

Fig. 3.
×1852.

shows that in *S. verticillata* it is small (4.85μ), *S. italica* (medium 7.45μ), and *S. glauca* (large 12.35μ).

In the classification of the *Setarias*, *S. verticillata* by virtue of its retrorse barbs and articulate fruits has been classed apart from *S. italica*, whereas *S. glauca* is ranged next to *S. italica*. It looks therefore probable that *S. italica* and *S. glauca* form the diploid and tetraploid species of one section of the genus *Setaria*.

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¹ *Herbage Abstracts*, 1931, 1, No. 1, p. 2.

² *Madras Agricultural Station Reports*, 1933-34, p. 442.

Some Abnormal Ovules and Embryo-Sacs of *Thylacospermum rupifragum* Schrenk.

LAST year the writer investigated some of the developmental stages of the flower of *Thylacospermum rupifragum* along with the anatomy of its vegetative parts, a short account of which has already been published in a recent issue of this journal.¹ The entire material available in this connection consisted of about fifty fairly old flowers and a few fruits. An examination of them after sectioning yielded some interesting abnormal facts worth recording.

Ordinarily each flower of *Thylacospermum* has in its incompletely bi-locular ovary four campylotropous ovules, each with two integuments, the inner one forming the micropyle. Each of the integuments is two cells thick except for the micropylar and of the inner one which is thicker. In the centre of the ovule there is, as usual in the Caryophyllaceæ

an embryo-sac, lying embedded in a thick nucellar tissue. The fully-formed embryo sac is an 8-nucleate structure and is almost of the usual Angiospermic type except for a few differences (Fig. 1). In shape it is broad in the middle and tapers towards the two ends. The synergids are laterally hooked and are somewhat larger than the egg cell

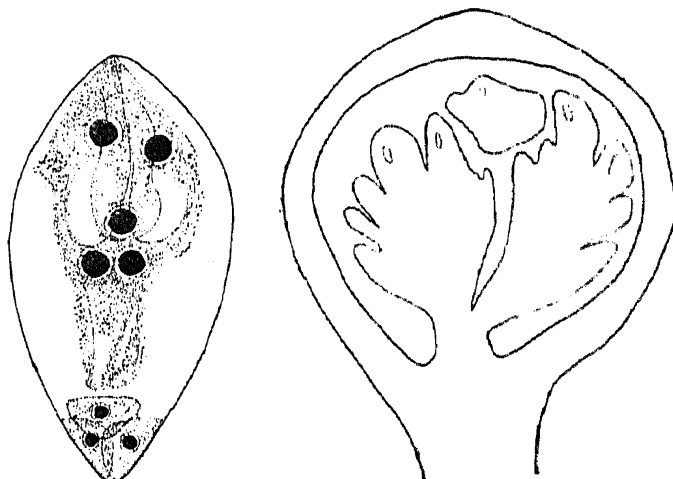


Fig. 1.

Fig. 2.

Thylacospermum rupifragum. 1. An 8-nucleate normal embryo-sac. ×720. 2. A l. s. (Semi-diagrammatic) of the ovary of the flower with ovules which are lobed and contain an unusual number of embryo sacs. ×52.

The degeneration of the embryo-sac and the nucellus in the ovules seems to be a common occurrence in this plant. Most of the flowers and fruits examined showed either partially or completely collapsed nucellus. The former was found to contain either degenerating embryo-sacs or empty space in their place.

One flower was observed in which the integuments and the basal part of the ovule had grown exceptionally large and as such the ovules filled the entire cavity of the ovary. The massive integuments of the ovules were of an uneven thickness and the inner one did not form any definite micropyle as in the normal case. Mostly the top of the nucellus was left uncovered and it rested directly on the wall of the ovary. All the embryo-sacs found in these ovules had degenerated.

