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BEETLE IN NEW YORK STATE**

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EPHRAIM PORTER FELT

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University of the State of New York

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ELM-LEAF BEETLE
IN
NEW YORK STATE

PREPARED BY
EPHRAIM PORTER FELT, D. Sc.
Acting State Entomologist

ALBANY
UNIVERSITY OF THE STATE OF NEW YORK

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PREFACE

This bulletin was prepared, first to bring prominently before the public the very destructive nature of this imported insect, and second to demonstrate that it can be controlled without great expense, provided intelligent direction is given to the matter.

The life-history and habits of this beetle have been given somewhat in detail because unless they are thoroughly understood, it is very easy to adopt means that are only partially successful or futile. In order to give the bulletin a more practical value, short accounts have also been included of three other insects, which, working with the elm-leaf beetle, have aided greatly in ruining many noble elms.

In the portion devoted to remedies prominence has been given to the cost of spraying per tree, the proper apparatus and the time and manner of application. It is surprising to see what mistakes some men make in dealing with insects and how they cling to methods of no value. To offset this tendency, two of the more common fallacies are mentioned and their futility shown.

E. P. FELT

Albany, N. Y., 21 June, 1898

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THE ELM-LEAF BEETLE IN NEW YORK STATE

Galerucella luteola Müller

Ord. Coleoptera: Fam. Chrysomelidae

This imported insect has committed such extensive injury to the elms in the cities and villages along the Hudson river that it is worthy of extended notice. The residents of places where this pest has established itself have repeatedly observed the grubs working on their elms and in many instances have seen two or even three crops of leaves destroyed in a single season without taking steps toward the protection of the trees.

The causes for this condition of affairs are not hard to find, as the majority are inclined to trust in providence and hope that the ravages of the insect will not be as severe the next season. Many others see the grubs at work on the underside of the leaves but not being quite sure of the best method of controlling them, and as there is no way of doing this without labor, they usually make no effort to subdue the pest.

Bad reputation of its family. This beetle is a member of the large, leaf-eating family of *Chrysomelidae*, which comprises a number of our most injurious insects. It includes such well-known pests as the asparagus beetle, *Crioceris asparagi* Linn., the Colorado potato beetle, *Doryphora 10-lineata* Say, the 12-spotted Diabrotica, *D. 12-punctata* Oliv. and the striped cucumber beetle, *Diabrotica vittata* Fabr., all well-known insects against which perpetual warfare must be waged. Another member of this family, the cottonwood-leaf beetle, *Lina scripta* Fabr., recently inflicted serious damage upon the large basket industry in the willow growing districts about Syracuse, Rochester and other localities in that part of the state. Judging from the well-known records of its allies, we may expect that the elm-leaf beetle will continue to be very destructive.

Inaction means death to the elms. The elm-leaf beetle was known in Albany in 1892, probably having made its way to the city a year or two earlier, and since that time its ravages have become more and more serious, until in 1897 most of the numer-

ous European elms along our streets were completely defoliated once, the second growth of foliage was seriously injured, and some trees had their third set of leaves attacked. This condition of affairs was observed in Albany and Troy and was true to a greater or less extent in many other places along the Hudson river. The leaves are the breathing organs of a tree. Their removal or destruction weakens it seriously, and to have that occur even once a season for successive years, means the early death of the unfortunate elm. The number of magnificent shade trees killed by this insect in Albany, since its advent, may be estimated at over a thousand, and had not the city taken action to protect the elms many more would have succumbed in the next year or two.

It is useless to hope that another season the pest may not be as destructive. It shows a remarkable vigor and prolificacy in our climate. At Washington, D. C., it has been known for a long series of years and still is very injurious. In New Jersey, New York city, New Haven, Conn., and other localities it has been found necessary to spray the trees with a poisonous mixture in order to avert serious injury. Parasites, diseases of various kinds and predatory enemies seems to have little effect in reducing its numbers. The valley of the Hudson river as far north as Saratoga is now included in the same life zone as that of the latter places named.

Distribution. This insect is common over a large part of Europe, but it is injurious only in the southern portions of Germany and France and in Italy and Austria. The records of the earlier entomologists indicate that the beetle must have made its way to this country about 1834, because in 1838 it was reported as very injurious to elms in Baltimore, Md. It is now found from Charlotte, N. C., to north of Salem, Mass. Up to 1896, so far as known, it was limited to territory east of the Appalachian chain of mountains. In that year it was found established at Elm Grove and Wellsburg, W. Va., by Dr Hopkins of the Agricultural experiment station of that state. Its progress up the Hudson is interesting to follow, indicating, as it does,

the distribution of the beetle along the lines of travel. In 1879^a it was abundant and destructive at Newburg; 12 years later it was reported to this office from Poughkeepsie, in 1890 from Hudson, in 1891 from New Baltimore and in 1892 it had reached Albany and Troy. It was found at Mechanicville in 1896 by Dr L. O. Howard, of Washington, D. C. That same year the larvae were abundant at Averill Park in the town of Sand Lake about seven miles southeast of Troy, the beetles evidently having been transported thither by the numerous electric cars running to that station. In a similar manner it has spread over a large portion of Connecticut and into Rhode Island. It had made its way up the Connecticut valley to Springfield by 1891, and to Amherst by 1895. The latter year it was found by Dr Howard at Millers Falls and was reported to him then at South Vernon, it having crossed the New Hampshire line. It has also been reported from north of Salem, Mass., and at Middlebury, Vt.—two localities distant from others where it has been found.

The above record indicates most clearly that this pest has not made its way to all portions of the state where it may be expected to thrive. The climate of the upper austral life zone seems to agree with the insect, judging from the number of broods and its abundance in Albany and vicinity. The area within the state embraced by this zone has been represented on plate 4, in the *11th Report on the insects of New York*. Briefly, it embraces Long and Staten islands, the valley of the Hudson river north about to Saratoga and a large portion of the north-western and central part of the state adjacent to the great lakes and including Oneida, Cayuga, Seneca lakes and neighboring bodies of water. This insect will probably make its way along the lines of travel to most of the cities and larger villages lying within the above limits. The beetle having become established at localities not yet included within this zone, indicates that it may have an even wider range, although climatic conditions will probably prevent its becoming destructive.

^a Unfortunately most of these dates indicate only the time when the ravages of the insect were serious enough to attract the attention of some one, and so only approximately the year of its arrival.