STUDIES ON SOUTH INDIAN FERNS—III: NOTES ON TWO RARE AND LITTLE KNOWN TAXA

1. **Microsorum hymenodes** (Kunze) Ching in Bull. Fam. Mem. Inst. Biol. 4: 295. 1933 & Ic. Fil. Sinicarum 2. Pl. 84. 1934; Bir & Trikha in Bull. bot. Surv. India 10 (2): 133-148. 1968. (POLYPODIACEAE). *Polypodium hymenodes* Kunze in Linnaea 23: 279. 1850; C. Chr. Index Fil. Suppl. 1. 54. 1917. *P. superficiale* var. *semilinearis* Clarke in Trans. Linn. Soc. Lond. II Bot. 1: 558. 1880.

A very rare specimen so far reported only from Himalayas (Bhutan, Nepal and other parts of N. India). *Subramanyam* 10558 collected from Karain Shola, Nilgiri Dt., was misidentified as *Microsorum zippellii* Bl. A critical study revealed it to be *Microsorum hymenodes* (Kunze) Ching and thus this turns out to be a new record for South India. For a detailed description etc. refer Bir & Trikha *l.c.*

Specimens examined: Karian Shola, Nilgiri Dt., Tamil Nadu, 1300 m, 24th July 1960, *K. Subramanyam* 10558 (MH).

2. **Doodia dives** Kunze, Bot. Zeit. 144. 1848; Bedd. Ferns S. India t. 229. 1863 & Handb. Ferns Brit. India 137. 1883; C. Chr. Index Fil. 242. 1906. (BLECHNACEAE).

Beddome (1883) reports its occurrence from "Ceylon Hackgalla and the Central provinces above 4000 ft. elevation also in Java" But subsequently this species was collected from Coonoor and Upper Tiger Shola in the Nilgiris. Apparently, this has not been reported from India and hence its occurrence in South India is of phytogeographical interest.

This fern may be mistaken for some species of *Nephrolepis* in general appearance. However, the lunate sori arranged serially on either side of the costa are very characteristic of this species.

Specimens examined: Coonoor, Nilgiri Dt., Tamil Nadu, 1733 m, 21st January 1957, *K. M. Sebastine* 2150; Upper Tiger Shola, Nilgiri Dt., Tamil Nadu, 2000 m, 8th December 1957, *K. M. Sebastine & A. N. Henry* 4836.

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P. BHARGAVAN

Botanical Survey of India, Coimbatore

ZYGNEMATACEAE OF EASTERN HIMALAYA—I: *SPIROGYRA*

During the systematic survey of the algae of Eastern Himalaya, four species of *Spirogyra* have been recorded of which three are new to the Indian subcontinent. The materials were collected from streams and temporary water reserves of Darjeeling and its adjoining areas.

1. **Spirogyra hunanensis** Jao in Sinensia. 11: 297, Pl. 4, Figs. 4-5. 1940.

Vegetative cells 90-100 × 190-205 μ with plane end walls; chloroplasts 8-10, nearly straight or slightly spiralled; conjugation scalariform, conjugation tubes formed by both gametangia; receptive gametangia 120-130 μ inflated on the conjugating side; zygospore ellipsoidal, 90-100 × 120-145 μ, spore pale yellow, wall reticulate (Figs. 1 & 2).

Specimen no. D/Sp-1.

Locality: North point, Darjeeling, 2000 m, collected in April, 1974.

Previously reported only from China.

2. **Spirogyra minutifossa** Jao in Trans. Amer. Micros. Soc. 54: 3-4, Pl. 1, Fig. 5. 1935.

Vegetative cells 20-22 × 100-140 μ with plane end walls; one chloroplast with 3-6 turns in each cell; conjugation scalariform, tubes formed by both gametangia; fruiting cells inflated on both sides; zygospores ellipsoid with narrow ends, 22-25 × 40-50 μ, deep brown at maturity, spore wall minutely grooved (Figs. 3 & 4).

