SCIENCE NEWS

Science Service, Washington, D. C.

SPREAD OF THE FRUIT FLY

COMPLETE demoralization of the fruit industry through a nation-wide ban on interstate fruit shipment loomed as a result of the activities of the Mediterranean fruit fly, Florida's insect invader. Entomological circles have been thrown into a panic by the announcement that the enemy, in the few weeks that have elapsed since its discovery near Orlando, Florida, has reached six other states, penetrating as far north as New York City and negotiating the wide barrier of the Mississippi River.

Dr. S. A. Rohwer, of the U. S. Bureau of Entomology, says that reports from his scouts are that the fly has been found on fruit in Louisiana, Arkansas, North Carolina, Georgia, Texas and New York, in spite of the rigorous federal and state quarantine now maintained. It has not been discovered infesting orchards in any state but Florida, but maggots contained in the fruit are scheduled to emerge in a few days, and unless all of the contaminated fruit is discovered and burned the enemy is bound to become entrenched in these other states also.

In view of this alarming evidence of activity on the part of the fruit fly, federal authorities are considering placing all states in the union under federal quarantine. This would prevent reshipment of infected fruit and simplify the problem of control. It is estimated that from two thirds to three quarters of the Florida crop had left the state prior to the discovery of the fly and been shipped to all parts of the country.

The all-states quarantine was considered at a public hearing before the Plant Quarantine and Control Administration on June 1. Dr. C. L. Marlatt, chief of the U. S. Bureau of Entomology and field marshal of the scientific army combating the fruit fly, presided.

Department of Agriculture officials stated that it is particularly important that the southern states be protected by a quarantine since they are the ones that would suffer most from an infestation. In northern states it is likely that the insect would be killed off by the rigorous winter weather.

The newspaper reports stating that infested fruit had been found in California, indicating the presence of the fly there, could not be confirmed by the Bureau of Entomology. No official reports of the pest farther west than Texas have been received.

Attending the meeting were officials of the Bureau of Entomology, as well as members of the Plant Quarantine and Control Administration, representatives from other bureaus of the Department of Agriculture, senators and representatives from the various states, particularly those affected, and representatives of fruit companies and railroads.

MAGNETIC OBSERVATIONS IN THE ORIENT

AMERICAN observations on the earth's magnetism are slowly closing in on all parts of the world. Lieutenant Odd Dahl, a Norwegian explorer, has returned to this country after completing a series of magnetic observations in the Orient for the Department of Terrestrial Magnetism of the Carnegie Institution of Washington. Observations in eastern Persia and Baluchistan were made for the first time and repeat observations made in Syria, Iraq, India and Norway.

The only part of the world for which American magnetic observations are still lacking is central Siberia. Magnetic data for the Arctic were collected on Amundsen's expedition with the *Maud* and the Antarctic is being taken care of by two men on the Byrd expedition who were taught how to make the necessary observations. Repetitions of the process are desirable every seven or eight years in order to observe magnetic fluctuations.

Lieutenant Dahl made the trip accompanied by his wife and another Norwegian over a caravan trail by automobile starting on the border between Iraq and Syria. The party followed the Euphrates, made camp in the Garden of Eden, stopped at Babylon and went north through Persia to Teheran, where they were refused admittance into Russian Turkestan by Soviet officials. Permission to enter Afghanistan was likewise refused so they followed the border of both countries while making their way into India. Through Baluchistan only two automobiles had been over the caravan trail before them. They traveled about a thousand miles through desert country carrying gas and water where they could not find it. They made over 7,000 miles in all before reaching Calcutta.

CHARTING YUAK BAY

WHEN the Alaska Steamship Company's *Aleutian* hit a rock in Yuak Bay, on the coast of Kodiak Island, Alaska, on May 26, her passengers were rescued by a ship that was engaged in plotting such menaces to navigation. The U. S. Coast and Geodetic Survey's steamer *Surveyor*, which saved many of the passengers, is now surveying this very harbor.

According to Commander William E. Parker, of the Coast and Geodetic Survey at Washington, the present charts show a large submerged rock in the entrance to Larsen Bay, the indentation of Yuak Bay in which the wreck happened. Probably, however, this was not the one that caused the damage.

The older surveys of the region are not very complete, and there are many partly or completely submerged "pinnacle rocks," that make the region a treacherous one. In order to reduce the danger, the *Surveyor* has been assigned to a resurvey of the entire Kodiak coast. This work is done with the sonic depthfinder, which measures the time taken for a sound to travel to the ocean bottom and to echo back. As the speed of sound in water is accurately known, the time taken permits a measure of the depth.

The survey program of the *Surveyor* this season includes the Yuak Bay itself. She was engaged in this

part of the work when the *Aleutian* sank, and so happened to be close by and able to assist in the rescue.

