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RESEARCH AND TRAINING IN
GERONTOLOGY

A WORKING PAPER

PREPARED FOR THE

SPECIAL COMMITTEE ON AGING
UNITED STATES SENATE

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PREFACE

Any national system of services and information about aging must be based upon two essentials:

(1) Hard scientific facts which enable social planners, legislators, and administrators to make informed judgments on policies and programs, and

(2) An adequate number of trained persons—including knowledgeable generalists as well as specialists—who can put the system into day-to-day operation efficiently and effectively.

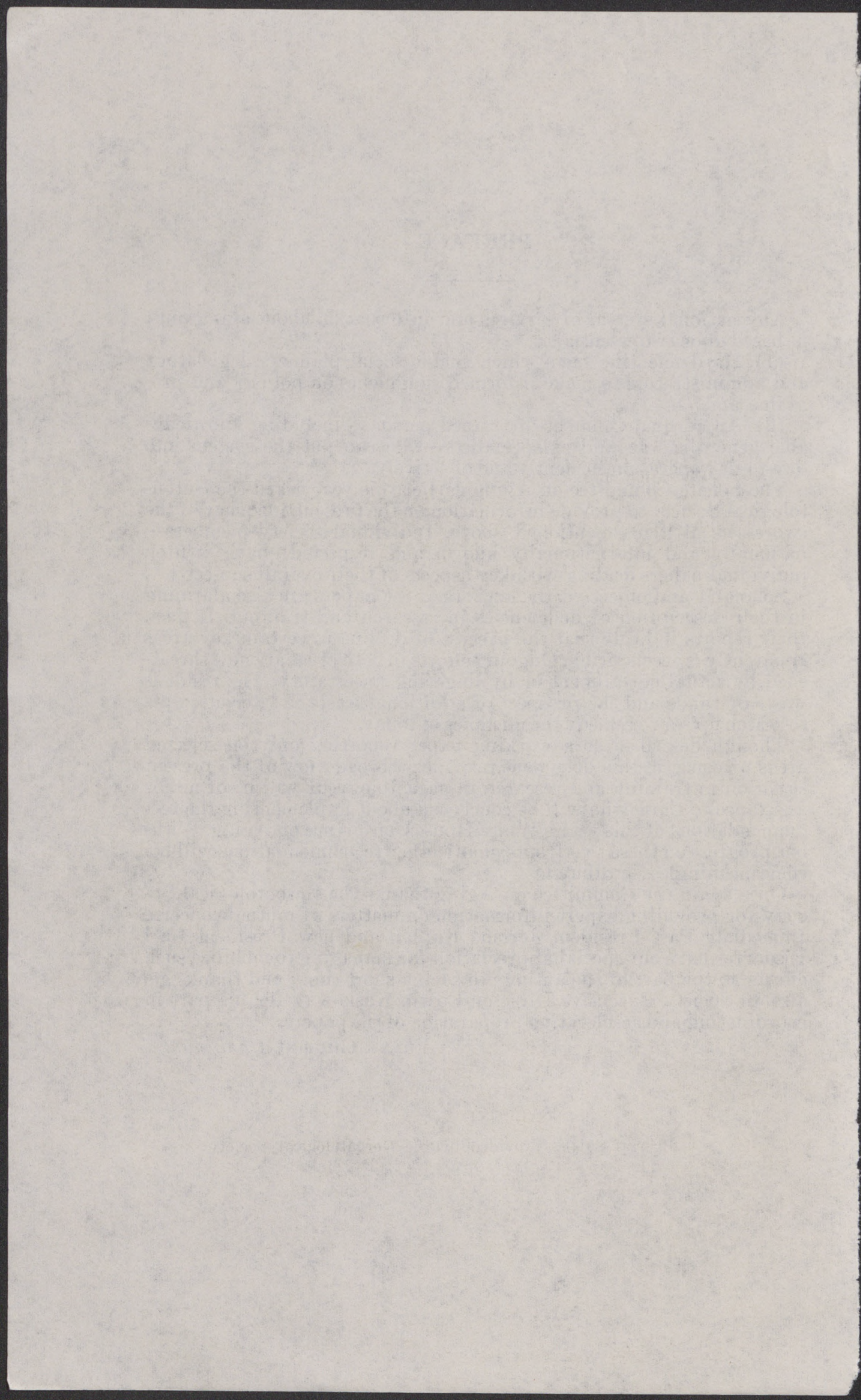
The Senate Committee on Aging earlier this year asked the Gerontological Society to provide information on the present adequacy of the two essential items mentioned above. Individual society members—nationally and internationally known and respected—have written individual papers dealing with key aspects of their overall subject.

Scholarly and objective, the authors of the papers are also alarming in their description of deficiencies in research and training. In fact, their reports indicate that the process of decline in certain key areas apparently is accelerating. Ongoing efforts in both areas are now threatened by actual curtailment or by lingering uncertainty. The result is waste of funds and the prospect of additional waste in later attempts to “catch up” or to remedy the mistakes of today.

Though described as a working paper reporting only on selected areas of concern, this document provides a broad view of the present situation in training and research in gerontology. It will be of major assistance to those who will be concerned about implementing the recommendations of this year’s White House Conference on Aging. Without progress on these two fronts, many other recommendations will become meaningless or diluted.

Once again the Committee on Aging thanks the Gerontological Society for providing expert information on matters of mutual concern. Immediate Past President Jerome Kaplan and new President Carl Eisdorfer have our special appreciation for managing to mobilize such efforts on the part of the authors in such a short time; and thanks go, also, to Society Executive Director Edwin Kaskowitz for his part in coordinating and accelerating preparation of the papers.

FRANK CHURCH, *Chairman.*



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RESEARCH AND TRAINING IN GERONTOLOGY

INTRODUCTION AND SUMMARY OF PARTS

Striking deficiencies in research and training in gerontology persist in the United States, despite a 1961 White House Conference on Aging which saw the need for greater action and despite the calling of another White House Conference 10 years later.

Such deficiencies, in the opinion of those individual members of the Gerontological Society who report on specific problem areas in this report, have two major consequences:

1. Public policy in aging is based upon inadequate information.
2. Where ongoing programs exist, they are often directed or staffed by persons with limited experience, or even sympathy, with gerontology.

Today, 20 million Americans of age 65 and over—together with other millions near retirement age—feel the consequences of present limitations. Within the very near future, far greater numbers of Americans will be in the same age group; and they, too, will be inadequately served unless research and training are markedly improved.

The papers in this report clearly support:

- a. Establishment of a National Institute of Gerontology.
- b. Significant programs of research, training and services in appropriate Federal agencies.

Other of their recommendations merit special mention:

1. Schools of medicine can no longer give marginal attention to the unique characteristics of aging. Indeed they must lend a concerted effort to teaching and research in geriatrics and gerontology.

In turn the Federal agencies dealing with health must provide more significant and equitable shares of support to these efforts.

2. Biomedical science must be given the needed support to more fully investigate and unravel the process of aging and the related illnesses of aging.

3. We must finally develop the tested information and systems which will lead us to sound social policy and social service practice and delivery.

4. Individuals must be given the milieu in which they can not only reach but continue to perform at their highest level for the greatest possible period of time. Put another way, we must discover the mechanism that will allow the mind and the body to function smoothly together well into the late years of life.

A summary of each paper follows:

BIO-MEDICAL RESEARCH ON AGING.—Dr. F. Marott Sinex (Ph. D.) describes the current state of such research within existing Federal institutes or agencies and concludes that a much more vigorous and far-reaching effort is needed.

At the National Institute of Child Health and Human Development—now the major center for aging research—there is, for example, no study section which considers individual research grant applications in the field of aging; and there has been no growth in research programs since 1966. Congress increased funding by approximately \$7.1 million for NICHD and directed it to pay particular attention to the development of its aging program. And yet, at the time of this writing, those funds have not been released.* An NICHD Gerontology Branch in Baltimore, dedicated in May 1968, has only 120 employees, as compared to the original projected staff of 272. Dr. Sinex gives other examples of current deficiencies; he reports on several promising subjects calling for additional research; and he makes a recommendation calling for establishment of a new Institute on Aging within the National Institute of Health. Among the most compelling reasons for this action—recommended by the 1961 White House Conference—is that recent advances in biological technology suggest that a more rational control of the aging process is now feasible. In addition, a new institute would help assure that more of the results of fundamental biological research should be made available for the care of patients.

MEDICAL EDUCATION IN GERIATRICS.—Dr. Joseph Freeman (M.D.), FACP, reports that experience in geriatrics from 1950 indicates that the mid-point in the effort to get the subject recognized in medical education has been passed. A review of the catalogues of 99 types of medical schools revealed encouraging strengths in some and grave deficiencies in others. Of more than 20,000 faculty members represented in the schools, only 15 had primary titular identification in the field of aging. Dr. Freeman comments:

Indecisive attitudes toward geriatrics, the clinical side of aging, stand out in contrast to the increasing organization, financing and clarity of gerontological thought displayed in the research aspects of senescence. The fault may rest in the failure of clinicians to identify geriatrics as a distinctive field in which the small fraction of irremediable senility receives a disproportionate share of discouraging emphasis. When as much as one third of the potential lifespan falls in the realm of geriatric medicine . . . there can be no excuse for the dominance of the nursing home theorem involving the less than 5 percent of a special population over 65 years of age which requires full custodial care.

Dr. Freeman says that the focal point for geriatric education must be the medical school, but he also recommends education on aging in high schools and regional medical programs and U.S. Federal health service programs, directed to support significant amounts of training.

MEDICAL RESEARCH IN THE CARE OF THE AGED.—Dr. Manual Rodstein (M.D.) reports that a number of urgent medical problems that particularly affect the elderly are in urgent need of in-depth research. He urges action to prevent and delay the changes of aging, and to help us deal more effectively with diseases. Among the examples given by Dr. Rodstein on the need for more information:

For further information on this issue, see appendix 2, p. 73.

- After 30 years of investigation and hundreds of clinical reports, no definitive statements can as yet be made as to the value of drugs which slow down the clotting of the blood in coronary artery disease. Resolution of this problem is of special urgency for the aged. . . .
- The course of cancer in the aged is often of a slowly progressive nature as shown by an average duration of life of 10 years from the onset of symptoms of breast cancer cases treated with hormones, surgery and X-ray treatment. In treated colon and rectal cancer, survival was over 6 years. These findings point out the need for better methods of early diagnosis.
- The cause of heart failure, the end point of so many aging hearts, is not completely understood. In some respects our thinking is not ahead of that of Thomas Hobbes, who in the seventeenth century regarded the heart as a spring and the failing heart as a wornout-spring.

Dr. Rodstein, like Dr. Freeman, comments on negative attitudes upon the part of medical students and practitioners, as far as aging is concerned. He proposes that small grants be made to medical students and house physicians to increase interest in clinical research in the aged. Such research, he writes, may not necessarily markedly extend the lifespan, but it can improve the quality of life in the aged.

EDUCATION AND RESEARCH TRAINING.—Dr. James E. Birren (Ph. D.) and Miss Kathy Gribbin report informed estimates on the need for trained personnel specializing in services in aging call for increases of 10 to 15 times the current level of effort.

Since 1968, two major studies in this area have been conducted. They clearly document:

- a. the current low level of preparation and training for services, planning and research.
- b. the great, overwhelming need for qualified trained people to serve the current population.
- c. the anticipated increased need in the next 25 years.

Estimates range up to increases of ten (10) and fifteen (15) times the current level of effort.

Dr. Birren and Miss Gribbin recommend:

1. The requirements of training in problems of and services to the aging require facilities that include faculty from several disciplines of teaching and research.

In each major region of the country there should be at least one major interdisciplinary training and research center. A goal of five (5) or six (6) by 1976 and nine (9) or ten (10) by 1982 is recommended.

2. A national commitment (policy) toward training in aging must be stated and implemented.

It is recommended that a National Advisory Council of Aging be created. Its scope would include training goals and programs of all the aging-oriented and concerned agencies of Government.

This Council would promote the training/research centers and also continue to monitor and evaluate their progress.

3. There is a need for the establishment of a National Institute of Gerontology. It would have the responsibility for research, training and coordination of Federal efforts. A minimum of twenty-five million dollars (\$25,000,000) for the first year of operation is recommended.

NEEDED SOCIAL RESEARCH ON AGING.—Dr. Erdman Palmore (Ph. D.) reports that all evidence indicates that only a few million dollars per year is spent throughout the Nation on social-behavioral research on aging. The basic need in research on social aspects in aging he concludes, is simply for a much larger amount of such research. However:

Regardless of the total funds devoted to research on aging, the effectiveness of this research could be improved by better organization and coordination. At present research on aging and the control of the research funds are scattered among a dozen different Federal agencies.

Dr. Palmore calls for more university-based centers of gerontology to conduct and coordinate relevant research and training. Relevant areas for exploration include:

1. *Income Maintenance*.—The income gap between the aged and non-aged is growing. We must take a closer look at the mechanisms which determine the income, and the needs of people to devise better distribution of our resources, goods and services.

2. *Employment*.—Compulsory retirement and age discrimination in jobs has a marked impact. We must look into concepts such as flexible careers and retirement, job development and characteristics of the older worker.

3. *Living Arrangements*.—Research in this area must range from transportation to behavior setting studies and encompass architecture and the social behavioral sciences.

4. *Social Services*.—In particular we need research on how to best organize and deliver more adequate comprehensive services to the aged.

In addition, impact research producing a basic fund of information relevant to the policymaker is sorely needed. Research support must be increased to five times the current level, about \$45 million.

BIO-MEDICAL RESEARCH ON AGING

(By Dr. F. Marott Sinex, Ph. D.) *

The White House Conference on Aging provides an opportunity to review progress and make recommendations about future policy.

Research on the causes of aging has received relatively little Federal support. This is unfortunate because ultimately aging is the single most important factor in producing human illness and mortality. While research on aging is supported in a number of Federal departments, the aggregate support for biomedical research is less than 13 million dollars. Half of this support is in the Institute of Child Health and Human Development. The appropriation for research on aging in the Presidential Budget for 1971 was the same as in 1966.

THE NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT

The present program of aging research at the National Institutes of Health consists of both an intramural and extramural program. Historically, these had quite different antecedents. The intramural program originated in 1940 through a grant of the Macy Foundation to the Public Health Service. Nathan Shock was hired in 1941 to direct this new program located at the Baltimore City Hospital. The Baltimore program was part of the Division of Physiology at the NIH under the direction of Henry Sebrell. After the Division of Experimental Biology and Medicine was created in 1947, this program was transferred to the Heart Institute. When the Institute of Child Health and Human Development was created by public law 87-838 in October of 1962, arrangements for the transfer of the Gerontology Branch to the intramural program of the new Institute were made which was effective in December 1965. The new building was dedicated in May, 1968. The building has never been completely staffed. In July of 1968 there were 132 staff personnel. There are now 120. The original projected staff was 272. There seems little likelihood that the Administration will restore the intramural staff to its 1968 level.

The extramural program began to form when a center of aging was created in 1956 under Halsey Hunt to monitor all the NIH programs concerned with aging at the NIH. The purpose of the Center of Aging, later administered by Stanley Mohler, was primarily informational.

It provided the Director of the NIH, Congress and scientists with information about the support of research on aging. Six program

*F. Marott Sinex, Ph. D. is Chairman of the Department of Biochemistry at Boston University School of Medicine. He is also a past president of the Gerontological Society (1969-70) and continues to be an active member of the Council. He was Chairman of the Health Task Force Committee of the Massachusetts Commission for the 1971 White House Conference and serves on the Technical Review Committee on Research for that Conference. He is also a member of the Board of Scientific Counselors of NICHD.

projects called centers were instituted under the sponsorship of individual NIH institutes between 1956 and 1962,

Towards the end of President Eisenhower's administration, two White House Conferences were held, one concerned with children and the other with the problems of the aged. An Institute of Child Health and an institute of Aging Research were recommended. In President Kennedy's administration these were amalgamated under Public Law 87-838 in October of 1962 with the creation of the Institute of Child Health and Human Development. Aging became one of five program areas in the new Institute. The new institute also has responsibility for pre-natal development and obstetrics, the health of children, mental retardation and family planning. The pre-existing centers were transferred from the categorical disease institutes to the new Institute and the Center of Aging was disbanded. By agreement with the other Institute directors all grant requests which dealt primarily with aging were to be assigned to NICHD.

The new Institute only enjoyed a few years of a favorable atmosphere for research development prior to 1967, when research funding across NIH plateaued. However, the somewhat more positive attitude towards training allowed the development of a number of quality training programs. The training grant study section and the staff of the aging program played a major role in the development of aging research in the late '60's. In 1969 the training grant committee's role was extended to include the review of program projects but with no increase in budget. There is still no study section which considers individual research grant applications in the field of aging. There has been no growth in research programs since 1966. For fiscal year 1972, Congress approved approximately a \$7.1 million increase in funding for the National Institute of Child Health and Human Development, raising the House allowance from \$107.7 million to \$116.8 million. However, House and Senate Conferees indicated their strong intent that within this additional \$7.1 million funding for NICHD, priority should be given to research on aging. At the time of writing the additional funds approved by Congress have not been released by the administration.*

THE VETERANS' ADMINISTRATION

The Veterans' Administration has always had to care for a rather large group of aging veterans. The structure of research programs at its Hospitals involves many aged subjects. The VA has supported longitudinal studies of the Spanish-American War veterans and of an ambulatory group at the Court Street VA in Boston. In 1962 Joe Meyer and Harold Schnaper organized six satellite programs in conjunction with Universities on the basic nature of the aging process. Later these were incorporated into the stringent NIH type peer review process organized for all Part I funds in the VA. The aging identification was lost. Competing on their own, some of these programs have prospered and others found hard going. During the present administration, the Central Office of the VA has once again become more directly involved with research development and program planning. It may be that conditions are now favorable for new VA initiative in

For further information on this issue, see appendix 2, p. 73.

aging research involving basic research, clinical research and clinical training in some of the major stations. The concept of VA-University partnership embodied in the satellite programs is a good one. The clinical resources compared to those of the NIH are vast. With appropriate attention to quality and research environment, the much simpler administrative structure and its direct involvement in health care delivery gives the VA good leadership potential. Nevertheless, the budget committed by the VA for biomedical research on aging, if one follows the NIH procedure for allotting program costs, is less than 2 million dollars.

ATOMIC ENERGY COMMISSION

The Atomic Energy Commission has played a significant role in the study of aging, although not necessarily by design. The study of chronic low level effects of radiation required, as controls, normal aging animals. Furthermore, many factors influenced by radiation such as nicking and breaking of DNA strands as well as their repair are clearly important factors to consider in normal aging. Quality research on aging has been conducted at Oak Ridge, Brookhaven and Argonne National Laboratories. Oak Ridge and Brookhaven have conducted NIH training programs. The utilization of our national laboratories in the future programs of the AEC's Division of Biology and Medicine should be a matter of concern to those interested in research on aging. Probably the most serious difficulty is in reconciling gerontology with the primary mission of the AEC. While the close relationship of radiation biology and gerontology may be apparent to scientists, formal recognition and direct funding of gerontology creates some understandable administrative problems. The research in the Division of Biology and Medicine that might reasonably be allotted to aging research is less than 2 million dollars and is decreasing.

