per cent level for all but the shortest height-class. The solved formulae are given with the accompanying graph.

When these data were gathered, observations indicated that oviposition also increased with the density or "weight" of moss on the sample. These relative densities were recorded as "light", "medium" and "heavy". Although this factor has been investigated, its influence on egg distribution has not been tested statistically. Nevertheless graphic analysis shows that egg density is progressively heavier from "light" to "heavy" moss. But the distribution of the moss on the trees is such that it only serves to strengthen the positive correlation between egg density and height. It is quite possible that moss weight is the strongest single factor influencing the place of oviposition.

Perhaps the most practical inference that can be drawn from this analysis is that butt sampling can be just as reliable as multiple sampling. By adjusting the butt sample counts with the appropriate regression formula for the total height of the tree, a good estimate of the average number of eggs per sample for the whole tree should be obtainable. By eliminating the task of falling trees, butt sampling would save a great deal of time. This is a factor which is very important where sampling is done in remote areas. The time saved can be used to obtain samples from many more trees in each area and will thus increase the accuracy of the population estimate.

It must be remembered, however, that all these data were obtained from epidemic areas and that oviposition was heavy. If one supposes that in a light epidemic, the moths lay their eggs only at the optimum heights on the tree trunks, then the butt sampling alone would fail to detect the population. The seriousness of this shortcoming can only be tested during the next period of looper abundance.—J. M. Kinghorn.

Decay in Englemann spruce and alpine fir in the Bolean Lake Area, British Columbia.—In co-operation with the B.C. Forest Service a pathological investigation was initiated during 1951 to obtain information relative to the decays and decay losses occurring in Engelmann spruce (*Picea engelmanni Parry*) and alpine fir (*Abies lasiocarpa* (Hook.) Nutt.) in the Bolean Lake area of British Columbia. Studies of this nature are an essential requirement in the development of cutting systems for spruce-fir stands.

Seventy-eight spruce and 78 fir of merchantable size were analysed on a representative sample area of 1·5 acres. An analysis of these trees has shown that 48·7 per cent of the spruce and 73·1 per cent of the fir contained deductible amounts of decay. On the basis of gross merchantable volume these losses amounted to 18·6 per cent in spruce and 29·9 per cent in fir. In spruce of merchantable size, 60·0 per cent of the total loss in that species was attributed to *Fomes pini* (Thore) Lloyd. In fir of merchantable size, decay associated with *Echinodontium tinctorium* E. and E. accounted for 39·9 per cent of the loss in that species. Trunk rots associated with *Stereum sanguinolentum* Alb. & Schw. ex Fr., and *Fomes pinicola* (Swartz) Cke., were of secondary importance in both species of trees. Root and butt rots associated with *Armillaria mellea* (Vahl ex Fr.) Quél., *Poria subacida* (Peck) Sacc., and *Polyporous circinatus* Fr., were common in both spruce and fir but caused only minor losses.

A partial analysis was made of understory trees of both species. Fir understory trees were characterized by a great range in age distribution, general slow growth, a high incidence of dead trees, and an average decay-loss which amounted to 18·8 per cent of their gross volume. Spruce understory trees exhibited a wide range in age-distribution, but were found to be free of decay. The nature and extent of decay in this class of trees will have considerable influence on the decision concerning the composition of residual stands to be left after cutting.—J. E. Browne.

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