

GENERAL SCIENCE

Ultraviolet Barrages Urged As Means of Preventing Flu

National Academy of Sciences Learns That Army May Be Protected From Epidemics By Lamps in Barracks

ULTRAVIOLET barrages from mercury vapor lamps, sweeping the air of barrack rooms, mess halls and other places where soldiers of the new American army will be crowded together during the coming winter, were suggested as a means of minimizing epidemics of influenza, pneumonia, measles, mumps and other plagues that scourged the army camps of 1917-18, by Dr. William F. Wells of the University of Pennsylvania, before the National Academy of Sciences meeting at the University of Pennsylvania.

Dr. Wells feels that it is highly likely that many of the so-called infectious diseases are air-borne, and that their germs or viruses can be kept down by flooding spaces where they float with ultraviolet radiation of germicidal wavelengths. In keeping with this theory, he has tested various types of ultraviolet installations, first in hospitals, more recently in schools. Results have been decidedly encouraging.

He and his associates are engaging in further careful tests of the method in new environments. They intend to pursue their theory to scientific proof. They believe however that enough is now known to warrant the recommendation that ultraviolet radiation apparatus be installed in buildings designed to house large companies of men. The bearing of this recommendation upon the coming national situation is obvious.

Science News Letter, November 2, 1940

Why TB "Runs in Families"

AN ANSWER to the riddle of why tuberculosis seems to "run in families" was sought by Dr. Max B. Lurie of the University of Pennsylvania, who told the Academy of his results.

Dr. Lurie produced six closely inbred families of rabbits by several generations of brother-sister matings. Two of these families were highly susceptible to tuberculosis, one was highly resistant, and the remaining three were intermediate.

When the rabbits were infected with TB germs, it was found that resistance centered largely at the port of entry. The

disease was confined to the lungs in the resistant family, and made but slow progress even there. In animals belonging to the susceptible families, however, it readily spread from the lungs to other tissues, traveling by the circulatory system.

Further experiments showed the resistant rabbits to be strongly allergic to dead tuberculosis bacteria and their products, whereas the susceptible animals were quite tolerant and gave little allergic reaction.

Science News Letter, November 2, 1940

Dance of Life in Protoplasm

LIFE as a dance, a rhythmic to-and-fro motion of protoplasm, was demonstrated in a series of striking motion picture films shown before the meeting of the National Academy of Sciences, by Prof. William Seifriz and Noburo Kamiya of the University of Pennsylvania. Not only the time of the rhythm, but the force with which it moves the fluid stuff of life, have been measured by the two researchers.

The organism studied by Prof. Seifriz and Mr. Kamiya is one of the lowliest of living things, known as a slime-mold. Slime molds are so far down on the evolutionary scale that biologists are not agreed whether they are plants or animals. To the naked eye, they look rather like bits of egg white, or blobs of spilled mucilage. Nevertheless, they are alive, and the naked protoplasmic masses of which they are composed are in slow but ceaseless streaming motion.

Prof. Seifriz and Mr. Kamiya have succeeded in making motion pictures of this protoplasmic streaming, speeding up the apparent motion by exposing frames of their film at longer than normal intervals, and then running the film at normal speed—what is known as the time-lapse method, which is the reverse of a slow-motion picture. The speeding up has shown many things about the streaming of protoplasm that have not been known before.

Basic is the rhythmic ebb and flow of the life-tides in the (*Turn to page 282*)



POWER BY RADIO

Transmission of power by radio has been successfully accomplished with this tube in a demonstration by Westinghouse scientists. It is shown with I. M. Mouromtseff, one of the engineers who developed it.

RADIO

Power Is Sent By Radio With New "Klystron Tube"

A FORWARD step on the road to radio transmission of power was demonstrated to a group of college deans and professors attending a conference at the Westinghouse Lamp Research Laboratories. As they sat in the conference auditorium, each member of the audience held aloft a flashlight bulb to which was attached a short wire antenna. On the platform was the transmitter from which the electrical waves, focussed like a searchlight beam with the help of a six foot horn, were aimed at the little lamps, causing them to light as though connected to a storage battery.

The waves carrying the energy are from four to 16 inches long, much less than the ordinary short radio waves, which are 10 to 300 yards in length. Unlike the radio waves, they cannot penetrate non-metallic materials. This was demonstrated by holding a block of wood between the lamp and the transmitter. Then the lamp went out.

The apparatus, called the Klystron, originated about two years ago in the laboratories of Stanford University, in California. The Sperry Gyroscope Company was designated by the University to promote the practical use of the instru-

ment, and the researches in the Westinghouse laboratories have been carried out by arrangement with them. I. M. Mouromtseff and G. M. Dinnick, as well as other Westinghouse engineers, have been working on the problem, and have produced it as a much smaller and simpler tube which is now air cooled.

