

## BRYOPHYTA

### ANTHOCEROTAE (by Sinske Hattori)

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**Anthoceros erectus** Kashyap in New Phytol. **14**: 9 (1915); in Journ. Bombay Nat. Hist. Soc. **25**: 281 (1916/8); Liverw. W. Himal. Panjab Pl. **1**: 25, pl. 1, 1-4 (1929).

*A. Butleri* Steph., Sp. Hepat. **5**: 986 (1916).

NEPAL. Shewaden-Papung, 2150 m, on soil (Jun. 29, 1972); Bir Gaon-Dingla, 1610 m (Jul. 1, 1972).

Distr. Himalaya, India, and ?Ceylon.

**Anthoceros glandulosus** Lehm. et Lindenb. in Lehm., Pugillus **4**: 26 (1832)—Meijer in Journ. Hattori Bot. Lab. **18**: 3, pl. 2, 1 (1957).

NEPAL. Bir Gaon-Dingla, 1150 m, on soil (Jul. 1, 1972); Dingla-Doban, 800 m, on soli (Jul. 2, 1972).

Distr. Widely distributed in tropic Asia, southward to Australia and eastward to Samoa.

**Phaeoceros himalayensis** (Kashyap) Proskauer in Bapna et Vyas in Journ. Hattori Bot. Lab. **25**: 88 (1962).

*Anthoceros himalayensis* Kashyap in New Phytol. **14**: 8 (1915); Liverw. W. Himal. Panjab Pl. **1**: 26, pl. 1, 58 (1929).

NEPAL. Kuwa Pani-Hile, 1900 m, on rock (Jun. 4, 1972); Hile-Chitre, 1980 m, on soil (Jun. 5, 1972); Nessum-Bhuje, 1750 m, on rock (Jul. 3, 1972).

Distr. Himalaya and India.

### HEPATICAE (organized by Sinske Hattori)<sup>1)</sup>

#### TAKAKIACEAE (by Sinske Hattori)

**Takakia ceratophylla** (Mitt.) Grolle in Österr. Bot. Zeitschr. **110**: 444, f. 1 (1963)—Hatt. et al. in Journ. Jap. Bot. **48**: 2, f. 1-3 (1973).

NEPAL. Ghopte-Gosa, 4020-4050 m, on rock (Jun. 13, 1972); Gosa-Banduke Pokhari, 4050-4210 m, on rock and in crevices of rocks (Jun. 14, 1972); around Banduke Pokhari, 4120 m, on rock (Jun. 14, 1972); Banduke Pokhari-Saju Pokhari, 4150-4170 m, on rock, rocky cliff, and in crevices of rocks (Jun. 15, 1972); Saju Pokhari-pass to Topke

1) The following authorities are in charge of the study and preparation of manuscripts for the families and genus in the parentheses: Dr. M. Mizutani (Lepidoziaceae and Lejeuneaceae), Dr. N. Kitagawa (Lophoziaceae, Cephaloziellaceae, Lophocoleaceae, Gymnomitriaceae), Dr. T. Amakawa (Jungermanniaceae and Scapaniaceae), Dr. H. Inoue (Plagiochilaceae), Mr. K. Yamada (Radulaceae), and Dr. R. Grolle (*Asterella*).

Gola, 4100–4350 m, on rocks, rocky cliff, and in crevices of rocks (Jun. 16, 1972); slope above Jalang Chhyongo, 4350 m, on soil (Jun. 21, 1972); around Kipuphu, 4520–4550 m, on rock and in crevices of cliff (Jun. 26, 1972); Topke Gola–Shewaden, 3050 m, on rock (Jun. 28, 1972).

Distr. Himalaya (Nepal and Sikkim) and Aleutians (Amchitka Isl.). New to Nepal.

**Takakia lepidozoides** Hatt. et Inoue in Journ. Hattori Bot. Lab. **19**: 133, f. 1–24 (1958)—Hatt. et al. in Journ. Jap. Bot. **48**: 7, f. 2, i–l (1973).

NEPAL. Banduke Pokhari–Saju Pokhari, 4170 m, on rock (Jun. 15, 1972).

Distr. Himalaya (Nepal), N. Borneo, Japan, and along the Pacific coast of Alaska and Canada. New to Himalaya.

#### HERBERTACEAE (by Sinske Hattori)

**Herberta dicrana** (Tayl.) Trev.: Fl. E. Himal. 503 (1966).

NEPAL. Hile–Chitre, 2150 m, on rock (Jun. 5, 1972); Basantapur–Dor, 2370–2510 m, on rock, fallen tree, and tree trunk (Jun. 6, 1972); Dor–Chauke, 2850 m, on rock, decaying tree, and tree trunks (Jun. 7, 1972); mossy forest below Lamo Pokhari, 2630–2700 m, fallen and decaying branches (Jun. 9, 1972); Suke–Hile Chok, 3200–3550 m, on tree trunks (Jun. 11, 1972); Ghopte–Gosa (near Kobche), 3650 m, on rock (Jun. 13, 1972); coniferous forest above Topke Gola, 3650 m, on fallen tree (Jun. 18, 1972); forest below Thudam, 3250 m, on tree trunk and fallen branches (Jun. 25, 1972); Shewaden–Papung, 2200 m, on rock (Jun. 29, 1972); Gupha Pokhari–Chauke, 2600 m, on decaying branches (Jul. 4, 1972); Dor–Chitre, 2500 m, on branches (Jul. 7, 1972); Phulchoki, summit area, 2650 m, on tree trunk (Jul. 15, 1972).

