

$^{13}\text{C}$  NMR data (table 3) show signals in the regions 40–47 ppm (doublets in SFORD) and 55–58 ppm (triplets) which are interpreted<sup>7</sup> as due to C-4 and C-5 respectively. The chemical shifts of the aromatic carbons show the substituent shifts as expected<sup>10</sup>.

The mass spectral fragments (table 4) agree well with the structures assigned. Some of the fragmentation pathways are similar to those for 3-aryl-4-aryl-2-pyrazolines<sup>5</sup>.

From the above it is clear that 3-acetyl-4-aryl-2-pyrazolines have the structure II. Such a structure assignment has also been favoured by Smith *et al.*<sup>1</sup>, but without any spectroscopic evidence.

#### 3-Acetyl-4-aryl-2-pyrazolines: General procedure

To a solution of Ia (1.46 g, 10 mmol) in ether or chloroform at 0°C was added excess of diazomethane (from 4 g of nitrosomethylurea) and the mixture kept at 0°C for 60 h. The progress of the reaction was monitored over silica gel layers. After completion of the reaction, the solvent was removed under vacuum. The product IIa, 1.6 g, formed was recrystallized from pet. ether–ether; m.p. 102–103°C.

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## TWO NANNANDROUS SPECIES OF *OEDOGONIUM* LINK, NEW TO INDIAN ALGAL FLORA

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THE genus *Oedogonium* Link, is world-wide in distribution and most of the species are found epiphytic on *Cladophora*, *Pithophora*, *Chara* and *Nitella*, and also on larger species of *Oedogonium* and *Bulbochaete*<sup>1</sup>. At present the genus includes more than 531 species<sup>1,2</sup> excluding its varieties and forma. Of these, 171 nannandrous species, completely described, and 10 species, incompletely described, are included in a monograph by Gonzalves<sup>1</sup>. Among them 58 nannandrous species with their 73 taxa are so far reported from India.

During fortnightly collections of epiphytic algae of Mauri Lake, Pratapgarh, UP, from August 1984 to July 1986, 65 taxa of the genus *Oedogonium* were encountered. Among them 18 taxa are nannandrous, of which only two taxa, viz. *Oedogonium sinuatum* (Trans.) Tiffany f. *seriatum* Prescott and *O. westii* (Tiffany et Braun) Tiffany, are described here. Both species are new additions to the Indian algal flora.

†For correspondence

*Oedogonium sinuatum* (Trans.) Tiffany f. *seriatum* Prescott (figure 1).

Filaments nannandrous, gynandrosporous; vegetative cells undulate and capitellate, undulation up to four, 20–30  $\mu\text{m}$  in diameter, 50–90  $\mu\text{m}$  in length; oogonia single or up to four, seriate, spherical, 60–70  $\mu\text{m}$  in diameter, 50–80  $\mu\text{m}$  in length, operculate, division inferior; oospores spherical, smooth-walled, not completely filling the lumen of the oogonia, 55–60  $\mu\text{m}$  in diameter, 50–60  $\mu\text{m}$  in length; nannandria usually many, up to six, attached with a suffultory cell, 8–10  $\mu\text{m}$  in diameter, 40–50  $\mu\text{m}$  in length; antheridia exterior, two, 8–9  $\mu\text{m}$  in diameter, 9–12  $\mu\text{m}$  in length.

The present specimen agrees well with the type description. However, *O. undulatum* (Wittrock) Hirn and *O. sinuatum* (Trans.) Tiffany are quite similar in general appearance, but both have narrower vegetative cells and oogonia in comparison to the present taxon.

Habitat and collection no.: Epiphytic on *Ceratophyllum demersum*, *Utricularia aurea*, *Nelumbo nucifera* and *Chara zeylanica*; 47, 113.

Occurrence and distribution: August to March; this alga is new for Indian algal flora; earlier reported from N. America<sup>1</sup>.

*Oedogonium westii* (Tiffany et Braun) Tiffany (figure 2).

Filaments nannandrous, gynandrosporous; vegetative cells cylindrical, 15–30  $\mu\text{m}$  in diameter, 70–140  $\mu\text{m}$  in length, suffultory cell inflated, 35–55  $\mu\text{m}$  in diameter, 70–87  $\mu\text{m}$  in length; oogonia two or up to three, seriate, obovoid, 50–64  $\mu\text{m}$  in diameter, 65–85  $\mu\text{m}$  in length, poriferous, pore superior; oospores ovoid to obovoid, smooth-walled and filling the lumen of oogonia, 52–61  $\mu\text{m}$  diameter, 60–75  $\mu\text{m}$  in length; nannandria curved and situated on a suffultory cell, 17–25  $\mu\text{m}$  in diameter, 65–75  $\mu\text{m}$  in length; antheridia single, 15–19  $\mu\text{m}$  in diameter, 10–12  $\mu\text{m}$  in length.

