

## ROCKS, MINERALS, AND CLAYS

Close collaboration with the Geological Survey was maintained. The Laboratory was represented on the Ceramic and Related Materials Research Committee, which also includes representatives from the Geological Survey, Mines Department, Industries and Commerce Department, Soil Bureau, and the Pottery and Ceramics Research Association.

Over 600 samples, including rocks, ores, clays, and miscellaneous inorganic materials, were received for analysis. Seventeen special reports and two information circulars were prepared. Glass-sands from nine localities were investigated and analyses and grading tests were carried out.

Work has been carried out on the New Zealand ironsands. The South Island black sands have been shown to differ from the Taranaki sands in containing separate magnetite and ilmenite instead of titanomagnetite. The Metallurgical Section is investigating new methods for the separation of titanium, vanadium, and iron from titanomagnetite. The Chemical Engineering Section has mechanically concentrated considerable quantities of black sand for the State Iron and Steel Department for use in the electric furnace smelting trials.

Diatomites for use as filtering agents in dry-cleaning were investigated. Tests were made of bentonites from several deposits. A new method of decomposing rocks for analysis, which may have industrial as well as analytical applications, was discovered and patented. Useful rapid methods for the analysis of clays and cements were developed and published.

## FOOD, DRUGS, AND WATER

Preliminary surveys of the literature and discussions of fundamental problems in food technology were instituted, and the initial steps were taken in research into problems of the chemistry, dehydration, and transport of meat.

Very extensive analyses and investigations of all types of food as sold to the public were made for the Department of Health and other Government Departments. A few instances follow to show the general nature of this work. A number of cases were encountered in which foreign substances of different kinds were found in food. These included bread containing the body of a mouse and rodent excrement (several cases), and dried fruit and nuts containing insects. The resultant fines and publicity should do much to check carelessness in the handling of food.

In several centres checks were made on the quality of locally-produced egg-pulp. Bacteriological examinations were made of milk, milk-shakes, ice-cream, and egg-pulp. The results show that great benefit will be derived from an extension of this work.

Tin used for the tinning of food utensils was analysed to determine whether it contained excessive amounts of lead. Enamelled vessels were tested for the presence of lead, arsenic, and antimony. In bacon, boric acid was found to be much less prevalent than formerly. A survey of the alcohol content of liquors was made. "Sago" which has come back on the market was found in every instance investigated to consist of tapioca starch made in imitation of sago.

Special attention was given to the determination of vitamins in food. Analysis was made of large numbers of drug samples. Tablets of different kinds were defective, particularly in regard to uniformity of drug content.

The quality of public water-supplies was continually checked, both chemically and bacteriologically. A survey was made of the fluorine content of many town water-supplies. The amount of fluorine present was in all cases so low as to be harmless. Whether this fact has a bearing on the incidence of dental caries is being investigated by the Department of Health with the co-operation of the Laboratory.

Milk-supplies throughout the country were closely watched by the Health Department. Experience shows that to ensure good supplies of pure milk a large amount of analytical control is essential. The Wellington City supply was again found to be of high