Though a severe earthquake occurred near Sitka, Alaska, the same day that the *Aleutian* sank, there was no connection between the two events. Kodiak Island is on the other side of the Gulf of Alaska, and about 800 miles west of Sitka. The earthquake occurred at about 1:30 P. M., Alaska time, about eight hours after the sinking.

THE ECLIPSE OF NEXT APRIL

AN expedition will be sent out from Lick Observatory, University of California, to a site not yet selected, to observe a solar eclipse which will be visible in central California and northwestern Nevada on April 28, 1930.

The relative positions of the sun, moon and earth at that time will be such that the tip of the moon's shadow cone will barely reach the earth, scratching it as a duellist's sword may scratch the skin of his opponent's cheek, missing all other parts of his face.

Out of the 5 hours and 32 minutes which will be required for the moon to pass centrally between the earth and sun, the shadow point will reach the earth's surface for only 38 minutes. During this short period of time the shadow will sweep along from a point in the Pacific Ocean about 240 miles southwest of San Francisco to a point near Butte, Montana.

Fortunately, this means that at stations along the path of the shadow across California the sun will be totally eclipsed for from one to two seconds and that the eclipse will occur near the noon hour, when the sun is highest in the sky.

The very short duration of totality, however, will prohibit any photographs of the sky surrounding the sun, and will restrict the observing program to single direct photographs, to record the brighter part of the sun's corona, and to observations with the spectrograph. It should be possible, astronomers at the university say, to secure spectrograms that will greatly add to the present knowledge of conditions prevailing in the sun's atmosphere.

THE ELECTROLYTIC PRODUCTION OF FLUORINE

FLUORINE, the gaseous chemical element heretofore isolated in only small quantities, has been produced electrolytically in thousand cubic feet quantities by Professors Wilder D. Bancroft and Newton C. Jones, of Cornell University.

As a result a new method of analyzing complex organic compounds will be developed. Determining just how some chemicals are put together has been difficult because dissociation with electric current, a fruitful method for some compounds, can not be used on solutions that do not react to electricity. Fluorine, however, reacts with almost any organic substance, whether electrolytically conducting or not, and it displaces that portion of the substance that would have appeared at the anode pole if the substance had been electrolyzed.

These findings and possibilities were reported to the American Electrochemical Society meeting at Toronto. Professors Bancroft and Jones also discovered that fluorine when it reacts with benzene does so explosively, although this was unexpected in the light of properties of the two gases hitherto known.

Large quantities of fluorine occur in different parts of the earth's crust but it is practically all most tightly locked in combination with other elements. One of the common minerals containing it is fluorspar. In school chemical laboratories students know one of fluorine's compounds, hydrofluoric acid, because of its property of etching glass.

SUSCEPTIBILITY TO CANCER

SUSCEPTIBILITY is probably an important factor in cancer and increased susceptibility of the race to the cause or causes of cancer may account for the statistical increase in the disease, suggests Dr. William J. Mayo in the forthcoming issue of *The American Journal of Surgery*. Recent observations and investigations made by himself and other scientists have confirmed Dr. Mayo's belief in the importance of this factor in the development of cancer.

"One factor of supreme importance which has not been sufficiently stressed is that individuals vary in their susceptibility to the cause or causes of cancer, whatever they may be," Dr. Mayo writes. "In no other way can we explain why 90 per cent. of persons do not have cancerous disease, and why 10 per cent. of them die from it." Dr. Mayo reasons that it is as logical to suppose that the 90 per cent. have greater resistance to cancer as to try to explain why only 10 per cent. came in contact with supposed causative agents. Dr. Mayo offers as a probable explanation that when sources of chronic irritation exist, the tissues involved try to heal the breach of continuity by normal cells, but if the irritation is long-continued the tissues are not able to develop normal cells for the purpose, "and cells that are more and more immature are rushed to the rescue." In persons who are susceptible the cells "continue an unlimited functionless division."

"The assumption has always been," Dr. Mayo says, after discussing various theories recently put forward, "that the more severe grades of cancer are due to a more potent cause. I need hardly point out that these newer revelations throw some doubt on so ready an explanation. It is equally if not more probable that the more severe forms of cancer and the development of cancer in certain tissues are due to increased susceptibility. . . . Because of natural immunity to the disease, relatively only a small proportion of the total population is susceptible to scarlet fever. With the Dick test the degree of natural immunity of the individual to scarlet fever can be determined, and if it is not sufficient to protect from the disease, it can be increased to normal by serum. Why not in cancer? Perhaps the development of cancer as well as its degree of malignancy is attributable to the diminished activity of immunizing processes rather than to the nature of the activating agent."

THE CENSUS OF 1930

INCREASINGLY valuable sociological information is likely to be gathered during the course of the taking of the

census in 1930 and succeeding census years. Though so far as the 1930 census is concerned, there are not so many new questions to be asked, nevertheless it seems probable that studies of unemployment and of the indigent poor, at least, will be made. It is expected that information will be gathered during the course of the taking of the census which will show the number of men and women in the United States more than 65 years of age who possess less than $5,000, or less annual income than is usually derived from a $5,000 investment. It is expected also to show the number of such persons living in institutions for the aged.

