

and die in the midst of abundant feed, has brought prominently to notice the importance of attention to the mineral content of grasses and clovers. Bush sickness, caused by iron deficiency, and King-country diseases, caused by calcium and phosphate deficiencies, by their very acuteness have drawn attention to the need for research into the nutritive content of all pastures, for there are many where the deficiency, though present, does not reach the acute stage.

With the aid of an annual grant of £2,000 from the Empire Marketing Board, work has been in progress for some time on the deficiency areas of the Rotorua, Waikato, and King-country districts, where the investigations are being conducted by officers of the Department of Agriculture. In the Nelson Province, similar work is being undertaken by the Cawthron Institute. Soils and pastures are being analysed, feeding trials are being conducted with stock, and specially prepared mineral licks and medicines are being administered in order to ascertain, firstly, the cause of stock unthriftiness, and, secondly, means of curing this trouble. The solution of these problems will bring into more effective use thousands of acres of land which at present are incapable of maintaining stock in a healthy condition, and possibly provide a check to such diseases as sterility, abortion, &c., which annually cause large stock losses throughout the Dominion.

The future prosperity of the Dominion lies largely in the increase of its stock population, and these investigations are aimed at (1) bringing into use additional areas; (2) increasing the carrying-capacity of areas at present in use; (3) checking losses incurred through diseases and loss of constitution.

The first two quarterly reports to hand indicate definitely that the results of these researches will be of considerable economic value to the Dominion, and have justified the Empire Marketing Board in offering to continue their subscription for the full period of five years considered necessary to reap the full benefit of the work.

SEED AND PLANT RESEARCH STATION.

At Palmerston North, adjacent to the Massey College property, there has been established a Plant Research Station, where the co-ordinated efforts of the staffs of the Department of Agriculture and the Department of Scientific and Industrial Research will engage in investigations concerned with the control of plant-diseases, the certification and standardization of seeds, pasture establishment, management, and control.

The investigations embrace both laboratory and field work, and are designed to save some of the annual loss of £2,000,000–£3,000,000 which is attributed to plant-diseases, to increase the quality and standard of our main lines of grass and clover seeds, and to enhance the quality of our pastures by attention to grass development, fertilization, and management.

Work at this station is now in full progress, and a large number of investigations are proceeding, many of which are being co-ordinated with those conducted elsewhere in research stations abroad. The Empire Marketing Board has interested itself in the projects, and is contributing £2,500 towards capital costs and £2,500 annually in promotion of the activities of the station. The work of this Research Institute is regarded as one of the most promising major activities of the Department.

PHORMIUM FLAX RESEARCH.

A Co-operative Research Association of flax-millers and flax-growers has been established, and the Massey College has undertaken to work with this committee on the breeding of strains of flax possessing desirable qualities of yield, fibre-strength, and disease immunity.

Investigations also have been carried out as to methods of chemically treating fibre so as to secure better colour without loss of strength, while the committee also has arranged for tests and investigation of the use of fibre for fine high-grade papers.

Methods of testing for strength of fibre have been evolved; but a survey of the whole situation has shown that certain methods of stripping so seriously impair this strength as to limit the usefulness of flax for cordage. The work on both breeding of flax and its subsequent treatment mechanically or chemically is, therefore, important, so that the fibre of the future may be standardized and of the highest quality.

The flax industry is in a somewhat difficult position, and some additional major use for flax will be necessary in view of the large areas at present being planted. Considering the funds at the disposal of the committee, very satisfactory progress has been made.

LEATHER RESEARCH.

A Leather Research Association has been formed, and funds for research subscribed by tanners throughout the Dominion. Up to the present friction tests have been carried out with New Zealand-made leathers in order that comparisons might be made with imported material and that possible defects in the methods of manufacture might be traced. This is necessary in order that a larger proportion of the leather requirements of the Dominion may be provided locally.

The tanning materials and water-supplies available to manufacturers have been analysed, while a certain amount has been done by way of scientific control of various processes. The great possibilities of such action have led to the appointment of a research chemist with overseas experience in both manufacturing and laboratory work. This officer is working for the Tanners' Research Association, and the whole arrangement promises well.

FISH RESEARCH.

The problem of the fish-food content of the coastal waters of New Zealand has been under investigation in conjunction with the Marine Department. The nature of the food consumed by our main