SCIENCE NEWS

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SCIENTIFIC RESEARCH AND THE WAR

AMERICAN science is being marshalled for war with as much vigor as possible and the scientists in deep secrecy have been hard at it for over eighteen months. The beginning of actual war in the Pacific will make little difference in the tempo of scientific research for America's defense. In the full realization that it takes months for a new weapon to evolve from the idea to something useful on actual battle line, on the sea, in the air or on land, American scientific forces sprang into full activity within a few weeks after the fall of France.

A new division of the government's defense machinery was created to speed the application of defense to warfare. This effort is headed by Dr. Vannevar Bush, who is now director of the Office of Scientific Research and Development of the Office for Emergency Management. The National Defense Research Committee, first under Dr. Bush and now under President James B. Conant, of Harvard University, started the push last year, enlisting for its many projects the bulk of the physicists in America and thousands of other scientists.

This is a physicist's war just as the first world war was a chemist's war. The job this time is to devise protection against magnetic and acoustic mines, spot airplanes by various physical means, make bigger and better weapons or improvements in older weapons, devise better airplanes that fly faster, farther and carry more bombs. Of course in doing the scientific job in the war, chemistry, and even medicine, biology and psychology, play important rôles. New explosives, new methods of keeping soldiers, sailors and airmen healthy, better methods of treating the wounded—all these are important. Medical experts, too, have been mobilized for months, many committees for civilian medical research workers, army, navy and public health surgeons, working together. Dr. Lewis H. Weed, of the Johns Hopkins University, as chairman of the National Research Council medical committee, has been a key man in this medical effort.

The public too have been earnestly invited to volunteer its ideas and suggestions for applying invention to the war. The National Inventors Council under the chairmanship of Dr. Charles F. Kettering has received over 30,000 inventive ideas, and every suggestion of possible war usefulness has been given a prompt hearing by Army and Navy experts.

Committees of psychologists and psychiatrists have been hard at work, helping in pilot training, morale, and other aspects of the war effort.

The Navy in recent months, already relying heavily on its Naval Research Laboratory, called Dr. J. C. Hunsaker to head its science and research activities. Dr. Hunsaker is also chairman of the National Advisory Committee for Aeronautics, long in the forefront of airplane design and development. The NACA laboratories are now playing an increasingly important part in our aviation program.

Old-line research organizations in the government have accelerated their war work—the National Bureau of Standards in various fields, the Bureau of Mines and the Geological Survey in discovering new deposits of strategic minerals, the Department of Agriculture in food research, the U. S. Public Health Service in disease protection.

The National Roster of Scientific and Specialized Personnel under Dr. Leonard Carmichael, president of Tufts College, has listed thousands upon thousands of scientists for possible war service as the war effort grows.

Close cooperation of American scientific effort has been effected with the British scientific war work. Dr. Charles G. Darwin, director of the British National Physical Laboratory, has been in this country for months as liaison officer.

One important phase of America's application of science to war is that scientists are being put to work on important war problems in their own laboratories or in industrial and university research institutions best fitted to do the particular job needed. New ideas needed by Army and Navy are tried out promptly and vigorously with a minimum of red tape. It was made known a few months ago that some of the new research developments made in America had seen actual use on the field of battle. This will be increasingly the case in weeks to come.

Science is enlisted for the duration. Its effectiveness will be announced to the enemy by action rather than any news of progress that has been made.—WATSON DAVIS.

THE UNITED STATES MEDICAL COMMISSION TO THE YUNNAN-BURMA RAILROAD

JAPAN'S sudden attack on this nation gravely imperils the life of at least one and possibly several American scientific men believed to be in the Burma Road area where they were commissioned to fight malaria among Chinese builders of the Yunnan-Burma railroad. These scientists are members of the Medical Commission to the Yunnan-Burma railroad appointed last August by Surgeon-General Thomas Parran of the United States Public Health Service at the request of the Chinese Government.

Dr. Victor H. Haas, Public Health Service officer and chief of the commission, is known to have arrived in the Chinese Province of Yunnan on the Burma border. His last report, written five weeks ago, has been received by the Public Health Service at Washington.

Other members of the commission supposed to be either with Dr. Haas or on their way when Japan struck are: Dr. Fred P. Manget, American missionary physician; Dr. Marshall Balfour, chief of the Far Eastern Division of the Rockefeller Foundation; Dr. Paul Stephenson, formerly of the Peiping Union Medical College; Dr. W. L. Jellison and H. A. Johnson, of the Public Health Service; Frank W. Fisk, University of California; D. E. Wright, Rockefeller Foundation; F. W. Thomas and E. R. Lacy, Tennessee Valley Authority; L. B. Hall, Georgia State Department of Health; Arthur B. Morrill, Detroit Water Board.

