SCIENCE NEWS

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THE MEETING OF THE AMERICAN ENGINEERING COUNCIL

THE welding of over 200,000 engineers of the nation into an articulate, coordinated group to advise the government and public on matters of large public works and other engineering projects and technology was advocated by Dean A. A. Potter, of the School of Engineering of Purdue University, speaking as president of the American Engineering Council at its recent meeting in Washington. Dean Potter urged that the profession take as active an interest in presenting non-biased opinion on engineering matters as does the American Medical Association on medical matters and the American Bar Association on legal questions. In its representative membership the American Engineering Council stands midway between the American Bar Association and the American Medical Association. The engineering societies represented on the American Engineering Council have a membership of 71,875 out of a potential 176,000 engineers who are eligible for membership in the societies. This is about 41 per cent. The American Bar Association has only 28,400 members out of 144,065 lawyers in the country, or a membership of less than 20 per cent. The American Medical Association has a membership of 102,715 out of a total of 140,398 medical practitioners in the country, or a membership of 72 per cent. In the opinion of Dean Potter the membership of the societies sponsoring the American Engineering Council should be as strongly representative as is the membership of the American Medical Association. But in any event it should be as articulate and as strong in molding public and legislative opinion as are both the lawyers and the doctors.

JAMES D. MOONEY, vice-president of General Motors Corporation, in an address before the meeting of the council, pointed out that the nation is nowhere near the saturation point of production and in the use of machinery and technology devices despite the opinion of some people to the contrary. Such cries against over-abundance and machines have come before and will come again, he indicated, citing an abstract from the 1886 report of the U. S. Commissioner of Labor, who said: "The nations of the world have overstocked themselves with machinery . . . far in advance of the wants of production. This full supply of economic tools to meet the wants of all branches of commerce and industry is the most important factor in the present industrial depression. Railroads and canals that are really needed have been built . . . harbors and rivers are sufficiently developed . . . water and gas works, tramways, etc., are largely provided. . . . The day of large profits is probably past." Fifty years ago the nation disregarded this pessimistic advice, said Mr. Mooney, and should do so to-day.

INDUSTRY may be able to raise the $25,000,000 suggested by Lammot du Pont to furnish employment for 3,000,000 men, but until science and technology provide new inventions and industries which can absorb this vast capital the road to future progress will be blocked, said Representative Jennings Randolph at a meeting of the council. "Direct employment for one million men would be provided, if each of 200 scientists and engineers could succeed in developing new industry-creating inventions and discoveries in 1938. Each industry thus created would have to employ an average of only 5,000 men and would require an investment of about $40,000,000. Two or three million additional jobs would be created as indirect labor. For this it is estimated that a total private investment of $8,000,000,000 would be needed. Even if only moderately successful, there is no doubt such an attempt would aid materially in solving unemployment." Congressman Randolph is sponsor of a bill providing for a government scientific research commission which would propose research work to be carried out in Federal laboratories or in the universities and colleges with Federal funds.—ROBERT D. POTTER.

THE DAILY AMOUNT OF ILLNESS

EVERY day throughout the winter 6,000,000 persons in the United States are too sick to work, attend school or pursue their other usual activities. This estimate of the amount of illness in the country is based on the results of the National Health Survey of the U. S. Public Health Service.

About 2,500,000 of the 6,000,000 on the nation's daily sick list are suffering from chronic disease such as rheumatism, diseases of the heart and blood vessels, hardening of the arteries, nephritis, cancer and non-malignant tumors, diabetes, asthma, tuberculosis, ulcer of the stomach, gall bladder diseases, nervous diseases and permanent impairments resulting from previous illness or accident. Colds, influenza, pneumonia and like diseases were the cause of illness in 1,500,000 of the 6,000,000. This is because the survey was made in winter when these diseases are most prevalent. About half a million were on the sick list because of accidents and another half million suffered from acute infectious illnesses or other acute illnesses such as appendicitis.

From 15 to 24 years is the healthiest age, according to this survey, the proportion of the sick in this age group being only 1 in 40. The highest proportion of sick was in the oldest age group, from 65 years and up. In this group one in every eight were disabled on the day of the survey. Children, and adults between 25 and 65 years had about the same proportion of illness. Illness occurs most often in the lowest income groups according to the survey. During the year of the survey, chronic illness of a week's duration or longer disabled two persons on relief for every one person in the middle and highest income brackets. Families just above the relief level but with incomes less than $1,000 had less sickness than the relief population but illness rate in this group was 17 per cent.

higher than for the highest income group. Most of this excess was due to the greater frequency of chronic illness.

