U. S. DEPARTMENT OF AGRICULTURE. DIVISION OF ENTOMOLOGY. BULLETIN NO. 10: OUR SHADE TREES AND THEIR INSECT DEFOLIATORS

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C. V. RILEY

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OUR SHADE TREES AND THEIR INSECT DEFOLIATORS.

BEING A CONSIDERATION OF THE FOUR MOST INJURIOUS SPECIES WHICH AFFECT THE TREES OF THE CAPITAL; WITH MEANS OF DESTROYING THEM.

BY

C. V. RILEY,
ENTOMOLOGIST.

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LETTER OF SUBMITTAL.

U. S. DEPARTMENT OF AGRICULTURE,
DIVISION OF ENTOMOLOGY,
Washington, D. C., March 15, 1887.

SIR: I have the honor to submit for publication Bulletin No. 10 of this Division, being an account of the more important insects which defoliate our shade trees. While of interest to other sections of the country, it has been prepared primarily to supply the constant demand for information by residents of the National Capital. In the series of Bulletins of this Division it takes the place of one on "Bird Migration in the Mississippi Valley," announced a year ago, and which, since the creation of the separate Division of Ornithology and Mammalogy, I have thought best to leave out of the series from the Entomological Division, especially as Dr. Merriam, the Ornithologist, has greatly amplified it.

Respectfully,

C. V. RILEY,
Entomologist.

HON. NORMAN J. COLMAN,
Commissioner of Agriculture.

INTRODUCTION.

Though all four of the insects considered in this Bulletin have been studied in years gone by and have been treated of in various publications, yet some facts of interest are recorded here for the first time. The article on the Elm Leaf-beetle is reproduced from Bulletin No. 6, which has been for some time out of print. Those on the Bag-worm and on the Tussock-moth are condensed from our First Report as State Entomologist of Missouri, published in 1868, and from later writings, and that on the Fall Web-worm is made up from the Third Report of that series for 1870, but contains much that is new and especially applicable to the District of Columbia, the quoted portions being taken in advance from our forthcoming report to the Department. The Bulletin concludes with some facts and suggestions which are also of local interest and have been elicited by the exceptional concern shown by the people of Washington in the caterpillar nuisance. Some portions of this part of the Bulletin have been given for publication to the Washington *Evening Star*.

In treating of the means of preventing the injury and of preserving the foliage of our trees we have gone into details as to the most important means in considering the first species, or the Elm Leaf-beetle, so as to avoid repetition, and later, in connection with the fourth species or Fall Web-worm, referred briefly to other methods.

C. V. R.

SHADE TREES AND THEIR INSECT DEFOLIATORS.

FOUR PRINCIPAL LEAF-EATERS.

There are four insects principally concerned in the defoliation of the shade trees in the city of Washington. They are: (1) The Imported Elm Leaf-beetle (*Galeruca xanthomelæna*); (2) the Bag-worm (*Thyridopteryx ephemeræformis*); (3) the White-marked Tussock-moth (*Orgyia leucostigma*); and (4) the Fall Web-worm (*Hyphantria cunea*).

THE IMPORTED ELM LEAF-BEETLE.

(*Galeruca xanthomelæna** Schrank.)

The depredations of this pest have now become widely extended throughout the Northeastern States, rendering almost worthless and unsightly those most valuable shade trees of our cities—the elms. As its injuries are so far unknown in the Mississippi Valley, the blighted appearance of the elms on the Department grounds in midsummer, and especially of the European varieties, at once attracted our attention when we first came to Washington, and a series of experiments was begun with a view of checking the ravages of the insect. The excellent opportunites thus offered for experiment and study have since been improved, and, with some prefatory passages in relation to the history and habits of the beetle, we will give the practical results reached.

AN IMPORTATION FROM EUROPE.

This beetle has done great mischief in the Old World, especially in Germany and France, and it is very important that the public know the best method of coping with it here. According to Glover, it was imported as early as 1837. Its distribution was formerly confined to limited areas near the coast, and its earlier attacks were notably about Baltimore and New Jersey.

HABITS AND NATURAL HISTORY.

The general characteristics of this insect have been pretty well studied abroad. Mr. E. Heeger† has given an excellent account of its life-history, with a detailed description of the larva and figures illus-

* This is the *Galeruca cratægi* Först., and *G. calmariensis* Fabr. In Crotch's Checklist it appears as *Galerucella xanthomelæna*.

† Seventieth contribution to the natural history of insects. Sitzungsberichte der kais. Ac. Wiss., Wien, 1858, vol. 29.