That the Congress of the United States is becoming acutely conscious of the need to make accurate studies of dependent old age is apparent. Resolutions are now before both the House and the Senate which would sponsor an investigation of old-age-pension systems. Information desired would show whether there should be federal pensions, or whether the states should care individually for their aged poor.

In addition to the unemployment studies and a tabulation of the aged indigent to be taken in connection with the 1930 census, the Census Bureau of the Department of Commerce reports that a tabulation will be made of all veterans of all wars. Furthermore, since an agricultural census is made every two years, the present one will be made by regular census workers in connection with the 1930 census.

Another line of inquiry, which may be included in the 1930 census, is a complete census of distribution, the Bureau of Census reports. Such a census was made in 1926 in a few large cities such as Chicago, Kansas City, Syracuse, Denver and Atlanta. The subjects on which statistics were gathered at that time included complete inventories of all retail establishments, volume of retail sales by all kinds of businesses, sales *per capita*, number of inhabitants per store, employees in retail distribution, their salaries and the relation of their salaries to sales, and the same subjects as applied to wholesale distribution.

Many other questions along sociological lines have been suggested and the information which might be elicited from the inclusion of those questions would be interesting and valuable, according to the Census Bureau. Among these are a complete census of religious affiliations, of incomes and of questions the answers to which would aid in framing immigration laws. Among the latter would be one suggested by a congressman, which would question each individual regarding his or her racial descent. Literacy tests have also been suggested.

ITEMS

TUBERCULOSIS recently caused the death of four garter snakes in the Philadelphia Zoological Gardens. Examination of their organs showed definite tubercles, Dr. J. D. Aronson, of the Henry Phipps Institute, reported to *The Journal of Infectious Diseases*. From the tubercles, or nodules, was isolated a micro-organism similar to that causing tuberculosis in man. This organism caused disease in garter snakes, frogs, goldfish, chameleons and lizards, but did not affect guinea-pigs, rabbits, chickens or pigeons.

THE discovery of a stone arrow- or spear-point lying directly under the bones of a mastodon has been made at Melbourne, Florida, by C. P. Singleton, zoologist of Harvard University. This evidence strengthens the much-debated theory that there were human beings in America thousands of years ago when mastodons and mammoths inhabited the country. Dr. J. W. Gidley, of the Smithsonian Institution, who has made previous finds of stone weapons in association with prehistoric animals at the same site, also announces a discovery consisting of a large stone tool. Scientists who doubt that man has inhabited this country more than four or five thousand years have suggested that the Indian weapons found with the fossil animal bones could have slipped into deeper older layers of earth than the surface layer of their own age. The large tool, of the type known as a turtle-back flaker, would not be likely to have worked its way into a deeper level. It was found four feet from the surface and two feet beneath the upper layer of the ancient formation in which the fossil bones lie buried.

FROM a point off lower California to the Philippines in 17 months was the trip made by a drifting bottle recently, and reported to the U. S. Navy's Hydrographic Office. On September 27, 1927, Second Officer R. M. Stall, of the American steamer *K. R. Kingsbury*, threw the bottle overboard at latitude 25 degrees 32 minutes north and longitude 113 degrees 35 minutes west. On February 12, 1929, it was picked up among the Philippines, at about 9 degrees 51 minutes north and 127 degrees 7 minutes east. The bottle drifted for about 7,200 nautical miles, or 8,300 statute miles. The longest drift in the records of the Hydrographic Office is one made from the southern Indian Ocean to the tip of Cape Horn between May 31, 1909, and May 19, 1919, traveling a total of about 11,820 statute miles. A drift of 11,550 miles in the same part of the world from 1902 to 1905 is second. In these southern seas, the longest drifts are possible. The recent drift of 8,300 miles in the Pacific is about the longest possible in that ocean.

MAPLE that looks like mahogany, or birch with the color of black walnut, may soon become factors in the veneer and cabinet woods trade, as the result of experiments recently conducted in northern New England by W. R. Brown, of Berlin, New Hampshire. Through holes bored in the base of the tree with an electric drill, a dilute solution of dye is allowed to flow in from a 100-liter tank suspended on the tree, and mingle with the sap. The coloring matter is absorbed and rises to the topmost branches of the tree within a few days. Reacting with some of the oxidizing ferments in the cell sap, it stains the wood a beautiful brown, dark purple or other color according to the dye used. New stains have been developed which almost exactly duplicate the shades of walnut, mahogany and other woods prized for the beauty of their grain. The greatest advantage of the process is that the wood is completely dyed through and through, which was not possible with some of the commoner dyes at first tried. The wood is also rendered relatively immune to decay and insect damage, due to the antiseptic action of the stain.