

FOUR NEW SPECIES OF *SELAGINELLA* P. BEAUV. FROM INDIA

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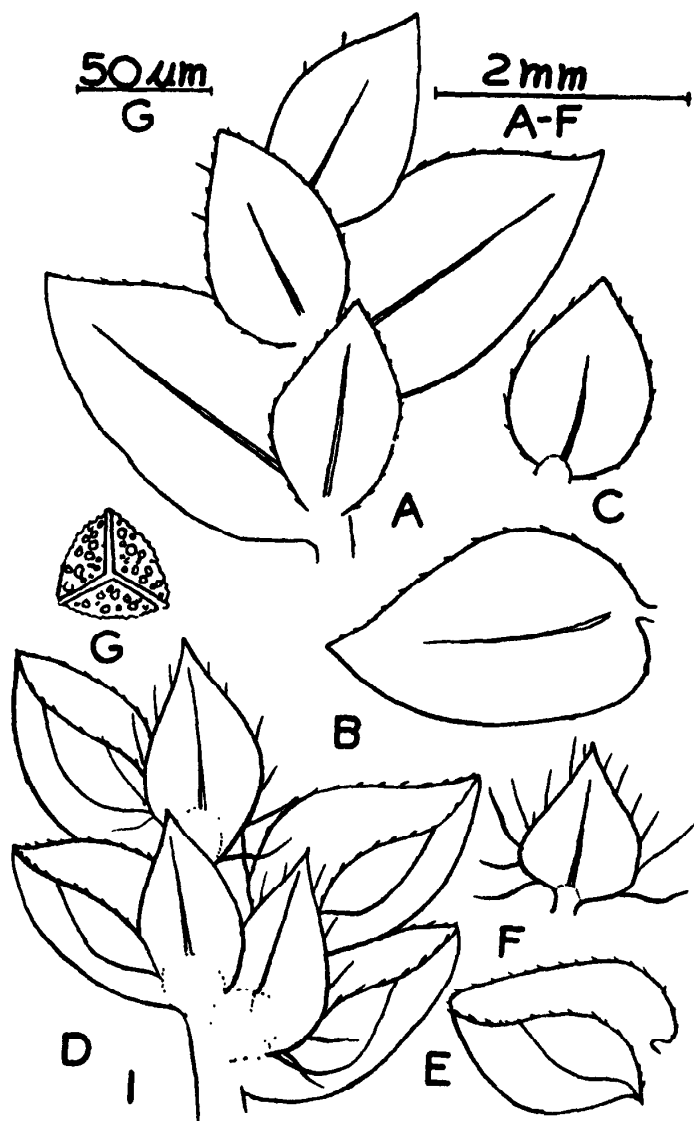
During the course of revisionary studies of the family Selaginellaceae Milde in India, the author came across a few peculiar specimens of the genus *Selaginella* P. Beauv., which on critical studies turned out to be new species. Further, these specimens were duly confirmed by A. C. Jermy, British Museum (N.H.), London as new. The four species are described in detail with illustrations of diagnostic value to facilitate easy identification.

Selaginella coonooriana Dixit, sp. nov.
(Plate-I, fig. 1, Text-fig. 1A-G)

Selaginella coonooriana Dixit, sp. nov.
S. catractrum Alston affinis sed differt caulibus decumbentis, usque ad medium redicantibus, foliis pallide-viridibus, membranaceis; lateralibus ovate-oblongis, remote, subacutis, minute denticulatis; medianis late ovatis, acutis denticulatis; strobili sporophyllis dimorphis, ciliatis, ovatis.

HOLOTYPUS: TAMIL NADU — Nilgiri: Coonoor hills, August 1893, *s.l. s.n.* Accession No. 60241, Plant numbered — I (MH). **ISOTYPUS**: *l.c.*, the rest eleven specimens (MH).

Stems 2.0 - 4.0 cm, decumbent, wiry, pinnately branched, branches small; rhizophores long, thread like, restricted to the basal part. Leaves heteromorphic throughout, pale-green, distant, membranaceous; lateral leaves ovate-oblong, subobtuse, minutely denticulate in the proximal side and smooth in the distal side; axillary leaves \pm like lateral leaves; median leaves broadly ovate, subacute,



Selaginella coonooriana Dixit, sp. nov.

Text-figs. 1(A-G): A. Part of vegetative branch. B. Lateral leaf. C. Median leaf. D. Part of strobilus. E. Larger sporophyll. F. Smaller sporophyll. G. Microspore.

