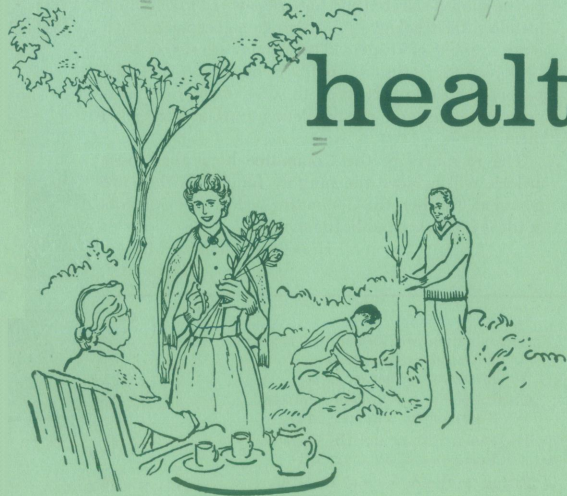


Old age- Physiological aspects.

American medical association. Council on medical service.
Committee on aging.



health aspects of aging

Chicago, 1958

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INTRODUCTION

The Committee on Aging of the American Medical Association was organized late in 1955. At an early meeting of this group it was agreed that two of the principal objectives of the Committee were to stimulate medical society interest in the problems of aging and to impress upon the practicing physician the important role he can play by assuming community leadership to enrich the lives of older citizens.

To provide some basic background material on the subject for physicians and interested lay groups, the Committee on Aging has planned to sponsor several series of articles. The first series, consisting of eleven articles, was published in *The Journal of the American Medical Association* in 1957. This series, plus an article

on "Aging and Chronic Illness" is reproduced in this pamphlet.

The author of each article is a recognized authority on the subject selected and has endeavored to minimize technical terminology in order to gain acceptance by a large number of readers. The articles are not of textbook format or substance but have been written for the purpose of calling attention to some of the health aspects of aging and of stimulating further interest in them.

The members of the Committee hope that these articles will achieve the purpose for which they are intended. Further, the Committee welcomes comments or ideas for future publications.

H. B. MULHOLLAND, M.D.

Chairman

CONTENTS

	PAGE
<i>Introduction</i>	2
<i>Aging and Chronic Illness</i>	3
H. B. MULHOLLAND, M.D.	
<i>The Oldster and His Doctor</i>	10
WINGATE M. JOHNSON, M.D.	
<i>Stress and Exhaustion</i>	17
EDWARD L. BORTZ, M.D.	
<i>The Role of Exercise in the Aging</i>	22
PAUL D. WHITE, M.D.	
<i>Health Maintenance for the Oldster</i>	26
HENRY A. HOLLE, M.D.	
<i>Nutritional Problems in the Aging and Aged</i>	30
HERBERT POLLACK, M.D.	

	PAGE
<i>Rehabilitation and Restorative Services</i>	34
HOWARD A. RUSK, M.D.	
MICHAEL M. DACSO, M.D.	
<i>Control of Fatigue in Older Persons</i>	40
THEODORE G. KLUMPF, M.D.	
<i>The Senior Citizen and His Community</i>	45
FREDERICK C. SWARTZ, M.D.	
<i>Posture in the Aging and Aged Body</i>	49
JOSEPH T. FREEMAN, M.D.	
<i>Housing as a Basic Need of Senior Citizens</i>	56
EDNA E. NICHOLSON	
<i>Preparation for Retirement is a Must</i>	65
ELIZABETH BRECKINRIDGE	



AGING AND CHRONIC ILLNESS

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Medical science may rightly be held responsible for two of the major problems facing the world, and more particularly, the United States, today. In 1900, for example, the average duration of life was 40 years. Now men live to 68, while females have a life span of 70 plus, which can be attributed to several factors. One factor is advances in preventive medicine by inoculations for typhoid, diphtheria, tetanus and such; two, better sanitation, improved housing and adequate nutrition. To this must be added contributions made by antibiotics, better and more frequent hospital care and the major advances in medical research would have made this one of the healthiest nations of the world. It is important to remember that in 1900 there were only three million people 65 years of age or older living in this country. By contrast, in 1956, there were 14,500,000 people in this age group. By the year 1965, it is predicted that there will be 25,000,000. Perhaps a more important figure is that there will be 75,000,000 over 45 and of this number with the present morbidity rate, approximately 20,000,000 of these will have cardiovascular disease of some sort, another twenty million some form of arthritis, and fifteen million mental disorders.

With many of these people in the labor force or actively employed, the impact of this group on our general economy is bound to be of great magnitude. The average age of retirement, for what was considered good and sufficient reasons, has been

set at around 65 for labor, industry and educational institutions. Now, if one looks around, he finds many individuals who are perfectly capable mentally and physically of making an important contribution to whatever position they hold, at this time of life. Indeed, their wisdom and skills are oftentimes ripened into maturity. To cope with this problem, there must be a realization that retirement age should be physiologic rather than chronologic. Younger people must be served but so must the oldster. It should be possible to use these individuals in a consultative capacity, letting the young still achieve the top jobs. To accomplish this will necessitate broad education of the public and others concerned in the complexities of the situation. Unless this is done, one can envisage serious consequences in which the young will have to carry this burden because, without work, they must be supported. Recent surveys have conclusively shown that most of these people want to work, with only one in twenty-five indicating a wish to retire. Government grants for the purpose of supporting this group cannot go on increasing to astronomical levels.

Loneliness, rejection, lack of motivation, and insecurity are the result of mental and physical inactivity, which may follow in the wake of enforced retirement.

In homes for the aged, emphasis on recreational and occupational therapy have resulted in an as-

tounding reduction in the suicide rate in the old age group. Preparation for this era is now receiving its proper emphasis with pre-retirement counseling, development of hobbies and adult education, which bring new interests better integrated to this period of life.

What are the responsibilities of the medical profession in this era? First and most important is to continue present research activities to the broad aspects of this problem, endeavoring to fathom the reasons why cells age, which may involve a study of intricate metabolic functions of these cells. Structurally, many may show little or no change, so one must seek a possible solution in the derangement of the enzyme systems. It is now known that young cancer cells have an entirely different basic metabolism than is found in the normal cell. Environment and the stress of modern life may also modify and contribute to the aging process, which is a field just now being recognized. Two decades ago, medical literature was replete with discussions of vitamins and deficiency diseases. Nowadays, these conditions are almost unknown in the civilized world. By contrast, the line must be held against over-nutrition. Obesity is one of the penalties of modern society, and our way of life and its affect on longevity is unquestioned. More recently medical and lay literature is filled with a discussion of the role that excessive intake of fats and cholesterol may play in the important problem

of arteriosclerosis. Should we follow the "Bantu" and other races, who eat a low fat diet, or is it the total fat which is important, or, perhaps the type of vegetable or animal fat ingested? What part does an elevated blood cholesterol play in the hardening of the arteries? An answer to this might delay the aging process and further increase the life span. In my opinion, there is no reason as yet to somersault ourselves into changing the cooking and eating habits of our patients, but keep an open mind about this question. Maintenance of a normal weight is paramount in the older age group.

Further efforts at primary prevention of disease must continue unabated. The widespread use of polio vaccine is an impressive example of a method of attack. Secondary prevention through the early detection of disease entities, through periodic check-ups, the use of antibiotics and perhaps the judicious use of hormones may make further contributions in this area. One should pause, however, to consider the possible ill effects of many of these agents, a striking example of which is prolonged and excessive use of the steroids. The use of such agents as penicillin and the sulfonamides in the prevention of recurrences of rheumatic fever is now well established.

It is not sufficient for physicians to just treat the sick. They must be aware of the ever growing population over 65, which increases at twice the rate

of that of the general population. With its myriad of problems, economic, social and medical, what a political pressure group this 70,000,000 people over 40 years of age can be.

Aging brings in its wake the problems of long term illness in ever increasing numbers. Of this age group, about two fifths have some form of disability, and not only are they more susceptible to disease states but also to accidents. Of these individuals 1.1 million are confined to hospitals, and another 4,000,000 are in their own homes.

For seven years, the Commission on Chronic Illness has studied this problem, resulting in the first volume containing facts and recommendations in the care of the long term patient, and is just now published. It is replete with facts, figures, suggestions and recommendations. What are the major difficulties encountered in this group? First, these patients should be located in the proper type of institution, suitable to their needs at the particular stage of their illness. Every general hospital of any size should have an active unit devoted to the care of the chronically ill where such an individual can be cared for during the acute stages of his disease; have his condition properly evaluated; initiate the necessary rehabilitation proceedings, and, above all, carry out the best disposition of his case for future care.

In a few cities, there are separate chronic disease hospitals which not only care for the chronically ill

but which must also contain all of the features necessary for the operation of a general hospital. In the opinion of the Commission on Chronic Illness, this usually is an unnecessary duplication of equipment and services. On the other hand, it cannot be denied that such institutions do a marvelous job, but it is a luxury.

If general hospitals or other institutions caring for these people could also have in close physical proximity a unit or facility which would give some general care, minimal nursing and medical supervision with rehabilitation tailored to the patients needs, much might be done to alleviate the high cost of care necessitated by continued confinement in a general hospital. I am now particularly talking of so-called convalescent home type of facility. It is common knowledge that many general hospitals are now caring for patients who would be better off in the less expensive structure. A committee under the chairmanship of Dr. Howard Rusk recently surveyed the city hospitals of New York City and found that 20 per cent of their patients should be in such an institution, where they could be cared for at rate of \$6 or \$7 per day as compared with the average rate of \$21.00 in New York City hospitals. Not only is the cost less but they are not surrounded with sick people, but live in an atmosphere in which they are stimulated to become self-sufficient. Patients with ununited fractures of the hip and hemiplegia are examples of those whom

can be given occupational therapy, social activities, companionship and recreational leadership, much of which could be carried out by aides or orderlies. It is estimated that this would save the City of New York six million dollars per year. It is also in the realm of possibility that with the decreasing morbidity of tuberculosis that some of the beds in these institutions may be available for the chronically ill. Indeed, some states have already turned over some of their tuberculosis beds for this purpose.

Nursing Homes

These institutions do play an important role in the care of the long term patient and the aging. There are now, according to recent surveys, 400,000 people in such facilities. These reports have shown the necessary role that nursing homes play, but they also have pointed up the wide variation in the character of service rendered, from custodial care with little or no medical supervision, fragmentary nursing and no rehabilitation, to excellence in all of these categories. It is up to the states and communities to see that these important units are not only well regulated but that their physical appointments are up to standard. Many states, such as Washington, have categorized their nursing homes, some for general medical care, some for aging and others for the senile and, indeed, special ones for rehabilitation. However, efforts at rehabilitation should be made in every home.

Foster Homes

These institutions are necessary for the single person or individuals without a home and, in most communities, there exists houses and families which may give this type care to the forlorn aged, or chronically ill person. Incidentally, of no little consequence is the fact that the rendition of this service provides income for those caring for these people.

Patients' Homes

As before mentioned, 4,000,000 of the chronically ill are in their own homes, which is the proper location for them provided that the proper surroundings and services are available. These older and chronically ill people are much happier if they can be cared for surrounded by their own people and cherished belongings. It should, therefore, be the ultimate purpose wherever possible to get chronically ill patients back in their homes. It is most essential, too, that their own personal physician be constantly appraised of the status of his chronically ill patient wherever he may be, and that eventually the family physician should again assume the responsibility for his treatment and care. To be sure, the family doctor will need some auxiliary help, and let me mention that it is well recognized that this help is in short supply.

Such services as are rendered by the visiting nurse, who takes care of the minimal medical needs, are necessary and valuable. Of more recent development is the care rendered by so-called homemaker services, who do the household chores, cooking, order food, even take patients out in a wheelchair, combining all of the small things that tend to bring comfort to the patient. I am certain, too, that one can stimulate the local citizens, women especially, to lend an important helping hand. Every community has a nucleus of such individuals who have the urge to help others. There may be too many untouched resources, such as the use of nurses on a part-time basis, many of whom are married and raising a family, who would like a few hours work every day.

Community Hospitals

Since the Hill-Burton Act has built small hospitals in rural areas, these institutions too have come to play an important role in the care of the aging and chronically ill, even to the point of contributing to the financial support of these structures. Perhaps more emphasis should be placed on this type of care in the smaller community especially, and some thought should be given by those staffing these rural hospitals to the care and rehabilitation of this group. Every doctor must be concerned, even though his contribution is not a major one.

Rehabilitation

If the care of the chronically ill is to be successful, there must be an appropriate and adequate rehabilitation facility available in every set up. Without this only desultory care can result. With rehabilitation, many disabled persons can be self-supporting and, indeed, contribute materially to the support of others. In California, in one instance, \$8,000 was saved in welfare costs by the rehabilitation of one individual. It is estimated that 2,000,000 men and women of working age could, if provided with rehabilitation, become productive. In 1953, it was estimated that \$30,000,000 in income taxes was contributed over a three year period by patients who had been rehabilitated, which exceeded grants for this purpose by more than 30 per cent. In 105 physically disabled individuals, seventy-six were rehabilitated at a cost of \$18,287 with an annual savings in welfare costs of \$440,000! Occupational therapy and teaching new skills may pay marvelous dividends. One firm in Connecticut has evolved a unique idea, hiring only people more than 65 years of age or those who are disabled. Their success has been phenomenal. Rehabilitation cannot always be afforded in small communities, but it is quite possible to set this up either on a regional basis or have traveling teams in rural areas to supply this need.

Community Organization

Fundamental to the success of caring for the aging and chronically ill is the necessity of having a live and functioning community organization which is cognizant of the needs, aware of the existing facilities and able to advise the physician where his patient can be properly cared for at the particular stage of his illness. Too, there must always be a free flow of patients from one institution or set-up to another and no one should be allowed to remain in a facility not suited to his needs.

Objectives


The American Medical Association has recently set up a Committee on the Aging, which has the following objectives:

1. To explore problems concerned with the medical, biological, psychologic and social aspects of aging;
2. To collect data concerning energy maintenance, fatigue control, and the preservation of specific motivation;
3. To promote research in these areas;
4. To inform the medical profession of the availability of information regarding the aging processes;
5. To stimulate medical society interest in the problems of the aging; and

6. To impress upon the practicing physician the important role he can play by assuming community leadership to enrich the lives of older citizens.

To face this responsibility, we as doctors, must make ourselves take an active interest in these problems, which, if not solved satisfactorily by us, will in time be taken over by Government. After

all, our communities may accomplish much, not only in helping to finance such facilities, realizing that in the long run by so doing it may reduce taxes and costs, but also using such aids as social security, comprehensive insurance, annuities and retirement plans as resources in the financial care of these patients. We have the training, the intelligence and all that we need is the will to do the job.



