse, for the purpose of having children.

"It may be difficult to understand the tenacity with which the theologians clung to the rule that sexual intercourse is for generative purposes only," Noonan says. "But this difficulty arises from underestimating the strength of the attack made on the value of procreation."

In accepting the fact that both sexual activity and procreation are natural, the Church ruled that people could not indulge in the first and take measures to prevent the second. Since sexual intercourse always precedes conception, that must be its divine purpose. By this reasoning, contraception is against the natural law. According to theologians, natural law is that part of God's plan

for the world that man can grasp by reason, in contrast to what he must take on faith.

Noonan points out that values the Church was trying to defend are those that all civilized men would still defend—the goodness of procreation and the sanctity of life. The question for the Papal commission to study, he says, is not: "Are some acts intrinsically against nature?" It is rather, "Are the rules once necessary to protect these values still necessary today?"

For many commission members, Noonan's point of view was illuminating. One American said, "We came to see our task as something much larger than the consideration of the pill. We believe the Church needs to rethink its whole doctrine on love and marriage."

The commission members are justified in assuming that Pope Paul expected them to make a profound and searching inquiry into the whole question of marriage. In the audience that he give them at the start of their deliberations, he said, "The problem can be summed up thus: Which form and according to which norms should married people in the activity of their mutual love perform that service of life to which their vocation calls them?" He also asked them to examine the problems "in complete objectivity and liberty of spirit."

But, for some of the theologians, the idea of starting fresh was highly objectionable. The conservative point of view is this: If the Church could have misled the faithful on so grave a matter, with such grave consequences and for so long a period, what value or reliability could be attached to any of her moral teaching?

The conservatives see no way that the Church can retreat from the solemn statement made by Pope Pius XI in 1930, shortly after the Anglican Church accepted the idea of limiting family size. Pius XI made a formal pronouncement on chaste marriage, referred to as *Casti Connubii*, and it is just about impossible to find a loophole in it. He said:

"Since, therefore, openly departing from the uninterrupted Christian tradition, some recently have judged it possible solemnly to declare another doctrine regarding this question, the Catholic Church, to whom God has entrusted the defense of the integrity and purity of morals, standing erect in the midst of the moral ruin that surrounds her, in order that she may preserve the chastity of the nuptial union from being defiled by this foul stain, raises her voice in token of her divine ambassadorship and through our mouth proclaims anew: any use whatever of matrimony exercised in such a way that the act is deliberately frustrated in its natural power to generate life is an offense against the law of God and of nature, and those who indulge in such are branded with the guilt of a grave sin."

Monsignor Kelly's secret statement to the commission was particularly impassioned in its appeal to adhere to tradition.

"Contraceptionists want our doctrine changed absolutely to admit as right what we hitherto have condemned as wrong," he said. "They take no note of what effect on Catholic membership or practice such a revolutionary change would bring. They talk as if deciding the crucial moral issue can be done after the manner of politicians balancing groups against each other and choosing the way out which alienates the fewest. This is not how moral decisions should be reached. There is noted here, too, a tendency to deny the existence of an intrinsically evil moral act, to downgrade or dismiss Catholic moral doctrine and to look with favor on what can only be described as 'situation ethics.'"

Another conservative commission member was even more outspoken. In an interview with the *Journal* he said, "The Church has had a doctrine revolving around the protection of life in its very beginnings, and that has been the context of the formulations of the past. If anyone thinks the Church is going to stand up and say the hell with *Casti Connubii*, he's crazy!"

Liberal theologians are still struggling with the question of what to do with *Casti Connubii*. Was Pius XI speaking infallibly when he made his statement? He did not so specify. However, so solemn were his terms that some theologians regard his words as having been spoken *ex cathedra* (from the throne). Did Pius XI himself consider it an infallible utterance? The language of *Casti Connubii* is certainly unhesitating and unequivocal.

One of the foremost modern theologists, the Rev. Father Edward Schillebeeckx of the Catholic University in Nijmegen, the Netherlands, has said that *Casti Connubii* cannot be reformed, only interpreted differently. But many on the commission feel that this is not a forthright approach. The liberal Bishop

Reuss says, "I am afraid of such an approach. I would like to examine *Casti Connubii* in the light of what we now know to be a different set of facts, and then say flatly that it was either right or wrong. That's the only clean way of acting. To attempt to give the impression that there is really no change is somewhat dishonest."

Other liberals argue that the Church has already broken away from *Casti Connubii* by accepting the rhythm method of regulating conception. Having intercourse only during the infertile days of a woman's cycle is, in itself, a frustration of the "natural power to generate life." They ask: Why is any form of fertility control any more sinful than any other form?

These liberals are answered by others who also want a change but who feel that there are moral differences among the various methods of birth control. Here the commission's scientists found themselves on the spot because they could not answer many of the theologians' questions about how various techniques of birth control work.

In the early days of the pill it was thought that its hormone-like constituents simply suppressed ovulation. Now there is medical evidence that this may not be its only action. Some women taking the pill may nevertheless ovulate sometimes. But they almost never become pregnant because the medication also changes the cervical mucus, making it harder for the sperm to reach the ovum. And it affects the lining of the uterus so that a fertilized ovum could not implant and grow. If the pill causes a barrier between the sperm and the ovum, how is it any different morally from a diaphragm? And if it causes the uterus to reject a fertilized ovum, then how is it any different from an abortion? Besides, as we have seen, the medical men on the commission would not endorse the pill anyway, because no one yet knows what its effects might be if used over a woman's entire reproductive years.

The sociologists on the commission also felt that the pill is not the answer to the world's population problem. It is too expensive for the poor people in the underdeveloped countries. The routine of taking it is too complicated for many simple, uneducated people. And, finally, it takes a high degree of motivation to continue it month after month. Most of the women in Puerto Rico who took part in the original clinical trials of the pills are reported to have stopped coming to the clinics for their medication.

Most of the social scientists are hopeful about the intrauterine devices, called I.U.D.'s. A small plastic loop or coil, once inserted in the uterus, prevents pregnancy as long as it remains in place. It can be removed, and the woman's fertility is restored. In India, Korea, and other populous Asian countries, the I.U.D.'s seem to be the best current answer. One of the commission's demographers says, "The I.U.D. is the simplest and most effective fertility control, and the most reversible in the event a couple decides to have more children."

But the theologians ask, "How does the I.U.D. work?"

Some scientific evidence indicates that the presence of this foreign object in the uterus prevents the fertilized ovum from implanting. If that is its mode of action, then technically it is producing an abortion.

Right now, in the United States alone, six crash programs are trying to find the answer to this question, one of the commission members informed his colleagues. Three of the projects are headed by Catholics. Their answers will be crucial because, as an American member of the commission explains:

"One of the problems that we liberal Catholics on the commission have is that the conservatives see the Church's negative stand on contraception as the outer bulwark against abortion. Unfortunately, the same group that is leading the fight for contraception is also leading the fight for liberalizing the abortion laws. Every time Alan Guttmacher [of Planned Parenthood] opens his mouth, we shudder."

Aspects of world politics were also discussed behind the closed doors of the Collegio. The Catholic Church looks to a great period of growth in the African countries as their peoples there drift away from their simple tribal beliefs and their reliance on magic. And the Africans on the commission were among the most adamant against any change in doctrine.

They said, in effect: "We have brought our people into the Church only within the last hundred years or so. We are your newest converts. And one argument that convinced us to join the Church is that it is eternal and unchanging. We cannot justify a change to our members."

A recent survey in one African country showed that a majority of the people thought a good family consisted of nine or more children. Africans respect a

man who has a large family, and they feel children are needed to work the land and to take care of the parents in their old age. Furthermore, they are suspicious of Western attempts to teach them birth control. The idea smacks of white imperialism trying to keep down the number of black men.

"People in the United States tend to think that this country need only make birth-control information available in the underdeveloped countries and the world's population problems will be solved," said one American. "But it isn't that simple."

As the four days of discussion drew to a close, commission members realized that their task was far from finished. There were some points on which there was substantial agreement. But there were also many unresolved questions.

On the whole, the doctors agreed that for some couples the rhythm method of fertility control is not adequate. As one psychiatrist expressed it, "Those couples who have ten safe days a month should be able to get along all right. But there are some who have only two safe days. Their frustrations can be destructive of the whole marital relationship. Beyond that, marriage and morality are both weakened when the fear of pregnancy looms larger than the love of spouse."

Sadly, however, the doctors were forced to concede that they did not yet have any satisfactory answers. The commission's report pointed out that instruction in the rhythm method is better in England, France and Germany than in America, but the truly elusive riddle really lies in the feelings and the intent of the partners in the marital act.

Dr. Marshall, the British physician member, put it this way: "There is something in the marital situation that we have to find, some act of integrity. This is the thing that the commission is trying to figure out. I'm not saying that we have to revert to the old idea that sex to be good must be procreative. But we have got to ask ourselves this question: 'What *does* take away love?'" In the commission's final report to the Pope, almost all the members agreed that the Church should actively promote the values of physical love as a tie between husband and wife that helps to strengthen the marriage. And the Church's doctrine should emphasize the unselfish and generous love that is the ideal of marriage. The concept of responsible parenthood should be stressed, in place of the idea of unlimited fecundity. The commission felt that each couple must determine for themselves how many children they can rear properly. The commission also felt that the Church should do a better job of educating its people in the positive ideals of marriage and should be more involved in research on rhythm and in teaching its techniques.

Dissenting opinions were incorporated in the commission's final report. For example, "On the positive values of sexuality, one theologian had reservations."

Though the commission could not reach any consensus about *Casti Connubii* or about other techniques of birth control besides rhythm, the general tone of its conclusions was broadening and liberalizing. The majority of the members came to feel as does Cardinal Suenens: "The concentration of the past on the biological integrity of the sex act was wrong. What we are concerned with now is a truly human approach, a many-sided approach to this most basic human activity."

The tone of the commission's proceedings was far too liberal to suit the old-guard Vatican officials. Cardinal Ottaviani, Secretary of the Holy Office, and Amleto Giovanni Cardinal Cicognani, head of the Vatican Secretariat of State, are two archconservatives who, according to inside sources, tried to obstruct the work of the commission.

One of the most outspoken commission members, for example, has been the Rev. Father Pierre de Locht, of the National Family Pastoral Center in Brussels. He has been pressing hard for a change in the Church's teaching. He even asks, "Can the Church resolve a question bearing on divine law by disciplinary action when it seems actually incapable of making any basic judgment?" More specifically, he questioned whether the physiologic integrity of the sexual act was the prime value to be upheld in marriage. His free questioning of the status quo earned him a call from Cardinal Ottaviani, who requested him to come to the Holy Office and explain himself.

Another incident deeply resented by the liberals developed about a private statement prepared by 37 American Catholic scholars at a conference at Notre Dame University. The scholars said they were "convinced that the norms established in the past are not definitive but remain open for further development." And they said that the Church's customary arguments for contraception "do not reveal a sufficient grasp of the complexity and the inherent value of sexuality in human life." They sent the text of their eight-point statement to the Papal

commission. But it was not acknowledged and did not reach the commission members. Seven months later, they sent it again, this time directly to Cardinal Cicognani. Again the document failed to reach the commission members. Then the Paris edition of *The New York Times* revealed that the document was bottlenecked, and only then was it distributed.

There were those who felt that the translation services were deliberately kept inadequate to obstruct their work. The Vatican provided translators for the meeting, and the commission members spoke in either French or English. But they did not have a simultaneous translation service such as is furnished by the United Nations.

"I would speak several sentences and then wait while the translator repeated the thought in French," an American scientist explained. "We felt that some subtle points might get lost with this system. So we asked the Vatican if we couldn't have a more up-to-date arrangement. Their answer was that it would cost too much."

The Americans have since written the Vatican that, when the commission meets again, they have pledges for $25,000 to cover the cost of simultaneous translations. They report that their offer went unacknowledged.

After the March meeting adjourned, other controversies erupted that also have not become public to date. Several members stayed in Rome an extra day to assist the Rev. Father Henri de Riedmatten, executive secretary of the commission, in going over the minutes. Later this group met again to write the commission's final report for Pope Paul.

"The eighty-three-page document was given to the Holy Father without any of us having a chance to review it and see if we had been accurately represented," said one American. "I found several errors in it—not terribly serious ones—but, still, I would have liked not to have been misquoted."

Behind-the-scenes maneuvers to obstruct changes in Church doctrine really got under way in earnest once the fourth session of the Ecumenical Council was convened last September. According to Canon Heylen, Pope Paul had by that time begun to agree with his conservative adviser, Cardinal Ottaviani, that the open disagreement over birth control was a threat to the authority of the Church. To settle the question Pope Paul decided to give the Papal commission's report to the bishops to see if he and they could come to some agreement about where the Church stood.

An early copy of this document fell into the hands of Bishop Reuss. He was appalled to discover that the printed report was not at all a fair reflection of the commission's reformist tendencies.

For example, the original report stated that "doctors said they had reservations about the anovulant pills, since their long-term and side effects are still under doubt from a medical standpoint, and many of them prefer the simple condom." In the printed report, reference to the condom was deleted.

The original report also said that the commission agreed that the conjugal act ought to be "*unitivus*," that is uniting in its effect, while opinion was split over the question of whether it must also be "*inseminativus*." A majority believed that it need not be capable of producing insemination. The report that Bishop Reuss had in hand, however, said that the commission had all agreed that the conjugal act ought to be both "*unitivus et inseminativus*."

That was enough for the liberal bishop. He hurried up to the Pope's private chambers on the fourth floor of the Vatican Palace and stated his objections. His quick indignation persuaded Pope Paul not to distribute the "edited" report. But the Pope still felt that the matter should not be left hanging fire. He summoned his old friend, Cardinal Suenens, and asked him, "What would you say if you were in my position?"

The Cardinal summoned several expert theologians, and together they wrote a five-page document which, says Canon Heylen, "emphasized the continuity of the Church's teaching on the value of life, but was not closed to practical change."

