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Are You Healthy?

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ARE YOU HEALTHY?

The writer recently attended a great athletic event where huge crowds of people came to view the contest. Masses of "fans" were banked far back in the great oval so that individuals were unrecognizable. A passing flyer peering down from the sky might have thought that a great "crazy quilt" had been spread out below. He would soon have been disillusioned, however, for at exciting moments of the contest he would have seen the swaying movements of the mob indicating abundant life. Should this visitor have come closer, he might have said to himself "surely here is great energy and vitality." To a certain extent he would have been correct because this crowd represented a select group of people. The infirm had been left at home. Many could no longer enjoy any of the aspects of the game except from an easy chair by the radio. Nevertheless, had the visitor been interested in health, and had looked closely and disconcertingly, he would have seen much to disturb him. Most of the people seemed to have forgotten the shape that nature gave to their bodies. Many of them showed symptoms which a medical practitioner would have diagnosed as serious ailments. Some were clearly not enjoying themselves because they were not well, and had the visitor been looking for an ideal of health, he would undoubtedly have been forced to turn his eyes elsewhere.

So far we have neglected the contestants. Perhaps they were entirely healthy. Certainly if anyone can be considered healthy, these men should be listed among the number, and yet just plain old "lying" statistics show that few if any of them could rate above 90 percent on any reasonable health standard. After all then, what is the mean-

ing of health? Very few people have ever tried to answer that question, and even fewer have given serious consideration to the proposition of whether or not they can qualify as healthy individuals. Most of us are content as long as we are able to continue our daily pursuits with a minimum amount of pain and inconvenience. This article is written in the hope that it may stimulate in the minds of the readers a desire for greater health, and for the purpose of setting forth a health ideal by means of which we may analyze our present condition of health.

Most authors of texts on hygiene have presented some sort of an ideal towards which each individual should aim. All of them have merit, but the present article is based largely (with a few modifications) on the eight points of "The Health Ideal" as set forth in the "College Text Book of Hygiene" by Smiley and Gould.

1. "To be able to carry out, during each working day of the week, an ambitious program of activity with zest and without undue fatigue, nervousness, worry or loss of weight."

While this seems to be a very reasonable requirement for an individual who wishes to be considered healthy, the facts are that a majority of teachers and students are unable to qualify. The writer has had occasion to make many posture studies of college students and college instructors on their way to classes in the morning, and of the same group at midafternoon. A compilation of the results show that while about eighty percent go to school in the morning with heads up and shoulders back, over sixty-five percent allow their shoulders and abdominal muscles to sag and heads to carry forward long before the eight hour period is complete. In other words they have adopted the most common type of posture, name-

ly, fatigue slouch or kyphosis. Fatigue is due fundamentally to one or all of three causes, namely, lack of energy food in the cells, accumulation of waste products in the body cells and blood stream, and nervous fatigue. Most brain workers would ascribe their tired feeling to the latter cause, and this is probably true if they are inclined to worry about their work, but it is also true that the other causes operate in most of us due to sluggish circulation etc., as a result of our failure to carry out a hygienic program of physical exercise. It appears that not many of us can qualify when we are required to finish the days work "with zest and without undue fatigue."

2. "To be able to eat three well balanced meals a day with enjoyment and without fear of digestive disturbance."

It is quite probable that more of us can qualify under this standard, and yet thousands, yes millions of persons, at middle life have ruined, or at least badly injured, a digestive system which appears to the physiologist to have a considerable margin of safety. Many can eat only a small group of specially prepared foods, others eat an ordinary meal with considerable trepidation and doubt as to what the results are going to be, and few of us are free from occasional digestive disturbance. These things have been brought about by irregular habits of eating, unhygienic methods of eating, and failure to select a reasonable diet. Along with these things the effects of worry and nervous tension, and their consequent reaction through the operation of the adrenal glands, have interfered seriously with our ability to "eat with enjoyment and without fear of digestive disturbance."

3. "To be able to sleep soundly eight hours a night."

The amount of sleep required seems to vary somewhat with individuals and with the kind of work done. It is probably true that the brain worker requires less sleep than the person who does heavy physical labor, providing they secure sufficient recreation and rest from the type of work that occupies most of their attention. During sleep the muscles ordinarily get a greater supply of blood and this en-

ables the cells to absorb a greater supply of sugar and to eliminate the waste products causing fatigue. The individual who is physically fatigued therefore usually requires a greater amount of sleep. Incidentally, many of us who are unable to sleep soundly can learn a valuable lesson from the latter fact. If we but think back to those long nights of peaceful slumber of our childhood days when we romped and played until we became so tired that we nearly fell asleep over our evening meal, we can without undue use of our imagination gain an inkling as to why we now toss fitfully so many hours of the night. A little more play, quite a lot more physical exercise, much less worry and mental strain, and most of us would be ready to again sink into that quiet dreamless slumber which would turn us out the next morning with zest for the day.

4. "To be able to enjoy at least one hour a day of rather vigorous physical exercise without feeling unduly fatigued, or strained."

