

As this material in the lowest part of the follicle passes along the vas deferens, the granules and sperm bundles gradually disappear until in the vesicula seminalis spermatozoa alone are found (Fig. 12).

#### *The Vasa Deferentia*

The long, slender vas deferens on each side (Figs. 1, 2) emerges from the peritoneal sheath of the testis and runs to the vesicular seminalis as detailed above (p. 205). The wall is lined with a cubical epithelium, outside which is a thick membrane (Figs. 10, 11). The peritoneal sheath of the testis is carried on to the vas deferens for a short distance (Fig. 10). In the specimens examined the lumen was filled with sperms.

#### *The Vesicula Seminalis*

This is a large ovoid structure which receives each vas deferens laterally (Figs. 1, 2). The Y-shaped tube comprising the common ejaculatory duct and the paired ejaculatory dilations emerges posteriorly and passes upwards and forwards over the dorsal surface, remaining attached to the vesicula wall (Figs. 1, 2; 12-14).

In all specimens examined by the writer the cavity of the vesicula was filled with sperms. The wall (Figs. 11-14) is lined with tall, rather irregular epithelial cells resting on a thin basement membrane. These cells are vacuolated and granular and their secretory activity is undoubtedly responsible for the nutrition of the sperms. The outer layer is thin and consists of irregularly arranged muscles ramifying through a light connective tissue. The whole organ is ensheathed in a delicate epithelium.

A single spherical or ovoid vesicula seminalis is present in all species covered by the review above (p. 204), except that paired vesiculae are found in *Euborellia moesta* (Berlese, 1909).

#### *The Common Ejaculatory Duct*

This is a single stout tube which emerges from the posterior face of the vesicula and runs up to the dorsal surface where it bifurcates and the paired ejaculatory dilations begin. The duct is firmly attached to the wall of the vesicula (Figs. 12, 13).

The duct is also filled with spermatozoa. The cubical lining epithelium rests on a basement membrane and is invested by an apparently discontinuous delicate cuticular intima (Figs. 12, 13). Outside the basement membrane is a thick covering of irregularly arranged muscle fibres and connective tissue. This layer appears to be integral with that of the vesicula, and the whole is covered by the one sheath. The lumen gradually narrows until, at the point of bifurcation, it is almost occluded.

This section of the ejaculatory duct is the ductus ejaculatorius conjunctus of Snodgrass (1936, 1957).

#### *The Ejaculatory Dilations*

It is difficult to determine the homology of these paired sections of the ejaculatory ducts (Figs. 1, 2, 14). It seems that they are referable to the bulbus ejaculatorius of some other insects. For the present, the term "ejaculatory dilations" will be used.

Each is rather wider than the section of the ejaculatory duct before it and a constriction marks its posterior limit. At first (Fig. 14) each is affixed to the vesicula wall, but shortly loses contact with it. However, the musculares of vesicula and dilation are separate, but the organs share a common investment.

In the material examined, the dilations were free of sperms. The wall of each is lined with a columnar epithelium resting on a very thick membrane and is invested with a delicate cuticular intima. Outside this is a wide sheath of irregularly arranged muscle fibres and some connective tissue. Strands from the membrane run out into the muscle sheath, giving it an appearance of being radially arranged. The lumen is virtually occluded at the posterior constriction.