Gordon Smith, entomologist of the Tennessee Valley

Authority, and Joseph Pasterski, Jr., Public Health Service clerk, are in San Francisco where they intended to leave shortly for Burma. Dr. T. H. Tomlinson, of the Public Health Service and executive officer of the commission, also was to have joined the commission. Their plans are now uncertain.

THE POSSIBILITY OF A CHOLERA EPIDEMIC IN JAPAN

EFFECTIVE bombing of Japan's crowded, inflammable cities might easily give rise to an epidemic of Asiatic cholera, is believed by U. S. Public Health Service epidemiologists. Two cases of cholera in at least one Japanese province (Taiwan) have been reported to the Public Health Service this year, and it is believed many more occurred. Cholera prevails in the Far East, but there is none in the United States.

Cholera is spread by eating raw foodstuffs and drinking water infected with the microscopic curved rods which are the cholera germs. Normal supervision of these sources would be disrupted by severe bombings of Japanese "paper" cities. A far higher number of people would be made homeless in Japan by bombings than in this country where living quarters are less crowded and more durable.

In addition, there are the dangers of typhoid fever epidemics among a coolie population suddenly driven from their supervised water and food supplies by fire and high explosives. Watchful Japanese health authorities have been able so far to prevent epidemics so far as is known, because to date no Japanese city has been severely bombed. Health authorities here believe, however, that mass destruction from air raids might easily bring the ravages of disease to a population already suffering from the strain of years of war.

Beriberi, another disease long known as a plague of Japan and other Oriental countries, is caused not by germs but by poor diet, specifically one lacking the morale vitamin B_1. The Japanese navy lost large numbers of its personnel from beriberi in the nineteenth century before the cause of this disease and the proper diet for preventing it were discovered. Long after it was banished from the navy it continued to afflict the civilian population, but the Japanese authorities have in recent years been trying to improve the nutritional status of the people. So far as beriberi is concerned, according to latest figures available, the death rate has been declining.

ITEMS

A CURE for athlete's foot which stops itching immediately and leaves no stain on skin or clothing is announced by Dr. Edward Francis, medical director (retired) of the U. S. Public Health Service, in the current issue of the *Journal* of the American Medical Association. The remedy consists of a mixture of three parts phenol and one part camphor which can be prepared by any pharmacist. He reports that the mixture is "non-irritating and may be painted between the toes several times a day. The sock may be replaced immediately without danger of corrosion." Users are warned, however, that the preparation should not be applied to wet skin.

A NEW plastic fabric for upholstery that is said to be stainproof, fireproof and practically as tough as steel is getting attention at the Modern Plastics Exposition at the U. S. Department of Commerce. The new material is being tried on New York subways and is being investigated by the U. S. Maritime Commission for upholstering furniture on new passenger ships. That the fabric can be washed with soap and water, does not retain heat like some chair covers, and is tough as steel are among claims made for it by the exhibitors, the Firestone Tire and Rubber Company. Known as Saran, the material is a thermoplastic resin extruded in strands or yarn of various sizes and gauges that can be woven like cloth. It can be produced in practically any weave or color used in producing cotton, silk or other textiles and can be combined with these to make original patterns. Besides upholstery, its uses are expected to extend to table tops, airplane partitions and room interiors.

A NEW "robot chemist," that automatically and continuously measures the amount of chlorine dripped into city water, was described in the course of a discussion of water supply sanitation at the General Electric Science Forum by Edward E. Minor, vice-president of the New Haven, Conn., Water Company. Practically all city water supplies are now chlorinated, to insure their freedom from harmful bacteria. The germ-killing process absorbs the chlorine and, if the introduction of the chemical is properly controlled, the excess is kept to a very low level. Less than this amount is not safe; more makes the water disagreeable to some persons. Until the present time, the only way to regulate the chlorine excess was to keep a chemist busy all the time making routine chlorine analyses. In the new process two electrodes, one of silver, the other of copper, are introduced into a slowly flowing stream of water. The amount of current passing between them is affected by the concentration of chlorine in the water. If it drops below the safe point, a relay in the apparatus increases the rate at which chlorine drips into the water; if it rises above the tolerable excess the amount of chlorine introduced is automatically reduced.

BY the use of "heavy" water, that is, water in which the two atoms of hydrogen that are combined with one of oxygen are twice as heavy as in ordinary water, investigators of the National Bureau of Standards have succeeded in producing a more constant standard volt. The final tests of the new standard were made by Dr. G. W. Vinal, chief of the electrochemical section, assisted by Mrs. L. H. Brickwedde. The standard volt is obtained from a standard battery cell which is made with extreme care according to very precise specifications. All other voltages are measured in terms of the voltage given by this cell. Just as the standard of length, preserved by the bureau, must always give the same length, this cell must always give the same voltage. The bureau has several such "standard cells" and, although very satisfactory, they require a certain period of aging before they settle down to a truly constant voltage and can be used. After seven years of research in the effort to improve the standard cell, it was found that by using a large percentage of "heavy" water in the liquid of the cell, its performance was improved and the aging period reduced.