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1917

ELLEN S. RICHARDS MONOGRAPHS — No. 1

STATISTICAL

LIFE EXTENSION

A TALK AT VASSAR COLLEGE

BY

IRVING FISHER

ARMY
MEDICAL
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PUBLISHED BY
VASSAR COLLEGE
POUGHKEEPSIE, N. Y.

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FOREWORD

The present pamphlet is the first of a series to be published under the auspices of the Ellen S. Richards Memorial Fund of Vassar College. This fund was given to the college as a part of the Fiftieth Anniversary gift, under the following terms:

First, that for a period of five years from 1915, the income of this fund be appropriated to secure annually a lecturer of distinction who shall give to the students of Vassar College a lecture or lectures along the line of Mrs. Richards' interest in the development of Euthenics or "Science of Right Living."

Second, that at the close of each five years, the disposition of the income of the fund, for the following five years, be determined by a committee of three members representing the Administration, the Faculty, and the Associate Alumnae.

Professor Fisher's lecture was delivered at Vassar College on April 6, 1917. In order to reach a larger audience, the lecture has been printed for distribution among the students and alumnae. It is hoped that future pamphlets will follow which may be incorporated in a volume that may serve as a testimonial to the continuance of Mrs. Richards' work for conservation.

LIFE EXTENSION

It is always a pleasure to speak to intelligent girls and women and it is a special pleasure to speak to Vassar girls, for I believe not only in this as a women's century, but it is a college women's century; and I believe that in the particular field of which I am to speak tonight there is a great work for college women both through leadership and example.

It is also a great pleasure to speak on a foundation in memory of Ellen S. Richards. From her I derived a great deal of help not only detailed and specific, but also general and inspirational. I think it is not unfitting that on this Good Friday, the day of great sacrifice, we should commemorate a woman who gave her life for her country. And it is at least an interesting coincidence that our beloved country should, on this day, have dedicated itself to what, for a peaceful country, is the greatest sacrifice it could make for humanity.

War and Health

Some of you may wonder how the subject of health conservation can be properly associated with war. It is true that two years ago it nearly broke the hearts of many of us who had devoted our lives to saving human life, to see the wholesale slaughter of it. And to those of us who had been interested in race hygiene or eugenics, the greatest tragedy was the destruction of the best manhood of Europe, those who ought to be the parents of future generations.

Very few realize how costly the war is, not in money, not in munitions, not even in men as we count them, but in the manhood of men, — men reckoned in quality, not quantity. Unless some compensation, such as I will suggest tonight, is to result,

the cost of this terrible war will be felt by the human race a thousand years hence. The Napoleonic wars shortened the stature of Frenchmen and doubtless weakened that remarkable race in other ways, for the tall and virile were cut down and left few of their blood to continue their kind. This war will sap the vitality and mental efficiency of the human race — unless there can be the necessary compensations.

Human life is so constituted that it is often the terrible calamity which becomes the stimulus to such compensations. We never had real safety at sea until after the *Titanic* went down. Locking the door after the horse is stolen is not always as futile as we assume. We often have some of the horses and sometimes in the end the cumulative saving more than offsets the probable original wastage. The Spanish-American war, while it resulted in only a few killed in battle, has paid for itself in life-saving many times over. In fact, every year we actually save more lives because of the elimination of yellow fever resulting from the Spanish-American war, than were lost in the war. Consequently we are looking to this war to save human life.

But examples of this are already to be found in the present war. That wonderful American, Alexis Carrel of the Rockefeller Foundation, with Dr. Dakin, has, under the stimulus of war, worked out a treatment of wounds which is today saving life and will save life to the end of time.

In Russia, not only have political upheavals, which mean much for democracy, been precipitated by the war, but there has been national prohibition, a revolution itself in the life of Russia. If you do not realize this — and few people do — read Ernest Gordon's book on Russian prohibition. The savings banks in Russia have accumulated savings equal to one-sixth

the cost of the war. And the total economic savings due to the abstinence from alcoholics have, I have no doubt, far exceeded the total economic cost of the war. I further do not doubt that the opening of the eyes of the Russians through this enforced abstinence from a protoplasmic poison has had considerable part in bringing about because of increased energy due to alcoholic abstinence, the political upheaval in which we are now so much interested.

What Can You Do?

