Insect a.g. 11. 1889

ally spray the trees. He therefore picked the fruit as the only remedy. The same difficulty—that the bugs are continually flying to the groves—will operate against any remedy which may be tried at this time. The only remedy previously published we may quote from Mr. Hubbard:

As was long ago suggested by Mr. Glover, in his report above mentioned, the bugs may be attracted to small heaps of sugar-cane trash with which Paris green or some other poison should be mixed; or the bugs, when collected upon piles of cotton-seed in winter, may be destroyed by drenching them with boiling hot water. The experience of several cotton planters with this last method has shown it to be practicable, but to be effective it must be thoroughly carried out. As the eggs can not all be reached and destroyed by hot water, the operation needs to be repeated several times at such frequent intervals that the bugs are not allowed to reach maturity and deposit fresh eggs.

In the orange grove effective traps may be made with refuse oranges, orange peel, etc., and the bugs, when thus collected, may be destroyed with the kerosene washes used for Scale insects. The kerosene solutions will also be more effective than hot water in reaching and killing the eggs.

As Mr. Hubbard further states, the cultivation of cotton through the orange-growing district of Florida is for many other reasons likely to diminish rather than to increase, and with the abandonment of this cultivation we may expect the Red Bug to do less and less damage to oranges, if not to disappear entirely as an orange pest, unless (and this is not over likely to happen) it should breed extensively upon some wild plant.

CAN THE RED BUG BE USED AS A DYE?

In the old days of expensive dye substances it was thought from the brilliant red color of these bugs that they could be used for some such purpose. Accordingly Dr. Charles T. Jackson, of Boston, was sent a number of these bugs in 1858 from this Department (then a bureau of the Patent Office), and from his report, published in the Annual Report for that year, it appears that the whole substance of the insect could be converted into a rich orange-yellow dye which could be readily fixed upon woolens or silks by the alum-mordant liquor. He also found that an ochreous yellow-lake could be made from them by precipitating the coloring matter with gelatinous alumina.

A PARASITE OF THE SUPPOSED EGGS OF THE COTTON STAINER.

By L. O. Howard.

In the article just preceding this parasite is mentioned and at Fig. 50 is shown one of the eggs which was so transparent that the contained parasite could be quite plainly seen. Carefully removing the egg-shell the parasites were found to be adults and in such perfect condition—evidently just ready to issue—that the following description was drawn

up from them and the accompanying drawing prepared. There is some little doubt as to the length of the wings, for they were, as a matter of course, closely folded and not fully developed. The venation, however, could be easily observed. The only other species of the genus reared in this country is *H. leptocorisæ*, which Mr. Hubbard reared from the eggs of *Leptocorisa tipuloides*, a predaceous bug found commonly on the Orange in Florida.

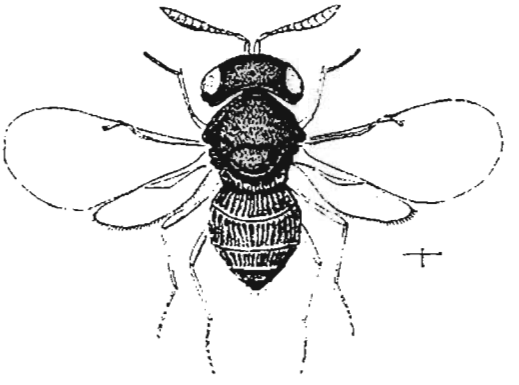

FIG. 53.—*Hadronotus rugosus* Howard—enlarged (original).

HADRONOTUS RUGOSUS sp. nov.

Female.—Length 1.8 mm. Expanse can not be measured, as the wings of the specimens examined have not expanded. Antennæ arise immediately above the mouth; scape reaches nearly to anterior ocellus: pedicel sub-cylindrical, as long as first funicle joint: funicle joints increasing regularly in width from joint 1 to basal joint of club; joint 1 of funicle twice as long as joint 2, the remaining joints sub-equal in length; joint 2 of club equal to joint 1; joint 3 longer than 2 and pointed. Head and face closely, deeply, and regularly punctate: facial impression shallow, with transverse punctures and with a distinct central longitudinal carina. Mesonotum strongly punctuate, the punctures of the scutum assuming a longitudinal direction. Dorsal surface of abdomen strongly longitudinally rugose, each joint smooth at extreme base and apex, the rugosities strongest upon joint 1, growing slightly fainter on succeeding joints; joints 2 longest, joints 1 and 3 slightly shorter; venter of abdomen with well-marked circular punctures. Entire surface of body with very sparse whitish pilosity. General color black; mouth parts, antennæ, and legs honey yellow, except that the front coxæ, antennal club and pedicel, and first two funicle joints above are brownish. The wings can not be well studied, but seem typical of the genus, and as in *H. leptocorisæ* Howard.

Described from 3 ♀ specimens (♂ unknown) dissected from eggs of Heteropteron, found on Orange by H. S. Williams, Rock Ledge, Fla., in April, 1880, and supposed by Professor Comstock to be those of *Dysdercus suturellus*.