## 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.

EUGENE S. SCHULTZ
UNITED STATES DEPARTMENT OF AGRICULTURE

DONALD FOLSOM
MAINE AGRICULTURAL EXPERIMENT STATION

## 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.

GEORGE H. LAMSON, JR.
STORRS EXPERIMENT STATION

## 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