

MEDICINE

Pneumonic Plague Danger

There exists a danger now of an outbreak of pneumonic plague unless it is spotted and treated early. Gland diseases of the groin or armpit regions are indicators.

► DOCTORS in 15 western states should suspect plague in any case of disease in the lymph glands of the groin or armpit regions, Dr. Vernon B. Link of the U. S. Public Health Service's western communicable disease center at San Francisco, warns in the *JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION* in Chicago (Sept. 30).

He foresees danger of an outbreak of pneumonic plague with serious loss of life unless plague is suspected, diagnosed and treated early.

Penicillin, famous mold remedy effective in many diseases, "has no value whatsoever in the treatment of human plague," Dr. Link also warns.

In two recent cases in which penicillin was the only drug given, the patients both died, he reports.

Streptomycin and sulfadiazine are the treatment of choice and should be started immediately "even when only a possibility exists that the disease is plague," he states. In one case, he reports, the use of these two drugs "produced an immediate, dramatic, life-saving effect in a moribund patient who most certainly would have died without such treatment."

The 15 western states in which plague danger exists for humans are: California, Oregon, Montana, Idaho, Nevada, Utah, Wyoming, Washington, Arizona, New Mexico, Colorado, North Dakota, Oklahoma, Kansas and Texas. Plague infected rodents, such as rats and ground squirrels have been found in all these states, constituting a reservoir of infection that may spread to man.

From July, 1949, through July, 1950, five cases of plague and 13 more suspected cases have occurred. This figure is considerably above previous averages and is one reason for Dr. Link's warning. Another reason is that two of the five cases occurred in counties of New Mexico in which wild rodent plague had never been found before.

Plague cases at present are sporadic and are of the bubonic type. But Dr. Link warns that a case of pneumonic plague might develop at any time and could give rise to a serious outbreak because this kind of plague spreads directly from person to person and therefore is much harder to control than bubonic plague which spreads via rodent fleas.

Science News Letter, October 7, 1950

MEDICINE

Smoking in Lung Cancer

Arsenic from insecticides used to protect the tobacco plants may be the chemical in tobacco smoke which causes cancer. Inhaling does not seem to make any difference.

► SMOKING is an important factor in causing cancer of the lung, two medical scientists conclude from a study reported to the *BRITISH MEDICAL JOURNAL* (Sept. 30).

Arsenic in insecticides used to protect the tobacco plants may be the chemical in the tobacco smoke that causes the cancer, they suggest.

The scientists are Dr. Richard Doll of the statistical research unit of the Medical Research Council and Dr. A. Bradford Hill, honorary director of the same unit and professor of medical statistics at the London School of Hygiene and Tropical Medicine.

Their conclusions about the part smoking, especially cigarette smoking, plays in causing cancer are based on studies of the smoking history of 1,732 patients with cancer of the lung, stomach or large bowel and 743 general medical and surgical patients who did not have cancer. Of the can-

cer patients, 649 men and 60 women had cancer of the lung.

Among the lung cancer patients 0.3% of the men and 31.7% of the women were non-smokers. In this study a smoker was defined as a person who had smoked as much as one cigarette a day for as long as one year.

Among non-cancer patients 4.2% of the men and 53.3% of the women were non-smokers.

After the age of 45, the scientists found, the risk of developing lung cancer increases in simple proportion with the amount smoked. The risk may be about 50 times as great among those who smoke 25 cigarettes a day as among non-smokers.

Whether or not the smoker inhales does not seem to make any difference. Since the size of the smoke particle which carries the cancer-causing chemical is unknown, noth-

ing can be said about the effect any change in rate and depth of breathing may have on the extent and site of deposition of the cancer-causing chemical.

In suggesting that arsenic from insecticides on tobacco plants may be the chemical in tobacco smoke that causes lung cancer, the scientists point out that the only cancer-causing chemical that has been found in tobacco smoke is arsenic. However, the evidence that arsenic can produce cancer of the lung is "suggestive rather than conclusive," they state.

If arsenic is the cancer-causer in tobacco smoke, it might account for the observation that deaths from cancer of the lung have increased more rapidly than the consumption of tobacco.