Distr. E. Nepal, Sikkim, Darjeeling, Bhutan, Khasia Hills, Nilghiri Hills, and China.

This species is common and very variable in the Himalayas. *Herberta chinensis* Steph. seems to be closely related to the present species. A specimen collected between Suke and Hile Chok, for instance, seems to be an intermediate form between *H. chinensis* and the present species.

**Herberta fragilis** (Steph.) Herz.: Fl. E. Himal. 503 (1966); **2**: 222, f. 19 (1971)—Grolle in Ergebn. Forsch.-Unt. Nepal Himal. **1**: 290 (1966).

NEPAL. Hile–Chitre, 2350 m, on rock (Jun. 5, 1972); Basantapur–Dor, 2510 m, on rocky cliff (Jun. 6, 1972); Chauke–Lamo Pokhari, 2750–2850 m, on rock (Jun. 8, 1972); mossy forest below Lamo Pokhari, 2680 m, on rock (Jun. 9, 1972); Suke, 2900 m, on rock (Jun. 10, 1972); forest below Thudam, 3250 m, on rock (Jun. 25, 1972); Topke Gola–Shewaden, 3300 m, on tree trunk (Jun. 28, 1972); Shewaden–Papung, 2500 m, on rock (Jun. 29, 1972); Dor–Chitre, 2500 m, on branch (Jul. 7, 1972); forest near Chitre, 2350 m, on rock (Jul. 7, 1972).

Distr. Nepal, Sikkim, and China (N.W. Yunnan).

This species seems to be closely related to *H. adunca* (Dicks.) Gray.

**Herberta Giraldiana** (Steph.) Nichols.: Fl. E. Himal. **2**: 223 (1971).

*H. Giraldiana* var. *verruculosa* Hatt., l.c. 223, f. 20 (1971), syn. nov.

NEPAL. Ghopte–Gosa, 2750 m, on soil and rock (Jun. 13, 1972); around Banduke Pokhari, 4120 m, on rock (Jun. 14, 1972); coniferous forest above Topke Gola, 3650 m, on tree trunk and rock (Jun. 18, 1972); Topke Gola, coniferous forest by pond, 3600

m, on rotten log (Jun. 19, 1972); forest below Thudam, 3250 m, on tree trunk (Jun. 25, 1972).

Distr. Nepal, Bhutan, and China (Shen-si, Szechuan, and Yunnan).

**Herberta himalayana** (Steph.) Herz.: Fl. E. Himal. 503 (1966); **2**: 224 (1971).

NEPAL. Basantapur-Dor, 2550 m, on branch (Jun. 6, 1972); Suke-Hile Chok, 3500 m, on humus (Jun. 11, 1972); Saju Pokhari-pass to Topke Gola, 4150 m, on rock (Jun. 16, 1972); Lama Chungbu-Slesa, 4250 m, on rock (Jun. 24, 1972).

Distr. Nepal, Sikkim, Darjeeling, and Bhutan.

A specimen collected between Lama Chungbu and Slesa has pilose leaf- and underleaf-lobes, the pili composed of a row of 7-13 (mostly 8-10) cells.

**Herberta Kurzii** (Steph.) Chopra: Fl. E. Himal. 503 (1966); **2**: 225 (1971).

NEPAL. Banduke Pokhari-Saju Pokhari, 4150-4170 m, on soil and rock (Jun. 15, 1972); Saju Pokhari-pass to Topke Gola, 4150 m, on rock (Jun. 16, 1972); coniferous forest above Topke Gola, 3600-3650 m, on tree trunks (Jun. 18, 1972); Phujeng La-Topke Gola, 4500 m, on rock (Jun. 27, 1972).

**Herberta pseudoceylanica** Hatt. in Fl. E. Himal. **2**: 225, f. 21 (1971).

NEPAL. Hile Chok-Ghopte, 3350 m, on fallen branches (Jun. 12, 1972); Topke Gola, 3600 m, fire wood (Jun. 17, 1972); coniferous forest above Topke Gola, 3500 m, on tree trunk (Jun. 18, 1972); forest below Thudam, 3250 m, on branch (Jun. 25, 1972).

Distr. Nepal, Sikkim, and Bhutan. New to Nepal.

**Herberta Sendtneri** (Nees) Evans: Fl. E. Himal. 504 (1966); **2**: 226 (1971).

NEPAL. Saju Pokhari-pass to Topke Gola, 4100-4300 m, on humus (Jun. 16, 1972); *Rhododendron* forest above Topke Gola, 3650 m (Jun. 18, 1972); Lama Chungbu-Slesa, 4250 m, on rock (Jun. 24, 1972); around Kipuphu, 4450-4500 m, on rock (Jun. 24, 1972).

