

LEATHER AND SHOE RESEARCH ASSOCIATION.

During the year negotiations between the leather-manufacturers, the boot and shoe manufacturers, and the Department of Scientific and Industrial Research for the formation of a combined Leather and Shoe Research Association were brought to a successful conclusion. The technical problems arising in these industries are so closely interrelated that mutual benefit cannot fail to be derived from investigations conducted by a combined research organization which makes possible the desirable co-ordination of work.

Among the leather research investigations undertaken during the year were the following: An examination of the factors affecting the hardness imparted to leather by tannage, thus following up a previous finding that hardness is definitely correlated with the wearing-value of sole-leather; and the development of a tanning process which will produce a leather representing a good compromise between the tanners' requirements of resistance to water-absorption together with high wear resistance, and the shoe-manufacturers' requirements that it shall be easily worked under modern methods of mass production.

In shoe research, the first problem submitted for investigation was the tempering of sole-leather, and as a result of the work carried out and the recommendations made, the process has been placed on a much sounder and more uniform basis.

Monthly circular letters have been maintained as an important part of the service. These letters, besides communicating the results of research work, have an educational function, and reports received indicate that they have been greatly appreciated.

SOIL AND LAND-UTILIZATION SURVEYS.

Substantial progress has been made with the major soil surveys in Hawke's Bay and North Auckland, and the former is very near completion. The soil survey of Hawke's Bay is associated with a comprehensive land-utilization survey of the province, including the detailed mapping of the pastures by the Grasslands Division of the Plant Research Bureau and a study of farm management and farm practice by officers of the Department of Agriculture. The soils of the greater part of Hawke's Bay have now been surveyed, and soil maps are being drafted for publication. The Heretaunga Plains soils have been surveyed in considerable detail, and the maps which have been prepared are now in the press. These soil maps, together with the data obtained from the orchard and agricultural surveys, will form a valuable guide to the present utilization and future potentialities of the area.

The pasture and farm-management surveys of Hawke's Bay are also approaching completion, and a number of maps are in the final stages of preparation for publication.

In North Auckland the soil survey now covers about half the province, and an account of the soils of Whangarei County is being written up for publication.

Soil surveys of the following areas were completed during the year: Bank's Peninsula; the Wairau Plains—undertaken primarily to provide some of the data for the Public Works Department in connection with an irrigation project; the pakihi lands of Westport; a reconnaissance survey of the pumice soils of Gisborne; and a preliminary survey of phormium soils. The survey of phormium areas indicated that the more fertile and well-drained soil, the more vigorous and healthy is the flax. Good alluvial soils in particular appear to be well suited to flax.

A valuable and stimulating report on soil erosion and land deterioration in the heavier rainfall districts of New Zealand was prepared, which draws attention to the seriousness of the present situation, but at the same time indicates that it is not too late to take steps to prevent more widespread and irremediable damage to our agricultural and pastoral lands.

FRUIT RESEARCH.

A full programme of research was carried out during the year under the general direction of the Fruit Research Committee and the Fruit Cold Storage Committee, both of which are fully representative of the various interests involved—i.e., the Department of Scientific and Industrial Research, the Horticulture Division of the Department of Agriculture, the Cawthron Institute, the New Zealand Fruit Export Control Board, and the New Zealand Fruitgrowers' Federation.

In addition to the current activities at the various experimental orchards, comprising manurial, rootstock, pruning, and spraying experiments, and plant-protection studies, a number of new projects have been started.

The production of unfermented fruit-juices on the Continent, and recently also in the United Kingdom, has aroused considerable interest in New Zealand as a promising means of utilizing low-grade fruit, for which there is at present no economic means of utilization. The Fruit Research Officer, during his recent visit to Great Britain, collected a great deal of information in regard to the production of unfermented fruit-juices, and on his return initiated experiments in order to test the practicability of utilizing New Zealand apples for this purpose. These experiments, which were facilitated by the co-operation of a local producer of this type of fruit-juice, are promising but as yet incomplete, and the final results are awaited with much interest.

Experiments on the curing of lemons, which have been in progress at the Dominion Laboratory for some time past, are now completed, and the results are being prepared for publication. This work has thrown much light on the mechanism of the curing process, and has enabled the requisite conditions for optimum results to be laid down for guidance in commercial practice.