ascertained by actual experiments with living diatoms that these plants can obtain their silica from diffused clay in suspension.[385]

3. Phosphatic deposits,[386] in the great majority of cases, betoken some of the vertebrate animals, seeing that phosphate of lime enters largely into the composition of their bones and occurs in their excrement (p. 248). The most typical modern accumulations of this nature are the guano beds of rainless islands off the western coasts of South America and Southern Africa. In these regions, immense flocks of sea-fowl have, in the course of centuries, covered the ground with an accumulation of their droppings to a depth of sometimes 30 to 80 feet, or even more. This deposit, consisting chiefly of organic matter and ammoniacal salts, with about 20 per cent of phosphate of lime, has acquired a high value as a manure, and is being rapidly cleared off. It could only have been preserved in a rainless or almost rainless climate. In the west of Europe, isolated stacks and rocky islands in the sea are often seen to be white from the droppings of clouds of sea-birds; but it is merely a thin crust, which is not allowed to grow thicker in a climate where rains are frequent and heavy. From observations made on phosphatic deposits such as the phosphatic chalk of France, Belgium and England, it is evident that phosphate of lime derived from the decomposition of animals (fish, etc.) may be held in solution and gather round any organic body, or fill its cavities and replace original carbonate of lime. Grains and concretions

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[385] Murray and Irvine on siliceous deposits of modern seas, Proc. Roy. Soc. Edin. xviii. 1891, p. 229, and ante, p. 756.

[386] A useful compendium of information on these deposits is given by R. A. F. Penrose in Bull. U. S. Geol. Surv. No. 46, 1888, already cited (p. 248).