SCIENCE NEWS

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THE GRASSHOPPER MENACE

GRASSHOPPERS, plus failure to act on the part of Western state governments, have confronted the wheat-growing region beyond the Missouri with a very serious threat, added to the already existing crop shortage due to the drought.

Last fall, the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture, found unusually large numbers of grasshopper eggs in the soil of the plains and western prairies. At that time the various state governments concerned were warned so that stores of poison bait might be ready when the insects should hatch and begin crawling, this spring. Without exception, the state governments did nothing.

Now the grasshoppers have developed almost to the point where they have wings and begin flying in hordes. The Western states, alarmed, asked the Congress for aid, since their legislatures had adjourned and there was no way of providing funds to meet the emergency which their inaction had permitted to arise. In its closing hours, the Congress pushed through a joint resolution transferring a quarter of a million dollars from a chinch-bug war fund not immediately needed. This is now at the White House, awaiting President Roosevelt's signature.

Agents of the Bureau of Entomology and Plant Quarantine in the West are locating the necessary raw materials for the poison bait: arsenic compounds or sodium fluosilicate, molasses and trainload lots of bran. They are also making preliminary arrangements for transportation to the 'hopper-infested areas. So as soon as the joint resolution is signed the battle-front can be built against the grasshoppers.

Even with the speediest possible action, there is considerable doubt whether disaster can be averted this year. Only a few days remain in which a poison-bait campaign can be expected to have any effect at all. Unless the materials are bought, distributed, mixed and placed where the crawling young of the grasshoppers can find and eat the poison bait before the Fourth of July, it will be too late.

Furthermore, the sum made available is estimated to be only about a third of what would be needed for a really effective fight against the 'hoppers. The Bureau of Entomology and Plant Quarantine was not consulted either as to the desirability of using federal funds for this purpose or regarding the adequacy of the amount or the timeliness of action. They are rather in the position of Gallieni's "taxicab" army before Paris in 1914: hastily mobilized, insufficiently munitioned, yet expected to stem the oncoming hordes in gray.

RARE METALS IN METEORITES

DISCOVERY of notable amounts of the rare metals, gallium and germanium, in the earth's only imports from outer space, the meteorites that fall from the sky, was announced by Dr. Arthur S. King, of the Carnegie Institution's Mount Wilson Observatory, in a paper presented to the Society for Research on Meteorites meeting at Los Angeles on June 25.

Emphasizing the usefulness of spectroscopic analysis instead of the regular chemical and mineralogical methods for determining the elements present, Dr. King found that iron meteorites have some 19 elements within them, including in largest quantities iron, nickel, cobalt and copper.

In spectroscopic analysis, the different kinds, colors, wave-lengths or spectral lines of light are viewed or photographed and studied. Each element when heated intensely flies its own kind of light "flag" and the intensity of the spectral line is greater the larger the amount of the element present.

The rare metals gallium and germanium in meteorite samples produce very distinct spectrum lines, Dr. King explained. While they are widely distributed in earthly rocks, they occur in very small quantities.

Unlike irons of the earth, iron meteorites are almost free from chromium and manganese. Another interesting fact is that traces of silver are present and those from Meteor Crater in Arizona give the silver spectrum in considerable strength.

Stony meteorites also are found and they are quite different in composition from the iron ones although they contain a large percentage of iron. Dr. King suggests that the iron explains why the stony ones are not entirely consumed by heat when they smash into the earth's atmosphere.

A large amount of sodium is a striking feature of stony meteorites as analyzed by the spectroscope. There is nearly as much magnesium in them, and Dr. King suggests that the high content of this metal that burns with a bright flame accounts in large measure for the spectacular features of meteoric falls that are seen over large areas when they occur.

THE USE OF X-RAYS IN TESTING MATERIALS

LOOKING inside all sorts of materials, from concrete to tobacco, is becoming a common task for x-rays, usually considered a tool for use of doctors in hospitals.

Foundries and welding shops use x-rays as a routine for control and inspection of the metal they produce. Earnshaw Cook, of the American Brake Shoe and Foundry Company, Mahwah, N. J., reported to the American Society for Testing Materials at Atlantic City on June 27 that "the installation of x-ray laboratories in commercial jobbing foundries is an economic measure, inherently profitable to the manufacturer and a reliable assurance of improved and maintained quality to the trade."

X-rays allow the detection of holes, cracks, inclusions and other defects in metal. With the growth of welding, x-ray equipments have multiplied for use in inspection of joints and other products made by welding.

J. C. Hodge, of Babcock and Wilcox Company, Barber-

ton, Ohio, reported that in building the giant hydraulic power penstocks of Boulder Dam, 270,000 feet of x-ray films were used for the examination of their welded joints.