"A very good text," said Pope Paul, "but I must read it with a peaceful mind." So Cardinal Suenens left it with him, and presumably, the Pope sent it to the Holy Office for review. The five-page statement was not heard of again.

Meanwhile, the Ecumenical Council had a group working on its own document about marriage and the family. It was to be a chapter within a statement on the Church in the modern world. This group, called the conciliar commission, had been previously asked by Pope Paul to leave the question of contraception out of their document, Schema 13, because he was taking sole responsibility for

this momentous decision. But Pope Paul apparently began to regret that he had placed himself on the spot. He asked four archconservatives from the Papal commission to sit with the conciliar commission in the final editing of Schema 13.

That action drew a protest from some of the bishops on the conciliar commission. And this protest resulted in an invitation of four liberal theologians from the Papal commission to help with Schema 13.

The eight theologians could no more agree while sitting with the conciliar commission than they could earlier when they met at the Spanish seminary. Furthermore, their presence was resented by the men on the conciliar commission who had been working for a long time on Schema 13. And, finally, it would have been against the Council rules to make substantial changes at that stage in the writing of Schema 13, since it had already had its final floor debate and been approved in substance by the Council.

Schema 13, as then written, embodied many of the ideas that the Papal commission had discussed. It supported the principle that strengthening the bond of conjugal love is as much part of the purpose of marriage as having children. And it emphasized the idea of responsible parenthood. But it did not settle the question of birth control.

In an unprecedented move the Pontiff sent the conciliar commission a set of modifications that would have the Council reaffirm *Casti Connubii.* The reaction was dramatic. One conservative cardinal cried, "Now Christ has spoken!" The counter-reaction was even more surprising since, in effect, it was directed against the Pope himself. The Council's lay auditors began drafting a letter of protest. Telegrams poured in from Catholic university groups.

Father de Riedmatten, Cardinal Suenens and other liberals called upon Pope Paul. They told him that if his modifications were written into Schema 13 there would be no further need of the Papal commission, since the discussion would be closed. They also warned him that hundreds of the Ecumenical Council fathers might vote down the entire document if it were so altered.

The Pope reconsidered and sent word to the conciliar commission that he had meant to say nothing definitive; they should feel free to use other expressions than those he had suggested.

The result was a remarkable compromise. The council document said Catholics should avoid "methods of birth control which are found blameworthy by the teaching authority of the Church." But what methods are "blameworthy"? To explain, the commission drafted an equivocal footnote, referring to (1) a statement from Pius XI's *Casti Connubii* (which did not even approve of rhythm), (2) to Pius XII's revolutionary address of 1951 (which approved of rhythm but no other means), and (3) to Pope Paul's statement in which he described his own doubts, sufficient to warrant an advisory commission of experts. The council footnote, furthermore, approved this commission's study.

For the Council, therefore, the question of licit birth-control methods remained an open one. Would it be open for the Pope as well? Cardinal Ottaviani thought not. He wrote to the Pope, "I did all possible to have the commission accept the modifications of Your Holiness, but I was always in the minority. Father Ford could not approve the attitude of the theological commission in this matter." The Cardinal also enclosed a one-page critique of the commission's work, written by Father Ford. But on the bottom of the Cardinal's letter, the Pope wrote: "We accept the commission's handling of the modifications." And so the Council adjourned, leaving the matter of birth control still an open question, after all.

What will the Pope do next? When he addressed the full meeting of the birth-control commission a year ago he appeared to be calling upon the members to help him make a change and to make it rapidly.

He said: "It is a problem which rouses world opinion as much as it justly preoccupies married couples and their pastors. * * * But we ask you urgently not to lose sight of the pressing need of a situation which asks of the Church and her Supreme Authority to give guidance without ambiguity. Consciences of men cannot be left exposed to uncertainties which today very often prevent married life from developing fully according to the Lord's plan. Moreover, in addition to these pressing questions of married couples, also certain economic and social problems have arisen * * *. Countries which know the serious difficulties of sociological character should raise their voices among you, and laymen, especially married couples, should have qualified representatives."

With that sort of charge to his commission, its members felt entitled to ask themselves: did he expect them to reaffirm *Casti Connubii?*

Some members wonder whether Pope Paul may be even more concerned about the Church's posture of hesitation than about the actual decision on contraception. Other members believe that the ambiguity of the present situation is a necessary evolutionary stage; that any hard and fast decision at this moment in history would trample on the consciences and the feelings of too many millions.

But what of the Pope's last directive that the traditional norms of the Church are still in effect while the matter is under study? There is a growing consensus among progressives that this was a pastoral directive, not a doctrinal statement. And pastoral directives are subject to interpretation and to commonsense judgments. "These are only norms which have to be interpreted," says Father Häring, one of the Church's leading moral theologians. Canon Heylen agrees: "For example, the Church decrees pastorally that its members should go to Mass on Sunday or abstain from meat on Friday. But if I am ill, I can certainly use my own judgment and stay home from Mass on Sunday—or eat meat on Friday."

Bishop Reuss says, "I do not think that we can or should conceal the fact from the people that there is some doubt in the Church on this question. And I have told my priests so."

In his instructions to the priests of his diocese. Bishop Reuss says that the clergyman should try particularly to help couples for whom "the rhythm method does not present a valid solution. They must be told that there is at least a doubt as to whether their failure signifies the loss of their state of grace.

"We're still in limbo," says Bishop Reuss. Given the present doubt, this may be an acceptable resting place. Pope Paul might not gain by deciding the question—either way—before more scientific data are in. Many believe, therefore, that the ambiguity of the present situation is an evolutionary stage during which devout couples themselves must make their own judgments.

Meanwhile, members of the Papal commission, as of the first part of this year, were still awaiting a call to reassemble and continue their work. Many have been in correspondence with one another. Some have met in small groups. But they feel that their task is unfinished. They are eager to get on with it. They hope they will soon be able to do so, even though the conservative bureaucracy of the Vatican may be alarmed by the intellectual freedom of the commission, and it is these officials who must pass on the outlay of funds for calling a meeting and disbursing traveling expenses of commission members.

"Four days was just enough time to get the questions out on the table, to define the scope of the problems," says Mrs. Crowley. "We are all willing to stay longer and continue working."

Dr. Marshall says, "The trouble is we feel a real sense of urgency about this, and yet, quite honestly, I can say that I haven't got any clear conclusions."

Some commission members believe that the Pope may not speak out for months, or even years. Others wonder whether he will ever define the situation further or will let couples be guided by their individual consciences, much as Canon Heylen, Canon de Locht, Father Häring and Bishop Reuss have suggested. At that, the commission has already unanimously recommended that the Pope, under all circumstances, should do no more than issue guidance on principles, not on specific methods of contraception.

Will research scientists find a simple, easy test for ovulation so that the rhythm method will require only a few days' predictable abstinence? Can the precise action of the I.U.D.'s be defined? Should the Church be in dialogue with other denominations about all of these questions—the Protestants, and even the Moslems and the Hindus? Should the Church and the proponents of planned parenthood meet together to discuss population problems?

All of these and other questions continue to trouble members of the Papal commission. And they continue to be a special burden of Pope Paul VI.

Senator GRUENING. We are going to meet tomorrow at the same hour to hear Secretary of Agriculture Freeman and we will stand in recess until that time.

(Whereupon, at 12:40 p.m., the hearing was recessed, to reconvene at 10 a.m., Thursday, March 3, 1966.)

POPULATION CRISIS

THURSDAY, MARCH 3, 1966

U.S. SENATE,
SUBCOMMITTEE ON FOREIGN AID EXPENDITURES,
COMMITTEE ON GOVERNMENT OPERATIONS,
Washington, D.C.

The subcommittee met at 10:03 a.m., pursuant to recess, in room 4200, New Senate Office Building, Senator Ernest Gruening (chairman of the subcommittee) presiding.

Present: Senators Gruening and Metcalf.

Also present: Mary A. Miller, clerk; Joyce Polk, assistant clerk; Carole Ransom, editor, Subcommittee on Foreign Aid Expenditures; and Laura Olson, special consultant on population problems.

Senator GRUENING. Before I proceed with my opening statement, I will place in the record at this point a photograph taken today of our distinguished witness, the Honorable Orville L. Freeman, Secretary of Agriculture.



EXHIBIT 79

The witness who testified on S. 1676 before the Subcommittee on Foreign Aid Expenditures, Thursday, March 3, 1966, was the Honorable Orville L. Freeman, Secretary of Agriculture, who was accompanied by Les Brown, staff economist, and Michael Walsh, White House Fellow. (Pictured, left to right: Senator Ernest Gruening, chairman, and Secretary Freeman.)

OPENING STATEMENT OF THE CHAIRMAN

Senator GRUENING. The hearing will please come to order.

When President Johnson sent his "A War on Hunger" message to the Congress on February 10, 1966, he made two specific references to population.

The President said:

One new element in today's world is the threat of mass hunger and starvation. *Populations are exploding under the impact of sharp cuts in the death rate.* Successful public health measures have saved millions of lives. But these lives are now threatened by hunger because food production has not kept pace. [Emphasis added.]

A balance between agricultural productivity and population is necessary to prevent the shadow of hunger from becoming a nightmare of famine. [Emphasis added.]

In his message the President said:

Hunger poisons the mind. It saps the body. It destroys hope. It is the natural enemy of every man on earth.

President Johnson has proposed that the United States lead the world in a war against hunger and the very able chairman and members of the Committee on Agriculture and Forestry have before them for consideration the Food for Freedom Act of 1966.

My colleague, Senator Joseph Montoya, of New Mexico, who is a member of this subcommittee, also serves on the Committee on Agriculture and Forestry.

I am a cosponsor of three amendments to the proposed Food for Freedom Act of 1966. One amendment, introduced by my colleague from Alaska, Senator Bob Bartlett, would add domestic fishery products to the President's food-for-freedom program.

The second amendment offered by Senator Ralph Yarborough, of Texas, adds the provision of "family planning services" to the items that the President shall take into account as evidence of self-help on the part of the recipient nation and would allow not less than 15 percent of the currencies which accrue from foreign currency sales to be used for "financing programs emphasizing maternal, child health and nutrition, and family planning services, and research activities related to the problems of population growth."

The third amendment offered by Senator Joseph Tydings, of Maryland, would authorize the use of foreign currencies accumulated through future sales of agricultural commodities to finance voluntary family planning programs in friendly foreign nations.

POPULATION EXPLOSION CONCERN ACCELERATES IN SENATE

These amendments show the growing concern in the Senate of the United States about the population explosion. The authors of these amendments are cosponsors of the bill this subcommittee is considering, S. 1676, a bill to coordinate and disseminate birth control information upon request, which I introduced on April 1, 1965.

We know the effects of overpopulation are far reaching.

The poverty of India or Brazil or Appalachia concerns each of us. No part of this globe need be dulled, drugged, and deteriorated by the population explosion man created.

John Donne said:

No man is an island, entire of itself; every man is a piece of the continent, a part of the main; if a clod be washed away by the sea, Europe is the less, as well as if a promontory were, as well as if a manor of thy friends or of thine own were; any man's death diminishes me, because I am involved in mankind; and therefore never send to know for whom the bell tolls; it tolls for thee.

BIOGRAPHIC STATEMENT: ORVILLE L. FREEMAN

The Subcommittee on Foreign Aid Expenditures today welcomes the contribution of Secretary of Agriculture Orville L. Freeman to the population dialog. His public career as three-time Governor of Minnesota and as U.S. Secretary of Agriculture is distinguished and dedicated.

At this time I direct that his official biography, prepared by the Department of Agriculture, be placed in the hearing record.

(The biography of Secretary Freeman follows:)

BIOGRAPHY OF SECRETARY OF AGRICULTURE ORVILLE L. FREEMAN

Since taking office in January 1961 as the 16th Secretary of Agriculture, Orville L. Freeman can count among his major achievements:

Farm income recovery from postwar low: Realized net farm income has recovered from a postwar low of the late 1950's, and during 1961–64 averaged about a billion dollars a year more than during the preceding four years.

Strengthened rural resources: Rural areas, where more than 54 million Americans live, are being pulled back into the mainstream of economic progress. Over 100,000 small-town and farm people are participating in rural areas development projects. An estimated 412,000 new rural jobs have been created. Hundreds of community development projects are underway.

Stepped up food use: The family food donation program is helping about 6 million needy Americans, nearly 50% more than in 1960, with twice as many different foods to supplement their diets. The number of children benefiting from the National School Lunch Program has risen from 14 million to 17 million—including thousands of needy children in deprived areas getting lunch at school for the first time. A Food Stamp Program was set up and is benefiting over half a million low-income people.

Action to meet world food needs: World food needs through 1980 have been surveyed to provide U.S. guidelines for expanding agricultural exports—both commercial exports and exports under the Food for Peace program. These surveys show that because of population growth and retarded agricultural capabilities, the less developed nations need substantial food aid as well as agricultural and economic development assistance, in order to build self-sustaining economies. Besides furnishing food for these nations, the Agriculture Department is supplying technical specialists, know-how, and guidance for the Agency for International Development's worldwide agricultural improvement operations.

Record farm exports and dollar sales: Farm commodity exports reached a new high of $6.1 billion in fiscal year 1964, and will be down only slightly from this record in fiscal 1965. Commercial sales for dollars reached a record high of $4.5 billion in fiscal 1964 from a $3.2 billion total in fiscal 1960. These records were due in great part to vigorous stress on market export promotion programs—including cooperative promotion arrangements with all major U.S. commodity groups.

Orville Lothrop Freeman was appointed to office by President Kennedy in January 1961 as the youngest man—he was then 42—ever to become Secretary of Agriculture, and the first from Minnesota. He was reappointed by President Johnson in January 1965.

Born of Scandinavian parents in Minneapolis on May 9, 1918, he spent his summers as a boy and youth on the family farm near Zumbrota, Minn., in Goodhue County. This farm was homesteaded by the Secretary's great-grandfather in the 1850s, and Secretary Freeman today is one of the share owners of the property.

