Miscellaneous

A wide range of articles used as food and drink were examined. They include apple-juice, apples, apricots, arrowroot, bacon, baking-powder, beer, brandy, butter, canned meats, carbonated beverages, cider, coffee and chicory, coffee, cornflour, cheese, cream, essences, gin, ground almonds, custard-powder, ground rice, honey, jam, ice-cream, margarine, milk-powder, mince meat, olive-oil, orange-juice, peas, rose-hip syrup, sausages, sugar, tea, tomatoes, tripe, wheat germ, whisky, condensed milk, dripping, flour, and spice.

A number of drug samples were examined for compliance with the standards of the British Pharmacopœia.

The Department of Health also submitted samples of enamelware, cigarette-papers, and dental and shaving creams to ascertain if they contained harmful substances.

Mines Department

Samples examined included scheelite concentrates for export, gold and silver assays, mine airs and gases, stone-dusts, and brattice cloths. Analyses of coal and other fuel samples and a large amount of investigational work in connection with fuel problems were carried out by the Coal Survey Division of the Laboratory.

Government Stores

A very large number of samples were submitted by various Government purchasing departments to ascertain if they complied with the specifications under which they were purchased or for special investigation of some defect or failure. Samples of tars and other roading-materials were examined for the Main Highways Board.

GAS INSPECTION

The gas-supplies of the four main centres and most of the other principal towns of the Dominion were regularly examined for calorific value, for pressure, and for freedom from sulphuretted hydrogen. It has been found that several works are experiencing difficulties in keeping up the calorific value of the gas and ensuring freedom from sulphuretted hydrogen. This has been explained by difficulties in supplies of coal and lack of trained labour. The systematic testing of the accuracy of all gas-meters passed for service was carried out as usual.

RESEARCH AND OTHER ACTIVITIES

Spray Materials

Spray work for the Plant Diseases Division has been confined mainly to checking certified spray materials—*e.g.*, oils, arsenates, and nicotine sulphate. A series of pyrethrum flowers was analysed, the figures for pyrethrin I varying from 0·35 to 0·7 and for pyrethrin II from 0·25 to 0·75.

A series of analyses of samples from kegs of colloidal sulphur was undertaken to ascertain the best method of mixing the material prior to use in orchards.

Metals and Alloys

A large number of samples of metal were analysed or examined metallographically in connection with munitions-production. These included samples of iron and steels, brasses, bronzes, aluminium alloys, bearing metals, solders, zinc, and zinc-base die-casting alloys. An examination was made for the Public Works Department of materials used in the arc welding of penstock pipes on hydro-electric development schemes.

Corrosion of Materials

Corrosion problems submitted from a number of sources included corrosion of high-voltage fuses due to traces of water present in the quenching liquid of the fuse, deterioration of aviation refuelling hoses induced by an alkaline cement used to attach couplings, corrosion of domestic coppers, steel bomb components, and dezincification of brass.

Chemical Engineering Section

A plant for drying medicinal herbs was constructed by the Public Works Department to design data supplied by the Chemical Engineering Section. This plant has been operating satisfactorily for two seasons.

Towards the end of 1942 the Section was asked to furnish designs for plants to produce dehydrated vegetables and apples to be supplied to the armed forces. The plant for vegetables, capable of dealing with between 4,000 tons and 5,000 tons of fresh vegetables per annum, is now in production. The plant for apples will soon be ready for operation. The Chemical Engineering Section has supervised the construction of these plants.

A commercial unit of the fescue-seed dryer (New Zealand patent) developed by the Section has been erected at Invercargill, and although it has not yet undergone final test it is reported to be giving good results.

The possibility of producing from coconut charcoal activated charcoal for filling gas-masks was investigated, and it was decided that this could in the circumstances best be done in intermittent gas-retorts. One of the main gas companies undertook the work of activation in consultation with this Section, and many tons of a satisfactory material have been produced. In connection with the manufacture of gas-masks, a special apparatus was designed for testing their efficiency.

Regular testing of the octane rating of aviation fuels for Air Headquarters has been carried out with the C.F.R. test engine.