

the duct and open into it in its posterior half or three-fourths, the glandular epithelium of the tubes being continuous with the epithelium of the duct.

As to the function of the neural gland, van Beneden's recent suggestion that it is a renal organ in connection with the nervous centre seems probable, and is supported by the case of *Ascidia mammillata*, where the apertures of the numerous secondary ducts or infundibula open into the peribranchial space.

The duct (figs. 10 and 11, *gl.d.*) is delicate, and is lined by a single layer of cubical epithelium. It runs anteriorly, directly under the front part of the nerve ganglion

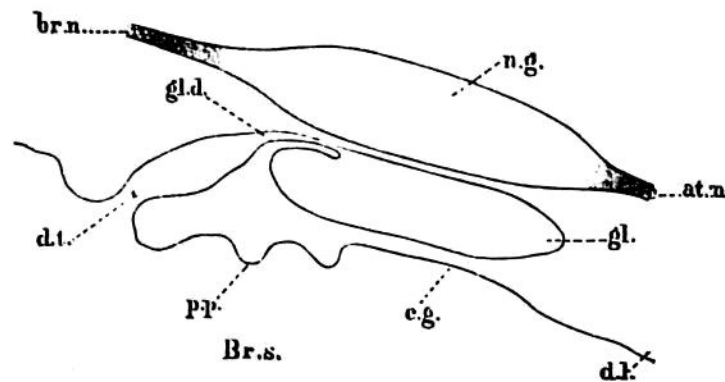


FIG. 11.—Diagrammatic longitudinal vertical section through the dorsal region of the anterior end of a Simple Ascidian.  
*br.n.*, branchial nerve; *at.n.*, atrial nerve; *n.g.*, nerve ganglion; *gl.*, subneural gland; *gl.d.*, duct of the gland; *d.t.*, dorsal tubercle; *p.p.*, peripharyngeal band; *e.g.*, epibranchial groove; *d.l.*, dorsal lamina; *Br.s.*, branchial sac.

and above the anterior part of the dorsal lamina, till it terminates by a complicated aperture best known as the olfactory or dorsal tubercle (fig. 11, *d.t.*), situated in the dorsal region of the anterior end of the branchial sac.

#### *The Dorsal Tubercle* (The Anterior Tubercle, the Branchial Tubercle, the Ciliated Organ, the Olfactory Tubercle.)

This, the aperture of the duct from the neural gland, is situated in a diverticulum from the præbranchial zone, the peritubercular area, formed by the bending posteriorly of the right and left peripharyngeal bands before they join at the anterior end of the dorsal lamina. Primitively, there is little doubt, it was in the form of a simple circular opening probably with prominent edges. It is still found in this or a very slightly modified form in *Molgula pyriformis* and *Eugyra kerguelenensis*. In most cases, however, the aperture is found in a much more complicated condition. This seems to have resulted from a forcing backwards of the anterior part of the edge till it almost came in contact with the posterior part, thus reducing the circular aperture to a slit curved in the form of a semicircle, with its concavity directed forwards, and bounded by prominent lips, usually more conspicuous than the aperture. This stage is found in *Ascidia scabra*.

Further complications are produced by the lips round the ends of the slit or "horns," as they may be called, being greatly prolonged and bent or coiled in various directions.