STUDIES IN THE FOSSIL MICROFLORA OF ANDAMAN ISLANDS—2. FOSSIL DIATOMS FROM HAVELOCK ISLAND

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ABSTRACT

Diatoms from the Round Formation and Strait Sandstone Formation exposed in the Havelock Island of the Ritchie's Archipelago in the Andamans are recorded and described.

INTRODUCTION

From the Andaman-Nicobar area, EHRENBERG (1851, 1854), GHOSH and MAITRA (1947) and others have recorded fossil diatoms from the Nancoori Island in the Nicobars. JACOB and SHRIVASTAVA (1952) and DESIKACHARY and MAHESHWARI (1958) described fossil diatoms from the Colebrook Island of the Ritchie's Archipelago in the Andamans. The present note deals with the fossil diatoms recorded from the Round Formation and Strait Sandstone Formation (RAMCHANDRA & SEN-GUPTA, 1963-64) exposed in the Havelock Island of Ritchie's Archipelago of Andaman Island. This is the first record of the diatoms from well established stratigraphic horizons of the Andaman-Nicobar region.

METHOD

Heavy liquid, a mixture of three iodides (Potassium, Cadmium and Zinc), with a specific gravity of 2.3 was used for separation of the diatoms. Permanent slides were prepared with Polyvenyl alcohol and Canada balsam.

DESCRIPTION

Genus **Actinoptychus** Ehrenb.

Actinoptychus undulatus (Bail) Ralfs

Pl. 1, Fig. 1

Valve diameter 37.5 μ; sectors six, three depressed ones alternating with the other three; central polygonal hyaline area present.

Remark—Actinoptychus sp. is recorded by HANNA (1927-28) from Lower Miocene sediments of California. GHOSH and MAITRA (1947) recorded it from the diatomaceous earth in the Nicobar Island. DESIKACHARY and MAHESHWARI (1958) recorded *A. undulatus* from Miocene sediments of Colebrook Island and WORNARDT (1971) from New Fort Beach, California.

Actinoptychus sp. cf. **A. chenevierei** Long, Fuge & Smith

Pl. 1, Fig. 2

Valve 25 μ in diameter, sectors ten; five depressed ones alternating with the other five; central polygonal hyaline area present. Valve margin narrow, approximately 2 μ thick.

Remark—*Actinoptychus chenevierei* Long, Fuge & Smith (1946), described from Morene Shales, California appears to be similar except for the size.

Actinoptychus sp. cf. **A. splendens** var. **solisi** Hanna & Grant

Pl. 1, Fig. 3

Valve 33 μ in diameter, sectors sixteen, eight depressed ones alternating with the other eight, central hyaline area present, valve margin distinct.

Remark—The specimens recorded resemble *A. splendens* illustrated by WORNARDT (1967) and differ from *A. vuigaris* Wornardt (1971) from Monterey Formation, Late Miocene, California in having sixteen sectors.

Genus **Asterolampra** Ehrenb.

Asterolampra punctifera Grove

Pl. 1, Fig. 4

The delicate nature of the diatoms prevented getting complete specimens. Central nucleus divides into a number of cells; radial arms approximately nine in number; characteristic short spines or "puncta" present at the end of each radial arm.

Remark—The species is known from the Lower Miocene of Phoenix Canyon, 7 miles north of Coalinga, California (HANNA, 1927-28).

Asterolampra sp.

Pl. 1, Fig. 5

Valve diameter 60 μ; central areolate area absent; rays fourteen, conspicuously ramose near their inner end, straight or slightly wavy; compartments fourteen with transversely truncate inner ends, varying in breadth; areolae distinct, polygonal, those along inner margin of compartments slightly larger.

No complete specimen was recovered.

Remarks—*Asterolampra marylandica* of DESIKACHARY and MAHESHWARI (1958) from Miocene of Colebrook Island appears to be very similar to the species, but differs in having eight compartments.

Genus **Arachnoidiscus** Ehrenb.

Arachnoidiscus sp. cf. **A. manni** Hanna & Grant

Pl. 1, Fig. 6

Valve diameter is approximately 30 μ; occurrence rare and being delicate is not found complete.

Remarks—The specimen seems to be more close to *A. manni* (HANNA, 1927-28) recorded from Lower Miocene of California. GHOSH and MAITRA (1947) also recorded *Arachnoidiscus* sp. from the Miocene sediments of Nicobar Islands.

