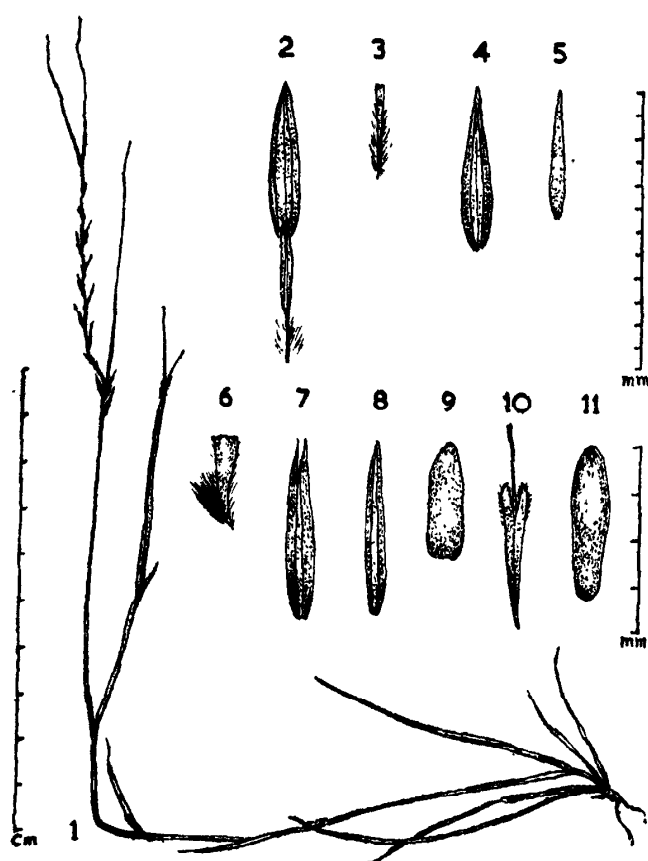




Parahyparrhenia bellariensis (Hack.) Clayton

Figs. 1-11: 1. General habit. 2. A pair of sessile & pedicelled spikelets. 3-5. Pedicelled spikelet: 3. A pedicel with callus atop. 4. Lower glume. 5. Upper glume. 6-11. Sessile spikelet: 6. Callus. 7. Lower glume. 8. Upper glume. 9. Lower lemma. 10. Upper lemma & awn (awn broken). 11. A grain. (Bharkava 50)

However, as per the description given by J. D. Hooker as well as C. E. C. Fischer (*l.c.*), the specimens from the type locality are taller and with generally larger floral features. According to them, the culms are upto 60 cm tall, leaves 7.5-20 cm $\times$ 3-4 mm, racemes 5-7.5 cm long, the sessile spikelet 4-6.5 mm long and the pedicelled spikelet 8-8.5 mm long.

Specimens examined: University Campus, Saurashtra University, Rajkot (Gujarat), Bharkava 50, 10th October 1977 (BSI; Saurashtra Univ. Herbarium).

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LESCURAEA DARJEELINGENSIS VOHRA AND *HAPLOCLADIUM MICROPHYL- LUM* (HEDW.) BROTH. SSP. *CAPILLATUM* (MITT.) REIM. VAR. *BHUTANICUM* VOHRA—TWO NEW TAXA OF MOSSES FROM THE EASTERN HIMALAYAS

In a detailed study of the mosses belonging to the order Hypnobryales (Musci) in the Himalayas, several hitherto undescribed taxa have been discovered. Two of these are described below:

Lescuraea darjeelingensis Vohra sp. nov.

Plantae graciles vel modice robustae, caespites compactos nitidos flavido-virides usque brunneolo-virides formantes. Caules primarii repentes, filiformes, caules secundarii numerosi, erecti vel ascendentes, $\pm$

flexuosi vel flagelliformes, 2-3 cm alti; rami pauci, erecti, obtusi, 1.0-1.5 cm alti; caules et rami prope apicem curvati, in sicco julacei. Paraphyllia pauca vel nulla. Folia caulina densa, erecto-patentia usque suberecta, in sicco erecta et adpressa, decurrentia, perconca, profunde plicata, 1.0-1.5 $\times$ 0.7-0.8 mm, ovata, usque ovato-oblonga, acuta vel abrupte unguis ata in acumine brevi, ad marginem recurvata saltem prope apicem, sursum acute serrulata, deorsum integra; nervus flavido-brunneus, folii medi-

