

## SCIENCE NEWS

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### THE NATIONAL ADVISORY COUNCIL

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A SPEED-UP of science and research applied to national defense is getting under way with the appointment of Dr. Vannevar Bush, president of the Carnegie Institution of Washington, to head President Roosevelt's new National Defense Research Committee. Although the new committee is only a few days old, it is expected to coordinate and in some cases merge efforts already in progress.

Numerous universities and industrial laboratories have volunteered their services, and preliminary contacts and plans have already been developed with Army and Navy officers charged with accelerating the defense plans and procurement.

It is known that a survey of aircraft production has been underway for several months under the auspices of the National Research Council with funds provided by the War Department. Since Dr. Bush is chairman of the National Advisory Committee for Aeronautics, the government's important research agency that has contributed largely to aviation's rapid advance, it is felt that the aviation aspects of research are more advanced than research applications in some other fields. Psychological and other tests of airplane pilots is another research application that a National Research Council committee has been working upon for several months.

The new National Defense Research Committee is expected to have assigned to it by military authorities many other such problems. Working in all probability from the magnificent building of the National Academy of Sciences and the National Research Council just across the street from the Army and Navy buildings, the new committee will undoubtedly call upon research groups in industries or universities that are equipped to solve the difficult problems that arise in strengthening our military forces.

Of special value to the new committee will be an industrial research survey and a revised directory of industrial research laboratories just being completed by a committee after a half-year's work. This will allow the location of competent research workers with special knowledge and training needed to meet any special demand.

There has also been discussion of the registration of all scientists for defense service, not only so that the best men and women can tackle the problems to arise, but so that those having special training will not be wasted as ordinary soldiers in the event of a draft. Such a plan was carried out in Great Britain.

Washington, even before the formal announcement of the new National Defense Research Committee, was beginning to become the clearing house for research activity. Several leading scientists from universities have been conferring with Army and Navy officials, among them Dr. Edward C. Tolman, who heads a special council created by the California Institute of Technology to cooperate with the government in defense plans.

The new National Defense Research Committee is the

fourth major group called into existence to aid the government in times of emergency. The National Academy of Sciences was created by Congress at President Lincoln's request during the Civil War and it has continued as a "senate" of science, election to which is one of the highest honors in American science. The National Research Council was created during the World War as a government agency and continues to-day as a part of the academy. The Science Advisory Board was appointed by President Roosevelt in 1933, made effective reports on scientific research by the government and then went out of existence. Now the National Defense Research Committee is formed to play its part in the present situation.—WATSON DAVIS.

### EDUCATION OF THE DEAF

CELEBRATING fifty years of success in teaching deaf people to talk—not to be "deaf and dumb"—and launching a more determined crusade to make the deaf still more nearly inconspicuously normal, the American Association to Promote the Teaching of Speech to the Deaf held its annual meeting in Providence, R. I., from June 17 to 21. The birthday celebration will honor Dr. Alexander Graham Bell, of telephone invention fame, who created the organization.

As an encouraging demonstration that even marvels achieved by the deaf-blind Helen Keller, may be exceeded, two doubly-handicapped pupils will exhibit their skill in conversing. Leonard Dowdy, twelve-year-old deaf-blind student at Perkins Institution for the Blind has amazed educators by his ability to place a hand lightly against cheek or neck of a speaker and to understand speech by the vibration thus felt. Miss Keller "listens" by placing fingers against the speaker's nose, lip and chin. Leonard's rapid progress in acquiring language and his delight in skating, skiing and other strenuous sports have impressed teachers, who believe he may set new records for his handicap in attaining a happy and normal life. His partner in the demonstration will be a deaf-blind girl pupil, Carmela Otero, of the same school.

To teach more parents to help their deaf children, the new idea of daily classes for parents at the meeting will be tried. The classes are an outgrowth of the Correspondence Club for Parents, which the association maintains. By a managed plan, about a hundred parents send round robin letters in groups of ten, thus sharing experiences with other families of deaf children as far afield as Vancouver, Cuba, Mexico and South Africa and Australia. It is estimated that about 10 per cent. of parents of deaf children have the time and ability to apply knowledge gained through this experience exchange.

Five generations of the family of Dr. Alexander Graham Bell were represented. A memorial fund, providing prizes for teachers of the deaf, is in honor of his father, Professor Alexander Melville Bell, the best known eloquentist of his time. Three living generations of the family took personal part in the celebration.

Historic papers in which Dr. Bell and his deaf wife advocated that the deaf be taught to use their voices and to read the lips of others, were read by their grandson, Melville Bell Grosvenor, and their granddaughter, Mrs. Barbara Fairchild Muller. An award for the best essay by a deaf pupil on Alexander Graham Bell and his influence on teaching the deaf was presented to the winner, Arthur Coy, of Providence, by Dr. Bell's daughter, Mrs. Gilbert Grosvenor. A Golden Birthday Fund of about \$4,000 and a birthday book inscribed with the names of contributors will be presented by Gilbert Grosvenor, 2nd, great-grandson of Dr. Bell and accepted by Mrs. Calvin Coolidge, honorary president of the association. The fund is expected to aid the organization in its effort to bring the deaf into normal, active association with hearing people.

