(*b*) *Observational Top-dressing Trials.*—This important series of trials has now been in progress under the co-operative experimental scheme for at least twenty years. During that period thousands of experiments have been conducted throughout the Dominion and have proved to be accurate guides to the fertilizer and lime requirements of pasture under all farming conditions. Through the extension services of the Fields Division the results from the trials have been made available to farmers and used by them to their very great advantage.

Nevertheless, the need for further work of this nature is indicated by the very considerable increase in the number of experiments now open. This need has arisen because of the following :—

(i) The completion of the examination of soil types as they are recognized and classified by the Soil Bureau of the Department of Scientific and Industrial Research, the aim being to classify each soil type according to its fertilizer and lime needs.

(ii) The comparison between different types of fertilizer. Serpentine-superphosphate is one type of phosphatic fertilizer and the majority of trials now include this material, but new forms are constantly being developed and have to be tried in the field. One important series of trials examines more concentrated forms of fertilizer which may be of advantage in hill-country top-dressing, where transport charges are heavy, or possibly for application from aircraft.

(iii) Changes in the fertilizer requirements of soil as a result of erosion or of improved fertility. Erosion is well known, but the improvement in fertility of much country, particularly in the cropping districts, has not been as well recognized. This has been brought about by top-dressing and the use of improved strains of pasture plants. By these means pastures have been maintained for longer periods and have carried greatly increased numbers of stock.

Results from these trials are supplemented by production data from mowing trials and by soil and plant chemical analysis. Officers of the Soil Fertility Research Station, Hamilton, in their studies on the chemical side of this work have greatly enhanced the value of the results secured.

A small but important section of the work deals with a study of "minor" element deficiencies. Overseas work, particularly in Australia, has shown the importance of several elements previously not considered essential to plant growth. Some of these elements may affect stock health and yet not produce a noticeable effect on pasture growth.

A detailed potash-response survey has been started of the soils of Taranaki and of the effect of previous pasture management on the response to potash. A total of 186 observational pasture top-dressing experiments is now open.

(*c*) *Pasture Species and Strains.*—Many of these trials are carried out with the co-operation of the Grasslands Division, Department of Scientific and Industrial Research. The major importance of pasture research in New Zealand is reflected in greatly increased numbers of trials of this type. These trials deal with investigations into pasture species for different soil and climatic conditions, comparison of "strains" of pasture plants, examination of seeds mixtures and seeding rates, problems associated with pasture establishment, the introduction of clovers into hill-country pastures and the improvement of such pastures generally, methods of producing swards less liable to erosion, the healing of eroded areas, and demonstration plots for farmers. Trials are both small scale and paddock scale; in the latter case, stock-grazing records are secured. In Central Otago, investigations into the regrassing of depleted country have continued,