AGRICULTURE

Corn Borer Control Hoped

The European corn borer, were it human, would undoubtedly be suffering from a case of the big-head. Probably never before has an insect been mentioned in a presidential address as was the corn borer, when President Coolidge called attention to its menace in his recent address to Congress, saying that it "warranted the federal government in extending cooperation" to fight its spread. And now the House has voted a special appropriation of $10,000,000 to be used in a campaign to control the spread of the borer. This is quite aside from the $685,000 asked in the regular agricultural bill for research and quarantine of the pest by the Bureau of Entomology.

Contrary to a widespread impression, this $10,000,000 appropriation is not for the eradication of the borer. Government entomologists have no hope of such a thing as eradication. To eradicate the borer from the country it would be necessary to make of the infested area a desert, for the European corn borer attacks 225 different kinds of plants. Thus eradication is out of the question. The $10,000,000 appropriation is for an experimental clean-up campaign to reduce the chances of the corn borer's spreading throughout the corn belt by reducing the number of borers present in the infested areas. Last year was the first year that the corn borer did any real commercial damage in the United States, but the example of Canada, where the main corn belt is heavily infested and where 12,000 square miles suffered a complete loss of the crop last year, shows what the corn borer may do here in time unless steps are taken.

To be used this spring the money named in the special appropriation must be available by February 1. This means that not only must the Senate pass the bill and the President sign it, but the infested states must pass necessary regulatory legislation giving state and federal officials the authority to take action where the farmers refuse to adopt the prescribed method of treating the crop.

The plan is that the government shall bear the expense of any farm clean-up measures addition to ones followed by the farmer under normal circumstances. In other words, the government would pay for the extra labor and expense involved in the special operations necessary in infested areas.

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PSYCHOLOGY

Destroying Memory in Rats

Rooting out memories in rats is the feat that has been accomplished by Dr. K. S. Lashley of the Institute for Juvenile Research, Chicago. Many of our universities in recent years have added departments of rodent education, majoring the course in that branch of activity in which rats have shown themselves proficient in all ages, that is, finding their way through tortuous passages. The rat to be trained is put into one corner of an artificial maze and set to find his way to his food in some other compartment. When he is able to run rapidly through the passages without hesitation and without turing into a blind alley, he is credited with having learned his lesson. Dr. Lashley has discovered that this acquired proficiency can be eradicated by cutting out certain parts of the brain, particularly in the parietal region. The larger the area injured the greater is the number of trials required for relearning the lost lesson. When the cerebral lesion is extensive more practice is necessary for relearning the maze than for learning it at first but other and simpler habits are formed as quickly as ever. The investigator concludes that the maze habit is relatively independent of the activity of specific neurons but somehow depends upon the massed activity of the greater part of the brain. Obviously such studies of the localization of various forms of action in rats may throw light upon the cause and cure of mental diseases in man.

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BOTANY

Plant Missing Links

Fossil remains of plants with leaves like ferns but with fruiting bodies that tie them up with seed plants, have been found in "coal balls" from a coal mine at Danville, Illinois, by Dr. J. Hobart Hoskins of the University of Chicago. A report of Dr. Hoskins' work will be published in an early issue of the Botanical Gazette. The fossils were embedded in hard masses of iron pyrite, which had to be ground down thin enough to transmit light before they could be examined with a microscope. These coal balls have long been familiar objects of study in Europe, but interest in them has been aroused in this country only in the last few years, when Dr. Hoskins' teacher, Prof. A. C. Noe, began to collect and make sections of them.

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BACTERIOLOGY

Disease Germs Variable

New conceptions of how immunity is developed against germ-caused infections, that may have far reaching effects on the protection of the human race against disease, are advanced by Dr. Philip Hadley of the University of Michigan.

According to the older views it was thought that all the bacteria of a particular specific kind must necessarily be alike in all their characteristics. Recent work, however, has shown, says Dr. Hadley, that "in one and the same bacterial culture organisms of vastly different potentialities for disease production may exist side by side."

At present, many disease-producing species may be divided into two distinct types; one that is virulent that possesses certain individual properties and is called the S type, and another that is non-virulent, or at least less virulent, that possesses other characteristics, and is known as the R type. The most important difference between the two types lies in the fact that the S form resists the onslaughts of the defensive cells of the blood known as the phagocytes while the other form is readily destroyed by them.

Change from one form to the other may be produced artificially in test tubes in the laboratory. The most potent factor in inciting such changes has been found to be blood or serum from an animal which has been inoculated with the culture of the organism in question. In the presence of such serum the virulent form "S" passes over into the non-virulent form "R." The importance of being able to bring about such an action in the bodies of animals and human beings suffering from bacterial infection is at once apparent.

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ZOOLOGY

Sunlight Bad for Fish

The ultra-violet radiation in sunshine may be a great help to birds and beasts and man, but fish fail to appreciate these invisible rays.

Experiments undertaken at a Vermont hatchery and just reported to the U. S. Bureau of Fisheries, definitely establish that sunlight is harmful rather than helful to fish. Almost twice as many young fish died in troughs of water exposed to direct sunlight as those in troughs left in the shade, experts found. The experiments were repeated with different ages and different species with sometimes an even greater mortality in the unshaded troughs, it is stated.

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