

Subfamily 1. DIPORASPIDA, Haeckel.

Definition.—Dorata-spida with twenty radial spines, each of which bears two opposite apophyses. The spherical shell is composed either of the meeting branches of these apophyses (Phractaspida), or of twenty perforated plates, produced by conrescence of their branches (Ceriaspida).

A. Tribe I. Phractaspida, Haeckel.

Definition.—Dorata-spida without perforated plates; the spherical shell is composed only of the meeting branches of the two opposite apophyses, which arise from each radial spine. Therefore the meshes of the shell are all sutural.

Genus 349. *Phractaspis*,¹ Haeckel, 1881, Prodrömus, p. 467.

Definition.—Dorata-spida without perforated plates; shell composed only of the meeting branches of the two opposite apophyses, which arise from each radial spine. Condyles of the branch-ends without by-spines.

The genus *Phractaspis* is the most simple and primitive form among all Dorata-spida, and may be regarded as the common ancestral form either of this whole family, or at least of its first subfamily, the Diporaspida. In all members of this subfamily the spherical shell is composed of twenty radial spines, each of which bears two opposite apophyses; but the mode of composition is different in the two tribes of the subfamily, in the Phractaspida and Ceriaspida. In the simpler tribe, the Phractaspida, the shell is composed only of the meeting branches of the apophyses of neighbouring spines; there are no peculiar perforated plates or shields. In the Ceriaspida, however, both apophyses of each single spine form a perforated plate or shield by union of their branches, and the shell is formed of the meeting edges of these shields. Of course the Ceriaspida must be derived from the simpler Phractaspida. *Phractaspis*, as the common ancestral form of both, exhibits a very simple structure of the shell (Pl. 137, figs. 1, 2). Commonly, if the fork-branches of each apophysis be not again branched, the shell possesses only twenty-two large meshes and forty sutures. More rarely their number increases, the fork-branches of the apophyses being again branched (*Phractaspidium*, Pl. 137, fig. 3).

Subgenus 1. *Phractasparium*, Haeckel.

Definition.—Shell with twenty-two meshes, and forty sutures, each spine with only four branches, its two apophyses being simply forked.

¹ *Phractaspis* = Hedging shield; Φρακτόσ, ασπίς.