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ADDRESS OF THE PRESIDENT OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

SPEND a little less on alcohol, tea, coffee, tobacco and cosmetics in order to have more to spend on preventing disease and improving human health. Try to raise the general intelligence level. Have the courage to apply what is already known about health and disease, and to search for further knowledge along these lines.

These three pieces of advice were given to health workers of America, Canada and Mexico by Professor Haven Emerson of Columbia University, president of the American Public Health Association, meeting at Pasadena. Professor Emerson addressed the first general session of the organization at Pasadena on September 1.

Self-denial, increased general intelligence and courage are the three elements needed to further improve human health. Specific problems which he urged health workers to concentrate their efforts on are sanitation, diabetes, alcohol, industrial diseases, syphilis and sex and marriage education including birth control.

Referring to the modern frankness of mind, act and speech, he urged that health officers attack the matter of sanitation with equal frankness of spirit and of language. We can not consider ourselves a civilized nation until every place of human habitation is equipped with the means for sanitary disposal of human waste with its infesting and infecting organisms of disease.

The problem of checking the increase in diabetes must be met by teaching people to exercise the large muscles of their bodies more and to limit their intake of food, he believes. He sees the increase of this disease as a result of the machine age which has reduced man's muscular exertion to the use of the fine muscles of eye and finger and has insured, with but slight interruptions, a superabundance of food.

Years can be added to human life expectancy, the birth of wanted children assured and large vacancies can be created in hospitals and asylums when the race is washed clean of the pollution of syphilis. This is the most prevalent of all communicable diseases and one for the prevention of which we are doing the least. Yet practical knowledge of how to combat syphilis exists to a greater degree than for any other disease, except diphtheria, malaria and hookworm infestation. The disease exists in more than a third of the rural population, both Negro and white, of some southern states.

A NEW WEIGHT-REDUCING DRUG

DINITROPHENOL, potent new weight-reducing drug, should be added to the poison list and its sale regulated so that it can be obtained only on a physician's prescription.

This step was urged as a safety measure by Drs. M. L. Tainter, W. C. Cutting and A. B. Stockton, who were the first to report the use of the drug as an obesity remedy, at the meeting of the American Public Health Association.

"Probably at least one hundred thousand persons have been treated with the drug in this country alone," Dr. Tainter stated in reviewing the results obtained with the remedy since he and his colleagues first studied its possibilities in 1931. It has also been used in Canada, Great Britain, France, Sweden, Italy and Australia.

Three deaths have been reported from its use. One was a psychiatric patient and there is some doubt in Dr. Tainter's mind as to whether the drug was the cause of this death. The other two were a physician who took two tremendous doses and a girl who bought the drug on her own responsibility from a druggist and took a very excessive dose. Excessive amounts of the drug cause death by producing a fatally high fever.

A possible means of treating this dangerous fever was suggested by Dr. Tainter, who said that in animals, at least, the fatalities from a fever of dinitrophenol can be prevented by chilling the skin with ice packs and by giving oxygen inhalations.

The main disadvantage to the medical use of the drug is the very alarming and unpleasant skin rash which it sometimes produces. A saving feature is that about half the patients who have had one such skin reaction are able, after a short interval, to continue the treatment without further difficulty.

Dr. Tainter and colleagues were unable to find that the drug, in proper dosage, had any harmful effect on liver, kidneys, blood, digestive tract or blood pressure or circulation. Patients with high blood pressure can be treated like other patients, and as they lose weight the blood pressure is usually lowered and the accompanying symptoms of that condition improved. There is always a possibility that some persons may have an idiosyncrasy for the drug and in these patients harmful effects might be produced by even the correct doses.

Because it is such a potent remedy Dr. Tainter urged not only that its use be limited to physicians but that even doctors should not use it until every other remedy for reducing weight, including careful dieting, had been tried.

BREAST CANCER IN RELATION TO CHILD-BEARING AND NURSING

CANCER of the breast is the penalty women pay for failing to bear and particularly to nurse children, in the opinion of Dr. Emil Bogen, of Olive View, Calif. Evidence for this theory, based on statistics and on animal experiments, were presented by Dr. Bogen at the meeting of the American Public Health Association.

Comparison of birthrates and of cancer deathrates show that where the birthrate is low, the deathrate from breast cancer is high. Furthermore, in urban localities, northern countries and regions where small families and early weaning of the babies are customary the deathrate from breast cancer is high. It also appears to be

higher among unmarried women and married women who have not had children than among mothers of large families.