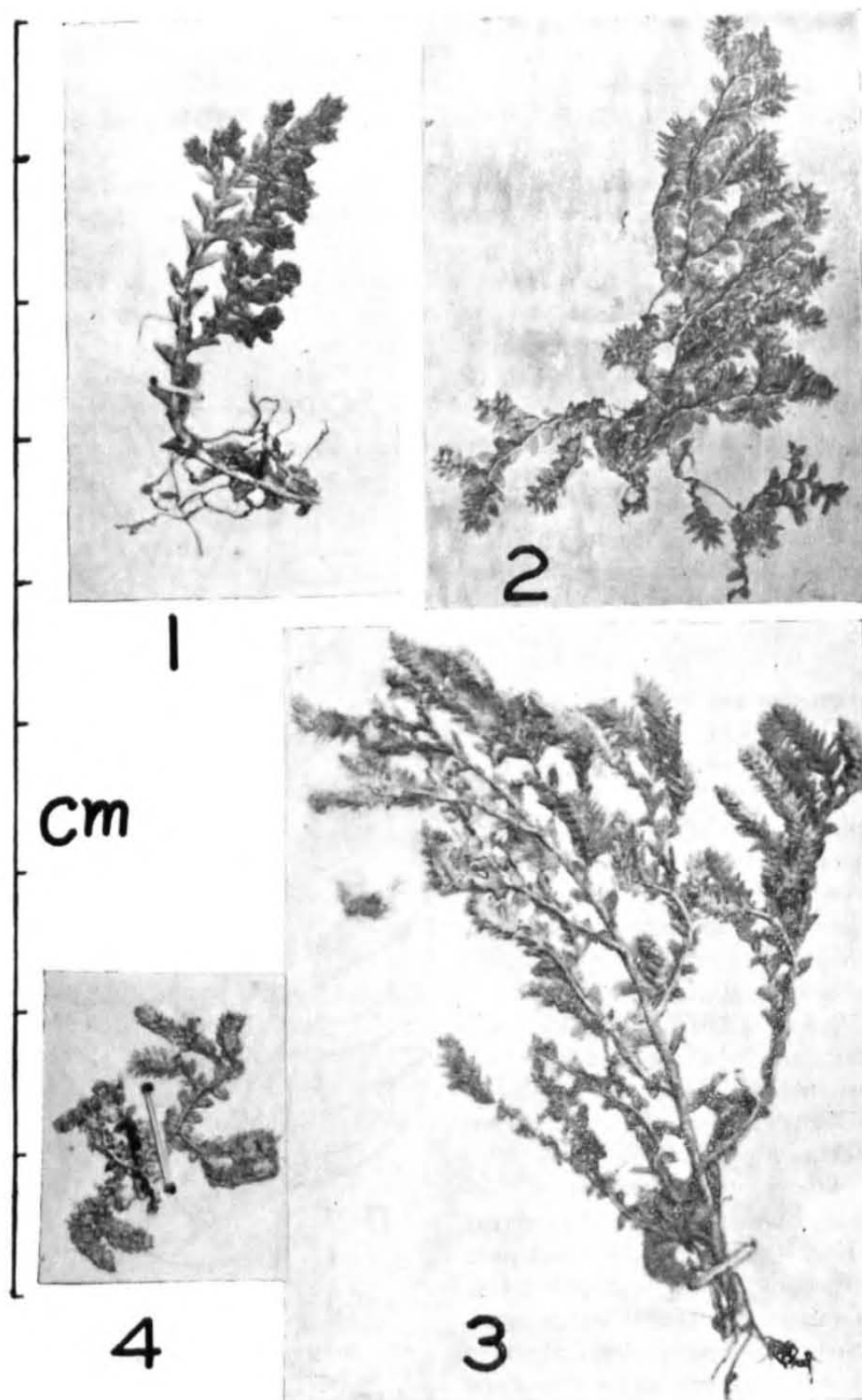


Plate-I, Figs. 1-4 : 1. *Selaginella coonooriana*, Holotype, plant numbered-I, Accession No. 60241 (MH). 2. *S. jainii*, Holotype, plant numbered-I, Panigrahi 16838A (CAL). 3. *S. panchghaniana*, Holotype, plant numbered-I, Panigrahi 11739 (BSA). 4. *S. panigrahi*, Holotype, plant numbered-I, Panigrahi 1119 (CAL).

