DISCUSSION

We have attempted to point out important aspects in the behaviour of *S. noctilio* which would permit a better understanding of factors necessary for the establishment and maintenance of the insect as well as the build-up of its numbers. We have also included observations and experimental evidence on the effect of the moisture content of the wood on oviposition by *S. noctilio*. We have put forward what evidence we have obtained on the dispersal habits of the woodwasp. All of these matters are, in our opinion, vital to any attempt to develop methods for controlling woodwasp damage to forests of susceptible species. Much more work is necessary on certain of these subjects. For instance, in examining dispersal we felt that females which emerge in late autumn appear to fly longer distances than those which emerge early in the flight period. This could be related to both the greater number of woodwasps and the greater utilisation of available host material per unit area. Both of these factors would tend to increase the likelihood of dispersal of females searching for satisfactory sites for oviposition. This does not mean that large numbers of females will not aggregate even on the same tree, however. Many ovipositing females may be attracted to the same locality and to the same tree at times. What must eventually happen, however, is that, in time, such attractive localities become less attractive because of the degree of utilisation of them. The resources there are diminished.

Movement of adult *S. noctilio* from place to place has been observed on logging trucks, ovipositing females often continuing to "work" the logs in transit. There is little doubt that carriage of woodwasps in this and in similar ways, is an important factor in the dispersal of siricids. There is little doubt, in our minds, that man has played an important part in the relatively rapid spread of *S. noctilio* throughout New Zealand. The importance of unthrifty plantations to the build-up of woodwasp numbers also indicates that man has greatly assisted the insect by planting large areas of pine plantations which could not be properly tended silviculturally. It would seem that, without the relatively large acreages of unthrifty pines, *S. noctilio* could not have developed outbreak numbers over such an area as it did in the late 1940's in New Zealand. The severity of the droughts preceding this outbreak must have had a significant effect, but the large numbers of susceptible trees available in stands, which were in need of, and, indeed, well overdue for, thinning, was more important. This is supported by evidence of larger numbers of trees being killed as young stands approach crown-closure, particularly in areas where no droughts were recorded, such as Rai Forest. The intraspecific competition present at crown-closure and prior to it is apparently the factor here which makes the trees susceptible. We do not in any way want to create the impression that severe drought cannot make trees susceptible, but we do believe that, under such conditions, a forest, which has been given adequate silvicultural treatment, will not present as favourable an environment for unimpeded increase of the woodwasp as an untended stand of similar age and growing on a similar site.

The ability to establish and maintain a small population in moribund branches on old pine trees, such as are found in windbreaks on farms, indicates that the woodwasp would be difficult to eradicate. The successful utilisation of such a resource also emphasises the importance of root-rot fungi which contribute to the decline of many *P. radiata* used for windbreaks throughout Australasia. Thus in any attempt to minimise the effects of *S. noctilio* in pine plantations, we believe that regular, appropriately-timed thinnings, combined with good forest hygiene, should be among the first considerations of forest owners.