

homotypal *ribs* of the entire cranium consist, not of four, but simply of a single pair, attached to the occiput, and which serves both to suspend the jaws, upper and nether, in their place under the middle of the head, and to lend support to the hyoid and branchial framework; while the scapular ring we find existing, as in the higher vertebrata, not as a cerebral, but as a cervical or dorsal appendage. In the wide range of the animal kingdom there are scarce any two pieces of organization that less resemble one another in form than the vertebræ of the placoids resemble their skulls; and the difference is not merely external, but extends to even their internal construction. In both skull and vertebræ we detect an union of bone and cartilage; but the bone of each vertebra forms an internal continuous nucleus, round which the cartilage is arranged, whereas in the skulls it is the cartilage that is internal, and the bone is spread in granular points over it. If we dip the body of one of the dorsal vertebræ of a herring into melted wax, and then withdraw it, we will find it to represent in its crusted state the vertebral centrum of a Placoid, — soft without, and osseous within; but in order to represent the placoid skull, we would have first to mould it out of one unbroken piece of wax, and then to cover it over with a priming of bone-dust. And such is the effect of this arrangement, that, while the skull of a Placoid, exposed to a red heat, falls into dust, from the circumstance that the supporting framework on which the granular bone was arranged perishes in the fire, the vertebral centrum, whose internal framework is itself bone, and so *not* perishable, comes out in a state of beautiful entireness, — resembling in the thornback a squat sand-glass, elegantly fenced round by the lateral pillars, (fig. 8, *b*;) and in the dog-fish (*a*) a more elongated sand-glass, in which the lateral pillars are