FOOD AND DRUG ADMINISTRATION

The formation of a new national laboratory group at Pine Bluff, Ark., under Dr. Edwards and the Food and Drug Administration represents an opportunity to deal with some important questions with which normal granting mechanisms have been particularly ineffective. The average university does not have the elaborate animal facilities such as exist at Pine Bluff and our national laboratories nor can a university investigator always obtain, through grants, funds to carry aging animals for a number of years. This limits his ability to do certain types of aging research. There is a need for the large scale testing of a number of diet additives which have been found by the gerontologists to extend the life span of rodents. Some of these are prevalent constituents in our environment, such as BHT, an antioxidant and common food additive, and aspirin. Some would consider chronic ingestion of BHT and aspirin harmful. Pine Bluff will have the facilities to find out. Whether these facilities are utilized will depend on policy decisions made over the next few years. We should learn why there is such a remarkable variation in life expectancy from county to county and State to State in this country. Environmental research is more than toxicology.

NATIONAL SCIENCE FOUNDATION

Research in gerontology often consists of applying what has been learned about *Escherichi coli*, a bacterium, and rapidly dividing cells to fixed post mitotic. Gerontology is dependent on advances in molecular biology and biochemistry for techniques and concepts. Gerontology, while it has benefited in recent years as an applied science, has been hurt by the reduction of funding of truly basic research by the NIH's Institute of General Medical Science and the National Science Foundation. Unless our basic information continues to grow, application will become sterile.

In regards to actual research on aging, NSF has often looked upon gerontology as something they should support if there was only a little more funding and fewer higher priority programs. There is essentially no research on aging supported by the NSF.

HEALTH, EDUCATION, AND WELFARE

There were several reasons for concentrating the aging program in Child Health on biology rather than the delivery of health services. First, there is a real concern, buttressed by historical precedent, that research programs suffer if they must compete with delivery programs. Second, the nature of gerontology today is such that the research is needed. The result is a program that has all of the strengths and weaknesses of a typical NIH program. The research which is supported is of good quality. The judgment of the staff is competent and sound. The promotion of research within the scientific community has been done in such a way to inspire confidence in gerontology and the NIH. The growth of research on aging within the program has been modest since there has been no increase in funds since 1967.

In regards to more practical problems of medicine and health care delivery, the NIH program is shaped by the organizational structure of NIH and HEW. Medicare and Medicaid are part of Social Security. Hearings on Medicare are held before Senator Long and Representative Mills as a matter of finance. Responsibility for the planning health resources, development of health manpower and application of research findings to the elderly is diffuse within HEW. Neither Dr. Duval, Assistant Secretary for Health and Scientific Affairs, Dr. Marston, Director of the NIH or HEW Secretary Richardson is in a position to deal with all aspects of the health of the aged. The small research program within the Institute of Child Health and Human Development is neither very visible or in a position to exert much leadership. It is clear that the application of research findings on the nature of aging for the benefit of people should be considered in any discussion of NIH organization and that some of the points made in the recent discussion of the role of the Cancer Institute are applicable to gerontology as well.

NATIONAL INSTITUTE OF MENTAL HEALTH

Gerontology presents many problems to psychiatry. The elderly fill the mental hospitals and nursing homes with problems, for which by

training, the average psychiatrists are not well prepared. A number of these patients have psychoses unrelated to schizophrenia, many have some organic deterioration of the brain and almost all have very real problems about their families, their homes, their income and their sense of self esteem and identity. Solution of such problems with limited budgets, limited personnel and limited understanding of what to do, makes aging a depressing subject to the professional and patient alike.

The research and training program of the Institute of Mental Health is small. Aging is not considered a problem of the same magnitude as alcoholism and drug abuse. The small research budget of 1.5 million dollars should be increased.

THE PROMISE OF RESEARCH

MENTAL DETERIORATION

The need for research on aging is very apparent in certain areas. Of particular concern is the mental deterioration of the elderly. This is the concern of three Institutes—Mental Health, Neurological Disease and Stroke, and Child Health and Human Development. There is a real danger that much necessary research will not be done because of jurisdictional confusion. The responsibility of NIMH for research on the delivery and the nature of psychiatric counseling is clear and the principal problem is to expand the program. The National Institute of Neurological Disease and Stroke would seem to have a mandate for research on stroke. The National Institute of Child Health and Human Development has shown admirable initiative in establishing research programs on senile dementia considering the limitations of their budget.

Beneficial and practical results may be anticipated along at least some of the following lines. Drugs which better control the state of arousal in the elderly should replace unnecessary tranquilizers. The accumulation of age pigment and large masses of autooxidized proteolipid in neurones may be preventable through antioxidants. The breakdown of microtubules to abnormal forms and filaments may be preventable with drugs. We should shortly have a rational explanation of how emotion and mental activity affect the physical aging of the brain.

RESISTANCE TO INFECTION AND AUTOIMMUNITY

A decrease in resistance to infection obviously occurs in aging. Surprisingly little has been done to explore why or what to do about it. Some of the best work has been done at the AEC's Oak Ridge National Laboratory. It may be possible in the future to hoard our immunocompetence until it is really needed.

At the same time the ability to resist infection decreases, the incidence of autoimmune phenomena increases and the body attacks itself. The juggling of immunosuppressants and immunostimulents should prove an interesting challenge to the internist of the future.

CARDIOVASCULAR DISEASE

One might well ask, if one has a Heart Institute, why is it necessary for another unit of the NIH to be concerned with hearts and blood vessels. The difference is primarily one of approach. The Heart Institute has made a number of very important observations about atherosclerosis. However, understanding what predisposes an aging heart or an aging blood vessel to disease involves another kind of mental set and different tools. DNA and chromatin may become more important than cholesterol esters. It is interesting that the Hayflick experiment, on the finite generational expectation of fibroblasts, a major discovery for gerontology, has yet to be carried out on the cells of the blood vessel wall.

CANCER

Age is the single most important factor which predisposes an adult to cancer. It is more important than cigarette smoking or other factors. However, the Cancer Institute has done very little with aging other than to compile morbidary tables. The reason has to do with its preoccupation with the cancer cell, rather than the tissue from which it comes, and fascination with environmental correlation. These are important. However, we should know why the incidence of cancer in adults increases exponentially through most of the life span and then falls off in old age.

HORMONES

A number of hormones are used in geriatric practice. Yet hormones are still used in geriatrics and at least part of the resistance to hormone therapy is cultural rather than medical. This country is now embarked on a great steroid hormone experiment using birth control pills. We should know what we are doing, not only with sex hormones but with insulin and other hormones. The program of the intramural group in Baltimore on aging and diabetes is a good model.

THE BASICS

We should be able to understand aging and use this knowledge in a constructive way for mankind. The limitations now seem to be mainly technological and trivial. For example, there is no good way to label the DNA of fixed post-mitotic cells, yet our methods for measuring nicks and breaks have not been sensitive enough to measure nicks and breaks without isotopic labeling. This problem is being solved at Colorado State. Answering the question, what causes aging, always reveals a certain amount of personal prejudice. However, in a general way the problem appears informational. For whatever reason, faulty DNA, faulty repair of DNA, faulty regulation of genes, premature destruction of messenger or ambiguous protein synthesis, the cells can no longer make an appropriate response to stress. This ultimately leads to a breakdown in physiological control. Understanding such matters is not really difficult. It requires talent, funds, and effort.

RECOMMENDATION: CREATE AN INSTITUTE OF GERONTOLOGY

It would now seem appropriate to create the Institute for Aging Research within the NIH, recommended by the 1961 White House Conference. here are several reasons. First, there are the advances in biological technology that suggest a more rational control of the aging process is now possible. Second is the feeling that more of the results of fundamental biological research should be made available for the care of patients. Humane considerations as well as the enormity of the cost of medical care of those in nursing homes and chronic care facilities and of those who are unable to adequately care for themselves requires that we learn how to reduce this drain on our economy and emotions. Finally the increased burden of the Institute of Child Health and Human Development in regards to its primary mission, concern for the health of children, makes it desirable that the National Institute of Child Health and Human Development be an Institute of Child Health.

Creation of an Institute should solve some of the funding problems of the present NICHHD aging program. An Institute of Aging Research should be able to present the medical problems of the aged to the administration and the Congress more effectively than is now possible. Its more precise function may have to wait on further discussions of governmental reorganization but its creation should not. The increased administrative costs of a new Institute must be met by other means than by curtailing research programs.

The implications of aging research are so great that adequate citizen participation in planning is essential. The balancing of life extension programs and health maintenance programs is technically difficult but an important social option. The existing Council of the Institute of Child Health and Human Development is primarily concerned with children. This could be remedied in an Institute of Aging Research with its own Council.

The way to reduce the cost of welfare, of nursing homes and mental hospitals is to help older individuals learn to take care of themselves. This can be done through research on the causes of aging and improving our system of health care delivery.

MEDICAL EDUCATION IN GERIATRICS

(By Joseph T. Freeman, M.D., F.A.C.P.)*

INTRODUCTION

Two gerontologists prominent in geriatrics in previous eras have been cited for their views on the clinical teaching of the medical aspects of older patients. Charcot gave a series of lectures on old age at La Salpêtrière Hospital in Paris in 1867. He pointed out, with some exaggeration, that "one could scarcely cite a work in which the slightest indication could be found of the particular physiognomy of the diseases of old age," overlooking excellent studies by Quetelet in 1835, Hutchinson in 1846, and a fine book by Durand-Fardel in 1854. Subsequently he added that "Senile pathology presents . . . difficulties which cannot be surmounted except by long experience and profound acquaintance with its particular characteristics," and this is true.

More than half a century later, Dr. I. L. Nascher of New York, wrote that "so little has been done in the field of geriatrics that until it receives the attention its importance deserves and we know more about the metabolic changes in the period of decline, we must fall back upon empiricism in the treatment of diseases of senility." This major pioneer in geriatrics was aggressive and determined as well as informed. Even though he had pointed out that no medical schools in the first decade of the 20th century offered lectures on old age and its diseases, he persisted and was able to write in a letter that he had "lectured in geriatrics in Bennett Medical College, Chicago (now the Medical Department of Loyola University) in 1911 and 1912, and in Fordham Medical College, 1913-1914." A generation later, in 1940, he gave a series of lectures at the New York Medical School and predicted that although the subject was not then in the regular curriculum of medical schools, the teaching of geriatrics was destined to become a regular feature of medical teaching in the future.

Subsequently Zeman created and instituted geriatric teaching in 1963, at what was to become in his memory the Frederic D. Zeman Center for Instruction at the Jewish Home and Hospital for the Aged in New York City. By 1970, this institution offered thirty courses in clinical and paraclinical areas dealing with the aging. Other institutions such as the Philadelphia Geriatric Center have followed suit.

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The clinical teaching of geriatrics in medical schools lagged during the period of 1930-1950 when scientific and public involvement in aging was rising sharply, although a few schools like the Medical College of Pennsylvania (formerly the Woman's Medical College of Pennsylvania) had offered a roster of required lectures and clinical demonstrations in geriatrics in 1944.

Although the record of the 30 years from 1930 was a time of relative medical indifference toward aging and the specific medical care of the elderly, there was some progress. The rising number of older individuals in society found a match in social responses. Ideas about the elderly are not new but social capabilities and adequate medical applications are of fairly recent vintage. There is a growing clinical selfconsciousness among physicians about the medical problems of elderly people. This feeling has been intensified by increases in the numbers of older people with long-term illness, problems of the senile, rising costs of medical care, and changes in the environment and the character of diseases. Following the narrow chain of symptoms and signs to diagnosis and treatment, physicians stumbled into the realm of social problems. The aloofness of the old clinician is not in the current mode. Geriatrics is a field in which social and biologic roles become evident. Working in a daily routine of petty to gross pathologic states, physicians had rare opportunities to evaluate results. Periodically, he is reproached for adding years to life, as if there were some special volition about his or his patient's activities. By the middle of the 20th century, as a matter of fact, survival has been affected only in a minor way by medical intervention. Workers in bacteriology, immunology, public health and sanitation, food supplies, water control, urban cleanliness, and infant care had contributed most to the changing demographic scene. Here and there a little change was effected by the physician giving increasingly effective primary medical measures. Major health improvements including the era of specific bacteriologic proof long predated these individual contributions.

Common hygiene has become a right rather than a privilege. The applicability of specific measures to specific conditions with a predictably satisfactory result magnifies the physician's capabilities and intensifies his power in the management of health problems. The result is a leveling of the formerly accepted extreme fluctuations in the lifespan, and a progression of longer life with its singular features. The period of certitude in medicine is not very old. In less than a century there has been time only to safeguard man's potential living span by shielding it from some premature terminating forces. Adding years to survival is incidental and not a primary objective of medical effort.

THE MEDICAL SCENE

It is a general assumption that a fund of knowledge about the aging should be the portion of the well-trained, experienced physician. Efforts to introduce such training into the medical schools and other educational centers in the United States have not been notably successful. There is a paucity of teachers, research centers, and even failure of the clinical awareness of pertinent age-differences. Chances are that at least one more generation of physicians will enter public life before sufficient teachers properly instructed in gerontology be-

come available. Changes can be seen in the growing listings of post-graduate and special resident training courses in geriatrics and gerontology.

It no longer seems necessary to labor the point that particular knowledge of the normal and abnormal processes of senescence is required for the full comprehension of geriatric medicine. This dictum has been accepted, less in the United States than in some other countries, but the idea is gaining momentum. The problem in geriatrics is not only the need for heightened clinical competence but also for the identification of, and familiarity with, the particular medical problems that distinguish old from young bodies.

Medical education consists of a series of logical steps in training. It is not possible to assume a role of authority in aging medicine. Educational status in geriatric and gerontology requires a recapitulation of the several medical phases of instruction *from a particular point of view* based on the detailed attributes of senescence. Regardless of feelings about a specialty of geriatrics, there is no denial of the need for a special fund of information. One authority said:

The development of the care of older people into a definite specialty within the framework of medical practice, under the name of geriatrics, is growing fast. It is becoming increasingly recognized that although the disabilities of old age are those dealt with in medical practice, they nevertheless possess aspects, both technical and social, which justify their treatment by doctors *specially trained* in problems of the aged. [Italic supplied.]

Some hold the traditional belief that adequate preparation for the management of the aging can be acquired during the usual clinical education with little need for particular emphasis. These views are divergent and seemingly irreconcilable. Authorities in the field of aging consider, and with considerable merit, that additional preparation is necessary and have offered a variety of suggestions as a solution. The major need is for medical practitioners to become informed of the changes due to senescence by gerontologists who can convey their fund of information. The attainment of clinical skill in aging requires specific medical training in the special characteristics of the older patient. The point is that:

—Teaching of geriatrics must never become a mere repetition of the lessons already learned in general medicine, with occasional references to advancing years.

Medical schools need staffs of teachers whose primary interest centers on geriatrics and gerontology. It has been observed in full comprehension of the problem that:

—Despite a lack of qualified teachers and the need to produce research investigators and teachers rather than specialists, there was general agreement as to the need and desirability of stressing a program in schools of medicine for teaching, research, and service of the aging and aged.

It is not likely that those trained primarily in cardiology or endocrinology without special reference to training in gerontology can serve as sources of indoctrination in the clinical medicine of the aging.

The attainment of the sub-specialty in internal medicine may deter rather than promote the teaching of principles of senescence.

—Most internists now in practice received their medical education some years ago when the problems of aging were for the most part simply ignored.

The fact that geriatrics consists of combinations of pathology which are age-linked rather than systematized clearly by diseases or organs would tend to add to unrecognized bias on the part of specialists properly immersed in the mounting details of their fields without orientation in the body composition of the elderly.

To train practitioners and medical home administrators, medical schools need instructors whose senescence information is on the mechanisms which underlie clinical characteristics. Dacso noted that most medical schools "are still searching for effective means to strengthen their teaching regarding the special problems of aging patients." He proposed that "instead of insisting on a separate chair in geriatrics, a plan which is most practical and flexible has been devised to allow the individual medical schools to adapt or modify it to justify their own requirements. This plan calls for the appointment of a 'coordinator' with senior professional rank but without an independent department. He would be responsible for implementing the teaching of *the geriatric and gerontologic concept* throughout the entire curriculum. . . . This type of arrangement should not preclude the offering of postgraduate courses in the individual specialties if and when a demand for such teaching is manifested."

EDUCATIONAL MEASURES

Instruction in geriatrics continues to be an unsettled issue in a number of medical schools. An assessment was done from medical school catalogues (1969-1970) and by a survey of interns and residents serving in hospitals in the United States (1960-1961). An outline of procedures whereby the Regional Medical Programs could participate in such training as an integral part of the scope of this Federal effort was summarized in a proposal for *Regional Faculties in Geriatric Training* (1968). In addition, a geriatric course under a United States Public Health Service Grant (1966) was summarized in a syllabus: *The Elder Patient, Clinical Features and Total Management*. The substance of these reports is to the effect that facilities are available. The record of a half century's progress toward the identification of the need for special instruction in the physiological components of aging and the ensuing clinical patterns has attained acceptance. The point of debate has been passed by the readiness for policy. These educational efforts need guidelines to funds, primarily Federal, supervised by indoctrinated individuals and consultants, to lead to affirmative action. Private foundations have not been fruitful in this regard, and many Federal agencies have been reluctant dragons in the allocations of funds. Bias has not been a stranger in some agencies.

U.S. MEDICAL SCHOOLS

The 1969-1970 catalogues of medical schools in the United States were reviewed for their content of geriatrics and gerontology. Eighty-

five schools were 4-year approved, 6 were approved in basic medical sciences, and 8 were operational and in development but not eligible for approval (1969). Among these catalogues, 48 brochures cited aging in some form or other as geriatrics, gerontology, aging, senility, or senescence (43, 2, and 3 respectively), and 51 did not (42, 4, and 5 respectively). There were 124 citations, classified in 9 categories.

TABLE I.—*Survey of United States Medical School Catalogues*

Types of Medical School	AMA list in 1969	Catalogues reviewed	Aging listed in curriculum	No reference to aging in catalogue
4-year approved schools--	85	85	43	42
Basic medical science approved schools-----	6	6	2	4
Developing medical schools, operational, not eligible for ap- proval (1969)-----	8	8	3	5
Total-----	99	99	48	51

TABLE II.—*Categories of Aging in United States Medical School Catalogues*

Categories:	Citations in 48 catalogues
1. Pre-Clinical Instruction as part of the basic medical science course--	19
2. Pre-Clinical Instruction by special designation in basic science courses-----	8
3. Clinical Instruction as part of the general course structure-----	22
4. Clinical Instruction by special designation in the clinical curricu- lum-----	15
5. Elective Courses-----	9
6. Research Programs open to undergraduate students-----	15
7. Staff Appointments in Geriatrics and Gerontology-----	15
8. School Affiliations, centers for research on aging, clinical instruc- tion, extended care facilities, accredited nursing homes, etc-----	17
9. Miscellaneous funds, scholarships, endowments-----	4
Total-----	124

CATEGORIES

1. *Pre-Clinical Instruction—as part of the basic medical science course.*—At 17 medical schools the subject of aging was included in the general pre-clinical material. Course designations vary from school to school. At Duke University School of Medicine, the core Clinical Science curriculum contains the statement that “stress will be placed on the continuity of biological processes through maturation, senescence, to death.” The pre-clinical approaches in such medical schools as Temple, a Kansas, Virginia, Oregon, and Hawaii are similar to that at North Carolina, in which there is a “systematic coverage of man from conception to old age.”