A three-time Governor of the North Star State, Secretary Freeman brought to Washington a willingness to work 80 to 90 hours a week and the practical experience both of administering a State Government and of successfully working with legislative bodies. Although a lawyer by profession, he also is thoroughly familiar with the business end of a pitchfork as well as the complex farm policy issues of the day.

A graduate of Minneapolis public schools, Secretary Freeman attended the University of Minnesota, receiving a B.A. degree magna cum laude in 1940. He is a Phi Beta Kappa.

The Secretary worked his way through the University as a bus boy, janitor, waiter, hod carrier, and summer harvest hand, and also was active in student affairs and athletics.

He was elected president of the All-University Council and won a letter as second team quarterback on the famous Golden Gopher football teams in the late 1930s.

Following his graduation in 1940, Secretary Freeman entered the University of Minnesota Law School. World War II interrupted his legal training, but he returned to his studies and received his LL.B degree in 1946. The Secretary was awarded an honorary Doctor of Laws degree from University of Seoul, Korea, in 1957, and an honorary Doctor of Laws degree from Saint Joseph's College in Philadelphia, Pa., in 1965.

From 1941–45 he served in the Marines, advancing from second lieutenant to major. While he was leading a combat patrol on Bougainville Island in the South Pacific, a sniper bullet shattered his jaw and severely injured him.

His speech impaired, Secretary Freeman was hospitalized for eight months. He underwent special speech therapy and is now a fluent and forceful speaker.

While completing his law degree at the University of Minnesota and after graduation, Secretary Freeman was assistant to the then Mayor of Minneapolis, Hubert H. Humphrey, in charge of veterans affairs from 1945–49. From 1946–49 he also was chairman of the Minneapolis Civil Service Commission.

Secretary Freeman built a successful law practice during the early fifties as a partner in the Minneapolis law firm of Larson, Loevinger, Lindquist, Freeman, and Fraser. He managed Senator Humphrey's successful campaign in 1948 for the U.S. Senate, and was himself a candidate in 1950 for State Attorney General, and in 1952 for Governor.

He was elected Governor in 1954 and re-elected in 1956 and 1958.

Besides his political and governmental activities, the Secretary is a member of Alpha Zeta, National Agricultural Honorary Fraternity, and is active in many civic, professional and church activities. He has been a deacon in the Ebenezer Lutheran Church in Minneapolis, and has served as an officer in numerous civic, veteran, and other organizations.

Secretary Freeman married Jane C. Shields on May 2, 1942. They have two children, Constance, born July 3, 1945; and Michael, born May 7, 1948. Mrs. Freeman, a native of Winston-Salem, N.C., is a graduate in public administration from the University of Minnesota.

Senator GRUENING. Mr. Secretary, will you tell us how we can start to bring into alinement the world's food supply and the world's population.

STATEMENT OF HON. ORVILLE L. FREEMAN, U.S. SECRETARY OF AGRICULTURE; ACCOMPANIED BY LES BROWN, STAFF ECONOMIST, AND MICHAEL WALSH, WHITE HOUSE FELLOW

Secretary FREEMAN. Thank you very much, Mr. Chairman. It is a privilege and an honor to appear before this subcommittee.

I have followed the hearings with very great interest, and they certainly have made a great contribution in clarifying thinking in this country and around the world on this tremendously pressing and important subject.

I only hope that I can make a small contribution to this excellent record here today.

Before I begin with the prepared statement, I would like to ask your permission that I might be joined here at the witness table by two of my colleagues in the Department of Agriculture—Mr. Les Brown, one of our distinguished staff economists, and Mr. Mike Walsh, who is the White House Fellow assigned to the Department of Agriculture and who is contributing much to the Department.

FEEDING THE POPULATION—MAN'S NO. 1 CHALLENGE

Senator GRUENING. Gentlemen, will you join the Secretary, please.

Secretary FREEMAN. Mr. Chairman, in a world seemingly full of problems, it is difficult to single out one problem as most important. But more and more it appears that the task of feeding the rapidly growing populations of the less developed regions of the earth will be man's No. 1 challenge over the remaining three decades of this century.

World food production in 1965 was exactly the same as in 1964 but we had to divide it among 63 million more people than the year before. Next year, barring widespread famine or some other unforeseeable catastrophe, the denominator will be even larger.

Each year we calculate in the Department the world index of food production per person. Overall gains in food production in the less-developed countries are not unimpressive. But each year we must divide total food production by the ever-growing denominator of world population.

FOOD NEEDS WIDEN—LESS-DEVELOPED NATIONS UNPREPARED

Even more significant than the actual increase in world population, most of the additions are coming in the less-developed regions—those regions least prepared to feed them. High rates of population growth in the less-developed countries and low rates in the developed countries are contributing more to the rapidly widening gap in living levels between the "haves" and "have nots" than any other single factor. Nowhere is this widening gap so noticeable as in the most basic of human needs—the need for food.

Two-thirds of the world's people live in countries where diets fail to meet the most basic nutritional needs. The number of people suffering from malnutrition is greater than it was a generation ago. Hunger today is commonplace throughout much of the world. This in spite of the fact that we have distributed 140 million tons of food abroad under the Food-for-Peace program over the past decade or so.

MASSIVE FOOD IMPORTS HAVE NOT BEEN ADEQUATE

The gap between food needs and food production in the less developed world is widening rapidly. A generation ago the less developed regions of Asia, Africa, and Latin America were net grain exporters, shipping 11 million tons of grain annually to the developed regions, principally Western Europe.

During the war decade of the 1940's this flow was reversed. Grain moved from the developed world to the less developed world at the rate of 4 million tons per year in the late 1940's. During the 1950's this flow increased to 13 million tons per year. By 1964, the last year for which complete data are available, it was 25 million tons. We do not know exactly what the flow will be in 1966, but it is certain to be at least several million tons greater.

Over the span of one generation the total change in net trade—from exports of 11 million tons to imports of 25 million tons—totaled 36 million tons. Even more significant, however, is the fact that the

massive food imports have not been adequate. Food prices have risen sharply in several less developed countries over the past few years. The gap between food needs and food production is widening even more rapidly than the import figures indicate.

The food problem itself is not new; it has always existed. It is the magnitude of the problem that has changed. Two factors are responsible. First, the number of people in the world is increasing so rapidly that it now seems quite likely that the increase in world population between now and the end of this century, only 34 years hence, will equal or exceed the current population. Secondly, this is occurring at a time when the amount of new land suitable for cultivation is rapidly diminishing.

Throughout most of history man has expanded the food supply along with population simply by expanding the area under cultivation. This method has been known ever since agriculture began several thousand years ago. As population increased, the area under cultivation expanded—from valley to valley, from country to country, and from continent to continent.

This period of history is now drawing to a close. Bringing new land under cultivation cannot account for more than a small part of the projected increase in world food needs over the remaining one-third of this century. Lacking new land to bring under cultivation, we must look to greater output per acre.

Over the past quarter century all of the increases in food production in both North America and Western Europe have come from rising output per acre. The area under cultivation in both regions has actually declined. During this period, per-acre yields in North America have more than doubled, and in Western Europe they have increased by half. In the less-developed world they increased 8 percent.

LESS-DEVELOPED COUNTRIES . . . RUNNING OUT OF NEW LAND

As the developed regions have exhausted the supply of new land that could readily be brought under cultivation, they have generated takeoffs in yield per acre. Today's densely populated, less-developed countries, faced with rapid rates of population growth, are running out of new land while still in the very early stages of economic development.

Generating a yield-per-acre takeoff requires capital to purchase yield-raising inputs such as fertilizer, pesticides, and improved seed. It requires a favorable relationship between prices for farm products and the cost of these yield-raising inputs. The nonagricultural sector must be capable of providing agriculture with the physical inputs mentioned above and all of the services, such as credit, transport, and marketing needed to support a yield takeoff.

It is far easier to increase the food supply by expanding the area under cultivation than by raising output per acre. The failure to sufficiently appreciate the difference in these two methods and the difficulty in making the area-to-yield transition, particularly in underdeveloped economies, has resulted in a serious underestimation of the world's food problem.

FAMINE . . . IS NO LONGER TOLERABLE . . .

I would like to play the role of economic historian for a moment looking at the various means of adjusting food/population imbalances in times past, comparing them with the adjustments operating today. Throughout history adjustments of the imbalances between food and population have been frequent. The oldest adjuster, of course, is famine. Given the present state of technology and the values we attach to human life, this is no longer tolerable.

As the pressure of population on the land became unbearable during Europe's early industrial development, famine occurred from time to time, as in Ireland during the late 1840's. But famines did not occur often in Europe after the industrial revolution. Emigration and trade were by this time the principal means of maintaining a tolerable relationship between the number of people and the supply of food.

Emigration to less densely populated areas of the world was the most important single factor alleviating excess population pressure. It was the principal safety valve. The New World today is largely populated by the overflow from Europe.

Trade involving the export of industrial goods in exchange for food was another important factor. Historically, Europe had a technological lead over most of the rest of the world. It was able profitably to export this technological lead, in the form of manufacturers, buying the foodstuffs needed to feed its slowly but steadily growing population.

FRONTIER EXPANSION CURTAILED

Other advanced countries outside Europe such as the United States, Canada, Australia, and New Zealand, were able to push back their frontiers throughout the early stages of development to make more room for their growing populations.

For those countries now struggling to develop, however, these traditional means of alleviating population pressure no longer exist. There are not any significant possibilities for immigration in the world today. Nor do today's developing countries have a technological lead over the rest of the world. In fact, they are confronted with a serious technological lag.

In today's developing countries, when the population becomes greater than that which the land can sustain and when export earnings are not adequate to cover food import needs, food imports under concessional terms have provided the only alternative to famine.

Since World War II, thanks to the productivity of our farmers, there has not been any large-scale famine in the world, at least not in the free world. The new safety valve in the food/population race is the U.S. Food-for-Peace program. During the 12 years since Public Law 480, the enabling legislation for our Food-for-Peace program was passed, we have shipped abroad 140 million tons of food.

WHEAT IS A NOURISHING WEAPON

Wheat has become our primary weapon in the worldwide war on hunger. More than two-fifths of our wheat crop now moves abroad under the Food-for-Peace program. In all, we now export three-fifths of our wheat crop.

On February 4, the President announced that another 3 million tons of grain, consisting of 2 million tons of wheat and 1 million tons of grain sorghum, were being made available for immediate shipment to India. Without this massive shipment of grain, India would face famine within the very near future. Never before in history has such a large share of the food-producing resources of one country been committed to the welfare of the people of another country as is now the case with the United States and India.

POPULATION GROWTH OUGHT NOT EXCEED FOOD PRODUCTION GROWTH

Until recently, efforts to achieve a satisfactory balance between food and people were concentrated largely on the food side of the food/population equation. Today we know that concentrating our efforts on the food side alone will not be sufficient.

To illustrate, both Latin America and Western Europe have expanded food production at about 2.5 percent annually over the past decade. In Europe where population is increasing at about 1 percent per year, this has meant progress and a steady upgrading of diets. But in Latin America, where population has been multiplying at more than 3 percent per year, food output per person has declined.

Today's developing countries are faced with far higher population growth rates than those faced by the now advanced countries at a comparable stage of development or, for that matter, at any time in their history. The sharp postwar spurt in rates of population increase in the developing countries has caused a whole host of new problems, including greater unsatisfied needs for food, housing, and for social services such as health and education.

Much of the aggregate progress achieved at such great cost to the developing countries over the past 10 to 15 years is being eroded by runaway rates of population growth. These uncontrolled rates of population growth pose a more serious threat to nutritional and economic well-being than any other single factor.

Fortunately, we are beginning to realize the danger inherent in these explosive population growth rates. President Johnson, in his San Francisco address last June commemorating the 20th anniversary of the United Nations, pointed out that $5 invested in family planning achieves as much progress as $100 invested in other forms of economic development.

As we look ahead, we can see the time in the not too distant future when even our impressive food-producing capability, combined with that of the rest of the free world, will not be sufficient to fill the rapidly growing food deficits in the developed world.

FOOD, TECHNICAL AID, FAMILY PLANNING PROGRAMS HELP FIGHT WAR ON HUNGER

As of 1966 we are waging the war on hunger on three fronts. We are shipping food to the food-deficit countries, buying time for them to modernize their agriculture; we are helping aid-recipient countries improve their own agriculture by providing technical assistance and modern inputs such as fertilizer; and we are helping with family planning programs.

In the Food for Freedom Act of 1966 we have introduced several new concepts which bolster our capacity to wage the war on hunger. These provide the means for narrowing the now-widening gap between food production and population growth in the less-developed countries.

BY 1980: A BILLION MORE PEOPLE

The world must prepare for a billion people to be added over the next 15 years. This fact in itself is significant. But even more significant, fully four-fifths of this total will be added in the food-short, less-developed regions.

The adverse food/population trends of recent years are pervasive and they have a great deal of momentum. Arresting and reversing these trends will not be easy. The large number of females who will be in the reproductive age groups in the early 1980's are already born. Significant reductions in birth rates are not expected soon. Modernizing agriculture is a slow and time-consuming process.

"ALTERING THE TRADITIONAL BEHAVIOR PATTERNS . . ."

The modernization of agriculture in the developing countries means adopting new cultural practices and learning to use new inputs. It means altering the traditional behavior patterns of the rural people of Asia, Africa, and Latin America—a group making up half the world's total population.

Time, or the lack of it, is the critical new dimension in the world food/population equation. Runaway population growth rates in countries with little new land to bring under cultivation require rapid changes in methods of food production. Changes taking centuries in the developed countries must be compressed into decades. Those requiring decades must be compressed into years.

Events of the past few years indicate that winning the race between food and people will not be easy. The gap between food production and food needs in the developing countries widened gradually during the 1950's. It is widening rapidly during the 1960's.

The race between food and people will not be won without a prolonged, difficult struggle. We must not be deluded into thinking otherwise. Nor must we think the United States can win it alone.

