

shell have any kind of aperture through which a fluid could pass into the close chambers,* it follows that these chambers contain nothing more than air, and must consequently be exposed to great pressure when at the bottom of the sea. Several contrivances are therefore introduced to fortify them against this pressure.

removed from the desiccated membranous pipe within it, which has assumed the condition of a black elastic substance, resembling the black continuous siphuncular pipe that is frequently preserved in a carbonaceous state in fossil Ammonites.

At that part of each transverse plate, which is perforated for the passage of the siphuncle, (Pl. 31, Fig. 1, y. y.), a portion of its shelly matter projects *inwards* to about one-fourth of the distance across each chamber, and forms a *collar*, around the membranous pipe, thus directing its passage through the transverse plates, and also affording to it, when distended with fluid, a strong support at each collar. A similar projecting collar is seen in the transverse plate of a fossil Nautilus. (Pl. 32, Fig. 2, e, and Fig. 3, e, i. and Pl. 33.) A succession of such supports placed at short intervals from one another, divides this long and thin membranaceous tube, when distended, into a series of short compartments, or small oval sacs, each sac communicating with the adjacent sacs by a contracted aperture or neck at both its ends, and being firmly supported around this neck by the collar of each transverse plate. (See Pl. 32, Figs. 2, 3, and Pl. 33.)

The strength of each sac is thus increased by the shortness of the distance between its two extremities, and the entire pipe, thus subdivided into thirty or forty distinct compartments, derives from every subdivision an accession of power to sustain the weight or pressure of any fluid that may be introduced to its interior.

* We learn from Mr. Owen, that there was no possibility of the access of water to the air chambers between the exterior of the siphuncle and the siphonic apertures of the transverse plates, because the entire circumference of the mantle in which the siphuncle originates, is firmly attached to the shell by a horny girdle, impenetrable by any fluid.—*Memoir on Nautilus Pompilius*, p. 47.