SCIENCE NEWS

Science Service, Washington, D. C.

HEALTH PREPAREDNESS

POINTING out that "we have a tremendous task ahead of us," the new president of the American Public Health Association, Dr. W. S. Leathers, of Vanderbilt University School of Medicine, at the recent meeting in Detroit, urged public health workers to greater efforts on behalf of health preparedness.

In his presidential address Dr. Leathers said that during a period of national emergency, industry will be working under high pressure. Many hazardous chemicals will be used; overcrowding will occur and poor housing and sanitary conditions may become acute problems. This situation will require constant vigilance on the part of public health workers, and especially of industrial physicians.

He pointed out that the National Institute of Health, with its division of industrial hygiene, is in a position to coordinate a national program of industrial health. Sanitary measures around army camps can be better established and better enforced where there is thorough coordination between state and local health agencies and the military population.

The present war is a "war on nerves," said Dr. Leathers, stressing the weakening dangers of faulty diet. Among lessons of the World War which stand out now, he cited the fact that approximately a third of the men examined for World War service were physically unfit for military duty during one of the most critical periods of our country's history. "This experience alone," he added, "should cause us to make a dynamic drive for health preparedness."

Warning of the likelihood of another pandemic of influenza in the near future, Dr. Leathers urged research workers to intensify efforts to find a way of immunizing people effectively against this disease. Both measles and influenza were public health problems of the last war, and were all too frequently followed by pneumonia. Repetition of the "alarming" pneumonia death rate in the last war can be avoided now, however, as a result of recent knowledge for its prevention and cure. In this connection, he called the discovery of sulfapyridine "the greatest boon to pneumonia therapy that has occurred in the present century."

He expressed the view that Congress should pass the recently introduced bill for control of common colds, influenza and pneumonia, not only as an essential national defense measure but also as a great human need. The bill, which carries $3,000,000, would enable states campaigning against pneumonia to provide better medical supervision, more technical aid, increased number of typing stations, and an increased supply of sulfapyridine and specific sera.

As another urgent need Dr. Leathers called upon workers to devise "a synthetic preparation as a true prophylactic against malaria." In the last war, each cantonment in the South was guarded by an antimalarial zone a mile wide, and the U. S. Public Health Service and state and local health departments all worked together to fight this disease. Fortunately, even better methods of mosquito control are now known, but there are still serious limitations in treating malaria.

Venereal disease—which attacked more men in the army and navy in the last war than the number wounded in battle—can be reduced to a negligible health problem, like typhoid fever, declared Dr. Leathers, "if we have the will and the wisdom to do it."

Calling the Venereal Disease Act of 1938 one of the three most important health measures enacted by the Congress in the past decade, he said that the appropriation for 1940 is $6,200,000 and sharply pointed out that no nation can afford to save money by discontinuing the sustained fight on this major disease.

HEALTH PROTECTION AND ARMY TRAINING CAMPS

HEALTH protection of persons living near the new Army training camps will have to be given by state and local health authorities without federal financial assistance to meet the extra load of work, according to Assistant Surgeon-General Warren F. Draper, U. S. Public Health Service, speaking before the International Society of Medical Health Officers meeting at Detroit.

Congress has refused to make an appropriation to the Public Health Service at this time which would enable the service to aid local resources, because within the last four years considerable grants-in-aid have been made through the Public Health Service to the states to increase local health services. These grants have amounted to $11,000,000 annually, plus $6,000,000 annually for venereal disease control.

Population around the peacetime training camps will suddenly increase by a third or a half or may even be doubled, if World War training camp experience is repeated. The population increase will be made of construction workers and their families, job-hunters, families of the trainees, and a miscellaneous hodge-podge of camp followers. Hotels, boarding houses, restaurants, ice cream parlors and bottling establishments will be overtaxed and cleanliness and sanitation are likely to suffer. In addition, the military forces may have to depend on local water supplies and sewage disposal facilities.

Unless this extra strain on local health protection resources is foreseen and provided for, disease is likely to break out around the encampment areas. Although Dr. Draper did not enumerate specific diseases, health officers listening to him knew that typhoid fever, dysentery, trench mouth, colds, influenza and pneumonia are among the dangers that threaten unless proper sanitary and health measures can be taken. To assist in this task, Dr. Draper said, the U. S. Public Health Service can send to encampment areas trained advisers or consultants. These men will have the confidence of the military authorities and so can act effectively as liaison workers between military and civil health authorities.

Only by working their present staffs eighteen hours a

day or more will health departments be able to take care of the extra strain without sacrificing other vital health services, was pointed out by Dr. Arthur McCormack, Kentucky state health commissioner. Even if health departments could get money to finance the extra work the training camps will bring, they would not be able to get trained workers immediately.—JANE STAFFORD.