MANY COUNTRIES CAN CONTRIBUTE TO PRESIDENT JOHNSON'S WAR ON HUNGER

The strategy for winning the worldwide race between food and people is dictated by certain basic facts and trends. It is true that we have the last remaining, significant cropland reserve—60 million acres—that can readily be called forth. But Canada, France, Australia, and, to some extent, Argentina also have productive capabilities beyond their own needs. Many countries in the world can contribute to the war on hunger proposed by President Johnson. If they do not have food to spare, they can contribute fertilizer and other agricultural chemicals, farm machinery, shipping, and other inputs needed to accelerate agricultural development.

MAJOR THRUST TO AVOID FAMINE MUST COME FROM UNITED STATES

So far, the contribution of the rest of the world has been limited. It is important that other well-fed nations increase their contributions. However, the major thrust, if we are to avoid world famine, must come from the United States.

The situation is not hopeless. Some developing countries report promising progress in efforts to both modernize agriculture and slow down population growth rates. Taiwan, Israel, and Mexico have achieved impressive gains in food production. Both Taiwan and South Korea are, through nationwide family planning programs, beginning to reduce their population growth rates. These countries, however, are conspicuous because of their success. And among the scores of developing countries they are few.

WORLD LEADERS MUST WORK TOGETHER TO ATTAIN ACCEPTABLE FOOD/PEOPLE BALANCE

The government leaders throughout the world must work together to attain an acceptable balance between food and people. But even this will not be enough. Leaders in all fields, in science and agriculture, in education and religion, and in industry and medicine, must work toward the common goal—toward the day when the world can attain an acceptable balance between the number of people and the supply of food—toward the day when enough food to insure full physical and mental development will be the birthright of every child.

A PEACEFUL WORLD REQUIRES SHARING

The prospective gains of this and future generations will be determined in part by what we do now. A peaceful world requires that people everywhere share in the progress that all have come to expect.

Among all the species of life on earth, man is the most intelligent, the only one capable of voluntarily choosing between the quantity of life and the quality of life. The extent to which this choice is exercised over the next few years will strongly influence the history of the remaining one-third of this century.

May I make the following summary conclusions.

NEED FOR FOOD: THE MOST BASIC HUMAN NEED

1. There is in the world today a widening gap in living levels between the "have" and "have not" countries. Nowhere is the growing gap so noticeable as in the most basic of human needs—the need for food. This is the most significant social, economic, and political fact of our time. It will completely dominate relationships between the "have" and "have not" countries over the next few decades.

2. Food shortages emerging in the less-developed countries are a symptom of a much broader problem—the unprecedented rates of population growth now prevailing in almost every less-developed country. Other symptoms are housing shortages, lack of classrooms, and rising numbers of unemployed.

3. Uncontrolled population growth in the less-developed countries poses a more serious threat to nutritional well-being and to ultimate economic viability than any other single factor.

4. The densely populated, less-developed countries face two severe handicaps as they attempt to make the transition from the area-expanding method of increasing food output to the yield-raising method. They have very little time in which to make the transition, and they must do it while still in the very early stages of development.

5. Winning the worldwide war on hunger requires that the war be waged on three fronts. We must continue to ship food to the food-deficit countries, buying time with which they can modernize their agriculture; we must assist and encourage the food-deficit countries to accelerate their agricultural development efforts; and we must help the developing countries with family planning programs, bringing their population growth rates down to manageable levels.

NATION FACES AGRONOMIST SHORTAGE

6. As we intensify our efforts to win the worldwide food/population race we face a prospective shortage of agronomists comparable to the shortage of engineers experienced in this country when we entered the space age race several years ago. Our land-grant universities must prepare to meet this need.

FUTURE POLITICAL STABILITY OF DEVELOPING NATIONS CONTINGENT ON FOOD SUPPLY

7. The future economic and political stability of the less-developed countries is contingent on an adequate supply of food.

8. North American food and food-producing know-how will be the decisive factors in the worldwide race between food and people.

Thank you, Mr. Chairman.

"A MAGNIFICENT PRESENTATION . . ."

Senator GRUENING. Thank you very much, Mr. Secretary, for a magnificent presentation which packs a tremendous wallop.

You have made it very clear that we have to do all these things you outline and still they may not be enough so that we face a really serious problem immediately, and increasingly so, in the years to come.

Some of your sentences spell this out:

On page 2:

> The number of people suffering from malnutrition is greater than it was a generation ago—

despite the increase in food production; and then in the next paragraph:

> The gap between food needs and food production in the less-developed world is widening rapidly.
>
> The area under cultivation in various regions of the world has actually declined. During this period, per-acre yields in North America have more than doubled and in Western Europe they have increased by half. In the less developed world they increased 8 percent.

And still that is not enough to meet the situation.

"FOOD IMPORTS . . . PROVIDE THE ONLY ALTERNATIVE TO FAMINE"

And then you point out that there are not any significant possibilities for emigration in the world today. In other words, one of the old safety valves no longer exists.

Food imports under concessional terms provide the only alternative to famine.

And then you say:

> Today we know that concentrating our efforts on the food side alone will not be sufficient.

And you say:

> The world must prepare for a billion people to be added over the next 15 years. This fact in itself is significant.

This is a splendid statement, and we are very grateful to you for coming here and making it.

We have been joined by our able colleague from Montana, Senator Lee Metcalf, who has been much concerned with this problem.

Lee, have you any comments or questions that you would like to ask?

Senator METCALF. Thank you, Mr. Chairman.

I also want to join in complimenting the Secretary for a splendid statement. I think he very succinctly presents the problem.

I especially liked his summary of an attack on three fronts—shipping food at the present time, preparing these people to produce more food, and, of course, getting this population explosion under control.

CHANGE IN STANDARDS—A MATTER OF EDUCATION

Now this business of getting foreign countries, especially the emerging nations and undeveloped countries, up to the standards that we have in this country is an educational matter rather than some other matter, is it not?

Secretary FREEMAN. Well, as you well know, Senator, it is a combination of a lot of things, and education is a very, very important part of it.

The only factor which is equally important is to get your cost-price relationships to the point to provide an inducement to use what you teach.

Senator METCALF. When an American farmer gets a bag of fertilizer, he either knows what to do about it because he can read on that bag the proportions of the various soil ingredients that are needed, or he goes over to somebody in your agency and they tell him how to do it.

But when a farmer who cannot read or who does not have the educational facilities that you have in your various agricultural advisory services gets this fertilizer from the United States, he may put it on and destroy rather than help the quality of his land.

So, first, we have to teach him to read and write and get him these services. Is that not correct?

Secretary FREEMAN. This is certainly very, very important.

Senator METCALF. Now, that brings up the next question. You say in your sixth summary point, "Our land-grant universities must prepare to meet this need"—for agronomists not only in this country, but abroad.

PROPOSED AGRICULTURE RESEARCH CUTS QUESTIONED

Now, how can you justify the proposed research cuts in the President's budget at the present time on these very programs that will not only develop the agronomists but will increase the food supply of the Nation?

Secretary FREEMAN. I do not think, Senator Metcalf, that the cuts involved in this instance will have any effect whatsoever on the number of agronomists that are being trained.

Senator METCALF. Well, now, many of the research programs in the land-grant universities, Mr. Secretary, are long-term research programs, and they have contributed greatly to the increased production that we have in this Nation, to the high yields of corn. For instance, some of this exciting new 100-bushel wheat over in Washington emerged from research programs in the land-grant universities. Some of our developments in control of diseases, animal diseases, and pesticides have come from your research programs. And you have done a spendid job of it.

But all at once it is recommended that we cut some of these 25 percent and eliminate some of them. And here in a time when these things have made such a great contribution and you can foresee a great need for further production of food, we are in this country cutting the research programs that have made the greatest contribution of all.

How do you justify such a recommendation as that?

Secretary FREEMAN. I think the consequences that the Senator outlines will not flow from the adjustments that are being made.

As a matter of fact, in many respects our research programs are being strengthened, not diminished. Merely the quantity of money does not necessarily accomplish the real basic results.

"WE ARE TRYING TO . . . REORDER OUR HOUSE"

We are trying to, in a sense, reorder our house. First, basic, long-term research which is of fundamental need in such a rapidly changing program and area is strengthened. The appropriation for it actually in this respect is increased. And the number of dollars available for special kinds of research has been expanded.

On the other hand, some of the research which is primarily adaptive in nature in relation to adjusting to a given local set of circumstances, which has always been the responsibility of the State or of a region, has been cut back so far as the Federal contribution is concerned but not in an amount that is going to affect that research.

We feel, therefore, that this is not actually going to imperil the quality or the level of research as to which you expressed concern, but I really believe, in the process of freeing up some dollars and reorganizing our own research and directing it more specifically to particular goals and strengthening the long-term, basic research, that we are going to do a better, rather than a less, effective job.

Senator METCALF. Well, this is reminiscent of a couple of things, Mr. Secretary. I remember in the last administration there was always a bigger bang for a buck every time we cut defense appropriations. And remember the slogan of the automobile manufacturer that

their cars are bigger on the inside and smaller on the outside, or the Orwell sort of thing that "cuts represent gains."

Let me give you some examples, specific examples, that I know about.

In Montana State College, which is a land-grant college, we are going to have to cut, if this budget goes into effect, about 25 percent on some of the research programs. One of the programs is on the sawfly. It has been going on for more than 30 years.

ABANDONED RESEARCH FORCES DISMISSAL OF FUTURE AGRONOMISTS

Now, we have a whole hereditary history of sawfly for all those years. If we abandon that long-term research program which has contributed to the production of especially wheat in that country, we are abandoning one of the long-term programs that you are suggesting. At the same time, more than 20 young candidates for the Ph. D., research professors, are going to have to be dismissed.

Now, I cannot see how you can say that that either helps us develop more agronomists or prepares us for long-range research.

Secretary FREEMAN. Well, I do not want to dispute your figures. I am not acquainted in depth with this one. But I will wager you are not going to lose 20 young Ph. D. candidates just because research on sawflies is cut. That does not make sense.

Senator METCALF. I will take your bet. But the reason there is not going to be any loss is because I do not think Congress is going to consent to the budgetary request for cutting these programs.

Secretary FREEMAN. You are not telling me seriously that you think this would mean the end of the Ph. D.'s if they cut out research on sawflies, are you? It does not make sense.

Senator METCALF. We have a research program for wheat development, as you know. It is your Department. I just used the sawfly because for 30 years people have been there developing a whole generation after generation of these special biological attacks on the sawfly, and you are going to end it up. You are just going to wash it out.

Secretary FREEMAN. No, we would not end it up at all. This basic research on sawfly has been done, as you have just testified, for generations. It is now at a level where the State can and should carry forward this research without Federal money.

Senator METCALF. Well, now, Mr. Secretary, that again is something that emerged from the last administration where they wanted to change and transfer all these responsibilities.

Secretary FREEMAN. Senator, I object to your putting me in the last administration. I was not for that administration and I was not in it, and I do not think the basis is comparable. I challenge your analogy.

Senator METCALF. Mr. Secretary, is it not true that you have cut the research budget for the land-grant colleges about 25 percent?

Secretary FREEMAN. No.

Senator METCALF. How much have you cut it?

Secretary FREEMAN. My best recollection is out of $50 million the total cut is in the neighborhood of 6.

Senator METCALF. 6 percent?

Secretary FREEMAN. $6 million. It will average out at about 10 percent.

Senator METCALF. You will have to work that mathematics out.

Secretary FREEMAN. We will have to check it. I do not have the exact figures with me.

(The following figures were supplied in a letter of March 11, 1966, sent to Senator Gruening by Michael Walsh, White House Fellow, Office of the Secretary, Department of Agriculture.)

EXHIBIT 80

MONEY CUT FROM 1967 BUDGET FOR LAND-GRANT COLLEGES

	1966	1967	Difference
Formula grants under the Hatch Act	$46,893,221	$38,648,221	−$8,245,000
Formula grants for research facilities	2,000,000		−2,000,000
Formula grants for cooperative forestry research	2,500,000	2,500,000	
Nonformula contracts and grants	2,000,000	4,910,000	+2,910,000
Total	53,393,221	46,058,221	−7,335,000

NOTE: The 1967 budget cuts these payments 13.73 percent below 1966. The 1966 budget was $53,393,221; the 1967 budget figure is $46,058,221; the difference is $7,335,000.

Senator GRUENING. Will you yield a moment?

Senator METCALF. Yes.

ALASKAN AGRICULTURAL RESEARCH ELIMINATED IN PROPOSED BUDGET

Senator GRUENING. Are you aware, Mr. Secretary, that in Alaska the entire agricultural research program has been eliminated in your proposed budget?

Secretary FREEMAN. Yes, sir.

Senator GRUENING. Well, do you approve of that?

Secretary FREEMAN. Yes, sir.

Senator GRUENING. Why?

Secretary FREEMAN. Well, again, because I feel, Senator Gruening, that the research involved in this instance can and will be carried forward in other areas with comparable results and at less cost.

"THE CONDITIONS IN ALASKA ARE UNIQUE"

Senator GRUENING. In other areas? The conditions in Alaska are unique. They are different from those in any other area. We are an arctic and subarctic area. We have different conditions of temperature, different conditions of soil, different conditions of entomology. Research cannot be carried on anywhere else that is applicable to Alaska, and you know that.

Why do you pretend that this is desirable? You cannot believe that.

You have not been to Alaska. When you go to Alaska, you will see for yourself.

Secretary FREEMAN. I am going to respond to your invitation with alacrity, Mr. Chairman.

Senator GRUENING. That invitation has been extended to you for the last 6 years, ever since you came to the Government, and I hope this year you will come, and I hope you will be able to bring back the news when you do come that this inexcusable total cut has been restored.

Senator METCALF. Mr. Secretary, I do not want to belabor the point. I think you page through the budget and you find cut after cut in research programs, in programs to develop young and new scientists in the land-grant colleges. I estimated it as about 25 percent in some of the programs from a cursory examination of the budget.

"OUR ONLY HOPE: MORE RESEARCH, BETTER PRODUCTION . . ."