THE OLDSTER AND HIS DOCTOR

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In medical practice at its best, no one factor is more important than the proper relation between doctor and patient. This factor assumes particular significance in dealing with older patients. So much of pediatric practice consists of giving routine immunizations, recording weights and measurements, and prescribing formulas for various ages that a well-trained nurse can take over a great many of the pediatrician's duties. The doctor can usually stay in the youngster's good graces by giving him a lollipop or bright piece of cardboard after the nurse has done the dirty work of puncturing his skin.

The oldster, however, is not so easily managed. The years have taught him caution in bestowing his confidence, and his diseases are apt to be of a chronic or recurrent nature. A satisfactory relation with his doctor is most important to the patient's well-being and peace of mind. Such a relation is most often one that has developed over many years. The advice of a doctor who is himself well matured is often more acceptable to the elderly patient than is that of a younger man. It is frequently true, however, that a young doctor who really likes people—and no man who does not should be a family doctor or an internist—can win the confidence and even the affection of his older as well as his younger patients. (Witness Rex Morgan, M.D., and his favorite patient, Melissa.) Whether a doctor be young or old, he will need

special reserves of patience and equanimity in dealing with many of his elderly patients.

Attitudes Toward Aging

The oldster's attitude toward the aging process may be resentful, resigned, or realistic. The first two attitudes are hardest to deal with. The resentful patient is apt to be immature in spite of his years. Often he has been spoiled in childhood, accustomed to getting what he wanted by temper tantrums. Later, as a parent and spouse, he—or often she—has achieved the same aim by the technique of domineering or of clinging. Such individuals need understanding and a certain amount of sympathy—but not the sort of sympathy that makes them a prey to self-pity and encourages their childish resentment against life.

The resigned oldster makes no effort to keep up with current events or to contribute his best efforts to worthy causes. He is apt to use his age as an excuse to decline invitations to participate in social or community affairs. He is quite willing to accept financial support as a debt owed by the government or his children. Such people need to be encouraged to find something useful to do and to maintain an interest in living.

The realistic person accepts aging as a natural phenomenon and looks for the good in it as well

as for the bad. He learns, without adopting a "Pollyanna" attitude (familiar to the older generation), that old age has its compensations. Some of these will be pointed out later.

The doctor who deals with many older patients will learn to recognize their reactions to age and will often be able to help them develop the right attitude. In order to win their confidence, he will need to be sympathetic, sincere, and sensible. His sympathy should be of the practical sort which does not expend its force in pitying the patient but which looks for means to relieve his doubts and fears. He will need, to use a modern term, empathy as well as sympathy.

His sincerity should be so evident that he will not need to proclaim it with a trumpet. The oldster instinctively senses the doctor's attitude. If it be patronizing or impatient, the patient will almost certainly withdraw into his shell. It is necessary to make him feel that, for the time, he has the doctor's undivided attention.

The older patient also wants his doctor to be sensible in discussing his problems, whether they be physical, mental, or even spiritual. He will resent evasive answers or sugar-coated reassurance that all is well when he knows that all is not well. The average intelligent oldster appreciates a clear explanation of such conditions as hypertrophic arthritis and angina pectoris or even of a small cerebral thrombosis. It is important, however, for

the doctor to select his words with care, avoiding such dread terms as "hardened arteries," "cancer," and "stroke." Thewlis¹ has given an excellent discussion of the proper use of words in his classic work "The Care of the Aged," under the section entitled Logotherapy.

The doctor himself should look for the good things about maturity and help the oldster to appreciate them. Among these are the relative rarity of rheumatoid arthritis or rheumatic fever, freedom from migraine, better resistance to infectious diseases, and, for women, release from the nuisance of menstruation.

The physician might also point out to his elderly patients that the material comforts of modern living, while deplored by some Spartan-minded ascetics, make living more pleasant for all ages. Older people should be encouraged to accept such innovations as air conditioning, electric blankets, and oil and gas heat (to say nothing of indoor plumbing) instead of clinging to their time-honored inconveniences. Not the least of the blessings of this modern age is the more sensible clothing worn by both sexes. Certainly the lighter apparel adopted by men in hot weather is more conducive to a long and comfortable life than the tall hats, frock coats, and high collars which were once the hallmark of the professional man. By adapting his own wearing apparel to sensible modern styles, the physician who has the respect and confidence of

his older patients may influence them to place comfort over custom in the matter of clothes.

Physical Aspects of Geriatric Practice

Geriatrics might be given the same definition as pediatrics—"general practice with an age limit." It is doubtful, however, that many medical men will ever label themselves as geriatricians and limit their practice exclusively to older patients. To do so would largely defeat the purpose of geriatrics, which is concerned as much with preventing the ravages of age as with treating them. Preparation for age should begin in the prime of life, and to this end every general practitioner and internist should try to train his middle-aged and even his younger patients to cultivate proper habits of eating, sleeping, exercise, recreation, work, and mental hygiene.

All men and women past middle age should be encouraged to let their birthdays remind them that it is time for another complete physical examination. On a patient's first visit for such a health inventory, sufficient time should be allowed for a careful history and physical examination. The history should not only include a recital of the presenting symptoms and an adequate system review but should go into the patient's living and working conditions, his habits, and his attitude toward his family and associates as well as theirs toward him.

Subsequent appointments can be made much shorter, since it will be necessary only to fill in the gaps between visits. On the first examination a chest x-ray and an electrocardiogram should be made for a permanent record, but these need not be repeated on subsequent visits unless some indication arises.

The interview should conclude with detailed advice about diet, exercise, and sleep, and possibly about the patient's relations with his family and associates. One of the most important bits of advice that can be given most patients at middle age or beyond is to keep their weight at its optimum level. It might be wise to caution the patient that a favorable health inventory does not guarantee a full year of untroubled operation for the human machine. He should be encouraged to come back between annual visits if any marked departure from his normal status occurs.

Psychological Aspects of Geriatric Practice

One of the most important services the doctor can render the oldster is to help him make the necessary psychological adjustments to aging. Many of the most unpleasant traits of adolescence and old age have a common basis—the desire to belong. As Stuart Chase said in "The Road We Are Traveling," "Men want to . . . feel that they are a part of a living community, that they have a place in it

which other people recognize." The adolescent wants to achieve recognition as a useful member of society; the oldster wants to retain that recognition. The doctor can help the oldster's morale by showing a genuine interest in him and in his environment.

One of the greatest problems the aging person must face is that of retirement. It is not surprising that many men who are forced to retire from their lifelong occupations while still vigorous and alert become victims of mental depression. The doctor who is himself able to keep at work when long past the customary retirement age should not be blind to the fact that relatively few of his nonprofessional contemporaries are so fortunate. As a citizen, the doctor should use his influence to protest the arbitrary custom of requiring a man to give up his work at a fixed age, regardless of his physical and mental fitness. As a physician, however, he must help his older patients meet the changes in their lives which retirement brings.

Often associated with retirement is the problem of financial dependence and the prospect of widowhood and physical disability. Whenever feasible, it is usually best for members of the older generation to live apart from the families of their children or grandchildren—either in their own homes, apartments, or rooms, or in the homes and hotels which are becoming recognized as a necessity for older people in modern society. If it is actually necessary

for a family to take an elderly relative into the home, it is best to have a distinct understanding at the very beginning concerning the division of responsibility and authority. He—or she—should not be allowed to become a petty tyrant nor be made to feel helpless by too much attention. For his own sake, it is best to allow him to do as much as possible for himself and for others. Here, again, the doctor who has gained the confidence of his oldster patient is in a better strategic position to talk frankly with him about his relations with his younger relatives and possibly to suggest the advisability of living in his own quarters.

It is the doctor's privilege as well as his duty to help his older patients make the best possible adjustment to their advancing years. In this task he has the assistance of Nature's beneficent provision for changing one's viewpoint with advancing years. Except at the climacteric, adjustments to increasing age levels are usually made so gradually as to be almost imperceptible.

Some years ago I formulated seven "rules of conduct" for my own use and have found that some or all of them could be used to advantage in helping my oldster patients and friends to grow old with a reasonable degree of complacency. These rules—or suggestions—are as follows:

1. Recognize that the mind should be at its best when a person is about 40 years old and should continue to be efficient to the age of 70 or more.

The pathologists have shown that organic changes in the brain do not necessarily parallel mental changes. The mind which is properly trained does not lose its elasticity, and constant use of the brain helps to keep it efficient.

2. Avoid becoming an "old fog" by frequent association with young people. Prepare for occasional shocks, but try to understand their viewpoint.

3. Learn to delegate authority and to unload responsibility upon younger shoulders. There is an advantage in partnerships in which the enthusiasm of youth is balanced by the judgment of maturity.

4. Cultivate wide interests. Learn new uses for the hands and brain, and exchange more strenuous amusements for others less arduous. As A. C. Benson² has said, "One ought to grow older in a tranquil and appropriate way . . . to be perfectly contented with one's time of life . . . amusements and pursuits ought to alter naturally and easily, and not be regretfully abandoned."

5. Keep in touch with old friends and make new ones. Dr. Samuel Johnson once said, "If a man does not make new acquaintances as he advances through life, he will soon find himself alone. A man, sir, should keep his friendship in a constant repair."

6. Cultivate equanimity—the mental poise that keeps one from being unduly elated by good fortune or depressed by bad news and that teaches

one to take fortune's buffets and rewards with equal thanks.³ It is important to keep a proper balance between emotion, which furnishes the driving power for the human machine, and reason, which corresponds to the steering gear and the brakes.

7. Cultivate the habit of looking forward rather than backward. This advice may seem to conflict with Osler's admonition to live one day at a time, but it really does not. Planning for tomorrow is often part of today's task, but sighing over yesterday accomplishes nothing.

Finally, since personal experience is always more convincing than mere theorizing, let me offer the testimony of two philosophers who lived centuries apart. More than 2,000 years ago Plato⁴ quoted the reply of the aged Cephalus to the question, "Is life harder towards the end, or what report do you give of it?" "Old age has a great sense of calm and freedom, when the passions relax their hold, then . . . we are freed not of one mad master only, but of many . . . He who is of a calm and happy nature will hardly feel the pressure of age, but to him who is of an opposite disposition youth and age are equally a burden."

The other philosopher is Dr. Francis M. Pottenger,⁵ who in the final chapter of his autobiography, published in 1952, said: "My 80 years do not worry me. . . . To be sure, I would like again to have the keenness of youth. On the other hand, I would miss

the mellowness of age, the store of experience which guides me in my every movement and act. I have tried not to live too much in the past, but to be alert to the problems of the future. This I have accepted as an antidote to aging. It does not prevent the years from rolling by . . . but it does prevent that fear of the future which otherwise might make one unhappy in the twilight of life."

Summary

To most patients, a happy relationship with a good doctor is more important in the later than in the earlier years of life. Since preparation for old age should begin in the prime of life, it is desirable that this relationship be established early in senescence. Maturity in the doctor offers some advantages, although it is not essential if he is really interested in the problems of older patients and genuinely likes people.

The attitude of the oldster toward the aging process may be resentful, resigned, or realistic. The doctor can help to foster the correct attitude in his aging patients by being sympathetic, sincere, and sensible. He should be interested not only in the oldster's physical condition but in his environment, his interests, and his emotional status. The doctor needs to be truly the oldster's guide, philosopher, and friend.

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STRESS AND EXHAUSTION

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Resistance to disease becomes progressively less with increasing age. Older individuals are killed by diseases which would not have destroyed them when they were young. It has been stated by Alex Comfort that, had we throughout life the same resistance to stress and disease as we had at the age of 10, about half of us might expect to live approximately 700 years. The object of studying the changes that occur with aging is to find out why they occur and what can be done about them.

Many of the changes which take place in the body and nervous system are susceptible of reasonably exact measurement. There is dispersion of energy with the passage of time. This results in structural and functional alterations which are the measure of rate of aging. When a tissue retains its ability to maintain optimum structure for function, the rate of physiological aging may be kept at a minimum. As toxic agents and adverse environmental influences bring about a lessening of the vitality of the tissues, the rate of aging is accelerated.

The aphorism "adapt or perish" emphasizes Hans Selye's suggestion that adaptability is the most distinctive characteristic of human existence. Adaptation to stress is a gradual building up of resistance of the tissues to adverse factors. Loss of ability to adapt is an indication of aging. There are exquisite mechanisms within the body whereby

it is able to neutralize the various shocks. It can adapt to a wide variety of conditions. Under a normal healthy state of affairs, a minimum of wear and tear and deterioration of body tissues and function occurs. Insofar as an organ has adequate reserve, it can withstand ordinary assaults which would dissipate that reserve. Following the recovery period in the adaptive process, the body reserve returns to normal.

Selye¹ reviews, in a recent article, the various concepts bearing on the syndrome which he identifies as the stress syndrome. He defines stress as a state manifested by a specific syndrome which consists of all the nonspecifically induced changes within the body. The stress syndrome has a specific form even though it is nonspecifically induced. The syndrome affects the whole body while the local stress syndrome influences several units within a part. However, stress always manifests itself by a syndrome, that is, by the sum of the changes and not by any one particular change. It is essential to understand that a specific stimulus acting only on one organ usually causes a less marked stress response than a nonspecific agent which acts in many parts of the body. For example: Selye points out that exhaustive stimulation or even complete destruction of a limited cell group is much less effective in causing a corticotropin (ACTH) discharge than is a moderate stimulation of a more extensive area. The magnitude of the stress mani-

festation, that is, the corticotropin discharge, appears to depend upon the sum of all the reactions which occur in the body at any one time. There must be a common pathway somewhere in response to stress. These facts are important in understanding the reaction to long-continued stress states which may produce eventual alterations in structure.

Exhaustion may result from physical and emotional strain or from the innumerable vexations and torments of modern times. Identification of the most common causes that bring about exhaustion is helpful. These may be identified as the various illnesses, functional disturbances, organic diseases, abnormal mental attitudes, and many other conditions. It is important to realize that the body can neutralize the wasting of its reserve if given adequate assistance.

The wear and tear reactions in the body are reflected in the variations of function which revolve around the pituitary-adrenal axis. For example, 17-ketosteroid output is lowered in chronic illness, a frequent experience of the elderly. Recent physiological and biochemical tests that have been studied showed no essential differences in relation to stress between normal healthy youngsters and healthy older persons. In a number of conditions, such as infections and antigenic stimuli, the older individuals seem to show a more superior and efficient response to the stimulus than do the very

young, especially those under 2 years of age. Mortality rates from circulatory and surgical procedures are about the same for good-risk patients regardless of their age. Growing old, of itself, need not impair the responses to the strains of modern existence.

