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# *ROSSIELLA* AND *BOGOROVIA*: TWO FOSSIL DIATOM GENERA

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**ABSTRACT**

The genus *Rossiella* Desikachary & Maheshwari occurs in the Miocene deposits, both in onshore deposits and in deep-sea cores. Six species of this genus, viz., *R. paleacea*, *R. elongata* (Barron) Desikachary comb. nov., *R. tatsunokuchiensis*, *R. praepaleacea*, *R. moholensis* (Schrader) Desikachary comb. nov. and *R. gombosi* Desikachary sp. nov. are described and discussed. The authors consider *Rossiella* and *Cussia* Schrader as congeneric. *Bogorovia* Jouse, as typified by *B. veniamini*, is considered distinct from *Rossiella*.

*Key-words* — Diatom, *Rossiella*, *Bogorovia*, Miocene (India).

**सारांश**

रोसियॅल्ला एवं बोगोरॉविया : दो डाएटमाश्म वंश – टी० वी० देसिकाचार्य, वाई० लथा एवं के० ए० रन्जीथा देवी

रोसियॅल्ला देसिकाचार्य व माहेश्वरी वंश मध्यनूतन निक्षेपों, अर्थात् तट के पास वाले निक्षेपों एवं गहरे समुद्र की क्रोड़ों दोनों में ही पाया जाता है। इस वंश की छः जातियाँ अर्थात् रो० पैलिएसिया, रो० इलोंगेटा (बैरॉन) देसिकाचार्य नव संयोजन, रो० तात्सुनोकुचियेन्सिस, रो० प्रीपैलिएसिया, रो० मोहोलेन्सिस (स्क्रेडर) देसिकाचार्य नव संयोजन तथा रो० गॅमबोसाई देसिकाचार्य नव जाति का वर्णन एवं विवेचन किया गया है। इस शोध-पत्र के लेखक रोसियॅल्ला एवं कुसिया को समवंशी मानते हैं। बोगोरॉविया जूस को रोसियॅल्ला से अलग माना गया है।

*ROSSIELLA* was created by Desikachary and Maheshwari (1958) to receive *Stoschia*(?) *paleacea* Grunow in Van Heurck (≡*Coscinodiscus paleaceus* Grunow in Van Heurck, 1883; Rattray, 1889). Schrader (1974a) created a new genus *Cussia* with the same species as the type. *Cussia* is, therefore, a superfluous name. Schrader also created a number of new species under *Cussia*, but these do not agree with *R. paleacea* and need a new dispensation. Jouse (1974) created another genus *Bogorovia*, but based on *B. veniamini* as the type. *Stoschia paleacea* was, however, wrongly included by him in *Bogorovia*. *B. veniamini* Jouse occurring in the Upper Oligocene — Lower Miocene is so different from *Stoschia paleacea* in having transverse rows of areolae with distinct transverse costae (see Jouse, 1974, figs 1-3). Unfortunately, a number of other species which have a different structure got included in *Bogorovia* and *Rossiella* (*Cussia*). The diatoms under consideration here are all very important in biostratigraphy being largely restricted to the Miocene. We have recorded these same diatoms from new localities in India and the Indian Ocean. The results are being reported here.

## *Rossiella* Desikachary & Maheshwari

1. *Rossiella paleacea* (Grun. in Van Heurck) Desikachary & Maheshwari 1958, p. 128, fig. 6.

Length (20.9-) 33-88 μm, width (5.5-) 13-19 μm, areolae 3-5 in 10 μm.

Middle Miocene, Nancoori (Sturt BMNH 46063, Pl. 1, figs 2, 3); Colebrook Island (TVD & CLM no. 49, Pl. 1, figs 8-11); Kamortha, M. S. Srinivasan (no. MF 221, Pl. 1, fig. 4).

*R. paleacea* was first recorded from the Middle Miocene Nancoori deposits (Grun. in Van Heurck, 1883; Rattray, 1889; see Pl. 1, figs 2, 3) and again from the southern Naparima beds (Rattray, 1889; see Pl. 1, fig. 5). It was reported later from the Colebrook islands (Desikachary & Maheshwari, 1958, see Pl. 1, figs 8-11) and now by

one of us from the Kamortha Island (Pl. 1, fig. 4). This species has been recorded to occur in a number of Neogene (especially Early & Middle Miocene) cores from the Mediterranian Sea, the Pacific, the Atlantic, and the Indian Ocean and is considered a marker for designating diatom zones in cores.

