

1-1932

## Are You Educated?

H. Earl Rath

*Iowa State Teachers College*

Follow this and additional works at: [https://scholarworks.uni.edu/science\\_bulletin](https://scholarworks.uni.edu/science_bulletin)



Part of the [Health and Physical Education Commons](#), and the [Science and Mathematics Education Commons](#)

*Let us know how access to this document benefits you*

Copyright ©1932 by Iowa State Teachers College

---

### Recommended Citation

Rath, H. Earl (1932) "Are You Educated?," *Science Bulletin*: Vol. 4: No. 5, Article 3.

Available at: [https://scholarworks.uni.edu/science\\_bulletin/vol4/iss5/3](https://scholarworks.uni.edu/science_bulletin/vol4/iss5/3)

This Contents is brought to you for free and open access by UNI ScholarWorks. It has been accepted for inclusion in Science Bulletin by an authorized editor of UNI ScholarWorks. For more information, please contact [scholarworks@uni.edu](mailto:scholarworks@uni.edu).

**Offensive Materials Statement:** Materials located in UNI ScholarWorks come from a broad range of sources and time periods. Some of these materials may contain offensive stereotypes, ideas, visuals, or language.

# SCIENCE BULLETIN

A Service Bulletin for Teachers of High School Science, Published Monthly by the Extension Division and Edited by the Department of Natural and Physical Science.

IOWA STATE TEACHERS COLLEGE  
Cedar Falls, Iowa

VOLUME IV

JANUARY, 1932

NUMBER 5

## ARE YOU EDUCATED?

A few months ago we tried to set up a sort of standard by which a person might judge as to whether or not he could satisfy the demands of ordinary health. It shall be the purpose of this article to set up a standard by which an individual might judge of the adequacy of his or her health knowledge. This discussion is based largely on the "Ten Commandments" by Dr. Livingstone Farr—and, given in an address before the American Public Health Association, and printed in College Text books of Hygiene by Smiley and Gould. Many will probably not agree with the writer, but it is his opinion that a person, in order to be considered educated, should have a reasonable knowledge of the things discussed in the following paragraphs.

He should have a knowledge of the physiological basis for sound health habits. This applies more particularly to a worker than to any one else but has an application that is universal. The average individual has an idea that certain amount of sleep is desirable but only a very few have an idea of what takes place during sleep and why it is so necessary. If people could but glimpse the changes in blood circulation during sleep, the internal cleansing action going on in the body, the rest and invigoration of the nervous system, the replenishment of the cells with energy food, etc., sleep would be looked on as something more than a necessary evil to be indulged in only when demanded by nature. Likewise all people know that it is necessary for them to drink water, and some have a conception that water should be drunk regularly, but, as with sleep, few people have any real knowledge as to why water is vital to the body. If the average person could visualize the services that water performs for

the body, if he could appreciate the constant elimination of water from the body by means of the skin, breath, and by the kidneys, if he could grasp the value of diluting the excretions of the kidneys and the great aid of water in blood purification, water would not be looked upon as something to satisfy thirst, but as a vital aid in keeping the machinery of the body running smoothly. Incidentally, patent medicines in the form of blood remedies would soon be objects for a museum.

An educated person should know the types and amounts, and proportions of the various food elements essential to the proper nurture of the body. The existence of countless numbers of food fads is specific proof that people do not well understand the values and requirements in foods. Some people are in constant pursuit of roughages. They consume great quantities of bran, cabbage, celery, etc. While these are good foods, their use in ill advised quantities probably does more harm than good. And so it continues—some want raw foods while others must have them thoroughly cooked, some insist on proteins while others avoid them, some are searchers after vitamins while others do not know that vitamins exist. Few of our faddists could actually tell the relative proportions of proteins, carbohydrates, and fats that a person should consume, or what foods are high in minerals and why they should eat minerals, or what foods contain specific vitamins, and what functions the various vitamins have in the body. If they knew these things they would no longer be faddists.

Most people know that liver is a valuable food in the prevention or treatment of anemia, but few know that the action of the Kupfer cells in the disintegration of red blood corpuscles, is the reason for the liver



containing so high a percentage of corpuscle forming elements.

