

STUDIES IN THE GLOSSOPTERIS FLORA OF INDIA—
8. *STEREOCARPUS EMARGINATUS* GEN. ET SP. NOV.—A SEED
FROM THE LOWER GONDWANA OF INDIA

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ABSTRACT

A new type of seed, wingless, thick with radial symmetry is described from the Raniganj Series of the Lower Gondwanas of India. A new name, *Stereocarpus emarginatus*, has been proposed for the same.

SEED types which are known from the Lower Gondwanas belong either to *Cordaicarpus* or *Samaropsis*. Several species of the later genus are known (SEWARD, 1917; ARBER, 1905; SEWARD & SAHNI, 1920) whereas the seeds with a narrow border are very few. The present seed is represented by two specimens preserved on the same piece of shale No. 19512 and collected from the New Kenda Colliery in the Raniganj coalfield. Both the specimens possessed a thick carbonized crust suitable for cuticular study. Incomplete specimens of this seed are also present on other pieces of shales in the collection.

DESCRIPTION

The seed is very thick, seed impression deeply convex on the shale, almond-shaped (PL. 1, FIGS. 1, 3) or slightly more elongated (PL. 1, FIGS. 2, 4) with pointed apex. It is of medium size, about 1.5 cm. long and 1 cm. broad at the broadest part. Margin or wing absent. The base of the seed could not be seen clearly, most probably it is broadly rounded. On the middle part of the surface of the seed two to three, not very prominent ribs are seen running parallel to each other from the base to the apex.

The carbonized crust on the seed was thick. When it was removed gently by a needle, it revealed a thin black layer under the thick outer crust. Cellulose pulls were taken which removed both these layers. When these were macerated two cuticular layers were obtained.

The outer seed coat (sarcotesta?) is thick. The epidermal cells are thickened, elongated and arranged somewhat end to end. The

cells vary in shape and size and also in the thickness of the walls (PL. 1, FIGS. 5, 6).

In the portion of the cuticle which overlies the ridges, the cell walls are extremely thick (PL. 1, FIG. 7), sometimes to such an extent that it is difficult to make out the outlines of the epidermal cells. The epidermal cells in this region are also rectangular, but many of them show additional thickened cross bars joining two longer walls of the cell, so that it becomes difficult to make out the real transverse walls of the cell. The epidermal cells adjoining this thickened zone are less thick and vary in shape and size.

This outer seed coat must have been many-layered. After treatment of the carbonized crust with the acid this coat remained thick. But when alkali was added, the cuticular layer separated from the rest of the tissue which was dissolved.

The second layer of cuticle (sclerotesta?) is very thin. This is the one which came out from the inner thin black layer on the seed. The cell walls are faintly marked and could be seen to some extent after staining. Cells are elongated with straight, slightly but uniformly thickened walls.

Stereocarpus Gen. nov.

Diagnosis—Thick radiosymmetrical seed of medium size, oval to oblong, without wing or margin. A few ribs on the surface from base to apex.

Stereocarpus emarginatus sp. nov.

Diagnosis—Thick, almond-shaped seed of medium size with acute apex. Margin or wing absent. Two to three longitudinal ribs from base to apex present in the middle region of the seed. Outer seed coat thick; epidermal cells longer than broad, very much thickened. Inner seed coat thin, epidermal cells similar to those of the outer seed coat, but thinner.

Type specimen No. 19512, Birbal Sahni Institute of Palaeobotany Museum.

DISCUSSION

Cordaicarpus is distinguished by the presence of a cordate base and a narrow margin. *Samaropsis* possesses a very well-defined margin or a wing. Both the seeds are bilateral and are preserved as flat impressions or casts. The present specimen is obviously a thick type of seed, radially symmetrical, quite distinct in appearance from the above two genera, *Cordaicarpus* and *Samaropsis*. It does not possess a wing and the ribs which are present here are unknown in *Cordaicarpus* and *Samaropsis*. *Nummulospermum bowenense* is another platyspermic seed describ-

ed by Walkom (1921) from Queensland, Australia. It differs from *Stereocarpus emarginatus* by possessing a broad wing (sarcotesta), a circular nucule with prominent beak and absence of any ribs.

As regards other Palaeozoic seeds, a number of which are well known (SEWARD, 1917), *Stereocarpus emarginatus* is not comparable to any one of them.

This type of seed, as far as I know, has not been reported before from the southern hemisphere and the characters of the seed appear to be sufficiently distinctive as to warrant a separate generic name.

REFERENCES

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 SEWARD, A. C. & SAHNI, B. (1920). Indian Gondwana plants—A revision. *Mem. Geol. Surv. India*. N.S. 7(1).
 WALKOM, A. B. (1921). On *Nummulospermum* gen. nov., the probable megasporangium of *Glossopteris*. *Quart. Jour. Geol. Soc.* 77. Pt. 4: 289-295.

EXPLANATION OF PLATE 1

- 1 & 2. Two seeds on a carbonaceous shale No. 19512. Nat. size.
 3 & 4. The same seeds enlarged. Note the ribs in Fig. 3. $\times 5$.
 5. Epidermal cells of the outer seed coat. Thick cells on the left are those over the ribs. $\times 100$.
 6. Enlarged epidermal cells over the body of the seed. $\times 100$.
 7. Thick cells over the ribs. $\times 100$.



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3



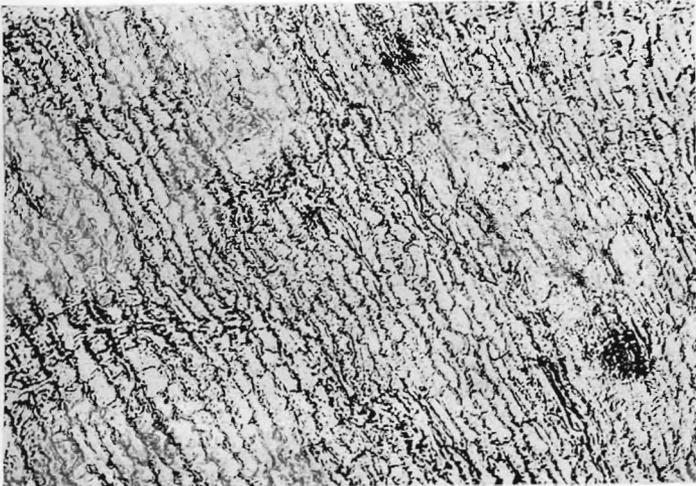
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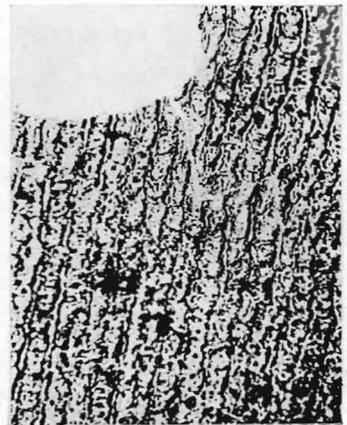
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