

Genus *Oedogonium* Link from northeastern Uttar Pradesh

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In the present paper 10 taxa of genus *Oedogonium* Link have been described for the first time from districts Gonda and Bahraich of U. P. *Oedogonium peipingense* Jao, Pap. Mich is a new record for India.

Key- Words– Algae, Chlorophyceae, *Oedogonium*, U.P.

INTRODUCTION

OEDOGONIALES constitutes a unique order of class Chlorophyceae as these algae possess multiflagellate stephenokontic flagella on their swimmers and show a peculiar type of cell division, resulting in the formation of caps. Silva (1980) has elevated the order Oedogoniales to the rank of class Oedogoniophyceae. Hirn (1900), Geiminhart (1939) and Gonzolves (1981) have given a detailed account of these algae. Gonzolves (1981) has also mentioned the distribution of various species of genus *Oedogonium* Link in India. Morozinska (2000) has described some new species of *Oedogonium* Link.

Occurrence of Oedogoniales in North India has been reported by Singh (1936, 1938), Randhawa (1963). They were followed by Venkataraman (1959) and Khan and Kukreti (1977) from Uttar Pradesh. Prasad and Misra (1992) have given distribution of several species of *Oedogonium* Link in India. Kant and Vohra (1999) have recorded four species of this genus from Dal lake Kashmir. In the present work 10 taxa of the genus *Oedogonium* Link have been described. These species have been collected from different ponds and rivers of Gonda and Bahraich districts of Uttar Pradesh (Map. 1 & 2). These districts are situated in tarai region of northeastern part of Uttar Pradesh. Algal flora of Gonda and Bahraich district has not been studied so far, hence all the species of the genus constitute new record from these areas. *Oedogonium peipingense* Jao is a new addition to the algal flora of India.

SYSTEMATIC DESCRIPTION

Phylum	–	Chlorophyta
Class	–	Chlorophyceae
Order	–	Oedogoniales
Family	–	Oedogoniaceae
Genus	–	<i>Oedogonium</i> Link

Filament single, unbranched, vegetative cells uninucleate, cylindrical or some time capitellate, chromatophore reticulate with numerous pyrenoids at large intersection of reticulum, basal cell with holdfast, vegetative cell, except the basal one capable of division oogonia and anthredia produced by the direct division of vegetative cells.

Asexual reproduction by multiflagellate zoospore, sexual reproduction by oogonial egg and anthridial multiflagellate sperm.

Drawf male, androsporangia and androspores are also formed.

