

realized that the fullest understanding of everything that affects quality is essential to the Dominion maintaining its position in the world's dairy markets in the strong competition inevitable in the future. Fundamental studies of the influence of feed, season, starters, and manufacturing processes on the fats, proteins, and carbohydrates of butter and cheese are being pursued. In addition, the influence of nutrition of the calf and the effect of certain hormone materials on the ultimate production of the dairy cow are being closely followed.

The provision made during the year for improved staffing for the Geological Survey was shown to be necessary by the wide range of economic problems with which the Survey was called upon to deal. Surveys of coalfields, clay, and radio-active mineral areas have demanded much attention and have indicated desirable avenues for new industrial developments. The unusual and prolonged eruption of Mount Ruapehu gave opportunity for geophysical investigations of volcanic activity. The new Volcanological Station which was opened at Rotorua during the year is already being asked to deal with many practical problems affecting the thermal regions. Its establishment will be particularly valuable for the opportunity it will provide for thorough study of the unique characteristics of this region, which must be understood before practical issues can be satisfactorily solved.

Research on building problems has made progress during the year, the qualities of pumice for concrete-manufacture being under study at the Auckland University College, and protection of timber against insect and fungus attack being dealt with at the Plant Diseases Division. The Dominion Laboratory has entered upon an extensive research programme dealing with the painting of certain classes of New-Zealand-grown timber which have proved difficult for satisfactory paint treatment.

In leather research attention has been focused upon work intended to improve the wearing-quality of sole leather, and a good deal of new light has been thrown on the relative importance of the factors existing in the original hide and those in its processing into leather, in so far as they influence the quality of the finished article.

The Woollen Mills' Research Association has had a successful first year since incorporation and has made good progress in thoroughly testing out on a mill scale the new wool anti-shrink process which was recently introduced to New Zealand from Torridon.

It is impossible to give briefly an indication of the results attending the many research projects being dealt with by the various branches of the Department. In an endeavour to make all new knowledge available to the widest number, the Information Section has continued to issue journals, bulletins, popular articles, and newspaper statements. These appear to be serving a good purpose judging by the number of inquiries which have been received for fuller information. It is the policy of the Department to issue its publications as rapidly as possible in order that the minimum of delay may occur in putting new knowledge into operation.

It has been the Department's policy to encourage development of research at all the University Colleges and at Cawthron Institute along lines appropriate to these institutions. It is pleasing to report that practical co-operation between the Department, the University Colleges, Cawthron Institute, and other State Departments has increased during the year. The ever-present shortage of suitably qualified personnel to undertake research work is being felt very much at present, and the resumption of the award of National Research Scholarships of higher value should provide a means for overcoming this difficulty.

During the war 172 members of the staff of the Department served in the Armed Forces. Of these, 142 have resumed duty, whilst 9 members are on leave without pay, chiefly for the purposes of furthering their education. Thirteen members are still in the Services and 8 have joined the J Force.

I have pleasure in acknowledging the loyalty, the zeal, and the high standard of achievement attained by the staff of the Department during the year.

E. MARSDEN,
Secretary.