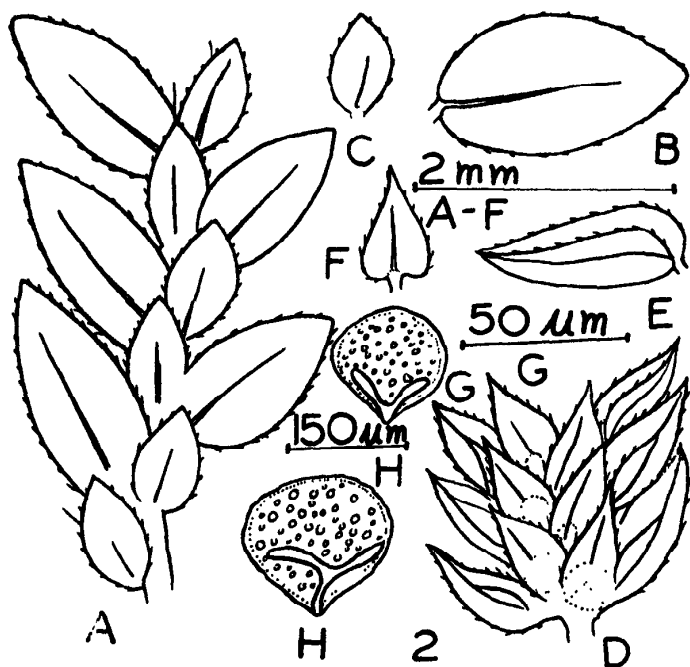
minutely denticulate. Strobili terminal at the end of branchlets, small $1.5-2.5 \times 1.0-2.0$ mm, comprising of a few sporophylls only; larger sporophylls sterile, ovate, obtuse, dentate; smaller sporophylls fertile, ovate, acute, long ciliate throughout; microspores trilete, orange, $40-45 \mu\text{m}$ in diameter, verrucoid; megaspores shed away, not observed.

Distribution : INDIA — Tamil Nadu : Coonoor.

Ecology : Plants growing on wet rocks. Scarce.

Etymology : The specific epithet is given after the type locality.

The present species can be easily distinguished from *S. cataractrum* Alston by its stems decumbent; lateral leaves acute; median leaves broadly ovate, subacute; smaller sporophylls long ciliate as against stems procumbent; lateral leaves sub-obtuse, median leaves ovate-oblong, obtuse; smaller sporophylls dentate in *S. cataractrum*.



Selaginella jainii Dixit, sp. nov.

Text-figs. 2(A-H) : A. Part of vegetative branch. B. Lateral leaf. C. Median leaf. D. Part of strobilus. E. Larger sporophyll. F. Smaller sporophyll. G. Microspore. H. Megaspore.

S. jainii Dixit, sp. nov. (Plate 1, fig. 2, Text-fig. 2A-H)

Selaginella jainii Dixit, sp. nov. *S. cataractrum* Alston affinis sed differt caulibus erectis, validis, tantum ad basin radicanibus; foliis lateralibus ovato-oblongis; median ovatis, cordatis; strobili sporophyllis dimorphis, dentatis, minoribus ovatis, cordatis ad basin iis; majoribus ovato-lanceolatis.

HOLOTYPUS : MADHYA PRADESH — Bilaspur : Siang, 22.2.1972, *Panigrahi* 16838A, Plant numbered-I (CAL). **ISOTYPUS :** *l.c.*, the rest seven specimens of the sheet, *Panigrahi* 16838A (CAL) & *l.c.* eight specimens, *Panigrahi* 16838B (BSA).

Stems $1.5-3.5$ cm, erect, thin, pinkish-brown, copiously branched from the base, branches small, pinnate; rhizophores short, thread like, confined at the base only. Leaves heteromorphic throughout, contiguous, pale-brownish-green, thin but firm in texture; lateral leaves ovate-oblong, distantly serrulate, obtuse; axillary leaves \pm like lateral leaves; median leaves small, ovate, distantly serrulate, cordate, subacute. Strobili terminal at the ends of branchlets, $5.0-7.0 \times 2.5-3.0$ mm; sporophylls dimorphic, dentate; larger sporophylls sterile, ovate-oblong, acute; smaller sporophylls fertile, ovate, acute, microspores trilete, deep orange, $35-40 \mu\text{m}$ in diameter, verrucoid; megaspores trilete, dull yellow, $200-300 \mu\text{m}$ in diameter, verrucoid.

Distribution : INDIA — Madhya Pradesh : Bilaspur.