A NEW TREATMENT FOR SILICOSIS

HOPEFUL news of the first clinical trials of a new treatment for silicosis was brought by Dr. D. Irwin, of the University of Toronto, to the American Public Health Association meeting in Detroit.

For the past six weeks some seven or eight men, perhaps more by now, have been having their lungs dusted daily with aluminum powder in the hope of checking further ravages of their lungs by the silica dust they have been breathing while at work. The treatment is being given by Dr. D. Crombie, superintendent of the Queen Alexandria Sanitarium in London, and Dr. J. Blaisdell. At least a year will be required before the results of the treatment can be determined, but the signs so far are "far from discouraging," Dr. Irwin said.

The men inhale the aluminum dust through a tube held in the mouth, exhaling through the nose. The treatments start with a two-minute daily inhalation and work up to a thirty-minute inhalation every day. The men are continuing with their work while under treatment. Tests of lung function, developed by Professor W. S. McCann, of Rochester, N. Y., were made before the start of treatment and will be made at intervals during the trial year of the treatment. It is hoped that these, as well as the way the men feel, will show any beneficial effects of the treatment.

The aluminum acts to check silicosis by coating the silica particles that are doing the damage in the lungs. This keeps the silica from dissolving and acting chemically to damage the lung. Studies by a number of investigators previously showed that it was not the sharp dust particles that damaged the lungs but some chemical reaction between free silica and the lung tissue.

Following this lead, Dr. Irwin and associates first tried the effect of aluminum in reducing the solubility and chemical reactivity of silica. Finding that aluminum could check both these actions, they tried aluminum dusting the lungs of laboratory animals with silicosis. The results showed that while lung damage was not changed, the potentially dangerous quartz in dust cells can be inactivated to a form in which the lungs can get rid of it. Success with treating the animals led to the trials now going on in the aluminum treatment of human silicosis sufferers.

"If our prognostication is correct, the usual inexorable progress of the disease will be arrested and functional impairment diminished," Dr. Irwin said.

Before treating human patients, a hundred men who had been exposed to aluminum dust in the course of their work for at least twenty-five years were carefully studied. These showed no sign of damage from the aluminum dust.

Preventing silicosis by aluminum dusting the lungs of men working in mines and other dusty trades has not yet been tried. The ideal way to prevent silicosis is to prevent the inhalation of silica dust by proper ventilation and other measures in the work places. The aluminum dusting method has been patented, and if it proves practical for both treatment and prevention, Dr. Irwin said, license to use it will be given only to plants that are up to standard on ventilation and other dust control measures.—JANE STAFFORD.

OKABAYATSIS COMET

DESPITE the German occupation of Denmark, the International Bureau of Astronomical Telegrams, at the Copenhagen Observatory, which is the world's clearing house for news of discoveries, seems still to be functioning. This is indicated by a cablegram received by the Harvard College Observatory, announcing the discovery in Japan of a new comet. It is signed with the name of Dr. E. Stroemgren, who has directed the bureau for a number of years.

News of the discovery was transmitted to Denmark by Dr. Hidewo Hirose, director of the Tokyo Observatory. The comet was discovered by a member of his staff, S. Okabayatsi, who is believed to be the same astronomer who discovered a new star in the constellation of Sagittarius in 1936.

Okabayatsi's comet is of the eleventh magnitude, it is too faint to be visible except with a telescope of at least moderate size. It is described as being diffuse, but with a central nucleus. Nothing is said about a tail.

It was found on Friday, October 4, at 1:49 P.M., by Eastern Standard Time, though, because Japan is on the other side of the International Date Line, it was still Thursday there. Its position, astronomically speaking, was 10 hours 7 minutes 31 seconds right ascension and 25 degrees 13 minutes 1 second north declination. This is in the constellation of Leo, the lion, north of the bright star Regulus, which rises in the east about 2:00 A.M. It was moving in a northeasterly direction, toward the next-door constellation of the little lion, and the Great Dipper, which is next beyond.

By October 10 the comet had already made its closest approach to the sun, and is becoming fainter as it recedes from the center of the solar system. Thus there is no hope of its being visible to the naked eye, since at the time of discovery it was of magnitude 11, too faint to be seen without a telescope. Calculation of its path has been made by Elizabeth L. Scott, at the University of California in Berkeley, showing that on August 11 the comet was nearest the sun, at a distance of about 90 million miles, slightly less than the average distance of the earth. A prediction based on this calculation shows that it will move into the constellation of the Great Bear early in November, passing alongside the pointers in the Great Dipper. It is heading almost directly north from its position at the time of its discovery in Leo, the lion.

The previous comets, since the beginning of September, were Whipple's periodic comet, found originally by Dr. Fred L. Whipple, of the Harvard College Observatory, and rediscovered on one of its seven-year visits on September 1 by his associate, Leland S. Cunningham. On

a photograph taken on September 5, Mr. Cunningham on September 15 found a comet which is expected to be seen easily with the naked eye this winter. Then, on the last day of September, Dr. Whipple discovered still another, on a photograph taken in August. Neither the old Whipple comet nor the new one will reach naked eye visibility.