Genus **Coscinodiscus** Ehrenb.

Coscinodiscus sp. cf. **C. asteromphalus** Ehrenb.

Pl. 1, Fig. 7

Valve diameter 75 μ; hexagonal markings all over the surface, hexagons arrangement typical of species.

Remark—*C. asteromphalus* has been recorded by WORNARDT (1971) from Late Miocene and Middle Miocene of Monterey, California.

Coscinodiscus sp. cf. **C. lewisianus** Grev.

Pl. 1, Fig. 8

Valve elliptical, ends rounded, 60 μ long and 42.5 μ broad; no rosette, in the centre irregularly arranged large areolae present, areolae rounded, 4-5 μ to 9 μ, arranged in rows, marginal areolae smaller, border distinct.

Remark—*Coscinodiscus lewisianus* has been recorded by DESIKACHARY and MAHESHWARI (1958) from Miocene of Colebrook Island.

Coscinodiscus sp.

Pl. 1, Fig. 9

Valve circular, 14 μ in diameter, hexagonal markings of central portion not different from those of other regions; hexagons are not arranged in radial rows.

Remark—*Coscinodiscus lineatus* (WORNARDT, 1971) from Moneterey Formation (Late Miocene), California, appears to be more similar to the present species.

Genus **Grammatophora** Ehrenb.

Grammatophora sp. cf. **G. maxima** Grunow.

Pl. 1, Fig. 10

Length 40 μ and width 7.5 μ. No markings could be recorded on the body of the specimens, although in general appearance it resembles *Grammatophora maxima.*

Remark—HANNA and GRANT (1929) recovered *G. maxima* from the Pliocene sediments, Etchegoin Formation of Central California.

Genus **Rossiella** Desikachary & Maheshwari

Rossiella sp. cf. **R. paleacea** (Gran) Desikachary & Maheshwari

Pl. 1, Fig. 11

Valve elliptical, 40 μ long and 10.5 μ broad, with tapering rounded ends; valve surface almost flat to slightly convex; central area and rosette absent; areolae polygonal and uniform in size; no distinct marginal arrangement; apertures distinct.

Remark—This species has been recorded by DESIKACHARY and MAHESHWARI (1958) from Miocene of Colebrook Island.

Genus **Rhaphoneis** Ehrenb.

Rhaphoneis sp. cf. **R. amphiceros** Ehrenb.

Pl. 1, Fig. 12

Valve 30 μ long and 19 μ broad, central part very broad, ends obtusely rounded; punctae distinct.

Remark—The type recovered is very much similar to the type recorded by DESIKACHARY and MAHESHWARI (1958) from Miocene of Colebrook Island.

Genus **Stictodiscus** Grev.

Stictodiscus sp. cf. **S. nankoorensis** Grev.

Pl. 1, Fig. 13

Valve diameter 85 μ, surface flat, marked with arcuate lines, lines radial and dichotomous in the subcentral and marginal regions, puncta round, uniform in size, arranged in radial rows, alternating with the radial lines; border distinct.

Remark—This species has been recorded by DESIKACHARY and MAHESHWARI (1958) from Miocene sediments of Colebrook Island.

Genus **Triceratium** Ehrenb.

Triceratium distinctum Janisch Karsten

Pl. 1, Fig. 14

Valve angularly built, triangular in shape, one pore present at each angle, sides straight, surface sculptured with hexagonal markings. The dimension of the axis is 90 μ and that of the side is 100 μ.

Remarks—GHOSH and MAITRA (1947) recorded the species from the diatomaceous earth in the Nicobar Islands. It differs from *C. cancellatum* in size of the valve and dimensions of the reticulations.

Triceratium cancellatum Grev.

Pl. 1, Fig. 15

Valve angularly built, triangular in shape; sides 27.5 μ long; surface sculptured with reticulations which are smaller than *T. distinctum.*

Remark—Triceratium cancellatum has been reported by DESIKACHARY and and MAHESHWARI (1958) from the Miocene sediments of Colebrook Island.