No school was found which offered a complete pre-clinical course covering anatomy, physiology, pharmacological principles, unique geriatric symptoms and signs and multiple involvements of intrinsic and extrinsic time-oriented influences on pathological developments and life-time regressions or immunological interactions. At the Uni-

versity of Washington School of Medicine, which has a Division of Gerontology in the Department of Medicine, teaching and research in aging are coordinated in three ways as evidence of improved methods: (a) a basic approach to the biology of aging at the cellular and subcellular level (b) the physiological and clinical problems of human aging; and (c) behavioral approaches to an aging population.

2. *Pre-Clinical Instruction—by special designation in basic science courses.*—Differences between *general* geriatric instruction and *specific* teaching of aging in pre-clinical courses are hard to define. Vanishing distinctions between pre-clinical and clinical teaching add to the difficulty. Many schools have included the subject of senescence as a general part of basic instruction, influenced by the flux of gerontologic reports. Others have made aging a particular part of established courses at the freshman and upper-class levels under the same impact but with more distinctive characteristics.

Pharmacology usually is taught in the basic science group, but no course was found in the 99 school catalogues which described the metabolic changes in old age as a basis for changes in the administration of drugs in the elderly. Dosages, methods of administration, frequency of use, and types of drug hazards, as well as research in gerontological pharmacology make up a field of major importance in therapeutics. Doubtless much pharmacological information is included in regular instruction, but it was not mentioned explicitly in any school catalogue, and seems to have been left to the chance of the instructor or of the clinical exposures.

In short, there are only a few schools recorded in their brochures where the basic science courses as an introduction to applied medicine (or clinical research) reflect awareness of the disciplines of geriatrics.

3. *Clinical Instruction—as part of the general course structure.*—Geriatric training is incorporated in the general clinical courses at 10 medical schools. At some centers, the subject is covered in more than one department for a total of 22 citations.

The inclusion of clinical aspects of aging in general medical discussions is a proper educational device. Once common points are established, it is of increasing importance to point out the special nature of the aged organism in which pathological expressions have characteristics that distinguish them from similar processes in youth. The same particularity is essential to goals in geriatric management whether the objective be curative, ameliorative, or tentative. Results of these therapeutic efforts in the elderly often differ from expectations of clinicians working with younger patients by the nature of extreme forces that influence medical judgment and decisions.

4. *Clinical Instruction—by special designation in the clinical curriculum.*—Although definitive courses on aging at the divisional or department level are few, some medical school departments have deepened their involvement in geriatrics and gerontology. A good example is at the School of Preventive Medicine and Public Health of the University of California, Los Angeles School of Medicine, which offers a course described as:

—Biochemistry and Physiology of Aging, Lecture—discussion program on biochemical and physiological changes in the aging process, as well as age-associated disease processes. It is specifi-

cally intended to meet the needs of medical students and physicians.

At the Mount Sinai School of Medicine there is a Geriatric Division in the Department of Medicine with a formal program of geriatric teaching, patient care and research. The Division utilizes a 40-bed convalescent unit and also a long-term care unit with the same number of beds. A fellowship residency in the Division is an indication of a maturation of training by physicians whose total careers will be in geriatrics. Such objectives need reenforcement not only in curriculum planning but also by various forms of financial support.

There are 14 schools in which 15 specific considerations to the aging are given in clinical courses. In most instances, these courses are offered in the Divisions of Psychiatry, Preventive Medicine, or Public Health. It is uncommon to find a course of departmental status under the heading "Aging." This situation is indicative of current educational trends, and suggests that well-defined clinical considerations of older patients do not as yet have adequate curricular identification in the national medical school scene. At 3 medical schools—University of Washington, Chicago, and California at Los Angeles—there are Divisions of Gerontology as of 1970. In 1970, a clinical professor in the Department of Medicine at the Chicago Medical School was appointed Chief of Gerontology.

5. *Elective Courses.*—As curricular forms expand, the likelihood of instruction in special areas increases, and more so in elective and research assignments. On-job learning typifies much of the development of geriatrics and gerontology and is an accurate picture of the way in which many leaders had to acquire their information. This approach no longer is suitable, if only because of the volume of information that has become available.

There is no particular pattern of elective courses by school departments. Eight school catalogues list opportunities for elective training in geriatrics and gerontology. In view of the massive research efforts in the Nation, many of them involving particular processes in a senescent population, it is possible that some elective courses have been overlooked because of failure to get a label. Those found in the catalogues were listed because their titles were specific and such specificity is a reflection of new degrees of awareness.

6. *Research Programs.*—Fifteen instances of geriatric and gerontologic research programs were found in the catalogues. Gerontological research facilities in medical school catalogues do not add up to a massive effort, nor reflect by title the many collateral studies in which aging is involved. With increasing awareness, funding, and staffing, programs of research on aging will increase in many medical schools and scientific research centers. The nationwide growth of Fellowships in Gerontology at universities is indicative of this trend. Two examples are the Fellowship programs at Pennsylvania State University and in the Gerontology Center at the University of Southern California. Graduates of such courses with a Doctor of Philosophy degree will be involved in all phases of the development of the science of the aging and serve as a body of properly-trained personnel in research, administration and coordination. It will not be long before the impact of these individuals will be felt in all aspects of aging.

7. *Staff Appointments.*—It has been difficult to determine the exact number of posts in the medical schools of the United States intended and designated specifically in the catalogues as staff appointments in geriatrics and gerontology. In some schools, undoubtedly the subject is taught without such labels or under headings judged to be equivalent.

The results indicate that didactic titles can fail to show that the teaching of geriatrics is included in the course of instruction; that chronicity of diseases is equated solely with senescence which is an assumption not supported by data; that aging itself somehow must be identified with chronic diseases in a particular fashion; and that average aging changes tend to be equated with diseases rather than with the natural progression of normal senescence. Chiefs of departments of chronic disease, rehabilitation, community health, and family medicine (or similar faculty titles) are not acceptable synonyms for Chiefs of gerontology or geriatrics. In the present assessment, the criterion for a staff appointment in the field was an unqualified statement or designation in the roster of primary gerontological orientation and identification. By such ground rules, there are few such staff appointments in the United States. The faculty members of the 99 institutions surveyed probably numbered 20,000–25,000 (as estimated from the list). Of this number, 15 had primary titular identification in the field of aging in 1970.

8. *Medical School Affiliations with clinical centers for aging, extended care facilities, research divisions on aging, nursing homes, teaching centers and chronic disease hospitals that offer specific geriatric service and training.*—There are 17 medical school affiliations with facilities where formal training in geriatrics and gerontology is available. Such institutions traditionally have been places for teaching.

Undoubtedly other institutions in the country are used for the teaching of geriatrics (including those for chronic diseases, community medicine, long-term care) but the present listing has been limited to those important enough in the opinion of the Curriculum Committee to be posted in the medical school catalogue by definitive title.

9. *Miscellaneous—funds, scholarships, and specially-endowed departments.*—Most school catalogues list scholarships, student prizes, research awards and special funds. Some funds are of long lineage and new ones are being added regularly. Among the many citations, there were 4 in which geriatrics was mentioned.

RESIDENT AND INTERN SURVEY

The extent of medical school education in the United States in 1961 was sought from interns and residents using a questionnaire. These physicians had completed the formal scholastic part of their training and were assuming responsible clinical positions. It was felt that they would be sensitive to what they had learned in school as they fitted knowledge to daily needs in their hospital duties.

Fifteen hundred questionnaires were sent to interns and residents who were graduates of 78 United States medical schools. A total of 470 reports, 215 intern and 255 resident, was received from students who were graduates of schools in the United States. An additional

65 were completed by residents in United States hospitals who were citizens of 23 other nations and graduates of 36 medical schools outside of the United States.

The first question was whether geriatrics had been included in the medical school curriculum. In the combined group of interns and residents, 34 percent, which is a ratio of 1:2, responded affirmatively.

The opinion of the group was requested as to the value of formal geriatric instruction in undergraduate medical school education. Classification by specialty inclination showed no particular trend, and 67 percent of the interns and residents with a ratio of 2:1 favored this educational measure. It is significant that in both groups, students who had such training in undergraduate years were more favorably inclined to endorse such forms of education than those without this indoctrination.

A self-grading of current adequacy of knowledge of the field was requested as a reflection of hospital experience. Slightly more interns and residents who had received instruction in geriatrics judged themselves to have an adequate knowledge of the field. Reflecting additional training, residents gave themselves a higher rating. Hospital personnel who had no training in the field, whether intern or resident, graded themselves below those who had some form of undergraduate training. Apparently even minimal exposure to planned geriatric instruction was able to raise self-estimation of knowledge of the field appreciably.

In the light of continued hospital-based training, the individual was asked to grade the value of a didactic course in geriatrics in the undergraduate medical school curriculum as (1) essential, (2) useful, and (3) unnecessary. For the whole group, more than 4 out of 5, or 82 percent, looked upon this formal extension of training as either essential (20 percent) or useful (62 percent).

Free comments were invited in an effort to lessen the possibility of bias in the formal questions. The replies, 49 out of 215 intern and 84 of a total of 255 resident returns, showed some consistency. Opinions indicated that almost 87 percent of the total number of free expressions by interns favored explicit geriatric education in the regular medical school curriculum. It was suggested that such instruction be limited to a brief factual course designed to emphasize particular clinical features of senescence. Almost 86 percent of the residents replied to the effect that there was a need for formal geriatric training and that this should be, for the most part, in the medical school (76 percent) or as part of postgraduate education (9 percent).

Returns from graduates of 36 medical schools in 23 nations other than the United States were an unexpected source of information resulting from the random distribution of questionnaires to United States hospitals where these physicians were residents. The non-United States group (all residents) graded itself as having an adequate knowledge of the field in 40 percent of instances as compared with 77 percent of the United States group. An overwhelming percentage of the non-United States educated group favored curriculum inclusion of geriatrics (90 percent) compared with 67 percent of the returns from U.S. graduates. In grading the value of such training,

almost twice as many, 37 percent to 20 percent believed that it was essential, and only 7 percent graded it as unnecessary versus 18 percent of the United States group. In the foreign group, 21 or 75 percent felt that undergraduate education in geriatrics was indicated.

The health-service professional school (medicine, dentistry, nursing) is the logical place for basic training and general orientation in geriatrics. The entire community takes its stance from this source. There have been a series of studies on this subject from 1950. In 1953, catalogues of United States medical schools from 1949 were reviewed. In 20 schools, or 28 percent of the series responding, there was some cognizance of aging in the curriculum. In 1956, Commons made a report to the Gerontological Society of his study of postgraduate education and residencies in geriatrics and gerontology in 65 schools. Awareness of needs was increasing and “despite a lack of qualified teachers and the need to produce research investigators and teachers rather than specialists, there was general agreement as to the need and desirability of stressing a program in schools of medicine for teaching, research, and service of the aging and aged.” In 1958–1959, the Commission on Geriatrics of the Pennsylvania Medical Society repeated the survey. Although returns were obtained from only 39 schools, the percentile increase in affirmative responses was noted in every category of question. The changes can be noted in Table III.

TABLE III.—*Comparison of Report by Dr. R. R. Commons (1956) and the Commission on Geriatrics, Medical Society of the State of Pennsylvania (1961)*

[In percent]

	Commons' report (65 schools)	Pennsylvania commission report (39 schools)
Educational facilities in geriatrics by special designation-----	3	48
Plan for addition of geriatrics to curriculum-----	3	40
Addition emphasis in other courses-----	37	95
Special Geriatric Department-----	3	17
Chronic Disease Hospital affiliations-----	27	30

NOTE.—N. B. These figures are not strictly comparable. Content of the questions varied in the two surveys. The number of schools replying to each question differed. Where questions seemed reasonably alike and there was a sufficiency of replies, an effort was made at a comparison to see whether a trend is developing. Limited as the two sets of replies are, there is a suggestion generally that there is more acceptance of clinical aspects of aging as a feature of the medical education program.

The last study reported obtained from the 1969–1970 medical school catalogues is indicative of the trend. *Vide Supra*, p. 8–15.

U.S. PUBLIC HEALTH SERVICE GRANT AND THE
NICHHD

The key to geriatric education and to collateral areas represented by the special care of the aging in nursing homes is curriculum planning. In Pennsylvania, for example, there are 50,000 persons in nursing homes and a reservoir of 1.2 million over 65 of whom a consistently small percentage of about 4–5 percent ultimately will require custodial care. In such situations it is not possible for a medical system that

offers geriatric training sporadically or in catch-as-catch-can fashion to function with full effectiveness. Education in the health care of the elderly, like that in every health service, must be a continuing thing, of educated exposures to the diagnostic evaluations and therapeutic techniques by which services rendered can attain increasingly higher levels of value, and predate the custodial phase of the lesser but important fraction of the elderly population. The structure of geriatric education must be built into the total educational plan which should start, at least to some extent, in college and earlier. Special sections in gerontology within the advanced school of education in all spheres of training may serve as foci for a variety of developments applicable to all of the disciplines in aging.

To bridge the gap between current needs and the development of professional school curricula, it is proposed that regional courses in geriatric education be made available. The Commission on Geriatrics of the Council on Scientific Advancement in the Pennsylvania Medical Society proposed the development of postgraduate, extracurricular short-term training courses in geriatrics.

An 18-hour course given in 3 days was funded by the United States Public Health Service in 1966. The course was attended by physicians, dentists, nurses, nutritionists, paraclinical personnel, ministers and hospital administrators. The Principal Investigator created a faculty and summarized the material in a syllabus of 49 pages. In the introduction to the course it was observed that there is a routine and constant necessity to restate clearly not only the definitions of those sciences dealing with aging, but also to find that quality of the aging body for which clinical specificity is essential. It was emphasized that as more people survive for a greater number of years, changes are reflected in the statistics of hospital populations, and adaptations of hospital resources follow.

The oversubscription and attendance at this course was significant. Its duplication in other cities and impetus to the field was a measure of awareness not only by those who initiated the course but also in the response of the faculty and the judgment of the audience. The experience suggested that the following is feasible as an independent faculty adaptable to most medical school needs in any community.

1. A formal course of didactic instruction in geriatrics can be arranged for physicians, nurses, and those in supportive health service.

2. This course will consist of 18 hours of instruction in a 3-day period. These sessions can be consecutive days, 1 day per week for 3 weeks, or once per month for 3 months.

3. The faculty will be selected from teachers whose primary orientation has been a competent background in the investigational and clinical aspects of geriatric medicine.

4. The trainees will be physicians, nurses of all levels with emphasis on nursing instructors, supervisors and administrators, podiatrists, dentists, social workers, nutritionist, occupational and physical therapists, nursing home administrators, the staffs of voluntary health agencies and municipal or equivalent service personnel.

A particular effort was made in the mid-1950's to teach Social Gerontology. A Council on Aging from 15 universities was organized with NIH funding; 2 summer institutes were held during which 100 college faculty members attended a 4-week summer session. Of the trainees, 75 percent introduced gerontological teaching in their college courses as the result of this indoctrination (Kent).

Medical training in geriatrics is coming under increasing epidemiological pressure just as the senescent phase of physiological mechanisms is gaining recognition in gerontology. Proper geriatric orientation is essential to lessen the incidence of medical mishaps. Among the elderly, the number of accidents, unexpected sudden deaths, unforeseen complications, errors in drug administration and untoward medical reactions of all types is much too high to permit easing of the pressures for higher educational standards in geriatrics. A science lacking depth and organization in the medical school and allied curricula is not likely to meet the needs of well elderly people or sick old patients. Geriatrics will be neglected as long as there is failure to perceive such fundamentals as the expressions of single and multiple interacting diseases in a senescent body; as long as standards for evaluating tests or determining drug dosages are based solely on height: weight, i.e., body-surface ratios; as long as drug dosages and methods of administration are determined by the imprint of remembered errors; and as long as therapeutic measures are instituted without knowledge of the basic reactivity and composition of the senescent body.

Geriatrics, as has been said so often, is not a medical specialty and should not lay claim to such categorical segmentation. The field has an important part to play in all of the disciplines of adult medicine. Gerontological research contributes directly and collaterally to clinical developments by the clarification of geragenetic forces in the epidemiology, diagnosis, pathology, and aging physiological reactions. As part of the biology of aging, the focus of geriatrics is on senescent changes and aging forms, with their clinical attributes, whereas the focus of gerontology is on the mechanisms underlying regular age changes and their medical traits; the fields are complementary.

Indecisive attitudes towards geriatrics, the clinical side of aging, stand out in contrast to the increasing organization, financing and clarity of gerontological thought displayed in the research aspects of senescence. The fault may rest in the failure of clinicians to identify geriatrics as a distinctive field in which the small fraction of irremediable senility receives a disproportionate share of discouraging emphasis. When as much as one-third of the potential lifespan falls in the realm of geriatric medicine (and more, if pre-aging factors are taken into consideration), there can be no excuse for the dominance of the nursing-home theorem involving the less than 5 percent of a special population over 65 year of age which requires full custodial care.

Properly identified measures in education that will guarantee the better distribution of knowledge about senescence and help to reduce the number of diagnostic and therapeutic errors known to be disproportionately high in the elderly should not require pleading. Identification of the place of aging in the educational scheme must be broad enough to encompass the results of clinical successes achieved

earlier in the life of the individual and blunt the rising figures for incapacity, institutionalization, and premature mortality in the later years of that same life.

CONCLUSIONS

Experience in geriatrics from 1950 indicates that the mid-point in the effort to get the subject recognized in medical education has been passed. New curriculum projects always have the responsibility of establishing their own place. When this objective has been accomplished, the means must be found by which to staff, finance, and adapt the subject to the going routine of established education.

The focal point for geriatric education is the medical school. Although the primary effort by definition is clinical, involving physicians, dentists and registered nurses, all of the paraclinical services require orientation and training inclusive of social applications where the impact of clinical effectiveness ultimately must fall.

Primary and continuing education in geriatrics and gerontology can be accomplished readily within the range of current Federal agencies and their budgets if requisite realignments of priorities can be established. Scholastic curricula—medical, paramedical and social—are susceptible to identical adjustments. Private foundations have failed to respond to the educational needs in aging and have tended to reject requests for funding. The educational resources of some pharmaceutical houses have been made available but again this has been at a rather low level. Such negative responses, outmoded as much as 10 years ago, no longer are acceptable.

It is possible to make certain proposals based on the last 20 years of study of geriatric education.