Illness plays a big part in causing dependency, it appears from that part of the survey which showed how disabling illness incapacitates the wage-earner. In relief families one in every 20 family heads was unable to seek work because of disability. In non-relief families with incomes under $1,000 the number of family heads unable to seek work because of illness was one in 33. This figure was one in 250 for families in the comfortable income group. The relief and low income families not only have more illness but have longer-lasting illnesses. They also get less medical and nursing care than those with high or comfortable incomes.

EMANUEL SWEDENBORG

SCIENTIFIC MEN will join with philosophers, religious leaders and other men of learning all over the world to commemorate this month the two hundred and fiftieth anniversary, on January 29, of the birth of Emanuel Swedenborg. The reason is that Swedenborg, chiefly known as a philosopher and founder of a new religious movement, was a pioneer in many fields of science. Much of what we consider the revelations of strictly modern, twentieth century science was guessed at if not actually known to Swedenborg who died four years before the American Revolution. George Washington might be surprised to see planes circling over the capital city that he helped to lay out, but Swedenborg would not be. He published, in 1717, a description of a "machine to fly through the air" which the Royal Aeronautical Society of England has called "the first rational design for a flying machine of the airplane type."

The *Daedalian*, as Swedenborg called his flying machine, was only one of his many forward-looking ideas. He was the first to use mercury for an air pump. He worked out a method for determining longitude at sea by observations of the moon among the stars. His was the first attempt to establish a system of crystallography. Other Swedenborg "firsts," apparently, were his nebular hypothesis theory of the formation of the planets and the sun; his account of the phenomena of phosphorescence, and a molecular magnetic theory.

From physics and astronomy and geology, Swedenborg turned to the human body for scientific investigation. In his observations of the endocrine glands and his ideas of their function he was far ahead of his time. He conceived the modern idea that the activity of the brain is due to the combined activity of its individual cells and he attempted to divide the brain into different sections according to the various functions, even as modern investigators are trying to do. The spinal cord, Swedenborg decided, had a separate function from that of the brain. His theory of its rôle and of its relation to the brain have since been confirmed by modern science. These investigations led him to philosophical considerations, as they have led many another. The result of these latter observations of Swedenborg aroused more wide-spread interest and as a result seem to have somewhat obscured his scientific contributions. An observance meeting will be held on Wednesday, January 26, in New York, inaugurating the American commemoration of the Swedenborg anniversary.

ITEMS

THE goal of ancient alchemists—the transmutation of the elements—has been achieved by the atom-smashers of the laboratory so well that there remain only two chemical elements which have not yet yielded to the art of the modern scientist, according to Dr. K. K. Darrow, of the Bell Telephone Laboratories, speaking before a meeting of the New York Electrical Society. Before the days of modern transmutation the world consisted of some 250 kinds of atoms. Of these about forty were unstable atoms —like radium—which spontaneously disintegrated into other forms. "It looks now as though nature had already made almost all the stable forms of nucleus which are possible, while physicists, in a scant four years, have already made almost all the unstable forms which are capable of lasting as much as a few seconds." Already to the 40 radioactive forms of atoms found in nature modern science has added no fewer than 220 others by the art of transmutation.

WORKERS at the Field Museum of Natural History are engaged in assembling the only complete skeleton of *Megatherium lundi*, a species of South American ground sloth extinct for 1,000,000 years. The specimen, being prepared under the direction of Phil C. Orr, will be ready for exhibition within a few months. Collected on an expedition to Argentina and Bolivia headed by Elmer S. Riggs, curator of paleontology, it is declared to be of great importance in the study of extinct types of mammals. The great ground sloths, of which this is a mountain species, were ponderous, clumsy beasts, with long hind legs and shorter forelegs. In appearance of head and body they resembled the bear in some respects, but many of them were larger than elephants. They could stand almost erect on their hind legs, and reach high into the trees, clawing off leaves for food with their forefeet.

AN Oxford zoologist, John R. Baker, proposes a set of season words that will have the same meaning everywhere. They are intended primarily for convenience in discussing things like the migration and nesting of birds, but they are based on an astronomical system. Thus, that part of the year when the sun is south of the equator and going south Mr. Baker proposes to call Notodune, which comes form two Greek words that mean, roughly, "towards south." A companion-word, used for the time when the sun is still south of the equator but heading north, is Notopheuge, which is translated as "away from south." Analogous words applying to the Northern Hemisphere are Boredune and Borepheuge. Then there are four more words, that have to do with the sun's travels relative to the observer himself. If in the same hemisphere as the observer and going to the pole of that hemisphere, it is Homodune; if away from that pole, Homopheuge. And for the hemisphere away from the observer the corresponding words are Heterodune and Heteropheuge.