

siphuncle, in the act of admitting or rejecting the pericardial fluid.

The principle to which we thus refer the rising and sinking of the living *Nautilus*, has been already stated (P. 318) to be the same which regulates the ascent and descent of the Water Balloon: the forcing of a quantity of water into the single air chamber of the balloon compresses the air, and increases the quantity of matter in this chamber, without enlarging the magnitude of the bal-

in the colour of the spar. In both these fossil *Nautili*, the entire series of the earthy casts within the siphuncle represents the bulk of fluid which this pipe could hold.

The sections, Pl. 32, Fig. 3, d. e. f., shew the edges of the calcareous sheath surrounding the oval casts of three compartments of the expanded siphuncle. This calcareous sheath may have been flexible, like that surrounding the membranous pipe of the recent *Nautilus Pompilius*. (Pl. 31, Fig. 1, b. d. e.) The continuity of this sheath across the air chambers, (Pl. 32, Fig. 2, d. e. f. Fig. 3, d. e. f. and Pl. 33), shows that there was *no communication* for the passage of any fluid from the siphuncle into these chambers: had any such existed, some portion of the fine earthy matter, which in these two fossils forms the casts of the siphuncle, must have passed through it into these chambers. Nothing has entered them, but *pure crystallized* spar, introduced by infiltration through the pores of the shell, after it had undergone sufficient decomposition to be percolated by water, holding in solution carbonate of lime.

The same argument applies to the solid casts of pure crystallized carbonate of lime, which have entirely filled the chambers of the specimen Pl. 32, Fig. 1; and to all fossil *Nautili* and *Ammonites*, in which the air chambers are either wholly void, or partially, or entirely filled with pure crystallized carbonate of lime. (See Pl. 42, Fig. 1, 2, 3, and Pl. 36). In all such cases, it is clear that no communication existed, by which water could pass from the interior of the siphon to the air chambers. When