Work on insects has been confined to developing methods for producing quantities under laboratory conditions. Timber infested with *Anobium* was collected, information secured on the habits of this beetle during its short life after emergence, and methods developed for maintaining individuals until the egg-laying period. Studies are now being made on the most suitable species of timber upon which to raise quantities of the beetles artificially, and effects of age and moisture content of the timber on the life of the progeny.

Difficulties have been met in securing adequate numbers of *Ambeodontus* for test purposes, owing to the extended period of emergence of the beetle and its long life-cycle. For these reasons attempts are being made to evolve a larval test.

Work with termites has been limited to the endemic wood-dwelling species, *Calotermes brouni*. Several thousand nymphs have been established in glass jars and will be available for tests when equipment is available for treating sample blocks.

(c) Penetration Tests.

Use of water-insoluble organic therapeutants depends largely upon discovery of a satisfactory solvent which will carry the product well into the wood, preferably without the use of pressure equipment. Tests were made with seven petroleum oils covering a wide distillation range, together with methyl-ethyl-ketone, upon sap rimu and matai blocks. Irregularities in penetration of each material made it difficult to measure differences. None, however, penetrated more than 1/10 in. into surfaces with straight grain, although when the grain ran in slightly from the surface, penetration appeared much better owing to the liquids travelling along the vessels. These results are at variance with claims made by certain American workers.

State Advances Corporation.

Throughout the year the major portion of the field-work of the Timber Protection Research Committee has been undertaken by the Field Staff of the State Advances Corporation.

The work has been concerned firstly with the geographical distribution of the Australian subterranean termites (*Ambeodontus tristis*, *Anobium domesticum*), weevils, and the native dry-wood termite. Considerable data have been collected upon the Australian termites, and this information was made available to Mr. F. N. Ratcliffe during his visit to the Dominion. The study of the distribution of *Ambeodontus* and *Anobium* has revealed that both these insects are widespread, but there is a noticeable increase in the incidence of the former insect in the Taranaki Province.

Attention must be drawn to the great amount of damage which is being caused to houses by the native dry-wood termite, *Calotermes brouni*. In some cases this termite has shown that it is able to cause even more severe damage than the Australian termites, although, of course, its attack is less rapid. On the other hand, the detection of attack by *Calotermes brouni* is more difficult than that of a subterranean termite, and control methods are likely to be more difficult.

The distribution of the various fungi attacking house timbers is being actively investigated. It has been ascertained that the City of Christchurch probably shows a greater incidence of fungal infection than any other large city in the Dominion. Specimens have been sent to the mycologists for the purposes of identification and culture. Studies have also been made of building practice in relation to attack by both insects and fungi. The qualities and grades of timber in relation to their susceptibility to infestation have been similarly investigated. Supplies of timber infested by insects and by fungi have been forwarded from time to time as required to the two Divisions concerned. The Corporation provided the transportation for officers of the various Divisions when such was necessary.

LEATHER AND SHOE RESEARCH.

Director: Mr. P. White. Assistant Director: Mr. F. G. Caughley.

During the year the Director visited Great Britain, Canada, and the United States of America to renew direct contact with methods used overseas in research work and manufacturing methods. The trip was very successful, and much valuable information was obtained about the present methods of manufacture of leather and shoes. A report on the visit was forwarded to members of the New Zealand Leather Research Association.

LEATHER RESEARCH ASSOCIATION.

Advisory Committee: Messrs. A. E. Lawry (Chairman), C. Arlington, J. E. Astley, S. L. Wright, W. Donovan, F. Johnson.

Observations on the Director's Visit Overseas.

English sole leather has a reputation throughout the world for its firmness, good wear, and resistance to water absorption. Investigations have been carried out in New Zealand on how these qualities are obtained, especially in relation to the use of astringent tannin materials. It is usually accepted that astringency is related to the size of the tannin molecule. Much work is being carried out in Britain on molecular size, and, although the knowledge is at present somewhat incomplete, practical tanners are talking in terms of size of molecules. The discovery of a method which will give maximum and minimum as well as the average molecular weights would be of the utmost benefit to tanners.