

## Report on an abnormal ovulate strobilus of *Gnetum gnemon* L.

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*Gnetum gnemon* Linn., the *meninjau* tree, is commonly cultivated near kampongs for the edible seeds. A specimen recently collected by Mr. K. Jumali from Duchess Lane, Singapore, bearing an abnormal ovulate strobilus shows some interesting features.

Normally, a simple, unbranched ovulate strobilus has a pair of amplexous bracts at the base, followed by five to six or more whorls of ovules, usually with four to six ovules in a whorl. Each whorl of ovules is seated in the axil† of an enlarged cup-like structure, or "collar", of the axis of the strobilus. This cup-like structure, morphologically is made up of a series of circular bracts superposed one above the others (Sanwal 1962).

The ovules [or the so-called ('female flowers' as used by Pearson (1929) and others, or "ovulate fertile shoots" as recently proposed by Eames (1952)] possess three layers of envelopes surrounding the nucellus (Fig. 1). The inner one is produced to form the micropylar tube, which is a unique character of the Gnetales. Morphological interpretation of these three layers of envelopes has been a subject of controversy. (For a review of the earlier interpretations, see Hagerup 1934.) Some current authors loosely refer to all these three envelopes as three integuments (e.g. Sanwal 1962, p. 251). Others insist that only the inner one can be designated as true "integument", the middle and the outer ones being fused bracteoles and bracts respectively (e.g. Eames 1952, p. 96). Most textbook writers, however, generally follow Pearson (1929) and Chamberlain's (1935) explanation that the inner and middle envelopes represent the inner and outer integuments, and the outer envelope, the "perianth".

The present abnormal ovulate strobilus (Plate 1) shows clearly a young strobilus with several whorls of underdeveloped ovules emerging from the split outer envelope of an otherwise normal ovule. This teratological specimen seems to favour the suggestion that the outer envelope represents a pair of concrescent bracts (similar to the amplexous bracts at nodes lower on the axis of strobilus) as advocated by Eames (1952, p. 96).

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† The ovules appear to be axillary, however, according to an ontogenetic study of Sanwal (1962), they are actually arise by the meristematic activity of the cells on the abaxial (or lower) surface of the "collar".



# REFERENCES

1. CHAMBERLAIN, C. J. (1935). Gymnosperms, structure and evolution. Chicago Univ. Press.
2. EAMES, A. J. (52). Relationships of the Ephedrales. Phytomorph. 2, 79-100.
3. HAGERUP, O. (1934). Zur Abstammung einiger Angiospermen durch Gnetales und Coniferae. K. Danske Vidensk. Selsk. Biol. Meddel. 11, (4), 1-83.
4. PEARSON, H. H. W. (1959). Gnetales. Cambridge Univ. Press.
5. SANWAL, M. (1962). Morphology and Embryogeny of *Gnetum gnemon* L. Phytomorph. 12, 243-264.

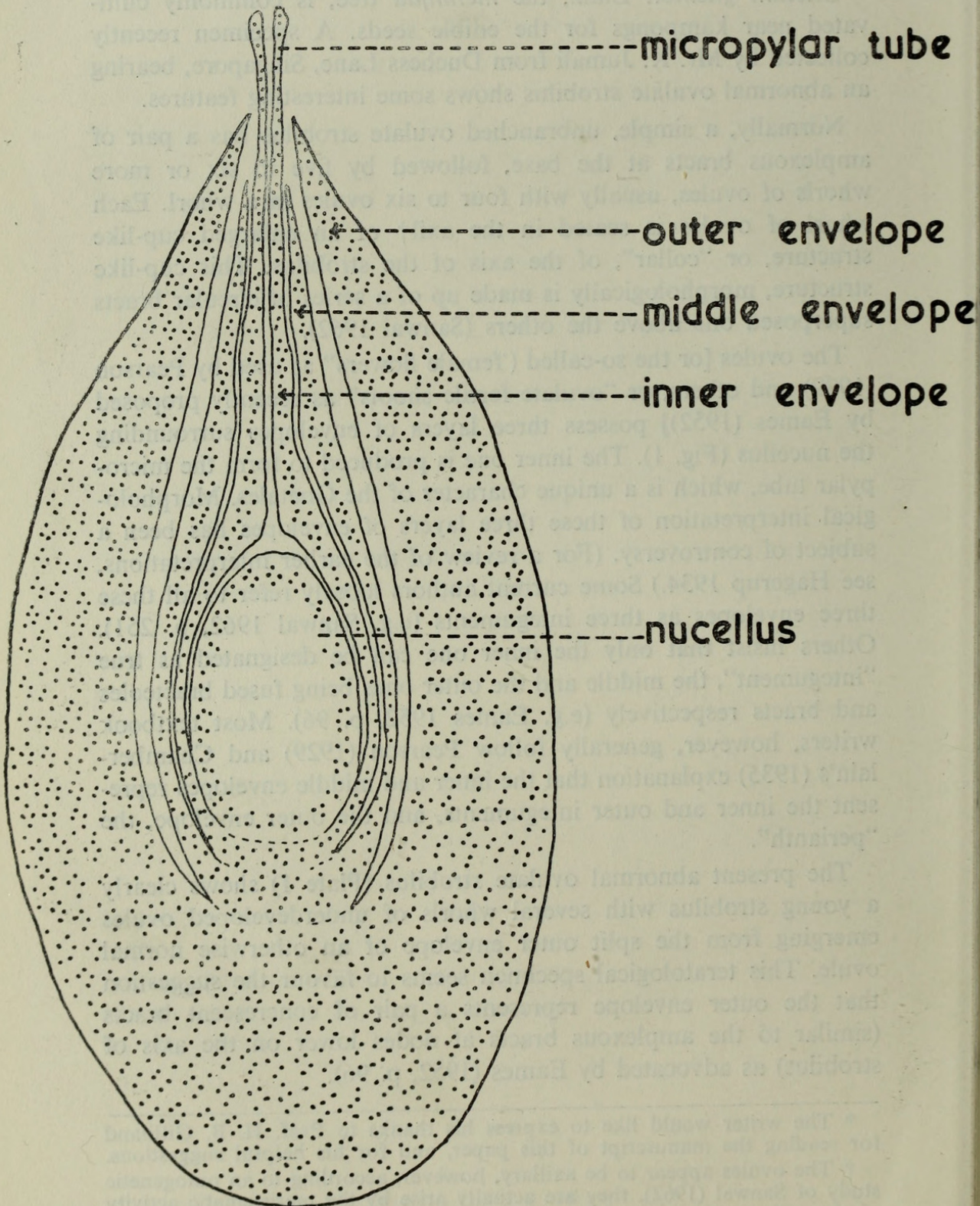


Figure 1. Diagram of the ovule of *Gnetum gnemon* Linn. in longitudinal section, showing the three layers of envelopes surrounding the nucellus. The inner envelope is produced forming the micropylar tube. (Based on a series of microtone sections).



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