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*Connected with Fertilizer Control.
†Connected with Second Judicial Department Branch Station.
"Slippery onions," onions "weak in the neck" and onions rotten at the bottom were very plentiful in Orange County in the fall of 1898. In many cases from one-third to one-half of the crop was lost from the bacterial disease which produced these symptoms; and additional anxiety was caused the growers by the discrimination made in the markets against onions from this section, due to reports of the rot and fear of loss by the dealers in handling onions liable to rot down in the storage rooms.

Many onions were found affected at harvest and the number was greatly increased at sorting time, a month or so later, the disease progressing very fast in onions stored in damp places or put away when not thoroughly dry. Excessive moisture, either on the fields during the latter part of the season or in stored crop seemed, in practice, the main factor in spreading the disease; and the same proved true in laboratory work upon the onions. Only in those bulbs kept in water were inoculation experiments successful; but where they were so kept even the check bulbs soon showed

* This is a brief review of Bulletin No. 164 of this Station, Notes on Various Plant Diseases, by F. C. Stewart. Anyone specially interested in the detailed account of the investigations will be furnished, on application, with a copy of the complete bulletin. The names of those who so request will be placed on the Station mailing list to receive future bulletins, popular or complete as desired. Bulletins are issued at irregular intervals, as investigations are completed, not monthly.
affected with the disease. Study of weather conditions showed that in forty days ending August 6, nearly 15½ inches of rain fell in the onion-growing section, the weather was hot, and some of the storms had been accompanied by severe winds which had twisted and broken the onion tops. Thus heat and moisture gave the best of conditions for germ life and the broken tops afforded easy entrance for the germs to countless numbers of bulbs.

The particular species causing this trouble was probably, almost certainly, a medium-sized bacillus which was found in innumerable swarms in the rotting tissue. The identity of the bacillus was not determined, but it and the disease it causes are not thought to be new, for more or less "slippery" or rotten onions are found every year; they were simply more abundant in 1898 because conditions favored the disease.

This bacillus has the power of motion in liquids but it is not able to penetrate the unbroken skin of the leaf bases or scales which make up the onion bulb; so when it happens to gain entrance to the outer scale it works and multiplies in that scale only, rotting it off from the sound scales within and leaving a "slippery" onion. When it enters scales at the center it rots out the heart and the onion, with sound exterior, becomes soft within so that pressure upon the top will collapse it, an onion "weak in the neck." When the disease works down to the base where all the scales join, or when infection starts at the base, the germs may enter all the scales and rot the whole bulb. Frequently, however we find the condition represented in the cover illustration, where sound scales are separated by rotten ones, and rotten scales by sound ones.

As moisture seems the all-important predisposing cause of excessive damage from this disease it is necessary that the onion fields should be so drained that water will not stand upon them; that they be kept free from weeds which will collect and hold the moisture; and that onions be stored dry and kept dry.

**Remedial measures.**
POWDERY MILDEW ON FIELD-GROWN CUCUMBERS.

Powdery mildew of cucumbers is a trouble occasionally found in the forcing house; but it has, hitherto, not been known to occur on field-grown cucumbers in America. In September, 1899, leaves affected by this disease were received from Athens, Pa. The owner of the field subsequently reported that, by September 22, every vine in the field and all parts of each vine except very young leaves were affected. The fruits were also misshapen and very bitter, but this may have been due in part to downy mildew, which was also present. Powdery mildew, unlike the downy mildew which fruits on the lower surface of the leaves, appears mainly upon the upper surface in the form of white, powdery spots. The disease is not to be dreaded by growers, for it is not liable to become epidemic; and if it does so may easily be combated. Its occurrence in field culture is of more interest to the botanist than to the pickle grower.

DODDER ON CUCUMBERS UNDER GLASS.

Dodder, or gold thread, is a parasite of quite common occurrence upon many plants in the open air. A vegetable strangler. It is a true flowering plant, not a fungus; but it kills the plants it attacks as surely as does disease. The dodder seed germinates in the soil and the young plant, which is a leafless, yellow thread, coils and twines about until it finds a suitable host. To this it attaches itself by suckers, severs its connection with the soil and draws its sustenance from the unfortunate plant upon which it has settled. The threadlike stem grows with great rapidity, coils about the stem and branches of the victim plant, extends to neighboring plants, and twining back and forth, forms, with its fellows, a yellow network of slender, leafless threads borne in the air upon the stems and foliage of its host.

It is not often found indoors, but was observed in the Station forcing houses in May upon a cucumber plant. It was then but a slender thread coiled about a section of the cucumber vine but it grew with great rapidity and though removed from the plant as completely as possible four different times it maintained itself,
fruited and spread to other plants nearby. It greatly enfeebled, but did not kill, its original host. It should not be trifled with for it is very aggressive. All affected plants should be destroyed.

**The Baldwin Fruit-Spot.**

The spotting of the Baldwin apple, well represented in the cover illustration, is a very common trouble of this well known fruit, of which the cause is obscure. Some have ascribed to fungi a condition similar to this and not distinguishable from it by the published descriptions; and have reported success in preventing the spots by the use of the fungicide, Bordeaux mixture. Other investigators have failed to find any trace of fungus in the spots or to check their spread by spraying; so it is probable that at least two different conditions have been referred to in descriptions of the “spot” “brown spot,” “dry rot,” “bitter pit,” as the trouble is named by different ones.

The Baldwin fruit spots studied at the Station are **Appearance.** conspicuous, slightly sunken, light or dark brown in color, generally somewhat circular in shape or with rounded corners if irregular, ranging in size from mere specks to a quarter-inch in diameter, distributed over the calyx half of the fruit and varying in number from two or three to seventy-five. Beneath the spots the tissues are light brown and spongy, not bitter, and may contain more starch than the healthy tissue surrounding the spots. Similar areas may develope in the interior of the apples after picking, but these do not contain so much starch. This indicates that the presence of starch in the diseased spots is due to the killing of the tissue and stoppage of the functional change of starch to sugar while the fruit is still green. Consequently, it is more abundant in the early formed spots lying just beneath the skin than in the deeper seated ones which originated later.

**Cause undiscovered.** Careful examination revealed no fungus threads or bacteria; and attempts to grow either fungi or bacteria in appropriate culture media were failures. The spots are probably due to some physiological cause, perhaps lack of water; but further investigation is needed.
A Fusarium Leaf-Spot of Carnations.

A Fusarium, that is, a species of fungus belonging to the genus Fusarium, is commonly associated with a stemrot of carnations but was not known to cause leaf-spot. That it did so on one bench of carnations at Syracuse is probably due to the fact that the leaf surfaces were broken by rust and the spores of this Fusarium found in the injured spots congenial germinating conditions.

Chaetomium contortum on Barley Seedlings.

Several years ago, a new fungus was found upon some lily bulbs on Long Island; but it disappeared and was reported by no one, until found in December 1898 upon some barley seedlings growing in the Station forcing house. It was feared that it might be parasitic upon these seedlings, but experiment proved its presence only accidental. Thus this case, like the one mentioned in the preceding paragraph, is of interest only to botanists as showing how unexpectedly old enemies or known species may appear in new forms or new places.