

PUBLIC HEALTH

Plague Spread Traced

Public health scientists are constantly on the alert to protect populations against epidemic diseases. Research has now positively identified the flea as a bubonic plague carrier.

► **BUBONIC PLAGUE**, a disease always found in some animals in western United States, can be spread by infected fleas, it has been demonstrated for the first time under semi-field conditions.

A team of three U. S. Public Health Service scientists and a radiobiologist report in *Science* (April 11) that they were able to trace flea transfer from wild rodents to domestic rats. This, they point out, is a "particularly important problem in plague epidemiology."

By tagging fleas with radioactive cesium-144, the scientists traced the fleas' movements.

Three California voles, *Microtus californicus*, a kind of field mouse, were studied in enclosed plots simulating field conditions. Tagged fleas were placed on some of the animals. They were then found in the animals' nests as well as moving between animals. The fleas were also eaten by the field mice.

While the field mice were alive, the scientists report, no tagged fleas were found on rats which were kept in a separate but nearby enclosure. However, in further experiments fleas moved from dead field mice to live rats and, when new field mice were placed in the area with rats, from live field mice to live rats. Radioactive fleas were also recovered from the rats' nests.

Further studies on flea transfer under actual field conditions are being planned, the scientists report, to confirm and extend their observations.

The bubonic plague is known to be established in at least 15 western states in addition to western Canada and in Mexico.

W. V. Hartwell, S. F. Quan and Dr. L. Kartman of the Communicable Disease

Center, U. S. Public Health Service, San Francisco, and Dr. K. G. Scott of the department of radiology, University of California School of Medicine, San Francisco, reported the research.

Dr. Kartman and Mr. Quan recently reported an unusually large number of meadow voles—"the largest and most extensive yet recorded in North America"—in California and Oregon. The fact that evidence has been found of an epidemic of tularemia in these animals poses a very serious public health problem, they report.

Dead field mice containing millions of tularemia organisms have been found under hay bales, in stored grains, and on the ground. Streams, irrigation ditches and, in one case, a shallow well that supplied drinking water in a home, tested positive for tularemia organisms. Two field mice, found positive for tularemia, were picked up in the pump house at this home.

Humans have been known to contract the disease from dogs and cats that have been infected when hunting the field mice.

Epidemics in man following outbreaks among field mice have occurred sufficiently often, the scientists warn, to illustrate the potential hazard of tularemia outbreaks in field mice.

K. F. Murray of the California State Department of Public Health's bureau of vector control, Berkeley, F. M. Prince of the Communicable Disease Center, U. S. Public Health Service, San Francisco, and M. A. Holmes, Oregon State Board of Health, Portland, co-authored the report on tularemia which appears in *California Vector Views* (April).

Science News Letter, April 26, 1958

The reason for the high vitamin B-12 concentration observed in the leukemia patients is not clearly understood at present, a team of scientists from the National Cancer Institute, Bethesda, Md., reported. Preliminary studies, however, suggest there may be some difference in the way vitamin B-12 is bound to a serum protein in the chronic myelocytic leukemia patient.

In one patient who had a high concentration of vitamin B-12 a clinical remission resulted in a reduction in the concentration to the normal range, Drs. I. Bernard Weinstein, Robert S. Mendelsohn, Helen F. Noble and Donald M. Watkin of the Institute reported.

The grasshopper pigment found by Drs. Landry E. Burgess and D. T. Rolfe of Meharry Medical College, Nashville, Tenn., was fed to weanling rats to determine its effect on growth and pernicious anemia compared to that of vitamin B-12. A close similarity between the grasshopper pigment and the vitamin was found.

Drs. Burgess and Rolfe said that it is "reasonable" to expect similar results with their grasshopper derivative as an "anti-anemic and growth principle" for man.

Science News Letter, April 26, 1958

● RADIO

Saturday, May 3, 1958, 1:30-1:45 p.m., EDT "Adventures in Science" with Watson Davis, director of Science Service, over the CBS Radio network. Check your local CBS station.

Dr. Eugene H. Lucas, professor of horticulture, Michigan State University, East Lansing, Mich., will discuss "New Drugs From Plants."

GEOPHYSICS

Satellite Temperatures Yield Earth's Heat

► **TEMPERATURE** information radioed back to earth from man-made satellites is yielding improved estimates of the heating characteristics of the earth and sun.

Dr. Raymond H. Wilson Jr. of the U. S. Naval Research Laboratory's Project Vanguard reports in *Science* (April 11) his calculations showing how the telemetered temperature data can be put to use in this new way.

Only requirement is that the amounts of solar radiation absorbed and emitted by the materials of which the satellite is made are known. These can be determined experimentally before launching.

The predicted satellite temperatures, Dr. Wilson says, depend upon the assumed effective temperature of the sun and on the sunlight reflected from earth. Since the space temperatures are now being measured, these relations can be reversed to give the heat characteristics of earth and sun.

Dr. Wilson told *SCIENCE SERVICE* he expected to complete the reverse calculations as soon as sufficient satellite temperature information was available.

Science News Letter, April 26, 1958

MEDICINE

Aged Lack Vitamin B

► **VITAMIN B** compounds were implicated in aging, pernicious anemia and leukemia at a session of the Federation of American Societies for Experimental Biology meeting in Philadelphia.

Three different research reports showed:

1. A deficiency of vitamin B-6 is common in the aged.
2. Serum vitamin B-12 concentrations have been found to be higher in patients with one type of leukemia than in those with other forms of cancer or in well patients.

3. A new reddish-brown crystalline substance has been isolated from the developing egg of the common grasshopper that can re-

place crystalline vitamin B-12 in the nutrition of young rats.

Tests to measure the amount of vitamin B-6 in the body have shown that individuals 18 to 40 years old had significantly higher levels than those found in elderly men and women 60 to 90 years old, Dr. Elma Ranke of the School of Hygiene and Public Health of Johns Hopkins University, Baltimore, Md., said.

Dr. Ranke reported the vitamin B-6 deficiency in the aged may represent an increased need of it with advancing years. As the individual grows older it is also possible the aged person may find it more difficult to absorb and utilize the vitamin.