

# The Canadian Entomologist.

VOL. XXVIII.

LONDON, OCTOBER, 1896.

No. 10.

## SOME NOTES ON INSECT ENEMIES OF TREES.

BY A. D. HOPKINS, WEST VIRGINIA AGRICULTURAL EXPERIMENT STATION.

The study of forest and shade tree insects is a line of entomological work demanding especial attention in the State of West Virginia. During the past two years I have carried out quite an elaborate line of investigations and experiments on this subject. The *first* object was to conduct investigations with reference to the forest conditions, the distribution of forest trees, and the relation of certain kinds of forest growth to the occurrence and range of the several life zones, and minor divisions of the same in the State. *Second*, to ascertain as far as possible the principal insect enemies of forest growth and their habits, as well as to study the climatic and other conditions that might be favourable or unfavourable for their multiplication; or the extension of their depredations. *Third*, to determine by experiments and otherwise some improved and practical method of preventing the losses that are occasioned by the more destructive kinds, especially those caused by bark and wood infesting insects.

Sufficient evidence has been obtained in the first object to enable me to prepare a preliminary map of the forest divisions of the State and the probable range of the life zones. Considerable information has also been added with reference to the habits of some of the more destructive insects, and some results have been obtained towards successful methods of preventing serious losses from their attacks on felled timber.

The studies with reference to preventives and remedies include a line of experiments which has already given good results and promises better ones in the future. The experiments include the cutting of different kinds of trees twice a month, year after year, until sufficient evidence is obtained to enable me to arrive at some definite conclusions with reference to the proper times to cut timber to secure the least possible damage from insect attack.

This line of experiments has been carried on regularly in different sections of the State since April, 1895. Observations are made from