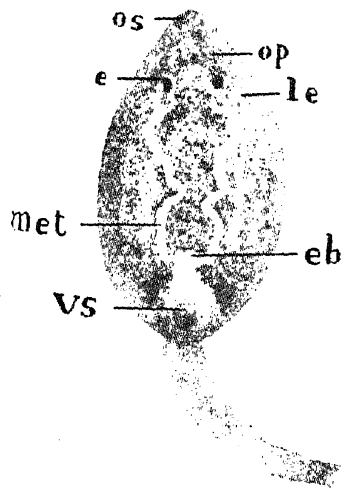
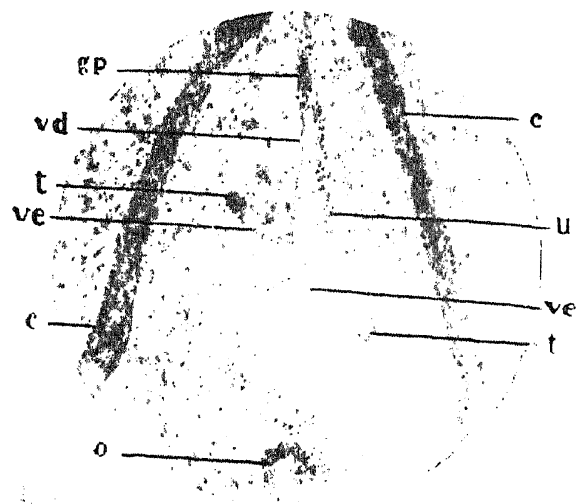




Pl 1.



Pl 2.



Pl 3.

DEVELOPMENT OF EMBRYO-SAC IN SOME STERCULIACEAE

Our knowledge of the development of the embryo-sac in the Indian representatives of Sterculiaceae is meagre (Y. M. L. Sharma, 1938 and I. Banerji, 1941). The present communication embodies some interesting features in the structure and development of the ovule and embryo-sac in five species of Sterculiaceae, viz., *Pterospermum Heyneanum* Wall, *P. acerifolium* Willd, *Klienhowia hospita* Linn., *Waltheria indica* L., and *Sterculia alata*.

Pterospermum species differ from other plants studied in having a multicellular archesporium. A group of 10-15 cells extending to two or three layers below the epidermis of the ovule function as archesporial cells; the hypodermal cells cut off primary parietal cells which give rise to a considerable parietal tissue while the sub-hypodermal cells function directly as the megaspore mother cells. Usually a few tetrads are formed in each ovule. A group of cells immediately below the archesporium in the central region of the ovule differ from the rest of the nucellus cells in being larger, having thinner walls, larger nuclei and vacuolated cytoplasm (Fig. 1). The lowest megaspores of the tetrads

5. The excretory granules in the retrograde continuation of the main excretory canals, and the floating intestinal glands with their ducts and atrium described for *Cercaria kylasami* are lacking in this cercaria under study.

These cercariæ develop in sausage-shaped rediæ, infesting the digestive gland of the molluscan host. The rediæ have almost the same morphological features as described for the other Amphistome redial stages. But it differs from those of the other Indian members of the "Diplocotylea" group in the presence of dark, irregular pigmentary patches on the body-wall in larger specimens only, the absence of ambulatory processes and gut contents, and in the existence of distinct excretory bladders. The rediæ are found to give rise to daughter rediæ or cercariæ or both.

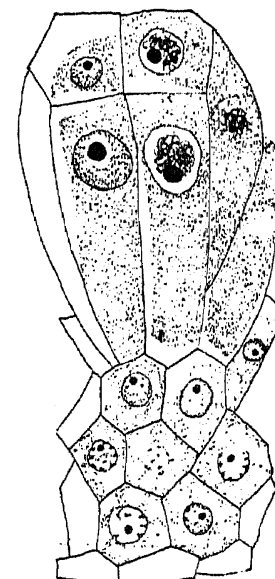
The cercariæ and their parthenitæ raised experimentally in the laboratory, by infecting *Planorbis exustus* with miracidia from the eggs of *Gastrodiscus secundus*, are exactly identical in every detail to those discharged by the snails that had the natural infestation with this type.

Further, adult specimens of *Gastrodiscus secundus* were recovered from the experimental donkey-foal, fed with the newly obtained cercariæ—a fact, which establishes that the cercaria under study is the larva of *Gastrodiscus secundus*.

A detailed study of the different aspects of both the pre-cercarial and the post-cercarial stages in the development of *Gastrodiscus secundus* is in progress.

Summary.—A new cercaria has been described belonging to the Amphistome group and this has been established to be the larval form of *Gastrodiscus secundus*, by feeding experiments.

Department of Parasitology, C. T. PETER.
Madras Veterinary College, S. V. MUDALIAR.
September 1, 1948.