### A CYCLOTRON FOR THE UNIVERSITY OF ILLINOIS

AMERICA'S sixteenth cyclotron will be built at the University of Illinois. The new machine will be rated at 10,000,000 to 30,000,000 electron volts acceleration. An older Illinois cyclotron is rated at 1,000,000 volts. The new cyclotron will be somewhat smaller than any of the fifteen others now in operation or under construction, but roughly equivalent to any in results. It will send out atomic particles at speeds of 20,000 to 40,000 miles per second. That is more than one tenth the speed of light. A cyclotron is used for studying the composition of matter by smashing atoms. It is also used in the production of artificially radioactive substances. These are used in research in physics, chemistry and biology.

Professor P. Gerald Kruger, who built the university's small cyclotron in 1936, also is in charge of the new machine. Its bulkiest part will be an electromagnet with a 60-ton iron core. The magnet will be wound with two miles of copper bar which will weigh 10 tons. It will be supported on a 37-ton concrete foundation.

Construction will take at least a year. The machine will cost \$31,500. Radiations from it will equal those from 300,000 grams (600 pounds) of radium, which would be worth, if it existed, \$6,000,000,000, nearly equal to the value of all the homes, personal property, and passenger automobiles in the State of Illinois.

Professor Kruger spent the last half of 1939 working at the Berkeley laboratory of Professor E. O. Lawrence, of the University of California. There Professor Kruger studied the effect of cyclotron-bombarded materials upon cancer. This study may lead to new treatment for the disease.

Working with Professor Kruger in building the new cyclotron at the University of Illinois are Professor J. R. Richardson and Dr. E. M. Lyman.

### THE TREATMENT OF LEUKEMIA

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OPTIMISTIC progress in combatting chronic leukemia was announced at the meeting of the American Medical Association in New York. A better method of treating patients with this invariably fatal ailment was reported by Dr. William P. Murphy, of Boston, who shared the

Nobel prize in medicine in 1934 for his work leading to the liver treatment for saving patients with pernicious anemia.

Dr. Murphy has not succeeded in curing leukemia, but he reports that with the treatment he has developed patients live a little longer and much more comfortably. The women in his series of cases were able to continue with household duties, one of the men continued his ministerial duties, and most striking of all, perhaps, a bus driver who had arthritis as well as leukemia was able, after treatment for both conditions, to do hard labor for three or four years without undue fatigue.

The treatment that Dr. Murphy advised fellow physicians to adopt consists in "spraying" the body with small doses of x-rays from a distance. X-ray treatment has long been used for this condition, but the rays have generally been directed in large doses to the spleen and bone marrow, where blood cells are formed.

Leukemia is characterized by excessive numbers of white cells in the blood. The intensive x-ray treatment has usually made the patients so miserable with nausea and loss of appetite and weakness due to sudden decrease in number of white blood cells that they usually dread the treatment and wait until they are in desperate condition before taking it. Smaller doses of x-rays given more frequently and by the "spray" technique over large areas of the body is not so hard on the patient and controls the disease better. The frequency of treatment should be determined by blood tests and the patient's general condition.

Chronic leukemia, he believes, results from a lack of some substance necessary for the maturing of white blood cells or their origination in much the same manner as pernicious anemia results from a deficiency of some substance concerned in red blood cell production. This is shown by the way in which the white cells respond to x-ray treatments of small dosage. The deficient factor in leukemia is supplied in some manner by the x-rays in small doses, probably less satisfactorily by large doses which may also destroy cells.

### DEFICIENCY OF VITAMINS

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DR. TOM D. SPIES, of Birmingham, Ala., pointed out at the meeting of the American Medical Association that war may be causing famine in Europe, but that here in America, even without war, there is a chronic famine. The chronic famine we have here is a starving for vitamins, minerals and other precious substances found in minute amounts in foods. Large numbers of people are starved for these substances, partly because they do not eat enough of the foods containing them and partly because foods as they come to the table to-day have lost much of their normal content of these protective substances.

About 90 per cent. of the vitamin B<sub>1</sub>, preventive of beriberi, in bread has been lost from the flour in the milling process. Water soluble vitamins are also lost to us by being washed out of the soil, so that plants do not furnish enough of these to the animals and men that live on them.

Dr. W. H. Sebrell, of the U. S. Public Health Service,

stated that death figures do not show the extent of this chronic famine in America. This, partly, is because deaths from this cause are not all recorded as pellagra or scurvy or beriberi deaths. Partly, too, it is because this famine does not kill, although it keeps people ailing and miserable and unfit for work. It is estimated that at least 100,000 people are probably suffering from pellagra.

