We now arrive, “ by lingering steps and slow,” at the genuine serpents, or

OPHIDIAN REPTILES, PROPERLY SO CALLED.

The principal characteristic of the serpent race consists in an extremely elongated body, clothed with scales, des­titute of limbs, and furnished with a tail, or caudal extre­mity. Locomotion is effected by lateral undulations, aided by the scales externally, and by the ribs within. Although the general form, viewed in relation to its transverse di­mensions, is concentred to an extremely small diameter, the different parts are capable of great enlargement, which admits in many cases of their swallowing bodies bigger than themselves. In conformity with this peculiar struc­ture, even the bony portions of the head are not so knit to­gether as in other animals, but, with the exception of the parts which protect the brain, are capable of a certain de­gree of separation. (See Plate CCCCXLHI. fig. 16.) The development of the tympanic bones; their mode of attach­ment; the mobility which they enjoy from not being fixed to the cranium by their lower extremity ; finally, the struc­ture of the under jaw, the two branches of which are capable of separation in consequence of being united by elastic liga­ments instead of symphysis ; all combine to produce the vast swallowing powers of these reptiles. The entire absence of limbs is accompanied by an equal absence of those solid por­tions, such as the sternum and pelvis, which unite the limbs with the body. The ribs are free for the same reason, and thus readily admit both of the occasional enlargement of the intestinal cavity, and of that extreme pliancy of form for which all the species are remarkable, whether they creep, climb, or swim. To facilitate these various movements, the general envelope is minutely subdivided into numerous compartments, the scales of the Lower surface being usually much larger than those of the upper, and subserving the place of feet, the ribs being attached to the lateral margin of the inner surface of these abdominal plates. The space of bare skin between the scales is greater among serpents than other reptiles, and on the throat this bare expanse forms a longitudinal cleft, known by the name of gular furrow.

The true Ophidians are closely connected to the Saurian order by the preceding genera *Amphisbæna* and *Typhiops,* which certainly form a passage from one of those great or­dinal groups to the other. It is these connecting links that render precise definitions, drawn from a few apparent cha­racters, so difficult, if not impossible. “ Il est très Sicile,” observes M. Schlegel, “ de se faire une idée d’un serpent, lorsqu’on prend pour type une des espèces où tous les charactères de l’ordre se trouvent réunis ; mais il est difficile de consigner des marques distinctives qui separent d’une manière tranchée les Ophidiens des Sauriens.”@@1 Thus the gular furrow which characterizes all serpents except the genus *Acrochordus,* exists also among lizards, and several other Saurian reptiles. A few Ophidians even exhibit vestiges of the hinder extremities, analogous to what we may observe among the so-called apodal Saurions, al­though there is reason to suspect that the parts alluded to represent, in the latter the pelvis, in the former the actual extremities.@@2 Perhaps the characters deduced from the bones of the cranium would afford the best distinctions be­tween the two orders, were it not that in these, too, certain species of the genera *Typhlops* and *Uropeltis* make a near approach to the true Ophidians. It may be well, however, to state briefly the distinguishing features in the cranial

osteology of the latter order. The bones of the face in serpents never form a fixed mass perforated by the nostrils, and incased by sutures in each other; and the intermaxillary bone, trigonal, and compressed in its form, is always free, and to a certain extent moveable, that is, never soldered by sutures to the maxillaries on either side. The maxillarius themselves, when united to the anterior frontale, are so merely by a narrow attachment, always preserving a cer­tain mobility ; and the lateral margins of the nasal bones are free throughout their whole extent. No Ophidian reptile has thick conical teeth perpendicularly incased ; they rather resemblc hooks curved backwards, with sharp points; and we believe that all serpents, with the exception of the ge­nus *Oligodοn,* have the palate armed with teeth resembling those on the maxillæ, whilst in the Saurian order the pala­tine teeth exist only in the form of small irregular asperities.

From the preceding brief sketch it may be inferred, that the most peculiar character of serpents consists in their mode of locomotion, and their extraordinary powers of deglutition. These conditions modify their entire organization, for the former determines the general shape of the body, and the latter that of the internal parts. On examining the posi­tion of the intestines, we find that these organs, which in the majority of other vertebrated beings occupy several spacious cavities, are in the Ophidians enclosed within a long and narrow cylinder. It is obvious that this disposition cannot prevail without great changes in the form of the viscera ; and the disturbance alluded to is even destructive of bilateral symmetry. We thus find the heart sometimes far removed from, at others closely approached towards, the head, according as the stomach is more or less extended ; it is thus also that most frequently there is only a single lung, sometimes extending in front of the heart, but usually pla­ced behind that organ, and almost always terminated by a species of sack of greater or less extent, and serving as a reservoir of air. The liver, for the same reason, assumes a narrow ribbon shape, extending from the heart to the py­lorus. The gall-vessel, that it may not be interrupted in its functions by the repletion of the stomach, is removed from the liver, and placed in the same curve of the duode­num as that which receives the pancreas and the spleen. The stomach resembles a lengthened narrow cylinder. Then follow the intestines of which the numerous inflec­tions are filled with fat, and which, after descending in a straight line, terminate in the cloaca. the lower portion of the abdominal cavity not being sufficiently spacious for the reception of the rest of the organs there thence results an anomalous disposition of the kidneys testicles and ova­ries. “ La verge enfin, et un organe sécréteur, sont logés dans la queue.” These peculiar forms, however, of the ma­jority of the internal parts of serpents exercise no influence over their functions; for, on more minute investigation, we find that they vary not only in distinct species but in dif­ferent individuals of the same species.

The disposition of the external organs on the contrary, present much more constant forms ; but these parts are mo­dified by the habits of the species whether arboreal, ter­restrial, or aquatic. The mode of locomotion is however, very uniform, the movement being nearly the same which aids a serpent while gliding on the surface of the ground, traversing the depths of lakes and rivers, or climbing around the umbrageous branches of forest-trees. The lateral un­dulations of the body suffice for these progressions ; and it is chiefly the sea-snakes that make use of their tails which are expressly organized for that special purpose, acting as a scull. The degree of rapidity depends in a great mea­sure on the nature of the surface in which the motion is

***@@@, Estai sur la Physiognomie des Serpens,*** par IL Schlegel. La Haye, two vols. 8vo, 1837. Of this, the most recent and complete work on our present department with which we are acquainted, we have availed ourselves largely in the following treatise.

@@@’ We have exhibited these parts as they exist in the genus Boa. See Plate CCCCXL1V. tigs. 1, *la*, and l*b*