I cannot see any justification for cutting any program anywhere in view of this splendid testimony that you have put forth here today. It seems to me that these programs should be expanded, that our only hope to meet this great need that you have eloquently foreseen is to have more and more research, better production, better fertilizers, better farming methods, rather than cutting back at any level.

Certainly I think that you have given the Senate and the Congress some ammunition to put back some of those budget cuts that you recommended this year.

WERE THE CUTS "WILLY-NILLY"?

Senator GRUENING. May I ask you: Did you recommend those cuts or were they put over on you willy-nilly?

Secretary FREEMAN. Well, Senator, you know that the budget is a product of a long and complicated process and that we have sought, the President has sought, and I am sure that you are very sympathetic and support the aim that we are going to expand new programs, going to develop improved programs and services which we need.

We have to very carefully and thoroughly set priorities. We have to try and eliminate programs that no longer command a priority that they might have commanded in the past and seek to use our resources in a maximum effective way.

There are inevitably differences of judgment. This is a matter of establishing priorities.

It is obvious that these two Senators this morning do not agree with some of the priorities established by the administration.

But this has not been done willy-nilly. Rather, we have analyzed in the Department and continue to carefully analyze and scrutinize all of our programs.

There are a good many—I found them in State government, and you will find them everywhere at any institution—that, once established, can go on and on and on. There are appropriations that go to land-grant colleges that were made years ago for no particular purpose.

I find lots of things that go on in the Department of Agriculture that have served their main purpose—maybe useful but which certainly do not command an equal priority with something else. The net result is that those things that in our best judgment, in a very tortuous and difficult process, are determined as having the highest priority within the limited funds available.

We do our best to make those judgments. And every program that we have had since the beginning of the Department cannot always be continued. And it is just about that simple—or that difficult.

Senator GRUENING. Well, we have a forest research laboratory on the campus of the University of Alaska, designed to do research in an entirely unexplored field, that of the vast interior forests. With great

difficulty we secured several years ago an appropriation to build this laboratory.

It is designed to staff 14 scientists and research men whose work will bring into use this vast, unutilized resource, the interior forests of Alaska. And yet the budget provides such a small staff—5 instead of 14—that this desirable undertaking really cannot do the job for which it was created.

Now, is that economy? Is that wisdom? We are very much puzzled by it.

The result of this research would bring in more revenue to the Treasury, more tax funds, development of a vast resource that is now largely unutilized. That policy does not make sense. We are very much distressed about this.

I completely share the views of my colleague from Montana, and I very much hope the Congress will rise up and restore the funds.

When you come to Alaska, which I hope will be at long last this spring, you will see these things for yourself.

Secretary FREEMAN. I am looking forward to that, Mr. Chairman.

Senator GRUENING. Mr. Secretary, I think it would be nice if you would give the subcommittee a little portrait of the two assistants that you have here, what their work is, and we might have a word or two from each of them.

Secretary FREEMAN. Fine.

Dr. Brown, to my left, is one of our outstanding staff economists within the Department of Agriculture, who has been working in the foreign agricultural area. He has written widely in that area.

He will be leaving tomorrow to go to India to review there both the development being made in their own agricultural institutions and the current very difficult food shortage situation, compounded by the drought.

Mr. Walsh, to my right, is one of the White House Fellows, the youngest one I might add, who survived the very spirited competition among some 3,000 outstanding young men in the country. He has been with us in the Department now for about 6 months. He has contributed greatly to many things, including the international agriculture field.

Senator GRUENING. Thank you very much, Mr. Secretary.

Would either of you young men like to say a word on this subject? We would like to have it as part of the record.

Mr. BROWN. I think perhaps I have expressed my views on most elements of the subject at one time or another, having spent most of the past 4 years either writing or talking about the problem of feeding the world's population over the next several years.

"EACH YEAR . . . WE HAVE TO DIVIDE BY AN EVER-LARGER POPULATION DENOMINATOR"

I think, as the Secretary pointed out earlier, the one problem that comes home again and again to those of us who work in the foreign agricultural area is that, although some of the developing countries are making rather significant gains in expanding their food production, each year as we calculate the index we have to divide by an ever-larger population denominator.

This is a rather frustrating thing. And given the efforts that have been made, we would hope that we could begin to slow down popu-

lation growth so that the people could begin to benefit from these efforts.

Senator GRUENING. Well, of course, that is the purpose of the legislation which we have under consideration. And since the President has spoken not fewer than 19 times since his election on the subject of population control, spoken most emphatically and most eloquently, I have very high hopes that it will be enacted and that we can proceed and meet this overwhelming problem, at least begin to meet it, as rapidly as possible.

Have you anything you would like to say, Mr. Walsh?

Mr. WALSH. Senator, I would just venture an observation or two of a young man coming into Federal Government at a very young age without much experience, who, on the basis of 6 months' experience, is still on what John Gardner would call the "very steep part of the learning curve."

To many young people in the world today the problems in the less-developed countries in terms of developing population indeed seem, at first glance anyway, staggering.

From what I have seen in the Department of Agriculture, and particularly Secretary Freeman's response to these problems in relation to the Indian food question and the overall world food/population question as a whole, I think the people of the world, the U.S. Government, and the citizens of this country are extremely fortunate to have in the person of Secretary Freeman and in the collective response of his staff in the Department of Agriculture and in the other agencies of the Government a number of people who combine a vision and an understanding of the problem with really a wondrous degree of intellectual and emotional resiliency in terms of the staggering proportions of the problem.

They combine a willingness to deal with the hard "nuts and bolts" problems of implementing population programs or technical changes with what seems to me to be an amazing optimism, a spirit of hope, and a willingness to stick with the problem over the many years.

". . . AN OPPORTUNITY TO DO SOMETHING—NOT A REASON FOR DESPAIR"

To me it is very inspiring, and I would only say I think the people of the world and the people of this country can take great hope and be very proud to have people who see these problems as opportunities to do something, and not as a reason for despair.

Senator GRUENING. Thank you very much.

Do you have any further questions, Senator Metcalf?

Senator METCALF. Yes, Mr. Chairman.

I do not want the Secretary to leave on a note of criticism as far as I am concerned. I think that you have done such a magnificent job in much of your organization that I hate to see some of it curtailed and some of it stopped.

You have come up to the Hill with legislation which shows imagination and a change of policy that has I think put agriculture back on a rising price level. Our farmers are getting more money for their products and are hoping to put farms back into production.

I want to compliment you on the overall management of a most important department to our area, the Department of Agriculture.

I just cannot justify your putting together such a magnificent sort of a machine and then dismantling about half of it this year at a time when we need it working at 100 percent efficiency.

Senator GRUENING. Thank you very much, Mr. Secretary.

Secretary FREEMAN. Thank you, gentlemen.

Senator GRUENING. Before we recess, I want to insert several articles relevant to our dialog today into the hearing record. They include an article entitled "She Had So Many Children . . ." and an accompanying illustration which appeared in the December 31, 1965, issue of Kaiser Aluminum News, two articles on the population explosion which appeared in "The National Review" on July 27, 1965, an article entitled "Food for Peace?" from the January 1, 1966, issue of "The New Republic" which points out the need of taking new farming techniques to developing areas as well as the necessity of utilizing these new methods, and an excellent cartoon by Bill Mauldin of the Chicago Sun-Times entitled "Drag Race."

I wish at this time to note that the 1964 U.S. Department of Agriculture Yearbook, "Farmer's World," contains a number of chapters in which relevant aspects of the population crisis are discussed. Where, for example, are the world sources of protein which are described as the scarcest and most expensive of our foodstuffs? This topic is discussed in detail in the chapter entitled "World Sources of Protein" which appears in the 1964 yearbook and is written by Martin G. Weiss and Ruth M. Leverton.

And what about the nutritional status of the world? Esther Phipard and Riley H. Kirby discuss this aspect in their yearbook chapter titled "Nutritional Status of the World."

They point out, correctly, that people must be well fed if they are to be healthy, productive, happy, and secure. Because of the millions who do not have enough to eat, they add, the "problems of food supplies and nutrition must be attacked on an international scale."

(The article referred to follows:)

With too little food, too few calories, for long periods, the body adapts to a lower plane of existence by conserving expenditure of energy. For adults, that means a loss of weight, lower physical activity, and consequently less output of work. Poor physical stamina coupled with low income, limited technical knowledge, and perhaps lack of water or fertile soil are basic causes of food shortages. A cycle of cause and effect operates to perpetuate the situation.

When children have too little food or the wrong kinds, growth and development are affected and general health is impaired. A greater susceptibility to disease is a natural concomitant. Malnutrition among young children is especially serious. It is largely responsible for the high mortality rate, which for children 1 to 4 years old, is said to be up to 40 times greater in some of the developing areas than in the United States or other economically well-off countries.

A shortage of protein, as well as calories, is common in the postweaning period, when the child may be given a starchy gruel low in protein.

It is especially common in places where cassava and yams are the staple foods. Sometimes a better diet may be available, but the mother continues these poor feeding practices because of tradition and from lack of knowledge.

Protein-calorie malnutrition of children is perhaps the most serious and widespread deficiency disease in the world. In its severe form, known as kwashiorkor in some areas, it exists in most of the food-deficit countries of the Far East, the Middle East, Africa, and Latin America. Characteristics of the disease include growth failure, muscular wasting, edema, skin and hair changes, mental apathy, liver damage, anemia, and sometimes associated infections. If diets are not improved, the rate of mortality may be high.

Senator GRUENING. Do we share our knowledge of food production with other nations?

We may be proud of the fact that we have tried to do this officially on an international scale since 1936. Our efforts and those of other nations are discussed in the yearbook's chapter entitled "Sharing Our Knowledge" written by Cannon C. Hearne, William E. Harvey, and Andrew J. Nichols. In it the authors point out that the first official step of the United States to promote the international exchange of persons for technical assistance was taken in Buenos Aires in 1936 at a meeting of the Buenos Aires Cultural Convention, which adopted a resolution calling for a multilateral exchange of students and teachers.

In one chapter Author Robert D. Stevens discusses "Population, Income, and Food." He points out that industrialized and developed nations have demonstrated that they can produce or import enough food to meet the increased requirements. His key word, of course, is "import." What happens when the importation of food is no longer possible? Thus, it becomes imperative to bring into alinement our food supply and our worldwide population.

Mr. Stevens writes:

> Major hindrances to increased production and food-generating exports are lack of the necessary social and governmental institutions, lack of education, and lack of local technical knowledge. These hindrances remain even though many countries are working hard to develop new institutions that will serve agriculture and other sectors of the economy better. Improvements in educational systems and the search for needed technical knowledge are going forward—but in many countries with too little effort and money to meet the impending food needs.

The Subcommittee on Foreign Aid Expenditures hopes that the problems of food production and distribution can be eased and solved while there is yet time.

(The photograph, cartoon, and other items referred to, follow:)



Courtesy of Kaiser Aluminum

EXHIBIT 81

She Had So Many Children

[Taken from "The Dynamics of Change," part 1 of a series presented by Kaiser Aluminum in observance of its 20th anniversary, Dec. 31, 1965]

For the student of change who trudged around the grounds of the New York World's Fair of 1964–65—avidly looking for vectors whose convergence might form an understandable picture of the world of 1986—the experience was singularly uninstructive.

Vectors—considered as lines of force that could shape our future—there were aplenty. But squinting along the lines of sight, trying to figure where they were going, revealed not only that they were not going to converge, they were not even parallel. There was a fracture here, a discontinuity that one could span with his feet within a few minutes but the mind could scarcely traverse.

One sat on his plastic seat and glided past the under-water, jungle-chopping, immaculately citied world of the future that General Motors feels we all may live in; and one could go to the General Electric rotunda and be hurled down a spiral pathway by ushers with torches, to where in a split second and a flash of light and sonic boom there was unleashed before your very senses a discharge of the power of the future; and one could go to the U.S. Pavilion and take a wonderful, wild ride through American history, trying to count the dead passenger pigeons and buffalo and Indians enroute.

And then one could walk over to where a giant computer flashed out the number of people there were in the United States at that very moment. One stood mesmerized before the computer's grinning teeth, feeling that here was a force that the other exhibits had not reckoned with. In much less time than it took to eat a hot dog, the numbers had changed significantly and the world had changed, and it simply didn't seem to have been realized by the exhibits across the way. The wonders they promised did not, somehow, seem to take into account the numbers on the big tote board of the human race. In those numbers, one could see a wave of future force humping higher and higher toward the beach of the present. When it topples, one felt, it would rattle the picture windows of condominiums twenty years away.

At the present time, starting someplace about 1946, the average annual rate of increase in the world's population is about two per cent. Using the 1962 population as a base, and applying this rate of growth to it, shows that in 650 years—somewhat less than the time backward to the Renaissance—there would be, in our world, one person standing on each square foot of land. At this rate, the perimeter of the coating of human flesh on the globe would, in 6,200 years, be expanding at the speed of light—186,000 miles per second.

Of course, one knows this will not really happen; mathematics are one thing and human beings are another, but somewhere this side of the ultimate in geometrical progression, the rate of acceleration in the numbers of people in the world will be the real force behind the change of our future. Just in the time span we are considering here—between 1966 and 1986—there will be five people standing where three stand today; and that will be plenty to cope with.

What appears to have happened here is that we have discovered "death control" before we have discovered—or implemented—birth control. We got the technological cart before the horse, as it were, and what we see as a population explosion today is not the result of increased fertility on the part of the human species, but largely the biological fall-out from the application of DDT, penicillin and soap.

According to "The Poverty of Abundance," published by the Planned Parenthood Federation, "In Ceylon, the introduction of DDT was largely responsible in less than a decade for a 57 per cent decline in the death rate, a population increase of 83 per cent, and a resultant decline in per capita income." It goes on to say that, "There are nearly 300,000 babies born every day, two-thirds of them into families that are poor, hungry, ignorant, ill."

We have trouble thinking in global terms. When the population explosion is brought down to the statistics of a single country, one gets the sort of picture

presented by Shri Asoka Mehta, of the India Planning Commission, in the *Hindalco Journal*, June of 1965:

In India, population increased 12 million between 1891 and 1921, 27 million between 1921 and 1931, 37 million between 1931 and 1941, 44 million between 1941 and 1951, 78 million between 1951 and 1961.