- The United States population over age 65, now in excess of 20 million people or almost 10 percent of the Nation's census, has special problems in health care linked to socio-economic need that change regularly with the natural adjustments to demographic urgency,
- Financial needs of the elderly were plotted on the graph of a generation-old economy,
- Medical school curricula need to take cognizance of the special features that aging brings to clinical forms, modes of treatment, forms of health facilities, accessibility to health care and changing costs,
- Clinicians in training as interns and residents have indicated an awareness of the need for special training on aging at the medical school level,
- Financial means and educational methods can utilize available direction and leadership without the necessity for major departures from well-established procedures,
- The natural emphasis on the elderly of whom 3 percent in any 1 day are in hospitals and less than another 5 percent are in various institutional facilities, must be to support the more than 90 percent who maintain private households in order to lessen the possibilities of increased welfarism in this group.

Education in aging should be initiated in high schools and carried through all scholastic levels to colleges, medical schools, and para-

medical training into postgraduate fields under the following headings:

Medical schools should offer preclinical instruction in the anatomy, physiology and pharmacology of senescence in the preclinical years followed by clinical demonstrations, working with older patients, ward rounds, and assignments to special facilities for the elderly in the clinical years. Funds for such educational services can be obtained from the National Institutes of Health, particularly NICHD: the Administration on Aging; special grants from the United States Public Health Service and other Federal sources; as part of the planning of the Regional Medical Programs; reoriented school budgets, special foundation grants; and other independent sources of funds.

Equivalent training in *nursing schools and allied health services* should follow a similar plan of training and funding.

Preparation of *special training courses* by grants under the U.S. Public Health Service can be arranged with particular reference to postgraduate facilities for multidisciplinary extra-institutional student bodies including physicians, dentists, nutritionists, physiotherapists, nursing home administrators, hospital administrators, nursing home personnel, and others.

Special involvement of the *Regional Medical Program* to include aging in its programs with particular reference to postgraduate courses under the direction of faculties affiliated with hospitals, medical societies, and groups capable of appropriate educational leadership can be encouraged.

Indoctrination of *college faculties* to incorporate all aspects of the cultural aspects of aging up to Fellowships in Gerontology at the Doctor of Philosophy level is essential.

Provision by the proper Federal agency to supply educational material on aging to *high schools* for inclusion in courses on social studies by which to emphasize among younger students the particular features that aging brings to a growing society would be useful.

An aging population that has contributed to its nation's growth and has become an expression of a culture's achievements must attain to the balance between the rights and privileges accorded others in their times.

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MEDICAL RESEARCH IN THE CARE OF THE AGED

(By Manuel Rodstein, M.D.)*

The value of medical research in the care of the aged depends on the training and motivation of medical students, interns, resident physicians and practitioners, the setting in which it is conducted, its funding, the problems investigated and the manner in which this is done.

The training and motivation of medical students and house physicians toward medical research concerned with the aging process and the aged present many difficulties. It is discouraging to note the absence of gerontology and geriatrics from most medical school curricula and hospital residency training programs. Equally depressing is a recent report from the Langley Porter Institute of San Francisco dealing with medical students' attitudes toward the aged. This survey reveals negative feelings about the aged together with no great respect for those taking care of them. Students felt that physicians caring for the aged should preferably be good natured even with disagreeable patients and not too clever, but kind and gentle. At the bottom of the list of preferences for hospital ward work were those for the chronically sick and aged. The least desirable form of work was considered to be care of the terminally ill aged. There was no significant change in attitudes between the freshman and senior.

House physicians and medical students often are not aware of the special aspects of diagnosis and treatment of the aged. They do not realize that they are best treated as individuals with interdependent emotional and socioeconomic problems rather than from a disease-oriented point of view.

Formal programs in gerontology and geriatrics in the medical school and during the period of hospital training are needed. The general hospital and the medical school have an opportunity to coordinate their teaching and research activities with affiliated chronic care institutions, homes for the aged, home care programs and community centers for the aged, particularly those located in housing projects for the aged. Through such exposure, students, house physicians, and members of the attending staff will self-select themselves for clinical research among the aged.

A chronic disease institution which is adequately staffed, with adequate diagnostic and therapeutic capabilities, and whose population includes a broad spectrum of functional capacity from the fully ambulatory to the chronically ill, is an ideal site for long-term longitudinal studies of the aging process and disease. Clinical research on the well aged is of the greatest importance.

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A program of great potential value is getting underway at the University of Manitoba Medical School under the chairmanship of Dr. J. A. MacDonnell. Visiting scientists will give lectures and discussions to faculty and graduate students concerned with a broad perspective of the aging process, current research and training for research on aging. Videotapes will be made of these sessions for use as basic teaching material for a program in gerontology which will occupy 3 sessions a week for 5 weeks in the third year medical school curriculum.

Interest in clinical research in the aged can be stimulated by small grants to medical students and house physicians. The National Institutes of Health and private foundations should give recognition to funding research in community centers, institutions for the aged, unaffiliated clinics, and community agencies dealing with the well aged. Voluntary attending physicians can participate in such research under appropriate direction.

The present trend away from human-centered and disease-oriented research in the aged and the concomitant increase in investigations whose material is neither human nor diseased should be discouraged. A reasonable balance of types of medical research is desirable. Excess emphasis on non-human, non-disease studies results in the alienation of the investigator from human problems.

Clinical medical research in the aged should result from and lead to good medical care. Although it should be based on the premise *primum non nocere*, there is no modality of clinical research or care without some degree of inherent morbidity and mortality. Procedures should be employed under careful control which reduce harmful effects to an acceptable minimum.

There are a host of conditions about whose life history we know little. Cross-sectional studies of the present generation of aged individuals are of limited value since their subjects were born so long ago and brought up under different medical, social, and economic conditions. Long-term longitudinal studies following up younger individuals by the use of periodic multi-phasic evaluations to post-mortem examination are superior, especially since only in this way can the rate of change of specific functions be assessed for any given individual. They are not without inherent disadvantages of costliness, attrition of subjects due to death, lack of interest or relocation, the saddling of the investigator with outmoded methods and the necessity for recruitment of young staff members who can be expected to outlive the subjects and carry on work begun by older investigators. The introduction of additional newer diagnostic techniques during the course of such studies will add to their value.

The establishment of normal values for the aged is of importance. We accept the fact without question that infants, children, and adolescents have a changing spectrum of normal value over a period of about 17 years. Yet we tend to accept normal value for adults as valid for the aged over a span of up to 35 years after age 65. We are just beginning to realize how difficult it is to establish normal standards for the aged even in such extensively investigated conditions as diabetes mellitus. There is no unanimity of opinion as to the definition of normal glucose tolerance in the aged.

The significance of the blood pressure level of any given aged individual is difficult to assess, since it is the result of a number of factors related to aging and disease, such as decreased elasticity of the great vessels, dilatation of the aorta, and a rise or fall in cardiac output, as well as the constriction of the small arteries which causes essential hypertension. There is ample opportunity for future clinical research in this field, since studies are needed to determine indications for treatment with antihypertensive drugs and optimal treatment regimes. The efficacy of treatment will be judged by the results of morbidity and mortality studies.

Determination of risk factors for death from coronary artery disease, particularly that of sudden death from acute myocardial infarction, is an urgent problem especially since the early mortality is particularly high in the aged.

The successes we have achieved in reducing the mortality from abnormal heart rhythms in acute myocardial infarction should not obscure our failure to reduce the extremely high mortality from shock in this condition, particularly among the aged. Clinical research is needed to determine the cause of shock in the hope of discovering improved methods of treatment.

After 30 years of investigation and hundreds of clinical reports, no definitive statements can as yet be made as to the value of drugs which slow down the clotting of the blood in coronary artery disease. Resolution of this problem is of special urgency for the aged, since therapy in them is more hazardous due to an increased sensitivity to such drugs resulting in a susceptibility to bleeding in the brain and intestines.

The cause of heart failure, the end point of so many aging hearts, is not completely understood. In some respects our thinking is not ahead of that of Thomas Hobbes, who in the seventeenth century regarded the heart as a spring and the failing heart as a worn-out spring. Much research remains to be done to discover what happens to the aged heart muscle fiber which causes it to fail independent of disease.

The present state of our therapy for heart failure leaves much to be done in the way of clinical research. Our knowledge of digitalis, still the most important form of treatment, has in many respects not, until recently, advanced much beyond that reported by Dr. Withering in his *Account of Foxglove* in 1785 in which he said, "despite opinion, prejudice or error, time will fix the real value upon this discovery." Time has confirmed the value of digitalis in augmenting the contractility of the normal and the failing heart but has not solved the problem of its high incidence of toxicity particularly among the aged.

Only in the recent past have we begun to understand the mechanisms of action of digitalis through research studies of its metabolism and excretion using radioactively labelled digoxin. Studies using radioactively labelled digoxin show that there is an initial accumulation of digoxin in the body when small doses are given daily. However, as the amount excreted each day is a function of the total amount accumulated in the body, the percentage excreted each day increases until an equilibrium of absorption and excretion is reached on about the sixth day, at which time there is an effective dose present in the body. Utilization of this method of digitalization in non-emergency situations will reduce the incidence of digitalis toxicity in the aged. Researchers have

also demonstrated the direct relationship between digoxin excretion and kidney function. Since the latter is only one-half of normal in the aged, digoxin is excreted less rapidly by them, indicating the need for a substantial reduction in maintenance dosage. Research has demonstrated that intravenous injection of the same dosage of digoxin will yield twice the blood level in a small aged person as in a large young person. Thus digitalis sensitivity in the aged may be explained not only by low body potassium and magnesium but by decreased body size and kidney function. These encouraging advances indicate how clinical research can help in providing improved treatment for the elderly cardiac.

New techniques of continuous monitoring of the heart by electrocardiographic telemetry are valuable aids for future research for study of the effects of stress on the heart, such as automobile driving. This technique has shown that episodes of syncope and faintness, otherwise unexplained, are often due to brief period of rapid abnormal heart rhythms. The technique of exercise testing has demonstrated that 38 percent of well aged males have an abnormal response to exercise compared to only 4 percent of healthy young males. Such modalities of research will help in the determination of the benefits of physical conditioning. The introduction of electronic pacemakers to drive the heart have prolonged the lifespan of aged individuals with heart block and presents opportunities for research. The introduction of graduated small amounts of electric current in different locations within the heart and at different time intervals in the cardiac cycle have elucidated the significance of the phases of the cardiac cycle during which a single abnormal heart beat may trigger a fatal abnormal heart rhythm, particularly in the course of acute myocardial infarction.

Previously inaccessible portions of the conduction system of the heart can now be studied with the hope for improvement in the therapy of abnormalities of conduction. We will learn more about the genesis of the potentially preventable abnormal rhythms which cause over half the deaths from coronary artery disease.

I would like to give some attention to research in cancer in the aged. Despite the availability of a large number of chemicals for the treatment of cancer, the determination of the optimal dosage and combinations of which can absorb a major part of the activities of many cancer centers, other aspects of cancer research in the aged deserve more attention. These include research designed to facilitate the early diagnosis of cancer and to determine the advisability and intensity of treatment of the aged individual with a particular type of cancer.

Early symptoms of cancer are unusual in the aged. When present they are most often nonspecific in nature such as weight loss and anemia. In only 30 percent is pain a presenting symptom. The finding of a mass on routine examination of an asymptomatic patient is common. More typical symptoms such as vomiting, jauntice, cough and spitting and vomiting of blood are present in only 1 percent to 7 percent of cases. Eleven percent of the cancers are unsuspected and found only at post-mortem examination. The course of cancer in the aged is often of a slowly progressive nature as shown by an average duration of life of 10 years from the onset of symptoms of breast cancer cases

treated with hormones, surgery and X-ray treatment. In treated colon and rectal cancer survival was over 6 years.

These findings point out the need for better methods of early diagnosis. A hopeful lead is provided by the recent discovery of a tumor specific constituent of cancer in the human digestive system which has not spread, which can be detected by the presence of a specific substance in the blood.

There is also the need for research to determine the advisability of intensive forms of therapy where life expectancy is limited. In mild cases of chronic lymphatic leukemia intensive treatment may promote progressive disease activity and the onset of severe complications. The operative risk of surgery for certain types of lung cancer exceeds the 5 years' survival rate in men over 70. Methods for determining the rate of growth of cancer will be helpful in evaluating the need for treatment. An example is the use of multiplane chest X-rays in the determination of the rate of growth of an extension of the tumor in the lungs. By extrapolation it can be hypothesized that, in some patients cancer cells were present at the time of original successful removal of an ostensibly localized primary cancer.

This raises the need for research into the question of host resistance to cancer in the aged. The Clinical Center of the National Institutes of Health is at present studying the blood of patients who have had spontaneous regression of tumors, prolonged survival following incomplete surgical excision of cancer, and prolonged remissions following chemical treatment for cancer in a study of host resistance to cancer.

Pending a major breakthrough on a cellular level prolongation of life expectancy has probably reached a practical maximum. The life expectancy of white males in the United States at age 65 has increased by only 1.5 years between 1900 and 1967 and that of white females only 4.3 years. At age 75 the increase is only 1.4 years for males and 2.3 years for females. Males of various middle and upper class vocations in England between 1758 and 1843 who achieved the age of 30 had a life expectancy of between 34 and 40 years, excluding deaths by accident or violence. White males of comparable age in the United States in 1959—1961 had a life expectancy of 41.67 years. In the British peerage, the longest and best documented body in which reliable figures for life expectancy are available with data covering ten centuries, there has only been one survivor to the age of 100. In addition our potential for prolonging the life-span is limited, as for example the elimination of cancer as a cause of death would only add 2.27 years to the average life expectancy at birth in the United States and 1.2 years at age 65.

Therefore although the achievement of a longer lifespan through research in the aged is a desirable objective, it seems more likely that significant results will be achieved by clinical research designed to improve the quality of life in the aged, to improve man's adjustment to man and his environment, to prevent and delay the changes of aging, and to help us deal more effectively with diseases.

METHODS FOR MEETING THE NEED FOR EDUCATION AND RESEARCH TRAINING IN THE FIELD OF AGING

(By James E. Birren, Ph. D.,* and Kathy Gribbin,** University of Southern California)

BACKGROUND

What is the problem?—At present there is a woeful lack of training in the field of aging at all levels and for all types of personnel. A previous survey supported by the Administration on Aging (U.S. Department of HEW, AoA, 1969), primarily oriented toward professional training, showed how tiny was current training effort in relation to the need for thousands of personnel delivering services to the retired. Similarly, a survey supported by the National Institute of Child Health and Human Development (Gerontological Society, 1968) showed that training in the basic sciences on problems of aging was barely becoming visible in American academic institutions. The gap between the need for trained personnel and the capacities of present training programs is so great that there is no danger in overtraining for several decades.

The current situation implies a lack of policy, implementation and monitoring. Training in aging is a long term investment and we are but in the beginning phases of forming a perspective on the magnitude and the requirements of our training efforts. At present the conceptual components of a national policy and program for training appear to be available. They need to be coordinated and provided with national leadership and support. *A national plan* for training in aging should be developed and it should determine responsibility for the development and monitoring of a national long ranged plan for training in aging.

Lack of facilities and funds in aging.—The main feature about training and education on problems of aging is that there is so little of it. During the nineteen seventies the task facing those who are responsible for training is one of increasing the amount of training manyfold. To do this, facilities for research and training must be created and funds made available. While there has been some progress and there are high quality programs in a few institutions, most States do not have appreciable training of any type.

The extensive mail and interview surveys tabulated in the 1968 survey of the Gerontological Society indicated that the present needs in

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initiation and/or maintenance of research and training programs in gerontology in order of importance were: (1) funding, (2) personnel, and (3) facilities. The number one need for research training programs in gerontology, funding, is all the more urgent when one attempts to anticipate the requirements of the next decade. While almost every research scientist in every discipline wishes he had more money, scientists' requests for funds in gerontology are met with an especially acute shortage.

Responsibilities.—Since more trained people are required for work with the aging, should not the major responsibility for funding be assumed by Congress, with assistance of the States and private sources such as foundations and industry? What pressures and strategies can be developed to help change national and local priorities to assure at least a minimum of funds for the training of people to work with the aging and for the training of teachers and researchers?

Little leadership in the field of training seems to have been exercised by private foundations. This is surprising since support of emergent areas of national concern have been a province of philanthropic investment. It seems anomalous that major foundations can proclaim no interest in aging. The support of training by private foundations, if for a limited time, would be distinctly beneficial, since it would offer more flexibility in planning and initiating training innovations.

While responsibility for support of training has rested with Federal agencies and will remain so in the predictable future, ways of encouraging State and local government investment in training warrant thorough discussion. In view of the responsibilities of State and local government for health, social, recreational, and education services to the aged, consideration should be given to reserving some portion of State educational budgets and portions of categorical departmental budgets to support training offered by public and private educational institutions. In those instances in which States have no training center, fellowships for out of State study could be provided.

Lack of activity in institutions of higher learning.—Probably one of the most important, and yet least mentioned goals for training in aging, concerns the facilities for the various training programs. There are no funds available to support the construction of university centers for training, research and related purposes in aging. In a recommendation of the U.S. Department of HEW (1969) it is suggested that AoA, the Public Health Service, the Office of Education, the Department of Housing and Urban Development, and other Federal agencies, as appropriate to their objectives and programs, should be authorized to provide financial assistance for the construction of model multi-service senior centers, housing projects, and personal care and nursing homes, to be operated in conjunction with training and research programs in universities and professional schools. Construction of university based research and training centers in aging must be developed and this can only be done with Federal support of their construction and operation.

The information that follows will document the shortage of personnel and the need for training. In addition, alternative methods of solving the problems of training will be considered and recommendations will be offered.

SHORTAGE OF PERSONNEL

We have within the United States a population of retired persons that by itself is larger than the whole populations of many major countries of the world. While sharing a common way of life with others of all ages, *the nation of the retired* have special needs of a biological, psychological, and social character. To meet these needs and to improve the quality of life for the retired, a substantially increased effort is required in education and training, an effort that must be carried out at many levels in our institutions.

The professions and the sciences have been slow to develop specialized training programs in aging and to some extent this may be due to the prestige and monetary reward systems within our institutions. However, it would also seem that there is a public expectation that a portion of the scientific and professional community will devote their careers to the study of aging.

It has become strikingly clear in recent decades that the problems of aging and the long-ranged goals of training are open ended in the sense that they will always be with an advanced society. Only advanced technological nations provide the basis for successful survival to the later years and the support and care of large populations of retired persons. Training in aging is a long term investment and we are but in the beginning phases of forming a perspective on the magnitudes and the requirements of our training efforts.

There is general agreement among educators and administrators that teaching and research programs in the sciences need to be enlarged. The estimated increase in needed research training grants between 1968-1973 was 23 percent (Gerontological Society, 1968). Such forecasts presume the availability of instructional personnel in numbers adequate to meet the demand for persons to undertake research. The supply of qualified teachers is very limited, however, and programs for the training of instructors at all levels are at a nearly stage in their development.

