is best adapted to the retrograde motion, which a Sepia derives from the violent ejection of water through its funnel (k);* thus far, the air chambers serve to maintain both the shell and body of the animal in a state of equilibrium *at the surface.*

The mode of operation of the siphuncle and air chambers, *in the act of sinking* suddenly from the surface to the bottom is explained in the note subjoined.†

* See Sup. Note.

† It appears from the figure of the animal, Pl. 34, with which I have been favoured by Mr. Owen, that the upper extremity of the siphuncle marked by the insertion of the probe b., terminates in the cavity of the pericardium p, p. As this cavity contains a fluid, excreted by the glandular follicles d, d., and is apparently of such a size that its contents would suffice to fill the siphuncle, it is probable that this fluid forms *the circulating medium of adjustment*, and regulates the ascent or descent of the animal by its interchange of place from the pericardium to the siphuncle.

When the arms and body are expanded, the fluid remains in the pericardium, and the siphuncle is empty, and collapsed, and surrounded by the portions of air that are permanently confined within each air chamber; in this state, the specific gravity of the body and shell together is such as to cause the animal to rise, and be sustained floating at the surface.

When, on any alarm, the arms and body are contracted, and withdrawn into the shell, the retraction of these parts, causing pressure on the pericardium, forces its fluid contents into the siphuncle; and as the quantity of matter within the shell is thus increased, without increasing its magnitude, whilst the specific gravity of the body remains unaltered by the removal of this fluid from the pericardium, accompanied by a simultaneous diminution of the magnitude of the body, the specific gravity of the entire animal is increased, and it begins to *sink*.