Nothing one saw at the New York World's Fair seemed to have fed those figures into its design of the future.

As a force for change, the increase in the numbers of people living at one time exerts itself in a number of highly divergent ways. If one thinks of human beings as sort of ambulatory energy transfer systems, then the increase in numbers means the multiplication of scanning processes whose input is wavelengths and whose output is symbols. The more people there are, the more eyes scan and ears hear the world, and the more rapidly our information about it will increase.

But when it comes to cultural change, the mere increase in numbers will not in itself accelerate it. As H. G. Barnett says, in *Innovation: The Basis of Cultural Change*, "A large population wherein individual members remain intellectually isolated or antipathetic is not more productive of innovation than is a small group."

What a large increase in the numbers of people *does*, as a force for change, is to make us consider new ways of doing things because the old ones will not work any more. The Commission that was established in Tokyo a few years ago to plan for the needs of a Tokyo of more than 20 million citizens in 1980, quickly found that nothing in human experience, no technique adopted in the past, is applicable to the kind of new problems that arise when one considers the population densities of the future.

When one considers that some cities in India may have populations of upwards of 36 million by 1986; that, according to the Chamber of Commerce of the United States (*Economics of Change: No. 1, 1965*), "Our country may add as many people by 1985 as now live in all states West of the Mississippi River;" and that 35 years from now, if current trends continue, there will be more than six billion Africans, Asians and Latin Americans, constituting 85 per cent of the world's population, it becomes obvious, if it were not already, that population growth, as a force for change in the world's society, is transformed from a *quantitative* force to a *qualitative* one.

The increase in the numbers of people will not only force us to a new technology, but it will raise new questions as to the quality and purpose of life upon this planet. In these questions—and our attempts to find answers for them—lies the real significance of population as one of the key forces of future change. The numbers game becomes transformed into a search for new ethics, new philosophies, new moralities and new religions.

"By 1985," says John G. Welles, head of the University of Denver Research Institute, "we shall be asking some new questions. Among them; How many people should there be in the U.S.? In my state? In my community? And some old ones; questions which were raised and discussed openly over 2,000 years ago by the Greek philosophers. Who should be allowed to breed, with whom and how fast? The educated classes? The physically healthy? And should it be discovered that the poorer classes and the unhealthy are breeding faster than the rest of the Nation—is the quality of the human race being downgraded?"

Here we are not talking about whether one genetic strain is "better" or "worse" than another, but whether any genetic strain can create the environment in which the individual can develop his fullest potential in a world that has not learned yet how to feed, clothe, shelter and educate two thirds of the people it now has.

Historian Arnold Toynbee gets to the heart of the meaning of the population explosion when he says, "The issue is, indeed, a religious one in the sense that it raises the question, 'What is the true end of Man? Is it to populate the Earth with the maximum number of human beings . . . or is it to enable human beings to lead the best kind of life that the spiritual limitations of human nature allow?'"

Trying to find answers to *that* question will shape all our futures.

IT TOOK FROM	FOR EARTH'S POPULATION TO REACH
the beginning of man to the Neolithic age	7,990,000 years to reach 10 million
Neolithic to the Birth of Christ	10,000 years to reach 300 million
Birth of Christ to the days of Columbus	1,500 years to reach 500 million
Columbus to 1850 A.D.	350 years to reach 1 BILLION
1850 to 1925 A.D.	75 years to reach 2 BILLION
1925 to 1962 A.D.	37 years to reach 3 BILLION
and will take to 1975	13 years to reach 4 BILLION
and from there to 1982	7 years to reach 5 BILLION

EXHIBIT 82

WHAT—EXIT FOR ASIA?

[By Pyrrho, National Review, July 27, 1965]

THE GREAT WET RICE CIVILIZATIONS OF ASIA CAN SURVIVE, SAYS THE AUTHOR, IF THEY CAN SUCCESSFULLY STEM THEIR BIRTH RATES, INCREASE THEIR FOOD SUPPLIES, AND, JUST AS IMPORTANT, GIVE HOPE AND PURPOSE TO THE DISCONTENTED YOUNG

The growing populations of Asia may be the most disturbing phenomenon of the nuclear era. These populations rise like a torrential river, at a time when they are already large, hungry, and have no escape from their dilemma. Their number may be quickly told: China, 700 to 800 million; India, 475; Pakistan, Indonesia, and Japan, over 100 each; others, over 150—more than half the world's population, increasing at an annual rate of more than 30 million.

In this space, only a brief account of the problem can be given. For our purposes, it is relevant to discuss 1) food and land, because these are hungry populations, food shortages are getting worse, and there is no unused land, and 2)

living space, because these are densely crowded populations, which have already exceeded the limits of tolerance in both rural and urban areas.

I. Food and land

The Asian diet is a central factor, and a comparison may help to point up its nature. A Roman slave, whose life may have approached in stringency that of most Asians, nevertheless had a food supply well over double that of a modern urban Chinese under Mao, and in it were included wine, oil, meat and other foods not available to the Chinese. As a rule, 2,200 calories a day are regarded as a subsistence minimum; in China, during the Great Leap Forward, the quota dropped to an extreme low of 1,500.

The Asian people may, quite properly, be said to live in a state of conditioned starvation, a state that borders on famine; actual famine often occurs in the periods before the harvest almost anywhere in Asia. If Asian peoples are small, it is not surprising; that they are gauntly thin, except for the Communist cadres, is to be expected. They reached the limits of the land's resources a long time ago.

The wet rice culture, which is the basis of the Asian civilizations, is relatively new in human history; the wheat and barley cultures of Mesopotamia were in being possibly six millennia earlier. Nevertheless, despite their late arrival, the wet rice cultures have been, over at least three or four millennia, the most durable of all societies. The question now looms whether they have reached a terminus.

Wet rice is the most profitable of all cereal crops except hybrid corn. The yield is very high, a pound of seed normally yielding 100 pounds of grain. It requires little but nitrogen, usually provided by the application of human and animal excrement, nor is the land exhausted if no phosphorus and potash are applied. Fish and other protein foods in large quantities breed in the flooded paddies, which are dredged after the harvest. The culture required the domestication of the water buffalo, a rich asset that provides draft power, manure, a little milk, and body heat for warming shelters.

The ancient problem of the wet rice people has been their dependence on the regular flow of the river. In the years when precipitation varies beyond a normal range in either direction, the crops are threatened by drought or floods. The moderation of the river flow, vital to the food supply of the people who live in the bottom lands, has been the prime objective of government in all wet rice cultures. Such hydraulic civilizations, as Wittfogel suggests and Egyptian history attests, have required a measure, often too full, of despotic control.

Apart from adverse river flow, another difficulty besets a wet rice culture: bottom land is limited and can be expanded only as the delta expands farther out on the continental shelf. When dryland cultivation is begun in the hills and plains above the river bottom, water retention properties are reduced and the heavy runoff of precipitation increases flooding. The expansion of cultivated acreage undertaken by Mao in the Great Leap Forward was followed by extraordinarily riotous flooding of the Yangtze and Yellow river basins. It was nearly as great a disaster as the Soviet "Virgin Lands" experiment, in which the ploughing up of an area the size of Poland created a desert. In both cases the limits of arable acreage had been reached generations earlier and the geographical boundaries had not changed.

The limits set by land on the food supply in Asia are clear; they are the flood plains of the great rice rivers, which increase only as the deltas expand. Well over 650 million people are crowded into the river basins of the Yangtze and Si Kiang of China, the Mekong of Indochina, the Chaupaya of Thailand, the Salween and Irrawaddy of Burma, the Brahmaputra and Ganges of East Pakistan and India. The land does not provide enough food, there is no place to go, and their numbers increase.

With an annual population increase of 30 million, the Asian peoples living in the river bottoms could possibly keep their annual per capita food production at a constant level, in the absence of drought or flood, if they could pour in ten million tons of nitrogenous fertilizer a year, for 30 million tons of added rice. At present, however, world production of nitrogenous fertilizer does not greatly exceed that figure. Even if Asian fuel resources were available, and the capital and technological skills, the required tonnage might take a decade or two to produce—and there are limits on the rate of return of fertilizer, as the Dutch and the Japanese have discovered as they approached the optimum quantities.

The naturally defined limits on the land and the food supply make the future of the rice peoples—the Indians, Pakistani, Burmese, Thais, and other Southeast Asians, as well as the Chinese, Koreans, and Asian people of Oceania—uncertain. Disaster lurks at every turn. During the Great Leap Forward the Chinese may have slaughtered as many as 20 million draft animals (the *Economist's* estimate), an event that reduced planting and yields throughout the afflicted areas, not to mention the loss of milk, manure, and body heat. Bad weather, drought, and flood abide. Where can the people turn? And where can food be found for the coming generations?

The surplus food areas of the West—primarily the United States, Australia and Canada (USAC)—have picked up a part of the food bill of the Asian people. The United States is providing the minimum requirements for more than 100 million of the rice people—50 million in India, and more in the great famine year of 1964—20 million in Pakistan; 10 million or so in Indonesia and Egypt; and millions more in other rice nations. The nations of Asia that may or can be in surplus—Thailand, Burma, Cambodia, South Vietnam, and Japan—provide at best a modest flow, one or two million tons, into a world grain market of 40 million or more tons, most of which must come from the USAC food powers, with marginal additions from Argentina, France and other factors in the market.

The limits have been reached on USAC cereal resources. United States surpluses will tend to decline with the increasing recognition that at least a quarter of its cultivated land, some 75 million acres, may be more economically used in other than agricultural operations. The USAC countries cannot continue to rely on the uncertain credits they extend to insolvent Sino-Soviet and Asian customers, nor can the United States continue to ignore the exhausting drain on its foreign exchange, largely generated by economic aid programs. In effect, the makeshift feeding program for the Asian (and the Soviet) populations may be coming to an end. If such is the case, then the whipsaw effect of declining external supplies compounded by the increased demand of rising populations will produce a very high disturbance level.

These food, land, and population factors can be more easily summarized by reciting certain changes from 1935 through 1959. In that period the West had a population increase of 90 million and an increased cereal grain output of 110 million metric tons. The rest of the world had a population increase of 660 million while its grain output rose by only 90 million tons. In the same period, the West decreased its cultivated acreage by five million, while the rest of the world increased its acreage, into progressively more marginal areas, by 175 million acres.

This historic collision in Asia between the torrential force of population and the fixed limits on land area and food supplies may see the loss of more people through famine and hunger and resulting disturbances than there were people alive during the height of the Roman Empire.

II. Living space

Raymond Pearl left behind him a wealth of intellectual product which economists and political leaders have not yet fully digested. His relevant experiment in this context was one involving population densities—specifically flies. It is old now, often cited, and will be regarded as a platitude by many. The experiment was simple. If a small population of flies were confined to a bottle and provided with food, what condition would limit their numerical growth? Density was the presumptive condition—and it was proved. Multiplication stopped well before all the space was occupied; there was a limit to the crowding flies could tolerate.

In the 1950s, a similar experiment was undertaken with rats, in a similarly restricted environment. Space was again a limiting factor on population growth; with the rats, however, once crowding reached a limit, there was a pronounced tendency to cannibalism. It was also noted that a higher degree of crowding was tolerated if only one family was involved than if there were two or more separate groups.

There has been no adequate formulation or grasp of the factors in the density phenomenon, but certain inferences are possible. The wet rice peoples have always been packed into river basins of limited extent and have developed, particularly in the great flood plain of the Yangtze, societies without large open spaces, but in a rural setting in which the people were tied to a plot of land. In China, where the arable land per person is about one-sixth of an acre, or in the Red River Valley of North Vietnam where it is even less, crowding is an

ancient and face-to-face condition in which family and personal relations tend to be fixed and carefully ordered.

The rice people, as a rule, have a very practical bent. The harsh margins on which they live require a high degree of realism and permit no other habit. When one family had five acres of land in pre-Mao China, it was nearing the status of landlord—or lord of the manor. If it had double that amount it was of ducal stature. Other criteria, deriving from one kind of excellence or another, completed the ordering of the community. The family itself was no less precisely hierarchical than the society at large.

The family is a religious concept in Asia, as in the West, but in those far simpler, rural societies it is a much more important institution and has until recently controlled land tenure practices. Family land holdings are divided, according to the coparcenary rule, equally among the siblings, a practice that is followed regardless of the particular religious persuasion in the area concerned. In the West, the natural religious tendency to coparceny has been modified by freedom of contract, primogeniture, entail, and other arrangements, which have avoided the methodical subdivision of the land that occurred during the medieval era, especially along the upper Rhine.

The disastrous effect of systematic subdivision of the land, which may be one of the most perfect ways of hobbling a society ever devised, is now apparent. The loss of arable land—often 25 per cent or more in boundary strips and paths—is bad enough, but the size of the holding permits only subsistence, rarely a surplus. China is the extreme case, but the limit is also being approached in many other areas, and yet the entire religious system is based on joint heirship, or coparcenary, as Mao learned when he attempted to consolidate the land, organize military brigades, and divide the family by establishing common eating halls, kindergartens, and crèches. Even the cadres were unable to break completely with the status system.

The foundation is, however, crumbling. The land requires only a family of two children, and the others are surplus and alienated. These disaffected young people have had to move to the cities, where they constitute a revolutionary core. Despite the immoderate growth of the cities, population pressure on the land continues. The likely outcome is that unrest will rise, the structure of society will tend to fracture, and wars will be the rule. The practical question is whether these states can survive.

The internal political problem is formidable. The cities are a dumping ground for the surplus rural population. The population of Karachi, for example, increased tenfold in a decade, and millions of people continue to stream into the cities of Asia every year. In China, Mao is vigilant, but even so, major cleansing operations have to be carried out from time to time to extrude persons that the cities cannot absorb. This is not surprising. The United States cities have still not begun to absorb the stampeding rural populations they have received over the last two decades. Capital formation cannot move at such a rate, and adaptation to urban life cannot occur overnight.

