

The laboratory apparatus for testing the inflammability of coal-dust recommended by the British Safety in Mines Research Board was set up and tests made to show the minimum amount of limestone-dust required to suppress the inflammability of three coals from the Greymouth district.

Other subjects receiving attention were Waikato peats, Mataura lignite (including a report on a visit to Australia), metallurgical coke, and the use of medium- and high-sulphur gas coals for gas-manufacture.

CHEMICAL ENGINEERING

Much of the work undertaken by this section consists of the translation of work from the Laboratory into the industrial phase.

A project commenced this year was the removal of hydrogen sulphide from coal-gas. The apparatus designed should simplify the purification of coal-gas from high-sulphur coals when applied under commercial conditions.

The work on fuel technology has extended over the whole of New Zealand and visits were paid to fifty-five of the six hundred larger boiler installations. A large volume of information was circularized on all aspects of fuel efficiency. Indications are that the more widespread application of the knowledge available could result in very large savings in coal.

Other projects have been in connection with the following: apple-processing and apple-juice plant at Motueka, modified tobacco-curing kiln, experimental production of antibiotic material such as penicillin, improvement of bentonite, and the operation of a continuous-tunnel kiln for terra-cotta roofing-tiles.

There is a growing demand from industry for the benefits that can be obtained from scientific process control.

GENERAL INVESTIGATIONS

Considerable work was carried out in determining the residual amounts of the insecticide D.D.T. left on apples, tomatoes, and cabbages treated by both spraying and dusting. The work indicated that adequate control of the insects was obtained without toxic residues being left.

BUILDING-MATERIALS INVESTIGATIONS

(See Building Research report, p. 8.)

DOMINION PHYSICAL LABORATORY

During the year the number of separate items of work handled for industry and other Government Departments has exceeded one hundred per month. The staff has now been established on a permanent basis. Agreement has been reached with Treasury Department on a system of charging-costs for work performed at the Laboratory.

A Nuclear Physics Section has recently been established and will concentrate on instrumentation problems concerned with the application of radio isotopes to biological and medical problems.

A small booklet describing in full the services available to industry from the laboratories will shortly be available.

GENERAL PHYSICS

Frost Investigations, Central Otago.—Initial measurements were carried out in the Earnsclough area, near Alexandra, during the autumn frost period of 1947 of atmospheric temperature, humidity, wind velocities, and direction. On the basis of these results further measurements were carried out during the spring frosts. It has been established that the inversion ceiling of temperature is too high to permit the use of fans for drawing warmer air down from the upper layers to combat the frost.