

SPIROGYRA VARIFOVEOLATA SPC. NOV. AND A NEW VARIETY OF *SPIROGYRA* FROM INDIA

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SEVERAL new taxa were collected while making collections of conjugatean forms in the course of cytotaxonomic studies in Zygnematales. One new species and a new variety of *Spirogyra* are being described here.

Spirogyra varifoveolata sp. nov. (Figs. 1-3, 6-10).

Cellulae vegetativae $97-106\mu$ latae, $83-235\mu$ longae, parietibus apicalibus planis, chloroplastis $6-9$ efficientibus $0.5-1$ spiram in singulis cellulis. Conjugatio scalariformis, tubulis efformatis ab utroque gametangio; gametangia mascula $99-104\mu$ lata, $97-110$ (-156) μ longa, gametangia feminea $97-104\mu$ lata, $97-110$ (-156) μ longa, cellulis femineis cylindraceis, non-tumescens, conjugationis canali $27.5-30.0\mu$ lato, zygosporis ellipsoideo-ovalibus vel sphericis $62-94\mu$ latis, $81-94\mu$ longis; exosporio levi, gracili, incoloro; mesosporio crasso, brunneo, foveolato; in non-nullis zygosporis area foveolata eminens et bene evoluta est, in aliis vero minus evoluta; endosporio gracili, evi, incoloro.

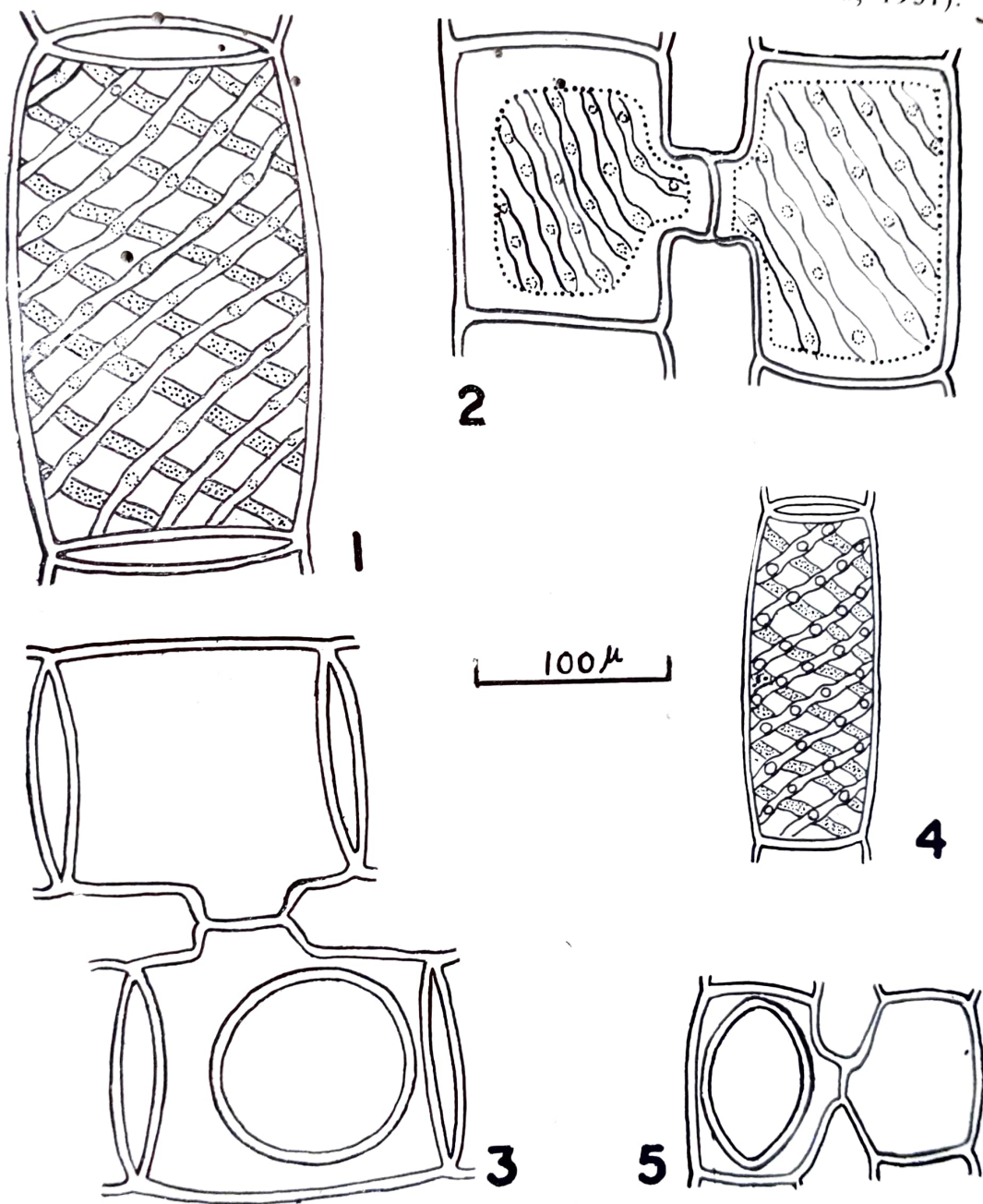
In vado prope viam Kursi, ca. 9 mill. pass. e Lucknow lect. 22. novembris 1967, et positus in Algarum collectione in Univ. Lucknow, sub numero 269.

