

the insertion of the velum, by a ring-canal (*cc*). From their apical junction arises a peduncular canal (*cp*) which runs through the pedicle of the gonophore (or the apical horn) to its insertion into the bracteal cavity and opens here into the phyllocyst.

*Gonads*.—The gonad, or sexual gland of each gonophore, is represented by the manubrium, which depends from the apex of the subumbrella into its cavity. In the mature state it usually fills about the apical half of that cavity, but in many cases the entire cavity, and sometimes by further growth it becomes much larger than the latter, and is widely prominent through its distal opening (for example, in *Lilyopsis*, *Desmophyes*, *Vogtia*, Pl. XXX.). Each gonad is a simple, cylindrical, ovate, or spindle-shaped sac, and contains a central cavity, which is closed at the distal end, whilst it opens at the proximal end into the peduncular canal. The thick wall of the cavity consists of three different layers, outside a covering exodermal epithelium, and inside a vibratile entodermal epithelium, which includes the cavity (*spadix*); between these is a layer of sexual cells, which are originally derived from the exoderm. They produce a number of large ovules (usually between twenty and forty) in the female, and innumerable small zoosperms in the male gonophores. The ovaria or female gonads are usually somewhat rounded, ovate or club-shaped, colourless (Pl. XXVIII. fig. 4; Pl. XXXIV. figs. 13, 14, &c.). The spermata or male gonads are rather elongated, cylindrical, or fusiform, often vividly coloured (yellow, orange, red) (Pl. XXVIII. fig. 6; Pl. XXXIV. figs. 11, 12, &c.).

*Ontogeny*.—The development of the Calyconectæ from the fertilised egg has hitherto been very little known. The first observations were made in the spring of 1853 by Gegenbaur in Messina.<sup>1</sup> He observed the segmentation of the egg of *Diphyes sieboldii*, and the development from it of a larva, which is a peculiarly modified medusome, composed of a simple nectophore and a cylindrical sac-shaped larval body, which is attached externally to the ventral side of the nectophore. In my opinion the mouthless larval body is the original siphon, protruded through a ventral fissure of the nectophore. From its base the primary tentacle arises afterwards. I call this larva *Calyconula*.

A similar Calyconula is developed from the egg of *Galeolaria aurantiaca* (= *Epibulia aurantiaca*), which Metschnikoff described in 1874.<sup>2</sup> The Calyconula of *Hippopodius gleba*, described by the same author,<sup>3</sup> exhibits still more distinctly the dislocation of the siphon, the axis of which is perpendicular to that of its nectophore, in the subumbrellar cavity of which it was originally placed. The remnant of the ventral fissure of the bilateral umbrella is yet partly visible.

The Calyconula of a Monophyid (*Muggixa kochii*), and its development from the egg as well as its metamorphosis, were described in 1882 by Chun.<sup>4</sup> This larva developed

<sup>1</sup> 7, p. 332, Taf. xvi. figs. 12-21.

<sup>2</sup> *Loc. cit.*, p. 46, Taf. xi. figs. 5-8.

<sup>3</sup> 85, p. 39, Taf. vi., vii.

<sup>4</sup> 86, p. 9, Taf. xvii. figs. 6, 7.