Oedogonium obtruncatum Wittrock 1874

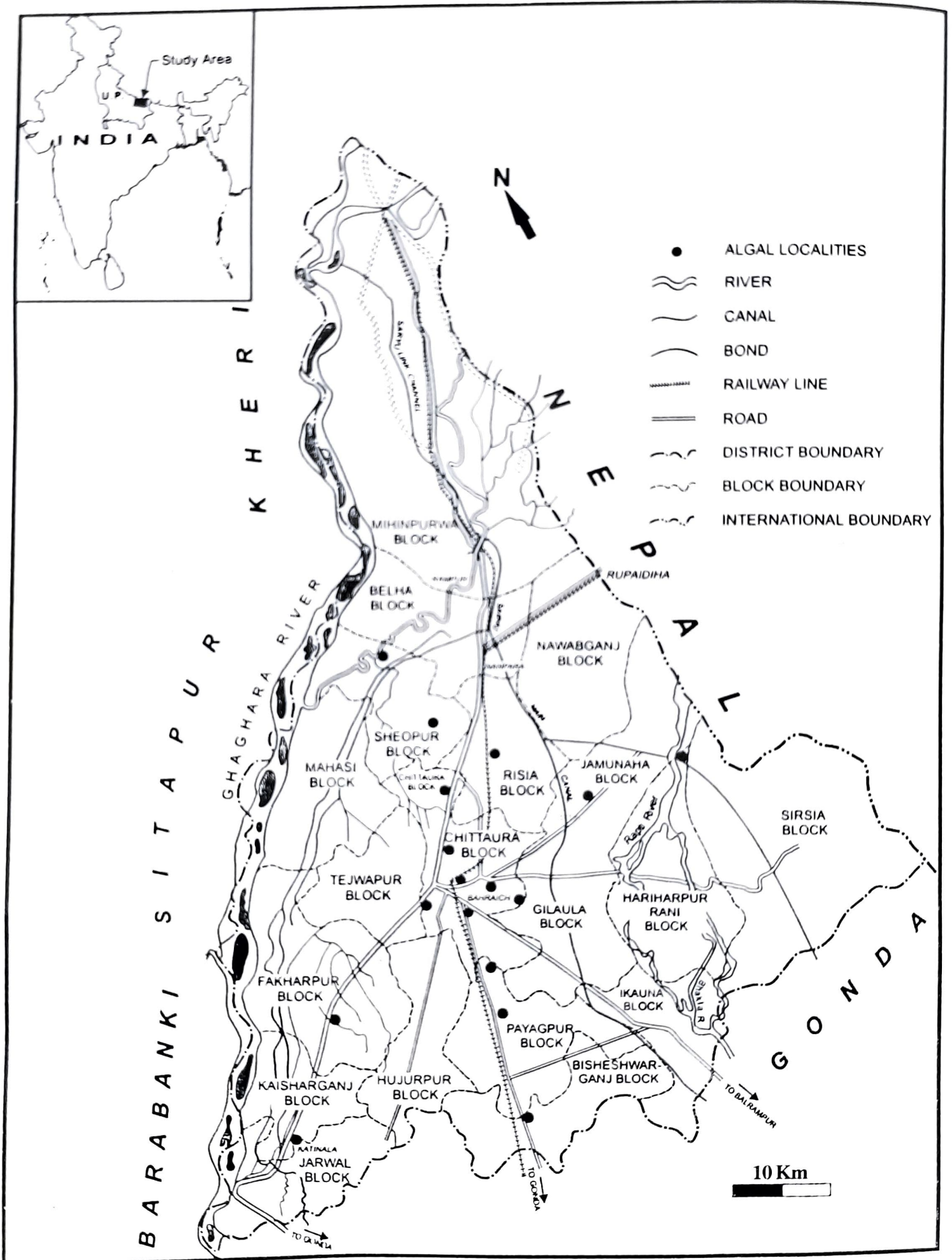
Pl. 1, Fig. 4

Hirn, K. E. 1900. Tab. XLIX fig. 318.

