

In this intricate scheme of relationships insects play a dual regulatory role. Some, namely the herbivorous species, act upon the vegetation while others, endowed with carnivorous instincts, control the excessive multiplication of the first. Vegetarian insects may be roughly divided into two great classes: those which feed upon healthy, living trees and are therefore designated as primary; and those which attack only sickly, dead, or dying trees and, as such, are usually designated as secondary. Considered from the standpoint of man's economy, the primary insects are, potentially at least, the most injurious, and the majority of so-called destructive species are found among them. From the standpoint of nature's economy, they really act as useful protectors of those species whose existence becomes threatened by the undue dominance of others.

Generally speaking, secondary insects, by hastening the death of weakened trees or by contributing to the decomposition of dead trees, are useful agents in the regeneration of forests by the removal of trees which have reached the natural limit of their existence. The carnivorous insects comprise parasitic and predacious species that favour the vegetation by regulating the numbers of herbivores.

When, therefore, we refer to insects as pests or destructive enemies of the forest we speak in terms of human relationships and we forget that, more than often, man himself is the prime mover in the calamities which are visited upon him. Our knowledge of insect ecology is still very imperfect and it would be absurd to pretend that all the causal relationships underlying the rise and fall of any one insect outbreak can be determined. However, the fixing of man's responsibility is, in many cases, a comparatively simple matter. Improvident and reckless exploitation, ill-planned reforestation, destruction of wild life, fire, and the importation of insect species from foreign lands are broad categories under which man's offences may be readily classified. In planning measures of prevention and control, our first concern must be the regulation of man's activities and the correction of his mistakes. In some cases, appropriate legislation is the only course, in others the education of the individual will be more effective. In any event, whether legislative or educational procedure be adopted, it should at all times be based upon as thorough a knowledge of basic facts as it is possible to obtain.

Dominion Government Organizations for Dealing with Entomological Problems.—The study of forest insect problems in Canada is entrusted to the Forest Insect Investigations unit of the Division of Entomology, Science Service, Department of Agriculture. Forest entomology, as distinct from other phases of entomology, became a special section of the Dominion Entomological Service in 1911 and was formally established as a division in 1916. In the course of the recent general reorganization of the Department of Agriculture, forest entomology was ranked as a unit or section of the Division of Entomology. The headquarters of this service is in Ottawa and laboratories are maintained at Ottawa, Ont.; Fredericton, N.B.; Winnipeg, Man.; Indian Head, Sask.; and Vernon, B.C. Sub-laboratories are operated at Berthierville, Que.; Laniel, Que.; the Petawawa Forest Experiment Station at Chalk River, Ont.; and Vancouver, B.C. Temporary field stations and camps exist at a number of places throughout the Dominion. The personnel engaged in forest entomology consists of 17 permanent employees, 37 temporaries, and a small number of labourers who are hired whenever need for their services arises. The greater part of the permanent staff consists of officers specially trained in entomological research. The work accomplished by the unit may be classified under three headings: surveys, fundamental studies, and emergency projects.