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## THE PLUM-TWIG GALL-MITE.

*Phytoptus phlæocoptes*, Nalepa.

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In January, 1895, I received from a fruit grower at Industry, Pa., several plum-twigs which were badly infested with what was to me a new pest. Two of these twigs are shown, natural size, on the accompanying plate. It will be seen that a ring of small, sub-spherical excrescences encircles the base of each bud and also the bases of two short shoots. The correspondent wrote that he had 400 trees badly infested, and a majority of the plum trees in his neighborhood were affected. The Damsons seem especially subject to attack, but all varieties suffer more or less.

The excrescences were then of a dark brown colour, with a slight reddish tinge. Usually a slit-like opening could be distinguished on the surface. Upon carefully cutting through one of the excrescences, I was surprised to find a cavity in the interior that was packed nearly full of very minute whitish creatures, which proved to be four-legged mites or Phytoptids. Thus, these excrescences were the galls formed by the mites, and in which they were then hibernating. There were hundreds of the mites in each gall and all of them in a dormant condition. Thus, each twig was harbouring thousands of the little creatures. The fleshy portion of the galls, between the cavity and the outer skin, is of a dark magenta colour. The galls vary in size, some of the larger ones containing two or three cavities.

But little is known of the life-history of this curious gall-mite. The correspondent writes that the mites also live in the galls during the growing season. They probably leave the galls in which they hibernate and form new galls in the summer. On several twigs I found a ring of old, dry, deserted galls below a ring of inhabited galls.

Having ascertained the nature of the pest, I ransacked the literature for records of similar attacks by gall-mites. In *Insect Life*, Vol. I., p. 343, is recorded some correspondence which Dr. Riley had in January,

1888, with a fruit grower at Marlborough, N. Y., regarding what was doubtless this same Plum-twigg Gall-mite. In this instance the galls also occurred along cracks on the bark of larger limbs, and in close connection with the Black Knot fungus, which was, of course, accidental. Again in 1891, Dr. Riley (Insect Life, Vol. V., p. 17) records a small mite as injurious to Damson plum trees at Berlin Cross Roads, Ohio. This was probably the mite under discussion. These are the only records I have found in American literature of any mite making galls on plum-twigs.

There has recently appeared in the European literature three admirable and exhaustive papers on the Phytoptidæ, by Dr. Alfred Nalepa [Sitz. der Math.-Natur. Classe der kais. Akad. der Wiss., Abtheil. I., Vol. 96 (1887), pp. 115-165; Vol. 98 (1889), pp. 112-156; Vol. 99 (1890), pp. 40-69]. Each article is accompanied by several finely executed plates. \*Luckily, I had access to Dr. Nalepa's work, and I found that but one Phytoptid had been described which lived in galls on the twigs of plum trees. In Vol. 99, p. 54, he describes and figures this mite as *Phytoptus phlæocoptes*. In figure 2, I have reproduced (photographically) one of Dr. Nalepa's figures of the mite; it is the female and is magnified 450 diameters. The mites in the galls were very similar to, if not identical with, this European species. The only noticeable difference is in the shape of the body. The Pennsylvania mites are shorter and wider, but this may be quite possibly due to their being in hibernation and dormant. The European species was first described and figured as *pruni*, by Amerling, in 1868.

The mites could have been easily introduced into this country on plum stock, but the correspondent writes that his trees were grown in his vicinity "and are known as sucker-growth trees." If our mite is identical with the European species, and it probably is, the pest was introduced into this country some time previous to 1887, and it is now present in New York, Ohio, and Pennsylvania.

The fruit grower informs me that his trees are thrifty, but the fruit is undersized. So many thousands of the little creatures working at the

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\*Dr. Nalepa puts our knowledge of the Phytoptidæ on a scientific basis. He rightly discards all previous descriptions of the mites as inadequate and not definite enough for the determination of any species. He gives new detailed descriptions with excellent figures; and the species are renamed, usually with new names, but sometimes the old names are retained, as in the case of the Pear-leaf Blister-mite, which he calls *Phytoptus pyri*, n. sp. We should thus write *pyri*, Nalepa, instead of *pyri*, Scheuten. Dr. Nalepa's work should be in the hands of every one interested in the Phytoptidæ.

bases of the buds must greatly lessen the vitality of the whole tree. When the mites occur as numerous as shown in the figures, they must prove a serious pest; and, with our present scanty knowledge of their life-history, they will prove a hard foe to combat. So far as we know, the mites are securely protected in their gall-homes during the whole year. Possibly there may be a few days, when they are leaving their galls to form new ones, that they could be hit with an insecticide. It is doubtful if kerosene emulsion will penetrate the galls, but it is worthy of a trial on a few trees during their dormant period; dilute the emulsion with only three or four parts of water, and make it by the Riley-Hubbard formula. The only other suggestion I can now make is to prune the trees as closely as possible, taking pains to cut out as many gall-bearing twigs as practicable, and to burn all prunings. As most of the galls are on the twigs, millions of the mites could be destroyed in this way.

I am indebted to the "Rural New Yorker" for the use of the figures of this mite and its work.

#### PARTIAL PREPARATORY STAGES OF SOME MOTHS.

BY G. H. FRENCH, CARBONDALE, ILL.

##### *Catocala Minuta*, Edw.

*Full-grown larva*.—Length about one inch. As in most *Catocala* larvæ, seven stripes, the dorsal gray, lilac tinted; the next blackish-gray, paler on the middle of the joints; the next about the same colour, but tinted with the reddish-orange that forms the broad bordering lines between the stripes; the next also blackish and below this dull orange. The bordering lines on the back whitish, distinct white on the folds; lateral fringe orange tinted. Piliferous spots orange, the posterior pair to each joint more prominent than the anterior pair; the anterior pairs on joints 6 to 8 paler. The posterior part of joint 9 elevated and white between the spots; back of the elevation, and reaching down to the legs, orange tinted black. Head dull lilac-gray, mottled with white, a blackish patch above on each side and in front two black spots on each side. Venter yellowish-white, with black patches in centre of joints.

*Chrysalis*.—Length, .65 inch; diameter of thorax, .23 inch; tongue- and wing-cases extending back to posterior part of 5, the tongue-case as far back as the wing-case; tapering back from 5; abdominal joints very shallowly punctured, the punctures scarcely perceptible with the lens;