#### BLEPHAROSTOMATACEAE (by Sinske Hattori)

**Blepharostoma trichophyllum** (L.) Dum.: Fl. E. Himal. 504 (1966); **2**: 226 (1971).

NEPAL. Forest below Lamo Pokhari, 2730 m, on rotten tree trunk (Jun. 9, 1972); Suke-Hile Chok, 3570 m, on humus (Jun. 11, 1972); Hile Chok-Ghopte, 3400, on rock (Jun. 12, 1972); Ghopte-Gosa, 3700-4100 m, on rocks and rotten log (Jun. 13, 1972); Gosa-Banduke Pokhari, 4050 m, on soil (Jun. 14, 1972); around Banduke Pokhari, 4120 m, in crevices of rocks (Jun. 14, 1972); Saju Pokhari-pass to Topke Gola, 4350 m, on rock and cliff (Jun. 16, 1972); coniferous forest above Topke Gola, 3600-3610 m, on tree trunks and rotten log (Jun. 18, 1972); *Rhododendron* forest above Topke Gola, 3650 m (Jun. 18, 1972); Jalang Chhyongo-Janga La, 4600 m (Jun. 21, 1972); Janga La-Thudam, 4550 m, on soil-covered rock (Jun. 21, 1972); Lama Chungbu-Slesa, 4350 m, on soil (Jun. 24, 1972); forest below Thudam, 3250 m, on soil (Jun. 25, 1972); around Kipuphu, 4550 m, in crevices of rocks (Jun. 26, 1972); Topke Gola-Shewaden, 3250-3350 m, on rotten log (Jun. 28, 1972); Shewaden-Papung, 2000 m, on rotten log (Jun. 29, 1972).

Distr. E. Africa, Europe, Himalaya, New Guinea, China, Formosa, Japan, Korea, Siberia, Hawaii, and N. and C. America.

**Pseudolepicolea Trollii** (Herz.) Grolle et Ando: Fl. E. Himal. 504 (1966)-Hatt. et Mizt. in Journ. Hattori Bot. Lab. **31**: 252, f. 1-2 (1968).

*P. Trollii* var. *darjeelingensis* Hatt. et Mizt., l.c. 252, f. 1-3 (1968), syn. nov.

NEPAL. Dor-Chauke, 2750 m, on rocky cliff (Jun. 7, 1972); Hile Chok-Ghopte, 3350–3500 m, on rock and cliff (Jun. 12, 1972); Ghopte-Gosa, 3650–4020 m, on rock and cliff (Jun. 13, 1972); forest below Thudam, 3350 m, on rock (Jun. 25, 1972).

TRICHOCOLEACEAE (by Sinske Hattori)

**Trichocolea tomentella** (Ehrh.) Dum.: Fl. E. Himal. 504 (1966).

NEPAL. Chauke-Lamo Pokhari, 2850 m, on rock (Jun. 8, 1972); Suke-Hile Chok, 3570 m, on humus (Jun. 11, 1972); Topke Gola-Shewaden, 2850–3150 m, on soil and bank (Jun. 28, 1972); Shewaden-Papung, 2000–2600 m, on rock (Jun. 29, 1972).

Distr. Europe, Himalaya, Khasia, Assam, N. Vietnam, China, Formosa, Japan, Korea, ?Java, ?Sumatra, and ?New Hebrides.

PTILIDIACEAE (by Sinske Hattori)

**Mastigophora Woodsii** (Hook.) Nees: Fl. E. Himal. 504 (1966).

NEPAL. Topke Gola-Shewaden, 3250 m, on tree trunk (Jun. 28, 1972).

Distr. Scotland, Ireland, Faeroes, Himalaya, Bengal, W. China (Yunnan), and Canada (British Columbia).

**Ptilidium ciliare** (L.) Hampe, Prodr. Fl. Hercyn. 76 (1836).

NEPAL. Topke Gola, ca. 3600 m, fire woods (Jun. 17, 1972).

Distr. Circumboreal, barely into the northernmost limit of the deciduous forest as a relict; also rarely (and locally) in Argentina (Tierra del Fuego) and New Zealand.

LEPIDOZIACEAE (by Masami Mizutani)

**Bazzania angustistipula** N. Kitag. in Journ. Hattori Bot. Lab. 30: 268 (1967).

NEPAL. Basantapur-Dor, 2550 m, on branches (Jun. 6, 1972); Dor, 2300 m, on branches (Jun. 6, 1972); Dor-Chauke, 2850 m, on branches (Jun. 7, 1972); below Lamo Pokhari, 2630 m, on tree-trunks (Jun. 9, 1972); Suke-Hile Chok, 3500 m, on tree-trunks (Jun. 11, 1972).

Distr. Nepal and Thailand. New to Himalaya.

**Bazzania himalayana** (Mitt.) Schiffn.: Fl. E. Himal. 505 (1966).

NEPAL. Chitre-Basantapur, 2350 m, on tree-trunks (Jun. 6, 1972).

Distr. Nepal, Sikkim, Bhutan, Assam, and Philippines. New to Nepal.