And an increased interest in hygiene and eugenics is being stimulated. Many articles are appearing in England and elsewhere asking "What can we do to conserve the race?" With life as with commodities, any scarcity creates a high price. War is causing a scarcity of human beings and consequently increases the price we put upon them. Those of us who are interested in what Mrs. Richards was interested in, are trying to arouse people like yourselves,—people who will set standards and have the influence of leadership in their communities—to a realization of what can be done and what must be done.

It is difficult to condense all that I would like to say into a few minutes. My former master in political economy used to say: "Divide your discussion into four parts: (1) What is it? (2) Why is it? (3) What of it? (4) What are you going to do about it?" In other words, "talk about the facts, the causes, the evils and the remedies." I will try to do this.

What Is Life Extension?

As to the facts, the first question is, is it really possible to prolong human life and to add to its efficiency, its fullness, its

meaning? I wish that I could impress on you the sense that I have of this possibility. As your President has said, it has been impressed upon me largely by personal experience. I feel a little ashamed to admit that as an economist and as a student of society I had been blind, as the average man or woman of today is blind, to what health conservation means. Suddenly I discovered I had tuberculosis and I took a long enforced vacation. When after three years I went back to Yale, I was unable for two years to do even half a man's work. But I began to study to learn how I might get back at least part of my working power. I studied the factors that make for working power. I applied every thing that I could learn to add to my power to work. At length by dint of conscientious application of a dozen or more specific points of hygiene, not only did I succeed in winning back my previous working power, but acquired more than I had ever dreamed of acquiring. I have often wished I had only known before what I know now. The ordinary man and woman does not attain half the normal efficiency nor live half of the normal working period of life.

Some nine years ago Mr. Roosevelt appointed his National Conservation Commission. It was originally intended to ascertain how much waste there is in this country in regard to the forests, the soils, the minerals and the waters. But at the last moment, it was suggested that an investigation into the waste of human life should be included. I was appointed to make this study and wrote the report of the Commission on this subject. From the data which I then received, from some ten or twelve co-workers who were experts in their special lines and who could give me estimates of the degrees of preventability of the various causes of death, a composite picture was obtained of what a

general life-saving campaign could do. The results were carefully worked out and never seriously challenged. They show that 43 per cent. of the people who die in the United States die unnecessarily — before their time, probably long before their time. This means that over 630,000 lives a year might be saved if we applied the knowledge we now have. It means that at least fifteen years can be added to the average life span of the average American, most of which would be an addition to the working period of life. It means that the total economic cost of needless diseases, estimated on the basis of lost bread-winning power is over \$1,500,000,000. In fact, this is an unnecessarily conservative estimate because at the time these estimates were made we did not have the necessary data in regard to wages, etc., to make a more exact computation.

The Life Extension Institute

Two years ago, with the assistance of a man from Ellen S. Richards' own state, I helped establish the Life Extension Institute in New York City, the chief work of which has been to make medical examinations of policy holders of life insurance companies, of employees of large firms, and of individuals. Through this Institute we have secured for the first time some real statistics as to the extent of physical impairments. Previous to the publication of these statistics, whenever I had been told by people who are conversant with the condition at sanatoria or by physicians who had tried to generalize from their practice, of the vast amount of physical impairment found, even I, who realized that there was much waste of human life, was very skeptical. But the facts brought out by the Life Extension Institute show that my skepticism was unwarranted. The Institute has

examined several thousand employees of a Detroit motor car company, including men who receive more than the average wages and possess more than the average intelligence and mental expertness and presumably more than the average health. Yet in all these groups, 99 per cent. were found to be more or less impaired. Of course the major part of these impairments were minor, such as defective teeth and slightly high blood pressure, and yet these minor impairments we know are the beginning of serious troubles. Considering the fact that these men were on the average between twenty-five and thirty years of age, we are justified, I think, in saying that as soon as men or women grow up today they begin to die. They do not know it until death stares them in the face some thirty or forty years later. If they did know the road they were travelling, I believe they would turn about, like the Venetian Cornaro. Cornaro, when he was thirty-seven, was told by his physician that he only had a few months to live, but that he might live longer if he would give up his bad habits. He took the hint and died at the highly respectable age of one hundred and three! With all this room for improvement, I think we are justified in some optimism as to what might be accomplished.

The Causes of Health Loss

What are the causes of this vast amount of disability? Alcoholism is one important cause but probably no more so than many others, such a bad air, neglected teeth, bad posture, constipation, etc.