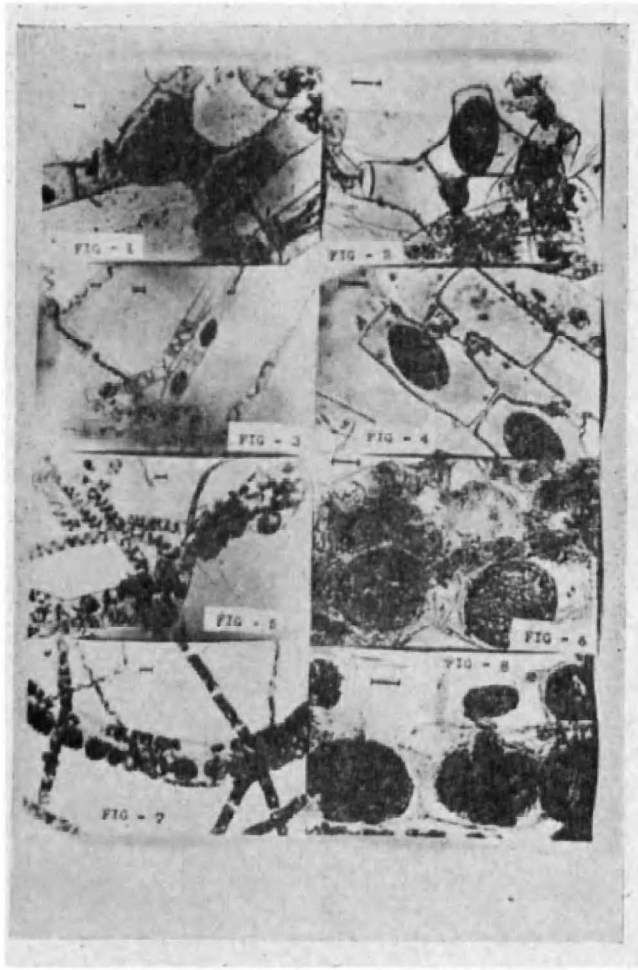


Plate 1: Filaments showing conjugation phases in four species of *Spirogyra* (Scale-10μ)
Figs. 1 & 2. *Spirogyra hunanensis* Jao. Figs 3 & 4. *S minutifossa* Jao. Figs. 5 & 6. *S. sulcata* Blum, Figs. 7 & 8. *S. orientalis* W & G. S. West

Specimen no. D/Sp-2.

Locality: Near Victoria falls, Darjeeling, 1950 m, collected in May, 1975.

Previously reported only from Nova Scotia, United States of America.

3. **S. sulcata** Blum in Amer. Jour. Bot. 30: 783, Figs. 9-11. 1943.

Vegetative cells 25-35 × 70-120 μ with plane end walls; 1 (-2) chloroplasts with 3-6 turns; conjugation scalariform, tubes formed by both gametangia; fruiting cells enlarged slightly; zygospores ovoid, 40-45 × 60-70 μ, greenish to brown, spore wall thick, reticulate (Figs. 5 & 6).

Specimen no. D/Sp-3.

Locality: Senchal lake, Darjeeling, 2400 m, collected in April, 1975.

Previously reported only from United States of America.

4. **S. orientalis** W. & G. S. West in Ann. Roy. Bot. Gard. 6: 186. 1907.

Vegetative cells 30-42 × 70-125 μ end walls plane; chloroplasts 3, making 2-3 turns in the cell; conjugation scalariform, tubes formed by both gametangia; fertile cells inflated; zygospores ellipsoid to globose, 35-40 × 50-75 μ, median spore wall scrobiculate, dark brown (Figs. 7 & 8).

Specimen no. D/Sp-4.

Locality: Bhutia basti, Darjeeling, 2000 m, collected on April, 1974.

Previously reported from Bombay (India), Yunan (China), Burma, Michigan (U.S.A.).

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S. C. SANTRA AND T. K. ADHYA
Darjeeling Govt. College, Darjeeling