A NEW PHOTOGRAPHIC FILM

A NEW kind of photographic film, that wears longer in use, and stores better than the cellulose nitrate and cellulose acetate films now universally used, has been devised in the laboratories of E. I. du Pont de Nemours and Company, Wilmington, Del. This is shown by the posthumous issue of two U. S. Patents, numbers 2,216,735 and 2,216,736, to Dr. Wallace Hume Carothers, who died in April, 1937. The original patents for the du Pont synthetic fiber, nylon, were issued to him also. The new patents, like the old ones, are assigned to the du Pont Company.

The patent specifications point out that nitrocellulose is now most widely used for films, despite its inflammability, and that cellulose acetate, which has replaced it in some cases, has the disadvantage of low resistance to water, and poor strength and flexibility, especially when very dry. Fairly thick films must be used to compensate for the lack of strength. In color photography, where the picture may be coated on both sides of the film, and separated by its thickness, this causes a blurring of the picture.

Dr. Carothers found two groups of chemical substances which offer many advantages over the old material. One consists of linear superpolymers, and is covered in the first patent, the other includes linear polyamides. Both of these are crystalline, that is, they have a sharp melting point, and do not, like resins, gradually soften as the temperature is raised. In preparing the film, the material may be melted, and spread on a smooth, cool metal surface, or rolled between cool metal rolls, where it freezes into a thin sheet. These substances, it is said, have extreme strength, good flexibility and resistance to water, and are non-inflammable. On account of their strength, movie films made of them will last much longer when exposed to the wear of repeated passage through the projection machine. It is also possible to use films half as thick as ordinarily. This promises to be very useful in color photography. Layers can be coated on opposite sides of the film without causing a distorted image.

In other methods of color photography, several layers of emulsion are coated on a single film base. Using thin films of superpolymers or polyamides, each with its own emulsion, a three-deck sandwich or "tripack" can be built up, in which the total thickness is still surprisingly little, and the emulsions are very close together.

As an example of the advantage over older kinds of films, it is said that cellulose acetate film can be bent about twenty-five times before breaking, at 70 per cent. relative humidity, and about ten to fifteen times in a perfectly dry atmosphere. In contrast, at either degree of humidity, films made of one of the polyamides was intact after two hundred and fifty bendings.

According to the patent specifications, "This indifference to atmospheric conditions means that films of the present invention need not be stored under carefully adjusted conditions as is done with cellulose acetate. This unique property makes them specially advantageous as permanent business, library and historical records."

The advantages of the new film adapt them for cut or roll films, amateur or professional movies, microfilm recording of documents or publications, x-ray pictures, color photographs and sound recording.—JAMES STOKLEY.

ITEMS

SATISFACTORY observations of the total eclipse of the sun on October 1 were made by the expedition to Queenstown, South Africa, from the Cruft Laboratory of Harvard University. Though the party was mainly interested in radio studies, which did not depend on clear weather, it was planned to take photographs also, and, presumably, these were made. Two other American expeditions, to South America, were subjected to cloudy weather during the few minutes that the sun was covered, preventing such photographs.

THAT drought, which plagued large parts of the West during September, was completely broken during the first ten days of October, is indicated by reports to the U. S. Weather Bureau. In the Great Plains region and westward, water holes are full and usually dry streams are running. Moderate to substantial rains were wide-spread over most central and northern states, which had also been very dry during September. However, drought has taken a distressingly solid grip on the Southeast, where the soil is still much too dry for fall plowing, pastures, truck crops and winter grain seeding. Light showers relieved the situation somewhat in parts of the area, but were neither abundant nor wide-spread enough to do general good.

EPIDEMICS such as those that swept American army camps in 1917–18 can be largely obviated if we "make haste slowly" this time, mobilizing trainees gradually and in small groups and not trying to rush the process of physical hardening. This recommendation is offered editorially by the *Journal* of the American Medical Association. Dr. Hans Zinsser, the eminent Harvard bacteriologist who died only a few weeks ago, is cited by the *Journal* as authority for the opinion that the epidemics in the World War camps were due largely to the crowding together of large numbers of young men, some of whom were carriers of respiratory diseases, and to the efforts of the officers to harden their recruits up into real soldiers by too strenuous exercise and too prolonged drill.

BETTER results in operations for cataract are obtained by a new surgical stitching feat described by Dr. Luther C. Peter, of Philadelphia, at the meeting in Cleveland of the American Academy of Ophthalmology and Otolaryngology. Instead of waiting till the operation is finished to put in stitches, the surgeon takes a couple of what might be called "preventive stitches," somewhat in the manner in which a seamstress runs a thread around the space for a buttonhole before she cuts the hole.