2. *Rossiella elongata* (Barron) Desikachary comb. nov.

1981a *Bogorovia paleacea* var. *elongata* Barron, p. 528, pl. 4, figs 11, 12; 1981b, p. 140, pl. 2, fig. 2.

This diatom has elongated and symmetrical valves and does not resemble *R. paleacea* which is essentially asymmetrical. It is known from the lower Upper Miocene (Burckle, 1972) of eastern and North Pacific.

Three other taxa have been attributed to the genus *Rossiella*.

3. *Rossiella tatsunokuchiensis* (Koizumi) Gersonde, 1980, p. 272.

1972 *Raphoneis tatsunokuchiensis* Koizumi, p. 349, pl. 42, figs 3, 4.

Length 33.6 μm, width 9.6 μm and areolae 8 in 10 μm.

This was found earlier from Pliocene and late Miocene cores from DSDP sites 213, 215, elsewhere and in the tropical Indian Ocean (Schrader, 1974). It is now reported from the top section of core (0-2 cm) MSN 37-P taken at 8°48′S, 109°38′E (Pl. 1, fig. 7).

4. *Rossiella praepaleacea* (Schrader) Gersonde, 1980, p. 272.

1973 *Coscinodiscus praepaleacea* Schrader, p. 703, pl. 3, fig. 1.

1974a *Cussia praepaleacea* (Schrader) Schrader, p. 914.

1973 *Bogorovia praepaleacea* (Schrader) Jouse, p. 351.

Length 38.4 μm, width 8.4 μm, areolae 8 in 10 μm. It has been reported from MSN 37-P, taken at 8°48′S, 109°38′E (Pl. 1, fig. 1).

5. *Rossiella moholensis* (Schrader) Desikachary comb. nov.

1974a *Cussia moholensis* Schrader, p. 542, Pl. 1, fig. 1, pp. 1-4.

This differs from *Rossiella paleacea* but resembles somewhat *R. elongata*.

A few other species do not resemble *Rossiella* (=Cussia) or even *Bogorovia*. They differ from the former in having transversely arranged areolae and from the latter in not having a costate condition.

6. *Cussia*(?) *lancettula* Schrader, 1974b, p. 914, pl. 1, figs 9, 10.

Length 45.6 μm, width 10.8 μm and areolae 7 in 10 μm. It occurs in the Core LSDA SCS 2G taken 6°48′N, 114°44′E (0-5 cm) (Pl. 1, fig. 12).

7. *Bogorovia*(?) *cypriata* Gardette, 1978.

Length 36 μm, width 10.8 μm and areolae 8 in 10 μm. It has been reported in Core LSDA SCS 3G taken at 8°14′N, 115°37′E (0-4 cm) (Pl. 1, fig. 6).

Jouse (1974, p. 351), Gardette (1978) and Hendey (1981) have rightly pointed out their resemblance to *Cymatosira*. *Cussia lancettula* and *Bogorovia cypriata* resemble very closely *Cymatosira*, but the same cannot be said of *Bogorovia mediopunctata* (Hajós) Jouse (=*Rhaphoneis sparsipunctata* Hajos, 1968, p. 143, pl. 41, figs 16-27), *B. mediopunctata* v. *matraensis* (Hajós) Jouse and *B. sparsipunctata* Hendey. These latter ones cannot be placed in *Cymatosira*, as we have no definite information about the pattern of colony formation in them.

8. *Rossiella gombosi* Desikachary sp. nov.

1983 *Rossiella* sp. Gombos, A. M. & Cieselski, P. F. Initial Repts. DSDP 71: 604, pl. 24, fig. 1-2.

Valves linear-lanceolate, symmetrical, apices rounded, 11.3-12.8 μm broad, 70-78.8 μm long; aerolate, areolae 6-7 in 10 μm.

*Type Specimen* — Gombos, 1983, loc. cit. pl. 24, fig. 1.

*Locality* — DSDP 513A-13-1, 67-69 cm; 47°34.99′S 24°38.40′W.

Gombos and Cieselski did not name the species pending a review of the species of *Rossiella*. This form is so different from the other species of *Rossiella*. Hence, it is described as a new species here.