Each individual is endowed with an amazing margin of reserve at birth. Apparently this is specific for the individual. As yet, only the most crude methods are available for studying the reserve of particular organs at the clinical level. However, conditions of physical sickness are now being observed, and methods are being tried in an endeavor to estimate the reserve of particular systems such as the pulmonary tract, the heart, the arterial system, and the nervous system. Exhaustion, experimentally, of certain organs such as the pancreas can produce temporary disease. When the body, with the passage of time, is unable to completely renew its energy and heal injured tissues, the scar of the disease remains. This stigma may be of little consequence if it occurs in a part of the body that is not vital to continued existence. On the other hand, even a small clot in a blood vessel in a vital area of the heart or the brain stem might produce fatal outcome to a body that is in otherwise excellent condition. As long as the individual maintains good homeostasis and thereby is capable of meeting the day-to-day stresses and strains satisfactorily, aging per se has little, if any, influence on

impairing stress responses. The diseases and deteriorations of tissues in older individuals embarrass physiological responses and thereby set the stage for further structural damage. This is an important point, for it emphasizes the necessity for maintaining good physical fitness as a factor for long life.

In long-term illnesses, especially those in which considerable wear and tear of tissues occurs, with continued stimulus of the pituitary-adrenal axis, the 17-ketosteroid output is lowered. When the reserves of the body are extended in excess of energy replacement, the individual is living at a deficit. He is spending more of his basic vitality than he is renewing. At the particular moment in his life when the expenditure of tissue energy exceeds tissue repair, senescence has begun. The rate of senescence may be demonstrated very well experimentally. In animals, changes which resemble the degenerative alterations characteristic of old age may be produced in the organs by long-continued stresses. The body responds in a non-specific as well as in a specific manner to the various obnoxious agents such as infection, neoplasm, metabolic deficiency, or organ decompensation. Impulses arrive at the anterior pituitary axis through the hypothalamic nuclei and through the mediation of epinephrine. Next, the pituitary secretes the trophic hormones. Through this mechanism there is a shift in the balance of hormone

production with a relative diminution of thyrotropic and gonadotropic hormones with an increase in the production in corticotropin.

From the specific hormones of the adrenal glands, effects occur in practically every organ of the body. Tissue metabolism may be greatly altered. The blood sugar level may fall. An ulcer may develop somewhere in the gastrointestinal tract. Increased capillary permeability may occur. According to the adaptation reaction of Selye, these are classified as the first or alarm reaction phase. In the so-called counter shock phase, a reversal of some of these effects may take place. Authorities agree on the changes which take place in the structure and function of organs with advancing age. There is a loss of fluid and an increased frequency of achlorhydria. Frequently there is a mild loss of glucose tolerance. However, the healthy older body must be much more carefully studied before it is condemned to unhappy and deficit existence.

Since life entails a continual striving to attain aims, it is impossible to conceive of living without stress. The objectives of an ambitious individual are only obtained by strong drive with the expenditure of energy. Without some commitment of this kind there can be no stress. For many authorities the terms stress, strain, and striving are practically identical. Without motive there is no effort, without effort there is no strain, and without strain

there is no stress. Stress implies combat—combat with oneself against some tendency or habit or against some circumstances in general. The time of stress may be short or long; the outcome may be unsuccessful. As a rule, the individual is aware of the stress. The stress itself is not so important as the depletion of energy leading to exhaustion. The problem then is simplified by consideration of maintenance of adequate organic reserve that may be physical or mental. Antistress factors then take on a new significance.

Fatigue, like stress, is a many-sided experience, one for which an adequate definition has not been stated. Fatigue refers to the condition of a body weakened by prolonged stress. This may set the stage for many clinical syndromes. The majority of these are referable to the circulation, the digestive tract, and the central nervous system. Definite changes in the physiochemical pattern of the blood may frequently be discovered. Fatigue is subjective; the patient has difficulty in performance. There is a drag and increasing unwillingness on the heart, the brain, and the nervous system to respond to demand. A tired person is unlikely to have any enthusiasm about anything. When he is enthusiastic the fatigue disappears. Weariness and boredom in oldsters are invited by lack of motivation. Personal attitudes take on significances as motivation reflecting a sense of values. This becomes more and more important with advancing years.

Conditions which produce stress and fatigue leading to exhaustion are now being studied. Their reflection in the various constituents of the blood and tissue fluids is becoming known. Protective nutrition, anxiety-resolving devices, and specific motivation are basic essentials. These are now generally accepted. Margins of reserve for each individual may be recreated that will grant him longer life and, perhaps, a more enjoyable one. Improved living conditions, which are the attributes of a society highly sensitive to social responsibility in the atomic era, are capable of bringing about a deeper measure of enjoyable existence.

In resisting the useless expenditure of energy, man's fight with time is his greatest battle. In that battle, his emotional life—the surplus of hope over

despair, of love over indifference, of motive over resignation—is highly important. As Helton² points out, it is not a fight for the duration of the body so much as it is a fight for the duration of the capacity for happiness. One can be too busy and too active in the process of maturing to be annoyed by the deteriorations of aging. Purposeful activity up to the limits of physiological and mental optimum represents the most potent factor in the fight against premature human deterioration.

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THE ROLE OF EXERCISE IN THE AGING

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As I sit down to write about the role of exercise in the aging, I am conscious of the pleasant and relaxing effect of a brisk walk in the clear cold air of Santa Fe and the hills around. As a senior member of society, I can vouch for this particular positive effect of exercise; for many aging persons this may be its chief value. However, there are other physiological results of exercise which deserve as much emphasis in the aging as they do in the young, and possibly even more.

Though such effects of exercise are frequently referred to in the presentation of health programs, they are but little discussed in planning for the health and happiness of older persons. To be sure, no hard and fast rules about exercise can be laid down for everyone of a certain age, in the first place, because no two persons have exactly the same physical needs or psychological preferences and, secondly, because chronological age is not the same as physiological age. Also it is true that some individuals live to be old and free from disease despite the fact that the only exercise they get is in breathing, eating, talking, and in tending to their minimal physiological processes of other nature; what percentage of healthy older persons belong in this category has not been determined, but it appears to be considerably in the minority.

Naturally, in extreme old age, when physical strength and mental ability steadily decline, there comes a time when exercise beyond that of the

simplest acts of living is no longer possible, but in the early and middle years of old age exercise can be very beneficial. It is important to recognize that there is a difference between positive health and the mere absence of disease.

At any age, physical exercise, more or less planned, though not as a burdensome or boring program, has certain beneficial effects which can be helpfully reviewed in our discussion of the problems of aging. The kind of exercise is not very important except that it should suit the strength, aptitude, and liking of the particular person. It may vary in strenuousness from that involved in simple deep breathing in short periods several times a day to that involved in heavy wood cutting or snow shoveling or fast tennis.

There should be no age set at which a person long accustomed to vigorous exercise should cease exercising, although it is usually wise to tone down the energy expenditure and the amount of time per day or week with each passing decade. If a man or woman is in good health and enjoys exercise in the open air (or perhaps even if not) the beneficial effects can continue to a very advanced age. I have known of Maine guides and lumbermen, gardeners, sailors, laborers, and sportsmen who have kept up a vigorous program both enjoyably and beneficially well into the 80's.

There are very few adequate statistics concerning the health and longevity of athletes. Some

articles and books have been published on the subject; one of these, entitled "University Oars," was written many years ago (1873) by Dr. John E. Morgan, who was an oarsman himself. Dr. Morgan, of Oxford University, made a follow-up study of members of the crews who took part in the annual races between Cambridge and Oxford from 1829 to 1869. His conclusion was that the effect of the rowing was a favorable one, that this type of exercise (some of which was continued for years afterward) had no unfavorable effect on health but rather the reverse, and that the longevity of the oarsmen was slightly greater than that of the average population.

A study not yet reported, which my associates and I made, was a follow-up of Harvard football players who earned their letters between the years 1900 and 1930. This study showed a longevity close to that expected in the population at large. It had been hoped to compare those who continued vigorous exercise throughout their lives with those who took no particular exercise after graduation from college and also those who had gained very much weight with those who had gained practically no weight at all. Evidence on these two points was definitely favorable for those who continued vigorous exercise and who did not gain weight, but the numbers in these extreme groups were hardly adequate for statistical conclusions. One of the difficulties in such a study is

that the majority of American males live a standard existence, that is, they eat much the same diet, drink and smoke moderately, get some exercise but not of any considerable degree, and gain a moderate amount of weight through the years (10 to 25 lb. or more in the course of 30 years).

Benefits of Exercise

Exercise has positive effects on the health. In the first place, there is the benefit of establishing or maintaining the general muscular tone throughout the body, including that of the heart itself. Some muscles, of course, become stronger if they are more involved in the exercise, for example, the leg muscles in long walks, golfing, cycling, or tennis, or the arm muscles in wood cutting, gardening, fishing, or housework. One of the muscles that it is important to keep in good tone is the diaphragm; almost any vigorous exercise or even repeated programs of deep breathing will help here.

There are several values that are derived from good muscle tone. One is that which concerns the circulation of the blood itself. Sometimes one forgets that the heart, although the most important factor of course, is not the sole supporter of the circulation. The elasticity of the aorta and other great arteries is of importance in maintaining an even flow of blood. The vasomotor function of the smaller vessels is vital for the selective distribution of the blood to the organs as needed. The peripheral

veins with their valves act as local pumps for the return of blood to the heart when they are compressed by the muscles that surround them. The better the tone of the muscles the better is this support to the heart afforded by the veins. For the same reason, peripheral venous stasis of high degree with the development of varicosities, the pooling of blood, and phlebothrombosis is counteracted, to a certain degree at least, by good muscle tone. Finally, good tone of the diaphragm with wide respiratory excursions (aided by the avoidance of obesity) not only greatly helps respiration but also improves the pumping action of the diaphragm in its suction of blood back to the chambers of the right side of the heart.

A second benefit from exercise is that already referred to, namely, its effect on the psyche. Most individuals, old as well as young, are much helped by the relaxation which comes from exercise of the right degree, usually midway in amount and intensity between the extremes of triviality and of exhaustion. For many of us, exercise is a delightful antidote for nervous tension and strains, anxiety, and mental concentration. A pleasant fatigue of the skeletal muscles has time and time again given me mental repose, peaceful sleep, and a sense of equanimity.

A third benefit has been on digestion, partly, in all probability, by reducing nervous tension, which is a common factor in cases of esophageal irritabil-

ity (cardiospasm) and peptic ulcer, and partly by its favorable effect on the bowel function.

A fourth benefit of exercise at any age, and therefore applicable to the "aging," is its favorable effect in helping to control obesity, a condition widely regarded as inimical to the best of health and longevity. Although it is true that obesity is due to the combined effects of heredity and over-nutrition, nevertheless, with the same caloric intake, the increased metabolic requirement resulting from exercise does help to control body weight. It is not the fat deposited under the skin here and there throughout the body or in the omentum that is of most importance but rather a few grams of fat in the wrong places, particularly in the walls of the coronary and other important arteries.

Finally, the deepening of respiration which comes with exercise favors the function of the lungs in gaseous exchange and in the state of the lung tissue itself. Although chronic bronchitis and emphysema are common in old age and limit the amount of exercise possible, they are not a bar in themselves to mild exercise within the reserve of the person affected.

Even in the presence of disease other than in the lungs, suitable exercise can be beneficial. I have seen many patients with heart diseases of various kinds and degree and, except for the most severe cases, slight to moderate exercise can and should be prescribed. Of course, angina pectoris too easily induced or myocardial weakness of considerable degree will demand pro tem absolute rest, but with recovery or in the presence of well-healed myocardial infarction, as in the President's case, a careful program of regular exercise may not only be an important health measure but it may conceivably be helpful, in the absence of important symptoms, in retarding the further progress or increase of coronary atherosclerosis. Further research as to this possibility is in order.

Thus, in conclusion, it may be said that exercise of almost any kind, suitable in degree and duration for the particular individual concerned, can and does play a useful role in the maintenance of both physical and mental health of the aging individual but that no hard and fast rules can be set, because each person requires individual appraisal.



HEALTH AND MAINTENANCE FOR THE OLDSTER

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The immediate past-president of the American Medical Association, Dr. Dwight H. Murray, in his address in Chicago last year said: "I sincerely believe that it is Nature's plan that we remain physically and mentally alert to the end of our days." Surely there are none who would dispute the desirability of such a favorable outlook for the future.

It is evident that as time goes on people will live longer. But it is not enough to live so that one might be enabled to wait for death. Life should provide such priceless ingredients as physical and mental health and well-being—the will to live. During the Federal-State Conference on Aging in Washington, D. C., in June 1956, it was stated that the Council of States Governments had compiled a "Bill of Objectives for Older People."

This list included such items as physical and mental health, including rehabilitation; equal opportunity to work; home living; adequate minimum income; participation in community activities; freedom, independence, and initiative. One will observe that these objectives are no different from those to which any of us would aspire. But, in my judgment, the maintenance of physical and mental health is fundamental to the other objectives mentioned.

As physicians, we are quick to agree that in health "a stitch in time saves nine." But our attention has too often been drawn away from the person who, for the moment, at least, was not ill. We have con-

cerned ourselves almost exclusively with those who complained of symptoms and who needed relief. This took all of our time. Moreover, we have always been reluctant to risk being placed in the position of seeming to solicit business.

All of these reasons for our failure to take action in the field of health conservation are understandable. But we should now take a more positive approach to health maintenance in our oldsters. Keeping well is important to all of us. It is the key basic need in older age groups. The interest of the apparently well senior citizen in his own health has been grossly underestimated. Our work is thereby made easier.

For many years we have ignored the so-called degenerative or chronic diseases in the elderly. We accepted them as matters of course in the treatment of more acute symptoms. Now our researchers are studying tissue cells to find out why their rate of replacement slows down with increasing age. Who can say that these mysteries will not be solved? Who can say that atherosclerosis may not some day be reversible, or at least preventable?

Because of these things, we see a beginning realization on the part of physicians in practice and in health agencies that the development and application of regimens of health maintenance in our oldsters can be tremendously productive. If we take this positive approach to the "stitch in time" philosophy, we may avoid being faced with the neces-

sity of doing a complete sewing job later on when it can do little good.

Too much emphasis cannot be placed upon the need for a medical advisor in the middle and senior years. We need here the individual physician-patient relationship. It pays its greatest dividend during the years when body reserves are dwindling and when advantage should be taken by the physician of intimate knowledge of the individual patient gained through years of experience as his medical advisor.

Like the management of diabetes, health maintenance in the oldster, or the science of keeping him well, is a long-range undertaking. It must, of necessity, not be limited to the treatment of symptoms when they arise. The approach must be one of sympathetic understanding of what makes him "tick" and an interest in his over-all health problems. One need not add that he must be made to feel that his physician is sincerely interested in him as an individual.

This interest should include such fundamentals of good health as his home; the food he eats; his personal living and recreation habits; outlook on life and motivation for living; and the avoidance of fatigue. Other articles in this series discuss in more detail a number of these keystones of life and health maintenance of the oldster. How then does one keep him well?