At about this point most of us begin to back up and allow some one else to stand at the front of the crowd. We recall the picnic we attended a few weeks ago when we foolishly tried to atone for several months of inactivity, and how the "better half" had to help us out of bed the following morning. Most of us know, and all of us should know, that vigorous exercise properly indulged in strengthens the heart, aids materially in the circulation, exercises the walls of the blood vessels in the muscles and keeps them more elastic, stimulates the kidneys, develops the lungs, rests the nervous system, and does many other things which mild exercise alone cannot do. We oil up the car regularly, inflate the tires when they need it, and see to it that the ignition system furnishes plenty of spark, but most of us forget that our bodies are delicate organisms which require a certain amount of attention to keep them from "knocking." I am afraid most of us will have to plead guilty to a deficiency when it comes to this particular health ideal, and will have to admit that it will take some months before we can "be able to enjoy at least one hour a day of rather vigorous physical exercise."

5. "To be able to enjoy the society of others at least one hour a day without irritability, boredom, or undue self-consciousness."

This might be listed as a social health ideal. It is noticeable that many freshmen in college, and, while we hesitate to say so, many college graduates, have failed to cultivate the knack of making friends and holding them. Some people are shy and retiring, and while they would like to enter into social relationships with others, they have developed a sort of inferiority complex which makes them ill at ease when attention is directed to them. They cannot enjoy the society of others, nor are they people that we can enjoy associating with. Their minds lack something in their ability to function normally in society. They do not meet this health ideal.

Contrasted with the individual just discussed, we find far too many who are happy only when they are delivering a monologue. They care naught for healthy discussion and exchange of opinions; they are not interested in the ideas or ideals of others; they wish only to hear themselves talk. They deserve to be listed among the obnoxious pests fit only for extermination. While it is true that man is fundamentally an egoist, this is hardly justification for one individual monopolizing a social conversational group. Some people lack a sense of humor, some appreciate a joke only when it is directed at some one besides themselves, while others are hurt by sallies of wit which were intended only to enliven the conversation. Since man must live as a social being, it is reasonably essential that he develop a condition of mind which might be called the social health of the mind. It would indeed be a blessing to mankind if more of us could measure 100 percent on this ideal.

6. "To be able to enjoy as a 'legitimate escape into world of unreality' or as an adequate means of self expression for at least two hours a day, literature, art, music, drama, hobbies or games, without eye strain, nervousness or boredom."

A hobby, outside of our regular line of work, in which we can lose ourself for an hour or more each day, is the best possible means of preventing a nervous breakdown. If,

in addition to its health value, this hobby enables us to create things of beauty which will bring pleasure to others as playing beautiful music, painting a picture, or discovering new facts about birds or flowers, it will not only be a benefit to us but will be commendable as well. Hobbies which take us out of doors are perhaps most desirable for those who work at sedentary labor. What we use as a hobby, however, is not so important as the fact that we have one. The pursuit of a different line of work rests the nerves that we have been using in our vocation and permits us to return with increased efficiency. All of us have enough of the savage, and few of us could not be benefitted by a greater patronage and understanding of the arts. Most of us are too wrapped up in our particular line of work and as a result we wear out young. Far too many of us will not be able to answer present when the roll call for this ideal is called.

7. "To be generally self confident, optimistic, enthusiastic, free of unnecessary fears—'expecting success and attaining it with reasonable frequency'."

A few years ago the writer had in class a girl who seemed to possess superior intelligence, but who was slated to be dropped from the college because of low grades. A little questioning brought forth the fact that this girl had developed a serious inferiority complex. She had formed the habit of thinking that her ideas were of little value, and consequently did not recite even when she was entirely conversant with the information desired. It will not be necessary to bore you with the details of her recovery, but suffice it to say that she ultimately graduated as an honor student. Optimism, cheerfulness, openmindedness, etc., are almost entirely mental habits which are formed in the same way that other habits are formed. Many of them are easier to practice when the rest of the body is functioning well, but all of them are difficult to avoid practicing once the habit is well formed. Some people have the habit of not being able to make up their minds. We all have friends who spend most of their vacations trying to decide what to do. Often their

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DAVID STARR JORDAN

EDITORIAL

When two germ cells unite to make the fertilized egg, the beginnings of a man, what that man is to become as an adult depends in part upon what those germ cells contain in the way of hereditary characters, and in part upon the environment, prenatal and postnatal, to which the egg and developing embryo are subsequently subjected.

The subject of this sketch seems to have been fortunate in both conditions, heredity and environment. He developed a huge, vigorous body and a powerful, alert mind, one peculiarly capable of noting and retaining infinite details of color, form, and structure. The fishes, a group characterized by almost unbelievable diversity of form, color-pattern, and habitat, were thus admirably suited to his retentive type of mind, and David Starr Jordan became an ichthyologist, a student of fishes. He followed them in pond and creek, in river and ocean; he knew them as scarcely no man had known them before.

He personally described and named nearly a thousand distinct species of fishes, as well as naming many new genera. Any one who has ever read his "Story of the Salmon" has discovered that David Starr Jordan not only knew fishes but knew how to write entertainingly about them as well.