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## EXPLANATION OF PLATE

1. *Rossiella praepaleacea* (Schrader) Gersonde, MSN 37-P. × 1600.
2-5 & 8-11. *Rossiella paleacea* (Grun. in VH) Desikachary & Maheshwari.
2-3. Nancoori. × 1600.
4. Kamortha. × 1600.
5. South Naparima. × 1600.
8-11. Colebrook Island. × 1600.
6. *Bogorovia*(?) *cypriata* Gardette, Core LSDA SCS 3G. × 1600.
7. *Rossiella tatsunokuchiensis* (Koizumi), Gersonde Core DSDP, sites 213, 215. × 1600.
12. *Cussia*(?) *lancettula* Schrader, Core LSDA SCS 2a. × 1600.

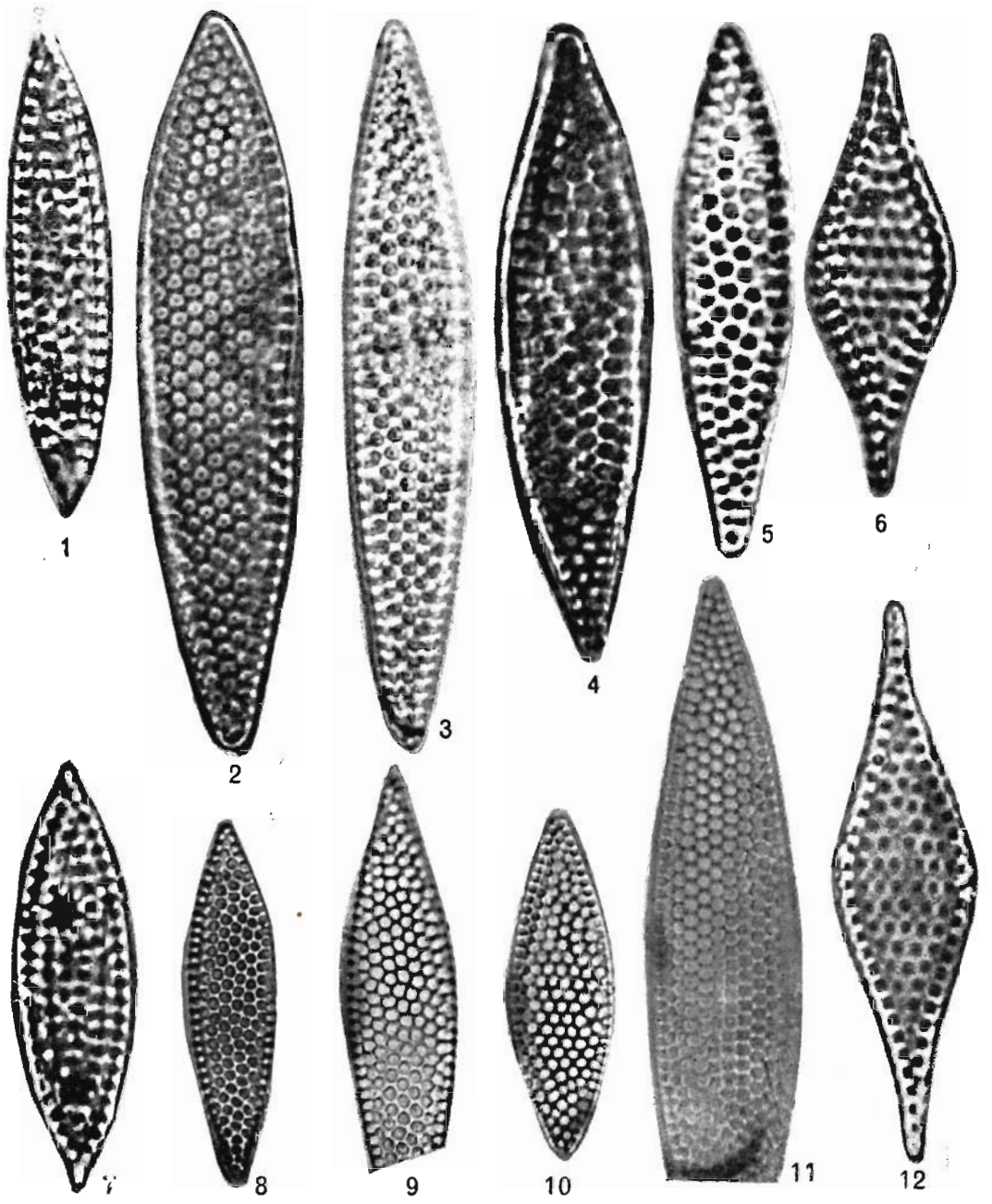


PLATE 1