Spirogyra varifoveolata sp. nov. (Figs. 1-3, 6-10).

Vegetative cells $97-106\mu$ broad, $83-235\mu$ long with plane end walls; chloroplasts $6-9$, making $0.5-1.0$ turns in each cell. Conjugation scalariform, tubes formed by both gametangia, male gametangia $99-104\mu$ broad, $97-110$ (-156) μ long; female gametangia $97-104\mu$ broad, $131-150\mu$ long, female cells cylindrical, unswollen; conjugation canal $27.5-30.0\mu$ broad; zygosporis ellipsoid oval to spherical, $62-94\mu$ broad, $81-94\mu$ long, exospore smooth, thin, colourless, mesopore thick, brown, foveolate, in some zygosporis raised foveolated areas are prominent and very well developed, whereas in others less developed; foveolations variable in shape and size $1.17-15.21\mu$ across; endospore thin, smooth, colourless.

Habitat.—Floating in a pond near Kursi Road about 9 miles from Lucknow, date of collection 22nd November, 1967. The material is deposited under No. 269 of algal collections, University of Lucknow.

The species comes close to *Spirogyra ghosei* Singh, *Spirogyra reinhardii* Chmielwski, *Spirogyra echinata* Tiffany and *Spirogyra hunanensis* Jao. (cf. Czurda, 1932; Randhawa, 1956; Transeau, 1951). It



FIGS. 1-5. Figs. 1-3. *Spirogyra varifoveolata* sp. nov. Fig. 1. A vegetative cell showing chloroplasts. Fig. 2. A pair of conjugating cells showing early stage in conjugation. Fig. 3. A pair of conjugating cells showing the female cell containing zygospore and the corresponding empty male cell. Figs. 4, 5. *Spirogyra bichromatophora* (Randhawa) Transeau var. *multichromatophora* var. nov. Fig. 4. A vegetative cell showing chloroplasts. Fig. 5. A pair of conjugating cells showing the female cell containing zygospore and the corresponding empty male cell.

agrees with *Spirogyra ghosei* in the number of chloroplasts, width of the vegetative cells, in having unswollen female gametangia, and in the colour of the mesospore. But it differs from *S. ghosei* in the width of conjugation canal, shape and size of the zygospores and in the ornamentation of the mesospore.

It resembles *Spirogyra reinhardii* in the number of chloroplasts and in the colour of mesospore. However, it differs from *S. reinhardii* in having narrower filaments, in the shape and size of the zygospore, in having unswollen female cells and in the ornamentation of the mesospore.

