Sydney to New Zealand.—The two soundings in 2600 fathoms contained respectively 7 and 19 per cent. of carbonate of lime. In 1975 fathoms there was 77 per cent., in 1100 fathoms 84 per cent., and in 275 fathoms 88 per cent. (see Chart 27). The carbonate of lime in all these consisted essentially of the shells of pelagic Foraminifera, with Coccoliths, Coccospheres, and Rhabdoliths. In the deeper deposits there is, it will be noticed, less and less carbonate of lime, and this is due to the gradual removal of the more delicate and smaller shells (see Diagram 11). While these small shells and Coccospheres made up most of the deposit at 275 and 400 fathoms, they were very rare at a depth of 2600 fathoms, though they appeared to be quite as abundant at the surface over the one locality as over the other. The mineral particles were very minute in these soundings, and consisted chiefly of felspars and glassy volcanic fragments. As the entrance of Cook Strait was approached, the mineral particles derived from the coast of New Zealand increased both in number and size, and the pelagic shells diminished, while glauconite, which was absent in the soundings from the middle of the section, again made its appearance. At 150 fathoms the deposit was a Blue Mud with 26 per cent. of carbonate of lime.

Off New Zealand.—The deposits off the east coast of New Zealand in 1100 and 700 fathoms (see Chart 27) were Blue Muds, with a thin characteristic layer of a reddish colour on the surface. They contained only from 4 to 10 per cent. of carbonate of lime, the chief part of the deposit consisting of amorphous and clayey matter and fine mineral particles derived from the neighbouring land. The mineral particles were uniform in size and nature in both localities, but while they were estimated at 21 per cent. in the former, in the latter deposit they made up 25 per cent. Siliceous organisms were few. The dredge brought up pumice stones at both stations.

New Zealand to Tongatabu.—The deposits off the Kermadec Islands in 520, 630, and 600 fathoms (see Chart 27 and Diagram 12) were Volcanic Muds, containing very many large blocks of pumice. A very large fragment of a huge new Hexactinellid Sponge, *Poliopogon gigas*, was brought up from 630 fathoms attached to pumice stones; it measured about 2 feet by 3 feet 6 inches.[1] The deposit at 2900 fathoms was a Red Clay, which gave no trace of effervescence when treated with dilute acid, showing that it did not contain any carbonate of lime. The mineral particles were very small, the bulk of them being less than 0·05 mm. in diameter, and consisted of felspar, magnetite, and hornblende; there were, however, some large fragments of pumice, and the great bulk of the fine washings of the deposit was composed of very minute fragments of pumice.

Off Tongatabu.—When outside a line joining Mallenoah and Atataa Islands dredgings were obtained, first in 18 fathoms, and then in 240 fathoms (see Chart 28). The deposit at both these depths was a Coral Sand containing from 86 to 90 per cent. of carbonate of lime, composed of fragments of Coral, calcareous Algæ, *Orbitolites* and many other

[1] 6·1 by 10·6 decimetres.