

stock of this whole order, with the exception of the Sphærocapsida. The four following families of the order may be easily derived from the Dorataspida. The number of genera (seventeen) and of species (one hundred and eight) is in this family greater than in the other five families together. When I constituted that family in my Monograph 1862, it comprised only one genus, *Dorataspis*, with seven species. The nearly allied genus *Haliommatidium* (*Phatnaspis*) belongs to the Belonaspida.

The Dorataspida differ from the other *Acanthophracta* in the simple spherical lattice-shell, which is composed of the meeting apophyses of the twenty radial spines. In three other families of the suborder the shell is not spherical, but ellipsoidal (Belonaspida), discoidal (Hexalaspida), or diploconical (Diploconida). In the Phractopeltida the spherical shell is double, composed of two concentric lattice-spheres. In the Sphærocapsida the simple spherical shell is not composed of the apophyses of the spines, but of innumerable small plates.

The family Dorataspida may be divided into two very different subfamilies, which are probably derived, independently of one another, from two different subfamilies of the Astrolonchida. The first subfamily, Diporaspida, exhibits on each radial spine two opposite apophyses, like its ancestral group, the Phractacanthida (p. 753); whereas the second subfamily, Tessaraspida, possesses on each radial spine four crossed apophyses (opposite in pairs), like its ancestral group, the Stauracanthida (p. 758). Therefore the composition of the spherical shell, produced by the meeting branches of the tangential apophyses, is essentially different in the two subfamilies: in the Diporaspida each radial spine is surrounded by two opposite primary aspidal meshes, in the Tessaraspida by four crossed primary aspidal meshes.

Another principle of division may be established for the whole family by the different mode of composition of the shell, and regarding this important difference we may distinguish also two different subfamilies as *Cladophracta* and *Peltophracta*. In the first and simpler subfamily, the *Cladophracta*, the shell is composed totally (or sometimes partially) of the meeting branches of the apophyses of the neighbouring spines; but in each single spine (or in the most part of them) the branches of the apophyses are not united, and form no lattice-plate (Pl. 137, figs. 1 to 8). Whereas in the *Peltophracta* the shell is composed constantly of twenty perforated plates, as in each single spine the branches of its apophyses are united and form a fenestrated shield with two or four (and sometimes numerous) pores (Pls. 135, 136, 138).

In the Diporaspida as well as in the Tessaraspida we find numerous representatives of the two groups of the *Cladophracta* and of the *Peltophracta*; therefore the whole family of Dorataspida may be divided into four different tribes. The Diporaspida (with two opposite apophyses on each spine) are partly *Cladophracta* (the Phractaspida, Pl. 137, figs. 1-4), partly *Peltophracta* (the Ceriaspida, Pl. 138). On the other hand the Tessaraspida (with four crossed apophyses on each