Long-rotation Rye-grass and White Clover.—Sown first in April, 1947, long-rotation rye-grass and white clover gave excellent winter and spring grazing, dried out rather badly in summer, but reseeded well in autumn.

Pedigree Perennial Rye-grass and White Clover.—Not quite so vigorous as H1 rye-grass in spring and clover growth not so good in summer. Recovers more quickly in autumn.

Cocksfoot and White Clover.—After the first summer this becomes almost a pure sward of white clover.

Italian Rye-grass, Montgomery and Broad-leaf Red Clover.—The Italian rye-grass provides excellent grazing in winter and spring, but does not survive a Poverty Bay summer. The red clovers thereafter become dominant and provide excellent grazing in summer and autumn.

Six ewes were lambed in each of the paddocks and the lambs did well in all of them, the average daily weight increase varying from 0·45 lb. to 0·54 lb. between the 25th August and the 8th December. On the latter date all except 6 out of 48 lambs were sent to the works. Six lambs were grazed in each of the acre paddocks from the 2nd February to the 13th April. During this period the red clovers proved outstanding, the lambs grazing them making a daily weight gain of 0·4 lb. In second- and third-year pastures in which white clover was vigorous growth varied from 0·24 lb. to 0·31 lb. per day, while in first-year short- and long-rotation rye-grass pastures and second-year perennial rye-grass pastures in which white clover was rather poor growth varied from 0·09 lb. to 0·18 lb. per day.

Rickets and Unthriftiness of Lambs wintered on Green Oats.—Previous field experience has shown that, in the South Island particularly, sheep grazed on green oats during winter become rachitic and fail to grow properly. Administration of calciferol improves growth-rate and prevents rickets. Further evidence from the field suggested that there might be a positive rickets-producing factor in green-feed oats. Experiments have been commenced to study this and, if confirmed, to determine the nature of the factor. The work is being carried out on rats. Considerable preliminary work has been carried out to establish technique, and a study is proceeding on dried oats known to cause rickets in sheep; comparison is made with dried grass. Experiments have been carried out to test the calcification produced in rats by diets containing 53 per cent. of the dried oats (*a*) unextracted, (*b*) extracted with petroleum ether, and 53 per cent. of the dried grass (*a*) unextracted, (*b*) extracted with petroleum ether, all the diets being adjusted to the absolute phosphorus content and to the Ca/P ratio of the standard rachitogenic diet. It is found that on all of these diets normal (complete) calcification is produced, in spite of the adverse ratio which in the standard diet produces severe rickets. A marked distinction is found in the weight increases of the groups on oats and on grass: on both unextracted and (to a slightly less extent) on extracted grass diets the weight increases of the rats over the period of experiment are excellent, on unextracted oats the weight increase is very poor, and on extracted oats only slightly less poor. It appears that there may be some factor present in green oats which has a depressant effect on growth of rats, and that this factor is not completely removed by extraction with petroleum ether. The factor seems also to be present in the petroleum-ether extract.

Experiments are also being made to determine whether supplements of vitamin A or vitamin D fed to rats on a 53-per-cent. (unextracted) oats diet will give normal growth increases. Preliminary assays of these petroleum-ether extracts have shown (1) that some vitamin D is present in the grass extract (probably approximately 2 I.U. per 100 g. grass) and (2) that some vitamin D is present in the oats extract, but that the extract also contains some factor inhibiting growth and thus vitiating the measurement