

elongated or retracted, at the pleasure of the animal, by a very curious mechanism, which I shall presently describe. By bending them on either side, in their expanded state, the *Asterias* is capable of effecting a slow progressive motion; so that these processes may be regarded as corresponding to feet, being levers for the advance of the body. This, it may be remarked, is the first time that we meet with organs of that description in our progress through the animal kingdom. Each of these feet is terminated by a concave disk, which when applied to any flat surface acts as a sucker, on the principles already adverted to.\* Reaumur counted 304 of these feet in each of the five rays of the star fish, making 1520 in all.† Each foot consists of a tube, closed at the outer end, and the stem of which, after passing through the aperture in the integument, is dilated into a bag or reservoir of fluid; as is shown in Fig. 97. By the contraction of this reservoir, the fluid it contains is propelled into the outer portion of the tube, which protrudes by being thus distended; the foot fixes itself, by means of its terminal fleshy disk, to the point it touches, and then, by retracting, draws the body along for a short distance. By the retreat of the fluid into its reservoir, the foot is again detached, and ready to be moved forwards, and is thus made instrumental in taking another step, by a repetition of the same process.‡ From the shortness of these feet, notwithstanding their great

\* Page 105.

† *Mémoires de l'Académie des Sciences*, 1710, p. 487.

‡ The mechanism by which the feet are protruded and retracted is illustrated by the diagram, Fig. 97, which exhibits the bladders connected with them, in different states of distention and contraction. Fig. 96 shows the upper side of the umbulacra, and of the bladders connected with the feet. Dr. Grant, from some observations which he made on the structure of the cilia of the *Beroë pilcus*, is led to suspect that the rapid vibrations of these singular organs in the lowest animals may depend on the undulations of water conveyed through elastic tubes along their bases, in a manner resembling the injection of the tubular tentacula of *Actinæ* and *Asteriæ*. If this conjecture were verified, he remarks, one of the most remarkable phenomena of animal motion, though one of the most frequent, would lose much of its present marvellous character.