

**STATE HORTICULTURAL COMMISSION.
ENTOMOLOGY IN OUTLINE: COMPILED
FOR THE USE OF COUNTY
HORTICULTURAL COMMISSIONERS
AND FRUIT-GROWERS**

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State Horticultural Commission. Entomology in Outline: Compiled for the Use of County Horticultural Commissioners and Fruit-Growers by John Isaac & Ellwood Cooper

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JOHN ISAAC & ELLWOOD COOPER

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REPRESENTATIVES OF THE SEVEN PRINCIPAL ORDERS OF INSECTS

PLATE I.

REPRESENTATIVES OF THE SEVEN PRINCIPAL ORDERS OF INSECTS.

1. Orthoptera—*Hippiscus rugosus*.
2. Diptera—*Ezoprosopa caliptera*.
3. Hemiptera—*Rasahus biguttatus*.
4. Lepidoptera—*Papilio turnus*.
5. Coleoptera—*Buprestis*.
6. Hymenoptera—*Vespa germanica*.
7. Neuroptera—*Polystæchotes punctatus*.

All natural size.

STATE HORTICULTURAL COMMISSION
ELLWOOD COOPER, Commissioner

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Commissioners and Fruit-Growers

BY
JOHN ISAAC



SACRAMENTO
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1906

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ENTOMOLOGY IN OUTLINE.

Arranged for Horticultural Commissioners, Fruit-Growers, and Farmers.

By JOHN ISAAC.

Some simple work, which shall present, in plain, every-day language, information about the insect world, has long been desired by our County Horticultural Commissioners and fruit-growers. As a rule, these men are not scientific entomologists, nor do they need be, but, at the same time, it is necessary that they should know something of insects and their modes of living, and be able to distinguish between insect friends and enemies, in order that they may protect the one and destroy the other.

It is much to be able to tell to what order an insect belongs, more to know to what family in that order it belongs, and this is as far as the average commissioner or orchardist can hope to go; to go farther and trace it to genera and species is the work of the trained entomologist, and is a life work alone for any man.

It is the desire of the writer to place such knowledge before his readers, in the simplest manner, divested as far as possible of all scientific and technical terms. Those who desire more can acquire it from the scientific text-books. We do not offer this as a scientific dissertation on entomology, nor as giving, by any means, all that is known of that science, but simply as an introduction to every-day men of the more general facts which they should know in the pursuit of their calling for the benefit of their constituents.

SYSTEM IN NATURE.

Success in any pursuit depends upon system, and this is essentially true of the study of any branch of natural history. As we gaze around us upon the material world, we behold a conglomerate mass of life that may astonish, or even oppress, us with its multitudinous forms, but until we can take each individual object and trace it down to its proper place in the order of nature, it has no meaning for us. To accomplish this, the natural sciences,—geology, botany, biology,—have been established, and these again have been subdivided, until every object can be assigned to its proper place and its life and peculiarities known and described. There is no field in which subdivision has been called out