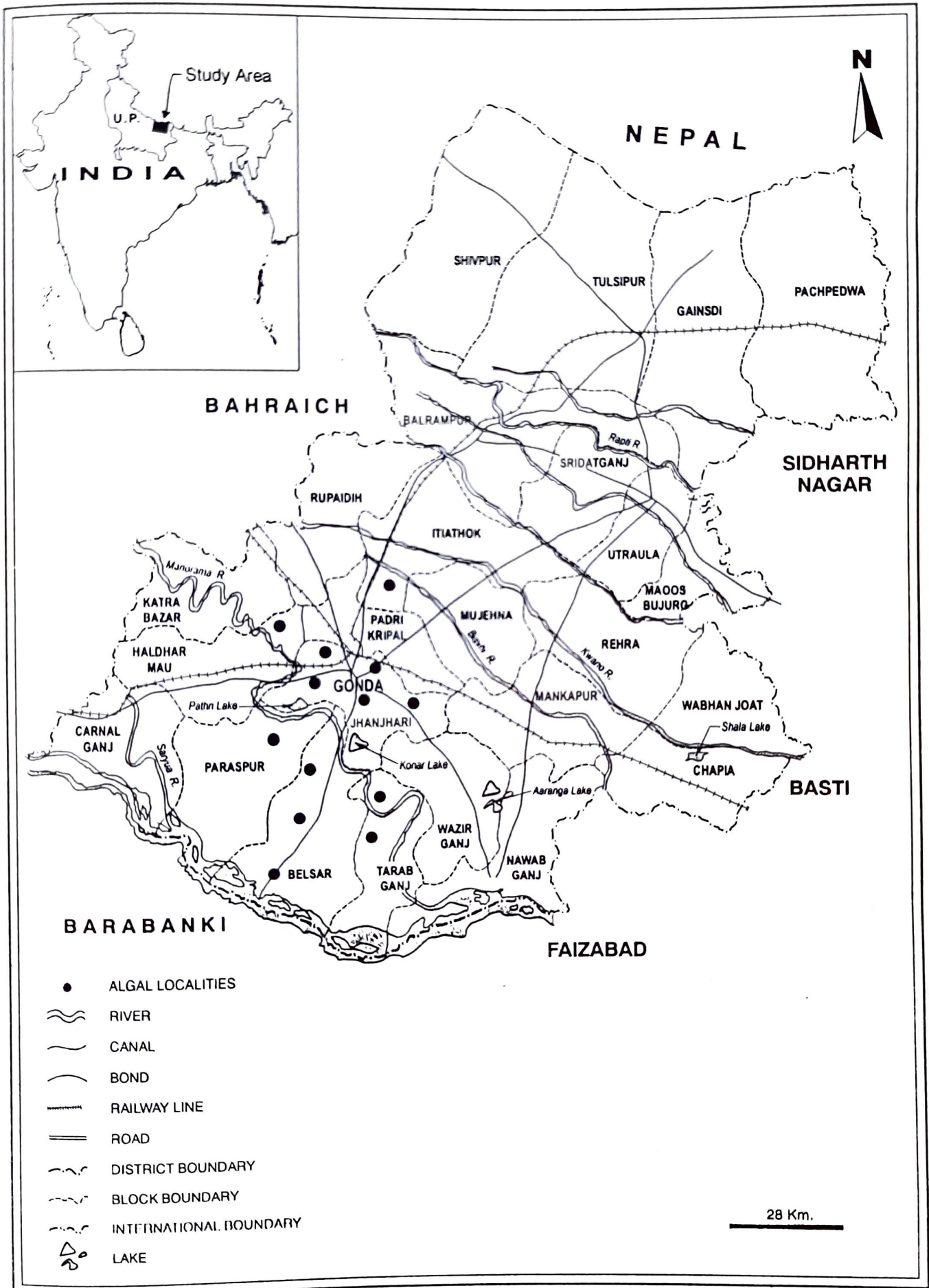
Gonzalvales, E. A. 1981. p. 282, fig. 9.277A.

Nannandrous, gyandrosporous, vegetative cells evidently capitellate 20 µm indiameter, 76 µm long terminal cells form oogonia, oogonia two, separated by androsporangium, ellipsoid, or globose ellipsoid 50 µm in diameter, 50-60 µm long.

Oospore identical in shape to the oogonium, 47



1. Map of District- Bahraich Showing Algal Localities



2. Map of District-Gonda Showing Algal Localities

μm in diameter 48-58 μm long, spore wall smooth. Androsporangium 20 μm in diameter, 20 μm long, dwarf male not seen.

Collection no. – Gon. 16 (13. 11. 1999)

Localities – Tirray manorama and allied pond.

Distribution in India – Bombay (Maharashtra), Alnavar (Kernataka), Pondicherry.

Remark – In the present specimen androsporangia occur at intercalary position.

Oedogonium completum (Hirn) Tiffany 1934

P1. 1, Fig. 5

Gonzalvales, E. A. 1981, p. 376, Fig. 267 A.

Nannandrous, gyandrosporous, vegetative cells capitellate 14-16 μm in diameter, 65-77 μm long, oogonia single, ellipsoid 48 μm in diameter, 58-60 μm long.

Oospore broadly ellipsoid, filling the oogonia, 46 μm in diameter 56-58 μm long, oospore spore wall smooth. Androsporangia, 3-5, 20 μm in diameter, 22 μm long.

Collection no. – Gon. 56 (2-12-1999)

Locality- Gouda Ghat.