**Bazzania imbricata** (Mitt.) Hatt.: Fl. E. Himal. 505 (1966).

NEPAL. Suke, 2900 m, on humus (Jun. 10, 1972); Suke-Hile Chok, 3200 m, on tree-trunk (Jun. 11, 1972); Ghopte-Gosa, 3850 m, on humus (Jun. 13, 1972); Gosa-Banduke Pokhari, 4050 m, on rocks (Jun. 14, 1972); below Thudam, 3250 m, on branches (Jun. 25, 1972); Topke Gola-Shewaden, 3250 m, on rotten logs (Jun. 28, 1972).

Distr. Nepal, Sikkim, Bhutan, and China.

**Bazzania ovistipula** (Steph.) Abeywickrama: Fl. E. Himal. 2: 226 (1971).

NEPAL. Basantapur-Dor, 2550 m, on tree-trunks (Jun. 6, 1972).

Distr. S. India, Ceylon, Nepal, Sikkim, Assam, Philippines, and Japan.

**Bazzania praerupta** (Reinw. et al.) Trev. in Mem. Istit. Lombardo, ser. 3, 4: 414 (1877).

*Bazzania decurva* (Nees) Trev.: Fl. E. Himal. 505 (1966).

NEPAL. Suke-Hile Chok, 3570 m, on humus (Jun. 11, 1972); Hile Chok-Ghopte, 3400 m, on humus (Jun. 12, 1972); Ghopte-Gosa, 3700-3970 m, on rocks (Jun. 13, 1972); Saju Pokhari-Topke Gola, 4100 m, on rocks (Jun. 16, 1972).

Distr. S. India, Ceylon, Himalaya (Nepal and Sikkim), Assam, Burma, Sumatra, Java, Borneo, Philippines, Formosa, and Japan.

**Bazzania sikkimensis** Steph.: Fl. E. Himal. 506 (1966).

NEPAL. Chitre-Basantapur, 2350-2550 m, on tree-trunks (Jun. 6, 1972); Topke Gola-Shewaden, 3350 m, on rotten logs (Jun. 28, 1972).

Distr. Nepal, Sikkim, Bhutan, Assam, and Philippines.

**Bazzania tricrenata** (Wahlenb.) Trev.: Fl. E. Himal. 506 (1966); **2**: 226 (1971).

NEPAL. Suke-Hile Chok, 3550-3570 m, on rocks (Jun. 11, 1972); Hile Chok-Ghopte, 3350-3400 m, on humus (Jun. 12, 1972); Ghopte-Gosa, 3700-3970 m, on rocks (Jun. 13, 1972); Banduke Pokhari, 4050-4130 m, in crevices of rock (Jun. 14, 1972); Banduke Pokhari-Saju Pokhari, 4150 m, in crevices of rock (Jun. 15, 1972); Saju Pokhari-Topke Gola, 4100-4350 m, in crevices of rock (Jun. 16, 1972); Topke Gola, 3610 m, on tree-trunks (Jun. 18, 1972); Kipuphu, 4550 m, on rocks (Jun. 26, 1972); Phujeng La, 4750 m, on rocks (Jun. 27, 1972); Topke Gola-Shewaden, 3350 m, on rotten logs (Jun. 28, 1972).

Distr. Europe, S. India, Nepal, Sikkim, China, Formosa, Japan, and N. America.

**Bazzania uncigera** (Reinw. et al.) Trev. in Mem. Istit. Lombardo, ser. 3, **4**: 415 (1877).

NEPAL. Nessum-Bhujje, 2500 m, on soil (Jul. 3, 1972).

Distr. Himalaya (Nepal), Thailand, Java, Ambon, Borneo, Bangka, Philippines, New Guinea, and Fiji.

**Kurzia Makinoana** (Steph.) Grolle: Fl. E. Himal. 506 (1966).

NEPAL. Suke-Hile Chok, 3570 m, on humus (Jun. 11, 1972); Ghopte-Gosa, 3970 m, on rocks (Jun. 13, 1972); Gosa-Banduke Pokhari, 4050 m, on soil (Jun. 14, 1972); above Topke Gola, 3650 m, on soil (Jun. 18, 1972).

Distr. Europe, Nepal, Sikkim, Formosa, Japan, and N. America. New to Nepal.

**Lepidozia reptans** (L.) Dum.: Fl. E. Himal. 506 (1966); **2**: 226 (1971).

NEPAL. Dor-Chauke, 2650 m, on soil (Jun. 7, 1972); below Lamo Pokhari, 2730 m, on rotten tree (Jun. 9, 1972); Gosa-Banduke Pokhari, 4050 m, on soil (Jun. 14, 1972); Saju Pokhari-Topke Gola, 4350 m, on rocks (Jun. 16, 1972); below Thudam, 3250 m, on soil (Jun. 25, 1972); Topke Gola-Shewaden, 3250 m, on rotten logs (Jun. 28, 1972); Papung-Bir Gaon, 1800 m, on rocks (Jun. 30, 1972).

