light, limonite is reddish or deep brown; after heating these particles become black, opaque, and magnetic. Although we can rarely distinguish limonite from red hematite, it seems probable that in some cases the latter is represented in the deposits. The distinctive characters are that hematite is not at all so soluble in acids; it is red in reflected light and in transmitted light slightly transparent with a reddish tinge. These argillaceous matters are mixed up with :—

b. Organic substances, heated on a platinum foil they disappear or leave cinders, not decomposed by hydrochloric acid; soluble in caustic potash. Generally no organic structure is to be seen; amorphous, colour greenish, yellowish, brown, or grey, between crossed nicols behaving as isotropic bodies; in some cases when exhibiting an organic structure they are birefrangent.

c. Siliceous organisms, owing to their low specific weight (1·9 to 2·3), and their small size, these are carried away with the fine washings, and are fragments of the siliceous organisms found in the deposit.

d. Mineral particles, fragments of the same species as mentioned under "minerals."

We see thus that what goes by the name of deep-sea clay has no complete analogy with what should be included under the name of pure clay. It is not chemically or physically similar to kaolin, but is more nearly allied to bole-clay, rich in iron and manganese, and the clayey matter in the fine washings plays a much less important part than might be suspected before microscopical examination. Further on it will be shown that the proportion of silica in these clays, and therefore the proportion of silica in the fine washings, indicates generally free silica. This is to be attributed to the presence of remains of siliceous organisms, or small quartz particles. The fragments of minerals which pass away in the first decantations are always less than 0·02 mm. in diameter; their diminutiveness thus makes them float suspended in the water for some time, when the latter is agitated by shaking. Particles of this size might perhaps be determined in a rock section under the mineralogical microscope, but this is not possible with minute, isolated, irregular, chemically and physically altered, fragments, generally without any crystallographic outlines. There is, however, one exception in the case of splinters from pumice stone and vitreous volcanic rocks. The structure and form of these glassy particles makes them much more readily distinguishable than other mineral particles, so that particles even 0·002 mm. in diameter can be recognised. This can easily be tested by grinding a piece of pumice to powder in an agate mortar, when it will be found that the abundance of gaseous bubbles, the filamentous structure, curvilinear outline and jagged appearance due to the presence of the bubbles, enable the minutest fragments to be detected. The fragments from basic and acid pumice can even be detected in some cases; the latter yields elongated and nearly colourless fragments, while the former shows darker particles, and some of the bubbles are of a circular form rather than elongated.