Our colleagues in pediatrics have long used the

"well baby clinic" as a productive device to insure optimum health maintenance in young children. As yet we have scarcely scratched the surface in utilizing this technique in our senior citizens. The "well oldster clinic," properly managed, will yield a far richer source of things that need doing. The doctor's office is the best place for this activity. The conditions most commonly uncovered are cardiovascular disease, cancer, arthritis and rheumatism, mental diseases, nephritis, glaucoma, diabetes, obesity, anemia, and loss of vision and hearing. Ironically, some of these conditions might well have been the targets in a program of health maintenance during the early and middle years.

In this connection it seems somewhat inconsistent for us to express concern over the health of the pre-school child, with a little more attention to his health through the elementary school grades, only to forget about him later. At junior-high-school age, he then is assumed to have achieved an Achilles-like state of physical and mental well-being, receiving no more frequent and directed medical supervision, except during periods of acute illness. Finally, when his body and mind have become worn with the fatigue of a half-century of struggle in a highly competitive and industrialized society, we again express a concern for his infirmities which we refer to as chronic diseases of old age.

The conditions found in the oldster may loom as formidable obstacles to the joy of living unless we

begin a carefully managed program of secondary prevention. By secondary prevention we no longer mean the prevention of the condition itself, but rather a regimen to minimize its adverse effect. Secondary prevention is a positive program of hopeful action—a refusal to subscribe to the negative outlook which, in too many minds, is reconciled to the futility of effort.

Those who work with these patients know that the potential harvest of accomplishment is very great. But each case calls for a long-range plan of management, and the physician is the key to its success. The patient must learn to live with what he has left. But the more we are able to conserve his health resources, the more effectively he will be enabled to carry on as an active oldster.

It is not my purpose to describe the clinical procedures which are necessary to achieve health maintenance. Many of the elements of such a program are covered in other articles in this series. Each patient must be managed somewhat differently, according to his own needs. Medical or surgical procedures, if they are necessary, should not be avoided purely on the basis of age.

There should be sufficient flexibility to permit changes in living habits in the light of what develops with the further passage of time. Periodic reappraisals will be necessary and good records are essential. The entire program is designed to provide the maximum activity and participation permissible.


Activity and participation in the living process are vital essentials in the life of the older person. Most of us have observed that sudden retirement without adequate preparation is a killer of men. Inactivity breeds depression and loneliness; death, too often, soon follows in their wake. Life must go on and there must be people to share it with; there must be things to do.

Our systems of mandatory retirement based on chronological age are not consistent with our other efforts to conserve human resources. As our methods of measuring productive capabilities of people become objective and reliable, the policy of sudden forced retirement will, in all likelihood, give way to a more gradual reassignment of duties in keeping with variations in the physical and mental aptitudes of individual employees.

We stress productive activity because of its importance to health maintenance in the oldster. This is especially true of mental health. One cannot

stand still. As time moves on we either go forward or backward. Unless, over the years, we have prepared for retirement through the development of a hobby or an avocation, the sudden cessation of a lifelong activity makes a disastrous impact on our well being. For these reasons, many oldsters will need to be referred to day-centers for recreational activities or to a so-called sheltered workshop for productive work. The physician will wish to utilize these and other facilities for time consuming educational and ancillary services for his patients.

Public health agencies are giving top priority to chronic diseases, and many other agencies are also providing increased services for the aging. These activities will result in many referrals to private physicians for diagnosis and treatment. It is my hope that we as physicians will meet this challenge through the individualized approach which has distinguished the practice of medicine in the United States.



NUTRITIONAL PROBLEMS IN THE AGING AND AGED

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With the increasing of the life span, a larger percentage of the total population are now in the old age group. It is not enough merely to increase life span per se; these added years must be made productive and enjoyable and then extended further. One of the many problems to be explored in the aging population is nutrition. Does it need special attention? Is it a problem by itself or is it secondary to other more important questions? Can the effects of earlier metabolic insults be reversed?

Aging is the sum of life experiences in its broadest concept, the inference being that avoiding physiological insults, including episodes of malnutrition, all throughout life will result in greater longevity and prolonged functional usefulness. The problem of the aged resolves itself into two components—the aging process itself and the actual status of the aged person. Little is known of the aging process except that it is speeded up by the onset of certain chronic disease states. Atherosclerosis and obesity are perhaps two of the most important of these states. In the minds of many people, when a specific therapeutic agent is not available, all too frequently malnutrition is blamed and the cure is said to be dietetic.

While, unquestionably, the basis for good health is optimum nutrition, the cause of ill health is not always malnutrition from bad dietary practices. The panacea for the aged is not necessarily the dis-

covery of the ideal diet for this group of our population, but it can do a great deal towards the support of good health and longevity.

It was less than 100 years ago that the robust-looking, stout man was looked upon with favor as the best risk for life insurance.¹ It was at that time that tuberculosis and the acute infectious diseases accounted for the high death rates. It was clear that at ages under 35 the mortality figures favored those who were slightly to moderately overweight. At ages from 35 to 55, the lowest mortality rates were recorded among men 5 to 10 lb. underweight and at 57 to 62, among those 15 to 20 lb. underweight. It should be pointed out that the standard for the determination of overweight or underweight was the "average" weight figures of the 1912 tables which reflected the gradual weight gain of the population. It should be mentioned further that, in the underweight group at ages 15 to 29, tuberculosis accounted for 40% of the deaths. Nutritional and weight problems are of greater concern today because the progress in prevention and treatment of the infectious diseases now makes more obvious the slowly developing effects of chronic malnutrition. The excuse of obesity as a secondary effect of achieving good nutrition to aid in the prevention of infectious diseases no longer holds true. The present state of knowledge of micronutrients and macronutrients makes it possible to achieve optimum nutrition without the undesirable side-effects of

excess calorie intake. Optimum nutrition precludes the presence of obesity.

Among the more important obviously measurable physiological changes occurring during a lifetime is the decreasing oxygen requirement per unit of body weight. This phenomenon is now believed to be due more to a decrease in total amount of active protoplasm than to a decrease in oxygen requirement by the single cell. When this is coupled with decreased over-all physical activity, the important practical application of this phenomenon can be promulgated, i. e., a decreased calorie requirement with age. The obesity of the elderly is not due to gourmandizing but mainly to the constancy of the intake in the face of decreasing requirements. The figure expresses graphically what happens to body weight in the face of constant calorie intake and constant physical activity over the period of years as the metabolic requirements decrease. Many religious rituals and certain food practices among groups of people indicate a recognition of the place of periodic fasting and limited diets in the prevention of overeating. A diet supplying all of the micronutrients, macronutrients, and only sufficient calories to maintain the optimum weight can be suggested for those who desire maximum longevity for their inherited biological strength. It can be suggested further that, since the advantages of overweight in the adolescent and early adult years has been replaced by prevention of infectious diseases

and improved therapeutics, at no time in one's life span should obesity be tolerated.

In the United States the National Research Council's Food and Nutrition Board has had a tremendous impact on the thinking of the teachers in the field of nutrition. Their table of recommended food allowances is used as a yardstick for the measurement of the adequacy of the diet. There is no question that it has served a useful function and has brought about an upgrading in the general nutritional status of the people of this country. One can question whether their calorie allowances for the 65-year-old group and older are not too generous and conducive to the production of obesity. Lyons and Trulson² report a survey of 100 men and women over 65 years of age living in Boston. They found that 35% of the men and 52% of the women consumed 100% of the National Research Council calorie allowances—2,600 and 1,800 calories respectively; 48% of the men and 57% of the women were 10% or more above their desirable weight. This would indicate that for this group the National Research Council's calorie allowances are too high.

The diet has been implicated in the genesis of atherosclerosis. This discussion will not go into the details of the arguments pro and con. No doubt, in time, atherosclerosis will be proved to have a relationship to metabolic factors. Whether these are due to faulty dietary habits and can be reversed by

changes in the diet is still a very open question. There is at present no evidence which calls for a recommendation for drastic changes in the present dietary regimen to combat atherosclerosis. A diet which will bring about and maintain optimum nutrition can be achieved by the consumption of the normal variety of foods in amounts sufficient to maintain the desirable weight.

Chronic disease states have their influence on nutritional requirements, and meals must be planned accordingly to supply the required amount of nutrients. The physician who prescribes diet therapy as part of the treatment in the aging population must make certain that the therapeutic diet not only is nutritionally adequate on paper but is actually consumed by the patient. Low-sodium diets, frequently prescribed for the aged, are particularly anorexigenic and, if careful attention is not paid to the adequacy of the consumption, secondary malnutrition occurs, particularly with respect to protein and some of members of the vitamin B complex. Paralysis agitans (Parkinson's disease) may make it very difficult for the patient to feed himself. Concentrated foods in liquid mixtures may be necessary as supplements between meals. Gastrointestinal disturbances, both functional and organic, frequently lead to limitation of food choice. The therapeutic diets prescribed for gout and diabetes mellitus are more easily interpreted into good food intakes than some of the others.

Limitation of physical activity because of myocardial disease and circulatory insufficiency and arthritis and other joint difficulties should call for a compensating decrease in caloric intake, otherwise weight gain is inevitable. Added body poundage causes a further load on the circulation and weight-bearing joints. The precipitation of anginal pain by a full meal discourages many from eating a full meal. Personality changes and the negativism frequently associated with cerebral arteriosclerosis have a direct bearing on appetite and food consumption. Socioeconomic factors must be investigated. These latter, too, can determine to a large extent the food intake.

Look carefully for dental or local oral lesions as a cause of poor eating. Ill-fitting dentures and sore gums are a real deterrent. Many functional gastrointestinal upsets result from foods that have not

been masticated. Pay attention to the mechanical state of the food as well as its nutritional content.

Basically, the nutritional requirements for the aged are essentially the same as for the younger adults. With the exception of recognition of the decreasing caloric requirements, one need not, in the light of present knowledge, alter the dietary pattern. One must recognize that the metabolic status of the aged is the end-result of previous experiences and that optimum nutrition must be maintained throughout life.

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REHABILITATION AND RESTORATIVE SERVICES

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Medical rehabilitation, or restorative medicine, as it has sometimes perhaps more aptly been called, emerged from the general background of clinical services as an answer to a long-felt need rather than as an arbitrary separation of a specialty. It is concerned with the medical care of all those who, as a result of illness or trauma, are left with a permanent impairment of their physical functions.

The broadened concept of rehabilitation has resulted in more than the creation of a new medical specialty. It has redefined and broadened the physician's responsibility to his patient. It has called upon the physician to extend his services to activities which, by conventional standards, had not been considered strictly a medical responsibility. The physician's responsibility ends only when he has restored his patient to the best and most productive life possible as judged by two primary criteria—ability and disability.

With the recognition that chronically ill and disabled patients had problems which went beyond their physical pathology, it became evident that if these problems were not met, the results of medical care would be negated. Restorative medicine emphasizes the point of view that, in addition to the technical restoration of health, the proper utilization of restored functions is fundamentally the physician's responsibility.

This does not imply that the already overburdened physicians should involve themselves in the details of strictly social and vocational problems. This would result in the uneconomical use of a scarce and highly skilled profession. However, it is increasingly being recognized that the physician's responsibility is to know and to utilize all of the resources and co-professional services that will lead to the optimal utilization of his patient's functional capacities. He must be captain of the team. He must write the prescriptions for social and vocational needs and see that they are properly filled just as he would for drugs or diet.

Foremost among those whose physical functioning is impaired by chronic illness or other disabling conditions are the rapidly increasing number of older people. In an effort to simplify the discussion of restoration in this large and complex group of elderly patients who could benefit from a "total approach" program without regard to etiological considerations, we have classified them into the following three empirical groups: (1) obviously handicapped patients (those with hemiplegia, arthritides, fractures, amputations, and neuromuscular diseases), (2) chronically ill patients who do not have signs of a manifest disability (those with chronic cardiac and pulmonary diseases), and (3) elderly persons who are not obviously ill but whose physical fitness is impaired.

Techniques in Clinical Diagnosis

The first step in successful rehabilitation is accurate clinical diagnosis. In dealing with physically disabled patients, it is obvious that conventional diagnostic and laboratory techniques are insufficient when it comes to evaluating physical disabilities and determining functional capabilities. Since a majority of disabled patients suffer from some involvement of the locomotor and/or neuromuscular systems, new methods of evaluating their efficiency have been added to the diagnostic armamentarium. The most important of these methods are (1) systematic testing of the strength of individual muscle groups, definitively and accurately measured, (2) determination of the range of joint motion, and (3) objective testing of representative activities essential for daily living (briefly summarized as activities of daily living [ADL]).

The need for an objective method for determining muscle strength has long been felt in clinical medicine. The quest for more definitive measurements continues. Until more accurate methods are developed, we must use the one that is currently accepted and generally satisfactory for clinical needs. This is the method devised by Lovett in 1932 to determine the muscle strength of his patients who had poliomyelitis. Lovett's method measures muscle or muscle group performance against a series of graded resistances as an objective expres-

sion of their strength. Accordingly the muscles can be graded as follows: zero, trace poor, fair, good, and normal. Additional subgradations allow for an acceptable accuracy in practical determination of muscle power. The most obvious shortcoming of this method is the fact that the examiner's subjective judgment cannot be excluded in applying the test resistance and evaluating the muscle response. Errors due to subjective judgment can be substantially minimized if all subsequent tests are made by the same examiner.

The objective measurement of the range within which a joint can move can be determined with much more accuracy than the strength of a muscle. The clinician who wants to learn this diagnostic method will find that the literature is rich in various techniques, all of which have advantages and disadvantages. In testing the range of a joint excursion, it is important to know that various joints have their physiological limitations determined by their anatomic structure and their relationship to the surrounding soft tissues. The accurate knowledge of these limitations is fundamental in accurate assessment.

The most recent addition to the diagnostic techniques in restorative medicine is the testing of the ADL. As previously suggested, ADL testing uses an empirical list of everyday activities without whose unimpaired performance efficient living is very difficult and sometimes impossible. ADL are

customarily divided into three main groups: (1) self-care activities, (2) ambulation, elevation, and traveling activities, and (3) hand activities. The method practiced in our department calls for the testing of almost 100 different activities. The deficiencies in ADL are determined by the physician or, more usually, by the specially trained nurse or therapist. The tests are absolutely necessary for the establishment of adequate training programs. Our objective in function is not just the training of muscles or growth of muscles, but physiological exercise.

A careful analysis of the patient's general condition with the additional information gained from these functional tests will give the clinician a reliable picture of the nature and degree of the patient's physical disability. After the diagnosis has been made, an equally specific prescription for rehabilitation therapy must follow. Several reference books¹ giving definitive evaluation techniques are available.

Since documentation of the patient's improvement is important for medical and often for legal purposes, reliable recording methods are of great importance. Special charts are available for all functional diagnostic tests. Electrodiagnostic methods such as use of strength-duration curve for reaction of degeneration, galvanic tetanus ratio, chronaxy, and the most recent addition, electro-

myography, have greatly enhanced accurate diagnosis and evaluation of disability.

