

By retaining control of selected plants until enough can be distributed to plant hundreds of acres, the risk of a good variety being dissipated and lost through small quantities being given to private owners will be minimized. In addition, by the use of due care, the rate of increase of the plants can probably be greatly hastened as compared with the best that private owners would do.

The Easton area will serve another purpose also. The planting and cultivation of phormium is a new branch of agriculture for which new methods of planting, cultivation, and harvesting must be evolved by large-scale experiment. Should it ever be considered feasible to establish a full-scale experimental and demonstrational plantation and mill, the Easton area will provide a valuable nucleus of both plants and experience. The area was chosen because it is conveniently situated right in the greatest flax-growing area of New Zealand. Removal of plants from the Easton area to any of the other flax areas in the district will therefore be comparatively easy whenever the question of extending the planted area arises. The plants at present set out should provide in three years' time enough to plant from 300 to 400 acres.

It was a most unfortunate year in which to carry out the transplanting. Floods in the Manawatu River in nine months were as frequent as in the whole of the previous nine years. The stop-bank surrounding the property was repeatedly broken, mainly because new earthwork had no time to consolidate between floods. The floods which poured through the broken banks washed many plants right off the property, and buried hundreds more under silt. The result has been a somewhat severe loss of plants, particularly of the Varieties S.S., No. 22, and No. 37. The remaining plants are, however, making excellent growth. The stop-bank has been well repaired, and the trouble is unlikely to recur.

COLLEGE FLAX AREA.

The Ngaro which was removed to the Easton area gave an excellent yield of leaf—namely, 38 tons per acre—although it was cut very high to spare the roots for transplanting. The leaf yielded 1 ton of fibre from less than 6 tons of leaf, as compared with 9 tons which is usual at Foxton. The fibre was of excellent quality, and bales have been sent overseas for reports.

In the College area there are still several hundreds of mature plants of different varieties which have never been subjected to the crucial test of stripping at a flax-mill. The cutting, transport, and milling of these plants has been too expensive a matter to undertake hitherto, but it is hoped that the work will be carried out in the next month or two. Once the milling tests have been carried out many plants which are useless can be discarded and attention devoted to propagating as fast as possible those which prove satisfactory.

HYBRID PLANTS.

The growth of hybrids between the varieties Ngaro and S.S. has been very satisfactory. The best of these plants appear to have rather better growth than the better-growing parent and the superior fibre qualities of the other. Several thousands of these plants are being grown by private millers under an arrangement with us. This arrangement relieved us of the need for large areas of land, but in other respects it is not too satisfactory. More rapid and certain progress can be made in growing, testing, and propagating the plants when we control the whole of the operations.

During the past summer enough seed of this same cross was produced by hand cross-pollination to raise approximately 100,000 plants—enough for 100 acres.

Milling tests of one or two plants of another cross—Paretaniwha $\times$ S.S.—have given very gratifying results. Neither parent is a very tall plant, but many of the hybrids are. The fibre of the hybrids tested had not only good colour and strength, but was very fine and probably suited to textiles.

This character of fineness is one to which we have not hitherto given special attention, as our main aim in selecting varieties has been to secure strong, bold fibre for cordage purposes. It is now plain that industries such as the manufacture of woolpacks, sacks, and shop twines can use New Zealand hemp as raw material. Fineness of fibre is a most important quality in these industries, and we are therefore devoting much attention to selecting varieties which possess this character.

PEDIGREE-PLANT WORK.

The work of inbreeding good varieties in order to secure true-breeding types and to study the inheritance of important characters is proceeding as fast as the nature of the plant will allow. The fact that about six years is the approximate length of time between generations renders this work very slow. Some thirty seedlings of the Ngaro variety were inbred this year. The risk of cross-pollination makes it necessary in *Phormium* to use a somewhat roundabout and laborious method in this work. Some of the resulting seed was lost as a result of the hurricane on 2nd February.

COLLECTION OF NEW VARIETIES.

About twenty new varieties have been added to our collection during the year. The bulk of these were obtained from the East Coast and the eastern Bay of Plenty. A visit to those districts was made in early December in search of new material. Thanks to assistance given by Sir Apirana Ngata, it was possible to inspect most of the *Phormium* varieties growing there, and specimen plants were secured. Sources of supply of quantities of a good variety have been noted, in view of the possibility that this variety may be wanted for planting on a commercial scale.