Ecology : Plants growing on wet rocks in the form of patches with scanty soil.

Etymology : The specific epithet has been given in honour of Dr. S. K. Jain, Director, Botanical Survey of India, who promoted the cause of taxonomy of all groups of Cryptogams in the Survey.

The present species can be easily distinguished from *S. cataractrum* Alston by its erect stems, ovate-oblong lateral leaves,

denticulate throughout the margins and broadly ovate sporophylls against the procumbent stems, ovate lateral leaves, denticulate at the proximal side only and not broadly ovate sporophylls in *S. cataractrum*.

S. panchghaniana Dixit, sp. nov. (Plate I, fig. 3, Text-fig. 3A-H)

Selaginella panchghaniana Dixit, sp. nov. *S. crassipes* Spring affinis sed differt foliis infra nota marginam planis; foliis medianis majoribus, base obliquis; strobili sporophyllis dimorphis, longe ciliatis.

HOLOTYPUS : MAHARASHTRA — Mahabaleshwar : Panchghani, 7.11.1966, *Panigrahi* 11739 (BSA). **ISOTYPUS :** *l.c.*, the rest three specimens (BSA).

Stems 5.0 - 8.0 cm, decumbent, glossy brownish, copiously branched from the base,

branches long, decompoundly pinnate; rhizophores thread like confined to the basal part only. Leaves heteromorphic throughout, distant; lateral leaves ovate, oblique at the base; subacute to acute, proximal side denticulate, distal side entire; axillary leaves \pm like lateral leaves, denticulate at the margins; median leaves elliptic, acuminate, denticulate. Strobili terminal at the end of branchlets, 7.0 - 10.0 \times 2.5 - 3.0 mm, sporophylls dimorphic, ciliate; larger sporophylls sterile, ovate-oblong, acute, long ciliate; smaller sporophylls fertile, ovate, acuminate, long ciliate throughout; microspores deep orange, trilete, 25 - 40 μ m in diameter, verrucoid; megaspores trilete, dull-yellow, 225 - 300 μ m in diameter, verrucoid.

Distribution : INDIA — Maharashtra : Mahabaleshwar.

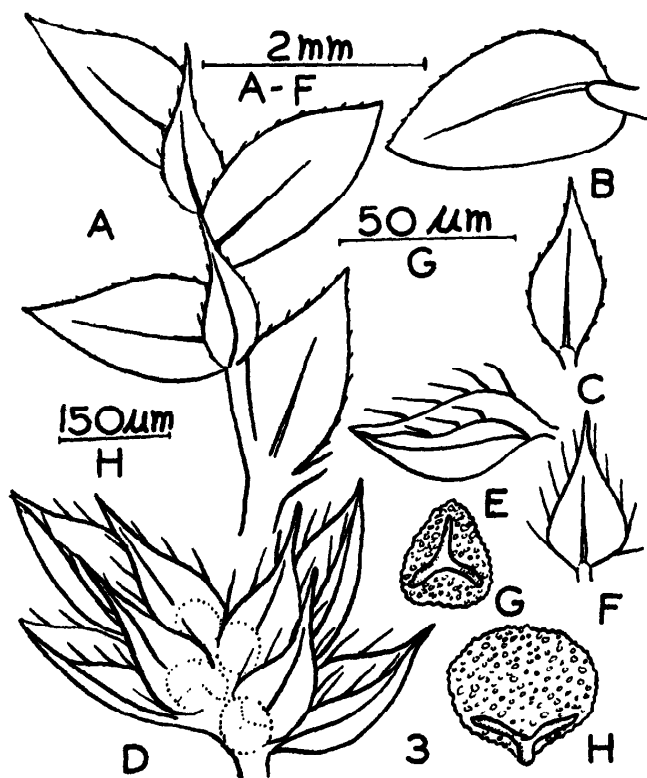
Ecology : Plants growing on rock boulders under shade in moist humus soil.

Etymology : The specific epithet is given after the type locality.

The present species can be easily distinguished from *S. crassipes* Spring by its median leaves acute to acuminate and sporophylls being long ciliate as against median leaves aristate, larger sporophylls only serrulate and smaller sporophylls serrulate-ciliate in *S. crassipes*.