Heart of the device is two small doughnut-shaped copper tanks, called "rhumbatrons" because of the rhythmic surging of the radio waves within their walls. These were devised by William W. Hansen, Stanford University physicist, who discovered their properties in the course of atom-smashing experiments. The rhumbatrons break up an

electron stream, bunching the individual electrons and converting their energy into the high-frequency oscillations, which are transmitted from the Klystron antenna. Even in this stage of development, the professors were told, a power of 200 to 500 watts is attained, comparable to many a radio station.

Though power transmission may come eventually with the Klystron, engineers think that more immediate applications will be in increasing the number of television transmission channels, or the number of messages transmitted simultaneously over a telephone line; producing body heat internally for medical purposes and in improved aerial navigation.

Science News Letter, November 2, 1940

MEDICINE

Nerve-Cutting Operation Cures Meniere's Disease

Record of 400 Permanent Cures and Only One Death Out of 401 Cases Reported to College of Surgeons

A RECORD of 401 operations for Ménière's disease, with one death and 400 permanent cures, was announced by Dr. Walter E. Dandy, of Johns Hopkins Hospital, at the meeting of the American College of Surgeons in Chicago.

Patients with this ailment have sudden, recurrent and usually incapacitating attacks of dizziness in which objects rotate. Ringing in the ear and partial deafness on the affected side and frequently nausea and vomiting accompany these attacks. The deafness and ear symptoms may occur on both sides.

Permanent cure of the condition is achieved, with almost no risk and no after effects, by cutting the nerve of hearing on the affected side, or on both sides, if the ear symptoms occur on both sides. If the hearing is worth saving, it may be preserved by cutting only three-quarters of the way through the nerve. The operation can be done almost painlessly under a local anesthetic, but Dr. Dandy prefers to put the patient to sleep with avertin.

Science News Letter, November 2, 1940

New Chemical Treatment

A NEW chemical treatment of Ménière's disease, which has been on trial for just over a year, was reported

by Dr. Bayard T. Horton, of Mayo Clinic. This treatment consists of injections of histamine and its usefulness in relieving Ménière's disease was discovered when Dr. Horton used it to treat a patient who had peculiar, one-sided headaches. The histamine treatment was given for the headaches, but to the patient's elation, she not only got over her headaches but seemed to be entirely relieved of Ménière's disease from which she had also suffered for more than four years.

Following this experience, Dr. Horton started treating other Ménière's disease sufferers with histamine. To date, 49 patients have been given this treatment. All of them were promptly relieved of the dizziness, nausea and vomiting, and less than half obtained improvement of the ringing in the ear. This is the most difficult phase of Ménière's disease to treat, Dr. Horton pointed out.

The acute symptoms of the disease, Dr. Horton and associates are convinced, can be relieved by injecting histamine into the patient's veins from one to four times on successive days. For prevention of future attacks, histamine in adequate dosage is injected under the skin two to three times a week. A few patients who have been on this schedule for a period of six to nine months have remained free from attacks.

"It will take additional time," Dr. Horton stated, "to evaluate this particular phase of histamine therapy.

"The perfect treatment for Ménière's disease has not been announced nor will it be announced here tonight," he declared at the beginning of his report. "The story which I have to relate regarding its treatment with histamine is a very simple one and can best be told as it actually happened. I am not here to defend this method of treatment. It will survive or fall on its own merits."

Science News Letter, November 2, 1940

Urges Sympathy for Draftees

DO NOT follow the hard-boiled drill sergeant's methods of handling recruits and draftees. Be firm but kind and show a little sympathy to the new soldier.

This is the advice Brigadier General Raymond F. Metcalfe, Medical Department, U. S. Army, gave to members of the American College of Surgeons, many of whom will soon be medical officers assigned to duty with America's new defense army.

"Remember, the medical officer and the chaplain are the only officers who can show a little sympathy for the new soldier without lowering discipline," General Metcalfe stated.

Many of the men coming to the doctor's office at the dispensary or hospital will be not seriously ill, but tired, homesick and suffering disturbed body functions as a result of the complete change in habits required by Army life.

If there is any doubt of illness, the man should be sent to quarters or the hospital at once rather than waiting until he becomes seriously ill, General Metcalfe said, warning that measles may be the first serious condition developing among the recruits and draftees, and may be followed by pneumonia and empyema. Prompt isolation of the measles patient may stop this disabling sequence.

Sodium amytal, familiar to many civilians as a sleeping medicine, should be given to every seriously wounded soldier picked up by Battalion Surgeons and hospital corps men before the wounded man is sent to the rear, General Metcalfe advised in outlining plans for handling the wounded if we should get into war.

Many lives may be saved by this measure, he said, because sodium amytal has been found to delay for 10 hours or longer the onset of shock which is a grave danger in battle wounds.

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