From experiments with white mice, Dr. Bogen finds an explanation for this. A derivative of the chemical substance, cholesterol, is capable of producing cancer just as some of the coal tars do when painted on the skin, he pointed out. This same substance, cholesterol, is present in the ducts of the female breast, both when it is producing milk and when it is not. In the absence of the normal drainage that comes with milk production and child nursing, this cholesterol may undergo the chemical changes that make it develop cancer-producing qualities, in Bogen's opinion.

Child-bearing and nursing is accordingly a natural preventive measure against this cancer-producing agent present in the body.

THE GULF HURRICANE

"SCREWY," though slang, is nevertheless an accurate characterization of the conduct of the Gulf hurricane that threatened the Gulf ports of Texas during the last week in August, and then put out to sea again, bound no one knew whither. Its course could almost be charted with a corkscrew.

It was not in any respect a typical autumnal tropical storm in its coming, and in its howling retreat over the thrashed-up waters of the gulf it was just as atypical, C. L. Mitchell, of the U. S. Weather Bureau, told Science Service. It was driven back, "licked," by a high-altitude land wind from the north.

It was not a large storm, as hurricanes go, but what there was of it was pretty intense. When it approached Galveston, meteorologists expected it to go on ashore, wreak what damage its strength enabled, and then blow itself out over the wide plains of Texas. That is the ordinary, "orthodox" thing for a hurricane to do. People on the gulf coast, warned of its coming, made things as secure as possible and then got out of the way.

Instead of striking as expected, however, it veered back toward the east, whence it had come, and when last heard of it was still doing its dervish dance out over the gulf, some 280 miles to the south of the Mississippi delta.

Meteorologists were as baffled as laymen over this abnormal behavior, until reports of pilot balloons launched at inland points in the South and West began to come in. These showed that a strong north wind at high altitudes had steadily pressed against the westwardly drifting storm from the gulf, amounting in effect to a counter-attack which it could not overcome or pierce, so that in the end there was nothing to do but retreat.

This saving high-level north wind was born of a great, persistent area of high pressure, that moved in with the recent cool wave from the Northwest and had much to do with the beneficial rains that have fallen in the Midwest and Southwest. This "high" constituted a citadel of even, steady weather which the violent but small off-shore storm could not penetrate, and from which the land-wind sortie issued to drive it back.

At last reports, no one was willing to guess what the gulf storm would try next. It might swing to the northeast, threatening the Florida panhandle, it might continue straight east, striking the Florida peninsula, or it might blow itself out over the gulf. It was still intense, but still small in area, so that its damage, wherever it may strike, is expected to be severe in degree but limited in extent.

In its birth no less than in its behavior, the storm was atypical, Mr. Mitchell said. The usual autumnal hurricane comes into being somewhere out over the South Atlantic, drives up through the Caribbean, and makes its landfall somewhere in the West Indies, on the South Atlantic coast of the United States, or on the gulf coast of this country or Mexico.

Not so the present storm. It apparently originated right in the Gulf of Mexico itself, for its presence was first reported somewhere to the southward of the Mississippi delta. Thence it followed its erratic course, first toward the west, then back again in an easterly direction.

This has been a freak season for marine storms in any case, according to Mr. Mitchell. There have been three so far, one in June and two in August, none of them of tropical Atlantic origin. The other August one originated off the Carolina coast and wound up on the shores of Texas.

Two August "tropicals" striking Texas in themselves constitute a record. In forty-eight years of record, only half-a-dozen hurricanes have struck the Texas coast during the month of August. Never before, so far as can be determined, have the weather-gods bestowed upon it such a double doubtful favor.

NEW DETERMINATIONS OF THE AGE OF THE EARTH

BY DR. ALFRED C. LANE
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FROM strife-torn Austria comes new scientific evidence that the age of the earth is not less than 1,725,000,000 years. Thus does the city of Vienna maintain the heritage which has made it a great scientific center in the past.

From correspondence with scientists in Austria I have just learned that while troops roamed the streets outside, investigators at the University of Vienna have completed an analysis of radioactive rocks from near Winnipeg, Canada, which provides the new insight into the age of the earth.

The method of determining the age of rocks and mineral from the amount of radioactive material they contain, and the ratio of such material to the amount of lead present has been frequently described. The process (often referred to as the radioactive "timeclock" method) is in many ways like finding out how long a popcorn machine has been running by determining the proportion of popped to unpopped corn in it.

By analogy, the unpopped corn would be the radioactive material present in the rock which has not, as yet, disintegrated. The popped corn would correspond to

the products of disintegration, principally radioactive lead.

Some time ago, Dr. H. V. Ellsworth, the expert of the Canadian Geological Survey in such matters, analyzed a sample of the mineral uraninite from near Winnipeg, Canada. He found a large proportion of lead present compared with the radioactive element uranium.