The species is similar to *S. echinata* in the number of chloroplasts, in the size of the zygospore and in the colour of the mesospore, but it differs from *S. echinata* in having broader filaments, in the shape of the zygospore, in having unswollen female cells and in the nature of ornamentation of the zygospore.

With *Spirogyra humanensis* it agrees in the number of chloroplasts, in width of the cells and in the colour of the mesospore, but differs in having unswollen female cells, in shape and size of the zygospore and in the ornamentation of the mesospore.

Since it does not agree with any known species in essential characters, it is distinctly a new species of the genus to be named *Spirogyra varifoveolata* sp. nov. on account of the variable foveolated ornamentation of the zygospore wall.

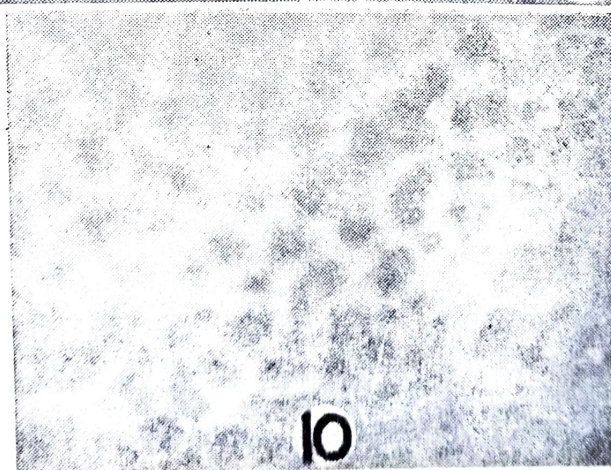
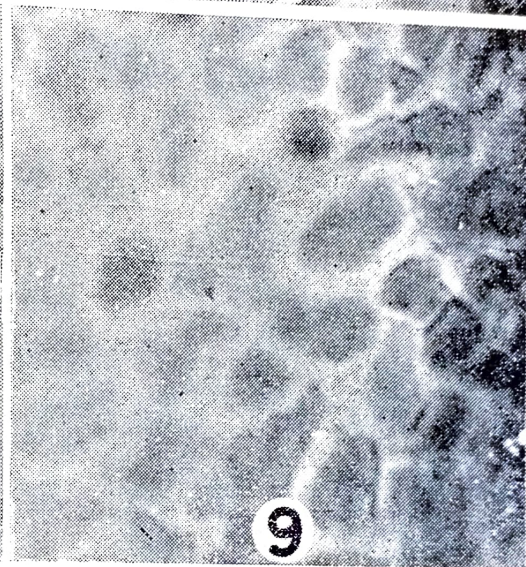
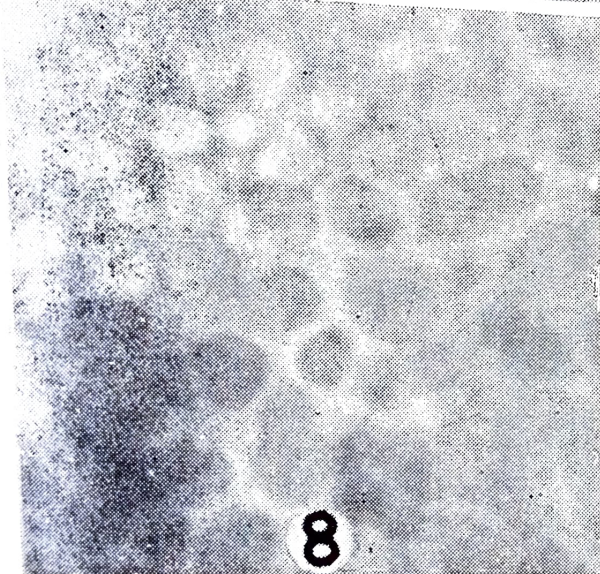
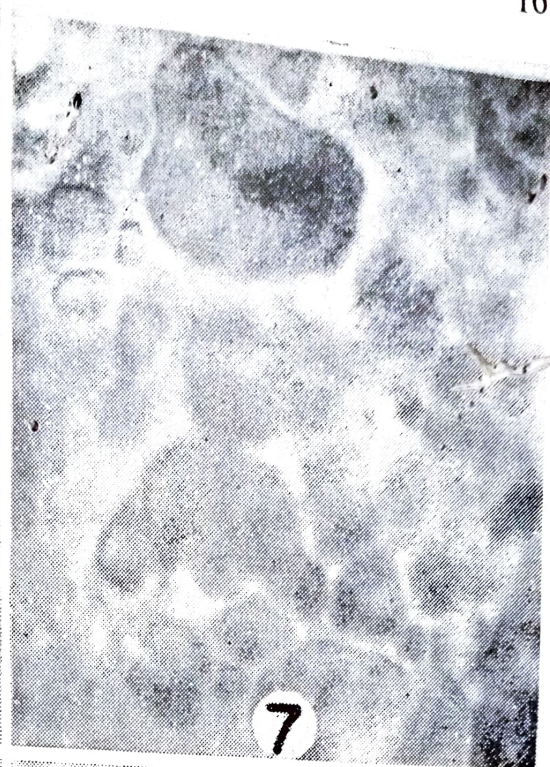
Spirogyra bichromatophora (Randhawa) Transeau var. *multichromatophora* var. nov. (Figs. 4, 5).

