

The four orders into which this grand class of vertebrata is divided by M. Agassiz, are founded upon the peculiar structure of the scales ; and are characterised as follow :—

*Order I. PLACOID (a broad plate).*—The skin covered irregularly with enamelled plates, sometimes of a large size, but frequently in small points, as the shagreen on the dermal integument of the *Sharks*, and the tubercles of the *Rays*. *Lign.* 126, fig. 1, a fossil *placoidian* scale from the skin of a shark, highly magnified.

*Order II. GANOID (splendid, from the brilliant surface of the enamel).*—The scales are of an angular form, and composed of plates of horn or bone, covered with a thick layer of enamel ; their structure is identical with that of the teeth. The *Sturgeon* is an example of this order. *Lign.* 132, figs. 1, 2, 3, 4, are fossil scales of a *ganoidian* fish.

*Order III. CTENOID (toothed, or comb-like).*—The scales are formed of plates, which are toothed or pectinated on their posterior margin or edge, like a comb. As the plates are superimposed on each other, so that the lowermost always extend beyond the uppermost, their numerous sharp points or teeth render the scales very harsh to the touch. The *Perch* belongs to this order. *Lign.* 126, fig. 3, represents a fossil *ctenoidian* scale.

*Order IV. CYCLOID (a circle).*—The scales are composed of simple laminæ, or plates of bone or horn, without enamel, and have smooth borders ; but their external surface is often ornamented with markings. The scales of the lateral line consist of funnels placed one within the other ; the contracted part of which, applied against the disk of the scale, forms the tube through which the mucus flows. To this order belong the *Mullet*, *Salmon*, and *Carp*. *Lign.* 126, fig. 4, is the scale of a fossil *cycloidian* fish.