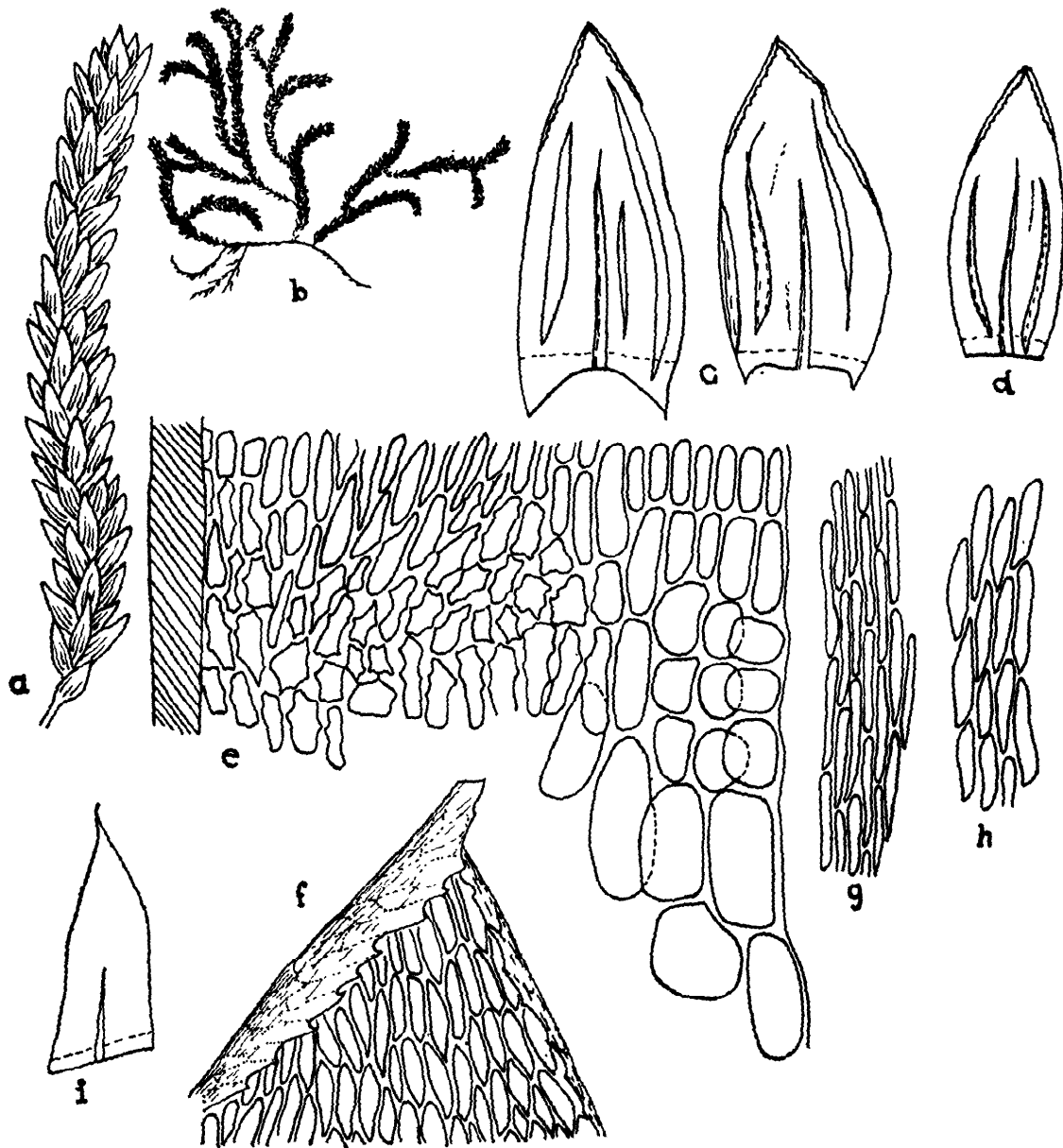


Plate I. *Lescuraea darjeelingensis* Vohra sp. nov.

Figs. a-i : a. Shoot $\times 5$. b. Plant (Natural size). c. Stem leaves $\times 25$. d. Branch leaf $\times 25$. e. Basal cells $\times 125$. f. Apical cells $\times 125$. g. Laminar cells $\times 125$. h. Cells towards mid margin $\times 125$. i. Inner perichaetial bracts $\times 25$.

um vel parum ultra attingens, 35μ latus ad basin, sursum tenuior dilutescensque; cellulae lineares, pariete tenui vel modice incrassato, laevi, $5 \times 35-50 \mu$ ad medium, prope marginem latiores, rhombiformes, incrassatae $7-10 \times 27-42 \mu$, cellulae basales parum latiore brevesque, incrassatae, fovi-

atae, ad insertionem quadratae usque rectangulares, incrassatae, profunde rubello brunneae, a nervo usque ad marginem fasciam distinctam coloratam formantes, cellulae alares pellucidae magnae, rectangulares, non inflatae, parietibus tenuibus, supra cellulis quadratis brevibus paucis. Bractae

perichaetiales interiores erectae, lanceolatae, non convolutae, breviter acuminatae, 1.0-1.5 × 0.5 mm, margine integrae, planae; nervus dilutus, sub medio evanidus; cellulis linearis. Seta rubra, usque ad 1.5 cm alta. Capsula non visa.