In Asia, most of the migrants are young people, of both sexes, with no prospect of employment or status and no ability to deal with urban complexity; they are instantly susceptible to political exhortation. The term "student" is applicable, regardless of the degree of literacy, because they learn the ways of creating disorder. In Saigon, the mobs and demonstrations have invariably been of young people of rural provenance. The student threat to public order is immediate evidence of the role of population growth in political instability.

If disoriented youth, the surplus rural population without status or prospect, is a threat to public order in the cities, they are no less a threat if they remain in the rural areas, where they become guerrillas if there is an appropriate organization available. As a rule, the guerrilla organization starts in the poor village from which raids into surrounding communities are mounted. The quiet and systematic diffusion of terror is the preferred means in rural areas, as contrasted with riots in the urban context, and it appears to have considerable success in political subversion. Once a political base exists, the development of a larger guerrilla force is undertaken—necessarily by external aid. The guerrillas, characteristically, are the young people—the surplus population the society cannot absorb.

China in decline

Economic growth in any society is a function of net capital formation, which tends in turn to be an inverse function of population growth. Capital derives from surplus product, of which there is none in a society that consumes all it

produces—and hence no economic growth. Stated in other terms, if there is surplus population and effective use of economic resources, there is relative economic decay. In Asian countries, except for Japan and Taiwan, economic growth is dubious as long as population growth runs at the present rate. China may, by heroic extractive measures, strip a gaunt population of minuscule resources which it can devote to capital formation; but even China is in a regressive cycle because most of its manufacturers and three-quarters of its normal exports are based on agricultural products.

Taiwan, on the other hand, has managed very well because United States aid has been used to 1) improve agricultural output by the most sophisticated measures developed in any Asian community; 2) increase the industrial plant that is directly in support of agriculture; 3) develop industrial plant to process surplus agricultural product, and last but not least, 4) maintain a very large army that drains off surplus rural youth and, by systematic training, prepares them for entry into the industrial economy. But Taiwan must nevertheless soon move into the Japanese population-control cycle if it is not to jeopardize the achievements that are in part an accident of history and in part of good and rigorous government.

China is the largest and most recent case of a society that has gone into a decline because of unassimilable population growth and migration. It is not yet clear whether the fall will come and, with it, the extinction of a great civilization. If it does come it will probably be from the inundation of the city by a large, inimical rural population—much as Rome fell, as Fustel de Coulanges brilliantly demonstrates in *The Ancient City.*

Asia is now visibly suffering from all the symptoms of a probably fatal social cancer. There are too many people on the land and too many in the cities. Mortality rates are down for infant and adult as the result of control of disease and infection. The fertility cycle, the child-bearing period, has increased dramatically. Uninhibited population growth continues. Youth is the principal casualty, and increasingly so because as many as three-quarters of the youth in Asian communities, rural or urban, must find a wholly different life from the one in which they were reared—and in a society without opportunity.

This malady which, having run the course, once left Rome a garbage heap in which savages played, is universal in the modern world. But Asia, of course, presents the most severe symptoms, apart from North Africa, because the limits on food, land, and space had already been reached generations earlier. In China, the population ceiling is almost certainly reached; migration can't relieve it; and if the existing wet rice culture is basically altered, the land may be able to sustain fewer than half the present population.

If there is hope, it may be the example of Japan. Faced with the basic problem, Japan has accomplished, or nearly so, the impossible; and, despite the rapid economic change, the ceaseless migration, and the rise of foreign influence, the Japanese appear to be emerging with their tightly-knit web society. It looks a little different at the edges, and it is modified here and there in structural detail, but it is still the seamless cloth of an ancient rice culture. The rice peoples can survive, if they follow the Japanese example in population control, increase the productivity of the land, and constrain their teeming population.

EXHIBIT 83

THE AVALANCHE

[By Theodore Sturgeon, National Review, July 27, 1965]

Extrapolations of population increase go from the terrifying through the fantastic to the all but incomprehensible. By 2500 A.D., it would have increased to the point where there would be but one square yard for every human being. In the year 5000, the mass of humanity would exceed the mass of the earth itself

A SCIENCE FICTION NOVELIST TAKES A HARD LOOK AT THE EARTH'S SKYROCKETING BIRTHRATE AND ADMITS IT PORTENDS HORRORS EVEN HE FINDS HARD TO IMAGINE

"It's a nice house, all right," said Bill, "but not for us."
I'd thought it was perfect for him. "What's wrong?"
"It won't," he said, "pass the nudist test."

Now, I'm not a real estate man, but he was a friend of mine, with a nice wife and three nice kids; he was looking for a house in our town, and I happened to know of just the buy for him.

"And what might be the nudist test?"

"Just this: A man and his wife ought to be able to set up cots on the front lawn and sunbathe if they want to."

"You don't mean you and Martha—!"

He laughed at me. "We never have and we never will, and you weren't listening. I didn't say a man should do such a thing. I said *he should be able to.* Granted that humanity is a gregarious species—and I wouldn't want it any other way—a man's freedom and privacy on his own land ought to be something worth having."

Trying to be funny, I said, "Well, maybe one day the whole country will go nudist, and every house will pass your test."

"If that happened," Bill said, "I'd just work out another test."

This dialogue occurred some years ago, but it came back to me when I began to immerse myself in research on the population explosion. For you can unearth all sorts of statistics, many or most of them appalling, and many a prognostication; and all of them, optimistic or pessimistic, seem to miss the most important point of all.

Thus begins—began—the article ye ed. assigned me, on the population explosion. I accepted the assignment blithely, and devised the above fiction as that technicality, the "hook." Then, because I am aware of a distinction between fiction and untruth, I proceeded to make true the part which suggested my immersion in research.

I emerge profoundly shaken, ashamed of myself, my (in the anthropological sense) culture, and my species. I now regard the above opening as inexcusably specious and cute, and I share it with you in confession and self-excoriation. I descend from sage detachment because I am not detached, and substitute this white-hot capital-I for the scholarly objectivity into which I had posed myself.

In this mood I have two confessions to make, one of which I shall leave until the end. The other is this: I have for a quarter of a century marinated myself in speculative fiction—*not* Buck Rogers stuff, *not* giant termites from Hollywood, but that species of expression which is all the modern arena will accept of prophecy, of dreaming logically: that genre which, with poetry, is the ultimate field for freedom of thought and of speech. In it I have had two aims: to produce creative fiction to as high a literary standard as my powers will permit, and to live, think, observe, and constantly learn, not within historical parameters, but in geological, astronomical, cosmological time. The placement of one small flicker of *id* in such a sweep of time, the visceral recognition of one's orientation in God's universe, have more products than humility. One may then be surrounded by hysterics and by ideological monomaniacs, by seductive preachments of perilous secularities and by the tidelike motions of the deflorated herd, and not be swayed. With such a perspective one can realize always that, no matter what the issue at hand, there is doubtless a greater one of which today's issue is merely an expression—or into which today's issue will disappear with hardly a trace. (Just what *was* a Catharist? A Huguenot? Scholars know, but now nobody else does.)

Sitting aloof and expansive in such a roomy environment, then, I turned with a smile to my assignment and wrote that sleazy little opening. The good-humored point I was about to make is that if you think the population explosion has not yet affected you, then look about you and see how rare it has made the house that can pass the "nudist test"; there were not enough of those for all of us fifty years ago. Look what you're paying in school taxes. Look at the attrition of public lands in "developments"—another term for destruction. Thus my thesis: there is so a population explosion, and it's a botherment to you right this minute if you'll only look.

Then I began to look at the facts, and the facts which they led me to, and I was, for a time, as immobilized as Hercules when old Atlas went out for a beer. Not only had I undertaken a burden so huge I could not think what to do with it, I had perforce to face a (to me) terrible truth: I have been quite as capable of turning my carefully-nurtured wide-spectrum attention away from the significant, and toward the trivial, as has my most despised, most compartmented specialist, the begonia- or Bach- or Buick- or bauble-hobbyist so enmeshed in the

refinements of his preoccupation that he is unaware of the existence of God's works.

60 million more each year

I knew there was a population explosion, just as you know it. But it didn't bother me.

Now it bothers me.

"To measure a circle," remarked the jovial solon Charles Fort, "begin anywhere." Let us begin, then, with the superb campaign against malaria in Ceylon, which halved the death rate in ten years. The result is that Ceylon's population increase has risen to 3 per cent, which for Ceylon, or Sheboygan, means that the population will double in 20 years. Or shall we begin in Aswan? The magnificent High Dam will have added two million acres of food-growing land by 1972, by which time the rank-and-file of Egyptians will have acquired thirteen million more bellies to fill—and no one will have an extra spoonful more than he has today. Says *Time*'s Gilbert Cant: Latin America will have 550 million people by the end of the century; he follows that with the statement that these forecasts are *always* underestimates, and always have been. Says the UN, as if to bear him out: Latin America will have 624 millions by that time; 756 if today's trends of death-control and rising fertility continue. We will be supporting well over 300 millions, the Soviets over 350, the Chinese (who could, today, maintain their current standard of living only if they could rid themselves of 50 millions) will have on their hands—let me spell it out—*one billion, two hundred and ten million.*

A wild thought: quickly, let's kill some off!

All right: let's have an atomic assault somewhere on earth—no matter where—and by tomorrow night, kill five million people.

It would take the world, with its average current rate of increase, somewhat less than 90 days to replace these people and go on as before.

Sir Julian Huxley likes to use banker's figures. World population is now increasing at a compound interest rate of around one and three-quarters per cent a year. This means 60 millions this year and next and the one after—the equivalent of the entire U.S. population in only three years. Or, if you like, 160,000 every day. This would be quite frightening enough if the rate of increase remained the same, but it does *not*. It is a fair estimate that for most of man's history, the rate was a small fraction—perhaps a tenth—of 1 per cent. It reached 1 per cent in our century, and is now pressing toward 2 per cent. This however, is a world average. Many areas—Southeast Asia, most of Africa, the Middle East, and Latin America, as well as Pakistan and India, have increase-rates of more than 2 per cent: Costa Rica reported, last year, a rate of 4.4 per cent. And all of these are have-not areas.

Death-control—industrialization, with its concomitant public health, improved housing and nutrition and education—has in some instances depressed the runaway birth rate, but does virtually nothing about population increase; more people live longer.

Sir Charles Darwin describes ours as a Golden Age—and goes on to posit that it is the last Golden Age our species can ever know. He develops this mournful thesis with seemingly unassailable logic. After describing the disastrous increase in population, he dwells at length on the attrition of natural resources. Some of his examples are striking. Half the oil drawn from the earth in its history, for example, has been taken since 1920, and (as long as it holds out) the rate of exploitation will certainly not decrease. Coal, it is estimated, can last hardly another 500 years. On the basis that it takes 500 million years to make it, we are squandering capital at a rate of a million to one. Half the metals ever mined have been brought up in the past 30 years; here, too, the rate of exploitation must rise. Depletion in certain areas—especially undeveloped areas—will make it impossible for them to industrialize to any important degree. "Have" nations are not going to export increasingly scarce materials to them. Finally, in too many areas, the greater the population, the lower goes the water table.

One remark must be made about Sir Charles' paper, which was delivered (at Caltech) in 1957. Its subtitle reads: "*Every day there are eighty thousand more people on the earth. In another fifty years the world population will be four billion—a hungry four billion.*" The alert reader will notice that these figures,

producing as they did this gloomy prognostication, are in each case roughly half of the latest UN count.

One square yard for each?

Extrapolations of population increase go from the terrifying through the fantastic to the all but incomprehensible. By 2050, it would (if unchecked) reach 20 billions; by 2500 A.D., it would have increased to the point where there would be but one square yard for every human being. In the year 5000, the mass of humanity would exceed the mass of the earth itself, and 'long about 13,000 A.D. humanity would weigh more than the mass of the entire universe within range of the 200-inch Hale telescope. With the ultimate concept of "a solid sphere of organized matter expanding at the speed of light" I will not, save for this mention, entertain you.

Much—far too much—has been said on the matter of food. "We can feed the world!" proclaims Henry Borsook, who developed (remember?) *MPF*—"Multipurpose Food." And in my opinion, he and his nutritional technologist cohorts—the algae-and-yeast boys, the ranch-the-oceans fellows, and the transmutation-of-petrochemicals-into-proteins enthusiasts; the Carrelite growers of immensely perpetuating, injection-fed chicken breasts—all these and more could do what they say, at least up to serving a population of, say 20 billions. (It's amazing how frequently, and how immediately, the layman leaps at the concept of "unpalatability" when this subject comes up. I wonder how many really and truly "natural" foods he has eaten lately? Actually, a technology which can transmute petrochemicals can certainly reproduce any known flavor or texture—and an entire broad spectrum of new ones to boot.) And I have always been intrigued by a paper I read years ago which stated that of the 25,000 varieties of edible (in purely nutritional terms) foods on this planet, we (and that includes Bushmen and Baruchs, Kanakas and Connecticuts, Gobis and Glaswegians) eat only 750.

But a population of one quarter of that 20 billion is unthinkable in any real human terms; as unthinkable as the theoretical humans of A.D 2500 each standing on his square yard of dry land. Now, today—and you may check today's paper—the shock of automation has added itself to the growing pressure of too many people. The young are getting it first; today's persistent 5 per cent (or so) unemployment rate becomes 15 per cent among white teenagers attempting to enter the labor market, twice that for Negroes. It is not difficult to project a nation with an employed minority tending the machines, and an increasingly growing jobless majority, living on some sort of makework or nowork at the public expense. Surely a more unstable picture of a society has not arisen since the great days of the Roman free circus. The specter here emerges, in civil war terms, of one of Sir Charles Darwin's global speculations. If half the world severely limits its population, he avers, it will enter upon a Golden Age of its own—for a very brief while.