Another interesting abnormality was met with in a flower with six ovules inside the ovary instead of the usual four. All the ovules were of a very unusual type. Each of them was comparatively large and very much lobed. It did not show any campylotropous curvature. A very large vascular strand from the placenta entered the base. Each such ovule consisted of almost similar nucellar cells and did not possess any definite

integument. Fig. 2 gives a semi-diagrammatic representation of this condition as seen in a L.S. of the ovary. In each ovule one or two uppermost lobes were larger and each contained one or in some cases two embryo-sacs. On the other hand, the lobes in the lower part of the ovule were comparatively smaller and sterile. The naked condition of the ovules inside the ovary is comparable to that of the "mamelon" of the Loranthaceae. The number of embryo-sacs per ovule varied from one to three. One of the embryo-sacs was found to be 4-nucleate and appeared normal. One 8-nucleate embryo-sac was normal, being similar to a fully-formed embryo-sac of a normal ovule. Three embryo-sacs were 18-, 16- and 4-nucleate and were of abnormal type. The exact position of the nuclei in these could not be clearly made out. Other embryo-sacs were 4-, 8-, 15- and 21-nucleate. They differed widely both from the normal embryo-sac and from one another in their size and shape and the organisation of the nuclei. A full account of them with all the diagrams will be shortly published elsewhere.

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¹ *Curr. Sci.*, 1935, 3, 300-301.

An Instance of Reversion of Floral Parts in *Quisqualis indica*.

WHILE casually looking at a plant of *Quisqualis indica* in the Botanical Gardens of the Benares Hindu University, in April 1934, a single large petaloid structure like the sepal of *Mussaenda*, among an inflorescence attracted my attention. On examination, it was found that the whole of the calyx tube of a flower was modified into a single structure like the sepal of *Mussaenda*, without any evidence of a tubular structure at all. This was arising, not from the inflorescence axis, but from the subtending bract, and with the latter, two bracts belonging to two adjacent lateral normal flowers, have also fused by their edges up to a considerable length. On the posterior surface of the single sepal was attached only one stamen with a normal anther.

As for the gynæcium of this flower, there is no trace of it, but just in the axil of this modified structure, is an organ perfectly

leaf-like both as regards colour and general appearance, and is about five times the size of an ordinary bract. This structure has not got any connection with any other flower, and it may be regarded as a modification of the gynæcium.

These abnormalities may be considered as reversions to the foliar nature of the floral parts, although the cause of such a reversion cannot adequately be explained at present. The gynæcium has completely reverted to the leaf-form. The tube-like calyx of the normal flower has been modified to a large leaf-like form, but brightly coloured. This reversion itself explains the fusion of the bract with it, and points to a closer relation to a leaf, because leaves generally do not have any subtending structures.

In the specimen, the basal region of the bracts has been twisted, so that for outward appearance, the posterior side became the anterior, and *vice versa*.

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April 29, 1935.

Notes on a Collection of *Paguridea* from Porto Novo.

A COLLECTION of *Paguridea* from the backwaters of Porto Novo and its neighbourhood belongs entirely to the two families *Paguridae*, Dana, and *Coenobitidae*, Latreille. *Paguridae*, Dana, is represented by the three genera, *Diogenes*, Dana, *Pagurus*, Fabricius, and *Clibanarius*, Dana, while the *Coenobitidae*, Latreille, is represented by the single genus *Coenobita*, Latreille.

GENUS, *Diogenes*, DANA.

The following species of the genus are included in the present collection:—

(1) *D. custos*, Fabricius. This is the most common species of the locality and a large number of them have been collected. The members of this species are found to inhabit the shells of as many as twenty-two species of gastropod molluscs.

(2) *D. diogenes*, Herbst. This is not as common as *D. custos*, Fabricius.

GENUS, *Pagurus*, FABRICIUS.

The species belonging to this genus are comparatively rare in the locality and the genus is represented by only two species, mentioned below:—

(1) *P. hessii*,¹ Miers. This is the largest and most brightly coloured species of the collection. Only two specimens have been collected.