Likewise an educated person should be acquainted with the principles of normal mental action and the conditions underlying the variations from normal. Most persons who worry are not aware of the fact that they are doing so. Even fewer know the physiological effects of worry, and probably fewer still have a very good idea of how they might control the mind to avoid worry. Dr. Saddler is authority for the statement that 90% of all illness other than that due to accident or contagious diseases is purely imaginary. The effect of the mind on the health of the body is something that all persons should know. Many of the people who fill our insane hospitals could easily have avoided insanity in spite of inherited weak nervous tissue, had they practised reasonable mental hygiene. An educated person should know how to keep his mind, as well as his body, in a healthy condition.

Everyone should understand the nature of the sex instinct in man, the stages of its development, its normal expression, and the values and penalties attached to it. Much of life's unhappiness comes from a failure to appreciate, evaluate and control the sex instinct. Millions of children are improperly handled because their parents and teachers do not recognize the stage of sex development. Likewise, many thousands of unhappy homes, and the greatest percentage of divorces, are due to lack of sex education of the proper kind. It seems reasonable that an educated person should have an understanding of the problem.

The day of black magic in preventing and healing disease is long since passed. Today science has given us vaccination and inoculation to prevent disease. Instead of dealing with a painted and hooded medicine man, we deal with toxins and antitoxins, precipitins, agglutinins, opsonins, etc. Today we can be tested for susceptibility to many diseases. Considering these things it is probably true that an educated person should know about the factors determining infection and resistance, and the principles of artificial immunization in the case of the more com-

mon infectious diseases. Along with these things he should know the effects of the common health habits on the ability of the body to resist disease. Science has largely provided the solution to the problem of how to avoid the common diseases but still millions of persons are killed or left permanently impaired annually by so apparently harmless a disease as measles. It is high time that knowledge of this type be more widely disseminated and included in the list of things that an educated person should know.

Recently I met a friend of mine whom I had not seen for several years. When last I saw him, he was a bright, energetic, clean cut fellow who made a fine appearance and a creditable impression. Today his features are coarse, his skin is rough, his hands and feet are enlarged, and his mind is sluggish and dull. He is undergoing the degenerative disease known as myxedema. From a worth while friend, he is changing into a dumb beast. This need not have happened. It is due to a partial failure of the thyroid gland to function normally. Had he gone to a physician several years ago and submitted to a basal metabolism test, the results would have shown a slowing down in the secretions of the gland, the doctor would have prescribed the necessary amount of thyroid extract taken from the glands of animals, and he would be as useful today as ever. The change has been slow and he did not know what was happening, and now it is too late. Many people suffer from the degenerative diseases of middle life because they are ignorant of what is happening. An educated person might well be expected to know what these are and how to avoid them.

The average citizen of a community buys milk from the local milk dealer and assumes that it is healthful, he drinks freely from the city water supply and assumes that it must be all right, and he works at the local industrial plant and takes for granted that the manager has taken all necessary precautions to safeguard his health. These are only a few of the health hazards lurking in the environment in which he lives. In most cases he receives rea-



sonable protection because some one else has taken the precaution to look after these things for him. Many laws have been passed to safeguard him, and citizens better educated than he have aided in the enforcement of those laws. They would be better enforced, however, and new laws providing greater safety would be passed if the average citizen were cognizant of the environmental dangers surrounding him. An educated person must know these things, and know how to protect against them.

Far too many persons today are afflicted with the necessity of wearing "store teeth." Such teeth are on the average only about one tenth as efficient as natural teeth. Few people are born with teeth which could not be maintained in good condition to a ripe old age if proper care were exercised. Elsewhere in this article the value of a diet in the care of the teeth was emphasized. Fully as important as this is the regular examination and repair by the dentist. The procedure too often followed is that of postponing the visit to the dentist until a tooth begins to ache. Many times a tooth becomes very badly decayed without aching at all. The result is that when a visit is finally made to the dentist, he often has to recommend the removal of one or several of the teeth. For several years the writer has had the opportunity of examining the teeth of several hundred college students each year. The number of complete sets of teeth have as a rule been in the minority. The usual explanation given to account for the missing members is that "it became so badly decayed that I had to have it pulled." Much expense, and most of the missing teeth would have been saved had the individual visited a dentist regularly each six months.

Many people are now beginning to appreciate the value of a regular visit to a physician. An automobile owner seldom drives his car until it absolutely refuses to go any further. He knows that some of the parts which are now operating need adjustment. If taken care of their usefulness may be prolonged indefinitely, if neglected they may have to be replaced in a short time. The human body works in much the same

way, except that the parts can seldom be replaced. An educated person should realize the value of regular visits to both his dentist and his doctor.

