

Citrus Fruits.—The principal investigation dealt with changes in composition of the juice of New Zealand grape-fruit from early season to maturity, with a view to ascertaining a suitable maturity test applicable to fruit prior to marketing. Fruit from four selected orchards was examined at three-weekly intervals from June to October. The results are to be published in the *Journal of Science and Technology*. The tests are being repeated this season, and should be continued for at least two further seasons.

Some work was also begun on extraction, de-aeration, and commercial preservation of the juice.

Phormium (New Zealand Flax).—Chemical examination of phormium leaf has been commenced, and analyses of the whole leaf (butt and blade) and of the fibre, as well as of the isolated cellulose, have been completed. The degree of lignification with age is under investigation, also the constants of the cellulose from established varieties.

Ragwort.—An alkaloid, possessing the empirical formula $C_{18}H_{25}O_6N$, was isolated from ragwort (*Senecio jacobaea*) growing in New Zealand. It is probably identical with the alkaloid jacobine isolated from Canadian ragwort by Manske. The acetate produced cirrhosis of the liver when injected subcutaneously into rats, and was very toxic. A full account of the work, including biological experiments by Drs. C. S. M. Hopkirk and I. J. Cunningham, was published in the *Journal of Science and Technology*.

Soil Research.—Clay fractions of soils collected by the Soil Survey Division have been separated and analyses made to determine type. Fusion analyses were made for the Director, Cawthron Institute, of a series of river-till fractions from the Ashburton and Rakaia Rivers.

Advisory and Consulting Work.—The services of the Director of the Laboratory and other members of the staff have frequently been required on scientific and industrial committees or in connection with reports on industrial processes. The demands for such work increase each year, and a good technical library must be maintained. Arrangements are made for the circulation of various scientific journals among the staff.

During the year a number of scientific and chemical papers have been published in various journals.
