

wet and dried states, and subsequently mounted on microscopic slides for examination by transmitted light. As a rule the residue from about 1 gramme of the substance was taken for examination, so that the evaluations of the various elements present might be comparable in different deposits, but often very large quantities of a deposit were taken and the carbonate of lime all removed, in order to have a considerable quantity of residue for more thorough examination and study.

The processes made use of in lithology for isolating mineral species by means of strong acids, by the action of electro-magnets, by liquids of high density, by sifting, &c., have all been used by us with varying success, especially when we desired to get a sufficient quantity of a substance for quantitative examination.

Liquids of high density, such as the compounds of mercury and potassium, and borotungstate of cadmium, were useful when dealing with a coarse deposit, but not so in dealing with an ordinary deep-sea deposit, where the grains are exceedingly fine, so much so, that as a rule it appears to the naked eye as a homogeneous mass. With an ordinary magnet and an electro-magnet we were most successful in extracting from a mud or ooze all the magnetic particles, such as magnetite, fragments of meteorites, with particles of magnetic metals. This was accomplished by placing the magnet, covered with thin "iron" paper, in a porcelain basin, in which the mud or ooze had been well mixed up with water, and moving it slowly about, keeping the magnet as near to the bottom of the vessel as possible without touching it; it was then removed into another basin, the paper taken carefully off, and the particles washed into a clean basin to clear them from extraneous matter, then re-collected on a slide for examination under the microscope.

The deposit was, after great dilution with clean water, also passed over fixed electro-magnets, to collect the magnetic particles, but this was not so convenient in practice as the above method with movable electro and permanent magnets.

The very simple process of fractional decantations, practised often and after a regular system, proved to be in the end the most useful and expeditious way of preparing the residue for microscopic analysis, and it was this process that we followed in all our examinations. In this way we were usually able to separate sufficiently the RESIDUE into the three portions noted in the table under the headings: 1. **Siliceous Organisms**; 2. **Minerals**; 3. **Fine Washings**. The decantations were performed with glass or porcelain vessels and abundance of water. The whole was kept in motion for some time, and then the finer particles were poured off carefully, after continued stirring and shaking. The first of these decantations gave us the fine washings, in the second the siliceous organisms predominated, while the heavier mineral particles remained behind. Each of these were mounted on microscopic slides for further examination.

The figures in the first column of the tables under RESIDUE give the percentage in the whole deposit, and is found by subtracting from 100 the quantity of carbonate of