Therapeutic exercises are of primary therapeutic importance in restorative medicine. These purposeful and graded activations of certain specified muscles or muscle groups aim to make them stronger, improve their endurance and coordination, and generally improve their over-all functional efficiency. The objective in training is not just to strengthen muscles for the sake of strength, but, further and in addition to this, to increase their functional efficiency.

A basic understanding of muscle physiology is fundamental, without which therapeutic exercises should not be undertaken, just as no drug should be prescribed without a precise knowledge of its pharmacological action. The systematic reeducation and reconditioning of the general musculature imposes extra demand on the cardiovascular and respiratory system, and indeed, affects almost every function of the human body.

Physical Restoration

The physical restoration of the disabled elderly patient (while generally the same diagnostic and therapeutic procedures are used as for the younger age group) shows many special problems which warrant discussion. One of the major differences is that in the younger handicapped person the problem is limited to a crippling condition in an other-

wise healthy body; in the case of the older patient, however, the crippling condition is superimposed on the pathology of the aging process. This, in practice, means that in the elderly patient the restoration of the physical disability can rarely be separated from definitive medical care. Consequently, the physician engaged in the physical restoration of the disabled aged must possess a broad clinical knowledge of both conventional and restorative medicine.

Since the chronically ill and disabled aged constitute an ever-increasing proportion of every clinician's practice, the responsibility for these patients can no longer be placed in the hands of a few specialists. Indeed, it is the responsibility of every practicing physician to acquaint himself with the simpler methods of restorative medicine and to apply them in his practice. A number of rehabilitation courses are being offered on the postgraduate level in the major teaching centers which in a comparatively short time equip the physician with adequate knowledge to deal with common physical disabilities. The rehabilitation centers and services supplement rather than supplant the functions of the practicing physician. As in all other fields of clinical medicine, the bulk of services must be rendered by him. Highly specialized rehabilitation centers should be utilized primarily for the severely disabled. The role of such centers in the total program of restoration is fundamental.

The goals of restorative medicine in the older groups vary from those in the younger. In rehabilitation of the young, the vocational job objective is primary. In the elderly patient, vocational rehabilitation is usually secondary. Nevertheless, the absence of a vocational goal does not minimize the value of restorative medicine for the aged. The fact that the patient who previously had functional impairment regains his self-sufficiency may very well release a younger person for gainful employment. In such cases the rehabilitation of the unemployable elderly person can well be considered as indirect vocational rehabilitation. But even more important is the restoration of dignity and self-respect.

The medical and economic significance of the aging group is being increasingly recognized. The number of restorative services for the aged, though still very small, is slowly growing. The federal government, which, through its Office of Vocational Rehabilitation, has operated a successful vocational rehabilitation program, has now recognized its share of responsibility in the rehabilitation of those who no longer could be counted on in the labor market. As a result of this recognition, the various health agencies of the government are working on plans which are primarily intended to stimulate interest and, if need be, support local activities in geriatric rehabilitation.

In some communities, without any outside assist-

ance, old-age homes are adding rehabilitation facilities to their health services. It has been our experience that, in many communities where such services have been established, one or more of the local physicians has initiated such plans. Since this is an important public and personal health problem, the support and carrying out of such services by the physicians is not only desirable but a moral obligation. Thereby they will not only discharge a professional duty but also contribute to good public and professional relationship between the medical profession and the community. Some resources that may be used in rehabilitation planning are (1) the United States Department of Health, Education, and Welfare and its various bureaus and divisions, (2) state governmental agencies, (3) religious and various other voluntary agencies, (4) the National Committee on the Aging, New York City, and (5) special committees of the American Medical Association and state or county medical society.

Conclusions

The first objective of medical rehabilitation is to prevent or to eliminate the disability if that is possible; the second, to reduce or to alleviate the disability to the greatest extent possible; and the third, to retrain the person with residual disability to "live and work within the limits of his disability, but to the hilt of his capabilities."


One of the most important tools in management

of the older patient is the beneficent use of stress. All of our lives we regulate the function of our physical, emotional, and endocrine systems with our stress reaction. In the older patient stress must still be used but in smaller doses. Continuing stimulation, whether it be social, vocational, or cultural, is the only antidote for atrophy of disuse. If this concept is to be followed, all of the community resources must be utilized—governmental, religious, voluntary, and professional. The dynamic utilization of a total restorative program as has been briefly outlined means happier, healthier, and more productive and dignified lives for our aging population.

The standard form for manual muscle testing may be obtained from the National Foundation for Infantile Paralysis, 310 E. 42nd St., New York 3. Copies of tests for "Physical Demands for Daily Living" may be obtained upon request from the Institute of Physical Medicine and Rehabilitation, New York University—Bellevue Medical Center, 400 E. 34th St., New York.

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CONTROL OF FATIGUE IN OLDER PERSONS

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Fatigue is the most prevalent limiting factor in the pursuit of an active, happy, and useful way of life by older persons. Fatigue is both a symptom in itself and a symptom complex. Generalized fatigue is a vague physical, mental, and emotional depression known to everyone but difficult to describe specifically except through synonyms such as weariness, weakness, tiredness, exhaustion, lassitude, malaise, spent, strained, overworked, and "worn-out." It is often accompanied by loss of mental acuity, impairment of memory and perception, headache, disturbances of emotional and reflex reactivity, loss of visual acuity and accommodation, functional gastrointestinal and sphincter disorders, changes in cardiac rate, rhythm, and circulatory tone, and muscular weakness and tremor. Fatigue is also accompanied by many bodily chemical and endocrine changes, reference to which is beyond the scope of this paper.

Causes of Fatigue

Fatigue is an almost universal symptom of disease. It is often the chief complaint and sometimes the only one. In view of this, the symptom should always be taken seriously and steps taken to find the underlying cause. A painstaking analysis of the patient's physical, mental, and emotional status to disclose the possibility of disease, unhygienic patterns of living, or emotional conflicts that may be the basis of or contribute to undue fatigue should

be instituted. Anemia, tuberculosis, diabetes, nephritis, cardiac decompensation, and thyroid dysfunction are a few of the many specific causes of undue fatigue. It is important to keep in mind that the "small cerebral hemorrhages" of Alvarez may be followed by easy fatigability and thus bring the patient to the physician's attention. The use of tobacco and alcohol—and this need not necessarily be excessive according to ordinary criteria—should be considered as possible causes of fatigue. But the physician should guard against arbitrarily banning these and other pleasures. They may represent the solaces of a lifetime and, indeed, are more likely to have value in overcoming fatigue than otherwise. In this as in other things, a brief trial period of abstinence or curtailment may tell the story.

The importance of obesity as an etiological factor in fatigue cannot be overemphasized. Loss of weight is usually of decisive benefit, although this may not always become apparent until the weight is stabilized at a lower level. Emotional factors often play an important role in fatigability. They should not be overlooked.

In considering the significance of fatigue, it must be kept in mind that it is also a normal incident of normal living. Some individuals are unduly sensitive to their own feeling tone and are unwilling to tolerate the minor deviations from the feeling of well-being that occur to everyone. Such patients need only reassurance. However, when the pattern

of fatigue has recognizably changed, or the symptom is out of proportion to the age or mode of life, or it imposes an undue limitation on ordinary activities, it should not be dismissed lightly.

In the absence of specific disease, fatigue of older persons arises principally from the following five basic causes: (1) diminution of organic reserve, particularly of the heart and circulatory system, due to loss of vascular elasticity and arteriosclerosis; (2) decline of endurance of mental and emotional effort, the basis of which is the sum of the many organic changes in the central nervous system accompanying the aging process; (3) atrophy of disuse involving all systems of the body; (4) loss of incentive, motivation, and interest; and (5) decline of endocrine activity.

In attempting to control the fatigue of older persons, the physician is confronted with the paradox of a symptom that can never be entirely cured and yet can almost always be temporarily alleviated. Fortunately, much can be done by the physician to combat fatigue, but he must be willing to devote enough time to the patient to determine which of the basic causes is predominantly responsible. There is no rule of thumb regimen that is effective in all cases, and clinical trial with periodic changes in therapy and prescribed patterns of living may be necessary. Basically, fatigue can be alleviated: (a) by shrinking the individual's activities to the level where the symptom largely disappears or (b) by

measures that will tend to enhance endurance and tolerance to fatigue.

For a long time the approach to the problem of fatigue was thought to be simple. A brief history of the patient's mode of life was obtained with one objective in mind—to cut out something. It made little difference how little the individual was doing—if the patient was tired, something had to go. For instance, if the patient did nothing more than sit in a rocking chair all day long, he was no doubt advised to stop rocking and go lie down.

The enormous benefaction of rest, particularly as a therapeutic measure, cannot be questioned. But too much of a good thing, or a good thing improperly applied, may be harmful. What surgeons have learned in the practice of early ambulation we are beginning to realize has application to many medical problems and particularly to the problem of fatigue of the aged. Rest is not a universal panacea for fatigue—as thoughtful experience discloses over and over again. Many of these patients can be reduced to a vegetative existence and plied with sedatives and somnifacients and they are still tired.

What has been lost sight of is the fact that the pattern of modern civilized living, particularly in the United States, is specifically designed to avoid physical activity and stress. We have applied our enormous inventive genius and resources to the development and widespread distribution of labor-saving devices to the point where physical exertion

is virtually eliminated. Young people are able to maintain their muscular and neurocirculatory tone in reasonably good condition through sports and play. As we grow older, we tend to give up these things, and, with the help of labor-saving devices, now including electric golfmobiles, we begin to suffer rapidly and too early in life from atrophy of disuse. This brings with it, among other things, a loss of functional reserve of the heart and other muscles, including those of the vascular tree. As a consequence, the slightest added stress brings on undue fatigue.

Perhaps we have lost sight of some of the following basic principles of physiology and biology that have application to this problem. 1. Functional capacities are maintained only through use. 2. Such capacities can be augmented, within limits, only through repeated stress. 3. Atrophy of disuse sets in rapidly and those capacities that are relinquished are soon lost. 4. Functional capacities decline with age, but they will decline less rapidly if they continue to be used to their fullest extent!

Prevention of Fatigue

With these thoughts in mind, it is evident that the most effective approach to the problem of fatigue of old age lies in prevention through the maintenance of an adequate neuromuscular reserve against stress. Fortunately, some degree of the same reserve can be regained at any time except where

its loss is due to advanced organic disease. This may be accomplished by means of a regimen of graded exercise. The form of the exercise will depend on available resources and resourcefulness, but every effort should be made to avoid drudgery and to find some physical activity that is fun and that the patient will be inclined to continue of his own volition. Golf, swimming, hiking, bicycle riding, gardening, badminton, and tennis are among the many pleasurable forms of activity that will serve the purpose. Here, too, the rules of common sense are still applicable and too much exercise as well as too much rest can only defeat its own purpose. Along with exercise, the physician should see to it that the patient also obtains an adequate amount of sleep at night. If mental or emotional disturbances interfere with this, there is ordinarily no overriding reason why a good somnifacient should not be prescribed. A short rest at midday is of definite benefit in some cases, and almost all individuals can train themselves to sleep for half an hour if they will earnestly try.

At the same time the mental and emotional fatigue that comes at the end of a trying but sedentary day can be miraculously dispelled with a little physical exercise. It takes a particular charge of will power to undertake physical activity when fatigue is already present and all of nature seems to be crying for rest instead, or perhaps a drink. But over and over again it has been demonstrated that

physical activity in such circumstances brings a degree of refreshment and renewed energy that nothing else can equal.

Undue fatigue of older persons occurs so much more commonly among those who are overweight that this circumstance warrants special emphasis. The remedy is obvious, easy to prescribe, but hard to take. A patient once told me, "What I need, doctor, is a will-power pill." In addition to dietary instructions, the importance of exercise should not be discounted, despite traditional handed down hearsay to the contrary. Its greatest value lies in its stimulating effect on endocrine activity, perhaps the thyroid in particular, and in overcoming the tendency to sleep and snooze too much—a common counterpart of obesity.

There can be little doubt that endocrine deficiencies contribute to the fatigue of old age in some individuals. This is particularly true during the menopause, and in such cases the administration of estrogens is often of benefit. Whether or not a related change takes place in men is still a matter of dispute. Nevertheless, experience suggests that small doses of testosterone are also sometimes of value in overcoming easy fatigability of older men. Thyroid extract is occasionally helpful, particularly where the basal metabolic rate is low and the serum cholesterol level elevated, but otherwise it is more often disappointing than not.

The sympathetic amines, such as methampheta-

mine (Desoxyephedrine) hydrochloride, phenylephrine (Neo-Synephrine) hydrochloride, and amphetamine (Benzedrine) have a potent effect in counteracting undue fatigue. As a general rule, they should not be given until other measures have failed. They are, of course, contraindicated in hypertension, coronary, and other vascular disease. Contrary to older pharmacological concepts, they are best administered in conjunction with a small dose of a sedative which permits the ergogenic effect of the amine to occur without the otherwise accompanying nervousness and sleeplessness. The sympathetic amines are particularly useful for fatigue in obese patients. Needless to say, patients receiving drugs for fatigue should be seen by the physician at regular intervals.

There is no reliable correlation between how hard a person works and degree of fatigue. If anything,

fatigue of older persons is seen more commonly among those patients who do not have enough to do. Too often they feel that their life work is done and their fatigue has its origin in boredom and loss of incentive and interest. Over and over again, when a crisis arises or something of deep interest comes along, these individuals miraculously lose their fatigue.

It is, of course, difficult for a physician to prescribe an interest where there is no interest. Unfortunately "make work" programs often fail because they are undertaken half-heartedly and the necessary compelling motivation is lacking. However, this should not serve as a deterrent, because a new and absorbing interest is the only real salvation for some of these patients. When they find it, as some do, their symptoms disappear and they are given a new lease on life.



THE SENIOR CITIZEN AND HIS COMMUNITY

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In every community, whether large or small, there is an increasing number of people being looked upon as senior citizens. A generation or two ago this group was not so large. The small community odd jobs and farming activities took care of many of those who could work. The family philosophy of being responsible for their own took care of a large part of the remainder.

As a "problem" the oldster did not present the urgency that is thought to be there today. In a community which throbs along at the relentless rate set by an atomic age, there is little sympathy or feeling for one who allegedly cannot keep the pace. We who have conquered the atom have not solved the challenge of being able to live one with the other. We are adept at recognizing differences that permit us to set groups apart and at discussing their special needs as problems; but what about those similarities which make us all brothers under the skin whether we are young or old, white or colored, religious or nonreligious.