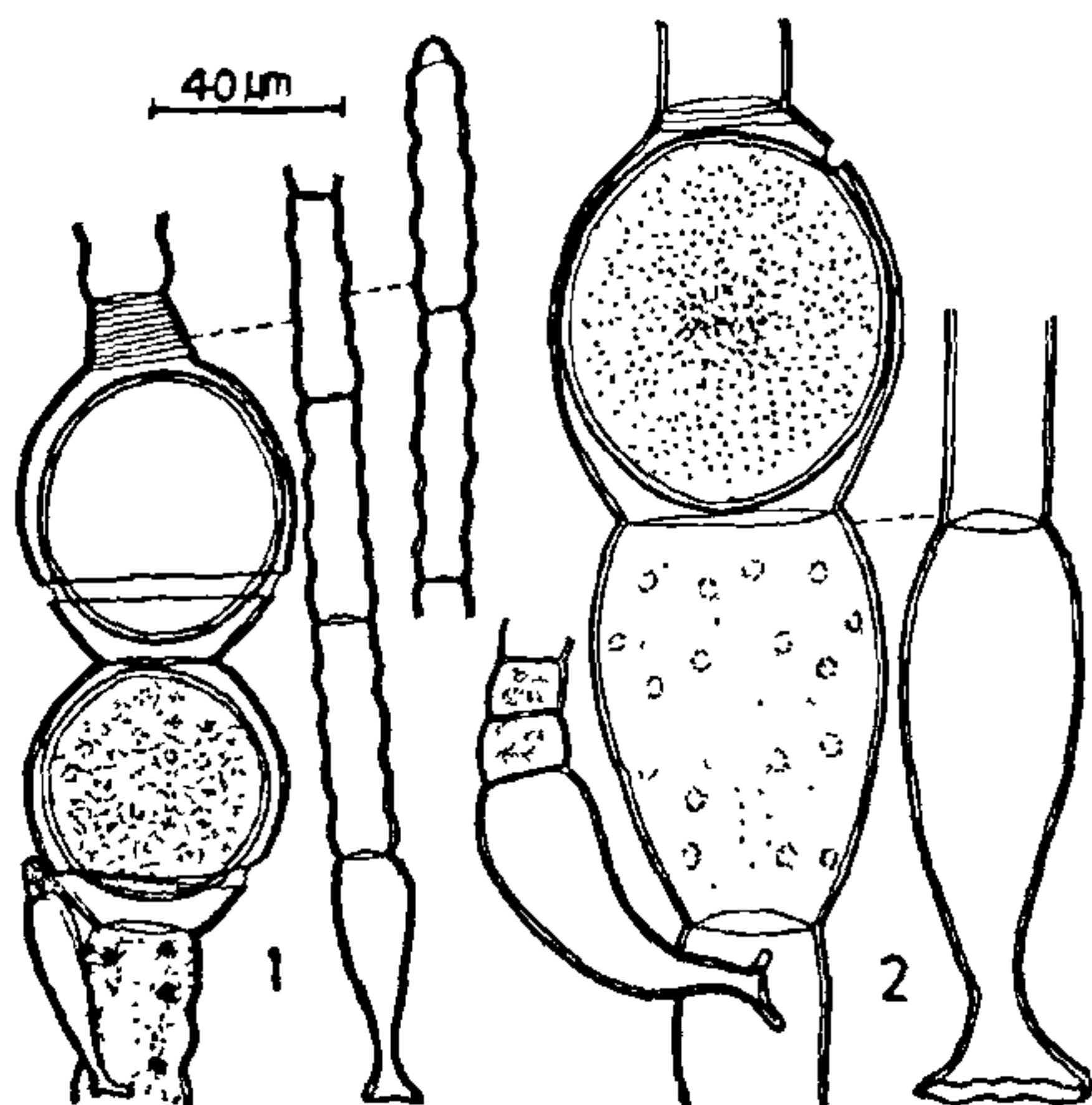
The present specimen resembles the type description in all the essential features.

Habitat and collection no.: Epiphytic on *Ceratophyllum demersum*, *Hydrilla verticillata* and *Eleocharis dulcis*; 123, 191.

Occurrence and distribution: August to December; the present alga is also new to Indian algal taxonomy; previously it was reported from N. America and Europe<sup>1</sup>.

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Figures 1 and 2, 1, *Oedogonium sinuatum* (Trans.) Tiffany f. *seriatum* Prescott. 2, *Oedogonium westii* (Tiffany et Braun) Tiffany.

## LEAF ANATOMY OF MIDRIBLESS MUTANTS IN PEARL MILLET

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THREE spontaneous midribless mutants in pearl millet [*Pennisetum glaucum* (L.) R. Br., syn. *P. typhoides* (Burm.) S. & H.], two from Mali (IP 6534 and IP 10154) and one from India (J 561), were identified. All the leaves of the midribless mutants characteristically droop in appearance (figure 1) and