For a more complete picture of the extent of the vitamin deficiency in the country, Dr. Sebrell turned to figures on consumption of vitamin pills and similar preparations. In 1937 the people of the United States spent more than \$100,000,000 for vitamin preparations manufactured or sold through pharmaceutical channels. Perhaps not all of this vast amount of vitamin-taking by the people was necessary to stave off vitamin famine or repair its ravages. The sum of \$26,000,000, however, was spent on vitamins prescribed by physicians. "A figure of this magnitude," he explained, "must mean that physicians are becoming increasingly aware of the value of the preparations in treatment and, conversely, that vitamin deficiency symptoms are widely prevalent." The figures on vitamin consumption are probably much higher, because in 1937, latest year on which figures are available, neither nicotinic acid nor riboflavin were being widely used. "Prevention and proper treatment of the nutritional diseases constitute one of the greatest medical problems in this country to-day."

### THE PREVENTION OF DIABETES IN DOGS

THAT the first steps toward prevention of diabetes have been made through medical research workers, among them Dr. C. H. Best, of Toronto, was stated by Dr. H. F. Root, of Boston, speaking before the meeting of the American Medical Association.

The disease has actually been prevented in dogs. This prevention has been accomplished in two ways. It depends on the discovery that diabetes can be caused either by failure of the insulin-producing part of the pancreas or by overwork of this insulin factory in the pancreas. In dogs this overwork is due to stimulation of the insulin-producing cells by injections of an extract from the pituitary gland in the head. Insulin given at the same time as the pituitary extract, however, prevents the diabetes. It can also be prevented by fasting the dog before the pituitary extract is given.

If the diabetes is allowed to develop under pituitary stimulation, giving insulin allows the overworked insulin factory in the body to rest and renew or regenerate itself. This regeneration of insulin-producing cells occurs in human beings also. The star-shaped cells called mitotic figures, which are signs of rapid regeneration of body tissue, have been discovered in the insulin-producing part of human pancreases.

Many people, he pointed out, are on the border of diabetes. If these persons get pneumonia or a bad tonsil infection, they will be tipped over the border because the infection caused too much strain on their insulin factories. With the right treatment and diet, however, they can be helped to recover from their diabetes. Their insulin-producing cells may regenerate as do those of the dogs studied.

New synthetic sex hormones are helping women with

diabetes to have babies successfully, according to Dr. Priscilla White, of Boston. Loss of babies by diabetic mothers has been cut in half since treatment with these hormones was started two years ago. The hormones used are called stilbestrol and pranon.

Not every expectant mother with diabetes needs this treatment. Blood tests can now be made, however, to show whether the diabetes is severe enough to upset the glandular balance of the mother's body and so cause her baby to be born so far ahead of time that it can not live.

### ITEMS

THE human body, like industry, uses iron over and over, according to investigators of the U. S. Department of Agriculture, Washington, who are studying the body's need of this essential element. Iron is used in the red blood cells. As these cells break down, about 85 per cent. of the iron is recovered and returned to the bone marrow. In the whole body there is only enough iron to make an oversized shingle nail.

EXAMINING the mysterious skull of a young woman, found in a jar where it was placed after being severed from her body, 5,000 years ago in India, Dr. Wilton M. Krogman, of the University of Chicago, suggested that the modern Mediterranean race may once have had a mixture of Negroid blood, since eradicated by out-breeding. The young woman, who may have been a princess, sorceress or priestess, to account for the strange preservation of her head, came to light during excavations of the Boston Museum of Fine Arts at Chanhudaro, India. No other ancient skull of India has ever been brought to the United States. Dr. Krogman stated that if the skull had been assembled from odd parts, it could not present a more conflicting picture. He concluded that it combines such Negroid traits as flattened head vault, broad nose opening and low eye sockets, with Caucasoid features such as narrow nasal bones, small teeth, moderate distance between the eyes and shape of palate. He pronounced the ancient woman of India "a proto-Mediterranean type in which ancestral Negroid traits have manifested themselves."

SNATCHING from the laboratory a dancing mirror to render more faithful reproductions of phonographically recorded sound, a new sound system for home and commercial phonographs has been introduced by David Grimes, chief engineer of the Philco Corporation. Instead of the conventional needle of the ordinary phonograph, a feather-weight sapphire floats along the groove of the record. The recorded sound is translated into minute bobbings of a paper-thin aluminized mirror, such as heretofore has been used only in galvanometers and oscillographs of research laboratories. A tiny beam of light from a specially made lamp plays on the mirror, which reflects it to a small photoelectric cell, creating in the cell an electric current that corresponds to the sound variations on the record. Amplified and reproduced in a loud speaker, this current gives a high degree of faithfulness with a minimum of scratch. Since the motion of a needle in the record's groove does not need to bear down heavily to set up mechanical or crystal vibrations, it is claimed that the life of the record is increased at least ten times. Needle changing is eliminated.