

opportunities of examining these Turtles. The united Chelyoidæ and Hydraspides form simply a section of the family of Elodites in the classification of Duméril and

*mys*, *Phrynops*, and *Hydraspis*, agree in having no temporal arch, while the parietals are broad, long, and flat, and the parietal arch is very narrow and far backward. The type of *Hydromedusa* and *Chelodina*, which may also constitute a distinct family, differs from the genuine *Hydraspides* in its parietals, that are gradually narrowing backward to form a ridge with the upper occipital, carrying the parietal arch even further backward than in the *Hydraspides*; as in these, the temporal arch is also wanting. The *Podocnemides* present still more striking peculiarities. As in the marine *Chelonioidæ*, the parietal and temporal arches are united to form a broad roof over the temporal region. This is the only group of *Testudinata* in which the peculiarities of the skull of *Chelonii* and *Amydæ* are intimately combined. On this account, I expect that the *Podocnemides* will be found to agree much more closely, in those structural peculiarities which constitute family characters, with the earlier representatives of this order in past geological ages, than with any other type. It is deeply to be regretted, therefore, that the beautiful series of fossil Turtles found by Hugi in the jurassic limestone of Solothurn, in Switzerland, have not yet been examined and described with that minuteness which would furnish the means of a direct comparison with the living types; for they exhibit, more distinctly than any other fossil Turtles I have seen, a surprising combination of *Chelonioid* and *Amydoid* characters. This is also the case with the genera *Eurysternum*, *Münst.*, and *Idiochelys*, *Myr.*, described by Herm. von Meyer, in Münster's *Beiträge*, 1839.

It ought also to be noticed in this connection, that the oldest fossil species, referred to the family of *Chelonioidæ* by Owen in his beautiful illustrations of the British Reptiles, (*Trans. Palæont. Soc.*, 1851,) differ in many respects from the marine Turtles, and present, especially in their oval form, which is quite distinct from that of the living *Chelonioidæ*, features which are characteristic of the living *Emydoidæ*, or, rather, common to all the *Testudinata* of the present period, in the younger stages of their development.

By its rounded form and small size, the *Chelonia* of Glaris differs also greatly from the living *Chelonioidæ*. It certainly constitutes a distinct genus, characterized by the peculiar proportions in the length of the fingers of the front paddles. A knowledge of these combinations of characters, in the earlier representatives of the order, is of great importance with reference to the question of their succession in former geological periods, and that of their relations to the surrounding mediums. Most of the oldest fossil *Testudinata* have been referred to fresh-water types, and their occurrence in the oolitic and cretaceous rocks, with other fossils evidently belonging to marine types, has led to the supposition (see Pictet, *Paléont.*, vol. i., p. 440) that they may have been floated into the sea from the adjoining fresh waters. I hold that such an assumption is not necessary. There is no closer relation between the secondary *Testudinata* and the living representatives of this order than between the fossil *Ganoids* of the jurassic and cretaceous periods and the living *Sauroids*; and yet it would be entirely gratuitous to assume that the jurassic and cretaceous oceans were fresh-water basins, because the living species of *Lepidosteus* and *Polypterus* inhabit the rivers of North America and of Africa. Again: the occurrence of fresh-water Turtles in the jurassic formation, at a period during which no *Chelonioids* are known to have existed, would lead to the conclusion that there is no relation between the gradation of these animals and the order of their succession in past times; while it appears, on the contrary, that, far from being genuine *Emydoids*, the earliest *Testudinata* exhibit simultaneously synthetic and embryonic features, exactly as we have already observed in many other types. (*Comp. Part I., Sect. 24, 25, and 26, p. 107-118.*) Now that the families of *Testudinata* are better defined and more fully characterized, a renewed comparison of the fossil and living representatives of this order would add greatly to our knowledge, especially if the investigation was made with direct reference to the questions alluded to above. The lateral movability of the neck of the