

Three other types of deposit occur sporadically and are by way of being rarities, viz. :—

- (4) Diatom Ooze.
- (5) Ochreous Mud.
- (6) Calcareous Deposits.

### 1. SANDS, ETC.

Wherever the bottom of a loch lies under briskly moving water, as within the sphere of wave-action or at the inflow of a rapid river, the deposits are graded by elutriation, and the finer material is carried away. The residue will consist of coarse and heavy mineral grains comparable to sea-sand. Sandy loch deposits, then, are only found in shallow depths, and usually near the shore-line. They consist chiefly of quartz, felspar, and mica, and are free, or nearly so, from clayey matter; the more vigorous the elutriating agency, the more does quartz tend to predominate. Sandy deposits are often discoloured by organic matter, which is apparently not washed away so easily as clay; also by limonite, existing as a tenacious incrustation on quartz grains. An analysis of a sand from Loch Ness, 30 feet, has been published in an earlier paper of the Survey.<sup>1</sup> In the majority of Scottish lochs, which are more or less steep-sided and U-shaped in section, the layer of sandy deposit may be supposed to extend from bank to bank, underlying deposits of finer material in the inner part of the loch, and being itself underlain by yet coarser grains and pebbles. This scheme of stratification was well illustrated by some of the Survey soundings, in the rare cases when it was possible to bring up a long plug in the sounding-tube. As regards the origin of sandy deposits, it is clear, since they are too coarse to be transported to any extent by water, that they are derived from the rocks immediately surrounding the loch. They are, as it were, autochthonous, and differ in this respect from the material of the finer mineral deposits (Clays), which may in part have arrived from great distances.

### 2. CLAYS

The term Clay is here applied to any mineral deposit which is sufficiently fine-grained and coherent to have a certain plasticity in the wet state. In the Scottish lochs Clays and Brown Muds shade off into one another through an infinity of gradations; we may regard as typical Clays those specimens (and they are plentiful enough) which contain practically no organic matter, and are farthest removed from the Brown Mud end of the series. Such

<sup>1</sup> *Geogr. Journ.*, vol. xxxi. p. 60, 1908.