A "SPINDLING-TUBER DISEASE" OF IRISH POTATOES

INVESTIGATIONS by the writers have recently disclosed that a malady commonly designated as "running-long" or "running-out" is an infectious disease. It has been transmitted from diseased to healthy plants by means of tuber grafts, vine grafts, leaf-mutilation inoculation and plant lice. Proximity of healthy plants to diseased plants in the field increases the amount of infection. The tubers perpetuate the disease from year to year. In the absence of control measures the percentage of incidence in a given stock increases from year to year.

Plants infected late in the season may show no symptoms in their tubers or elsewhere. Plants infected early from the seed-tubers or otherwise have erect, spindling stalks, leaves that are smaller, more erect and often darker green than healthy foliage, and tubers generally more cylindrical, more spindling, more spindle-shaped and with more numerous and more conspicuous eyes than are the tubers from healthy plants or from plants apparently healthy but inoculated late in the season. The yield is reduced somewhat the first year in which the symptoms appear in the plants, and more in subsequent years from plants growing from spindling tubers. In view of the symptoms described, the term "spindling-tuber disease" is proposed.

Like other degeneration diseases of potatoes, this disease has been attributed in the past to senility, reversion and adverse conditions of weather, climate, soil and culture. Undoubtedly potato tubers often are poor-shaped because of other causes than this disease. It is also clear that diseased hills may produce some tubers not easily distinguished from commercially acceptable tubers. However, many of the losses due to poor tuber shape and to reduction in yield are to be attributed to the spindling-tuber disease, which is to be found in many varieties and in all percentages of incidence.

More detailed data on this and other degeneration diseases of the potato are being prepared for publication in a later paper.

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NICOTINE SULPHATE, AN EFFECTIVE VERMICIDE FOR SHEEP

EXPERIMENTS covering a period of three years of study on the control of the sheep stomach worm, *Hæmonchus contortur,* at the Storrs Experiment Station have resulted in the finding of an effective dosage for killing stomach worms.

The most effective agent used has been a 40 per cent. nicotine sulphate diluted with water. Ten cubic centimeters, or approximately two teaspoonfuls of the 40 per cent. nicotine sulphate in one quart of water, giving four ounces to adult sheep and two ounces to lambs. These treatments were used in 948 cases, and 161 animals have been slaughtered twenty-four hours after the treatment and only a few live worms have been found in the stomach, constituting an effective dosage in that thousands of worms are commonly found in a single stomach.

The treatment caused the death of five weak lambs. While the treatment staggers and even kills very weak animals, it can be used without danger to other sheep and lambs and one can be reasonably sure of the effectiveness of the treatment in contrast with the less efficient copper sulphate treatment that has been so universally recommended. In the experiments where the one per cent. copper sulphate was used, live worms were found in the stomach and stronger solutions caused severe burns. In cases where the three per cent. copper sulphate solution was used as a dosage, the mortality from the treatment was more than sixty per cent.

Twelve hours previous to the treatment, the animals were kept away from food.

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SWARMING INSECTS SIMULATING SMOKE

ON February 26, 1921, at 6:30 P.M., persons strolling about the main building of the University of Texas raised a fire alarm because of what appeared to them as a wreath of smoke issuing from the middle tower. The writer was unable to discover any fire within the tower but from the roof of the building could make out that the "smoke" consisted not of carbon particles but of insects. These were

issuing from a small hole under the tin and flying in a close swarm, gently blown back and forth in the breeze like a delicate streamer. The swarm played in this manner for about fifteen minutes and then seemed to return whence they came.

None of the specimens were recovered from this swarm, but there seemed to be no doubt that they were Tenebrionid beetles living in bat guano in the tower. The insects secured from the bat guano this year were kindly identified by Dr. Edwin C. Van Dyke as *Blapstinus pratensis,* Lec.

In this connection the following Associated Press dispatch as published in the Austin *American* June 5, 1922, is of interest:

CHICAGO, June 4.—Mosquitoes flying in such thick swarms that they were mistaken for smoke caused two fire alarms to be turned in early to-day.

Members of a truck company answered a call saying that the steeple of St. Michael's Roman Catholic Church was burning. The firemen saw what they at first supposed was a small cloud of smoke and they raised their extension ladders to fight the fire. When they mounted the ladder they encountered mosquitoes and were forced back. The same experience was met by members of another engine company called to the Zion Methodist Church in another part of the city.

The fact that these two swarms were encountered the same day gives ground for the suspicion that guano beetles, not "mosquitoes," were swarming from bat-infested belfries of the two churches. The participation of the majority of the members of a species in the same locality on the same day of the year is, of course, a common phenomenon. If this were not so, swarming as a reproductive function would lose its adaptive significance.

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QUOTATIONS

A SUPER-UNIVERSITY

THE meeting of the American Association for the Advancement of Science in Cambridge fulfills in a way the vision which Franklin K. Lane had of a "super-university." In a letter written in his own hand on the day before he went on the operating table in May of 1921, he described this "place of exchange for the new ideas that the world evolves each year" as follows:

No faculty—but a super-university with all the searchers and researchers, inventors, experimenters, thinkers of the world for faculty. No students—but every man the world round interested in the theme under consideration welcome as a student without pay.

Except that the meeting in Cambridge was national in its personnel, it answered very well Mr. Lane's definition. Nearly all the departments of human knowledge were represented: chemistry, botany, anthropology, mathematics, physics, geology, geography, zoology, agriculture, psychology and the economic and social sciences. Those not included were represented in like meetings elsewhere. A thousand papers were presented, from Professor Edmund B. Wilson's on "The physical basis of life" and Dr. Bell's discussion of the smashing of atoms to a study of baldness and of the ideal stature of successful salesmen. Every paper meant research into the field of the unknown in man's environment and most of them pushed back by much or little the mystery that surrounds his existence or made friends for him of forces that before seemed hostile to his freedom or his life.

This meeting also gave the super-university "Faculty"—serving for very love of the truth itself in most cases—an audience that was generally competent to understand what was brought before it. And when the results are intelligently, intelligibly and accurately reported, as was done by the *Times,* the student body becomes larger than that of any university, larger even than that of the super-university conceived by Mr. Lane.

There is only one thing lacking, and that is a permanent exhibition of the yearly increments made by man's conquest of his environment so that the public may have an opportunity to see (so far as it can be visualized) "all that is new in science, philosophy, practical political machinery and all else of the world's mind products." If there could be a place for such permanent exhibition and illustration of the contributions for the year of scientific research and experiment and invention (and "why not in New York?" said Mr. Lane), the value of such meetings as that at Cambridge and in other parts of the world would be vastly increased.—*The Times,* New York.