Distribution in India – West Bengal.

Remark - Hirn (1900) in his monograph has treated this taxon as a variety i.e. *Oedogonium obtruncatum* var. *completum*. But Gonzalvales (1981) has treated it as a species – *O. completum* (Hirn) Tiffany 1934.

Oedogonium alternans Wittrock and Lund 1874

P1. 1, Fig. 8

Hirn, K. E. 1900, p. 251, Tab. XLI Fig. 263 b.

Gonzalves, E. A. 1981. p. 393, Fig. 9.290.

Nannandrous, gyandrosporous, vegetative cells capitellate 40 μm in diameter, 50-85 μm long, support-

ing cell 85 μm long, 40 μm indiameter. Oogonia single, 95 μm in diameter, 76 μm long, spore wall reticulate costate, androsporangia single, epigynous, hypogynous, dwarf male not seen.

Collection no. – Bah. 12 (4-10-1998)

Locality - Radhakund (Shiv temple).

Distribution in India – Godawari (Karnataka)

Oedogonium inerme Hirn 1900

P1. 1, Fig. 10

Hirn, K. E. 1900. p. 287, Tab.II, Fig. 10.

Gonzalvales, E. A. 1981. p. 527, Fig. 9.437.

Macrandrous, vegetative cells cylindric, 20 μm in diameter, 60-90 μm long, oogonia depressed to pyriform, single or up to three seriate 65 μm in diameter, 65-70 μm long. Antheridia not seen.

Oospore depressed or sub-depressed, globose not filling the oogonia, 40-50 μm in diameter 32-35 μm long, oospore spore wall smooth.

Collection no. – Bah. 176 (18-10-1999)

Locality – Saryua River.

Distribution in India – Hamirpur in Jalandhar District (Punjab).

Remark – As observed in the present specimen Male plant of this species has not been reported by Hirn 1900 and Gonzalvales 1981. The oogonia of the present specimen are slightly broader than those of *O. inerme* Hirn.

Oedogonium amplum Magnus and Wille 1884

P1. 1, Figs. 3, 6, 12

Tiffany, L. H. and Britton, M. E. 1952. p. 72, pl. 20, Fig. 175.

Gonzalvales, E. A. 1981. p. 250, Fig. 9.132.

Macrandrous, hetrothallic, vegetative cells cylindric, those of female filaments, 60-70 μm in diameter,

EXPLANATION OF PLATES-1

Figs. 1, 2, 7. *Oedogonium borsianum* X 500
 Figs. 3, 6, 12. *Oedogonium amplum* X 200
 Figs. 4. *Oedogonium obtruncatum* X 200
 Fig. 5. *Oedogonium completum* X 200
 Fig. 8. *Oedogonium alternans* X 200
 Fig. 9. *Oedogonium vaucherii* X 500

Fig. 10. *Oedogonium inerme* X 300
 Fig. 11. 14. *Oedogonium peipingense* X 200
 Fig. 13. *Oedogonium borsianum* var. *crassa* X 200
 Figs. 15-16. *Oedogonium* sp. indet X 750