Species distincta, *L. saxicolae* (B. S. G.) Mol. affinis, a qua differt paraphyllio nullo, foliis plus concavis, valde plicatis acutis, apiculatis, vel breviter acuminatis, margine apicem versus valde serrulatis, nervis invalidis, in medio vel parum ultra evanidis, cellulis basalibus rubello-brunneis.

Wadhwa 166, Darjeeling, Tongloo, Batashi Road, 3060 m, die 17.6.1961 (Holotypus—CAL); *Wadhwa* 32, Bhutan, Chi La—Ha, 3000-4000 m, die 20.8.1963 (Paratypus—CAL).

***Lescuraea darjeelingensis* Vohra sp. nov.**

Slender to moderately robust plants, in compact tufts, glossy, yellowish green to brownish green. Primary stems creeping, thread-like, secondary numerous, erect or ascending ± flexuose or flagelliform, 2-3 cm tall; branches fewer, erect, obtuse, 1.0-1.5 cm tall; stems and branches ± curved near apices, on drying julaceous. Paraphyllia fewer or none. Stem leaves dense, erectopate to almost erect, on drying erect and appressed, decurrent, very concave, deeply plicate, 1.0-1.5 × 0.7-0.8 mm, ovate to ovate-oblong, acute or suddenly narrowed into a short acumen; margin recurved, at least near apex, sharply serrulate above, entire below; nerve yellowish brown, reaching mid-leaf or slightly beyond, 35 μ wide at base, becoming thinner and faint above; cells linear, thin-walled to moderately incrassate, smooth, 5 × 35-50 μ in the middle, towards margin wider, rhomboidal, incrassate, pitted, at insertion quadrate to rectangular, incrassate, deep reddish brown, forming a distinct coloured band from nerve to margin, alar cells pellucid, thin, walled, large, rectangular, not inflated, with a few short quadrate cells above. Inner perichaetial

bracts erect, not convolute, lanceolate, shortly acuminate, 1.0-1.5 × 0.5 mm; margin entire, plane; nerve faint, ceasing below middle; cells linear. Seta red, upto 1.5 cm tall. Capsules not seen.

A distinct species, closely related to *L. saxicola* (B. S. G.) Mol., from which it differs in paraphyllia lacking, leaves more concave, more strongly plicate, acute, apiculate or shortly acuminate; margin more strongly serrulate at apex; nerve weak, ceasing in middle or slightly beyond, and deep, reddish brown basal cells.

Wadhwa 166, Darjeeling, Tongloo, Batashi Road, 3060 m, 17.6.1961 (Holotype—CAL); *Wadhwa* 32, Bhutan, Chi La to Ha, 3000-4000 m. 20.8.1963 (Paratype—CAL).

***Haplocladium microphyllum* (Hedw.) Broth. ssp. *capillatum* (Mitt.) Reim. var. *bhutanicum* Vohra var. nov.** a varietate *capillato* differt planta habitu robusta, profunde flava, rubello-tincta, paraphylliis caulem dense tegentibus, foliis caulinis majoribus secundis, cum aristis longis curvatis usque fere circinatis.

Vohra 2003, Bhutan, Dochula, 3050 m, in truncis arleoris, die 22.9.1964 (Holotypus—CAL); *Wadhwa* 185, Bhutan, 1963 (Paratypus—CAL); *Norkett* 9814, Nepal Oritntalis, Dohkan-Tembe Path, 1070 m, die 4.2.1962 (Paratypus—B.M.).

***Haplocladium microphyllum* (Hedw.) Broth. ssp. *capillatum* (Mitt.) Reim. var. *bhutanicum* Vohra var. nov.**

Differs from var. *capillatum*, in plants being robust, deep yellow, with reddish tinge; paraphyllia densely covering the stem; stem leaves larger, secund, with long curved to almost circinate arista.

