cerned with a microscope. The smaller forms are generally less well rounded than those of greater dimensions, no doubt because their diminutive size allows them to remain suspended in agitated water, and thus to escape the mutual attrition to which the larger and heavier grains are exposed upon the bottom. (Book III. Part II. Section ii.) So far as experience has yet gone, there is no method by which inorganic sea-sand can be distinguished from that of rivers or lakes. As a rule, sand consists largely (often wholly) of quartz-grains. The presence of fragments of marine shells will of course betray its salt-water origin; but in the trituration to which sand is exposed on a coast-line, the shell-fragments are in great measure ground into calcareous mud and removed.

Mr. Sorby has shown that, by microscopic investigation, much information may be obtained regarding the history and source of sedimentary materials. He has studied the minute structure of modern sand, and finds that sand-grains present the following five distinct types, which, however, graduate into each other.

1. Normal, angular, fresh formed sand, such as has been derived almost directly from the breaking up of granitic or schistose rocks.

2. Well-worn sand in rounded grains, the original angles being completely lost, and the surfaces looking like fine ground glass.

3. Sand mechanically broken into sharp angular chips, showing a glassy fracture.

4. Sand having the grains chemically corroded, so as to produce a peculiar texture of the surface, differing from that of worn grains or crystals.

5. Sand in which the grains have a perfectly crystalline outline, in some cases undoubtedly due to the deposition of quartz upon rounded or angular nuclei of ordinary noncrystalline sand.¹¹²

The same acute observer points out that, as in the familiar case of conglomerate pebbles, which have sometimes been used over again in conglomerates of very different ages, so with the much more minute grains of sand, we must distinguish between the age of the grains and the age of the deposit formed of them. An ancient sandstone may consist of grains that had hardly been worn before they were

¹¹⁹ Address, Q. J. Geol. Soc. xxxvi. (1880), p. 58, and Monthly Microscop. Journ. Anniv. Address, 1877.