Herman E. Seemann, of the Eastman Kodak Company, reported that x-rays have solved problems in connection with ceramics, concrete, mica, coal, asbestos, foods, tobacco, plastics, textiles, paper, leather, wood and other materials.

Radioactive substances, such as radium, giving off gamma radiation similar to but more powerful than x-rays, are also being used for non-destructive testing of materials, and Norman L. Mochel, Westinghouse engineer, predicted greater utilization of radium in materials testing, particularly where portability is an advantage.

HEREDITY OF CANCER

TAKING issue with Dr. Maude Slye, of the University of Chicago, Dr. Clarence Cook Little publishes his most recent findings on heredity and cancer in the *Journal* of the American Medical Association for June 27. Dr. Little, whose research, also with mice, has been done at the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Me., contends that he has disproved Dr. Slye's hypothesis that the incidence of all spontaneous cancer is due to a single Mendelian recessive hereditary factor.

There have recently come to maturity in Dr. Little's laboratory female mice that are first generation hybrids between cancer and "non-cancer" strains. A large number of cases of cancer have been developed among these first generation hybrids. The amount of cancer of the breast appearing among virgin female mice of the first hybrid generation is largely dependent on the strain from which the female ancestor is derived. If a "high" strain female is crossed with a "low" strain male the incidence of breast cancer in the virgin female hybrids is approximately 39 per cent. On the other hand, when a "low" strain female is crossed with a "high" strain male the incidence of cancer of the breast is only 6 per cent. This difference holds good for the second hybrid generation.

Dr. Little states that this type of inheritance is non-Mendelian. It follows the maternal line and definitely establishes the existence of genetic influences outside the chromosomes. He states that "The accepted method of making human matings militates against the practical use of controlled heredity as a means of reducing the incidence of cancer in man. This, however, does not prevent the genetic approach to the problem in the laboratory and the use of controlled homogeneous inbred strains of mice from being extremely favorable material for pure scientific research in the nature and cause of cancer."

Dr. Little is managing director and editor of the American Society for the Control of Cancer.

ITEMS

CANADA'S plague of forest tent caterpillars, which have been stopping trains in Ontario, are not expected to raise trouble in the United States this season, according to Dr. F. C. Craighead, of the Bureau of Entomology. The species reaches its climax in late May and early June, after which the caterpillars "go to sleep" as pupae, to emerge in late summer as moths and lay their eggs. Northern Minnesota resorts have suffered somewhat from the crawling pests this spring. They made life miserable for early vacationists, and ate all the leaves off the poplar trees. However, the leaves will grow again, so that the resorts will be in normal condition for the regular summer business.

DOWNY mildew or blue mould, a destructive disease of tobacco plants which has been retarding the growth of the Australian tobacco industry, is likely to be conquered as a result of the research of Dr. H. R. Angell, J. M. Allan and A. V. Hill, of the Council for Scientific and Industrial Research, Canberra, Australia. It was found that the infection of the tobacco plants was in the seedling stage and the practice was adopted of growing the seedlings in special beds which could be covered with glass and in which they placed a number of shallow vessels containing benzol or toluol, chemicals which are hostile to fungus growth. The young seedlings, therefore, grew in an atmosphere containing the vapor of one or other of these substances and though they remained strong and healthy themselves the fungus causing the disease got no opportunity to grow. Once the young seedlings had survived the critical stage they could be transplanted without fear of further infection.

DR. LEO SCHWARTZ, in the current issue of *Preventive Medicine*, states that persistent hoarseness calls for careful examination by a trained throat specialist. He calls hoarseness the "herald symptom" of cancer of the larynx and points out that it is also the symptom of forty-nine other conditions, none of them trivial. Cancer of the larynx gives its warning sign earlier and remains localized longer than cancer anywhere else in the body, and early diagnosis and treatment offer a better chance for recovery than in other cancers. In the early stage this condition can be relieved by an operation which does not deprive the patient of his voice or necessitate the use of an artificial voice box.

PROBABLY the first two reports ever published of direct observations and measurements of pressure in the common bile duct of man are contained in the current issue of the *Journal* of the American Medical Association. Dr. Harold A. Kipp, of Pittsburgh, operated on a man, seventy-eight years old, and formed a communication between the gall bladder and the stomach. With a manometer he measured the variations in bile pressure in inches of normal salt solution, and found that laughing, coughing and even standing up influenced the flow of bile in the patient. Three physicians from Rochester, Minn. —Dr. John M. McGowan and Dr. Winfield L. Butsch, of the Mayo Foundation, and Dr. Waltman Walters, surgeon —with the cooperation of their patients showed that there is an increase in the pressure within the common bile duct after the gall bladder has been surgically removed.