

seem to be the homologues of the cranial bones of the osseous fishes,—at least their homologues so far as the *cuticular* can represent the *internal*. They appear for the first time, not as modified spinous processes, broadened, as in the carapace of the Chelonians, into *osseous* plates, but like those *corneous* external plates of this order of reptiles, (known in one species as the tortoise-shell of commerce,) the origin of which is purely cuticular, and which evince so little correspondence in their divisions with the sutures of the bones on which they rest, that they have been instanced, in their relation to the joinings beneath, as admirable illustrations of the *cross-banding* of the mechanician.

In the heads of the osseous fishes, the cranium proper, though consisting, like the skulls of birds, reptiles, and mammals, of several bones, exists from snout to nape, and from mastoid to mastoid, as one unbroken box; whereas all the other bones of the head, such as the maxillaries and intermaxillaries, the lower jaws, the opercular appendages, the branchial arches, and the branchiostegous rays, are connected but by muscle and ligament, and fall apart under the putrefactive influences, or in the process of boiling. This unbroken box, which consists, in the cod, of twenty-five bones, is the *homologue* of that cranial box of the Placoids which consists of one entire piece, and the *homotype*, according to Oken, of the bodies and spinal processes of four vertebræ; while the looser bones which drop away represent their *ribs*. The upper surface of the box,—that extending from the nasal bone to the nape,—is the only part over which a dermal buckler could be laid, as it is the only part with which the external skin comes in contact; and so it is between this upper surface and the cranial bucklers of the earlier Ganoids that we have to institute comparisons. For it is a curious fact, that,