

with the exception of the Old Red genera *Acanthodus*, *Cheiracanthus*, and *Diplacanthus*,* all the Ganoids of the period in which Ganoids first appear *have* dermal bucklers placed right over their true skulls, and that these, though as united in their parts as the bones proper to the cranium in quadrupeds and fishes, are composed of several pieces, furnished each with its independent centre of ossification. The Dipterians, the Cœlacanth, the Cephalaspian, and at least one genus placed rather doubtfully among the Acanths, — the genus *Cheirolepis*, — all possessed cranial bucklers extending from the nape to the snout, in which the plates, various, in the several genera, in form and position, were fast *soldered* together, though in every instance the lines of suture were distinctly marked.

On each side of this external cranium the various cerebral plates, like the corresponding cerebral *ribs* in the osseous fishes, were free, at least not ankylosed together; and some of their number unequivocally performed, in part at least, the functions of two of these cerebral ribs, viz. the upper and under jaws, with the functions of the opercular appendages attached to the latter. In the cod, as in most other osseous fishes, the upper portion of the cranium consists of thirteen bones, which represent, however, only seven bones in the human skull, — the nasal, the frontal, the two parietal, the occipital, and one-half the two temporal bones. And whereas in man, and in most of the mammals, there are four of these placed in the medial line, — the four which, according to the assertors of the vertebral theory, form the spinal crests of the four cerebral vertebræ, — in the cod there are but

* The Acanths of the Coal Measures possess the cranial buckler.