**Lepidozia robusta** Steph.: Fl. E. Himal. 506 (1966); **2**: 226 (1971).

NEPAL. Ghopte-Gosa, 3700 m, on rocks (Jun. 13, 1972); Topke Gola-Shewaden, 3400 m, on rocks (Jun. 28, 1972).

Distr. Himalaya (Nepal, Sikkim, Bhutan) and China (Yunnan).

#### CALYPOGEOIACEAE (by Sinske Hattori)

**Calypogeia lunata** Mitt. in Journ. Linn. Soc. Bot. **5**: 107 (1861).

NEPAL. Mossy forest below Lamo Pokhari, 2850 m, on bank (Jun. 9, 1972); Topke Gola, coniferous forest side of a pond, 3600 m, in crevices of rocks (Jun. 19, 1972).

Distr. India, Nepal, Sikkim, and China (Yunnan and Hokin).

**Metacalypogeia alternifolia** (Nees) Grolle: Fl. E. Himal. 507 (1966).

NEPAL. Chitre-Basantapur, 2350 m, on decaying tree (Jun. 6, 1972); mossy forest below Lamo Pokhari, 2630 m, on soil (Jun. 6, 1972); Dor-Chauke, 2650 m, on soil (Jun. 7, 1972); Suke-Hile Chok, 3570 m, on humus (Jun. 11, 1972); Hile Chok-Ghopte, 3350-3500 m, on soil, rocky cliff, and in crevices of cliff (Jun. 12, 1972); Ghopte-Gosa, 3750 m, on soil, humus, and rock (Jun. 13, 1972); Banduke Pokhari-Saju Pokhari, 4010-4220 m, on soil and rock (Jun. 15, 1972); Saju Pokhari-pass to Topke Gola, 4350 m, on rock (Jun. 16, 1972); coniferous forest above Topke Gola, 3600-3650 m, on soil and rock (Jun. 18, 1972); forest below Thudam, 3250 m, on soil (Jun. 25, 1972); around Kipuphu, 4550 m, in crevices of rocks (Jun. 26, 1972); Topke Gola-Shewaden, 2850-3350 m, on rock and rotten logs (Jun. 28, 1972).

LOPHOZIACEAE (by Naofumi Kitagawa)

**Anastrepta orcadensis** (Hook.) Schiffn.: Fl. E. Himal. 507 (1966); **2**: 226 (1971).

NEPAL. Suke-Hile Chok, 3600 m, on humus (Jun. 11, 1972); Ghopte-Gosa, 3750 m, 3800 m, on rock (Jun. 13, 1972); Banduke Pokhari-Saju Pokhari, 4220 m (Jun. 15, 1972); in a coniferous forest above Topke Gola, 3600 m, 3610 m, on tree-trunk, rock and soil, rotten log (Jun. 18, 1972); around Kipuphu, 4500 m, on rock (Jun. 26, 1972); around Phujeng La, 4800 m, in rock-crevices (Jun. 27, 1972); Topke Gola-Shewaden, 3250 m, 3300 m, on rotten log, tree-trunk (Jun. 28, 1972); Thale Patil-Mangen, 3100 m-3400 m (Aug. 27, 1972).

Distr. Europe, Himalaya, Tibet, China (Yunnan, Szechuan), Formosa, Japan, N. America (Pacific coast of Alaska), and Hawaii.

**Anastrophyllum assimile** (Mitt.) Steph.: Fl. E. Himal. 507 (1966); **2**: 227 (1971).

NEPAL. Ghopte-Gosa, 3750 m, 3970 m, on soil and rock (Jun. 13, 1972); Gosa-Banduke Pokhari, 4080 m, in crevices of cliff (Jun. 14, 1972); Banduke Pokhari-Saju Pokhari, 4150 m, 4170 m, on rock (Jun. 15, 1972); Saju Pokhari-pass to Topke Gola, 4100 m, 4350 m, on rock (Jun. 16, 1972); on a slope above Jalang Chhyongo, 4350 m, on soil (Jun. 21, 1972); Lama Chungbu-Slesa, 4250 m, on rock (Jun. 24, 1972); around Kipuphu, 4450 m, on rock (Jun. 26, 1972); Kipuphu-Phujeng La, 4650 m, on soil (Jun. 27, 1972); Topke Gola-Shewaden, 3150 m, on rock (Jun. 28, 1972); Gosainkund-Gopte, 3500-4200 m (Aug. 25, 1972).

DARJEELING. Sandakphu-Phalut, 3200-3600 m (Aug. 2, 1972).

Distr. Europe (Norway, Alps), Himalaya, Borneo (Mt. Kinabalu), Korea, Japan, Alaska, and Greenland.

**Anastrophyllum bidens** (Nees) Steph.: Fl. E. Himal. **2**: 227 (1971).

NEPAL. Hile Chok-Ghopte, 3350-3400 m, on rock, humus (Jun. 12, 1972).

Distr. Himalaya (Nepal and Bhutan), Borneo, Java, Malay, Philippines, and Japan.