The ratio, in fact, was so large that he suspected some of the lead might not be of radioactive origin; or that despite its fresh appearance some uranium might have been removed from the rock during the billion and more years it had remained in its location. Either happening would have produced the surprisingly large ratio of lead to uranium.

During the last few years in the laboratory of Professor A. Franke at Vienna, Dr. F. Hecht and his assistant, Miss Edith Kroupa, have been making a special study of the use of chemical microanalysis. This is simply a method of obtaining an accurate determination of the amounts of materials in a substance when the total amount of sample is very small.

It was believed that the Viennese micro-methods would prove useful in checking the findings of Dr. Ellsworth. Accordingly the Canadian investigator sent to Vienna four tenths of a gram (about a hundredth of an ounce) of monazite which was associated with the uraninite sample. Monazite contains thorium, another radioactive material which ultimately, if given long enough, changes into a form of lead.

Working with this almost microscopic speck of material Miss Kroupa, guided by Dr. Hecht, made the microanalysis. Using their results one can compute that the rock from Winnipeg is beginning to approach two billion years of age. A fair estimate of its antiquity is probably some 1,725,000,000 years. Other data as to the rate of disintegration of thorium into lead might make the result as high as 1,820,000,000 years.

One can not be too fussy about a few million years when a minute error in weighing will produce such a difference. Miss Kroupa's data essentially substantiate the findings for the age of rocks elsewhere in the world. Minerals obtained at Sinyaya Pala in North Carelia, Russia, have been assigned the age of 1,850,000,000 years, for example.

The Viennese work, therefore, makes it highly probable that the Winnipeg minerals are the oldest yet known, at least on the North American continent.

ITEMS

A PICTURE of village life which flourished on Lake Titicaca, 1,200 years ago, including the practise of burying the dead under the houses, is brought by Dr. Wendell C. Bennett, who has just returned from archeological explorations in the high plateau of Bolivia, for the American Museum of Natural History. The houses of the village had completely encircled a mound beside the lake, Dr. Bennett found. The stone houses of the Incas are fairly common, but these houses were the rare relics of adobe and small stones, built by earlier people. Under the floor of one house were found 12 tombs, containing skeletons of children and adults.

Homo soloensis, a prehistoric race that lived in Java 40,000 years or more ago, had tools and weapons resembling those of Neanderthal Man in Europe. This is the conclusion of Dr. P. V. van Stein Callenfels, based on a study of a large collection of such implements of stone, bone and horn collected on a terrace of the River Solo. This terrace was apparently formed during Pleistocene or Ice Age times. The animal bones found associated with the relics of human occupation included an extinct elephant, a hippopotamus and other animals no longer known in Java.

ELEPHANT bones, apparently of Ice Age date, have been discovered during the digging of a well in a garden at Bethlehem. This is the first time such remains have been found in either Palestine or Syria, so that scientists are interested in tracing their possible connection with the "African" type of animal remains found in Palestinian caves in association with prehistoric human remains and stone implements. The find has been reported to *Nature* by Miss Dorothea M. A. Bate. A more detailed account, giving full description of the remains, is to be published shortly.

SMALL quantities of air can now be measured with great accuracy. Of particular use in air-conditioning of houses a small machine has been invented that can determine in a very short time if a sheathing paper meets requirements as to the amount of air that can leak in or out through it. S. T. Carson, of the National Bureau of Standards, who developed the instrument, has found that it has a range about a thousand times greater than most similar devices for measuring permeability. It can be used on leather and insulating materials as well as such thin membranes as a cigarette paper. Paper sheathing, air-tight food wrappers, grease absorbers and the insulation for electric cables can all be studied and their true value found. Since air permeability is related to liquid absorption the efficiency of roofing materials and the rate of drying of ink on printing paper can also be measured accurately.

WHEN lightning strikes a lightning rod or the steel mast of a high tension line, it may produce a current as high as 60,000 amperes, enough to light 130,000 fifty-watt lamps all at once. This is the result of a research carried on since 1926 by Dr. Heinrich Greunewald and his associates, of the Berlin-Charlottenburg Society for the Study of High Tension Installations. Currents of 30,000 amperes in lightning were found to be frequent, 50,000 to occur occasionally, and 60,000 was the highest measured. The investigation was made by inserting in the path of the lightning short rods of a special substance that becomes magnetized on the passage of a current. The degree of magnetization showed the strength of the current, and the polarity of the magnetism showed its direction. It was found that the current usually passed upward from the ground instead of downward as is commonly supposed, showing that the base of a thunder cloud is usually negatively charged. This is in accord with the results of other recent investigations.