

EXPLOSIVES AND DANGEROUS GOODS.

Licenses.—Importation licenses were as follows: Gelignite, 417,050 lb.; Polar gelignite, 225,000 lb.; blasting-gelatine, 4,250 lb.; Polar blasting-gelatine, 23,750 lb.; gelatine dynamite, 7,800 lb.; Polar gelatine dynamite, 52,500 lb.; samsonite, 186,400 lb.; Polar samsonite, 77,200 lb.; A2 monobel, 281,400 lb.; quarry monobel, 10,000 lb.; blasting-powder, 51,875 lb.; blasting-pellets, 33,750 lb.; sporting powder, 36,132 lb.; detonators, 1,440,000; E.D. fuses, 456,000; fireworks, 50,827 lb.

Other licenses were (corresponding figures for previous year in parentheses): Conveyance, 215 (224); sale, 596 (584); storage, 390 (387).

Examination of Explosives.—Examination of all shipments of explosives has been carried on as in past years. No serious trouble has been experienced in this connection, but it has been noted that some shipments from England still show a proportion of damp cases, though to nothing like the same extent as was found with the "Port Hardy" and "Port Huon" consignments some years ago, when the explosives were badly affected. With a view to throwing some light on the subject, the Department is arranging to obtain certain data on the conditions in the ship's hold during the voyage.

Low-freezing Explosives.—It will be noted that a considerable proportion of the gelatinous explosives imported during the year are of the "Polar" or low-freezing type. The probability of a change-over to this class of explosive was indicated in the last annual report. The tests of these explosives referred to in that report proved completely satisfactory in all respects, the explosives stood exposure to winter temperatures in the southern portions of the South Island without any sign of freezing or decrease in efficiency. It has now been decided that all gelatinous explosives imported into New Zealand will in future be of the low-freezing type. Following the procedure adopted in Great Britain, the replacement of ordinary gelatines by the low-freezing ones will be effected gradually so as to avoid any inconvenience to industries using explosives. It is anticipated that practically the whole supply available to users during the coming winter will be of the "Polar" type. It was indicated in the last annual report that the price of low-freezing explosives would probably be slightly higher than that of the ordinary type. Arrangements were, however, made by I.C.I. of Australia and New Zealand, Ltd., which is the company responsible for the supply of all explosives to this market, for the manufacture of this type in their Australian factories, and for an adjustment of costs so that no increase in price will be necessary.

Accidents.—Two fatal accidents which occurred during the year call for special mention. The first resulted through the explosion of gelignite which had been placed in a kitchen oven to thaw. Evidence at the inquiry shows that the gelignite, which had been purchased for use on a farm, had become frozen, and, in order to thaw it, the farmer placed some fifty plugs in the oven, whilst the family was seated in the room having breakfast. Some few minutes later the gelignite exploded, wrecking the kitchen and injuring the seven occupants, one of whom subsequently died. This is the second fatal accident which has occurred during the past few years through heating gelatinous explosives in a kitchen stove, and it shows clearly the fallacy of the impression, which is very generally held, that gelignite cannot be exploded except by a detonator. The fact is that it will explode by the action of heat alone, irrespective of the presence of flame, owing to the spontaneous decomposition of the nitro-glycerine under the influence of heat. The temperature required is only 215° C.

The misconception with regard to this matter is probably due to the fact that a single plug of gelignite or other gelatinous explosive can usually be burned in the open without exploding. The experience of departmental officers in the destruction of explosives is worth recording as illustrating the danger from heat. The destruction is usually carried out by laying the explosives in a trail not more than one cartridge abreast and lighting the end against the wind. It is found that under these conditions an explosion will result in about 10 per cent. of the cases. A number of instances are also on record both in New Zealand and abroad where explosives in quantities exceeding 5 lb. have been involved in fires and explosions have resulted. The change-over which is being made to the low-freezing type of explosives will obviate the necessity for thawing explosives, and will almost certainly result in the complete disappearance of this type of accident.

The second fatality was caused by children playing with powder which had been obtained by breaking up fireworks. It appears that a quantity of powder was placed in a small heap and a lighted match put to it. The flames set fire to the clothing of a child standing by and caused such severe burns that the child succumbed. The accident illustrates the difficulty of controlling the hazards involved in the use of fireworks. Some years ago, in consequence of accidents which occurred, the regulations were amended to limit the size and character of fireworks which might be sold to children. This has been effective to some extent in preventing serious accident, but it is evident that a warning must be given regarding the danger due to loose fireworks composition, which is to all intents and purposes as dangerous as ordinary blasting-powder.

In addition to the above, reports were received of a number of accidents in the use of explosives mostly due either to misfired charges or the striking of an unexploded cartridge when drilling or "mucking out." This class of accident can in most cases be attributed to chilled or partly frozen explosives, and the use of low-freezing types should also have the effect of reducing the numbers of this class of accident. A number of accidents was also reported from premature explosions in blasting operations, and this class is in the main due to carelessness. In one particular case it was reported that the fuse attached to a small charge of gelignite was actually lit before the charge was inserted in the bore-hole. It is of course impossible to guard against extreme foolhardiness of this type.

Sodium Chlorate.—Accidents in the use of this material still continue to be prevalent, though this year none with serious consequences has been brought to the notice of the Department. Of these, one is of particular interest as typifying the insidious nature of the hazards of chlorates. The report states that a farm-worker engaged in spraying sodium-chlorate solution had been in the habit of using a sack to protect his clothing. After being used for about two years, the sack, on drying out, became very stiff and the worker proceeded to beat it with a stick when an explosion occurred and he received