The gradual disappearance of the carbonate of lime remains from deep-sea deposits with increasing depth is exhibited in the following table giving the mean percentages of carbonate of lime in 231 samples of organic oozes, Red Clays, and Coral Muds from the Challenger collections, arranged in groups of 500 fathoms :—

14	cases	under 500		fathoms,	average	per cent.	$CaCO_3$,	86·04
7	,,	from 500	to 1000	,,	,,	,,	. .	66·86
24	,,	,, 1000	to 1500	,,	,,	,,	. .	70·87
42	,,	,, 1500	to 2000	,,	,,	,,	. .	69·55
68	,,	,, 2000	to 2500	,,	,,	,,	. .	46·73
65	,,	,, 2500	to 3000	,,	,,	,,	. .	17·36
8	,,	,, 3000	to 3500	,,	,,	,,	. .	0·88
2	,,	,, 3500	to 4000	,,	,,	,,	. .	0·00
1	,,	over 4000		,,	,,	,,	. .	trace.

The fourteen samples under 500 fathoms are chiefly Coral Muds; in the seven samples from between 500 and 1000 fathoms there are many mineral particles from neighbouring continents and islands. In all the depths beyond 1000 fathoms the carbonate of lime is almost exclusively derived from the shells of pelagic organisms that have fallen to the bottom from the surface waters, and it will be observed that in all the greatest depths of the ocean all of these pelagic calcareous shells have disappeared from the deposits.

Many years ago Sorby[1] called attention to the importance of observing the form in which carbonate of lime is built up in animal structures: whether the shells be composed of aragonite or of calcite. According to him some shells are found to be composed wholly of calcite, while others are composed of aragonite or of layers of calcite and aragonite.[2] The prismatic aragonite is much less stable than calcite, and consequently much more soluble. It has been stated by geologists that in some geological formations the aragonite shells were completely removed from the rock while the calcite shells were preserved. Some observers[3] have attempted to apply the same reasoning to the disappearance of the calcareous shells from the deeper deposits of the oceanic basins, it being held that the aragonite shells, or the aragonite portions of shells, have been removed in solution while the calcite shells, or the calcite portions of shells, are preserved in the deposits. It does not appear to us that any sufficient explanation of the facts to which we have just referred can be found in this direction. It is exceedingly difficult to determine by optical means whether or not any of these pelagic and microscopic shells are aragonite, and it is equally difficult to apply the specific gravity test with accuracy.

[1] Sorby, Presidential Address to the Geological Society, February 1879.

[2] See also F. Leydolt, *Sitzungsb. d. k. Akad. Wiss. Wien*, Bd. xix. pp. 10–32, 1856; G. Rose, *Abhandl. d. k. Akad. Wiss. Berlin*, 1858 (Phys. Kl.), pp. 63–111.

[3] Th. Fuchs, *Sitzb. d. k. Akad. Wiss. Wien*, Bd. lxxvi. pp. 329–334, 1877; *Neues Jahrbuch für Min. etc.*, Jahrg. 1882, Bd. ii. pp. 487–584.