**Anastrophyllum Donianum** (Hook.) Schiffn.: Fl. E. Himal. 507 (1966); **2**: 227 (1971).

NEPAL. Suke-Hile Chok, 3600 m, on humus (Jun. 11, 1972); Hile Chok-Ghopte, 3350 m, on rock (Jun. 12, 1972); Ghopte-Gosa, 3700 m, 3750 m, 3970 m, on rock and soil (Jun. 13, 1972); Banduke Pokhari-Saju Pokhari, 4150 m, on soil (Jun. 15, 1972); Saju Pokhari-pass to Topke Gola, 4350 m, on rocky cliff (Jun. 16, 1972); Topke Gola-Shewaden, 3250 m, on rotten log (Jun. 28, 1972); Gopte-Thale Patil, 3400-

3500 m (Aug. 26, 1972).

Distr. Europe (Atlantic coast), Himalaya, Tibet, China (Yunnan), and N. America (Pacific coast of Alaska and Canada).

**Anastrophyllum Joergensenii** Schiffn.: Fl. E. Himal. 507 (1966).

NEPAL. Ghopte-Gosa, 3750 m, 3970 m, on rock and soil (Jun. 13, 1972); Saju Pokhari-pass to Topke Gola, 4100 m, 4250 m, on rock (Jun. 16, 1972); Lama Chungbu-Slesa, 4250 m, on rock (Jun. 24, 1972); around Kipuphu, 4500 m, on soil (Jun. 26, 1972).

**Andrewsianthus ferrugineus** Grolle in *Ergebn. Forsch.-Unt. Nepal Himal.* **1**: 275 (1966).

NEPAL. In a coniferous forest above Topke Gola, 3610 m, on tree-trunk (Jun. 18, 1972).

Distr. Endemic to Nepal.

**Chandonanthus birmensis** Steph.: Fl. E. Himal. 508 (1966).

NEPAL. Bir Gaon-Dingla, 1300 m, on rock (Jul. 1, 1972); around Sanguri Bhanjyang, 1200 m, on rock (Jul. 10, 1972).

**Chandonanthus filiformis** Steph.: Fl. E. Himal. 508 (1966); **2**: 227 (1971).

*C. pusillus* Steph., Sp. Hepat. **3**: 646 (1909).

NEPAL. Hile Chok-Ghopte, 3400 m, on rock (Jun. 12, 1972); Ghopte-Gosa, 3750 m, 3850 m, on rock, and humus (Jun. 13, 1973); around Banduke Pokhari, 4050 m, 4120 m, in crevices of cliff (Jun. 14, 1972); Banduke Pokhari-Saju Pokhari, 4200 m, 4220 m, in crevices of cliff, on rock (Jun. 15, 1972); Saju Pokhari-pass to Topke Gola, 4100 m, in rock-crevices (Jun. 16, 1972); in a coniferous forest above Topke Gola, 3610 m, on tree-trunk (Jun. 18, 1972); Lama Chungbu-Slesa, 4250 m, on rock (Jun. 24, 1972); around Kipuphu, 4550 m, in rock-crevices (Jun. 26, 1972); Phujeng La-Topke Gola, 4760 m, on soil-covered rocks (Jun. 27, 1972); around Phujeng La, 3800 m, in rock-crevices (Jun. 27, 1972).

Distr. Borneo (Mt. Kinabalu), Himalaya, China (Yunnan, Szechuan), Formosa, Japan, and N. America (Pacific coast of Canada).

**Chandonanthus hirtellus** (Web.) Mitt.: Fl. E. Himal. 508 (1966); **2**: 227 (1971).

NEPAL. Near Sanguri Bhanjyang, 1270 m, on rock (Jun. 2, 1972); Dor-Chauke, 2650 m, on rock (Jun. 7, 1972); Chauke-Lamo Pokhari, 2620 m, 2850 m, on rock, tree-trunk (Jun. 8, 1972); Lamo Pokhari-Gupha Pokhari, 2830 m, on bank (Jun. 10, 1972); Ghopte-Gosa, 3800 m, on rock (Jun. 13, 1972); Topke Gola-Shewaden, 3450 m, on rock (Jun. 28, 1972); Bhorlang-Sundarijar, 2400-1400 m (Aug. 31, 1972).

**Isopaches decolorans** (Limpr.) Buch in *Mem. Soc. F. Fl. Fenn.* **8**: 288 (1932).

NEPAL. Shewaden-Papung, 2350 m, on bank (Jun. 29, 1972).

Distr. Europe (Norway, Alps) and Himalaya (Nepal).

This species has been known only from very limited areas in Europe, where it occurs very rarely. Himalayan plants fully exhibit such characteristic features as the silver-green plants somewhat appearing like *Prasanthus* in habit, the very strongly concave, rounded leaves bilobed shallowly and asymmetrically, the hyaline marginal leaf-cells whose walls are very strongly thickened (median and basal cells are rather thin-walled), the cylindrical-ovoid, deeply pluriplicate perianth whose upper portion is hyaline and whose mouth is shallowly lobed but

otherwise subentire. Both male and female plants together with sterile shoots with gemmae are found in the Himalayan collection—the female plants often bearing mature sporophytes.