He knew men, however, as well as fishes, and possessed, like Agazzis, a remarkable capacity for attracting students to work under him. He once made a walking trip of five hundred fifty miles with a group of students, and one of those students recently remarked of him: "My admiration for his scholarly attainments, and for him as a man grew day by day. I determined then and there to become a student of his."

He was professor at Butler University, then at Indiana University and subsequently its president, retiring from this position to accept the presidency of the Leland Stanford University just then being endowed and started by Senator and Mrs. Stanford. He literally made this great university, continuing as its president until well advanced in years.

David Starr Jordan loved life, and believed that men and other creatures loved their lives as he loved his. He, thus hated war, and became in his later years an "apostle and prophet of peace." What would be the status of the world today if in July, 1914, men like Jordan had sat in the seats of the Czar, the Kaiser, Earl Grey, and of the Count von Berchtold?

Something of his philosophy of life may be understood from these characteristic words: "Wisdom is knowing what one ought to do next; virtue, doing it; religion, our conception of the reason why right action is better than wrong; and prayer, the core of our endeavor."

He was a naturalist, an explorer, a teacher, a poet, and a minor prophet of Democracy. And in being all these things, he crowded his eighty years of life to the full. Science, as well as the world, is richer and better because of David Starr Jordan.

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ARE YOU HEALTHY?

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vacation comes to an end before they can make up their mind. Some people cannot face facts squarely. They are always on top of the fence, and never on either side. Some meet a difficult situation with their heads up, smiling, others are beaten before they begin. Some people tell the truth instinctively; others weigh the advantages of telling a lie. These things are mental habits denoting states of mental health. Some of us are quite ill in this respect. We cannot be cured except by a long and painful process. It would have been much better for us had someone aided in making us immune when we were young so that now we might be able to answer present when roll call on this ideal was called.

8. "To have sex desire normally

active and properly directed and controlled."

The brief space allotted to this article does not permit a discussion of this very important health ideal. The American public seems woefully ignorant of the principles of sex hygiene. Millions of lives are ruined annually thru ignorance.

Most of us think we are healthy, but the majority of us never have and never will know the joys of complete health. The real test for us at present concerns what we are doing to see that the schools of the present day turn out healthy students.

H. Earl Rath.

INDUCED CURRENT ELECTRICITY

In the May Number of the Science Bulletin, the writer gave a brief outline of the historical development of our present knowledge of the magnetic properties of an electric current. In tracing this development from an experimental point of view, a brief statement was made of the contributions of each of the following renowned scientists: Oersted, Arago, Ampere, Faraday and Henry. In this article of the May Number no reference was made to current induction as one of the magnetic effects of an electric current.

It is no exaggeration to say that this age of electricity owes its material greatness almost wholly to the discovery of the law of current induction. Michael Faraday of England and Joseph Henry of our own country were contemporaneous discoverers of this principle of induction. It is true that the discovery of current induction is generally credited to Faraday in our texts on physics since he was the first to publish the facts of the phenomena involved. However, every high school teacher should stress the fact that Joseph Henry, a professor of Princeton University, discovered the principle of current induction one year before Faraday published the results of his work. Faraday published a description of his experiments in 1831. The experimental records of Joseph Henry proclaim the fact that Henry made the discovery of current induction in 1830 but failed to publish it to the world. The discovery of the law of current induction was hailed by Tyndall, a contemporary of Faraday,

as the greatest experimental result ever attained up to that time in the history of the modern world.

We will consider briefly now the two main experiments performed by Faraday which led to the discovery of the principle of current induction. In one of these experiments Faraday used a closed iron ring, Fig. 1. Two separate coils A and B were wrapped upon the ring, one on each side as illustrated. The ends of coil A were connected to a battery of ten cells. The ends of

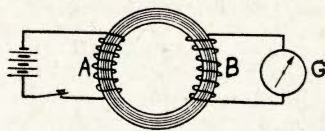


Fig. 1

coil B were connected to the galvanoscope, G, consisting of a coil of wire enclosing a suspended magnetic needle. Faraday found that at the instant the battery circuit was closed, there was an abrupt deflection of the needle of the galvanoscope, showing that a current was produced in the coil surrounding it. Again when the key of the battery circuit was opened there was another deflection of the magnetic needle but in the opposite direction. Faraday correctly inferred that the currents induced in coil B which passed also through the galvanoscope were due to the magnetism set up in the iron ring by the battery current passing through coil A. Faraday was also quick to see that these currents in coil B were momentary, lasting only as long as the duration of the change in the magnetic field of the ring. When the battery key is closed the magnetic field rises quickly from zero value to a maximum. When the battery key is opened the magnetism of the ring falls from a maximum almost to zero value.

A second experiment performed by Faraday is illustrated in Figure 2.

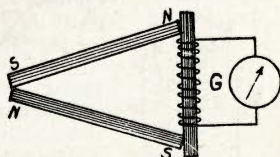


Fig. 2

The apparatus of this experiment consisted of a horse-shoe formed