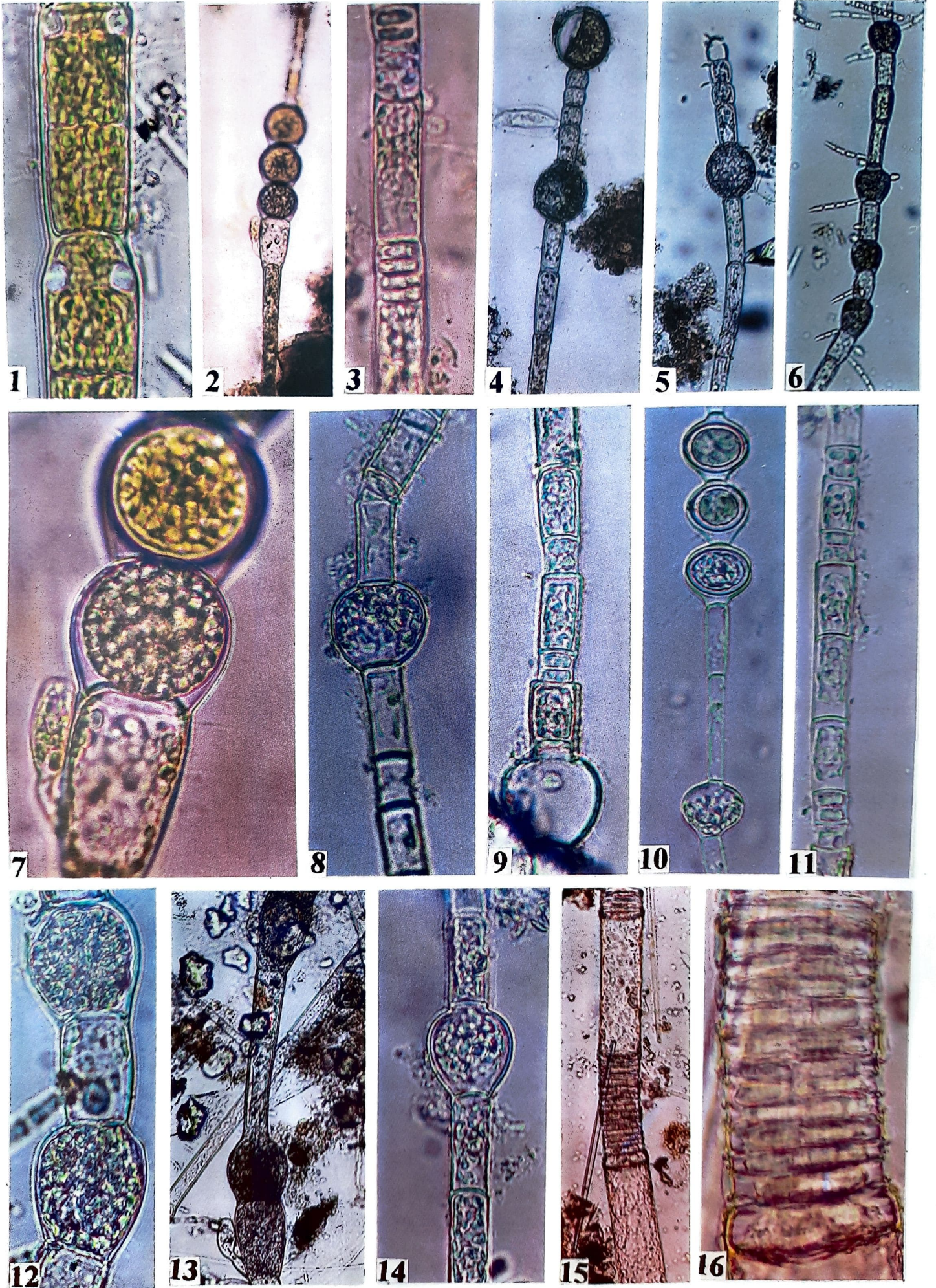


PLATE 1

100-120 μm long, those of male filaments 40-48 μm in diameter, 120-131 μm long. Oogonia single, ovoid-ellipsoid, 110 μm in diameter, 105-120 μm long.

Oospore ellipsoid, nearly filling the oogonia, 68-75 μm in diameter, 93-125 μm long, oospore spore wall reticulate costate, anthridia one to two, 40 μm in diameter, 20-25 μm long.

Collection No. – Gon. 40 (26-11-1999)

Localities – Near Gauda Ghat.

Remark – The oospore wall of the present species is showing reticulate costate but Gonzalvales (1981) species was smooth walled.

Distribution in India – Kolhapur (Maharashtra).

Oedogonium peipingense Jao, 1935

P1. 1, Figs. 11, 14

Gonzalvales, E. A. 1981, p. 334, Fig. 9.227.

Macrandrous, hetrothallic, vegetative cells cylindrical, those of female filaments, 38-39 μm in diameter, 90-120 μm long, those of male filaments 30 μm in diameter, 70-75 μm long. Oogonia single, ovoid 80 μm in diameter, 90 μm long.

