Leprosy and Fungus

Medicine

A medical progress note prepared by the American Association for Medical Progress.

Investigations of leprosy by Dr. E. L. Walker of the University of California Medical School illustrate the difficulty of obtaining proof of the causative agent of a disease, without animal experimentation. In Honolulu Dr. Walker is working on the theory that leprosy is caused by a soil-growing organism related to the fungus, *Actinomyces*. The disease is most prevalent in countries where the natives run barefoot, and it seems probable that it is contracted by contact with the soil. Frequently it breaks out first around the feet or legs, but even when the infection has entered by way of the feet it may spread through glands and break out in other places.

Actinomyces presents a number of problems to the investigator. In the first place the conditions under which it grows in living tissue cannot be reproduced in the laboratory. And in the second place these plants assume different shapes and forms. In human tissues they appear rod-shaped, whereas in laboratory cultures they may be spherical, rod-shaped with swollen ends or threadlike and branched.

At first Dr. Walker thought that there must be several different organisms associated with leprosy, but after months of experimentation he discovered that they were all of the same breed. His theory that the disease is caused by this particular organism however, must still be regarded as tentative. Animals other than man are immune and cannot help in the investigation. Positive evidence must depend upon the changes in the sickness rates following universal adoption of shoes and a careful disinfection of all wounds, and upon the investigation of soil conditions, and the mode of infection in all parts of the world where leprosy is most common.

Science News-Letter, September 1, 1928

Study Grease Devices

Engineering

Grease measuring devices such as used by filling stations in servicing automobiles may soon be standardized. Tentative specifications and tolerances for grease measuring devices were adopted at the twenty-first National Conference on Weights and Measures. During the next year a close study will be made of the usefulness of the code.

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Measures Speed of Lightning

Physics

The speed of a lightning flash has been measured for the first time in history. It takes about one seven-thousandth of a second for it to complete itself. No part of it lasts more than approximately one thirty-five-hundredth of a second.

The old dispute, as to whether lightning strikes downward from the clouds or jumps upward from the ground has also been settled. It does both. It starts from the cloud and the ground at nearly the same instant, and approximately one seven-thousandth of a second later the two ends unite in mid-air.

These facts, representing the first actual measurements of the speed of lightning, were determined by Prof. C. V. Boys, noted British physicist, who is spending the summer at the private laboratory of Alfred L. Loomis at Tuxedo Park, N. Y. Prof. Boys obtained his measurements with a special camera which he patiently carried about the world for 26 years, attempting hundreds of photographs in vain, until a New York stroke of lightning proved to be his real stroke of good luck.

The camera has two lenses instead of the usual single lens. They are mounted on a disk and whirled rapidly while the camera is pointed at a cloud which promises good lightning flashes. When the flash comes, the camera is closed and the plate developed.

Since two moving lenses have been used, a double picture is obtained, each image slightly displaced in a direction opposite to the other. By appropriate optical measurements and geometrical calculations of this displacement the direction and rate of travel of the flash can be determined. Its duration can be learned from the width of the streaks on the plate, blurred by the motion of the lenses.

A detailed report of Prof. Boys' lightning measurement and a description of the methods employed are published in the British scientific periodical *Nature*, which appeared in London today (Saturday, Sept. 1).

Science News-Letter, September 1, 1928

New Aid for Sub Crews

Inventions

A device which experts believe will save the lives of men submerged in sunken submarines has been devised by the Naval Bureau of Construction and Repairs after years of exhaustive research.

The instrument, defined as a "breathing device," is extremely simple in operation, consisting of a bag of oxygen attached to a mouth-piece, and worn with a bathing suit or light clothes. Following a wreck, submarine crews as far down as 225 feet need merely attach the instrument and swim to the surface, navy officials explain.

Tests thus far have demonstrated the efficacy of the invention in shallow water, and tests are now under way to try it out at greater depths. A few days ago a submarine expert dived 60 feet in a diving bell, rising to the surface, he said, without any discomfort.

It is pointed out that the invention is a welcome contrast to the old-style rescue apparatus which is extremely cumbersome and weighs up to 26 pounds. The new device weighs but two pounds and takes up every little space. Plans are under consideration to equip every submarine with the breathing apparatus.

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Thin Clothing Healthful

Hygiene

Women's clothing for winter has been given scientific approval as being far more healthful and more sensible than men's. Man lives in a tropical climate while woman enjoys the dry, cool atmosphere of the Alps, according to investigations made by Dr. E. Friedberger, professor of hygiene at the University of Greifswald.

The weight of man's indoor clothing is over four times that of woman's, the temperature inside man's clothing is 87.8 degrees Fahrenheit, with a relative humidity of 70 per cent., while the temperature under woman's clothing is 80.6 degrees and the humidity only 55 per cent.

Worst of all, man's closely woven and lined coat and vest keep the healthful light rays from penetrating to his skin, while the modern woman's loose, thin, unlined dress of porous material provides the continuous access of light rays to the skin, Dr. Friedberger found by experimenting with light-sensitive paper. It is this continuous exposure to small amounts of the health-giving rays that is desirable, rather than an occasional overdose on a holiday, which is all poor man gets, as a rule.

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