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. tatsuokukihicensis, 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

रोसियेला एवं बोगोरोविया : दो डीटल्माम बंता — रॉसियेला डेसिकाचर्य, बार्न नर प्रे ० एन राजीवा देवी

रोसियेला डेसिकाचर्या व माहेश्वर बंता मध्ययुगीन निश्चेत्रों, प्रायः तट के पास बाले निश्चेत्रों एवं गहरे समुद्र की जोड़े दोनों में ही पाया जाता है। इस बंत की ३: जातियाँ बेहतर रॉसियेला एवं बोगोरोविया, रॉसियेला इनकेल्बा (बर्न) डेसिकाचर्या व नर संसाधन, रॉसियेला लातुकुकियेनिसिस, रॉसियेला प्राप्तिनिष्ठा, रॉसियेला मोहोलेनिसिस (झेड) डेसिकाचर्या व नर संसाधन तथा रोसियेला डेसिकाचर्या व नर जाति के वर्ण एवं विशेष निष्ठा या है। इस शोध-पत्र के बेहतर रोसियेला एवं कुमिया के समान तत्त्व हैं। बोगोरोविया मुझ को रोसियेला से बनता 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 Naperima 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 Mediterranean Sea, the Pacific, the Atlantic, and the Indian Ocean and is considered a marker for designating diatom zones in cores.

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*.

1972 *Raphoneis tatsuokuchiensis* 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).

1973 *Coscinodiscus praepaleacea* Schrader, p. 703, pl. 3, fig. 1.
1974a *Cussia praepaleacea* (Schrader) Schrader, p. 914.

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).


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 (=Raphoneis sparsipunctata Hajós, 1968, p. 143, pl. 41, figs 16-27), *B. mediopunctata* var. *maturaens* (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.

Valves linear-lanceolate, symmetrical, apices rounded, 11.3-12.8 μm broad, 70-78.8 μm long; areolate, 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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REFERENCES


EXPLANATION OF PLATE

1. Rossissla praepaleaecea (Schrader) Gersonde, MSN 37-P. x 1600.
2-5 & 8-11. Rossissla paleacea (Grun. in VH) Desikachary & Maheshwari.
2-3. Nanocoon. x 1600.
4. Kamortha. x 1600.
5. South Naparima. x 1600.

8-11. Colebrook Island. x 1600.
6. Bogorovia(?) cypriata Gardette, Core LSDA SCS 3G. x 1600.
7. Rossissla tatsuokuchensis (Koizumi), Gersonde Core DSDP, sites 213, 215. x 1600.
12. Cussia(?) lancettula Schrader, Core LSDA SCS 2a. x 1600.