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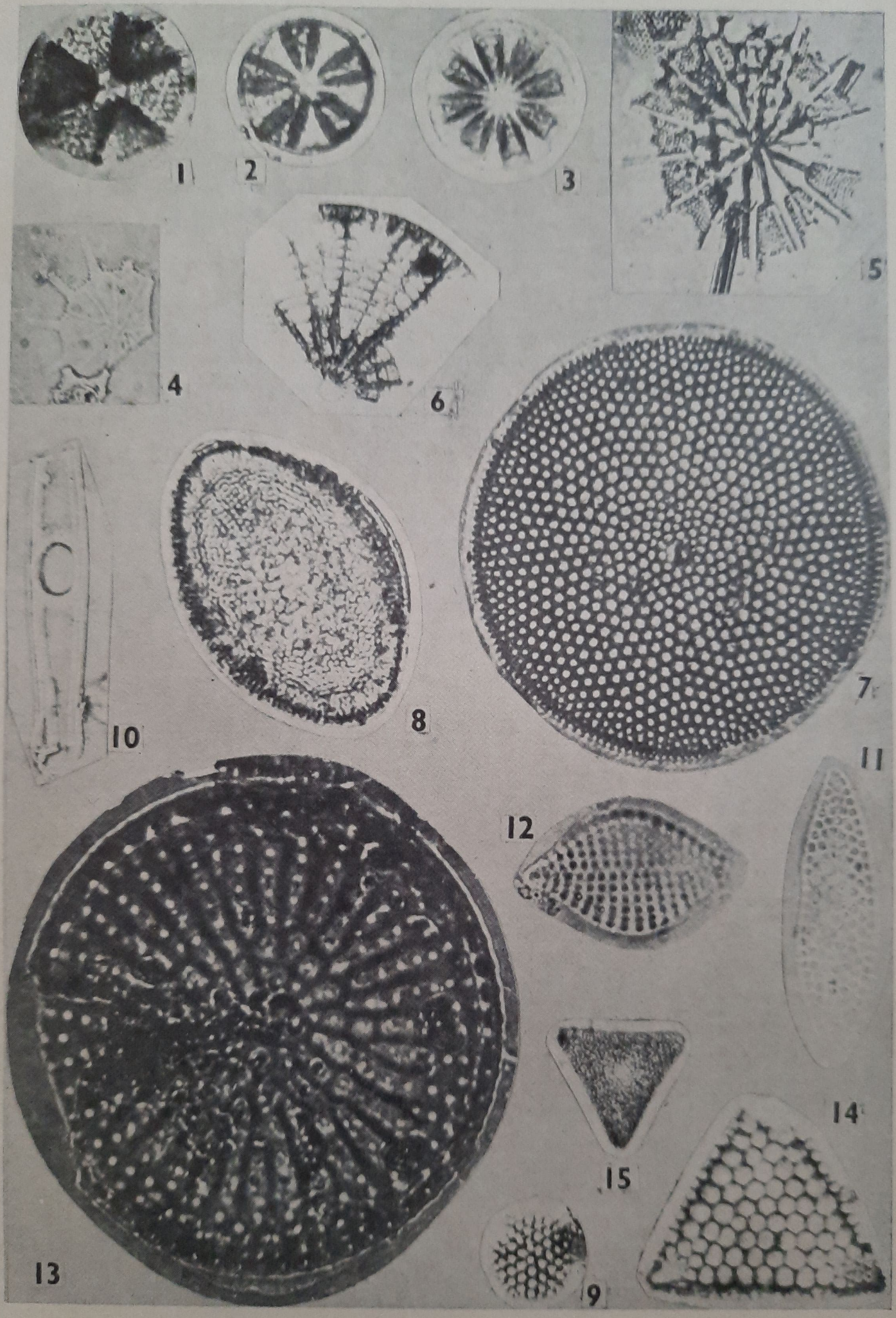
EXPLANATION PLATE 1

All figures ×1000

1. *Actinoptychus undulatus.*
2. *Actinoptychus* sp. cf. *A. chenevierei.*
3. *Actinoptychus* sp. cf. *A. splendens* var. *solisi.*
4. *Asterolampra punctifera.*
5. *Asterolampra* sp.
6. *Arachnoidiscus* sp. cf. *A. manni.*
7. *Coscinodiscus* sp. cf. *G. asteromphalus.*
8. *Coscinodiscus* sp. cf. *C. lewisianus.*
9. *Coscinodiscus* sp.
10. *Grammatephora* sp. cf. *G. maxima.*
11. *Rossiella* sp. cf. *R. paleacea.*
12. *Rhaphoneis* sp. cf. *R. amphiceros.*
13. *Strictodiscus* sp. cf. *S. nankoorensis.*
14. *Triceratium distinctum.*
15. *Triceratium cancellatum.*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