

in vertical sections of a disk that is moderately free from pigment. In none of the species of *Pentacrinus* or *Comatula* which I have examined, have I failed to observe this connection satisfactorily; and in some fortunate sections the vascular structure may be traced right down from the oral ring into the lower and more compact portion of the plexiform gland (Pl. LXII.). This is generally more or less lobulated in form, and in this respect very striking differences exist among the various types of Crinoids.

Both in *Rhizocrinus* (Pl. VIIIa. figs. 7, 8, *x*), and in *Bathycrinus* (Pl. VIIb. figs. 1, 4-8, *x*) it is almost as simple as in the Pentacrinoid. It is oval-oblong in section and has but slightly developed irregularities of outline. In *Antedon rosacea*, and in the lower part of the disk of *Pentacrinus*, until it commences to subdivide, it is more irregular in form (Pl. LVIII. fig. 4, *x*); and it shows indications of its lobular structure, as is well seen in Ludwig's admirable illustrations¹ of the former type. I have made no horizontal sections of the disk of *Antedon eschrichti*, but imagine that its plexiform gland must be not very unlike that of *Promachocrinus kerguelensis*. Figs. 5 and 6 on Pl. LVIII. represent horizontal sections through the gland in the lower half of the disk of this type, fig. 6 being that nearer the calyx. The irregularity in the form of the organ is very striking. The upper part of the same disk was cut into vertical sections. They show the extreme subdivision of the ventral end of the plexiform gland, and the termination of its branches in the well defined labial plexus, the spongy part of which is represented in Pl. LIX. fig. 9, *xv*.

The minute structure of the plexiform gland of the Crinoids is as yet unknown. According to Perrier² it is identical with that of the same organ in other Echinoderms. Fresh specimens, and not spirit-material, are absolutely essential for its elucidation; but as Perrier and Koehler, who have both studied the plexiform gland of the Urchins, give accounts of its structure which differ from one another, and from Apostolidès' description of the same organ in Ophiurids, there is a difficulty in determining from analogy, and still more so from observation, what its real nature is in Crinoids.³ Certain peculiarities that I have noticed in the appearance of its lower portion in *Pentacrinus decorus* lead me to think that Koehler's account of it in the Urchins⁴ is probably more correct than those of his fellow-workers.

Upon one point, however, I am quite satisfied. Although the condition of my material entirely precluded any minute observations on the structure of the plexiform gland, I have had no difficulty in tracing its connection with the intervisceral blood-vessels of the lower part of the disk (Pl. LVII. fig. 2, Pl. LVIII. fig. 6). This point was first noticed by Ludwig in *Antedon rosacea*, and he illustrated it with an excellent figure.⁵ I have

¹ Crinoideen, *loc. cit.*, Taf. xviii. figs. 57-59.

² Sur l'organisation des Crinoïdes, *Comptes rendus*, t. xcvii., No. 3, p. 18.

³ For a discussion of this subject see *Quart. Journ. Micr. Sci.*, N. S., vols. xxii.-xxiv., 1882-1884.

⁴ Recherches sur les Échinides des Cotes de Provence. *Ann. du Mus. d'Hist. Nat. de Marseille*, t. i. pp. 73-77, 95-99.

⁵ Crinoideen, *loc. cit.*, Taf. xviii. fig. 59.