

*Legislation.*—No new legislation was passed during the year, but under the Industrial Efficiency Act, 1936, to which brief reference was made in the last report, regulations were gazetted requiring that all persons selling motor-spirit should hold a license as from the 1st April, 1938. At the request of the Bureau of Industry this office agreed to undertake the issue of licenses and the inspection work in connection with the new regulations. This has naturally thrown a very heavy burden on both the inspection and office staffs, and expansion of the present personnel is an urgent necessity if the work is to be carried out in a proper manner. Arrangements were also made for those local bodies which are licensing authorities under the Explosive and Dangerous Goods Amendment Act, 1920, to undertake the issue of the necessary licenses in their districts.

The effect of the new regulations is, of course, to introduce a dual system of licensing, since all those persons who must now hold a license under the Industrial Efficiency Act are also still required to hold a license under the Explosive and Dangerous Goods Amendment Act, 1920. It will be quite evident that the licensing of one industry by two separate authorities may quite easily result in confusion and irritation, and the arrangements outlined above are designed with the object of causing the system to function smoothly and without friction.

*Accidents.*—In sharp contrast to the record of the previous year, which was happily free from any really serious accidents, the record this year contains an exceptionally large number of fatalities due to fires and explosions in the use of inflammable liquids. Several deaths occurred in operations connected with the repair or cutting of containers which had held inflammable spirits, and many people still appear to be ignorant of the dangers. One of these accidents is particularly worth recording, in that it illustrates the existence of a hazard which is little recognized even by people who have occasion frequently to handle or use dangerous goods. The accident referred to was the explosion of a 40 gallon drum containing a few gallons of crank-case oil drained from an aeroplane. After the used oil had been placed in the drum the bung was screwed home and the drum left standing in the sun for some little time. Later one of the engineers proceeded to cut open the end with an acetylene torch, when an explosion immediately occurred, ripping off the whole head of the drum and killing the operator instantly. It is a well-known fact that drainings from the crank-case of an internal-combustion engine may contain a certain amount of the lighter fractions of petroleum, the percentage naturally depending on a number of factors such as the length of time for which the oil has been in use, the amount of wear in the cylinders, &c. There is no doubt that the used oil contained in this drum was sufficiently diluted with petrol to permit the formation of an explosive vapour-air mixture inside the drum and that immediately the torch was applied an explosion occurred. On examination of the drum after the accident it was found that the torch had not actually cut through the metal, but had merely formed a hot spot at the point of application when the explosion occurred. Samples of unused lubricating-oil and of crank-case drainings from aeroplane engines were obtained and the flash-points determined. The result showed that even a very small percentage of petrol in the oil would cause a very marked lowering of the flash-point: and in one experiment it was found that an unused lubricating-oil which had a normal flash-point of nearly 500° F. gave, when diluted with only 3 per cent. by volume of petrol, a flash-point of 115° F. It is quite a usual practice in garages and other premises to regard these crank-case drainings as being innocuous, but this accident shows that the presence of a small amount of petrol in these drainings is always possible, and precautions should be taken in exactly the same manner as would ordinarily be done in the case of petrol or other inflammable liquids. In another instance reported during the year a man was killed whilst carrying out welding repairs to a tank which was being altered to serve as a fuel-container for a Diesel engine. The tank had previously been repaired by one workman, who tested his repairs with petrol but did not pass on this information. Subsequently further alterations to the tank, including a certain amount of welding, were found necessary, and another workman was deputed to carry out the task. Unaware that the tank had contained petrol, he had no reason to take the usual precaution of steaming it out first. As soon as the welding-apparatus was put into use an explosion occurred which knocked down the workman, fracturing his skull. It is prescribed in the Dangerous Goods Regulations that no operations involving the use of flames or lights, &c., shall be carried out on any container which has contained dangerous goods unless such container has first been cleaned by steaming out or another approved process. The neglect of this elementary precaution has been the cause of a considerable number of deaths and injuries in the past few years. Very few people appear to realize that too great care cannot be exercised in the handling of containers which have held inflammable spirits, and that unless precautions are taken to free the container from any suspected fumes the use of a naked flame or light on or near the container is an operation fraught with grave danger. It must be stressed that merely filling such a container with water or even passing running water through it is not a satisfactory method of removing the vapours and traces of remaining inflammable liquids. The Department has on record cases where accidents have taken place when welding or cutting operations have been commenced on containers through which water has been run for a number of hours. The most satisfactory method of cleaning these containers is undoubtedly by prolonged steaming out.

The domestic use of inflammable spirits such as petrol, kerosene, and methylated spirits has always been a fruitful source of accidents, and during the present year there have been reported no less than four deaths under this heading. It is possible that the toll is even greater, since on some occasions accidents are not reported to this Office, and thus may not come under notice until some time after, if at all. In one case a boy aged twelve was killed when some methylated spirit which was being poured from a can into a heater cup of a blow-lamp exploded, whilst in another instance a man was killed by an explosion of petrol fumes which were liberated in the room when he dropped a bottle of benzine which he had been using to refill his cigarette-lighter. The fumes ignited almost immediately at an adjacent stove. Another accident involved the use of a primus stove caused the death of a woman. The primus had been filled with petrol instead of kerosene, and exploded shortly after being lit. The most tragic feature of all these accidents, and, indeed, of the very great majority of accidents with inflammable