But inevitably, the other half will overrun it. (There is an interesting argument to be presented on this point, i.e., that any stable, resource-filled, highly technological nation will always be more than a match for the tattered horde, however numerous. This is comforting until one recalls the coming Chinese H-bomb and the very real possibility of an Indonesian A-bomb. In other words, underdeveloped nations are not all *that* underdeveloped, these days or in the days to come.) But the problem of a jobless majority with nothing to do but covet the privileges of the minority of machine-tenders is not one which can be approached in the matrix of security against an outside threat. Three-day, two-day work weeks, five-hour, four-hour workdays, can never offer a real solution.

Big brother getting bigger

As to the people we already have in the U.S., we are bound (so says the law) to educate them. Resulting from the "baby boom" of the 1940s, 1960s elementary school pupils are now ready, after a shocking increase in local taxes for new school construction, buses, and equipment, to enter high schools, which will increase their enrollment nearly 45 per cent during this decade—there are 36 million of them. High schools come high, to build and to maintain. Then the colleges, already swamped with students, will need 100 per cent more room in the late sixties, half that again a mere five years later. Educated guesses for school construction exclusive of teachers' salaries run to $30 billion through

1980. Public monies must do more for these people—build them streets, roads, sewers, water systems, police and fire stations.

And there's more. (There is always more, to appall anyone who looks.) The very presence of these new masses of humanity, the weight of their parents' votes and, so soon, their own, makes bigger bureaucracy—bigger Big Brother bureaucracy—so probable that without a miracle it is a certainty. And to perpetuate itself, it will, as bigger and bigger bureaucracies must, hand out the treasures which belong to us all, to woo a grateful constituency. State and national parks, Amendment One, your unlegislated right to tell the boss to go to hell and quit, even houses that pass the nudist test—watch them dwindle and disappear. Not in a science fiction story, friend. Not even tomorrow.

Now.

I have described a problem.

It has a solution. Control births.

This is not the only solution, by any means. Let me, without a shadow of recommendation, list a few. For example, we can withdraw any aid to anybody anywhere, in an effort to return to starvation and disease the power they had in the world's slums. Or we could register everyone on earth, draw lots, and shoot one out of three for a couple of dozen years. We'd have to make a criminal of the likes of Dr. Dooley and a memory of the hospital ship *Hope*, but that's all right. We can't do it efficiently with nuclear weapons without damage to our environment: I expect an argument on this one. We can't do it with conventional weapons because it would just take too darn long—whole generations would grow up before we'd finished.

Or we could attack the problem of births. We could spay girl children according to some computer's formula, by government edict and in such a way that the victims would never know. (Of course we'd need an iron-fisted world government and *real* permanent personal registration.) Or how about vasectomies for all men for all offenses—parking tickets, speeding, armed robbery, barratry?

But don't forget—if half the world controls its births, it will, it must, be overrun by the uncontrolled other half. So local, state, national, even hemispherical governments just won't do.

Education, perhaps?

If every school board, every college administration, every civic and business group, every church and every temple, and every government office hired every public relations man in America simply to teach the facts of the population explosion—none of the solutions, only the facts—I for one wouldn't believe it. But if they did it anyway, do you really think it would make a signal impression, make any headway against the apathy, the ignorance, the bullheadedness which, just for example, caused me to spend so much of my time on "more important" matters?

There is no more important matter.

You will have noticed by now that I have not mentioned contraception, nor will I except for this one thing—a concept so refreshing, so unique and at base so moving, that I cannot refrain from sharing it with you. John W. Campbell Jr., editor of a magazine called *Analog*, threw this away in one of his editorials a few years ago.

Let us bring the population explosion to heel, he suggested, by supplying the whole world with an oral contraceptive which would be pleasant-tasting and mildly addictive. This would not only take care of the regularity of dosage, it would make conception possible only to those who would make the necessary decision—and then an effort of will.

In a single generation (quite a small one) this phrase would become meaningless: an unwanted child.

Four Horsemen may solve it

I am ashamed of my species, and afraid for it. I would like to run to it and shout "Look!" and point at the avalanche. It is too late—it was, I think, too late some time ago. I wish I had known. (When my brother was eleven, he caught some fact thrown to him across the dinner table. "Is that really so?" he demanded incredulously, "I thought that was just one of those things *y'learned!*") This has been, until now, just one of the things I learned; now, suddenly, I *know*.

In all my research I have encountered a single shard of hope. Fred Hoyle, the cosmologist (everybody gets into this act; everybody should) wrote a brief *riposte* to Sir Charles Darwin's Malthusian chant. He anatomized Sir Charles's logic, and claimed to find a *non sequitur* in Darwin's statement that whereas a voluntary decision by the human species would require some powerful basis in emotion and logic, then even if such a basis for decision were found, it is doubtful if it would be accepted by enough of humanity to become effective in limiting population. Hoyle felt that the fact that Sir Charles wrote his article, that he was writing this response, that certain books like Harrison Brown's *The Challenge of Man's Future* are in circulation, are examples of feedback. He maintained that human beings may escape the Malthusian trap because it is an animal trap, and human beings are subject to much more subtle, much more powerful feedback than animals. Once a critical portion of humanity absorbs the fact that the rate of increase of human population must decline—and the word "must" is not modified—he sees the strong possibility of a chain reaction. If this can be brought about, he sees the feedback almost certainly winning out, for the simple reason that the time-scale of a chain reaction of this kind—one or two years—is far shorter than the characteristic time of population surges—70 years or so.

I think that what that means is that if each one can teach one, we can after all avoid certain degradation, almost as certain disaster, and possible annihilation. It is a small hope indeed; but it *is* a hope—the only one I found anywhere in all this research. I would like to see this problem solved by humanity; for whether or not we solve it, *it will be solved.* That is an unalterable fact. You will not have to listen hard, nor for very long, to hear the hooves of the Four Horsemen who will solve it if we do not.

My second confession, one which I must make and cannot regret: while I was looking elsewhere than at the ecology of my planet, I fathered six.

EXHIBIT 84

FOOD—FOR PEACE?

[The New Republic, vol. 154, No. 1, Jan. 1, 1966]

Over the holidays Americans consumed, as festive delicacies, 173½ million pounds of turkeys, ducks, geese and chickens, and 12 million hams, close to a pound per head. In India, meantime, Uttar Pradesh farmers were temporarily staving off their children's deaths from starvation, by letting them eat the seeds the farmers should be planting in order to get a crop in 1966. India's Food Minister, Chidambara Subramaniam, hastened to Washington last week for talks about his country's food crisis. This country, while deliberately destroying rice crops in Vietnam to try to starve the Viet Cong, has been sending food to India, under the Food for Peace program, at the rate of 6 million tons of grains a year; in 1966 the amount will probably have to be doubled if there is not to be a great Indian famine. The experts say that India's threatened famine is only the first shock wave of an impending world collision between growing numbers of people and food output that is lagging behind population.

There is no shortfall of food production in the United States; on the contrary American farmers are paid by the federal government for agreeing to restict their output. Since 1954, our food surpluses have been disposed of by being sent abroad, under the Food for Peace program. In exchange, this country acquires foreign currencies which are usually returned, as loans and grants, to the countries that get the food. Under the program, the US is providing about $1.7 billion worth of surplus food a year to nations that don't grow enough to take care of their own needs and can't afford to pay with dollars or other hard currencies for what they import. Congress is now expected to review the Food for Peace program, which is due to end on December 31, 1966. The program may be continued but be tied into foreign aid. The office of the director of Food for Peace has been moved from the President's executive office to the State Department, and an attempt will probably be made to have future Food for Peace legislation and appropriations handled by the Senate Foreign Relations Committee and the House Foreign Affairs Committee instead of by the Senate and House

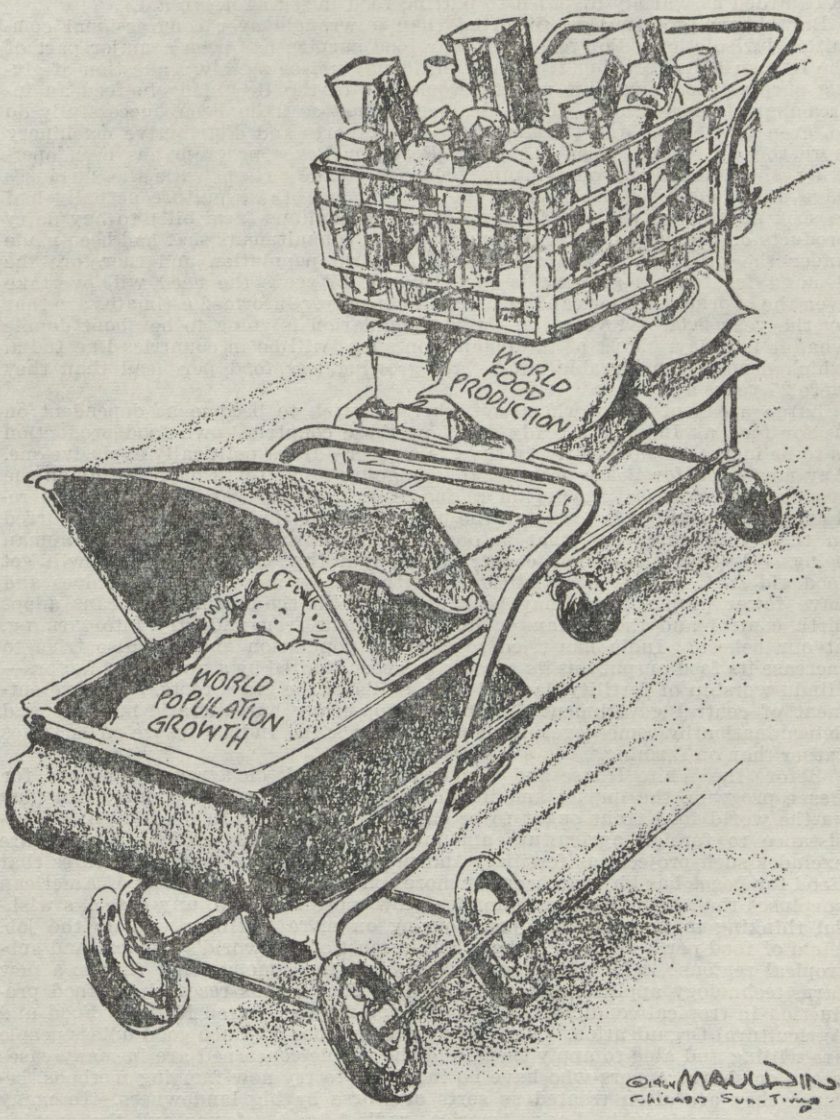
Agriculture Committees. Neither of the respective chairmen of the agriculture committees, Harold D. Cooley in the House and Allen J. Ellender in the Senate, is regarded as warmly disposed to putting food in with foreign aid.

But bigger problems are involved than a wrangle over congressional committee jurisdiction. For ten years, our food surplus has been a major part of the foreign aid effort, but from now on it may not be merely a question of giving surplus food away; it might become one of the US trying to feed an increasingly hungry world. The US alone cannot, as it happens, successfully do so, even if the will and the necessary ships, ports and distributive machinery were there. In the decade that the Food for Peace program has been operating, the demand for our surplus food has steadily risen while the surpluses have diminished, so that in 1965 the Department of Agriculture actually had to seek authority (which was given it in the omnibus farm bill) to buy dairy products on the open market in order to fulfill commitments that had been made under the program. The rate at which world population and therefore the demand for food is growing is such that in 15 years the need will overtake even the enormous American agricultural capacity. Informed estimates are that by the year 2000—34 years off—world population is going to be about double what it is today. Most of the population surge will be in countries like India, which despite considerable efforts are growing less food per head than they were 25 years ago.

Large areas of the world aren't likely to wish to become as dependent on us for food as India is already, but how those countries' own food production is to be increased sufficiently, in time, is a poser—and a politically explosive one. Any new Food for Peace program that is going to help will have to rely on the food-deficit countries growing more food for themselves and probably also reducing their birthrates to match the big reductions that have already occurred in their deathrates and that account for the current tidal wave of human beings. But if food-deficit countries are told that henceforth they will get food aid from us only on condition that they grow more food themselves and have fewer people, there may be a storm. Will the Latin Americans adopt birth control and the Indians switch investment from industry into farming, at our behest? India has tried to curb its population and has also tried to increase its food output but its success has been limited by a number of factors—Hindu worship of fertility, lack of farm skills at the grass roots, states' resentment of central government direction, a top-heavy bureaucratic machine and determination by some government planners to stake India's future on factories rather than on farming.

Before the White House and Congress go to work on a revamped Food for Peace program, the impact and implications of the role this country can play on the world food front ought to be carefully assessed. In fiscal 1965, US assistance to foreign agriculture amounted to only $106 million. This figure excludes such projects as fertilizer and processing plants; but it indicates that Food for Peace has hitherto been far more concerned with disposing of American surpluses than helping other countries grow more food. In any case it's wishful thinking to imagine that just pouring on more fertilizer will do the job. Yield of food per acre is shockingly low in most of the world's tropical and subtropical regions; licking the problem may call for, among other things, a new farm technology applicable to those areas. That means research on food production in tropical conditions, which is a job for the United Nations' Food and Agricultural Organization. Nor will new techniques do much good unless people are willing and able to apply them, and the people concerned are in many cases peons or sharecroppers who have no incentive to try new farming methods, because they are often treated as serfs or worse by big landowners. In many countries, especially in Latin America, radical land reforms and the opening of new lands to cultivation may be the necessary first step toward increased food production, but the former may involve major political upheavals. Any 1966 version of Food for Peace should take this possibility into account. Attaching ideological strings to a food aid program, whether to promote change or in an unwise bid to inhibit change, is apt to get the donor in trouble. As the world's most successful farmer this country certainly can and should help others to grow more food, but it would be a prudent move to channel as much as possible of such aid, if not actual food shipments, through the United Nations. That way, no one can say we are using our food to twist others' arms.

EXHIBIT 85



Drag Race

Senator GRUENING. The next hearing will be on the 9th of March when representatives of the Government of Sweden will testify.

(Whereupon, at 10:47 p.m., the subcommittee was recessed, to be reconvened on March 9, 1966.)

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