

CHAPTER V.

MINERAL SUBSTANCES OF TERRESTRIAL AND EXTRA-TERRESTRIAL ORIGIN IN DEEP-SEA DEPOSITS.

THE materials of organic origin in deep-sea deposits having been considered in the preceding chapter, we shall now turn our attention to the mineral particles, properly so called, which form a more or less considerable part of all marine deposits.

When these mineral particles are regarded from the point of view of their origin, or rather of the source from which they have been immediately derived, they may be divided into three groups:—

1. Mineral particles more immediately derived from the mechanical disintegration of the solid crust of the earth, and distributed by terrestrial forces over the bed of the sea.
2. Mineral particles derived from extra-terrestrial regions, which play but an insignificant part in the mass of marine deposits, but are highly interesting from their origin, nature, and distribution.
3. Mineral particles and substances formed *in situ* at the bottom of the ocean, as a result of chemical interaction with substances in solution in sea-water and materials of organic and inorganic origin undergoing decomposition at the sea-bottom, which may therefore be called chemical products.

These last (No. 3) will be dealt with in detail in Chapter VI., the present chapter being devoted to a consideration of the first two groups.

I. MATERIALS DERIVED DIRECTLY FROM THE SOLID CRUST OF THE EARTH.

If the materials derived directly from the solid crust of the earth, or from the underlying layers, be looked at from a general point of view, they may be divided into two categories, corresponding in a certain way with the two great groups into which we have divided marine deposits, viz., Pelagic Deposits and Terrigenous Deposits. The first of these categories comprises all those rocks and minerals projected in a fragmentary form from subaerial and submarine volcanoes during the present geological period,