

and for Lake Forsyth, various schemes for permanent openings have been propounded. These were based on the difficulty of making frequent openings by hand methods. But, on last year's experience, it appears to be possible to keep the lake-levels within satisfactory limits by periodical openings with modern plant at a fraction of the cost of sinking fund and maintenance charges for a permanent opening.

The Sefton - Ashley - Saltwater Creek scheme for the control of gullies in the upper catchment and for the improved drainage of some 4,000 acres in the lower reaches has been started, and 30 chains of channel cleared through heavy willow growth. A larger scheme, involving diversions of the Eyre and Cust Rivers and improved drainage between Oxford and the sea, has been designed and approved, but financial discussions are still in progress. An improvement scheme is in progress in the Selwyn between Lake Ellesmere and the Hawkins. It involves the excavation of a larger channel in the lower reaches, willow-clearing, and stop-banking. To date 4 miles 20 chains of the heaviest work near Lake Ellesmere has been completed.

In the Ashley River 20 chains of willow gabion training-bank has been completed. Six miles of channel in the Eyre and Cust Rivers has been cleared of willows and surplus shingle. Similar work has been completed over some 4 miles of the Hawkins. In the Waimakariri the control works have been maintained. This has included  $1\frac{3}{4}$  miles of anchored tree work and 42 chains of stop-bank.

Special wide weed-buckets have been developed for use with drag-lines for drain maintenance. A special bulldozer attachment is also in use for smaller drains. With this plant the Board has been active in maintaining the many miles of drains in its district and last year cleared a total  $131\frac{1}{2}$  miles, all during the three months of the late summer when the work is most effective. A drainage scheme involving 4 miles of stream improvement and the reconstruction of  $5\frac{1}{2}$  miles of drains has been completed at Wairiri. A length of  $2\frac{1}{2}$  miles of Spencer's Drain in Waimairi County has been reconstructed. The Ellesmere County Council has nearly completed its drain-improvement scheme.

#### SOUTH CANTERBURY CATCHMENT BOARD

The chief work of this Board is the clearing of the beds of wide shingle rivers which have become infested with willows and other growth. Work has been proceeding vigorously, and during the year under review a total of 64 miles 66 chains of clearing has been carried out in the Ashburton, Hinds, Orari, Waihi, Temuka, and Opihi Rivers. Having previously attempted to do the work by hand and machine methods on living trees, the Board is now successfully coping with the problem by an intensive use of hormones to first kill the trees and second growth. When dead, the trees are more easily removed by heavy tractors and the small dense growth by burning.

Another large work is the Ashburton-Hinds drainage scheme for the improvement of 87,000 acres and involving the reconstruction of 173 miles of old drains and the digging of 13 miles of new ones. An extensive drainage system was constructed half a century ago, but when the property was more closely settled lack of labour and other causes brought about a neglect of maintenance, so that ultimately the scheme became defunct. This work is now being reinstated and improved, and 149 miles of reconstruction and 9 miles of new drain have been completed to date, the lengths for the last year being 33 miles and 3 miles respectively.