Science News Letter, October 7, 1950

ENGINEERING

Counter Measures Three Kinds of Radioactivity

► DEVELOPMENT of the first instrument that can count all three kinds of radiation from uranium—A-bomb ingredient—is claimed in Schenectady, N. Y. The new instrument, called the universal scintillation counter, not only detects and counts alpha, beta and gamma radiation, it also does this job more efficiently than any other instrument detects and counts



IDENTIFIES BIG THREE—The universal scintillation counter analyzes the white square of paper which contains the smear from object suspected to be contaminated. The instrument is able to check the smear for presence of alpha, beta or gamma rays, which are the "big three" of nuclear radiation. Mrs. Ethelyn Langdon, engineering assistant, operates machine.

only one kind of radiation.

Developed by General Electric Company engineers, the new counter is designed for use in testing laboratory equipment, in measuring radiation of ore samples, and in determining how fast radioactive substances disintegrate.

The instrument is set up to test samples

of material two inches square. Radiation from a sample strikes a phosphor, a substance which gives off light in the presence of radioactivity. The light hits an electronic tube, which converts the light into electrical energy. A counting circuit is then activated by the electrical energy.

Science News Letter, October 7, 1950

RADIO

Radio Channels Double?

► HIGH hopes for doubling the number of available radio channels is promised by the use of what scientists call a single-sideband system of broadcasting. The system is approaching perfection.

Much work is being done by various institutions throughout the country in developing this single-sideband system. Included are technicians of Rutgers University in New Brunswick, with Prof. James Leroy Potter as the local leader.

Purpose of the work is to make more radio channels available. There are over 2,100 standard radio broadcasting stations in the United States now. There could be perhaps twice as many except for the technical difficulty that no channels, particularly in heavily populated areas, are available under the present broadcasting.

The single-sideband system, on which Prof. Potter is working in an integrated national research effort, may eventually dissolve the log-jam of stations frantically seeking airspace, he recently stated. It is still far off, however, since special receivers are necessary.

As explained by him, present radio receivers, set to pick up a certain broadcast frequency, actually receive two separate signals, one slightly above and the other slightly below the broadcasting frequency. These are the sidebands. The receiver combines them into a single perfect signal. Because of these sidebands, frequencies allotted to broadcasting stations have to be

spread quite far apart to prevent interference.

Among others working on sideband transmission are the U.S. Air Force and Stanford University in California. A new and radically simpler single-sideband transmitter was revealed by the latter recently. It was based on developments carried out in New Jersey laboratories of the Air Force.

The device utilizes only one of the sidebands formed. It eliminates the carrier signal completely. Voices transmitted by the single-sideband system are received as gibberish on ordinary receivers. Special receivers will be necessary if the system becomes widely used. The communication-type sets used by amateurs can be converted to receive them by a simple adjustment.

Science News Letter, October 7, 1950

METEOROLOGY

October Weather Will Change in Circles

► OCTOBER will be different this year. The Middle Atlantic states will experience much above normal temperatures. Montana, Idaho, and Wyoming will be much below normal in temperature. From these two centers the temperature will get gradually warmer and colder in ever-widening circles. But there will be little of the country that experiences a near normal temperature.

This is the word of the Extended Forecast Section of the U. S. Weather Bureau.

Where the temperature is much below normal, there will be snow. All over the country, precipitation, including both rain and snow, will be heavier than normal, except in the Pacific coast states, the South Atlantic states and along the Gulf coast. There less rainfall than normal is expected.

For most people this will be an unusual October.

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Question Box

AGRICULTURE

Why are potatoes colored? p. 232.

ENGINEERING

What are the "big three" of radioactivity? p. 227.

GENETICS

What will happen to the white race in the future? p. 231.

Photographs: Cover, Douglas Aircraft, Inc.; p. 227, General Electric Company; p. 231, U. S. Naval Observatory; p. 234, 235, American Red Cross; p. 240, Union Carbide and Carbon Corporation.

HOME ECONOMICS

What now keeps fish fresh until they get to market? p. 233.

ICHTHYOLOGY

How does the sea horse act like a monkey? p. 238.

MEDICINE

How can TV be utilized medically? p. 233.
What chemical in tobacco smoke may cause cancer? p. 227.