Two cases of the use of dirty bottles for the bottling of beer were investigated. In the first a tarry arsenical preparation had been kept in the bottle and gave a dangerous amount of arsenic to the beer. In the second case the creosote residue had a strong taste, but was not dangerous.

General Investigations

These include work done by some of the sections mentioned above and by the branches.

For the police a great deal of work was done in addition to that mentioned under "Toxicology." This included the following investigations: in arson cases, oil was detected in the remains from fires; sand was recovered from the sump oil of a Diesel engine suspected to have been wilfully damaged; many samples of intoxicating liquor were examined for the purposes of the Licensing Act and the Distillation Act; in connection with a safe robbery, ground-up crystals and traces of sawdust were found on the shoes of a suspect, and similar crystals (ammonia alum) and sawdust were present in the lining of the damaged safe; prepared opium was identified in material seized in raids; assistance was given in investigating the theft of Air Force petrol; a considerable number of drugs, tablets, and appliances were examined in connection with alleged criminal abortion.

Other investigations included the following: enamelled ware was examined for compliance with the standards; fluorine determinations were made on a large number of water-supplies, and the results will be published; work on the treatment of boiler-feed waters was continued; sand was tested with the object of finding a new Empire standard sand for cement-testing; foundry dusts and mine dusts were examined for silicosis-producing material; the number on a stolen lead storage battery was restored by etching with acetic acid; the Auckland Branch co-operated with the Plant Diseases Division in the investigation of timber-treating solutions, treated wood, and treated canvas samples; a series of severe but not fatal cases of poisoning by honey at a camp cookhouse led to a lengthy investigation on poisonous honey in conjunction with the Department of Agriculture (a new poisonous substance was extracted from the honey, and it was shown that it was possibly derived from honey-dew obtained by the bees from tutu leaves); over thirty samples of mine air, sewer gas, industrial air, flue gas, and coal-gas were analysed; a method was developed for the detection of minute traces of carbon monoxide in air; the usual wide variety of samples was examined for the Customs Department to enable them to be classified for Tariff purposes.

Fats Research

During the year, work dealing with the characterization of the fats present in New Zealand butter was commenced in a Fats Research Section of the Laboratory. The importance of butterfat in New Zealand's economy need not be stressed, and it has been deemed necessary to acquire as complete a knowledge as possible of the composition of the fats comprising butter as influenced by feed, seasonal, climatic, and other influences. This work has been placed in charge of Dr. F. B. Shorland, who has specialized in fats research.

The work has been undertaken under the guidance of a Committee comprising Dr. F. H. McDowall, Chief Chemist, Dairy Research Institute, Mr. R. L. Andrew, and Dr. Shorland. Close attention has been given to the development of the techniques necessary for the characterization of the unsaturated fatty acids occurring in butter, and when these are adequately developed it is intended to proceed with comprehensive surveys of New Zealand butterfats.

Molecular distillation of fish-liver oils has been under close investigation during the year, and as a result of the progress which has been made in the technique of such distillation it has been found possible to produce vitamin A concentrates equivalent to 1,000,000 I.U. per gram from New Zealand fish-liver oils.