The very title of the paper implies an ideal that the Committee on Aging might well strive to solve. The term "senior," besides indicating advanced age, carries with it the connotation of being advanced in accomplishments, dignity, rank, and office as well. It will be the responsibility of the aged of the future to possess these attributes. A citizen is a member of a free community and, in return for his loyalty and allegiance, is accorded protection of

life, liberty, and property as well as the right to vote and speak regarding the affairs of government. The community then, for our purpose, is a number of citizens with a common organization and/or interest who live adjacently.

The real content of this paper, however, has to do with the people who are over 65 years of age and their relationship to the community in which they live. It does not take too much of a study to bring out the fact that far too many of the senior citizens have but one characteristic in common, and that is their age. The advanced accomplishments, dignity, rank, and office seem to have been lost somewhere. The interest in environment, motive for living, and the sense of belonging seem to be hardly worth the effort. Neglect of personal appearance, chronic complaining, and failure to keep mentally alert limit the horizons of personal association. Any exaggeration of these defects changes sympathy and understanding to neglect and disgust and provides motives for the segregation of aged in homes and institutions.

Allegiance and loyalty are still expected of the senior citizen by the community. The protection of life, liberty, and property become a mockery to many in the face of enforced compulsory retirement which denies the oldster that right which gave his whole life meaning prior to the age of 65—and that is the right to work.

In the studies of the aged and aging compiled

by the staff of the Committee on Labor and Public Welfare, United States Senate, November, 1956, a bill of objectives and a program for action in the field of aging was offered. From the list the points which seem most germane to this subject are (1) equal opportunity to work, (2) adequate income, (3) adequate living quarters, (4) adequate medical care—in hospitals for both acute and chronic diseases or convalescent homes or homes for the aged, and (5) encouragement to participate with freedom, independence, and initiative in community activities.

In any labor market there is a sizable number of workers who have, for various reasons, never stayed long enough in one place to take root. These constitute the bulk of those who find it more and more difficult to get jobs as they approach 65 years of age. If the truth were known, they are largely the ones who would have difficulty getting employment on a tight labor market irrespective of their age. These should not constitute a part of the so-called problems of the senior citizens.

In this latter area, we have a totally different challenge. The rising cost of supporting the aged in retirement; the recognized value of the older worker from the standpoint of efficiency, spoilage, absenteeism, and loyalty; and the recognized wastefulness occurring when human resources are squandered at the age of 65 make us view with grave doubts the present concept of compulsory retire-

ment. It is the responsibility of the community and of industry to provide work for those who are willing and able. This concept is so very ably expressed by President John Erik Jonsson of Texas Instruments Incorporated when he says, "Never hire anybody you don't expect to keep the rest of his working life." It is the responsibility of the aging worker to realize that he has been and will continue to be a member of a society that wants and needs what he has learned through his years of effort. An adequate earned income is certainly the right of every member of a community. Even in the aged group this should be commensurate with his contribution and certainly should be larger than that provided by the usual retirement allowances plus social security.

Much is made of the concept of there being no place for the oldster because of his failure to keep pace in the production line. But what good is a production line without the consumer! Henry Ford must have realized this a number of years ago when the automotive industry was in its infancy. He envisioned the great productive lines of the future as the inevitable result of progress. His contribution to the industrial problems of the day was not to find more leisure for the individual who is not trained to use it in the first place but to provide more units of his product at a cost within the reach of all. When this did not quite occur, he raised the daily wage of every member of his fac-

tory to \$5 a day, an unheard of figure in those days. Instead of causing an economic collapse, it provided improvement in living standards of his employees as well as a greatly increased market for his automobiles. The great army of the retired which will grow larger with each advancing year is lost to the market because of inadequate income at the present time. Continued employment permits incomes above the usual retirement level and provides consumers with adequate funds to stimulate production.

Community planning and growth should take into consideration the needs of its older citizens. Some groups cling to the idea that these should take the form of a community for the aged within a community. Large multiple dwellings make it possible for similar needs to be met in group fashion. This is largely the approach observed in the so-called welfare state. There are several establishments of this variety being tried in the United States but with a somewhat different atmosphere. Fraternal, labor, or religious ties form the basis for this type of housing care. As nonsegregation becomes more prevalent, it is hoped that discrimination against the aged will become less articulate and the oldster will be able to take his place as a senior citizen and live and work in any part of the community he wishes. This privilege should continue until, because of either health or will, retirement becomes the course of choice. The future may

still prove that a closer association of youth and age can be extremely beneficial to both.

Because of the decrease in infant mortality, and because many epidemic and endemic infections have practically disappeared from the scene, an increasing number of people are living to advanced years, and the profile of medicine has accordingly changed greatly. More opportunity exists for the application of theories of preventive medicine in an effort to further eliminate man's illnesses. More long-term illnesses also exist, especially among the aged, which make us review all our present methods of caring for the sick. Adequate medical care must be provided to keep the well oldster well; to

keep the marginal oldster from becoming sick; and, when the oldster gets sick, to provide for his acute illnesses. The facilities of hospitals should be available as long as necessary in cases of acute illness, but then hospitals for chronic cases, rehabilitation centers, and convalescent nursing or old age homes are needed to complete the total care of the patient.

In summary, it seems that we are merely asking that the citizen who is entitled to vote and speak in his community be more advanced in dignity and standing and attainments and that his community recognize anew that the rights of citizenship be not abridged because of age.



POSTURE IN THE AGING AND AGED BODY

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"Animals have shapes and forms. Only man has posture . . ."¹ The routinely renewed achievement of the complex mechanisms of the upright posture affirms the substantial quality of this human adaptation. This evolutionary accomplishment attracted a roster of students whose observations parallel the most advanced thinking of the past three centuries. A review of these well-documented facts would serve, without novelty, only to refresh memory. The many details limited specifically to the effects of aging on posture, however, are quite a bit less a part of the common knowledge. Postural modifications in the aging body consist of a combination of changes that must occur in harmony. There are anatomic alterations in the skeleton to which the organs of the modified cavities must make accommodation. Adjustments in such contours and parenchymal contents exact a balance in physiological activities. These morphologic and reactive changes are reflected in appropriate biochemical tolerances and blood and tissue levels in the establishment of an effective equilibrium for survival. The tripartite progression must operate in a way that contributes to the older individual's functional adequacy.

The association between the nature of a structure and the character of its activities was recognized by Keith,² whose conclusion was an historical culmination of the fact that form probably is a result of its

functions. This is not the sort of thought that does much rousing anymore, but it affirmed theories of development that had long been in formulation. Progress from prone to orthograde and finally to a plantigrade status required multiples of changes. A superior method of survival based on the two-footed stance involved compromises in organ size and relationships which had to be threshed out in cycles of evolution. Pulmonary organs, for example, had to be coupled with a thoracic configuration compatible with the upright state. Cerebral blood flow is determined, among other things, by intravascular pressure; the effect of blood carbon dioxide concentration on cerebrovascular resistance; and reflex effects of the fluctuating intracarotid pressures on these vessels.³ The position of the head, whose shape is a result, in part, of such forces, affects these forces.

Persistence of well-being and length of survival are determined by the ability of organs to adjust with accumulative age. Adequate functions cannot be maintained if there is a break in the continuous liaison of the organs that mediate them. This is as true in a single life cycle as in the phylogeny of the species. Just as these chest and skull and other systems evolved in the many aspects of erect man, lesser adaptations for such changes as aging in the individual's life had to be perfected. The form, to repeat, follows all of the elements of its function.

Structural Changes and Aging

"A number of structural changes are invariable accompaniments of aging."⁴ Posture is determined by the total lineaments of the vertebral column. The configuration of curves from skull to coccyx is the quotient of many apposing forces. During maturation there is a balanced series of conformations to the erect state that is followed by piecemeal deterioration in average senescence. Early changes due to age are degeneration of the intervertebral disk and modification in the apophyseal joints; these changes can occur at a variable rate in different components of these structures from individual to individual. One result is a reduction in total columnar resiliency and of the ability of counterpoised muscle groups to maintain accustomed alignment, as gravity is resisted less effectively by the frame of an older person. Although many aging and aged people maintain satisfactory posture, asymmetrical and prior wearing of the anterior arc of intervertebral separation generally results in the accentuation of curves and osteoblastic proliferation at points of contact. Such degenerative bone disease and osteophytosis in sites of unusual ligamentous strain may deter the rate of loss of the basic vertebral contour. It is quite likely that "spondylosis is the commonest disease to which the vertebral column of man is subject . . . as a physiological response to chronic mechanical stimuli."⁵

From the unmarred, undiseased state of the non-traumatized healthy young person in the fulness of his postural heredity, a host of changes emerge in "natural" aging. There is increased curving of the cervical region compensated by the counterbalancing head.⁶ The thoracic bow is increased, with the convexity to the dorsum, while the lumbosacral section tends to a reverse change of direction. The sacrococcygeal articulation becomes more acute as many strains are brought to a focus in this union of the two sets of bones where there is balanced "a bulky superstructure on a small base." In general, elastic tissue properties seem to undergo the initial impairment followed by bone changes, the density or atrophy of which is related to degrees of use and abuse. The sternal bones, meanwhile, fuse into one, held at a greater distance from the dorsal column by the tendency of horizontally rotated ribs to maintain a fixed inspiratory position. As points of muscle origin and insertion, as well as functions, shift, muscles are molded into new shapes as more effective adaptations to gravity. The loss of tone of abdominal muscles unsupported by more rigid means inclines the region to a gravid sag which promotes accumulative defects. The pelvis, as a structure of support and balance, is compressed vertically and expanded laterally. The relationship of the femoral head to the enshallowed acetabulum becomes more acute. The short step, bent knee, and shifted center of gravity of the very old, often cane-

supported, person is in contrast to the epitome of successful adaptation, the peak of which was passed in late maturity—"in a better understanding of the special structure and the special physiology of the individual . . . the solution of the problem of chronic disease is largely to be found."⁴

The extensor muscle mass of the flexed cervical-occipital region becomes heavier in contrast to the opposed anterior muscles, which becomes shorter, atrophic, and spastic. Impaired foraminal apertures and the new lines of muscular emphasis compress segmental nerves with the production of various uncomfortable radicular syndromes. There are vascular, musculoligamentous, as well as neurological effects related to the arthritic articulations.⁷ The restricted mobility of the cervical component of the mediastinal structures renders it less reliable as a diagnostic index of intrathoracic changes. Impairment of ability to extend the neck limits coughing, swallowing, and other essential movements which are dependent on an expansible portal to the thorax.

In the deepened and widened and less mobile chest, the lungs are emphysematous in an increasing number of instances with a reduction in the total functional units. The intrathoracic structures of the mediastinum are more fixed. As the more rigid chest approaches a position of inspiratory fixation, accessory respiratory muscles become more essential for primary respiratory function as well as the

maintenance of negative intrapleural pressure by which the circuit of venous flow against gravity is established. Infradiaphragmatic veins lengthen, become more tortuous, and undergo degenerative changes with calcific deposition. The time for blood return to the vena cava inferior is prolonged.

The diaphragmatic concavity changes and it undergoes official impairments as its modified attachments and prime muscle qualities change. There is an age-linked increased incidence of herniations through the esophageal hiatus which has decreased resistance to repeated strains transmitted from above and below.⁸ The postural change of kyphosis may be the point of departure for a pathological sequence of such a hernia and chronic hypochromic anemia. In the area where the gastric mucosa is constricted by the annular esophageal opening and irritated refluxly, there is a varying degree of mucosal extravasation of blood for which there is inadequate compensation to maintain a normal blood level with chronic depletion of iron stores.⁹

The accentuated lumbosacral line is reflected in the impaired muscle qualities of the anterior abdominal wall with its droop of poorly resisted intra-abdominal contents and the accumulations of fat in the various planes and the omentum as well as in the retroperitoneal depots. All types of herniations increase, while fluid retention is linked to the hindered venous return which may effect an expansion of the lower body's total extracellular space. The in-

fluence of the modified postural dynamics, among other effects, accounts for a more than coincidental increase in the incidence of intestinal diverticuli, hemorrhoids, and varicosities of the extremities.¹⁰

The less stable upright state is accompanied by essential changes in the organs of support and locomotion. Degrees of joint deformities from hips to arches, neurological changes, and the progression of peripheral arteriosclerotic states belong in the same parcel. The entire picture, from an occasional aching back to the pathetic *marche a petit pas*, is framed by age's structural deterioration. Osteoporosis goes hand in hand with the obvious articular changes. "This machinery is constituted, not on an anatomical, but on a physiological basis."²

Biochemical Changes and Aging

As cause or result, biochemical changes must be involved in the structural modifications. Prominent among these are the interrelations of carbon dioxide retention, water balance, and calcium shifts. It might be theorized that localized changes in carbon dioxide concentration due to structural and activity limitations with age are primary. As venous return is impaired by reduced muscle tone, forced or spontaneous reduction in activities, altered pulmonary negative pressure, as well as a complex of other bearings, there is a tendency for dependent parts to be exposed to a lower pH for longer periods of time than nondependent areas. Such zonal differ-

ences are, in effect, regions of relative acidosis subject to constant forces of equalization. Water retention apparent as edema is due not only to the back pressures of gravity and osmotic forces but also to higher concentrations of carbon dioxide.¹¹ Chronic vasodilatation with sensations of burning, restless legs, and an increased incidence of nocturnal leg cramps may be part of this pattern. Acidosis is associated with increased calcium excretion, and intraosseous as well as extraosseous structures would be subject to regional differences in pH. For simple mechanical reasons or in the many chemical changes subsequent to release from continued dependency (of which adjustment to the carbon dioxide levels is an important consideration) certain muscle groups may become sensitized and respond with tetanic reactions.¹² In fact, the entire problem of calcium metabolism as part of the many influences of postural changes with age could be subjected to survey. Clinically, it is a common observation that the lower tibia, particularly in older women but also in many men, is very sensitive to pressure. This is a region which, by position, is particularly susceptible to many bone-altering effects, of which higher carbon dioxide levels may be thought to be one.

Changes in posture and muscle tone with dilating vascular effects underlie less labile fluxes in blood volume, which are reduced 15% normally by standing for 30 minutes.¹³ In older persons, shifts in blood volume, dilated vascular tree, and reduced

vessel elasticity are reflected in the increased incidence of recumbent angina, pulmonary edema, acute paroxysmal nocturnal dyspnea, and the motor agitative features of cerebral anoxia. The last are interpreted too often as primary cerebral impairment when a temporary physiological inadequacy unmasks for the time a generally compensated state of chronic brain syndrome.

There are many other influences in addition to these that are operating in such abnormal conditions. Proteinuria¹⁴ is significantly increased in persons in the upright position, and there is a still higher incidence in the lordotic state. Diastolic pressure rises when a person stands, and it falls with recumbency. In the presence of kyphosis¹⁵ there is a reduction in alveolar ventilation, reduced arterial oxygen tension, increased pulmonary vascular pressure, and a tendency to a rise in pulmonary vascular pressure. Vital capacity and maximum breathing capacity are reduced in direct relation to age. Circulation time increases and venous pressures tend to be higher. Such changes affect and are influenced also by shifts in electrolytes. In brief, as Sodeman stated, "the mechanisms of homeostasis have physiologic limitation."

