(2) *Seed-certification.*—The seed-certification work of the Station, and its application by the Fields Division of the Department of Agriculture has developed greatly during the year. The value of such work is fully recognized by both growers and buyers, and it would appear as if within a very few years it will become general with all farm crops. The success that has attended potato certification and perennial rye-grass certification, based on the intensive research work carried on by the Station, has been particularly gratifying, and, with regard to the last-named, there seems little doubt that certified seed alone will be produced within a very few years.

Grassland Research.

(1) *Strain in Grasses and Clovers.*—This year marks the third year during which intensive work on strain research in grasses and clovers has been carried out. It has now been definitely shown that grass and clover seed crops can, by the technique that has been developed, be easily divided into their respective strain-types, and that certain types are far more valuable than others for pasture purposes. The fact that a system of testing can be applied to the ordinary grass and clover seed crops of the country, defining those that are superior to others, is of great significance. It has enabled a system of certification to be adopted which is of immediate value, and must have far-reaching value. In addition to this, the actual single-plant selection work and study that is being carried out will in the future provide the nucleus material for further certification.

Certification of grasses and clovers as it exists to-day represents discrimination between good and bad type crops. In the future it will represent the certification of those crops derived from the best type within the present certified ones. Work in this direction is progressing well, and within the next two or three years a continuous stream of specially-selected nucleus material for future certification will flow from the Station, particularly as regards rye-grass, white clover, cocksfoot, and brown-top.

Perhaps the most significant result that has attended strain research in grasses and clovers at the Station is the fact that, so far as suitability for permanent pastures is concerned, the strains of rye-grass, cocksfoot, white clover, and other grasses and clovers existent in New Zealand have been shown by comparative trials carried out to be as good as, if not superior to, any that have been isolated elsewhere.

(2) *Pasture-top-dressing Research.*—The top-dressing researches being carried out at Marton Experimental Area have been continued, and a great mass of statistical information on response under varying conditions of application and treatment is being amassed. Work of this description naturally must be of long-time duration before conclusions can be drawn, and the perfecting of methods of measurement in themselves entail concentrated research along certain lines. One trial with phosphates applied at different periods of the year is now in its third year, and clearly shows the increased bulk produced, and the better spread of production by late summer and early autumn applications against those of any other period. Again, in another trial where large quantities are used at infrequent intervals against small quantities at frequent intervals, the economy of frequent application is well shown. In connection with these fertilizer top-dressing experiments, careful chemical work on the mineral change in pasture due to treatment, botanical alteration in composition, and seasonal effect is being carried out. In general, it can be said that response as measured by bulk is represented by increase in phosphorus, lime, and nitrogen in the herbage—so much so, indeed, that chemical analysis might well be an aid towards determining fertilizer response in grazed areas where eye determinations fail.

The sheep-grazing trials at Marton to a remarkable degree show the great increase in stock that can be carried under reasonable rotational grazing, but, at the same time, emphasize the great variation that takes place at different seasons of the year, clearly indicating the part that ensilage or other forms of pasture-conservation can play in increasing stocking density.

General Field-crop Experiments.

The cereal-fertilizing experiment, which is now in its seventh year, has been continued, and trials in connection with varieties, rates of seeding, and hot-water treatment have been carried out. The manurial trials with potatoes, both with regard to the early crop in the North and the main crop in the South, and also in connection with certified as against uncertificated seed, have been conducted. In the case of the trials with certified seed increases up to 150 per cent. were recorded, indicating the economic significance of certified material.

The work of the past few years in Canterbury on the effect of lime in counteracting germination injury in turnip crops is bearing good results from the practical standpoint, as is indicated by the fact that the use of lime in Canterbury has trebled in the past two years. In this connection the fact that many areas of Canterbury are highly lime-responsive, as indicated by the complete series of observational top-dressing trials that have now been completed, will further stimulate the use of lime throughout Canterbury.

Agricultural Systematic Botany.

The close connection with Kew and the British Museum that has been established by the Station through the visit of Dr. Allan to Great Britain during the year will prove of the utmost value in the carrying-out of systematic botanical work that is essential in the carrying-out of crop research generally.

An intensive study of the genera *Danthonia* and *Agrostis* so far as they relate to New Zealand agricultural conditions has been undertaken and is nearing completion, and a full revision of the alien plants of New Zealand has been prepared; while material for a revision of the indigenous grasses of New Zealand, from both the systematic and ecological standpoints, to replace that of Buchanan, is under way.