SOIL CONSERVATION

Four officers of the Division are members of Catchment Boards. Pasture research to assist in soil conservation is proceeding in Manawatu, Rangitikei, Hawkes Bay, Wairarapa, and Poverty Bay Catchment Districts. Both wind-erosion and water-erosion problems are being investigated on several soil types and in different climatic zones at various altitudes.

In conjunction with the Soil Conservation Council, Catchment Boards, and Air Department, experiments in distributing seed and fertilizer on hill country by the medium of the aeroplane have been initiated with some success. Botanical analyses of some hill-country pastures have revealed that clover establishment, at or prior to time of top-dressing, is a prerequisite to a satisfactory response to aerial top-dressing distribution of fertilizers.

Te Awa Research Area

Gully-control Work.—During the year additional debris dams were constructed and maintenance work carried out on the existing constructions. Constant attention was necessary to maintain the " tailrace " of these dams, particularly after floods. In January exceptionally heavy downpours washed out the majority of the work. A detailed report has been prepared on the three years' work at Te Awa up to and including this period, and is in the hands of the Soil Conservation Council for publication. A new system of gully control has been started to replace the washed-out debris dams. It was considered that the catchment area and possible maximum runoff was too great on this particular soil type for the type of dam previously constructed. A bulldozer has been used to widen and level the gully floor, and the new waterway has been grassed.

Fifty-acre Block.—Botanical analyses to record pasture changes following oversowing and top-dressing have been carried out. Herbage-production measurements have been continued on the oversown pastures in comparison with the adjacent untreated country, and a great increase in production has been achieved—from one and a half ewes to four ewes per acre. Pedigree white clover, *Lotus major*, and subterranean clover have proved to be of outstanding value when oversown on the hills. The 50-acre area and most of the block is now space planted at five trees per acre.

Grazing-trial Area.—An additional area of 130 acres has been fenced into paddocks and a comprehensive research programme inaugurated. A preliminary trial has been carried out on the existing pastures and records kept of grazing figures, ewe weights, wool weights, and lamb weights on the various treatments. For pasture-production measurement, forty-eight frames have been made and placed on the area. Sward analyses have been undertaken periodically.

Bulldozed Tracks.—The two and a half miles of bulldozed track has proved troublesome because of the sandy nature of the subsoil, and consequently rill erosion has occurred, but control has been successfully carried out by fascining, sodding, and seeding.

SUBSTATIONS

Pasture research in its various phases has been extended into the Canterbury and Southland districts. The results from the Lincoln and Gore substations compared with those at Palmerston North indicate clearly that these stations are thoroughly justified. Reference was made earlier in this report to a few of the projects being investigated.

Cocksfoot-seed production trials have shown that nitrogenous fertilizer is economically important, whereas superphosphate only promotes a weed smother. Areas of various pastures treated with different fertilizers have now been sown to wheat to ascertain residual fertility effects. The influence of both red and white clover on grasses in mixed swards under different manurial treatments is being investigated.