A survey of the training needs in gerontology was undertaken in 1968 by the Gerontological Society for the NICHD (Gerontological Society, 1968), and while assessment of the number of teachers and researchers in aging was not one of the direct functions of that survey, other valuable information related to the needs of the sciences was collected.

Training of professional personnel in gerontology remains small in relation to need. The 1969 report of the Secretary of the Department of Health, Education, and Welfare to the United States Congress indicated an urgent and increasing need for personnel to serve in the field of aging. The need for trained workers in 1980 is expected to be at a level two to three times above that of 1968. The report further indicated that at least a third of a million professional and technical workers (perhaps only 10 to 20 percent of whom have had any formal training) are employed in programs serving older persons only, or primarily.

In a 1969 survey conducted for the Administration on Aging (U.S. Department of HEW, AoA, 1969) a minimum estimate for current demand was obtained from data on budgeted vacant positions. Esti-

mates of demand for the years 1970 and 1980 were not comparable from occupation to occupation, due mostly to differences in the definition of job categories. Professional service personnel in aging are normally considered to include: (1) those who can accept responsibility for top-level administration and for broad planning and coordination; and (2) those directly engaged in serving old people, in staffing service agencies and in providing consultation and guidance to organizations and agencies in the field.

In 1967 it was estimated that 24,000 administrators and managers were employed in nursing and personal care homes. At that time there were 20,500 facilities in operation, an average increase of 1,000 per year from the 16,700 operating in 1963. A projected increase of over 1,000 per year (continued vigorous growth is expected for the next few years) yields an estimate of 44,000 facilities in 1970. Demand is largely a function of growth in the number of facilities, and since there is a certain amount of turnover in administrative staff in existing homes, the demand for personnel at this level may be expected to exceed the net increase in the number of facilities in operation.

A study conducted by NAHRO (Vogelsang, 1968) indicated that in 1968, management personnel employed in housing projects for the elderly numbered close to 4,900. The demand for staff during the next 10 years will be affected to a great extent by the amount of new construction funded by Federal and State Housing Assistance Programs. The NAHRO study predicts a need for 32,000 to 43,000 management and social service personnel in retirement housing for the elderly by 1980. This is an increase of from six to eight times the number employed in 1968, but the figure is basically realistic considering the trends in the size of the older population, estimates of living arrangements and family income distribution, projects of the number of elderly persons living in their own homes, and moderate predictions concerning the volume of housing construction.

At present there is no reliable data concerning the number or types of senior centers or their staffing. AoA estimates that in 1967-68 there were 2,500 to 3,000 centers open at least three days a week, but had no information regarding their activities. If one assumes that each center had at least one paid staff member, there were at least 2,500 to 3,000 persons employed in an administrative capacity; however some centers may have only volunteers, thus making an accurate estimate impossible. Federal and State encouragement of centers and the services they provide will decide their growth and demand for personnel. Nevertheless, most new retirement housing projects include a multi-purpose center, thus providing one definite growth factor.

At the beginning of 1968 more than 100 people were employed in AoA and the Adult Development and Aging Branch of NICHD, while State units on aging employed 172 persons in administrative and technical capacities. Budgeted vacancies, however, indicate that unmet demands for trained personnel were as high as one budgeted position in every six in State agencies and over one in three, in Federal agencies. Projections suggest a fourfold increase in the number of budgeted Federal and State positions by 1980.

Dietitians are largely found in institutional settings. In 1967-68 there were 4,600 dietitians employed in extended care facilities, while

900 more were needed to give optimum care. Dietitians are also employed in senior housing projects, geriatric hospitals, hospitals for the chronically ill, nursing homes and in other settings where older people make up the larger part of the population served. There is no data regarding the number so employed or the unfilled present demand. The future demand is inextricably linked to changes in the supply of these facilities and the number of persons requiring services. Since projections call for their increased construction, it is logical to assume the demand for dieticians will also rise.

Homemakers are relatively new and rare in the field of aging, but there is increasing recognition of their value to older people who prefer independent living arrangements, yet are handicapped or limited in performing household tasks. In 1967 only 115 public welfare agencies were providing homemaker services to the aged needing assistance in home management, including 93 which furnished personal care. Future staffing needs are dependent upon the interest of communities in extending the program; the demand and interest in the program, however, is already greater than what is being provided.

One of the major occupational groups employed in nursing and personal care homes is licensed practical nursing, LPN. In 1967 the estimated number employed was 40,000, almost double the number in 1964. Considering the rate of growth of the nursing home industry, LPN employment in these establishments may reach at least 100,000 in 1980 and may be as high as 175,000. Other LPN's are employed in home health and other programs reaching older people in their homes, so the future demand may be even greater.

In 1967 the number of registered nurses, RN's, employed in nursing and personal care homes was 30,000. The demand is expected to grow to 75,000 by 1980 but may go as high as 125,000. Many others are also employed in long-term care hospitals serving older patients largely and in the home health care program under Medicare. Demand is very high for RN's, but the supply in the field of aging is limited by competition from other programs and by attrition through marriage and childbearing.

Occupational and physical therapists are concentrated in hospitals and other medical facilities and programs, including nursing and personal care homes and home health care programs under Medicare. The supply of trained, qualified personnel is quite small, with many more in demand than become qualified each year. This places an especially hard burden on service delivery to the aging because of the competition for services by other patient groups. With nursing home and home-care populations growing, a difficult to estimate but substantial increase in number of occupational and physical therapists is needed.

Available data show that older persons utilize the services of physicians more than their proportion of the population; few doctors fail to have older persons as patients. Such programs as Medicare would lend to a forecast of an increase in future need in the number of physicians, but there are no available projective statistics. In 1967-68 there were 800 physicians working in nursing, personal care homes and in geriatric hospitals, with State and county mental hospitals having a full time equivalent of more than 5,000 physicians. Increased growth of such facilities will result in an increasing demand for physicians. In a

Senate Special Committee on Aging Hearing (1969) it was stated that it will be 1980 or beyond before there will be enough medical doctors to meet the needs in handling the programs now on the books. No available data, however, has mentioned if these physicians will have a specialization in or knowledge of geriatric medicine. Freeman (1971) reported on analysis of medical school curricula as revealed by school catalogues. Of 90 schools, 50 made no mention of aging as a subject in any form. Available statistics state that in 1966-68 there were only 96 psychiatrists for the entire country who reported a specialization in geriatric psychiatry. Unlike established training programs in child psychiatry, geriatric psychiatry remains to be developed.

Aides are found in nursing homes and personal care homes, home health agencies, homemaker services, hospitals, and other agencies and programs. The number of aides is growing because of the shortage of skilled professional manpower in community service programs, and because of recognition of the necessity to restructure position responsibilities and to assign selected tasks to personnel who have been given short courses or on-the-job training. There are no projections of future need, but in 1967-68 there were 177,400 nurses' aides with an unfilled demand for 10,700; 1,300 occupational therapy assistants in extended care facilities with an unmet need of 300, and 16,200, including the present supply, needed to meet the needs of patients in long-term beds in hospitals.

The social worker is a key person to assist the older person and his family and is frequently an important member of a team providing services. With all the duties needing to be performed it is estimated that in 1968 four out of five of the over 20,000 social workers in programs concerned with older people were employed in the old age assistance program. Projections of future demand for social workers in old age assistance depend on future caseload trends, changes in the relative number receiving social services and on whether the program survives or new departures are introduced including a negative income tax. Based on the assumption that the assistance program continues, one HEW projection suggests a moderate increase in staff over the 1960 level. Projections of need in other programs puts at least one social worker in every nursing and personal care home in the country and a specialist in social work services to the aging in every county welfare department. Such projections involve a demand for 1980 at least twice that of 1968.

What is lacking in the curriculum of most schools of social work is a proportionate representation of the subject matter of aging. The Council on Social Work Education (1964) has made curriculum suggestions to improve the level of training in aging. A broader input is needed with information from psychology, sociology, and health fields along with information on personal crisis of the aged to train social workers to work with middle aged and older adults.

Senior Centers, parks, housing projects and nursing and personal care homes are the principal establishments employing recreational personnel in programs serving older persons. In 1967-68, there were close to 30,000 filled positions in such places, of which over half were occupied by part-time workers making the estimated full-time equivalent approximately 15,000. This figure included senior center direc-

tors, recreation supervisors, activity specialists, recreation program leaders, professional consultants, program aides and program assistants. The National Recreation and Park Association estimates that staff positions in programs for older persons will be at least 23 percent higher and possibly even two and a half times as high by 1980 as it was in 1967.

The 1980 projection of 26,300 workers is based on the ratio of employees to population remaining unaltered; the 76,200 figures takes into account trends in expenditures for parks and recreation. Either figure demonstrates a tremendous increase over the present number of personnel and suggests a great need for recruitment and training. It is not apparent where the leadership and teaching skills needed to give recreation workers a background in aging will come from.

There is no available information concerning religious personnel and training. It is suggested that short courses, workshops, institute and specific sessions can be designed specifically for those with church roles that bring them into contact with the older person.

A few municipal library systems have developed special services for older persons. The full time equivalent of these librarians in 1967-68 was only 15-20 workers with an additional 50 needed. Projections for the 70's are between 75 and 200. The American Library Association is fostering the extension of services to older people, as a result of which an increased demand for librarians trained to work with the older population may develop. Research on older reader interests is needed to guide these library services as well as to uncover the latent potential for rendering enjoyment through new services designed for the retired.

There are about 20,000 people employed in the Nation's social insurance programs of which, in 1968, 800 were working with aspects affecting older people only. It is expected that this number will double by 1980. This will result from an increase in the number of older people and a decrease in the age of retirement, thus requiring more experts in this field. To meet this increased demand, training of additional workers is predictably necessary and needs to be developed. By 1980, 1600 social insurance workers will be needed, a figure twice that of those so employed in 1968.

There is a severe shortage of speech pathologists and audiologists who work with older patients whose speech and hearing have been affected by stroke, by other illnesses, or by hearing loss. In 1967-68, there were 300 working in extended care facilities and 140 in home health agencies participating in Medicare programs. The number in demand at that time was at least twice that employed. Recruitment and training of qualified personnel is of utmost necessity in order to help more of these older persons so afflicted.

There are many other professional groups that serve the retired and aged. However, there has been so little effort made to determine the present level of activity for most of them that estimates of personnel shortages and training requirements can only be stated in vague generalities. This underscores the need for a national policy and for a program of estimating personnel needs and training requirements in aging.

PRESENT RESOURCES AND ACTIVITY IN TRAINING

Two thirds of the training currently offered in gerontology is at the graduate level, and it is clear that the main need in gerontological training is at this level to help create a group of "trainers of trainers." The need for training at this level is also evident as the sophistication necessary for research and teaching in aging and administration and practice on the aged cannot be taught at lower levels.

According to the 1969 AoA survey, two broad types of graduate education are necessary:

1. Long-term career training leading to the doctorate, designed to produce teachers and researchers in the biological, behavioral and social sciences; and teachers, researchers administrators and planners in the professional fields serving the older population.
2. Long-term training leading to the masters degree, designed to produce skilled practitioners, supervisors, consultants, administrators, and instructors in junior college and short course programs designed to train individuals for employment in agencies serving older people.

The number of trainees in doctoral degree programs is small, partly because the training period of four or more years as a rule is long. The contribution of doctoral candidates to manpower resources in the field cannot be measured by numbers alone. Doctoral candidates are the source of most of the teachers and they write most of the books in the field. These highly trained individuals also account for much of the new knowledge being accumulated and provide a large measure of the leadership in program planning and strategy. Because so much rests on so few, it is desirable to increase the support to levels more appropriate to current needs.

An index of the growth of training and research in gerontology is the annual number of doctoral dissertations on aging accepted by American universities. Since data of this sort had not been previously compiled, the Gerontology Center library at the University of Southern California undertook a survey for this purpose (Moore and Birren, 1971). Although the quality of dissertations is somewhat variable, the population of dissertations has some validity as an indicator of trends and provides an objective basis for estimating the current state of gerontological training and research in relation to national needs. Without such a comprehensive data base, it is impossible to know whether or not the field is showing progressive development in relation to national priorities or where it stands relative to other academic areas.

A second search was made for all doctoral dissertations on aging between 1934 and 1969 by scanning all titles listed in the series commonly known as *American Doctoral Dissertations*. This series from 1934 to 1968 listed approximately 95 percent of all doctoral dissertations accepted by American universities and colleges. The listings were gathered from the institutions of higher learning themselves under the auspices of the American Council of Learned Societies and the National Research Council.

In the period 1934-1968 there were 262,151 dissertations prepared in all scholarly fields. Of this number, 667 were on problems of aging,

or only 0.25 percent of the total. Limiting consideration to dissertations in the biological, medical, psychological and social sciences, there were 142,193 dissertations of which 667 on aging were only 0.5 percent of the total, still a very small number in total scientific and scholarly activity in relevant fields. The analyses of doctoral dissertations indicated that there has been relatively little emphasis on the study of aging within each of the academic disciplines. In view of the small amount of academic training and research that has been devoted to aging, special efforts appear warranted to expand recruitment, teaching, research facilities and opportunities for graduate students to develop careers in the subject matter.

Ranking the States in order of numbers of dissertations on problems of aging from institutions within the State, the following are the three top States in order of rank; New York, Illinois and California. *Some States have not had an institution that produced a single dissertation on aging in the 35-year period.*

Ranking the institutions of higher learning by number of dissertations, the following are the leading institutions in order of rank: University of Chicago, Columbia University, New York University, University of Wisconsin, University of Southern California, and Cornell University.

Considering the pervasive nature of aging as a phenomenon of living things, the low level of doctoral study of the subject matter is surprising. There have been so few scholars produced in the subject matter areas that there is limited possibility of early expansion of educational activity and professional services of a specialized type.

Precisely how much effort, absolutely and relatively, should be devoted to graduate instruction and research in aging is moot. Of all scholarly fields covered in the analysis, two percent of total dissertations produced on problems of aging would be defensible in terms of scientific importance and in terms of generating a knowledge base for professional practice. In 1968 a minimum effort of 2 percent would have resulted in 435 dissertations. Actually only 89 were produced in that year, a year of high activity.

If one limits considerations to only the four academic fields most relevant, i.e., biology, medical sciences, psychology, and social sciences, 2 percent of the total between 1934-1968 would have yielded a total of 2844 dissertations on aging. In this period, a total of 142,193 dissertations were written in biological, medical, psychological, and social sciences of which 667 (about 0.5 percent) were on problems of aging.

The question of why has so little training been carried out, or more importantly, how much training in aging should be carried out has to be answered field by field. Instruction requires knowledge gained through research and presented by teachers who know and can evaluate such knowledge in relation to the professional problems presented. Such teachers are not available now because relevant disciplines have not produced the knowledge base and trained personnel.

From many viewpoints, training in aging has to be increased within a broad range of disciplines, e.g., genetics, developmental biology, developmental psychology, anthropology, and sociology, to name a few. In the fields of developmental biology and developmental psy-

chology perhaps one-fourth to one-half of the dissertations per year might be expected to deal with the scientific issues of changes in the mature organism. However, up to the present, senescence of the organism has only rarely been investigated or taught as a subject matter in graduate programs in developmental biology and developmental psychology. Faculty members in such disciplines are largely ignorant of the processes of aging even though aging can rationally be considered as part of natural developmental phenomena.

EMERGENT NEEDS

Training of the many types discussed will have to be planned and extended to meet not only the presently recognized needs but also important emergent ones. The content, techniques and goals of training programs cannot remain fixed. However, the changes must first occur within institutions having long range commitments and competent personnel so that the changes can be rational and not unthoughtful, quick, or opportunistic responses.

Little is known about the personal needs and circumstances of our many aged in different ethnic groups, e.g., Spanish speaking, Black, or Indian populations. Technological change reaches all groups in society, but unless we know something of the circumstances of the aged members of minority ethnic groups, we cannot create the conditions of communication; consequently such persons will not partake in services to which they are entitled in a changing society. Planned efforts should be made to recruit research and service personnel from disadvantaged ethnic groups. Such persons should be recruited by Training Centers in Gerontology.

The issues of aging and the environment require that research information be translated so that the architect, city and regional planner, and local government officials are informed and can plan on the basis of the needs of the retired. Whether individuals should be trained as environmental planning specialists for the aged or whether a generalist in gerontology can serve in the role of translator and mediator to planning specialists is moot. Clearly there are new factors in the urban environment that place the older person in an increasingly disadvantaged position, and effort has to be directed toward environmental planning that will provide optimum habitation for the aged.

The extension of the average length of life in the United States since the early part of the century resulted in greater gains for women than for men. This sex difference in longevity continues to grow. Moreover, there is about a two-year (average) sex difference in age at marriage, with women being younger. These factors result in millions of widows in our society who often have an appreciable length of life remaining. Trained personnel who know research facts can generate an economic return to society through their efforts with widows, as well as contribute to life satisfaction and contentment.

The trend toward earlier retirement leaves many capable and talented persons without useful roles in society. Many such persons would welcome the opportunity to serve in volunteer or in paid positions should they be given exposure through recruitment programs and should they receive the opportunity for pertinent training. While

it is true many unfortunate older persons do not have the necessary capabilities by reasons of health or other limitations, at least half of the retired population might be classified as potentially trainable or may already have the skills to serve the community and themselves through part time service positions, either paid or volunteer. A vast potential force exists within our society consisting of retired persons who can do varying degrees of work. While the potential for such community service roles is vast, they cannot be realized unless leadership is developed and training programs are planned and implemented.

There is at present an unestimated but gross shortage of persons trained in gerontology to enter the field of training the older adult for new social roles. Both researchers and teachers are needed in this facet of gerontology. Some states have institutions of higher learning that can undertake the required research and training, but there are pitifully few.

In recent years the universities and colleges of our Nation have been under great pressure to expand their facilities to meet the educational demands of the large numbers of young persons born in high birth rate years following World War II. Caught between the tidal waves of young persons to be educated and the constricting forces of limited teaching personnel, budgets, and facilities, the universities became preoccupied, and still are, with their educational relationships with the late adolescent and the young adult. Latent were issues of educating and retraining middle-aged adults or more generally the issue of serving society through research on life span processes. The university, through the pursuit of knowledge and education, is to serve all society. It is to be expected in the future that more campuses will have balanced student populations by age, in which, in addition to the late adolescent, older adults who wish to pursue further serious educational programs will be found. Among such prospective students are the early middle aged women who may have had distinguished undergraduate records before marrying and raising a family. Men and women whose careers have been redirected in mid-life may wish to be "retreaded" in an adjacent career area or directed to new ones. To plan for such future roles, the universities will be required to have persons on their staff who have expertise in the motivations, life styles, and capabilities of middle aged and older adults. Adult education itself requires dialogues with gerontologists so that advanced education for the mature adult ceases to be a simple extension of that which is used with the young. Gerontological components of knowledge and skill need to be found in schools of education as well as in the extension programs of the professional schools.