But back of these direct causes there are remoter causes. One is the increase of wealth. We have abused the opportuni-

ties which it bestows. Wealth is a great gift but if it is not used rightly it is as disastrous as a racing automobile to a small boy. Many of the degenerating diseases are the diseases of the rich. The Life Extension Institute has shown that while the death rate has been declining during the last several hundred years and quite rapidly during the last twenty-five years, it has not been declining in middle life. On the contrary in this country the death rate after the age of forty-five is greater than it used to be. We have saved the lives of infants and young persons, but are wasting the lives of those who are in the prime of life. This is due to the fact that while we have been fighting the infectious diseases we have not been fighting the wear-and-tear diseases.

The battle against the infectious diseases has been carried on ever since Pasteur found that germs were responsible for many diseases, and laid down his epoch-making statement that it is within the power of man to rid himself of every parasitic disease. Health officers have made infectious diseases their main business, but little attention has been paid to the wear-and-tear diseases.

But what are the wear-and-tear diseases and what are the conditions which produce them? They are the byproduct of civilization. For instance, the invention of houses of which we boast, without which we could not have the comfort of homes, the advantages of libraries, nor a large part of our present civilization, is at the same time largely responsible for the greatest of all diseases, tuberculosis. The human being is an outdoor animal and when he changes his environment he does so at his peril. The first houses were caves which we may be sure were well ventilated. Then came the hut with a hole in the roof for the smoke. That hole with the effect of

the fire in making the air rise, afforded, incidentally and unintentionally, a very excellent ventilating system. But the hole in the roof changed into a chimney, then into the open fireplace, and finally into the stove and the steam heater which will permit the passage of no air.

There used to be holes in the side of the house to let in the light. Now glass has been devised to let light in but keep air out. In addition we have the weather strips and all other devices which have gradually, almost hermetically, sealed man in a little cell in which he is a secure though complacent prisoner. Only in the last fifteen years have we waked up to this condition and partially remedied it. This is one reason tuberculosis is disappearing.

Then again, consider the foods of civilization. We are proud of cooking, we are proud of milling; but what do they mean? They mean that in the United States 100,000,000 people, instead of grinding with their teeth as Nature intended, are having their grinding done in Minnesota. The dentist has then to come along and advise us, usually in vain, to eat especially hard food. Again, bran has been taken out of our flour. The doctor has then to prescribe that we put it back in because we suffer from constipation.

And so the invention of the chair is not wholly beneficial. It affords great comfort, but is quite responsible for tuberculosis and nervous prostration because it does not fit the curve of the back; and even when it does, the person sitting in the chair does not take the trouble to take advantage of the fit. When you slouch in a chair and get into the habit of slouching, beware. It was many years before the danger of this habit was pointed out. Only in the last few years has the importance of posture in relation to health been appreciated, even by phy-

sicians. At present the Life Extension Institute is trying to impress on the people the importance of proper posture and there is a Posture League which was started by a woman, a former school teacher in New York City, Miss Jessie Bancroft, which is trying to correct seats and to get clothiers to make clothes and shoes really to fit boys and girls.

Again, we have invented alcohol and other narcotics and only after several thousand years of their use are we realizing the havoc which they have wrought.

Health and Industry

We have discovered the value of the division of labor in production. Adam Smith and other economists have told us of its wonderful advantages. It is a wonderful thing in increasing the product, but a terrible thing in decreasing the vitality of those who make the product. Men and women are not intended to be one-sided creatures; to use one muscle or one faculty all day; when they do, they lose resistance, they lose health.

Economists have been studying the industrial problem for many years. They have tried to discover the basic causes of labor strikes, labor discontent, the terrible feeling of resentment that the laboring men have. Most economists have found this cause in the lack of a living wage. This is one reason. But I have come to the conclusion that a larger cause, not the only cause, is the division of labor, the monotony of work and the lack of wholesome, healthful conditions. In order that workmen and workingwomen should be content and not want to smash someone else's windows, they must satisfy the great fundamental human instincts, such as the instinct of self-expression and the instinct of self-respect. In former days, when

the cobbler made his pair of shoes it was his self-expression. He was just as much interested in that as I am interested in working out a new book, or as an artist is interested in painting a picture, or as a physician is interested in solving the secrets of nature. We all have the instinct of self-expression in our blood. No human being can be satisfied in this world unless he has an outlet for this great instinct. In the old days, the cobbler expressed himself in the boots he made. Today the shoemakers are laborers who put in pegs, who put on polish, who add some little touch here and there, but can never follow their product as a whole. Therefore they have little or no interest in the product but are chiefly or solely interested in their pay envelopes. Consequently, the workshop becomes the workhouse. The workman is bribed to do drudgery in order that at the end of the week he may have some pay with which he can purchase the comforts of life.

