

chloride is first subjected to a stream of dry  $\text{CO}_2$ , so that, when used in the estimation of the  $\text{CO}_2$ , no error may be introduced by the absorption of the gas. The calcium chloride tube is fitted with an india-rubber stopper, in order to exclude the outside air when cooling and during the process of weighing.

The weighed sample is placed in the large bulb, a little water added, the different parts adjusted and finally wiped dry, and then the whole is weighed by suspending from the beam of the balance by a fine platinum wire. The acid is then run in little by little, until all effervescence has ceased; the contents of the bulb are heated with constant shaking to near the boiling point, cooled, and finally weighed, and from the loss in weight (weight before experiment minus weight after) the percentage of calcium carbonate is calculated. When these analyses were first made, Ludwig's apparatus was used, but this was modified to the present form by the substitution of an ordinary calcium chloride tube for the circular basal one, as there was a certain amount of inconvenience experienced in heating.

It may be urged that the determination by carbonic acid, unaided by the oxide of calcium test, indicates but approximately the quantity of carbonate of calcium, for the deposit may contain carbonates of magnesia and iron. It is sufficient to observe that these bodies are only present in very small quantities. Besides, the composition of a deposit at the same station and even in the same sample varies sometimes by a quantity greater than the error committed. It is true that small quantities of iron, alumina, phosphates, &c., are always dissolved in the above process, but this partial dissolution has no marked influence on the biological or mineralogical determinations that require to be made. This method was then sufficiently exact for our purpose. Complete quantitative analyses were made of many of the deposits, but the length of time required to do this for all samples was not compensated by any real utility in the investigation, while in many cases the quantity of a deposit was insufficient for such an analysis.

By thus removing the carbonate of lime with dilute hydrochloric acid from each deposit, our descriptions are conveniently divided into two parts, one dealing almost exclusively with materials of organic origin—the shells and skeletons of carbonate of lime secreting organisms,—and another referring to the part in which the mineral element predominates in the great majority of cases; in some localities, however, there are associated with the minerals properly so called, the remains of siliceous organisms, together with the silicified casts of calcareous organisms, and these may together or separately make up the greater part of the deposit after the removal of the carbonate of lime.

That part of the deposit which remains in the vessel after the removal of the carbonate of lime is called in the descriptions RESIDUE. In the examination of this residue the heavier particles were separated by decantation and examined by reflected light in the