The Department has been functioning a little over three years, and, in the research activities which it has undertaken, is emerging from the pioneering stage when an organization was being built up gradually. As has been found elsewhere, progress to those actively engaged has seemed slow, yet, considering the scale of the efforts, a retrospect shows that very general progress has been made in a number of directions and along such lines as are of material use to industries. Moreover, through contact with research organizations overseas, interchange of workers, and the establishment of the Imperial Agricultural Research Bureaux, a wider outlook of research has developed, and a considerable measure of Imperial unity attained. In organization, every effort has been made to facilitate team work and yet to take advantage of the enthusiasm and initiative of the individual worker, the mainspring of all successful endeavour in science.

The main result of the Department's activities has been the tendency to replace the speculative point of view on many questions by the more solid basis of facts as obtained by survey or experiment, so that we can now build steadily on the foundation laid. A review shows that the nature of the advances made have been real rather than striking, and this is as might be expected when progress is attempted on organized lines. There is a tendency to gauge results by pounds, shillings, and pence, and although this method is distasteful to the scientific worker and is not always a real criterion of progress, which is more truly measured by advance in conceptions and ideas, it appears necessary to take stock even after the relatively short period of activity of the Department and review the progress attempted and made in the investigations which have been inaugurated. The main new activities during the year have been the development of the Imperial Research Bureaux, forest biology, and investigations regarding standardization; and the organization by committees of interested parties in this and other regards has proved satisfactory.

(1) *Seed and Plant Research Station.*—At this station, conducted in co-operation with the Department of Agriculture, perhaps the largest measure of progress has been made on investigations having an almost immediate bearing on farm practice. The main advance has been the practical realization of the importance of strains in connection with the Dominion's grasses and clovers. Valuable results have followed excellent team work of the systematic botanist, agrostologist, plant-geneticist, and specialist in experimental technique. The strain investigations concerned with perennial rye-grass, white clover, red clover, and cocksfoot indicate that selection of the right type of grass or clover is all-important.

Desirable types of rye-grass have been isolated, and a quantity of seed is now available for further propagation. The adoption of true perennial rye-grass on our better lands will mean a more permanent pasture of high productivity, and hence lessened necessity for regular ploughing and replacement, and a greater response to top-dressing. The rapid replacement of inferior pastures by those comprised of the suitable grass strains isolated by the station is, therefore, a means whereby farmers can increase the stock-carrying capacity of their land, and this, together with the adoption of a system of intensive grassland-management throughout the Dominion, will do much towards increasing exports and influencing general prosperity; nor must the possibilities of building up a promising export trade in grass and clover seeds of the best reputation be overlooked. This will be possible with the adoption and extension of the seed-certification system, based on productive capacity, which is now being employed by the station.

Knowledge of the right methods of top-dressing is now being rapidly amassed as a result of the carefully conducted experiments at the station and throughout New Zealand. The importance of lime in improving the returns from other fertilizers has become very apparent. The good results arising from applications of nitrogenous manures with phosphates and lime, in the direction of prolonging the grazing season, in providing fresh green feed at those seasons of the year when usually there is the greatest dearth, have been clearly demonstrated. One of the most striking features of the work is that showing the great and economic response secured when concentrated manures are applied to pastures comprised of certified strains of rye-grass and clover.

Good progress has been made towards the knowledge of control of some of the most serious fungoid diseases of fodder crops. Dry-rot of turnips, club-root of turnips, sclerotina of lupins and peas, collar-rot of peas, are being studied, and, in the case of the first-named, disease-free seed is being raised in districts isolated from possible infection. Liberal dressings of lime at definite specified dates, together with the use of disease-resistant strains of swedes and turnips, have been found a fairly effective means of minimizing loss through club-root.

(2) *Mineral Content of Pastures.*—These investigations have been carried out in conjunction with the Cawthron Institute and the Department of Agriculture. The variation of the mineral content of typical pastures throughout the year has been determined, and much information obtained regarding the importance on stock-health of the lime, nitrogen, and other minerals found in pasture grasses. The necessity for a balanced fertilizer mixture comprised of lime and phosphate has been demonstrated over a very large belt of country. The correlation between stock-anæmia and soil-structure has been worked out, and we have now a much better knowledge of the relation of bush sickness and other malnutrition troubles to soil conditions. The cause of Xanthine calculi in sheep has been traced to a lime and phosphate deficiency. The degree of absorption of lime, sulphur, and phosphate by lucerne has been investigated. A survey of the iodine content of certain soils and waters has been made.

(3) *Pakihi Land.*—The workers at the Cawthron Institute have discovered a means of converting non-productive pakihi soils into at least good second-class land by simple methods of cultivation together with the application of lime and artificial fertilizer.

(4) *Dairy Research.*—The Dairy Research Institute at Palmerston North, with the associated laboratories at Hawera and Hamilton, has made considerable progress in providing a groundwork of chemical and bacteriological knowledge of our milk and milk-products. New methods of analysis and testing have had to be devised, and standardized methods of grading milk have been worked out,