Health and Self-Expression

When does he live. If he sleeps eight hours and works twelve, he has four hours in which to live. For those of us who really can express ourselves in our work, these twelve working hours are not drudgery but self-expression. And that is the reason I would not give up my work, which is my chosen work, for millions of dollars, if the alternative were merely to put a peg in millions of shoes.

We are accustomed to think of the workman as a workman. We forget he is the same flesh and blood as we ourselves. The workmen must be permitted to have some self-expression. One great industrial leader has attempted this in the Burgess Pulp Mills in New Hampshire. The men are kept interested in a picture or diagram of what they daily produce. Those who at-

tend the great cooker in which the pulp is cooked have to hold the temperature the same and go through a complicated cycle. It is their work or art to do it cleverly and skillfully, to make the picture and make it better than their neighbors. In this way some of the needed satisfaction in their work is supplied. Workmen, like all other human beings, long for self-expression and will get it destructively if they cannot get it constructively. Organized strikes are self-expression.

Health and Self-Respect

The instinct of self-respect is also thwarted under our system of division of labor. I know a professor of political economy who trained himself for his position by becoming a workman in an underground mine in Canada. He noticed that the thing the workman disliked more than anything else was to be called down by the boss in the presence of his own comrades. Such humiliation is equivalent to being told that he is an inferior being, and he wants to show that he is as good as the boss.

Class feeling originates largely in the attempts to preserve self-respect. If workmen were credited with being what they really are and if democracy were a fact, not a theory, this would make our workmen feel that they are our brothers. When we do not permit expression of the instinct of self-respect or self-expression we are dwarfing the psychological development of the workers. We are depriving men of a healthful mental life.

The Vicious Circle

What are the evils which are producing these conditions of short life and life which is deprived of its working power, of its satisfaction and of its usefulness? What are the evils which are producing the scourges of disease, poverty, vice and crime?

The more I study poverty, the more I am impressed with its relation to disease. Those who become chronically poor are those who have had the misfortune to be sick and to be sick so long that their little savings were not able to get them all the way across. The workman is continually gambling with disease and sometimes disease wins; then the workman loses his little all and becomes poor. That is the way to the poor-house.

And poverty in turn become a cause of vice and vice a cause of crime and so the workman gets into many a vicious circle. If we destroy disease I believe we shall eliminate the larger part of the other ills.

Hygiene

Finally, what are we going to do about it? There are two great branches of hygiene, in both of which Mrs. Richards was interested. One is public hygiene and the other is individual hygiene. Public hygiene is the hygiene of the public health officers who have mainly devoted themselves to the elimination of the infectious diseases. With all their shortcomings they are gradually accomplishing this purpose. But as to individual hygiene we have scarcely yet begun. If a beginning is to be made the thought of individual hygiene must be gotten into the minds of the people, largely through those who are interested in public hygiene. The public health officer has never considered it within his function to tell people about ventilation or alcohol or teeth or diet or posture. But he should consider individual hygiene his job as well as public hygiene, as should every other individual who aspires to teach health. Mrs. Richards was particularly interested in individual hygiene or as she often called it "Euthenics."

The first step toward hygienic improvement for the individual is the undergoing of a physical examination. I understand that there are facilities here at Vassar for that. The next step is to learn the lesson of that examination, find out the slightest impairment, correct it and do what you can to improve yourself.

The Life Extension Institute, whose work is particularly concerned with individual hygiene, and whose main aim is to give assistance to individuals in this matter, has published a handbook on the subject of personal hygiene. Dr. Fisk, the Medical Director, and myself are the authors. I do not hesitate to say it is a good book, not only because there was another author than myself, but because it has behind it ninety members of the Hygiene Reference Board. It is the only book ever written on individual hygiene which is not merely the opinion of one or two students of the subject. It represents the composite judgment of all the leading specialists on hygiene and has far more authority than anything else of its nature.

The Fifteen Rules of Health

The book summarizes in fifteen rules the ways in which the individual has it within his own power to add to his efficiency. These rules are under four heads: Air, Food, Poisons, Activity. Under Air there are five rules:

(1). **Ventilate every room you occupy.**

(2). **Ventilate your own clothes while they are on you.**

In other words, select light, and loose, and porous materials for your clothing. The skin needs the air contact.

