

Some seventy-five limestones from Hokianga, East Cape, and Poverty Bay districts were analysed for the Native Department for lime content. Limestone samples from Te Kuiti and from Mapua were analysed for suitability for caustic soda regeneration in paper-manufacture. Serpentine from the newly opened quarry near Te Kuiti was tested for use in serpentine-superphosphate. Concrete blocks, of blast-furnace origin, brought here by ships in ballast were tested for sea-retaining walls for Eastbourne Borough Council. In connection with the eruption of Ruapehu, the lava was analysed and the dust was examined for acidity and corrosion effects. Over thirty samples of cement, mainly from Karapiro Hydro, were examined for the Public Works Department for possible high-alkali content, and some samples were more fully analysed for conformity with British Standard Specifications. For the Mines Department the examination of dusts for minerals injurious to health in the stone-dusting of mines was continued.

CERAMICS

The main investigations during the year consisted of the systematic examination of clay deposits from several areas, in co-operation with the Geological Survey. These included survey of brick-clay deposits in the Wellington and suburban districts; examination of pottery and aluminous clays from North Auckland; report on white-burning clays from Mount Somers; tests on brick clays from Te Aroha, Nightcaps, and Levin; analyses and burning tests on clays from Otorohanga, Ruapekapeka, Tauranga, Nelson, and Kakahu.

Special investigations included development of testing methods for fine earthenware (cups and saucers) of local manufacture, and comparison with the imported article; examination of imported refractories for gas-fires as a guide for local manufacture of gas radiants and insulating refractories; comparison of refractory electrical radiator bars of New Zealand manufacture with imported article; silica gel—testing of efficiency of the locally made product and advice to manufacturers *re* improvement; glass-sand (Ross)—quality investigated.

Other subjects dealt with in special reports were production of aluminium sulphate from local clay, brickmaking by a new tunnel-kiln process, availability of pottery clays, suitability of local clays as paper fillers, jointing cement for suspension-type electrical insulators, and failure of hard-plaster hospital-wall finishes.

An apparatus for the examination of clay by a new method, differential thermal analysis, was constructed during the year.

PAINT

A large number of paint and related samples have been examined on behalf of the State Advances, Housing, Army, Navy, Air, and other Government Departments for compliance with purchasing specifications. In many cases the samples failed to comply with specifications.

Special problems still under investigation include the priming of totara and development of a satisfactory specification for totara primers, the effect of wood-preservatives on paint durability, the painting of asbestos-cement, and development work on casein paints.

An accelerated weathering unit for comparing the durability of paint was installed towards the end of 1944 and has been in almost continuous operation during the present year in testing metal protective paints. Sufficient experience has now been obtained with these paints to develop a satisfactory method of testing this class of material. This has been made possible through information made available by the Public Works, Railways, and Post and Telegraph Departments from records of actual exposure tests made by those Departments.

An extensive long-term programme of paint research has been planned and will be put in operation during the coming year. This work is under the sponsorship of the Inter-departmental Committee for Paint Investigation, a Committee of representatives of Government Departments interested in the use of paint, and arose from the recommendation of a member of the staff who was sent overseas to study building-research activities in England and America.