**Jamesoniella nipponica** Hatt.: Fl. E. Himal. 2: 227 (1971).

NEPAL. Hile Chok–Ghopte, 3400 m, on humus (Jun. 12, 1972); in a coniferous forest above Topke Gola, 3600 m, 3610 m, on tree-trunk, rotten log (Jun. 18, 1972); Lama Chungbu–Slesa, 4250 m, on soil (Jun. 24, 1972); Topke Gola–Shewaden, 3250 m, on rotten log (Jun. 28, 1972).

Distr. Himalaya, Borneo (Mt. Kinabalu), Formosa, and Japan.

**Lophozia Handelii** Herz. in Hand.-Mzt., Symb. Sin. 5: 14 (1930).

NEPAL. Suke–Hile Chok, 3600 m, on humus (Jun. 11, 1972); Gosa–Banduke Pokhari, 4050 m, on rock (Jun. 14, 1972); Saju Pokhari–pass to Topke Gola, 4200 m, on rock (Jun. 16, 1972); in a *Rhododendron* forest above Topke Gola, 3650 m, on soil (Jun. 18, 1972); around Kipuphu, 4500 m, on soil (Jun. 26, 1972); Phujeng La–Topke Gola, 4700 m, in rock-crevices (Jun. 27, 1972).

Distr. Himalaya (Nepal) and China (Yunnan).

**Lophozia incisa** (Schrad.) Dum.: Fl. E. Himal. 509 (1966).

NEPAL. Hile Chok–Ghopte, 3500 m, on rock (Jun. 12, 1972); Gosa–Banduke Pokhari, 4050 m, on humus (Jun. 14, 1972); in a coniferous forest above Topke Gola, 3600 m, on rotten log (Jun. 18, 1972); Janga La–Thudam, 4550 m, 4600 m, on soil (Jun. 21, 1972); Lama Chungbu–Slesa, 4350 m, on soil (Jun. 24, 1972).

Distr. Europe, Himalaya, China (Yunnan, Szechuan), Formosa, Japan, Korea, Saghalien, Siberia, N. America, and Greenland.

**Lophozia setosa** (Mitt.) Steph.: Fl. E. Himal. 509 (1966).

NEPAL. Dor–Chauke, 2850 m, on humus (Jun. 7, 1972); in a mossy forest below Lamo Pokhari, 2680 m, on soil (Jun. 9, 1972); Hile Chok–Ghopte, 3500 m, on rock (Jun. 12, 1972); in a coniferous forest above Topke Gola, 3610 m, on rock and soil (Jun. 18, 1972); Topke Gola, coniferous forest side of pond, 3600 m, on decorticated log (Jun. 19, 1972); Shewaden–Papung, 2500 m, on rock (Jun. 29, 1972); Thale Patil–Mangen, 3400–3100 m (Aug. 27, 1972).

**Sphenolobopsis himalayensis** N. Kitag., sp. nov.

[Fig. 24]

Planta dioica, minor, gracilis, brunnea, superne flavo-brunnea, intricate caespitosa. Caulis ad 18 mm longus, pauciramosus, plerumque lateraliter (typo *Fruclaniae*) et furcate ramosus. Folia caulina remota, transverse inserta, conduplicatim oblique vel squarrose patula, in plano magis lata quam longa, 350–600  $\mu$  longa, 380–650  $\mu$  lata, 1/3–1/2 subaequaliter biloba, lobis subacutis vel acutis, valde divergentibus, itaque sinu latissimo. Cellulae apicales 10.0–14.5  $\mu$ , medianae 18.5–25.0  $\times$  12.0–18.5  $\mu$ , basales 20.0–27.5  $\times$  12.5–16.5  $\mu$ , parietibus subaequaliter incrassatis, trigonis parum distinctis, cuticula sublaevi. Amphigastria sporadica, magna. Androecia mediana, bracteis 2–3-jugis, valde ventricosus et hemisphaericus; antheridia solitaria, magna, pedicellis brevibus, uniseriatis. Folia floralia erectoamplectentia, caulinis majora, bi- vel triloba, lobis acutis, margine integris vel hic illic dentatis. Perianthia alte emersa, oblongo-obovata, inflata, superne pluriplata, ore contracto, breviter lobulato, lobulis dentato-cliatas. Capsula valvulis bistratis, parietibus strati exterioribus incrassatis et praeditis nodulis numerosis, magnis (nodulis strati interioribus parvulis). Sporae rufo-brunneae, 15.0–16.0  $\mu$ ,





Fig. 24. *Sphenolobopsis himalayensis* N. Kitag. a. Leaves,  $\times 50$ , b. Pair of female bracts,  $\times 30$ , c. Cells of leaf-middle,  $\times 450$ , d. Cells of leaf-apex,  $\times 450$ , e. Part of female plant,  $\times 30$ , f. Part of sterile plant with two underleaves at U,  $\times 50$ , g. Cells of inner layer of capsule-wall,  $\times 450$ , h. Cells of outer layer of capsule-wall,  $\times 450$ . All drawn from the type.

dense minuteque papillatae. Elateres bispiri,  $7.8-8.5 \mu$  lati.