Robust plants, in dense mats, yellowish below, reddish above. Stems creeping, ± curved, irregularly divided, ± 2 cm long, irregularly or ± pinnately branched; branches dense, ± 5 mm tall. Paraphyllia densely covering the stems, branched or

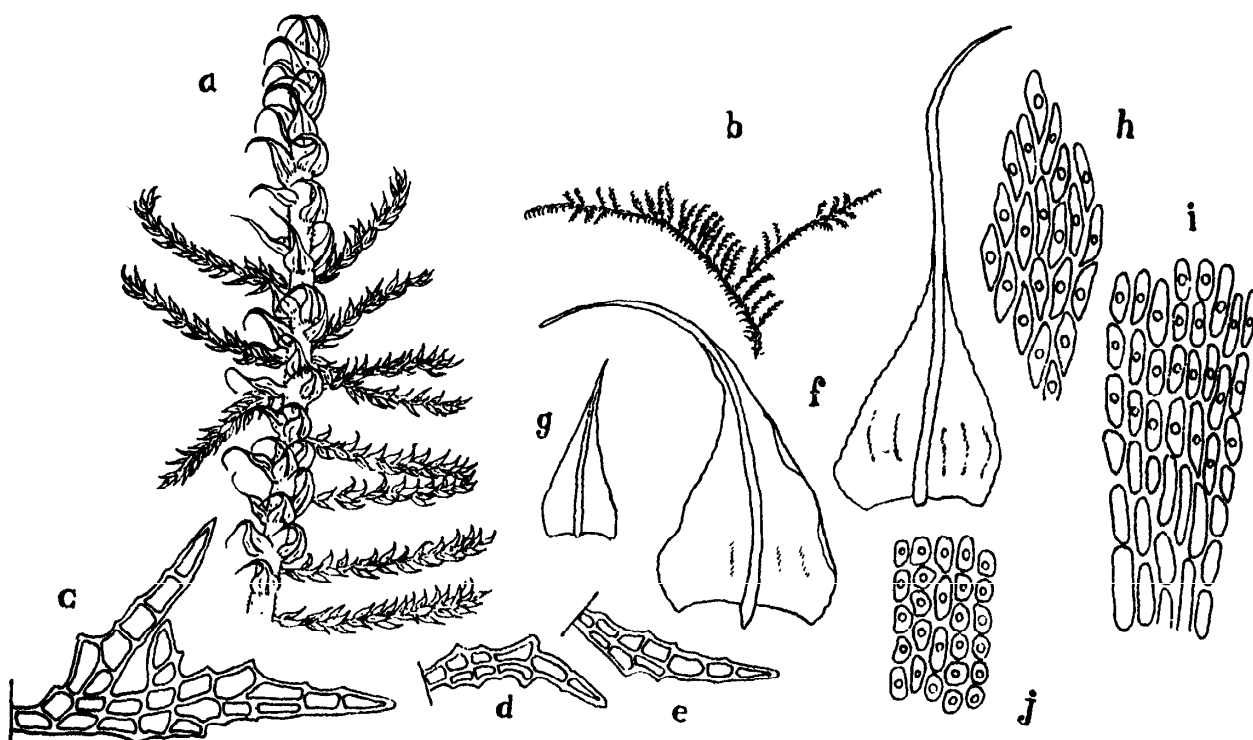


Plate II *Haplocladium capillatum* (Mitt.) Broth. var. *bhutanicum* Vohra var. nov.

Figs. a-j: a. Shoot $\times 5$. b. Plant (Natural size). c-e. Paraphyllia $\times 275$. f. Stem leaves $\times 25$. g. Branch leaf $\times 25$. h. Upper cells $\times 275$. i. Basal cells $\times 275$. j. Angular cells $\times 275$.

simple. Stem leaves on drying erect, when moist erecto-patent to spreading, crowded, deeply plicate on both sides of nerve, somewhat secund, $1.5-2.0 \times 0.7$ mm, ovate; margin crenulate or toothed, recurved at least on one side; nerve excurrent into a long, curved to almost coiled arista; cells oval-rhomboidal, $6.8 \times 14-21 \mu$, papillose at back with a single high papilla over the lumen of each cell, at base rectangular to linear-rectangular, gradually becoming quadratish above, angular quadratish; branch leaves on drying erect, when moist erecto-patent to spreading, crowded, deeply plicate on both sides of nerve, somewhat secund, $1.5-2.0 \times 0.7$ mm, ovate; margin crenulate or toothed, recurved at least on one side; nerve excurrent into a long, curved to almost coiled arista; cells oval-rhomboidal, $6.8 \times 14-21 \mu$, papillose at back with a single high papilla over the lumen of each cell, at base rectangular to linear-rectangular, gradually becoming quadratish above, angular quad-

ratish; branch leaves on drying erect, when moist erecto-patent to almost erect, crowded, $\pm$ secund, like the stem leaves but smaller. Seta 2 cm tall, pale or deep red; capsules not seen.

Vohra 2003, Bhutan, Dochula, 3050 m, on tree trunk, 22.9.1964 (Holotype—CAL); Wadhwa 185, Bhutan, Aug.-Sep., 1963 (Paratype—CAL); Norkett 9814, East Nepal, Dohkan-Tembe Path, 1070 m, 4.2.1962 (Paratype—B.M.).

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