rapid oversight of the work done or remaining to be done. When completed, the diagram appeared to give so full and clear a representation of the whole course of the analysis that it was decided to print it without alteration rather than to attempt a written account, which could hardly have failed to be difficult to follow. The diagram is therefore reproduced on the accompanying sheet. A brief account of the quantitative determinations not included in this diagram must, however, be given.

Analysis of the Insoluble Residue left on treating 200 *grammes of the Nodules with Hydrochloric Acid.*—The composition of this residue, which was dried *in vacuo* over sulphuric acid to constant weight, proved, after exhaustive qualitative analysis, to be comparatively simple. No special difficulties were therefore met with in the course of the quantitative analysis.

The loss on ignition was found to correspond exactly with direct estimations of the water contained in the residue after drying *in vacuo* over sulphuric acid to constant weight.

Table III. gives the percentage composition of the water-free residue.

A preliminary determination of silica gave 13·22 per cent. A second most careful determination with a larger quantity gave 13·38 per cent. This latter number was adopted as being certainly the more accurate.

On treating the crude silica with ammonium fluoride and sulphuric acid, a residue, consisting chiefly of titanic acid, was left. This residue was of course allowed for in calculating the percentage of silica.

The titanium was estimated with great care, being precipitated repeatedly by boiling the dilute sulphuric acid solution.

Analysis of the Aqueous Extract.—46·732 grammes of the powdered nodules were exhausted repeatedly with boiling water.

The complete extraction with water proved to be exceedingly tedious, and the solution was only obtained clear after repeated filtration. Aliquot portions were used for the determination of—(*a*) Total bases as sulphate; (*b*) potassium and sodium; (*c*) lithium; (*d*) chlorine; (*e*) sulphuric acid. Traces of calcium and magnesium were also found and estimated.

For the quantitative composition of the extract see Table I., column III.

The residue, insoluble in water, still contained sulphates, but no chlorides. The sulphuric acid was determined in a separate portion of the nodules.

Estimation of Water.—7·5337 grammes of the powdered nodules lost 1·7330 grammes on drying at 110° C. to constant weight. This is equivalent to 23·00 per cent.

A direct determination of the water evolved on heating to redness in a platinum boat gave, on the other hand, 29·83 per cent. of water. As the water collected in the bulb of the absorption tube was slightly acid, two further direct estimations were made, using freshly-ignited oxide of lead to keep back acid vapours. These determinations gave 29·64 and 29·67 per cent. of water respectively. The mean of these determinations, 29·65, was adopted.

Estimation of Peroxide-Oxygen.—These determinations were made by Bunsen's well-known method.

The standard thio-sulphate solution used was titrated against pure iodine, prepared according to Stas.

Three determinations gave 4·67, 4·71, and 4·75 per cent. of peroxide-oxygen respectively. The mean of these determinations, 4·71 per cent., was adopted.

Assuming the whole of this peroxide-oxygen to be present as MnO_2, the percentage of this compound would be 25·61, which corresponds to 20·90 per cent. MnO, as against 21·46 actually