

immense pastoral areas showing more or less retrogression. The conduct of the investigation has been entrusted to Dr. L. Cockayne, F.R.S. Some of the branches of the subject now engaging his attention deal with botanical nomenclature and segregation of component plant races, relative palatability of the various species of the grassland, the question of burning the tussock, depletion of the grassland, the rabbit question, distribution of danthonia, surface sowing, and cultivation. Steps are being taken to practically test a number of points in the investigation by observation enclosures, &c., in Central Otago, while a fresh series of experiments will be instituted at the Department's area on the Earnsclough Run, near Clyde.

#### THE EXPERIMENTAL FARMS.

*Central Development Farm, Weraroa.*—Field-cropping operations at this farm were on usual lines and presented no features of special note. The lately established plant-breeding section was further developed, useful improvement-work being done on a number of grasses, fodder plants, potatoes, &c. The various herds of purebred and crossbred dairy cattle were well maintained at strength, eighty cows and heifers being in milk in the flush of the season. At the close of the year the stock records showed the following numbers of the various breeds kept: Friesians, 113; Short-horns, 48; Red Polls, 29; Guernseys, 7; grade Jerseys, 21; and Guernsey-Jersey crossbreds, 8: total, 226. Sheep numbered 1,268; pigs, 109; and horses, 25. Improvements to buildings comprised the erection of commodious bull-pens, rearrangement of piggeries, &c. Owing to adverse circumstances the training scheme for student assistants and learners, instituted in 1917 in connection with this farm, was not continued at the expiry of the two-years course, but several of the students have been absorbed into the service of the Department. The conscientious objectors quartered on the farm during the latter part of the war have been replaced by returned soldiers for training purposes, and provision is being made for accommodating a greater number.

*Ruakura Farm of Instruction.*—This farm has still further assumed the functions attaching to its designation by instruction to various categories of trainees—boy "learners," apiary students, and returned soldiers—besides providing for a teachers' farm school, various school camps, classes, &c., in co-operation with the Auckland Education Board, and receiving numerous organized visiting parties of farmers and others. The need for additional accommodation and equipment has been recognized, and as part of the proposal special residential quarters for returned soldiers are being built on the farm. In regard to farm operations, a full cropping scheme was carried out, with excellent demonstrational results generally. The feature on the live-stock side is the Milking Shorthorn herd, which has been greatly developed in quality and numbers, standing during the year at about three hundred head, including young stock. The policy has been to retain and raise most of the young female stock in preference to buying in. The Jersey herd promises to be greatly improved by the progeny of the bull, Golden Swan, specially purchased two or three years ago. In sheep, the Southdown stud flock has been well maintained. The Berkshire pigs show further improvement, and new piggeries in course of construction will provide much needed facilities. All these classes of stock have been in great demand by private buyers, and the revenue from this source has constituted a record for the farm. The horticulture section continued useful work in plot testing of grasses, fodders, and vegetables, the raising of farm and garden seeds, the propagation of shelter and ornamental trees for use on the farm, and the maintenance of the fine orchard. The poultry section again distributed large numbers of high-class breeding-birds and settings of eggs of utility breeds, and afforded good instructional facilities in this branch of rural industry. A large proportion of the foodstuffs for the poultry was grown on the farm in connection with the general cropping scheme. The apiary experienced a record year on the instructional side; the experimental features were continued on much the same lines as in the previous twelve months. Queen-rearing operations were actively carried out, and large numbers sold, as also nucleus hives, but the demand by the public far exceeded the supply. The energy and practical ability displayed by the Farm Manager deserves commendation.

*Moumahaki Experimental Farm.*—In spite of unusual labour difficulties Moumahaki has been efficiently maintained throughout the period. Exceptionally heavy crops of cereals, peas, &c., were secured at the past harvest. The cropping scheme, together with the extensive areas of lucerne, enabled full stocking to be practised throughout the year. The dairying side of the farm was curtailed by a considerable reduction of the Ayrshire herd effected at a special auction sale. In sheep, the Ryeland stud flock continues to be a feature, and the demand for breeding-stock from the flock cannot be fully met. The excellent type of Berkshire pigs raised on the farm has met with a ready sale. Altogether the year has been a good one in regard to sales of stock, 1,700 fat sheep and lambs having been disposed of in addition to fat cattle.