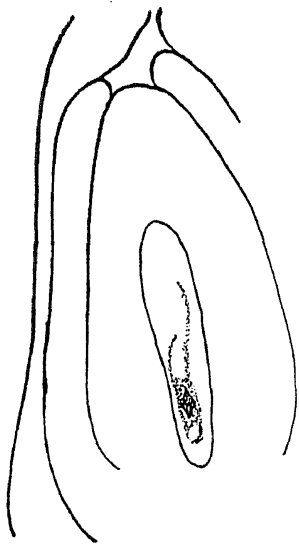


(FIG. 1)

1. Rao, M. A. N., *Cercaria kylasami* sp. nov. *Ind. Jour. Vet. Sci. & Ani. Husb.*, 1932, 2, (3) 259-61.
2. Sewell, R. B. S, "Cercariæ Indicae," *Ind. Jour. Med. Res.*, 1922, 10, (Supplement) 1-370.

become much elongated and taper towards the cell complex mentioned, probably deriving nourishment from it. Ultimately these cells are crushed by the developing embryo-sac or sacs.

In the one-nucleate stage of the embryo-sac it is seen that the chalazal end elongates into a tubular haustorial process. The nucleus and most of the cytoplasm migrate into it. Usually the nucleus divides in this position (Fig. 2). An



(FIG. 2)

8-nucleate embryo-sac is formed after three successive free nuclear divisions. The antipodals degenerate early. Two or three embryo-sacs are formed in some ovules, a fact noted by Sharma also previously.

In the rest of the plants studied, the archesporium is 1-celled although occasionally two archesporial cells and even two 2-nucleate embryo-sacs in each ovule have been observed in *Klienhowia hospita*. Usually the chalazal most megaspore of the tetrad is functional in these plants but in a few cases of *Klienhowia* and *Waltheria*, the one above the chalazal most is seen to develop further.

In *Pterospermum* species and *Klienhowia hospita* the antipodal end of the embryo-sac remains tubular owing to the presence of a jacket of thick walled cells around it. A hypostase is formed in the basal part of the ovule in *Waltheria indica*.

A fuller account of the floral anatomy, microsporogenesis, and embryo-sac development will appear elsewhere.

C. VENKATA RAO.

Department of Botany,
Andhra University,
Waltair.
September 12, 1948.

1. Sharma, Y. M. L., "A note on gametogenesis in a few members of Sterculiaceae," *Curr. Sci.*, 1930, 7, 284-85. 2. Banerji, I., "A note on the development of the female gametophyte in *Abroma augusta* L. and *Pentapetes phoenicia* L.," *Curr. Sci.*, 1941, 10, 30.

SPHINCTERED APERTURES IN THE INTERSEGMENTAL SEPTA OF EARTHWORMS

In 1919 Bahl,¹ in the first of his remarkable series of papers describing the enteronephric type of nephridial system in earthworms of the family Megascolicidae, also described *sphinctered apertures* on the intersegmental septa of the three species of *Pheretima*. These apertures have not been found in any other earthworm and in 1930 Stephenson² rightly remarked that, "So far as known, they are confined to genus *Pheretima*." Recently on examining two species of the genus *Drawida* (*D. ghatensis*, and *D. travancorensis*), sphinctered apertures have been found to occur in these earthworms as well, but that their situation is a little different. The septa of this worm are muscular and complete with no apertures on them at all, but there is a thin membrane, connecting the middle of the posterior face of each septum with the muscular bladder of the nephridium lying immediately behind it. It is this connecting membrane which is riddled with sphinctered apertures. I have counted the number of these apertures on eight such membranes and find that the average number is 200 on each membrane. The diameter of the apertures is, on an average, 57 μ , while the average thickness of the sphincter is 15 μ .

In discussing the possible function of these sphinctered apertures on the membranous septa of *Pheretima*, Bahl¹ wrote, "The sphincter muscles round the apertures are *a priori* the means of closing these apertures and thus restricting the flow of the coelomic fluid to particular segmental chambers which leads to a condition of turgidity of these segments and thus makes them stiff for the leverage of setae." In case of *Drawida* apparently this explanation will not hold good, as the sphinctered apertures here do not lie on the main body of the septum, but only on a subsidiary membrane connecting the nephridium with the septum. There is little doubt that this subsidiary membrane supports and keeps the bladder of the nephridium in position. It is possible that the apertures minimise the chances of the membrane preventing a free flow of the coelomic fluid within each segment.

I am thankful to Prof. K. N. Bahl for reading through this note and to Miss S. Mathew and Mr. P. V. Kurian for collecting the two species of *Drawida* from Travancore.

VIDYA VATI.

University of Lucknow,
September 15, 1948.

1. Bahl, K. N., *Quart. Journ. Micr. Sci.*, 1919, 64, Pt. 1. 2. Stephenson, J. *The Oligocheta*, 1930, Oxford.

A TRUFFLE (*TUBER* SP.) FROM KODAIKANAL HILLS (MADRAS)

TRUFFLES are highly prized in Europe as a delicate article of food, they are found in California also; fruit-bodies of truffles are dug up underground because they normally grow 3-12 inches below the surface of the soil; they emit a characteristic odour and are located by the aid