Obviously no single influence, such as postural change, can be blamed for the innumerable adjustments undergone in the aging body whose concert of successful and complicated progressions must be made in synchrony. The danger, by far,

is not that too much will be ascribed hypothetically to structural balances but that too little will be accepted as related to all that is involved in such efforts in a life cycle.

Comment

Is there any evidence of correlation in good posture, well-being, the incidence of certain pathological conditions, and length of survival? Clinical impressions suggest an affirmative answer. Better postured individuals probably have fewer defects, enjoy better health, and live longer than those with a seriously distorted skeleton. Postural aging is attended by new anatomic zonings and accommodating physiological states which can attain a pathological status reflected in new blood and tissue chemical constants. The extensive range of variable change only suggested in this arbitrarily limited synthesis depends on the degree of physical deformity and inherent abilities to make balanced adjustments. Lesser changes would incite lesser degrees of reaction and have a reduced influence on tenure. With the rise in postural impairments, there is a curtailment of resistance to physical and chemical stresses. One familiar example is the pattern of kyphoscoliotic cardiopulmonary disease in which the use of morphine, for example, may have undue effects. This vascular limitation based on a gross thoracic change is an extreme form, lesser stages of which have proportional effects.

In linking body limitations to structural deficiencies, there emerges the awareness of the need to promote techniques that will be more effective in resisting average trends of aging. If the morphologic, physiological, and biochemical changes based hypothetically on structure alterations can be allied inextricably to body form and function, a single question emerges, namely, will a conscious and persistent effort to maintain good posture in the face of common senescent regressions be able to impede any or all of the implied consequences? Occasional long survival despite severe architectural aberrations indicates a capacity of the body to arrive at a working premise, but this is rare. In general, there is a correlation in body structure, health, and span of survival.

As a pragmatic as well as a therapeutic feature in medical care, there are considerations that would best be undertaken prophylactically at an age before inalterable geriatric changes occur and yet be useful after the occurrence of some degree of them. These are (1) the promotion of the best postural state compatible with the body's older capacities and (2) the utilization of purposeful activities, correct nutrition, anabolic supplementation, and training in correct body alignment as a counterpart to natural adaptations made by the aging and aged body in its own defense. An over-diligent effort to correct posture in the face of a certain established equilibrium might seem justified empirically but

may be unsound physiologically, particularly if forced and in haste. Postural treatment must be planned with deliberation for the long pull and must be allied to normal values in gerontology, with consideration for the following statement made by Nascher a half-century ago: "in dealing with senile disease the object must be to restore the organism to the normal senile state and not to the normal state of maturity." The result will be an effective survival based on better anatomic and physiological conformity to the serial stages of aging.

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HOUSING AS A BASIC NEED OF SENIOR CITIZENS

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The number of "senior citizens" in the United States has been increasing steadily for many years. It is only recently, however, that the results of this increase have been felt with sufficient force to gain wide public attention. Now, with comparative suddenness, the extent of the changes that have occurred in the population and their implications for the future are being recognized. The pressure of the large number of elderly people in need of physical care and financial assistance is being felt not only by the older people and their families; it is encountered almost daily by doctors, hospitals, public health and welfare organizations, and by the taxpayers throughout the country who must pay a substantial part of the increasing cost of maintaining public assistance programs and institutions for the support and care of older people.

The time has passed when special emphasis was needed to make professional groups and the public aware of the importance of the problems of older people. Almost everyone has encountered these problems as they affect his own family or his close friends, as well as in their broader aspects. The air is filled with demands for action to improve the situation and with proposals of many kinds for solving the problems. This widespread and active interest and the accompanying demands for action are encouraging developments. They present certain hazards, however, with respect to the possi-

bilities for assessing the problems accurately and evolving effective methods for their solution.

The demands for action now are far ahead of tested knowledge of what to do and how to do it, and many new projects are coming into existence. Entire housing developments for older people, "retirement villages," apartment houses for the aged, old peoples' homes, rest homes, boarding homes, foster homes, nursing homes, and "geriatric hospitals" are being advocated, and some are being constructed. Because the need to provide care for large numbers of older people is still a new problem and there is comparatively little tested experience to serve as a guide, most of the proposals now being considered are based necessarily on theory. The good ones are grounded in theories developed through painstaking study of experience in closely related fields, of reliable and comprehensive data on the characteristics of the people who need the services and, specifically, what it is that they need, and of full information about what already is being done by professional personnel and health and welfare organizations and through critical evaluation of the data and logical thinking leading to the conclusions.

There are some proposals, however, that seem to have resulted entirely from wishful thinking and pure imagination unrestrained by any familiarity

with known facts or any real understanding of the characteristics and requirements of the older people concerned. Under these circumstances, it is especially important that medical society committees and other leaders in community service who have responsibility for evaluating the various proposals examine them critically in the light of the best information available. A considerable amount of such information is available, some of it in published form.¹ For obvious reasons, very little of this data can be included here. There are some considerations, however, that can be discussed briefly, as they may shed some light on the kinds of housing facilities that are best suited to the requirements of older people and that appear reasonable in relation to the possibilities for financing and maintaining them.

The first of these considerations is that older people should remain independent, active, integral parts of normal community life as long as possible. People who are in good health and who are fully able to manage their own lives with complete independence should do so, whether or not they happen to have passed the age of 65 or 70 or 75 years. Older people, like those of any other age, want to choose their own living arrangements and usually they greatly prefer to remain in the homes and neighborhoods where they have been living and where they have friends, relatives, and familiar surround-

ings. Comparatively few people have any desire to leave their own neighborhoods and move to special "colonies" or "projects" inhabited exclusively by people their own age. This is just as true of older people as of others, and most of them are not willing to make such a move unless there is a compelling reason for it, usually failing health and fear of the future. Many doctors know, from difficult experiences with their elderly patients, the tenacity with which older people may cling to their independence and to their own homes even after illness and infirmities have progressed far beyond the point where it seems to others reasonable or safe for them to do so.

In addition to the preferences of the older people, the question of community and governmental responsibility for financing and maintaining special facilities for particular groups of people merits consideration. No one seriously questions the need and the justification for supporting, through voluntary philanthropy and/or taxes, special facilities for care of people who are not able to take care of themselves. There seems good reason, however, to question critically whether the self-supporting people in the community should be expected to contribute to the support of special housing or other facilities for people—old or young—who are fully able to live side-by-side with everyone else in the same houses and apartments that are available to others.

Housing for Those in Good Health

At least 75 to 80% of all persons 65 years of age and over, in the United States, are entirely able to live independently in ordinary houses and apartments throughout the community. It is true, of course, that as people grow older the size of the family tends to decrease and smaller houses and apartments are desirable. Children grow up and leave home. A husband or wife may die, leaving the partner widowed and alone. The large house or apartment needed when the children were at home and all the members of the family were younger and more active may become a burden that should be sacrificed in favor of a smaller unit that can be maintained with less physical effort and at less cost financially. Ranch houses, first floor apartments, or units in elevator buildings may be preferred so there will be no stairs to climb and it will be easier to get out-of-doors. If a member of the family must use crutches or a wheel chair, wide halls and doorways will be desirable. Such safety devices as nonskid surfaces on floors and grip-bars in bathrooms may be advised.

The desirability of small housing units and of safety features like these has been cited as a reason for special housing projects exclusively for older people who are in good health. A brief examination of the housing needs of others in the population, however, casts doubt upon the validity of this

conclusion. The need for small housing units easily maintained and available at reasonable cost is felt by young people just beginning their adult life as well as by the older people. Particularly in cities, there are employed women, not yet married, who want homes of their own but have limited funds and not much time to take care of them. They usually must manage with small kitchenette apartments or find roommates for companionship and to share the expense of larger places. Similarly, the elderly widow may have to manage with a small kitchenette apartment or find a roommate to offer companionship and share the expense of a larger place. The young, recently married couple whose children have not yet arrived and who have not reached the peak of their earning capacity need housing accommodations of about the same size and cost as the older couple whose children are gone and whose income has passed its peak. Even with respect to such features as first-floor apartments, nonskid floor surfaces, wide hallways, and grip-bars in the bathrooms, older people have no monopoly on the need. The mother of young children who must run from one part of the house to another innumerable times a day also finds stairs exhausting. Baby buggies need about the same amount of space in the halls and doorways as wheel chairs. Even the grip-bar near the bathtub may be as useful to the younger family as to older people. Little children sometimes slip in bathtubs

and are drowned just as older people may fall and break their hips.

Good housing suited to the needs of the entire population will meet the requirements of healthy people past the age of 65 along with those of everyone else, and it is not necessary, nor is it desirable, to segregate into special "colonies" or "projects" older people whose health is good and who are fully capable of remaining independent and taking care of themselves.

Housing for Those in Failing Health

The need for special housing for older people arises when illness and infirmity have impaired their ability to maintain homes of their own. Such impairments characteristically develop slowly, and in many instances it is difficult to determine at just what point the elderly lady's arteriosclerosis, hypertension, heart disease, diabetes, or hearing loss is causing sufficient handicap to necessitate surrendering her own home and moving into special accommodations.

For many people, probably the majority, this point comes long before they are bedridden and long before they should be labeled "sick and incurable"—if, indeed, such labels ever are justified. These older people are, in fact, ill in varying degrees and their conditions are incurable, but they still are able to do many things for themselves and for others and they should be encouraged and

helped to continue living as normal lives as possible. Frequently, these people are described as "in good health for their age" or as "well old people who need care." They are ambulant and can come and go with reasonable freedom as long as they stay within their limitations, but they are not able to do the washing, scrubbing, shopping, and other work necessary to maintain a home, and they cannot safely live alone in a hotel or rooming house because their mental processes have slowed, and they are forgetful, or there is danger that they may become ill during the night and require help that is not readily available.

It is an unpleasant but important reality that for all of these people the course is downhill. Some will have acute episodes and reach the end quickly. For others there will be very gradually increasing infirmity for months or years. Some will suffer cerebral vascular accidents and be left alive but paralyzed and in need of large amounts of care to rehabilitate them to whatever degree may be possible and to provide such care and attention as they need to prevent further disabilities and make their remaining days as comfortable and satisfying as possible.

The group of "senior citizens" who need special housing facilities includes people in all of these stages of disability. Many of them are "in good health for their age" and need little more than someone to maintain a home for them and to be

available in case help should be required. Others need more assistance. Some are almost completely disabled and require constant nursing care. All of them, however, desperately need places to live where they can have a real feeling of "home," where they can be encouraged and helped to use all the capacities they still have, and where they can live as nearly normally as possible. And all of them need, in addition to four walls and a roof, some degree of protection and help.

It is important in planning any special facilities for the housing of older people to keep these facts in mind. In many instances, in efforts to avoid or postpone the facing of the unpleasant reality, proposals are made for the establishment of separate facilities exclusively for the people who still are in the early phases and require only minimum services. The explanation usually given is that these people are "well" and the others are "sick" and that having sick people in the facilities where the "well" people are living would be depressing and would make a true home impossible. These assumptions are not supported by experience, however. With the proper intent and reasonable effort, it is entirely possible to give good care to those who are infirm or badly disabled and still maintain homelike surroundings. It may be emphasized, also, that in many respects it is the people who are most severely disabled who are most in need of the comfort and security of a truly homelike atmos-

phere. The better the individual's health, the greater are his opportunities to find satisfactions in other ways, and it is a tragic mistake to assume that the only people for whom a homelike atmosphere is important are those who are still in comparatively good health.

The assumption that the "well" people will find it depressing if they are housed in the same facilities that provide services for those who require more care also fails to find support in actual experience. One of the strongest influences in bringing older people out of their own homes to enter any special housing arrangement is fear of what may happen when they no longer can take care of themselves. They are seeking the security of knowing that, as they become increasingly infirm, someone they can trust will be there to care for them. This is their primary need, and, whether or not they face it openly, it is fundamentally the thing they are seeking. Obviously, it is not desirable nor is there any necessity to ask the elderly lady who still is in fair health to move into the same room with a patient who has extensive paralysis and is incontinent. There is no reason why the people who are ambulant and fairly self-sufficient should not be housed in one wing or on one floor of the building while those with greater infirmities are in other sections. At the point when the elderly person must leave his own home and go to any special facility, however, he should be going to a place that can

become his home for the remainder of his life and where he can stay as his infirmities increase and more care is required.

Importance of Home Atmosphere

As health declines and physical independence is lost, any change tends to be contemplated with increasing fear and resistance by the patient. One of the most painful experiences in life comes at the point when one must give up his own home and the independence and status that go with it and go to live in a place where others make the decisions that control his way of living. This is true even when the move is to the home of a son or daughter. It may hold even greater fear and sorrow if the elderly person is going to live among strangers in a special accommodation for old people. If he is fortunate enough to move into good surroundings with kind and understanding people in control, he may come through the ordeal with a minimum of suffering and gradually may develop confidence and some feeling of security in his new surroundings and in the people who control them. This will be difficult or impossible, however, if he does not have real stability in his new home, especially the security of knowing that as his infirmities increase there will be someone whom he can trust to care for him.

This is a compelling argument for seeing the patient's total problem and for developing facilities

that will be prepared to care for him not only during the temporary period while he needs very little service but also as his requirements increase. Any facility designed for housing and care of older people should be prepared to continue providing the necessary care as its residents grow older and more infirm. Special facilities operated exclusively for so-called well old people who are ambulant and comparatively self-sufficient are not desirable. The requirements of older people are not static, and a chain of separate facilities, each of which offers care only at one particular stage of the patient's infirmity, represents a harsh solution from the patient's point of view and a form of organization of institutions and agencies that is unnecessarily expensive and almost unworkable from the point of view of good administration and good organization of community services.

For roughly two-thirds of the older people who have reached the point where they no longer can maintain their own homes without help, the problem is met within their own resources and by their families and friends. In only about one-third of the cases is there a need for special facilities maintained by the community. The difficulties and annoyance encountered when a family fails to accept its responsibility for care of an elderly person sometimes are so great that they obscure the many instances in which families are taking full responsibility and are discharging it with generosity and

kindness far beyond anything that reasonably might be expected from them.

