motions, there must be some intermediate agent, hitherto undiscovered, which it has at its command, by which it can act upon them. Dr. Carus's remarks on the zoophytes in general are very applicable in the present instance. "When we find," says he, "that there can be respiration without lungs; that nutrition, growth, and secretion may exist without a circulation of fluids; and that generation may take place without distinct sexes, &c., why should we doubt that sensitive life may exist without nerves, or motion without muscular fibres?" It is important to be observed here, that these spines, however strongly attached they may appear in the living animal, in the dead one fall off upon the slightest touch, which proves that the cause of their adhesion is connected with its life.

But though it is difficult to detect the muscular fibres that move the spines of the *common* sea-urchin, I had an opportunity, when correcting the proof containing the preceding paragraph, through the kindness of my friend Mr. Owen, of the Hunterian Museum, well known for his admirable anatomical description of the animal of the pearly Nautilus,* of examining a preparation of the large spines, with their sacs, of the mammillary Sea-urchin,† in which the muscular fibres were distinctly visible, enveloping the base of the spine, when the sac was removed; so that, reasoning from analogy, it may be concluded that the spines of the common species have a similar muscular apparatus.

The spines vary much in their form and sculpture. In the species last named they seem to be of a stony substance, varying in magnitude and length, the larger ones tapering from the base, and being blunt at the tip, they are beautifully fluted like the shaft of a Corinthian pillar.‡ The part enveloped by the membrane before mentioned is thicker

* Nautilus Pompilius. † Cidaris mamillatus, Fig. 24.

‡ Cidaris mamillatus, Fig. 24.