GOALS AND POLICIES

A dynamic national training program needs to be developed and supported that not only can meet those needs that can be presently defined, but which can also remain flexible to future needs. It seems very likely that future generations will arrive at retirement with different attitudes and with rising standards of living and expectations for the quality of life. One can be truly flexible in meeting emergent issues only if one has a rational plan from which to depart. At present

the conceptual components of a national policy and program for training appear to be available. They need to be coordinated and provided national leadership and support.

As is often the case, the long ranged goals concerned with government institutions primarily have to do with the funding. Recommendations from the reports of nearly all government organizations urge an investment in trained manpower and research in aging. A recommendation for new and enlarged facilities for research and training in gerontology is usually cited in government reports sometimes with the suggestion of joint funding by the various Federal agencies providing support for training and research in aging. Calls for additional funds are also made to further curricula on aging in colleges and professional schools, for short-term training of professional, paraprofessional and subprofessional personnel, and for volunteers.

In a report on the training needs and mechanisms in gerontology, the Advisory Council of the survey for NICHHD (Gerontological Society, 1968) unanimously endorsed the following goals (p. 49):

1. Increase the number of individual research projects being supported;
2. Establish predoctoral fellowships in gerontology;
3. Increase the number of program projects being supported;
4. Increase the number of training program grants being supported;
5. Establish more postdoctoral fellowships;
6. Establish predoctoral fellowships in gerontology;
7. Establish university chairs in gerontology.

Members of the Advisory Council vigorously expressed the need for strong regional units of research and training in aging. They suggested a variety of approaches (Gerontological Society, 1968).

1. University-based regional programs.
 - a. Existing university programs substantial enough to warrant it should become true regional centers and receive the necessary support to extend their facilities and resources of expertise into the surrounding regions.
 - b. Where suitable university aging centers do not exist, they should be created
 - c. University-related NICHHD regional centers.

We urged NICHHD to establish regional offices and activity programs on suitable university campuses or in close enough relation to suitable universities so that they may utilize that university's resources in aging to complement their own efforts in reaching out to institutions in the region. An approach such as this combines the accessibility of the initiating and funding agency with the resources of an established university program.

2. The regional consortium.

This approach suggests combining—or more appropriately, coordinating—the efforts of several institutions in a given region which have already developed fairly substantial activities in gerontology or who have expressed interest in developing such activity. The benefits of such an approach include the following:

- a. The "isolates" can be reached and brought into the mainstream of gerontological activity.
 - b. Regional centers based on the consortium as an administrative unit make possible maximum use of existing resources for training and assure more effective promotion of gerontological activity in the region.
 - c. It improves the effectiveness of communication among institutions and among researchers in the region, thus reducing duplication of effort and encouraging cooperation.
3. Longer commitments of funds.
- a. Long-term commitment is essential to the continuity of the research itself.
 - b. Long-term commitment will facilitate the task of recruiting both senior and junior personnel by offering more attractive long-term commitment (financial) to them.
 - c. Long-term commitment will encourage and sustain institutional administration interest and commitment.

Hopefully, following such long-ranged goals would make geographic shortages less critical a problem.

Obviously government organizations are committed to the goal of improving and increasing training in aging, but it is now necessary for them to secure administrative support and to commit the funds necessary to implement the recommendations.

The long-ranged goals of universities and colleges are mainly concerned with curricula, research and teaching facilities and the quality of the faculty and student body. The question of how best to implement the goals of universities in order to serve the greatest number of interested persons in the most effective manner is of great concern. Kleemeier and Birren (1967) suggested a goal in which the first 4 years should emphasize the establishment of major training programs in selected graduate schools. This strategy would concentrate interested people at central locations. Centralization is considered more desirable than the less efficient process of introducing a little training into each of many schools. Kleemeier and Birren believe that the departments of direct concern in the social sciences are psychology, sociology and anthropology, but they also feel that at least one program in economics and political science should be established. Biology training and research is an essential component of a Gerontology Center. In addition, such fields as social work, education, psychiatry, public administration and public health and the professional schools, should have training programs with goals of twice the enrollment of the sciences.

Kleemeier and Birren (1967) also suggest the training of 5,000 doctoral-level personnel as an appropriate 10-year goal for all sciences related to gerontology. By 1976, there should be between 1,500 and 2,000 active trained researchers in each of three areas: biological sciences, physiological and medical sciences, and behavioral and social sciences. They maintain that the present commitments are not enough; new training programs must be started.

The preceding implies a goal of a greater degree of institutionalization of effort in training. How to avoid the rigidities in our institutions is a point that warrants discussion. Lack of public standards for personnel and institutions is regarded as being accompanied by

low quality of services with little evidence of efforts to seek advanced training at centers of higher learning or through in-service training. Properly channeled, increasing institutionalization of standards can lead to improvements in the quality of institutions, services and products. However, means should be built into formal quality control measures to keep them contemporary and abreast of advances in the sciences and professions, and also for a balanced representation of the constituent groups on the policy making and enforcement bodies thus providing for public response.

The basis of personnel forecasts needs examination. Until the past 5 years there were no attempts to project needs and anticipate the numbers of those to be trained. Various principles of estimating personnel needs can be used, e.g., the market place, or how many unfilled jobs there are at present, interviews with those who hire on the basis of how many they would like to employ given budget support, per capita of older persons falling into different categories of independent living, handicapped or invalided, the estimated requirements for teaching and preparing teaching materials for different levels of students (to be supplied by educators), questionnaire and interview surveys of administrators with responsibilities in the field, and estimates of the needs for trained researchers by researchers now in the field. These various forecasts must be integrated so that the long term aspects can be seen and proportional commitments be made by administrators and institutions of higher learning.

The foregoing suggests that in order to make such forecasts, a coherent or integrated national policy on training in aging is needed. There is need for a continuing survey of training activities, their evaluation in relation to evolving national goals, a survey of training methods and materials, and the development of forecasts of training needs in terms of numbers of persons, field of concentration and dollar costs.

RECOMMENDATIONS

The requirements of training in gerontology or problems of aging require facilities that make available colleagues from several disciplines for teaching and research. Gerontology centers or institutes within universities can provide leadership to a state and region. In each major region of the country there should be at least one major interdisciplinary center. A goal of 5 to 6 such major centers by 1976 and 9 or 10 by the year 1982 appears to be conservative and realizable. Without the creation of such centers and without their receiving support for scholarships, traineeships, research projects, and related functions, it is doubtful whether a high quality training effort can be mounted over the next ten years. The cost of establishing such leadership centers is small indeed. Without them, it seems unlikely that dynamic training programs in aging with the capacity for innovation and self reform and evaluation is possible.

Creation of multidisciplinary institutes of gerontology increases the visibility of the field of aging and affords faculty and students an opportunity for exposure to greater competence as well as the interdisciplinary aspects of the field. Centers for training, research, and service to the aged are also needed to provide significant help to agencies serving the needs of the elderly. Existence of such centers would go a long way toward closing the gap between supply and demand of per-

sonnel trained at the graduate level. In addition to meeting training needs, university-based multidisciplinary gerontology centers could:

1. Recruit personnel at the professional and subprofessional levels.
2. Conduct basic and applied research.
3. Provide consultation to public and voluntary organizations in assessing the needs of the elderly and in planning and developing services for them.
4. Serve as a repository of information and knowledge on the subject.
5. Stimulate the incorporation of content matter in aging into the teaching of the biological, behavioral, and social sciences.
6. Urge the development of training programs in aging in the university school of social work, public health, health care administration, and education.
7. Afford opportunities for innovative multidisciplinary efforts in teaching, research and demonstration projects.

Such centers or institutes in gerontology multiply the effect of funds invested in training in gerontology because of the output generated by bringing specialists from many disciplines together in one setting. Such centers tend to attract the more serious and competent students to their training programs.

The Gerontological Society survey (Gerontological Society, 1968) indicated that only 71 of the 335 courses in gerontology offered in 1955-66 were at the undergraduate level, and in the entire United States there was only one baccalaureate program in gerontology. Just as it has been urgent to attend to graduate training in the sixties, it is also urgent to develop the subject matter and recruitment at undergraduate and high school levels in the seventies.

A national policy on training in aging would assume a consensus on several points: (1) that the way to develop improved services to the aged is by increasing the number of trained personnel that relate directly to retired persons, (2) that improved quality of services depends upon increasing the knowledge base through the activities of trained researchers, (3) that the problems and facts of aging should be incorporated into our secondary and undergraduate levels of education, and (4) that retired persons themselves need to be provided with the opportunity to acquire new skills or roles under dedicated and knowledgeable guidance.

Components of a national policy and plan could be developed by specific agencies with competence in the various aspects. Alternative means of reaching specified goals should be discussed and implemented. In addition, a 5 and 10 years' evaluation of the progress of the programs and the relative success of different approaches should be anticipated.

What type of administrative structure should be developed to encourage manpower training and set priorities in allocation of resources for training: A statutory National Advisory Council on Aging appointed by the President and supported by Congressional appropriations, a nonstatutory Advisory Council, or enlargement of the present governmental structure such as an Administration on Aging with shared power, budget and authority?

It is recommended that a National Advisory Council of Aging be created that would be comprised of men and women who represent the full range of concerns for the aging and retired population. Its potential scope could include the consideration of training goals of the constituent agencies, Department of Labor, Administration on Aging, National Institute of Child Health and Human Development, National Institute of Mental Health, National Science Foundation, Veterans' Administration, and others whose functions involve training for research or service, or training of retired persons for new roles.

A coherent or integrated national policy on training in aging apparently will not evolve without a competent panel giving the matter continuing attention in the years between White House Conferences. Whatever administrative structure is desirable, its organization should include among its activities the establishment of a continuing survey of training activities, an evaluation of training in relation to evolving national goals, a survey of training methods and materials, the development of forecasts of manpower and training needs in terms of numbers of persons, fields of concentration and dollar costs. Since the outcomes of training are directly related to the quality of research, education, and services, placement of training subcommittees within the structure should be such as to foster communication between colleagues responsible for research education and services.

It is recommended that serious consideration be given to the establishment of a National Institute of Gerontology to meet the demanding needs of current society as well as projections of future needs. The institute should have cognizance and responsibility for implementing the various goals outlined in this report. Such an institute should be given the responsibility for research, training, and coordination of Federal efforts. A minimum budget of 25 million dollars for the first year of operation is recommended.

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NEEDED SOCIAL RESEARCH ON AGING*

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GREATER TOTAL VOLUME NEEDED

The basic *need* in research on social aspects of aging is simply the need for a *much larger amount* of such research. This, of course, requires the recruitment and motivation of more professionals for such research and the provision of more space and facilities for such research. But these two factors are in turn dependent mainly on the provision of adequate funds.

It is difficult to even estimate how much is currently being spent on social-behavioral research on aging, but all the evidence indicates that it amounts to only a few million dollars per year for the entire Nation. A recent survey by the Administration on Aging estimates that for fiscal year 1972 the Federal government will spend less than \$9 million on *all* research on aging (including all bio-medical as well as behavioral-social research, but not including the Veterans' Administration's medical and prosthetics research: Brotman, 1971). When one compares this amount with the \$46 billion total Federal outlays in aging projected for fiscal year 1972, one sees that research represents only a tiny fraction of one percent of the total being spent on special programs for the aged. Even if one were to assume that the \$9 million estimate for research is a gross underestimate, and one were to double the amount in order to be sure and include all public and private supported research, the amount would *still* be a small fraction of one percent of the total spent by the Federal government on the aged. When this small fraction of one percent is compared with the usual 2 to 5 percent of total budget spent by most large organizations on research, it appears to be little more than a token gesture. Until these token amounts are increased substantially we can expect no substantial improvement in our knowledge of the basic processes and problems of aging, nor in our ability to effectively and efficiently improve the conditions of our older citizens.

Another indication of how research on aging has been lagging behind the growing concern and programs devoted to the aged, is the fact that while total Federal outlays for the

*For further documentation and details, see the studies and reports cited in the references at the end of this paper.

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aged have increased by 73 percent from 1967 to 1971, the amounts for research have increased by only 30 percent (Brotman, 1971). In other words, while the Federal Government has increased by $\frac{3}{4}$ the vast sums spent on the aged, the amount spent on research has increased by less than $\frac{1}{3}$.

Thus the argument can easily be made that funds for research on aging should be at least doubled, if not tripled. This would solve many of the dilemmas now imposed by the meager funds available. The basic arguments should not be whether we need more bio-medical vs. social-behavioral research, whether we need research on improving the quantity vs. the quality of life, whether we need more basic research vs. more applied research, or whether we need more interdisciplinary vs. single-discipline research. The basic answer to all these "either-do" questions is that we need more of all these types of research if we are to make any substantial progress in understanding the processes and problems of aging or in solving these problems effectively.

ORGANIZATION AND COORDINATION OF RESEARCH

Regardless of the total funds devoted to research on aging, the effectiveness of this research could be improved by better organization and coordination. At present, research on aging and the control of research funds are scattered among a dozen different Federal agencies. Wasteful duplication and diffusion of research efforts could be reduced by establishing a central Federal agency for administration and coordination of research on aging, such as a National Institute on Gerontology as proposed by several bills introduced in Congress. This proposal is being actively supported by the Gerontological Society and by most leading gerontologists in the Nation.

Another proposal that would increase the coordination and fruitfulness of research on aging is the establishment of more university-based centers for research and training in gerontology. These centers would be inter-disciplinary and have funds for the maintenance of central computing, administration, and encouragement of new and continuing research on aging. At present there are very few such centers in our Nation. But these centers have proven their worth and the National Institute on Child Health and Adult Development is accepting applications for support of such centers. However, the funds presently available for such center grants are so limited and uncertain that the future of even the established centers are being threatened.

TYPES OF RESEARCH METHODS NEEDED

1. *Basic Research.*—As the name implies, basic research underlies long range progress on the more applied and evaluative types of research. Basic research in social aspects of aging has been so sparse that we are just beginning to understand the role of social factors in physiological and psychological processes of aging such as adaptation, longevity, and life satisfaction. More progress has been made in understanding the social status of the aged, attitudes of older and younger persons toward the aged, discrimination against the aged in employment, social interaction of the aged, social value systems of the aged,

etc. But most of these findings are still tentative and based on relatively small studies (discussed in section 3 below). Exploration of new areas which presently lack any systematic studies is also important.

More longitudinal and interdisciplinary studies are particularly needed because aging is by definition a process that occurs over time and because the aging process cannot be adequately understood by any one academic discipline alone. The few longitudinal and interdisciplinary studies which have been carried out have already proved their usefulness (Palmore, 1970).

2. *Applied Research*.—The distinction between basic and applied research is often an artificial one because much basic research results in findings with practical implications and applied research often results in new understanding of basic aging processes. However, with the proliferation of new programs for the aged, there is a critical need for more objective and systematic evaluation of the effectiveness of these programs. Too often "demonstration projects" have simply demonstrated that a given staff can be assembled and a program put into effect for a short time, but there has rarely been objective and systematic evaluation of the actual impact, its long-term effects, and its cost-effectiveness compared to other programs. Often these demonstration projects do not have adequate funds or personnel for such evaluation. As a result, the evidence of its cost-benefit is not convincing enough to get long-term funding for the project. The evaluations which have occurred often are attempted after the program has been put into effect. The most effective evaluations are built into the project design from the beginning.

A serious weakness of most evaluations is the absence of a control group. Because the establishment of a control group is a substantial additional expense, and because much of the public and the program personnel resist the idea of not providing services to a control group, many such demonstrations have been unable to demonstrate that there is any substantial benefit to the participants of the program compared to others. The necessity of establishing some kind of control group in scientific experiments or tests of programs effectiveness, is well established in scientific circles, but is not yet accepted by much of the public or by many project administrators. Unfortunately, this is especially true of social and behavioral demonstration projects.

Because of the expense and difficulty of doing such objective evaluation research, it is now being proposed that a special section be established in each agency with programs for the aged with the primary responsibility of evaluating their programs, perhaps on a single basis.

3. *Replication of findings*.—Despite meager funds for research, social gerontologists have managed to amass an impressive array of findings (the most comprehensive review of these findings and their implications can be found in Riley, 1968 and 1969). Unfortunately many of these findings are based on small samples in limited localities. The field urgently needs more replication and testing of these findings in other areas and on larger samples in order to establish their representativeness and generalizability, as well as to discover any variations in their applications to different populations under different conditions. Replication is particularly needed in social and behavioral re-

search because social conditions and characteristics can vary widely from one population group to another.

4. *Annual Review*.—In a growing and changing field such as Social Gerontology an annual review of recent findings and evaluations of programs, as well as the most recent statistics on the current status of the aged, would serve several important functions. It would help to establish trends of gains or losses made by the aged in our society, which would in turn help predict emerging and future needs of the aged. It would communicate research findings to practitioners and agencies who would be better able to translate the findings into better programs. Finally, by reviewing current research, it should help coordinate and stimulate areas of needed research. These functions are currently attempted by various journals and occasional books in the field, but these attempts tend to be fragmented and sporadic. The annual review would regularize and centralize such attempts. This review might be similar to the economic report which is now issued annually by the Council on Economic Advisors, and could serve the same function. Just as the economic report tells the Nation how it stands in terms of the economy, so the social report on aging would tell the Nation how it stands in providing for health, income, and social needs of the elderly (Maddox, 1971).

TYPES OF APPLIED RESEARCH NEEDED

Specific areas of applied social research which should receive high priority have been outlined and discussed in the report of the Gerontological Society's Committee on Research and Development Goals in Social Gerontology (Havighurst, 1971). This section is based mainly on that report.

1. *Income Maintenance*.—This is perhaps the most crucial problem faced by most aged in our country today. The income gap between the aged and the non-aged is growing steadily (Palmore, 1971). In order to reverse this trend, further research is needed on (a) present and future income and wealth level in old age; (b) the relationship of these levels to pre-retirement income levels, to general budgetary requirements of the elderly, and to the income-needs gap of particular aged groups, such as minorities; (c) the transitional period into retirement and the decision-making process involved; and (d) considerations of the adequacy of current income maintenance institutions and the cost of alternative financing arrangements for these institutions.

2. *Employment*.—One of the most serious problems of healthy aged persons in our society is that of compulsory retirement and other forms of discrimination in employment against the aged (Palmore, in press). In order to reduce such discrimination and increase job opportunities for the aged, research is urgently needed concerning (a) characteristics of people who need and desire work but do not have adequate opportunity; (b) methods of creating and developing jobs in the public sector; and (c) experiments with flexible retirement at all occupational levels, which would include new careers for mature and older workers, and arrangements to permit continuing partial employment after the usual retirement age.

3. *Living arrangements*.—Studies of experimental housing units which vary in population density and age composition as well as which explore innovative variations in location of common facilities, in safety and functional features, and in person-space relationships are particularly needed. Behavior-settings studies should be undertaken in a variety of community-size settings. Current and future transportation, traffic, and mobility problems of aging groups need further explorations. Also, research on choices by people and their decision in respect to housing and living arrangements should be made with middle-aged as well as with aging people.