(3). **Live out of doors as much as you can.** Seek outdoor avocations and recreations. The value of this rule I am sure you all appreciate.

(4). **Sleep out of doors, if it is possible.** We do not yet understand what that great sense of well-being is which comes after sleeping out-of-doors, but it is very real.

(5). **Breathe deeply.** Take some long breaths every day systematically. One doctor advises his patients to take 100 long breaths every day. Then no part of the lungs can be unused. These long, slow, rhythmical breaths have also effects on the nervous system. In India, rhythmic deep breathing is a part of the religious system.

Under Food the Four Rules Are:

(1). **Avoid overeating and overweight.** This rule becomes especially important soon after you graduate from college, and therefore it is important before you graduate. It is the rich, overfed sedentary man or woman who later becomes the prey of the wear-and-tear diseases.

(2). **Avoid overeating of nitrogenous or protein foods.** Food fulfils two purposes:

(a) **It supplies energy or heat.** All foods perform this function to some extent.

(b) **It supplies repair or tissue building material.**

The protein foods for the most part supply the repair materials. The white of an egg is a good example of pure protein. Almost all foods have some protein elements, but the foods high in protein are chiefly meat and eggs. Consequently this rule practically means to avoid overeating of meat and eggs. Such indulgence is really the great dietetic sin of Americans, and one of the chief reasons, I believe, for the fact that in America cer-

tain degenerative diseases are more common than in other countries. We eat so excessively of meat, partly because we can afford it, partly because of an abnormal appetite coming from the hurry habit. It is curious how one bad habit leads to another. Upsetting the normal equilibrium in one way upsets it in another. Meat foods can be eaten in a hurry with impunity. The dog lives on meat, and bolts his food. The horse, however, who lives on grain chews his food for a long time. Man, when he tries to adopt the bolting habits of the dog, craves the food of the dog. Therefore we who hurry so are heavier meat eaters than the people of Europe and other countries and we pay for that indulgence in high blood pressure and diseases of the kidney.

(3). **Eat some hard foods, some raw foods and some bulky foods every day.** Hard foods exercise the teeth. Soft foods are more generally the causes for dental decay and abscesses at the roots of the teeth than anything else. Raw foods are especially helpful to digestion and assimilation because of the vitamins they contain, and for this reason they are necessary to life.

Bulk is just as important as hardness and rawness. Our lumps of sugar, for instance. Think of the bran sacrificed to secure that white flour of which our bread is made. We have prided ourselves on this concentration but it is this concentration which leads to constipation with all its attendant ills.

(4). **Eat slowly.** The hurry habit is responsible for many evils.

Under Poisons the Four Rules Are:

(1). **Evacuate thoroughly, regularly and frequently, to avoid "auto intoxication."**

(2). **Stand, sit and walk erect** for the same purpose; for bad posture is largely responsible for constipation.

(3). **Do not allow poisons and infections to enter the body.** Among other things this rule means total abstinence from alcoholic beverages and from the use of tobacco.

(4). **Keep the teeth, gums and tongue clean.** Take care of the teeth. If we ate properly they would not need special care. Primitive people have perfect sets of teeth without the use of the toothbrush.

Under Activity, There Are Two Rules:

(1). **Work, play, rest and sleep in moderation and in due relation to each other.**

(2). **Keep a healthful mental attitude,** for it is worry rather than work which kills.

Health the Best Preparedness

By adopting these rules, one may secure more strength and vitality than is ordinarily contemplated. But I am not going to leave the subject simply with an appeal to you to improve your own health for selfish purposes. I am going to ask you if, in this hour when we are talking about national preparedness, you cannot get a New England conscience behind your health; if you won't try to take care of yourself because you are valuable to the nation. You are valuable to the nation not only for the work which you will accomplish, but for your example. It is by imitation that customs are spread more than in any other way and what we really need to rejuvenate this country, to make it as healthful a land as Germany, to make our soldiers and citizens as fit for their jobs as the German is, is a change in

our health ideals. American health ideals are now, not as high as those of the ancient Greeks. Our ideals are so low, in fact, that we only talk in terms of disease—the negation of health. You say “I am well, only I have a little cold.” You do not mean that you have exultant health. You do not associate health with the positive side of life but with the negative side. The Greeks, on the contrary, associated health with art and beauty. We see in the wonderful statues of the age of Pericles what health meant to the Greeks. We must get this national ideal before we can solve health problems and before we can compete with other great nations, or even help much in this great war.



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