

Of the two areas being worked at Waiharera, one is being dug to the solid sandstone formation, and all the timber is being taken out and thrown on the surface. This is at the Big Flat: while at Pausina's Flat, only about a mile distant, quite different conditions prevail, and other methods of dealing with the ground are necessary. Here it is quite impossible to remove all the big stumps from the land in the process of digging, or to dig the land down to the solid formation. It has been found expedient to adopt a shallow system of digging, and to remove only the smaller stumps and loose timber. The area so treated will be more like a bush farm in its early stages of development than land for agricultural purposes, such as the Big Flat is. Pausina's Flat is very rich ground, and it is remarkable the improvement made to it by the draining which has been done in connection with the face-digging work. Some portions of the flat are at present growing a splendid healthy crop of *Phormium tenax*, and the land generally, after the application of lime, will be easily put under English grasses and make good dairy farms.

At Waihopo again, which is about sixteen miles north of Waiharera, the timber difficulty is a very great one. The land here is being dug to the solid formation, and all the timber removed is thrown up on the surface of the ground. The quantity of timber is considerably greater than at any of the other face-digging works, and in the event of some satisfactory process being arrived at for extracting the gum from it will prove very remunerative, as nearly all the timber here seems to contain a large proportion of gum. It will be advisable in the spring of the year to take steps to plant the land dug over.

With a view of testing the productivity of the land a small area of 12 acres at Mangawai was sown in oats, and also about 6 acres at Waiharera. At Mangawai half a ton of lime to the acre was used, as well as 1½ cwt. of bonedust and 1½ cwt. of superphosphates. The crop was not put in until late in October, owing to the fact that the ground was not solid enough to work earlier. A yield of a little over 1 ton to the acre was obtained at Mangawai. At Waiharera the crop was not successful. It was late in being put in, and very dry and windy weather was experienced. Added to this no lime was used, it being impossible to obtain any there at the particular time.

Full particulars of the expenditure under this heading are given in the accompanying statement of accounts.

KAURI-SWAMP PEAT.

As mentioned in the last report, considerable attention has been directed lately to the question of the profitable utilization of the kauri-swamp peat by the extraction of oils and other valuable products. Two syndicates have done a large amount of preliminary investigation-work in connection therewith, one of the syndicates being located in Melbourne, the other in Auckland.

In order to facilitate the development of the peat-oil industry provision was made in the amending Act of 1915 enabling the Minister to grant leases of areas, not exceeding 3,000 acres, to any person desirous of entering into this industry. The total area which can be set apart at any one time for such purposes under the Act is 10,000 acres. The Act provided for the making of regulations for the proper control of any such leases issued. Regulations have been gazetted enabling the provisions of this section of the Act to be brought into operation. The administration of any such leases, as the law stands at present, is in the hands of the Land Board.

NECESSITY FOR PROPER CLEANING AND STANDARD GRADING OF THE GUM.

The fossil kauri when taken from the ground is covered with dirt and encrustations of deteriorating gum. It is usually washed in the field by the digger, and the large pieces of the harder and more valuable sorts are further cleaned by scraping. The scraping is done by the digger at night or on wet days, a strong pocket-knife being used for the purpose. There are several degrees of scraping, each representing an additional trimming with the knife. These include "half," "three-quarters," "seven-eighths," and the "rescrape."

Much of the gum, however, is sold in the local market in its original dirty state, without either being washed or scraped. There is little or no scraping done in the stores in Auckland, and the consequence is that much of the gum is exported in a condition which does not result in the best value being obtained for it.

Scraping by hand is at best a slow, costly, and wasteful process. In any case it is only those pieces of hard gum which can be easily handled that are scraped; all the small pieces remain untouched. All things considered, it must be said that the cleaning and grading of the gum by the methods at present in vogue cannot be regarded as satisfactory. In the interests of the industry it is essential that all the gum should be exported in the best possible condition, and careful consideration should be given to any methods likely to achieve this end. A process which seems to promise good results is the sand-blast apparatus invented by Mr. F. V. Raymond, formerly of Invercargill. An experimental plant equipped in Auckland proved successful, and a factory was afterwards erected in Dargaville to clean the gum for the market.

The principle of the sand blast has been long known, and it is not difficult to comprehend its effectiveness in removing the outside crust or casing from the fossil gum. With a systematic spraying of sand over the gum under a regulated force of compressed air the cleaning should leave little to be desired. The apparatus in use by the inventor proves that gum of any size can be cleaned, and this is an important result in view of so much of the gum now produced being small in size owing to the fact that in the early days of the industry only the bold gums were dug. It is claimed that the cost of cleaning by this process is much lower than by any method hitherto used. The cleaning is thorough, and makes the subsequent grading of the gum a simple matter. The invention is described in the letters patent as a process for removing the exterior deteriorated coating from kauri and other like gums, consisting in subjecting the gum to the action of blasts of sand operated by compressed air; also an apparatus for