4. *Social Services*.—There is a general and basic lack of information concerning the effectiveness of current methods of providing services for the elderly. In particular, we need research on how to organize and deliver adequate comprehensive services to the aged; the psychological consequences of how services are offered; the range of environmental situations which promote or hinder access to services; uses of public and private facilities, including schools and community centers; identification of the changes in need that accompany extreme old age; the development and evaluation of systems for providing information concerning persons with needs and for referring such persons to appropriate services; the development of new strategies and policies for gaining personnel to provide services to the elderly; the effectiveness of alternatives to institutionalization; and operational research on methods of delivering medical health services to the elderly.

Such a listing of research needs could go on indefinitely. But perhaps this brief report will serve to emphasize and illustrate the more pressing needs in this underdeveloped field: social research on the later third of our lives.

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APPENDICES

Appendix 1

ADDITIONAL PAPERS PROVIDED BY THE GERONTOLOGICAL SOCIETY

ITEM 1. RECOMMENDED POLICIES ON RESEARCH AND DEMONSTRATION FOR THE WHITE HOUSE CONFER- ENCE ON AGING

(Prepared by the Gerontological Society, November 1971)

The delivery of services for the elderly must be based upon a secure foundation of knowledge. Accountability, cost efficiency, quality, and utilization control are terms common in the world of commerce and industry and appropriate in the area of government service. These, however, are impossible concepts in the absence of research and development. The world of commerce and industry has learned that investments in research and development produce substantial pay-offs—not only in the conventional terms of the “bottom line” but also in terms of producing better products and services. A recent publication by the Department of Health, Education and Welfare, Social and Rehabilitation Service, Administration on Aging, entitled “Federal Outlays in Aging—Fiscal Years 1967–1972” claims that estimated Federal outlays in aging for fiscal 1972 will be in excess of \$46 billion. No systematic method of collecting this data is indicated; no basis of the estimates is indicated and indeed some of them are patently inaccurate. Nevertheless, some of them are clear and do indicate that well in excess of \$30 billion is being channeled through various trusts and other committed funds as well as some expenditures of discretionary money for the elderly. A first step in developing an appropriate expenditure policy for any research strategy would be the collection of accurate data on estimated Federal outlays in aging by program showing source of funds and the distinction between dedicated funds and discretionary funds. Furthermore, such a report should show a breakdown between cash grants, support of vendors, support of direct-government and non-government services to the elderly, and support of research, demonstration, evaluative studies, and such special items as rent subsidies, interest rate subsidies, etc. A basic analysis of this type would then permit appropriate budgeting of research, demonstration and evaluation of ongoing programs with appropriate balance for development of new knowledge necessary to understand aging not only today but in the future as well.

Industry has recognized that in its own self interest, research and development should receive 2-10% of the total operating budget. This has not been approached in any way in the field of government services or expenditures. One has only to note the vast expenditures through the Social Security Administration, for Medicaid (long-term care), for Old Age Assistance, for housing for the elderly, as well as other areas to recognize very quickly that virtually no quantity of research is being done commensurate with the huge investment that the people of the United States are making in the field of aging. The estimates for research in the report referred to are in no way reliable particularly when they move outside of research expenditures made in programs other than the ones administered by the Administration on Aging. Even utilizing those, however, would bring a total research expenditure to more than \$74 million. However, \$62 million of this is claimed as occurring within the Veterans Administration for medical and prosthetics research—a highly dubious figure if it is, as it is alleged devoted entirely to the aging population. Nevertheless, this is far short of the \$300 million that would represent 1% of the more than \$30 billion currently flowing through various Federal channels. We hasten to add, however, that expenditures, simply on the big service programs areas might lead to an overemphasis on the economic and behavioral science areas. As noted in our Issue IV, we cannot separate the improvement of the quality of life from the understanding of the biomedical and behavioral origins of the aging process. Research in the basic sciences as they concern the aging process are essential if we are to address and conquer some of the major scourges of old age. Accordingly, a research funding strategy must appreciate this balance and give appropriate emphasis in those areas.

ISSUE I

Federal funds for research and demonstration should be immediately increased to a level amounting to 1% of the total expenditure for health and social services for the elderly. This percentage should be gradually increased to a level of 3% over a period of 10 years. All programs of service to the elderly should have components specifically earmarked for research and evaluation.

Funds should be specifically appropriated for research, demonstration and evaluation and should be derived from new moneys rather than diverted from service areas.

ISSUE II

The establishment of a National Institute of Gerontology, as recommended in the 1961 White House Conference on Aging should be implemented without further delay. The Institute should serve the functions of coordinating, funding, and developing programs in both biomedical and sociobehavioral aspects of aging. This should include both intramural and extramural research activities.

Another reasonable immediate goal should be the establishment of multiple centers for research on aging, for attack on specialized problem areas.

ISSUE III

The Federal Government should resume expansion of research and training programs immediately, utilizing every available avenue, established and new. It is recognized that the university environment is the appropriate locus for predoctoral training. However, at the postdoctoral level, both universities and independent research centers provide loci for research and training. Research projects under individual principal investigators as well as multidisciplinary programs should receive expanded support.

ISSUE IV

Improvement of the quality of life of the elderly cannot be separated from the understanding of the biomedical and behavioral origins of the aging process. A balanced program in which the urgent needs of today's elderly are met and the support of research and demonstration is required. Such a balanced program will lay a sound foundation for the health and services essential to those who join the ranks of the elderly in the future.

ITEM 2. THE STATUS OF RESEARCH IN APPLIED SOCIAL GERONTOLOGY

Gerontological Society Committee on Research and Development
Goals in Social Gerontology*

STATUS REPORT

DECEMBER 1969

INTRODUCTION

Old age in America may represent for many the triumph of technique over purpose. In the last 70 years, changes in medical care, food production and distribution, income distribution, housing patterns, and labor-saving machinery have contributed to longer life for more and more people. The prospect of old age for the vast majority of Americans has come about without much thought given to what old age should be, or might be for most older Americans. If, for most elderly people, old age is a time when energy is low, the circle of family and friends diminished, and income reduced, what is the reasonable expectation for life satisfaction in the retirement years? What is an older person's role once his family-rearing and economically productive years are past? Are these questions for a small number of individuals, or are they relevant for a sufficiently large number and large proportion of the elderly to warrant attention as problems of society deserving analysis?

There is enough evidence to conclude that for most Americans old age is a time when the arenas of choice become constricted, the environ-

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ment narrows, and functional decrements press more and more with each passing year.

Despite the accumulation of considerable data and some particular inquiries of very high standard concerning the status of the older American, it is clear that the formulation of social policies to assure his well-being does *not* proceed today from anything but a crude data base. The elementary data, however, may suggest clues to further inquiry. They prompt speculation about some of the current trends and what they may mean to old and young Americans alike.

What are some of the salient facts about old people in America today?

1. There are almost 20 million individuals who have passed their 65th birthday. Half are under 73; more than a million, 85 or over. It is estimated that by the year 2000 there will be in the population 28.2 million people who are over 65 (1).

2. The elderly population is a changing group. While in the course of a year there is a net increase of only 300,000, 1.4 million are newcomers to this group. By the year 2000, between 45 and 50 million middle-aged adults will have reached their 65th birthday.

3. The numbers of the very old, that is, those 75 and over, will continue to increase at about twice the rate of the over-65 group as a whole, and at more than twice the rate of the total population.

4. Widowhood is apparently a normal attribute of a woman's old age. By the year 2000 there may be as many as 9 million aged widows.

5. Women significantly outnumber men in old age. Today there are 134 older women for every 100 older men. By the year 2000 the 65-and-over group will have at least 150 women for every 100 men.

6. Life expectancy at age 65 is presently about 15 years. We can expect this figure to rise significantly if cancer, stroke, heart disease, and major cardiovascular renal disease are significantly controlled or eliminated. If major breakthroughs do occur in these areas, we can anticipate an increase in average life expectancy of 16 years over and above the present 15. In other words, average life expectancy at age 65 might be 31 years.

7. The elderly tend to be economically poorer than the young. In 1966 half of the families headed by persons 65 and over had incomes of less than \$3,645, or less than half of the median income attained by younger families of \$7,922. Older people living alone were the worst off. The median income for this group of 5 million was \$1,443 in 1967. Of the 7 million elderly families, about two out of five had incomes of less than \$3,000 a year, while half of these latter had less than \$2,000 a year. About 5 million older Americans, comprising 30 percent of the 65 group living outside of an institution, fall below the poverty level. In contrast, about 10 percent of the elderly families had income of at least \$10,000 and less than 1 percent (a total of 75,000 families) had \$25,000 a year or more.

8. While the largest single source of the \$45 billion that comprises the income of the elderly is from earnings from employment, this represents a source for only about 20 percent of aged individuals. Regular retirement programs contributed about 40 percent of total income, with 30 percent coming from Social Security, 6 percent from railroad retirement and Civil Service, and 3 percent from private pen-

sion plans. In addition, about 40 percent came from veteran's benefits and 5 percent from public assistance. In other words, almost half (45 percent) of the total income of our aged population comes from retirement payments of one sort or another.

9. Private pensions will undoubtedly cover more elderly people as time goes by, but only a small number will be able to rely on this type of income (2).

10. While there seems to be some emphasis at the present time on attempting to enlist elderly people in the labor market, the trends seem to run in favor of retirement. One of the major social decisions of the next 20 years will be to determine what proportion of people over 65 should be in the labor force by the year 2000.

11. Educational attainment and adjustment in old age may have a direct relationship. In the near future, the educational attainment of the elderly will rise significantly. About 20 percent of today's older population are foreign born and received some or all education in other countries. Changes in the immigration laws since 1920 will undoubtedly reduce this proportion of foreign born elderly in the population. Similarly, the effective extension of compulsory public education to age 16 will change the picture on educational attainment that currently exists. Fifty percent of today's over-65 group never went beyond elementary school. A million elderly never went to school at all. It is estimated that about one-sixth of the elderly are functionally illiterate. Only 5 percent are college graduates.

12. Persons over 65 have one chance in seven of requiring short-term hospital care and one in 25 of requiring long-term care in any one year. The chance for long-term care increase with age. While only one in 50 of those between 65 and 72 requires long-term care, one in 15 of those 73 and over requires this care (3).

13. Older people suffer more disabilities than the general population, visit their physicians more often, and, as one might expect, spend more time in the hospital. Yet about five-sixths of the elderly get along on their own.

14. The political power of the elderly has the potential for significant growth. At the present time they represent about 15 percent of the eligible voters. In the future they will approximate 25 percent, even if the improvements in life expectancy as a result of conquering major killers does not come about.

15. Older people will increasingly become more urbanized, like the rest of the population. It is anticipated that between 75 and 85 percent of the population will eventually live in the metropolitan communities of America. There will be increasing reliance on automobiles or other systems of transportation, which may produce special problems for those who cannot afford, or, because of physical limitation, cannot manage conventional forms of transportation (4).

16. While only 1.3 million, or just under 10 percent, of the farm population is 65 and over, elderly people form a growing proportion of rural folk because of the relatively faster exodus of younger persons from farm areas.

17. Elderly people will probably form a growing proportion of those living in the central city, not because of convenience, but rather

because the central city will become more and more the locus for the poor.

The shifts, changes, and trends in medical knowledge, methods of production, transportation, economic management, and other factors will occur at an even more rapid rate than they have in the recent past. The impact of changing knowledge and techniques upon society as the aged know it and encounter it has not been carefully considered.

The entire area of social policy in the human service and support field has been approached with less precision and reliance on research data than in the physical planning policy field. Despite all of our failures in control of air and water pollution, natural resource conservation, housing and transportation, there has been more systematic analysis in highway planning, space utilization, flood control, outer space exploration, electric power distribution, and port development than in the human service field.

The issues in social gerontology are as complex as any we can expect to encounter. As Nathan Shock has pointed out, the solution to the complex problems in gerontology will require the application of research techniques of practically every scientific discipline.

Effective research must be directed toward a specific question. Research is a technical operation and not all questions can be answered in the form asked. Many broad and general questions of great social importance must be broken down into simpler and more specific questions before they can be adequately attacked by research methods.

. . . It is unfortunately true that the greater the social significance of the question the less apt it is to be answerable in terms of tightly designed experiments. However, many of these broad important questions can be broken down into a series of more sharply focused questions which can be studied.

. . . We are being asked the broad important questions before we have built up much of a backlog of answers to the small specific detailed questions. (5).

It is the purpose of this series of papers to provide a summary of some of the important research in social gerontology and to lay out what some of the priority questions are. In other words, if effort, energy, and resources are going to be expended in social gerontological research, to what should we direct our attention first?

At this point, one must take special note of the recent volume entitled *Aging and Society* by Riley and Foner. While it summarizes the results of recent social science research on middleaged and older people and interprets this knowledge in term of sociological theory and professional practice, . . . [it] is in no sense a complete compilation. It consists of selected generalizations that are empirically based and that meet criteria of theoretical and practical relevance, generality and adequacy of evidence (6).

The authors, in addition to summarizing the research in the field, have also attempted to lay out some principal questions for research. The questions tend to be the smaller, more manageable issues subject to investigation rather than the broader type questions which point the direction for social policy.

While smaller, more manageable questions are of the utmost importance, the gap between the social science investigators and social policy planners must be bridged by the framing of the broader issues. The primary question then becomes: Is it possible for us as social gerontologists to determine which areas require our attention for research?

Can we describe a system of priorities?

Despite the phenomenal burgeoning of reports, studies, investigations, articles, and volumes on social gerontology, and despite improved financing from Federal, State, and private foundation sources, the goals for research have yet to be identified. This is not to say that many competent investigators have not identified some of the research questions. They have. There is, however, no research policy at any level that represents a degree of agreement about goal and purpose that compares with that which lay behind the effort expended, for example, in achieving a lunar landing. This is not to say that there have been no comments about the direction research in social gerontology should take. A broad review of research needs in social gerontology has been prepared by Tibbitts. He has defined the goals of social gerontology as achieving an understanding of the manner in which time-related biological and psychological changes and environmental and cultural factors influence the development of personality and behavior of older adults, their roles, status, and collective behavior. He has suggested that the impact of our changing economy and the transition to an automated, cybernetic production system are major areas for study, even more important than the impact of changing birth rates, migrations, distributions and other population characteristics. He has raised three basic questions: (a) What is the position of old people in advanced society? (b) What are the roles for old people and can more acceptable roles be found? (c) Can old people respond to efforts to integrate them into a society characterized by rapid advances in knowledge and social and technological change (7)? Related questions include the general one about the impact of large numbers of older people on structured institutions of society.

Is the meaning of "work" substantially altered by large numbers of "non-producing" persons? What is the meaning of retirement to the elderly and to the young?

Several investigators in social gerontology have raised important questions relative to the value system and its components. How do values change? How are they influenced? To what extent is the condition of the older American today a result of the wishes and ideas of all Americans? Can those national aspirations and values which impinge upon the life situation of the elderly be altered? To what extent do these values affect the self-image of the elderly and hence their behaviors and expectations?

If Shock is correct in saying that we must build up "a backlog of answers to the small specific detailed questions," then it would seem that it will be necessary for us to accumulate vast amounts of information about the elderly themselves and about those approaching old age.

While the field of public health has long pursued an epidemiological approach to information acquisition, there has been less attention given in the area of social disorder. In the field of aging the application of epidemiological approaches might be suggested through (a) definition of conditions and events affecting individuals; (b) development and systems for determining prevalence and incidence; and (c) determination of gross characteristics of those affected, such as age, sex, marital status, economic status, and geographical location. There is little information about the combination of problems most likely to occur, or concerning the circumstances under which older people incur social or physical disabilities.

Empirical observation has demonstrated that increasing disability and limited energy restricts the natural lifespan of the elderly. To be sure, architects have taken into account some of the physical problems of the elderly. However, there has been relatively little exploration of the social factors related to health of older people, such as relationships with family, friends, and neighbors, social institutions, real life space, protective care and services, and mental disability. Little has been done to further our understanding of the "new" population of moderately and severely retarded and severely physically handicapped persons who today, for the first time, are surviving into old age. The conditions promoting health and social adjustment have been little explored by social gerontologists.

Unless we examine younger groups in our population as well as the aged, we will have difficulty in developing either preventive or early identification measures suitable for this problem-prone population. Ethel Shanas, who is one of the few persons who has surveyed large numbers of the elderly, has indicated that research on characteristics and needs of the elderly can have substantial impact on social policy. The absence of data about the characteristics of elderly people has led to an imbalance in research. Concentration has been upon institutional development rather than upon community services. If we are to order the allocation of resources in behalf of elderly people on some logical basis it would appear that it should be done in terms of their real needs and real characteristics. (8).

In a more general vein, one cannot overlook what all writers concerned with research in aging have pointed out: the need for more longitudinal research. Hopefully, longitudinal studies may be able to give us clues as to the predisposing factors toward success or failure to achieve social adjustment and contentment in old age.

To be sure, a good deal of research must be directed toward the accumulation of basic information on the characteristics of the elderly, on the value systems of our society, on the characteristics of younger populations who are to be the elderly of the future, as well as on trends in economic conditions, housing, population, transportation, labor force composition, and education.

Nevertheless, social gerontology has a special obligation to contribute material useful for the formation of social policy, particularly when such a large segment of the population is involved. To that end, five steps seem essential.

1. *We must articulate with some degree of care objectives for life in old age.* Social planning might be taken to mean the effort to plan for

the fate of a whole society. However, that fate must be expressed in objective terms. We must be prepared to come up with objectives that can be quantified; Income necessary to provide x goods and services; housing of specified quality; health care; effective social centers; and so on.

The framing of objectives must encompass both the long and short range. Goals, that is, must be formulated for today's older American, as well as for the older American of the year 2000. The language of objectives must distinguish between *activities* and the *outcomes* of activities.

The social planners must attain the precision of the social researchers in developing statements of objectives. Without such precision it will not be possible to indicate what the research goals in social gerontology are for society. White House Conferences, in the traditional sense, are not adequate for this task, nor are the activities in which health and welfare councils indulge themselves.

2. *We must distinguish among those human conditions which are fit objects for change through applied social policy and those which are not.* Some elements of human wretchedness can be affected by social action, but not all—particularly if we eschew the conditioning of Huxley's *Brave New World*. There is legitimate social policy which leaves some problems to the individual to solve. This is particularly true in the society which seeks to meet the twin conditions of providing care yet maintaining independent choice.

3. *We must assess the value system in general and the value systems of the very old, the newly retired, and those facing old age.* What do each seek for in their old age and what do they expect? An assessment of the value system will take into account conflicting values and may make easier for us understanding what the tradeoffs are. For example, we have produced an old age and survivors insurance system which is based on a contributory principle. This principle has high value, but, having been tried, it has been found to produce a model that can condemn the old to poverty, a money-giving system which embraces virtually no services.

4. *We must assess the state of knowledge relative to life in old age and identify the gaps in some organized way.* What are the key researches yet to be done, and what systematic approach can we suggest for identifying the gaps and the questions that are of importance in the formation of social policy? In this respect, we would call upon the Administration on Aging, or, indeed, the Department of Health, Education, and Welfare itself, to give leadership to such examination by financing an effort to identify these gaps.