S. panigrahi Dixit, sp. nov. (Plate I, fig. 4, Text-fig. 4A-H)

Selaginella panigrahi Dixit, sp. nov., *S. proniflora* (Lam.) Bak. affinis sed differt caulibus brevibus, 1 - 3 cm; rhizophori brevibus tantum ad basin limitatis a basi copiose ramosis; foliis lateralibus ovatis, obtusis, serrulatis; medianis ovatis, subobtusis, dentatis; strobili sporophyllis dimorphis ciliatis, acutem; sporophyllis majoribus tantum ad basin ciliatis sursum dentatis.



Selaginella panchghaniana Dixit, sp. nov.

Text-figs. 3(A-H) : A. Part of vegetative branch. B. Lateral leaf. C. Median leaf. D. Part of strobilus. E. Larger sporophyll. F. Smaller sporophyll. G. Microspore. H. Megaspore.

HOLOTYPE : MADHYA PRADESH — Bastar-Kutumbar : Kanger Valley, 19.2.1963. *Panigrahi* 1119, Accession No. 20678, Plant numbered-I (CAL). **ISOTYPE**: *l.c.*, the rest five specimens of sheet no. 20678 (CAL) & *l.c.*, seven specimens, Accession No. 6854 (BSA).

Stems 1.0 - 3.0 cm, prostrate, wiry, pale-brown, branched from the base, branches very short, pinnate; rhizophores thread like, pale-brown, restricted at the base only. Leaves heteromorphic throughout, brownish-green on drying, membranaceous, contiguous; lateral leaves ovate, denticulate, oblique, subobtus; axillary leaves \pm like lateral leaves; median leaves small, ovate, dentate, subacute. Strobili terminal at the ends of branchlets and usually larger than the branches, 5.0 - 7.0 \times 2.0 - 3.0 mm; sporophylls dimorphic; larger

sporophylls sterile, ovate-oblong, ciliate in the basal part, rest dentate above; smaller sporophylls fertile, ovate, acuminate, long ciliate throughout; microspores trilete, orange, 60-65 μ m in diameter; megaspores trilete, dull-yellow, 150 - 250 μ m in diameter.

Distribution : INDIA — Madhya Pradesh : Bilaspur.

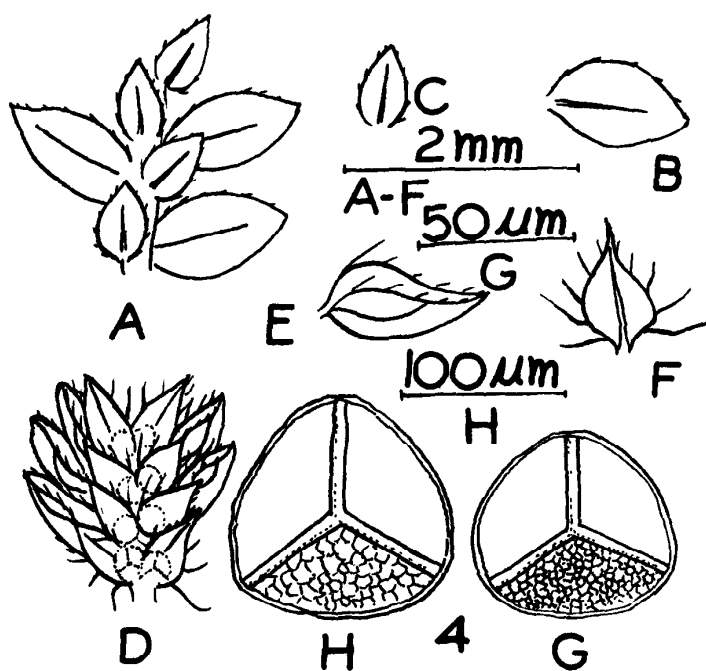
Ecology : Plants growing on rocks under shade, rooting in rock crevices with a little black humus soil. Scarce.

Etymology : The specific epithet is given in honour of Dr. G. Panigrahi — a pioneer worker on the genus *Selaginella* in India and under whom the author first worked on the subject.

The present species can be easily distinguished from *S. proniflora* (Lam.) Bak. by its short stems 3 cm long only, obtuse lateral leaves, serrulate in the proximal side, entire in the distal side and subacute median leaves against longer stems, acute and strongly ciliate lateral leaves and acute to acuminate median leaves of *S. proniflora*.

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Selaginella panigrahi Dixit, sp. nov.

Text-figs. 4(A-H) : A. Part of vegetative branch. B. Lateral leaf. C. Median leaf. D. Part of strobilus. E. Larger sporophyll. F. Smaller sporophyll. G. Microspore. H. Megaspore.