Oospore nearly filling the oogonia, 72 μm in diameter, 75 μm long, oospore spore wall smooth, anthridia one, 30 μm in diameter, 35 μm long.

Collection No. – Bah. 25 (12-1-1999)

Locality – Saryu River.

Remark – Setiform terminal cell not seen.

Distribution in India – This species is being reported for the first time from India.

Oedogonium vaucherii (LeClerc) Wittrock 1870

P1. 1, Fig. 9

Hrin, K. E. 1900, p. 97, Tab. VI, figs. 36-38.

Gonzalvales, E. A. 1981, p. 187-188, fig. 9.56 A.

Macrandrous, homothallic, vegetative cells cylindrical, 40-50 μm in diameter, 70-100 μm long. Oogonia single, sub-ovoid, globose, sub-globose 95 μm in diameter, 25 μm long.

Anthridia 35 μm in diameter, 25 μm long, spermatozoides two.

Collection No. – G0n. 58 (9-3-1999)

Locality – Gauda Ghat (West).

Remark – Gonzalvales 1981 described this taxa at variety level as *Oedogonium vaucherii* var. *vaucherii*.

Distribution in India – Hyderabad (A.P.), Ahmedabad (Gujarat) Bombay, Tunger, Hill, Kolapur (Maharashtra).

Oedogonium borsianum (Le Clerc) Wittrock 1870

P1. 1, Figs. 1, 2, 7

Hrin, K. E. 1900, p. 217, Tab. XXXVI, Fig. 223.

Gonzalvales, E. A. 1981, p. 394-396, Fig. 9.292 A.

Tiffany, L. H. and Britton, M. E. 1952, p. 90, pl. 25, Fig. 246.

Prasad, B. N. and Misra, P. K. 1992, p. 67, pl. 12, Fig. 1-4.

Nannandrous, idionandrosporous, vegetative cells cylindrical, female filament 60 μm in diameter, 180 μm long, suffoltary cell much inflattend 40 μm in diameter, Oogonia three seriate ovoid 155 μm in diameter, 160 μm long, oospore wall smooth nearly filling the oogonia, 130 μm in diameter, 130 μm long spore wall smooth, dwarf male bent toward towards oogonia, situated on suffoltary cell, 10 μm in diameter.

Androsporous filament, 32 μm in diameter, 140 μm long, androsporangia 35 μm in diameter, 25 μm long, androspore 25-28 μm in diameter, 22 μm , long.

Collection No. – Beh. 148.

Locality – Rapti River (Shravasti, Malhipur).

Remark – This is a widely distributed species of the genus *Oedogonium* Link..

Distribution in India – Sadiya (Assam), Tunger Hill in Thana District (Maharashtra), Faizabad (U.P.).

Oedogonium borsianum (Le Clerc) Wittrock 1870
var. *crassa* Singh 1938

P1. 1, Fig. 13

Gonzalvales, E. A. 1981, p. 397, fig. 9.292 C.

Nannandrous, gynandrosporous or idioandrosporous, vegetative cells cylindrical, female filament 20-30 μm in diameter, 70-80 μm long, Oogonia single ovoid 58 μm in diameter, 65 μm long, oospore

filling the oogonia, 56 μm in diameter, 63 μm long, spore wall smooth, dwarf male curved situated on the suffotry cell, 8 μm in diameter, 40 μm long androsporous filament not seen.

Collection No. – Bah. 148 (2-6-1999)

Locality – Kati Nala.

Distribution in India – Gorakhpur (U. P.)

Oedogonium sp. indet

P1. 1, Figs. 15,1-6

Macrandrous, diocious, vegetative cells cylindric 40 μm in diameter, 120 μm long, Anthridial cell 35-40 μm in diameter, 8 μm long. Anthrozooid indistinct.

Collection No. – Gon. 01 (10-11-1999)

Locality – Manorama Pond.

Remark – Due to lack of female plant, specific identification of this taxon is not possible.

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