The problems of wool are so complex that it is a real satisfaction to be able to record that work has so far progressed that there is now a new realization of the fundamentals of the problems involved, and that sufficient spade-work has been accomplished on which to build a practical programme of definite advance. Definite information has been obtained on the nature of the inheritance of medullated fibre, the significance of certain hairy fibres appearing in the birthcoat of lambs on the character of the ultimate fleece of the adult sheep, the thickening of fibre-tip after shearing in certain conditions, and the extent to which the chemical composition of wool-grease is modified by rain and exposure.

Definite progress has been made in tracing manufacturers' troubles to various conditions of breeding and environment in New Zealand, so that the somewhat uncertain position in this regard may be clarified and more reliable advice given to growers.

(11) *Cold Storage and Transport.*—Recognizing the importance of the technical problems of storage and transportation of our food products to the Home market, fairly extensive investigations on cheese problems have been carried out during the past two years. The appropriate temperatures for conveyance of our main lines of apples and pears have been worked out at Cawthron Institute, and the response of apples to different conditions of temperature and humidity. The relation of soil and climate characteristics to wastage-rate in fruit has been in part determined.

Much data has been obtained and is in process of compilation regarding the effect of transport conditions on meat, cheese, and fruit; and the hearty and active co-operation of representatives of the meat, dairy, and fruit industries ensures that practical application of this knowledge is being and will be made.

(12) *Noxious Weeds.*—Considerable advance has been made in the exploration of the possibilities of weed-control under various conditions by insects, and fair promise of worth-while results in the case of ragwort, gorse, and piripiri is indicated. These investigations are necessarily prolonged from the point of view of absolute safety.

The above synopsis deals with the main lines of investigation that have been inaugurated. Considerable progress is also recorded in work on the vitamin content and values of various stock-foods at Otago University, utilization of New Zealand building-stones, necessary organization for standards and standardization, investigations connected with forest biology, &c., as well as the innumerable relatively minor investigations in relation to secondary industries carried out at the Dominion Laboratory.

As has been stated above, however, the results of scientific endeavour cannot well be assessed in material standards, and an enumeration such as the above is more for the purpose of endeavouring to satisfy the lay mind. True progress is measured by the increasing co-operation of industry and science for the common good, the realization by industrialists of the scientific or research method, and the appreciation of scientific workers that they can play their part in the national well-being and prosperity.

GEOLOGICAL SURVEY.

Since last year's report was presented the Geological Survey has issued a bulletin on "The Soils of Irrigation Areas in Otago Central," wherein the soils of an area of 1,177 square miles are described and mapped.

Field-work that has continued for several seasons is now completed in the Wairoa and Murchison oil-bearing areas, and nearly completed in the Rotorua-Taupo volcanic zone. The examination of the Te Kuiti Subdivision, begun late in 1928, will be continued next year. This district is in the eastern portion of the region that, at a geologically no distant date, was covered by great showers of volcanic ash to a depth sufficient to influence the characteristics of the soil. On many farms the stock do not thrive, although when first settled, some twenty-five years ago, the district was renowned for its productivity. The problem is complex, but enough is now known to show that the geological factors entering into soil-formation are here exceptionally important, and it is proposed to continue and even extend the intensive field and laboratory work already carried out.

The past year was one of unusual seismic activity, and earthquakes occurred in several widely separated districts at different times. They were most serious in western Nelson, where considerable damage was done to towns, farms, forests, roads, harbours, &c. Several officers of the Geological Survey examined parts of the area shortly after the severe earth-movement of the 17th June, 1929. Further exploration has since been carried out, and a report compiled from many sources will be issued as time permits.

Since 1906, when the Geological Survey was reconstituted, it has carried out detailed explorations, for the most part in districts containing or likely to contain minerals of economic value. Most of the goldfields and large parts of the country known as likely to contain deposits of coal or oil have now been mapped. This work was undertaken to help the mining industry, and, except for short sections on the soils of each district customarily included in the bulletins and a comprehensive report on the limestones of New Zealand, the Geological Survey did little directly to assist farming until work in Otago Central and Te Kuiti was undertaken. Now, however, that intensive farming is becoming more general and the need for the better understanding of soil-characteristics more obvious, it is desirable that a systematic soil survey be put in hand. But soil experts are by no means agreed as to the principles to be followed in soil-classification, and the decision to constitute a soil survey as part of the Geological Survey, for the time being at least, was arrived at only after most careful consideration. Shortly summarized, soils are divided on the bases of geology, climate, and texture; and each has its advantages. In New Zealand where, on the whole, soils are youthful, and where, as has been clearly shown in several widely separated localities, there is a close general relationship between the underlying rocks and farming practice, geology undoubtedly provides the most satisfactory basis of classification. Even at Te Kuiti, where the rainfall is high and where volcanic ash mantles the surface to a depth of several feet, conditions likely to cause texture to have predominating influence, the underlying rocks profoundly affect the productivity of the soil.