It has not been so many years since Pasteur discovered the germ nature of disease. In that brief time scientists and students of medicine have done much to alleviate human suffering and death. Science made possible the building of the Panama canal by conquering the disease conditions in that zone. Deadly plagues which formerly devastated the nations of the world are now largely under control. Diseases, such as typhoid fever, which killed more soldiers than bullets in some wars, produced only a very few deaths during the "World War." Cancer is being investigated and aided, the death rate from tuberculosis is declining, and even that great bogey the common cold can now be inoculated against. These things have been accomplished by scientific medicine, yet many persons, whether ailing or not, listen to the blare of the fake healer or the vendor of patent remedies. They are frightened into handing over their money for worthless goods, and often they are worse off than before. An educated person should have an intelligent basis for the selection of his medical advisers. He should know that progress in healing has been made by science, and not by mystery and tradition.

Finally an educated person "should have a knowledge of the important health problems facing the community, of the methods of attacking these problems, and of the results to be expected from intelligent community action in the public health field." At the present time many communities are providing for adequate and safe disposal of sewage. Several cities in the State are faced with the necessity of purifying their industrial and city wastes in order to avoid excessive river pollution. Many cities need to increase their facilities for providing pure and wholesome water. These things are always retarded unless the public is enlightened as to their necessity. A knowledge and appreciation of the importance of isolation in cases of infectious diseases would prevent the spread

(Continued on page 7)



its nature, and in 1832 published it under the heading "Electrical Self-induction in a Long Helical Wire." Faraday's investigation of self-induction was not published till in 1835. Therefore the honor of discovering self-induction unquestionably belongs to Joseph Henry." From the above quotation we infer also that the construction of the first telegraph line belongs to Joseph Henry and not to Samuel F. B. Morse who brought it into commercial use.

The phenomenon of self-induction can be readily grasped from the following simple experimental illustration. In figure 3 a battery B and a key K are connected in circuit with an elongated coil of wire. In a previous article it was pointed out that

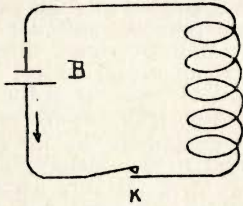


Figure 3

the magnetic lines of force around a straight current are circular with the wire at the center of the circles. The combined magnetic field of a series of circular turns of wire in an elongated coil carrying a current, however, is exactly like that of a straight electro-magnet. The lines of magnetic force when the current is flowing form straight lines in the coil passing out at one end of the coil and then curving around to return into the other end. It is evident that an elongated coil, Fig. 3, is an electro-magnet minus the soft iron core.

When the key K, Fig. 3, is closed, the current from the battery B rises gradually to its maximum because its energy is being used to build up the magnetic field, threading its circuit. This momentary loss of current energy is due to the fact that a counter current is induced which opposes its flow for the fraction of a second. On the other hand, when the current is broken by opening the key K, all the energy of the magnetic field threading the coil collapses, in a sense, on the circuit and induces a direct current which inten-

sifies the main current for a moment causing a bright spark at the key. This bright spark, which always occurs when an electric current is broken is due to the extra current induced when the number of lines of magnetic force threading the coil are rapidly reduced to zero.

It is a spark of this kind that is utilized in the common electric cigar lighter. This extra spark is also used by means of spark plugs in gasoline engines. A simple experiment to illustrate the extra current can be performed as follows: Connect an electro-magnet in circuit with two good dry cells. Not using a key, hold the two wire ends of the broken circuit over the top of a Bunsen burner with the gas turned on. Close the circuit by bringing the two ends of the wires together and then snap them apart suddenly. The gas of the burner will be ignited by the spark of the extra current.

L. Begeman.

---

### ARE YOU EDUCATED?

(Continued from page 3)

of many diseases which now reach the epidemic stage in many communities. Many public buildings are poorly lighted, poorly ventilated, and poorly cared for. In most cases the cost would be no greater were the buildings as they should be. What most communities need is more people who are qualified educationally to understand and aid in the health problems of the community. Incidentally many of us will have to brush up a bit if we are to qualify under "The Ten Commandments" of Dr. Farr as an educated person.

H. Earl Rath.

---

### NATIONAL GEOGRAPHY MEETINGS

The Christmas vacation always brings a full quota of meetings of interest to those who are engaged in educational work. Especially does this seem true for those interested in science. Two meetings of value to geographers were held at Ypsilanti, Michigan, where the new Union building, an alumni project of the Michigan State Normal College, afforded an excellent meeting place. The first of these was the meeting of the National Council of Geography