Cellulae vegetativae 58–64 μ latae, 71–235 μ longae, parietibus apicalibus planis, chloroplastis 3–4 efficientibus spiras 1.5–3 in singulis cellulis. Conjugatio scalariformis, tubulis efformatis ab utroque gametangio; gametangia mascula 58–64 μ lata, 50–93 μ longa; gametangia feminea 60–64 μ lata, 55–100 μ longa; cellulis femineis tumescentibus, conjugationis canali 15–30 μ lato; zygosporae ellipsoideae, 55–60 μ latae, 83–118 μ longae; exosporio tenui, levi, incoloro; mesosporio crasso, levi pallide luteo; endosporio tenui, levi, incoloro.

In vado prope Telibagh ca 7 mill. pass. a Lucknow, 27 Octobr. 1967, positus in Algarum collections in Univ. Lucknow sub-numero 254.

Spirogyra bichromatophora (Randhawa) Transeau var. *multichromatophora* var. nov. (Figs. 4, 5).

Vegetative cells 58–64 μ broad, 71–235 μ long with plane end walls, chloroplasts 3–4 making 1.5–3 turns in each cell. Conjugation scalariform, tubes formed by both gametangia, male gametangia 58–64 μ broad, 50–93 μ long; female gametangia 60–64 μ broad, 55–100 μ



FIGS. 6-10. *Spirogyra varifoveolata* sp. nov. Zygospore wall ornamentation on the mesospore from different zygospores in the same filament showing the range of variation in the foveolations. All figs., $\times 1,760$.

long, female cells inflated mostly on the conjugating side; conjugation canal $15-30\mu$ broad; zygospores ellipsoid, $55-60\mu$ broad, $83-118\mu$ long; exospore thin, smooth, colourless; mesospore thick, smooth, pale yellow; endospore, thin, smooth, colourless.

Habitat.—In a pool near Telibagh about 7 miles from Lucknow, Date of collection 27th October, 1967. The material is deposited under No. 254 of algal collections, University of Lucknow.

The species tallies with *Spirogyra bichromatophora* (cf., Randhawa, 1959; Transeau, 1951) in all respects except that it has three to four chromatophores instead of two and the colour of the spore wall is pale yellow instead of brown. It is, therefore, considered a new variety of *Spirogyra bichromatophora* to be called *S. bichromatophora* (Randhawa) Transeau var. *multichromatophora* var. nov.

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