Even with only about one-third of these older people dependent upon facilities maintained by the community, however, the number is large. There are approximately a million people in this group in the United States at the present time and the average community needs about 5 beds per 1,000 population to house and care for them. The special facilities maintained by the community for housing and care of its "senior citizens" should be homes in the best sense of the term and should be so constructed and operated that they encourage and help the older people to maintain as active and normal lives as possible. This is true for the elderly people who are ill, infirm, and in need of large amounts of care as well as those who still are ambulant and fairly self-sufficient. The missing link in the chain of facilities for care of the aged and for care of the sick and handicapped, in general, is not a facility for the diagnosis and specialized treatment of illness or injury. General hospitals are providing these facilities for older people along with everyone else and they should continue to do so. The lack is in homes for people who have continuing infirmities and illness, who require good care in varying amounts but do not need the highly specialized equipment, personnel, and routines of general hospital wards, who are not able to maintain homes of their own, and who do not have

families and friends with whom they can, and want to, live and receive care.

The character of these facilities should be understood clearly as that of a home. They should not attempt to become junior-grade hospitals and they should not be permitted to do so. The need for them arises from the fact that the residents cannot continue to maintain their own homes and do not have satisfactory homes available with their families or friends. They must, therefore, look to philanthropic organizations or governmental units to establish and operate facilities that will offer them the best possible substitutes for good homes of their own.

Essentially, these are substitutes for the patients' own independent homes and the relationship between these facilities and general hospital units should be essentially the same as between other people's homes and the hospital. The facilities may be—and it is highly desirable that many of them should be—operated as units of general hospitals on the same grounds, under the same administration, and with cooperative use of staff and equipment with the general hospital wards. The furnishings, staff, and atmosphere in these units, however, still should be, and can be, consistent with a home rather than the highly organized routines of the general hospital wards.

Any special facilities for housing and care of older people should include provisions for good

and consistent medical attention and health supervision for all residents as well as good nursing services. If the facilities are not an integral part of a general hospital, they should be so located and administered that the services of a good general hospital are easily and promptly accessible. People who are living in facilities of this kind should be able to receive in them approximately the same kinds and amounts of care that other people receive with their families in their own homes and, like those who are living in individual homes, they should be taken to the hospital when specialized services are required.

Summary

"Senior citizens" should remain active and independent members of the general community as long as they are able to do so. Special housing facilities are not needed nor are they desired by healthy older people who are fully able to live independently and maintain their own homes. The need for special housing arises when the older person no longer is able to maintain his own home and live with complete independence. Many of these people are in "reasonably good health for their age" and require only minimum care. For all of them, however, the course will be downhill and increasing amounts of care will be required as time goes on. The break away from his own home is extremely difficult, and when it must be made, the individual should be

able to go to another place where he can stay as long as he needs a home anywhere. Consequently, special housing projects and institutions operated exclusively for elderly people who are ambulant and self-sufficient are not desirable. Any special facilities for older people should be prepared to continue meeting their needs as infirmity increases and more care is required. Even though all the people in need of this care have some degree of illness and infirmity, it is homes, not hospitals, that they need. The emphasis should be on a homelike atmosphere, with encouragement for every individual—even those with advanced infirmity—to live as active and normal a life as possible; at the same time good medical attention and nursing services should be provided in whatever amounts may be required. Finally, advancing age is a universal experience and the ultimate test of any proposal for new facilities for “senior citizens” is an honest

appraisal of whether or not it will be adequate and acceptable for you and for me when our times come.

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PREPARATION FOR RETIREMENT IS A MUST

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The medical profession, as well as the rest of modern America, faces a new educational task today—learning and teaching how to make the most of the years following the achievement of maturity. In the last decade those devoting major attention to gerontology have been impressed by multiple indications that this new educational need has developed to the point where it is imperative that it receive additional consideration both by organizations and by individuals. So far, serious work on this subject has been carried primarily by a few universities, by a scattering of far-sighted professional people (including doctors), and by a small group of progressive industries. In addition, several organizations, notably the National Committee on the Aging of the National Social Welfare Assembly, have significantly stimulated the collection, digestion, and dissemination of relevant material. Nevertheless, these efforts do not yet even approach the dimensions of a satisfactory program for our older people.

The educational programs which have been conducted to date are conventionally labeled “preparation for retirement,” but the process might more accurately be called “education for reoccupation,” since the continuation of healthy functioning (social, emotional, and physical) is the goal we are trying to achieve. However—we refer to the process under discussion—the physician has more than one

direct relationship to the subject. Indeed, perhaps no other professional person has as many.

The Physician's Interest

What is the nature of the physician's relationships to the problem of preparation for retirement?

First, the physician is in a great measure responsible for creating the problem. By effectively postponing death, he has given the average American an extension of time between the end of working life and the cessation of life itself.

Second, the family physician, and increasingly the physician in a clinic setting, if he accepts the concept that the doctor's job is to treat "the whole man," is peculiarly well situated to perform the following important functions: (1) evaluation of the appropriate moment when preparation for retirement should explicitly be undertaken by his patient; (2) introduction of the subject in an acceptable fashion; (3) instruction of the patient in the components of preparation for retirement insofar as they relate to health and medical care, and (4) referring the patient to reputable sources for such nonmedical information as is essential if the physical and mental health of the patient is to be maximized as he ages.

Third, the physician is finding that, as time goes on, a larger proportion of his practice consists of older persons. There are several reasons for this.

Some of the increase is due to the elimination or reduction of illnesses among children and young adults since 1900, but much of the increase is traceable to the survival of more patients into the older age group. Effective treatment of the older patient depends not only on purely medical competence (including *expertise* in more complicated diagnostic problems and up-to-date knowledge of the potentialities of modern rehabilitation as it applies to the aged) but also on an awareness of the emotional, social, and financial hazards that so often affect the total situation of the older patient and have an important bearing on his readiness and ability to seek and respond to treatment.

Fourth, the physician himself is not immune to the need for preparation for retirement, even though he is less likely to be forced into compulsory retirement from his occupation than most workers. While it is almost a platitude to mention that "physician, heal thyself" is a mandate insufficiently observed, nevertheless, it must be noted that a substantial proportion of physicians also face the necessity of slowing down or of abandoning certain aspects of their practice as they grow older. Furthermore, studies of different occupational groups have shown that, because of their love of their profession, physicians, more than other types of workers, are inclined to postpone retirement as long as possible.¹

This paper proposes to outline the subjects that have been found to be desirable in retirement

preparation programs and to comment on those aspects in which the doctor can appropriately play a constructive part.

What Preparation Should Include

Significantly, certain far-sighted corporations, such as General Motors and Standard Oil of New Jersey, pioneered in developing programs to prepare their employees for life after retirement. Such companies realized not only the value of maintaining the physical and mental health of older employees but also the desirability of assisting them to continue a satisfying existence after their normal occupations have been removed from their daily pattern of activities. Consequently, industrial physicians were involved in health maintenance and preparation for retirement programs relatively early in their development.

Although some companies believed that these programs would be required only for nonexecutive personnel, the majority concluded that executives would also benefit from them. Experience showed that many hazards of unplanned retirement accompanied retirement on ample income.

While industry was becoming increasingly concerned with this topic, similar interest developed in certain educational and welfare organizations, and in a number of communities cooperative programs were established by companies and educa-

tional and welfare agencies. In most of these the doctor played a leading role in planning and administering the program.

Today, after about 10 years of experience with retirement preparation, the subjects requiring consideration have been fairly well delineated. Whether preparations for retirement programs are presented in group discussions or classes or on an individual basis, the following areas are generally regarded as basic: (a) financing retirement—anticipatory budget planning and consideration of income supplements; (b) health—the worker's strengths and weaknesses and his family's health situation as they affect finances, housing, place of residence, activities, and family relationships; (c) activities—a substitute for the job, activities the worker can afford, and replacements for former friends; (d) living arrangements—desirable or necessary changes; (e) family relationships—changes in patterns of family life in retirement and the role of children or dependents.

Financing Retirement.—Although individual physicians have varying concepts as to their roles in discussing with patients the nonmedical factors in their personal lives, the family physician, thanks to his well-established relationship with family members, is in a particularly good position to raise the question of a joint, realistic planning program between husband and wife regarding the financing of post-retirement years. He can either refer his pa-

tient to community agencies that can assist with budget planning or perhaps can suggest various helpful publications.

He may even wish, himself, to point out some of the questions requiring an answer. For example, does Mr. Jones know exactly what his monthly income is going to be after retirement? How much regular income is assured from Social Security, from Mr. Jones employer's pension plan, and from annuities, dividends, and other investments? If Mr. Jones dies, how much will his widow draw from these sources?

There are other questions that can be called to Mr. Jones' attention. What is his reserve capital, including real estate, savings, stocks and bonds, and any other holdings that can be converted into cash? Once assets are analyzed, Mr. Jones should be encouraged to look clearly at current expenditures and how they will be modified once his regular occupation has ceased. If prospective expenditures exceed anticipated income, how can expenses be reduced? Can assets be reorganized to yield additional income? Will some recreational or social activities simply be too expensive for the retirement budget?

A growing number of couples facing retirement actually test their financial plans for the future by trying to live on retirement budgets ahead of time. Certainly no test could be better, and Mrs. Jones should know that one of the serious problems reported by retired husbands is the wife who persists

in maintaining her accustomed level of expenditures after her husband's income is reduced. These considerations obviously indicate the advantages of preparation for retirement becoming a joint project between husband and wife. This is a point that the family doctor can emphasize more effectively than can many other people with whom Mr. Jones has a relationship.

Another question the Joneses should discuss well ahead of time is the financing of possibly increased medical expenditures. Unfortunately, industrial group health insurance plans often do not provide coverage for employees after retirement and many plans cannot be continued by a retired employee's widow. Therefore, if cash reserves do not appear reasonably adequate to cover major medical expenditures in the future, and if health insurance coverage will be inadequate, the possibility of purchasing additional insurance should be explored as early as possible. Even though this may seem expensive, if it can be fitted into the retirement budget such an investment is a small price to pay to remove apprehension lest illness wipe out financial reserves. As people live longer and longer, this threat is looming larger and larger for all couples in retirement. Without adequate planning of this kind, the fear of capital depletion too often serves as a deterrent to medical consultation when it is needed.

Closely related to the subject of financial planning is one essential that frequently is overlooked,

namely, the desirability of Mr. and Mrs. Jones each having an up-to-date will, with each thoroughly understanding the contents of these documents.

Consideration of the financial aspects of retirement usually leads to other discussions. If the Joneses wish to cut expenditures, they may consider the advisability of moving, either to a smaller home or to another community. They may reconsider relationships with their children. They may find that one or both would like or would need to supplement retirement income by working, perhaps on a part-time basis. Since experience has shown that illness and inflation are the two great disrupters of retirement plans, it is my personal conviction that both man and wife should equip themselves to do some kind of work, whether or not they ever wish or need to enter a second occupation. However, realism must be emphasized in preparing for a reserve occupation.

Health.—Since THE JOURNAL has published many excellent articles on the maintenance of health in later years, it is unnecessary here to repeat what others have already competently outlined with regard to the physician's responsibility for an aging patient. However, the mobility of the American population and the growth of specialized medical care have in many cases weakened or disrupted the traditional family doctor-patient relationship. This is reflected over and over again in courses of preparation for retirement during the question periods

following medical lectures. At such times, questions from the audience highlight certain topics which apparently have not received adequate consideration in the doctor's office. The need for greater emphasis on these subjects has been confirmed by physicians with a special interest in geriatrics.

First in importance is the need for periodic and comprehensive health examinations, followed by a thoughtful interpretation of the patient's current and anticipated physical condition. Along with this could well go a discussion of the nature of the aging process with particular attention to nutrition and to biological changes. Questions from older people too frequently reveal unnecessary and unfounded fears with respect to biological changes in later life that could easily have been dissipated by an understanding physician.

A second area insufficiently understood is that of rehabilitation, including in this not only physical medicine but also internal medicine and psychiatric care. Here again, further discussion in this paper is unnecessary because of the recent articles published in THE JOURNAL. Nevertheless, it must be reiterated that current medical practice has not yet incorporated the knowledge now available to restore older people to their maximum potential of self-care. Medical records are still too frequently marred by such careless and inaccurate diagnoses as "senility and debility." This attitude, of course, is responsible for the nationwide shortage of beds available for

geriatric rehabilitation, as well as for the thousands of old people misplaced in nursing homes and mental hospitals. The person approaching retirement should be made aware of the restorative treatment now available for many disabling illnesses.

Activities.—After considering finances, employment, and health, probably the next most important topic in preparation for retirement is the development of activities that can be a satisfying substitute for the job. This discussion should take into account possible physical and financial limitations. No leisure-time plan should be based entirely on the assumption of vigor and physical fitness until the end of life. If there have been indications that specific disabilities may develop, such as loss of sight or hearing or cardiac impairment or arthritis, the patient should be led to find and cultivate proficiency in pursuits that will be interesting even under the most restrictive circumstances.

Since we now know that the learning ability of older people is far greater than has been popularly supposed, motivation is all important, and the physician who knows his patient can strengthen this in many ways. Furthermore, Mr. and Mrs. Jones should be advised to seek some recreation that is shared with persons not connected with Mr. Jones' normal work in any way. While every couple should have friends of varying ages, post-retirement life is less than happy if Mr. Jones' retirement finds all his friends still at work.

Finally, the retirement counselor and the physician, in discussing stimulating activities for retirement, must be constantly aware that few generalizations are valid for older people. Mr. Jones will not only remain an individual, he may even appear to become more individualistic as the years go by, and his individual combination of characteristics must serve as the foundation on which to build his new life after retirement. One man's square dance is another man's torture!

Living Arrangements and Family Relationships.—When the doctor has a long-standing relationship with the total family group, he can be especially helpful in relation to retirement living arrangements and family relationships. Many couples begin retirement with an extensive trip or with a decisive move to another community, perhaps to Florida or California. The abandonment of one's home and the establishment of a new home in a new community should probably never be undertaken without a pretest of the experience. Locations under consideration as retirement homes should be thoroughly investigated and visited extensively before the final step is taken, and the physician's counsel should be sought regarding the adequacy of health programs in the new community and the appropriateness of the community in relation to the physical condition of those retiring. Also, if the retiring couple plans to move to a new home in their present community, the architectural features of

this home should be evaluated in the light of the prospective physical condition of the potential occupants. As an obvious example, a ranch-type home is clearly more suitable for a cardiac or arthritic patient than a two-story house with steep stairs.

Similarly, with respect to family relationships, the doctor can be a tactful interpreter between the generations. This is particularly true if there is a question of parents living with children or vice versa.

Conclusions

There has been ample evidence that programs of preparation for retirement serve to improve the quality of living for older people. The factual information they convey helps ward off many mistakes in budget planning and living arrangements and assists in creating an intelligent attitude toward

personal health maintenance. Finally, the actual process of looking clearly at the future usually is of great psychological value in reducing the apprehension and uncertainty about old age that haunts so many people.

With the present and impending impact of a larger old age group on so many phases of American life, including its impact on medical care, it is folly not to work vigorously for the extension of these programs. In their conduct, the doctor can assume varying degrees of leadership, but it is essential that he cooperate wholeheartedly with the other organizations and professions in this unparalleled educational crusade.

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