

The spirit of co-operation in research in industry grows slowly, and there are special features militating against its development in New Zealand. In the derived primary industries there are the differentiating interests of the local co-operative concern and the proprietary concerns; in secondary industries we have the purely local manufacturing concern, the combined importer and manufacturer, and the units of industry devolved from overseas. Many cases have arisen in our experiences where these interests have been antagonistic to co-operation in research, but gradually a broader outlook is being built up as each recognizes the amount of fundamental information of interest to each and all, and the sphere of co-operative research efforts becomes more definitely defined.

In general, during the year the value of organized experimental shipments of our products to England has been realized. These shipments of products of fully known and scientifically determined processing and history are examined in Great Britain by combined technical and trade experts, so that reliable information is obtainable as to their characteristics, good or bad, and the factors from which they arise. Thus lines of butters prepared in different ways have given a valuable lead as to the preparation of products which will be accepted by the Glasgow market. Shipments of cheese have thrown considerable light on maturation and the effect thereon of various practices in New Zealand factories. Shipments of pelts have indicated the effect of small traces of iron on keeping-quality, and have also indicated the suitability of various methods of processing for different manufacturing uses. Similar results have arisen from consignments of wool, meat by-products, apples, passion-fruit, kauri-gum, &c.; but in all cases it has been proved that the only way to obtain benefit from such shipments is to have a full technical knowledge of preshipment history and of the conditions during transport, followed by an examination in Great Britain which combines a knowledge of trade requirements and their interpretation in scientific language.

This is the only safe method of obtaining information on which to base extension of existing markets or marketing of new products, and in this work we are fortunate to have the co-operation of the Empire Marketing Board, the various research associations in Great Britain, and of our corresponding Department.

Dealing with certain of the special activities—

DOMINION LABORATORY.

The Dominion Laboratory is engaged chiefly in carrying out chemical work required by all Government Departments; except that of Agriculture, and this work still continues to occupy the greater part of the time of the staff. During the year a considerable variety of stores was examined for purchasing Departments. The renewed interest in gold-mining evinced throughout the Dominion entailed reports on an increased number of samples for prospectors and advice as to treatment when required. Work for the Police Department has increased considerably.

At the request of the Under-Secretary for Mines, research on the blending of New Zealand coals for gasworks use was advanced another stage. The proportions of Reefton slack coal required to correct the swelling tendencies of several high-grade bituminous coals were ascertained, and the information circulated by the Mines Department to all gas companies. The investigation on the relation of iodine to the incidence of goitre, undertaken in conjunction with the Health Department, was continued, and that on the ripening of bananas completed. A report on the latter will be issued shortly.

Industrial investigations still in progress deal with extraction and refining of kauri-gum and the improvement of meat offal for export. Work on a test of the keeping-quality of butter, in association with the Dairy Research Institute, has been proceeding during the past year. Another feature of the Laboratory work has been the examination and analyses of sprays for fruit-trees. The Director of the Laboratory again supervised the work of the Fuel Research Association, and maintained close relations with the chemist to the Leather Research Association. It is unfortunate that the work on coal must be curtailed owing to lack of finance and loss of contributions from the industry. Unless we keep up to date in the fundamental characteristics of our coals, the application of newly developed methods of treatment will be attended by considerable uncertainty. The work of the Laboratory during the year has resulted in information on which commercial briquetting can be undertaken in certain areas.

GEOLOGICAL SURVEY.

During the season, owing to shortage of funds, field-work had to be restricted to those districts in which it was possible for the geologist to obtain board, and where the country was open enough for him single-handed to fill in the topography of unsurveyed patches in the map. Since large parts of the Amuri Subdivision is sparsely inhabited, no work was carried out in that district.

Last April field-work in the Te Kuiti Subdivision, which was begun in 1928, was finished. A small scale black-and-white map of the district and a summary of its geology appears in the report of the Geological Branch of this Department.

The exploration of the Eketahuna Subdivision, part of the petroliferous region that extends along the east coast of the North Island, was continued; the examination of this area will probably be completed next year. At present little money is being spent in New Zealand in the search for oil, but the indications of its presence are so widespread along the east coast that further drilling is likely to be undertaken in the not-distant future, and the early mapping of the whole region is advisable.