5. *We must establish a method and system for understanding research in line with social policy and the gaps that we have identified.* Funding should follow this kind of priority scheme; and federal funding, which, after all, constitutes the major portion of funding in social gerontological research, must follow some kind of well-understood system that has meaning to all in the field.

It is time for a national idea about aging, a new approach to social policy; indeed, a new social policy itself.

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SUMMARIES

I. WORK, LEISURE, AND EDUCATION: TOWARD THE GOAL OF CREATING FLEXIBLE LIFE STYLES

As American society has become more and more highly industrialized, the adult segment of the lifespan has become much more open to changes and to choices. The ideal goal for an individual living in an automated society is to achieve a flexible life style—one that can change to meet new demands and new opportunities. The counterpart goal for society, if it is to act responsibly toward its citizenry, must be to help the individual maintain a sense of competence in the face of change by providing him with realistic possibilities for personal growth throughout life. The realization of this last requires social and economic policies that provide adults of all ages with a range of options for work, education, and free-time activities. Such policies, in turn, need a firm basis upon research and the results of pilot programs concerning: (a) the economic system, which provides work and income; (b) the education system, which provides training, stimulation, and a sense of competence for work and free-time activity; and (c) the emerging free-time system, which includes play, contemplation, and voluntary unpaid services.

A. *The economic system: the labor market and the individual work career.* New occupations, new specialties, and new jobs emerge continually. In our highly industrialized economy, only one man in five will remain in the same occupational category for his entire life. The job change inherent in and, indeed, required by our current economy is, however, seldom orderly and coherent. If we ignore both the occupationally highly-stable professionals and the occupationally highly-unstable casual laborers and consider only the majority of workers at the "common man" level, we find that less than a third of them spend

half or more of their work lives in positions of employment that can be arranged in an ascending order of prestige and achievement. We need a national policy in support of efforts that will reduce the chaos of the labor market and thereby strengthen the individual's possibilities for achieving strong identity through satisfying work. Such policy needs to be based on research concerning: (a) the characteristics of people who need and desire work but do not have adequate opportunity (such as women, the handicapped, and older workers) as well as those presently considered by industry to be unemployable for emotional or educational reasons; (b) the creation and development of new jobs in the public sector; and (c) experiments with flexible retirement at all occupational levels, which would include development of mid-career change programs, of new careers for mature and older workers, and arrangements to permit continuing partial employment after the usual retirement age. Programs now underway in the public sector need to be continued and evaluated on a long-term basis, with results compared across programs and given wide circulation. Many pilot programs now operating in the public sector are likely to be of value in designing programs for the private sector.

Along with such research and development, attention must be given to measuring the losses that would be borne by employers if they adopted flexible retirement and mid-career change plans.

Work aimed toward producing more precise measures of functional age is also urgently needed. Extensive research upon the relationship of age to functional abilities undertaken with civil airline pilots has shown that ability varies widely among persons of the same age. Such work should be extended to other occupations. Age limitations for employment are both socially and economically wasteful, since chronological age is rarely a reliable index of potential performance.

Private pension plans are growing in importance and in popularity among workers, but little is known of the relative advantages and disadvantages of the many and various pension schemes. As well as studies of existing data that will relate vesting provisions to labor turnover, we need longitudinal investigations of young people entering the labor market at the present time. How long does it take beginning workers with varying characteristics and qualifications to settle upon a lifetime job? How important to prospective employees are the pension benefits an employer can offer? Only longitudinal research can provide adequate answers to such questions.

B. The education system. Education has traditionally been viewed as an activity appropriate to the first quarter of the lifespan. In an economy that requires constant renewal of knowledge, however, we are likely to turn more and more to the concept of life cycle education. Experimental adult education programs should be supported, with emphasis on enrollment of persons over 50, an age at which participation now drops off rapidly. Studies are needed of the educational activities of persons in occupations where early retirement is normal (such as the military, law enforcement, and athletics). Special attention should be given to the evaluation of current preretirement programs.

As knowledge is gained concerning the adult years, efforts must be made to incorporate it into curricula for the training of professional workers. Just as child development was found at the turn of

the century to be a necessary area of study for physicians, social workers, and teachers, so now is adult development and aging coming to be viewed as necessary for attaining professional competence in work with adults. Calls are now being heard for a new service occupation, *personal care*, that will incorporate the specialties of many occupations in the service of providing protection and maintenance support for our growing population of elderly. Basic knowledge of the "total adult" will be necessary in order to integrate the diverse skills from such fields as law, nursing, and occupational therapy into a coherent course of training.

C. *The emerging free-time system.* The proposition advanced in this Report is that people in the United States are on the verge of a fundamental reorganization of the adult lifespan that will mean the more even and continuous distribution of education, work, and leisure throughout the course of adult life.

Initial changes in this direction are now evident on various fronts. The average man now has time to seek training for a new job. The work week has shortened, the vacation lengthened. As work becomes more flexible, it is possible to create a more flexible life, one that is open to a variety of possible options and developments.

The key question is—To what extent can man make good use of his increased free time? It is well to make a distinction between free time and leisure. Free time represents potential opportunity; leisure, what develops when people use their free time to get more meaning out of life.

In an ideal socioeconomic structure in which the basic material needs of middle-aged and older people are adequately met, it becomes important to set up arrangements in the society to assist people to enjoy true leisure in an active, involved, creative sense. Clues to the nature of such social arrangements might come from the study of how people currently use their vacations, how they combine work and recreation when they are really free to develop their own unique combinations, and how they make the transition from work to play.

The Uses of Free Time.—Among the people who have studied the uses people make of their free time, there is agreement that three broad categories will cover the activities of people when they are not working for money or doing the things required for their personal care and family obligations:

1. Study and contemplation.
2. Play or recreation,
3. Voluntary non-paid service.

People who are in a position to organize their adult lives so as to maximize satisfaction will combine work with free-time activity in ways most desirable to them; and they will select and combine a variety of free-time activities.

The social roles of the elderly need to be studied to find out how the social and personal needs of older people can be satisfied through changes in the distribution of effort and time among the various social roles available to them and as time is gained by a decreased need to expend effort in the worker role.

Conclusion.—Flexible life styles depend to a considerable degree on the opportunity for free choice and the use of this opportunity by people. Therefore the limitations on free choice should be studied

critically. For this reason we have suggested the need for research and experimentation with the rigidities in the American work, educational and leisure systems, such as automatic and compulsory retirement, lack of vested pension plan, arbitrary age limits on employment in certain occupations, etc.

The device of voluntary work for no pay or limited pay has been expanded recently through the development of VISTA, the Peace Corps, and discussion of a National Senior Service Corps. As the principle is developed of the use of public funds to support a wide variety of service activities for needy old people and poor people, opportunities for voluntary service will increase. At the same time, it seems probable that a large number of non-paid or low-paid roles will be created in the field of the performing arts (theater, ballet, orchestra) under the auspices of the National Foundation for the Arts and Humanities.

As these choice-enhancing opportunities develop, there should be research on the people who take them. What kinds of people make use of these opportunities, and what values do they obtain?

II. LIVING ARRANGEMENTS OF OLDER PEOPLE: ECOLOGY

Physical environments may either enhance and complement the quality of life for the aging adult or restrict the opportunities for independence and satisfaction in the later years.

Although particular characteristics of communities and dwellings are known and data concerning aging adults in the United States are available, relatively little behavior-environment research has ever been conducted relevant to the processes of human aging.

It has been our purpose to identify the specific characteristics of living environments which should be of particular concern to applied research in social gerontology.

Features of neighborhoods and residences which are the product of physical deterioration, economic neglect, and rapid social change have special impact on the function of the aging person. These impacts are visible in known problems of isolation, immobility, health accidents and the utilization of health services, robberies, and attacks, etc.

Public policy in the United States has already given considerable social priority to the problems of urban growth and the crises of cities. The Model Cities Programs, designated as remedial demonstrations by local, state and federal governments, appear only tokenistically to include concern for the aging adult.

Housing programs supported by government provide under 10 percent of the new construction needed by the elderly, nationally, and probably no more than 2 percent of needed new housing for the rural aged.

Were monies to be made available for a considerable greater volume of housing earmarked for the population over 60 years of age, there would be little scientifically sound basis upon which structural, size, spatial or locational decisions, with respect to such housing, could be made.

Inadequate attention has been paid to the practical alternatives in environmental improvement often more natural to people than age-

segregated apartment enclaves, retirement villages, or congregate facilities. Standards for rehabilitation and conversion of existing housing and neighborhoods, which are congenial to age heterogeneous populations and multigenerational families, have yet to be specified.

Certain applied research directions and methodologies with regard to the living arrangements and ecology of older people can now be specified.

Methodological Problems

1. Planning of more congenial environments for the aging adult requires refinement of our statistical descriptions of sub-populations within the larger group called "the aged."

a. Because of the variability inherent in the process of human aging, age data should probably be made available in 5-year groups for populations over 50 years of age.

b. "Head of household" data are inadequate for planning the housing needs of special family groups in the population, e.g., living environments and behavioral patterns of spouses of those over 65, themselves 50-65, need specification.

c. Life styles and environmental needs of such special groups as elderly, urban, single black men; or grandparents living with children and grandchildren; need to be explored and specific remedies for problems demonstrated.

d. The range of "immobilities" (levels of function) of aging groups need to be specified in ecological research.

2. Sources of continuing descriptive data on aging populations are potentially available to researchers and planners but have been inadequately tapped and never analyzed for comparability. A central clearing house for data relevant to aging and environments, to which, for example, employers, insurance companies, and the many separate data collecting arms of public agencies would contribute, is now urgently needed. It is certain that such centralization would result in the visualization of unnecessary duplication and of non-comparabilities in descriptive methods.

3. Both neighborhood and residential settings within which aging adults live and move require specification in terms of the known needs and activities of the aged. Variables which appear of most potential value to planning environmental changes are:

a. Physical suitability of dwelling units and outdoor spaces;

b. Age specific population densities and ratios of older age groups to the total population of the area;

c. Availability and accessibility of selected commercial and social services inside and outside of an area;

d. Characteristics and use patterns of varied transportation modes, public and private, by specific age and social sub-groups within the population;

e. Physical and social barriers to optimum functioning of aging groups which prevail or are developing in an area;

f. Economic resources for neighborhood development and housing which are available to, are understood by, and utilized by aging individuals and communities.

Research Needs

1. *Experimental housing units* provided for defined population groups in a defined range of environmental settings. Such housing should: (a) systematically vary in population density/age, (b) explore innovative variations in location of common facilities, in safety and functional features, and in person (family)-space relationships.

2. *Behavioral-setting studies* should be supported in a variety of community-size settings. Study of the interaction of adults in old established settings should be supplemented by study of interaction of adults in a variety of experimental settings.

3. Current and future *transportation, traffic, and mobility* problems of aging groups need further exploration. Innovative solutions need to be systematically demonstrated. Setting variables and age-function variables need to be carefully controlled in such demonstration research.

4. *Research on the choices* made by people and their decisions with respect to housing and living arrangements should be made with middle-aged as well as with aging people. There is no guarantee that the choices and decisions made by the contemporary generation of older people will also be made by the coming generations who will differ from them in education and health status. Furthermore, the changes of housing and living arrangements in metropolitan areas will present the next generations with substantially different problems of choice and decision than the present.

III. SOCIAL SERVICES FOR THE AGED AND AGING: SUGGESTED RESEARCH PRIORITIES

The majority of aging and aged adults in the United States do not live in institutions. Rather, they remain in their communities and manage without the help of organized social services. When families and individuals require social intervention because of age-related needs, the capability of communities to respond effectively and efficiently is often deficient. Flexible and alternative programs for providing income maintenance, health services, housing, and work and leisure activities are often either not apparent to the persons in need or are not, in fact, available.

Because of the varied and changing needs of individuals over the later years of life, social services need to be comprehensive, to provide services ranging from simple information to immediate direct service during a time of crisis. To achieve this goal it is necessary to clearly identify the elderly who require services, to ascertain their needs and requirements, and to learn how to deliver services to them most efficiently so that their lives can be permanently changed for the better.

Research is particularly needed to clarify the following: (a) the effect of social services on the functional capacity of the individual; (b) the relative values of services offered on the basis of age segregation and those offered in a mixed-age situation; (c) the degree to which older persons may determine which services are best suited to meet their needs; (d) the special requirements of ethnic and economic sub-groups; (e) effects of possible amelioration of the aging process

or changes in the social order upon requirements for community services; and (f) a basis for projecting the future service needs of the aged.

There is also a great need for the development of a variety of models to demonstrate, explore, and serve as guidelines for the provision of services. These models should focus both upon the provider of services and upon the consumer. In all cases, it is of extreme importance that evaluative research be designed into each model tested.

The major recommendations regarding research needs reflect a basic lack of information concerning the effectiveness of current methods of providing services for the elderly. In particular, we need research on:

1. How to organize and deliver adequate comprehensive services to the aged.
2. The psychological consequences of how services are offered and how this affects consumer usage.
3. The range of environmental situations which promote or hinder access to services.
4. Uses of public and private facilities, including schools and community centers, with demonstration programs, backed with evaluative research on how these institutions may be used more effectively.
5. Identification of the changes in need that accompany the move from late maturity to extreme old age. For this task, longitudinal research will be needed, both with representative samples and with samples from minority groups.
6. Development of a variety of instruments or social indicators to (a) appraise the effectiveness of service; (b) determine disability or functional capacity; and (c) identify individual service requirements.
7. The development and evaluation of systems for providing information concerning persons with need and for referring such persons to appropriate services. Such systems must have the function of evaluating the relevance and quality of service ultimately rendered, as well as that of evaluating and classifying needs.
8. Experimentation to determine the relationship of housing and other environmental factors to the ability of the elderly to manage on their own.
9. The development of new strategies and policy for gaining personnel to provide services to the elderly.
10. Operational research on methods for organizing medical and health services and delivering care to the elderly. Attention must be given to the problem of ensuring that older people get their just share of such care.

IV. ECONOMICS OF AGING

The purpose of this paper is twofold: one, to briefly discuss the nature of the income problem in old age by describing the behavior of earnings through worklife, the drop in income at retirement, and the subsequent deterioration in income position during the retirement period; and two, to identify and discuss a number of important areas where there is a need for greatly expanded economic research activity.

Incomes of the present aged are significantly lower than those of the younger population. In 1967 the median income for families headed by persons aged 65 or over was \$3,928, compared with \$8,500 for families with heads aged 14-64. Comparable medians for persons living alone were \$1,480 and \$3,655, respectively.

Over and above social security benefits and benefits from private pension programs, there is very little income from savings for the older population. Furthermore, this income tends to be constant, while the cost of living rises. Older people generally do not share in the extra income created by rising productivity and rising per capita gross national product.

The economic status of the future aged is primarily dependent on: (a) the earnings-consumption pattern during worklife and hence the extent to which private savings are accumulated for the nonworking period; (b) the division of workers' pay packages between current wages and private pension claims; (c) the retirement age decision; and (d) the extent to which the future society is willing to transfer income claims from workers to retirees via the tax-benefit mechanism. In addition to these variables which together explain the dollar amount of retirement income and financial claims, the ageds' economic situations are colored by the forces which determine the purchasing power of their money income and the factors which change the ageds' income status relative to that of the working population (inflation and economic growth).

For most families, the income problem in old age grows out of the cessation of earnings of one or more family members and the failure of private savings and/or private and public pensions to replace a sufficiently large proportion of these earnings. For a significant number of retirees, however, very low incomes were a problem throughout worklife; some form of income maintenance was in order even before they became too old to work.

Research into the income maintenance issues as they pertain to the aged requires a focus somewhat out of the mainstream of current poverty research devoted to raising low incomes. In the case of the elderly one must be concerned not only with those who have always lived below the poverty line, but also with families whose earnings during worklife provided a comfortable level of living and whose retirement incomes are now meager. While recommendations for some minimum income for all persons may well grow out of the current study focused on problems of poverty-level groups, such proposals are not likely to attend directly to the problem of substantial income loss associated with retirement and the subsequent deterioration in income position during the nonworking years.

Income-maintenance issues as they relate specifically to the elderly require further research into (a) questions of the present and future income and wealth levels in old age; (b) the relationship of these levels to pre-retirement income levels, to general budgetary requirements of the elderly, and to the income-needs gap of particular aged groups; (c) the transitional period into retirement and the decision-making process involved; and (d) considerations of the adequacy of current income maintenance institutions and the costs of alternative financing arrangements for these institutions.

Major recommendations regarding research needs concerned with economic aspects of aging are:

1. More detailed tabulations and analyses of existing data and development of new data to more clearly differentiate the economic circumstances of various aged subgroups.

2. Expansion and updating of simulation projections of the economic circumstances of the future aged populations.

3. Further research which investigates the implications of assets held by the aged (particularly home owners) on their economic well-being.

4. Development of new measures of income adequacy—especially measures which relate retirement income to preretirement earnings—and refinement of existing measures.

5. The expansion of longitudinal research to supplement cross-sectional surveys (which tend to hide the changing status of the individual).

6. The gathering of more information regarding the population's retirement expectations and other attitudinal questions.

7. Additional econometric studies of the labor force to help understand the motivations for employers' retirement policies.

8. More investigations of labor-management attitudes and practices regarding middle-aged and older workers.

9. Constant study of various proposed changes in the current social security program.

10. Comparative studies of public pension systems in other countries.

11. Estimates of cost and effectiveness of various proposed reforms in the area of aged income maintenance for use in establishing national goals and priorities.

12. Improved estimates of future private pension coverage and benefits.

13. Systematic study of the changes occurring in private pensions—especially benefit levels, vesting requirements, and survivor's provisions.

14. Continuing research to evaluate the operation and adequacy of Medicare and Medicaid, along with special attention to alternative ways of financing institutional care for the very old.

Appendix 2

WHITE HOUSE CONFERENCE ON AGING

November 17, 1971.

Hon. ARTHUR FLEMMING,
*Chairman, White House Conference on Aging,
Washington, D.C.*

DEAR ARTHUR: In response to your inquiry about funds for research on aging appropriated to the National Institute of Child Health and Human Development, I am glad to be able to clear up the confusion which has surrounded this subject.

As you know, the Congress appropriated \$4.5 million for aging research above the President's 1972 budget request. The Office of Management and Budget promptly apportioned the full appropriation. We agreed with OMB, however, that we would not spend above the level of the President's budget until we had worked out a fiscal year 1972 spending plan for all of HEW's funds. In developing this plan, we requested and obtained approval for our spending the entire \$4.5 million increase.

The confusion surrounding the availability of this \$4.5 million, it would seem, is thus a consequence of the interval between the OMB apportionment and the development of our spending plan. The delay has not, however, caused any postponement in the award of grant funds by the National Institute of Child Health and Human Development, since the Institute would not in any case have reached the \$4.5 million until late in the fiscal year. It is now clear, in any case, that the funds will be available when needed.

I hope this clarifies the situation.

With kindest regards,
Sincerely,

ELLIOT L. RICHARDSON.

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