

tent of space should contain. This arrangement is further explained by reference to an annexed diagram.

Sir William Herschel next compares the order of magnitudes with the order of distances, the result of which is, that if the order of magnitudes could indicate the distance of the stars, it would denote at first a gradual, and then a very abrupt condensation of them; but that, considering the principle upon which the stars are classed, their arrangement into magnitudes can only apply to certain relative distances; and show that, taking the stars of each class one with another, those of the succeeding magnitudes are further from us than the stars of the preceding order.

In the fourth and fifth sections of this paper, the means of ascertaining the profundity or local situation of the celestial objects in space, and the equalization of star light are discussed; and these are succeeded by a series of observations on the extent of natural and telescopic vision, and their application to the probable arrangement of the heavenly bodies in space.

This paper concludes with a series of observations on the extent and construction of the Milky Way; which, with his former observations, the author is inclined to think will contain nearly all the general knowledge we can ever have of this magnificent collection of stars.

*Some Account of the Nests of the Java Swallow, and of the Glands that secrete the Mucus of which they are composed.* By Sir Everard Home, Bart. V.P.R.S. Read June 26, 1817. [*Phil. Trans.* 1817, p. 332.]

After noticing the various opinions which have been entertained concerning the materials of which the nests of the Java Swallow are composed, Sir Everard proceeds to examine the glandular structure of its œsophagus and stomach, as also the chemical characters of the substance forming the nest. He was chiefly led to this inquiry by the suggestion of Mr. Raffles, who was of opinion that the matter of the nest was brought up from the bird's stomach, and that the violence of the effort was occasionally such as to be accompanied with blood, the stain of which is sometimes seen on the nests.

On examining the gastric glands of the Java swallow with a common magnifying glass, their orifices obviously differed from those of other birds, and of the common migrating swallow of England.

The Java swallow is a constant inhabitant of the caverns of that island, and about twice the size of the common swallow. It builds two nests; one oblong and narrow for the male, the other wide and deep for the female and her eggs. The peculiarity of structure in the gastric glands consists in a membranous tube surrounding each of their ducts, which, after projecting into the gullet, splits into separate portions, like the petals of a flower. From the surface of these tubes the peculiar mucus for the formation of the nest is secreted. Thus, says the author, the opinion which I have long

adopted, "that membranes upon which no glandular structure can be discovered are capable of secreting mucus," is confirmed.

From the annexed chemical examination of the Javanese swallow's nest, it appears to possess a close analogy to albumen; differing from the ordinary properties of that principle in being easily soluble in liquid ammonia, and in the solution of its subcarbonate, and in affording a relatively smaller proportion of ammoniacal products when submitted to destructive distillation.

This paper is accompanied by a drawing, exhibiting magnified representations of the gastric glands in the blackbird, and in the common and Java swallow; thus rendering the differences of structure, so as to preclude the necessity of any extensive details.

*Observations on the Hirudo complanata, and Hirudo stagnalis, now formed into a distinct Genus under the name, Glossopora. By Dr. Johnson, of Bristol. Communicated by Sir Everard Home, Bart. V.P.R.S. Read June 26, 1817. [Phil. Trans. 1817, p. 339.]*

The animals named in the title of this paper differ so considerably from the Leech, as to induce the author to remove them from the genus *Hirudo*, and to form them into a distinct one under the term *Glossopora*, a term derived from a prominent feature of the animal, namely, its projectile tubular tongue.

They resemble the leech, in the body being furnished with a series of rings, in locomotion being effected by the alternate motion of the head and tail, and in the division of one general stomach into several lateral cells or partitions. They differ from the leech in the mouth being furnished with a projectile tubular tongue; in the flat pyriform shape of the body; and in having an abdominal pouch or cavity for the reception of their young. After enumerating the character of the genus, Dr. Johnson expresses his opinion that the *Hirudo circulans*, *Hirudo crenata*, *Hirudo hyalina*, and *Hirudo tessulata*, will be found to belong to it; and the *Hirudo sexoculata*, described by Bergmann in the Stockholm Transactions, seems to be the same animal. Its tongue is cartilaginous, flexible, and about one eighth of an inch long. The author describes the *Glossopora tuberculata* and the *Glossopora punctata*. The notion that they are capable of reproduction when cut or divided, he considers without foundation. Their food consists chiefly of water Helices; into the shell of which they easily penetrate in consequence of their tapering head, and from the flexibility of the tongue they are enabled to follow their victim to the innermost recess of its habitation. The ova are received into the abdominal pouch of the parent, where they remain till fully evolved, and they are unproductive if moved from this situation.

An annexed drawing illustrates the anatomy and habits of these animals.