NEPAL. Banduke Pokhari-Saju Pokhari, 4010 m, on tree (Jun. 15, 1972-type in NICH 312022); Saju Pokhari-pass to Topke Gola, 4150 m, on rock (Jun. 16, 1972); in a coniferous forest above Topke Gola, 3610 m, on tree-trunk (Jun. 18, 1972); Phujeng La-Topke Gola, 4700 m, in rock-crevices (Jun. 27, 1972); Thale Patil-Mangen, 3100-3400 m (Aug. 27, 1972).

Distr. Endemic to Nepal.

This is the second species of *Sphenolobopsis* which was recently described (Schuster 1971). The type species, *S. Pearsonii*, had been known only from Europe but recently it was recorded from several other disjunct areas including North Borneo

(Kitagawa 1970). *S. himalayensis* differs from *S. Pearsonii* in the following features (Bornean material was used for comparison, because mature female inflorescences and sporophytes were not known in any other material). The plants are larger, especially the female plants being often nearly as large as *Sphenolobus minutus*. The leaves possess strongly divergent lobes (thus they are much wider) and *in situ* they are more widely spreading and frequently squarrose. The antheridium is much larger (ca.  $160 \times 125 \mu$  in *S. himalayensis*, while ca.  $80 \times 60 \mu$  in *S. Pearsonii*); this large antheridium with a short stalk (ca.  $50 \mu$  long) recalls again *Sphenolobus* rather than *Sphenolobopsis*. Although underleaves are occasionally developed even in sterile plants, the female inflorescences lack bracteoles and instead the bracts are often trilobed (in *S. Pearsonii*, bracteoles are present and bracts are bilobed).

The relatively large size of plants suggests that the present species may be placed in *Sphenolobus* (indeed, the species somewhat resembles *Sphenolobus minutus*). However, to assign it to *Sphenolobopsis* may be warranted by the furcate branching of the *Frullania* type, the sporadic occurrence of underleaves, and the bistratose capsule-wall whose inner layer bears small nodular thickenings (not semiannular bands). One of the diagnostic features of *Sphenolobopsis* is the seta composed of a small number (9–10) of cell-rows. Unfortunately, the setae of Himalayan material are all shriveled and impossible to demonstrate the inner structure.

***Sphenolobus minutus*** (Schreb. ex Crantz) Berggr., New Zealand Hepat. 22 (1898).

*Anastrophyllum minutum* (Schreb. ex Crantz) Schust.: Fl. E. Himal. 508 (1966); 2: 227 (1971).

NEPAL. Hile Chok–Gopte, 3400 m, on humus (Jun. 12, 1972); Ghopte–Gosa, 3750 m, 3970 m, on rock and soil (Jun. 13, 1972); Banduke Pokhari–Saju Pokhari, 4150 m, 4200 m, in crevices of cliff (Jun. 15, 1972); Saju Pokhari–pass to Topke Gola, 4350 m, on rock (Jun. 16, 1972); on a slope above Jalang Chhyongo, 4350 m, 4550 m, on soil and rock (Jun. 21, 1972); around Kipuphu, 4550 m, on soil-covered rocks (Jun. 26, 1972); around Phujeng La, 4750 m, 4800 m, in rock crevices, on soil (Jun. 27, 1972).

Distr. S. Africa, Europe, Himalaya, Borneo (Mt. Kinabalu), New Guinea, Japan, Siberia, N. America, and Greenland.

***Tritomaria exsecta*** (Schmid.) Schiffn.: Fl. E. Himal. 509 (1966); 2: 227 (1971).

NEPAL. Banduke Pokhari–Saju Pokhari, 4220 m, on rock (Jun. 15, 1972); around Phujeng La, 4750 m, on soil (Jun. 27, 1972).

Distr. Europe, Himalaya, Borneo (Mt. Kinabalu), Formosa, Japan, Korea, Siberia, and N. America.

#### CEPHALOZIELLACEAE (by Naofumi Kitagawa)

***Cephaloziella Massalongoi*** (Spr.) K. Muell. in Rabenhorst, Krypt.-Fl. ed. 2, 6: 191 (1913).

NEPAL. Hile Chok–Ghopte, 3350 m, on rock (Jun. 12, 1972).

Distr. Europe and Nepal.

This species is previously known only from Europe. A small quantity of material was found in the Himalayan collection. The leaf-cells are somewhat larger (10–

14 × 8–10  $\mu$  in leaf-middle) but other vegetative features (plants are sterile) agree well with European material.

JUNGERMANNIACEAE (by Tairoku Amakawa)

**Horikawaella grosse-verrucosa** Amakawa et Hattori, sp. nov. [Fig. 25]

Planta minor, gracillima, rubra, dense caespitans. Caulis ascendens, ad 1.2 cm longus, 0.15 mm in diametro, cum foliis 0.5–0.6 mm latus, ramis laterali-intercalaribus; cortex pachydermis, distincte verrucosus, radicellis sparsis, longis, hyalinis vel rubrescentibus. Folia caulina leviter incuba, sinuatim inserta, oblique patula,  $\pm$ conduplicatim concava, in plano ovata, 0.35 mm longa, 0.28–0.3 mm lata, apice anguste obtusa, margine ventrali anguste decurva. Cellulae foliorum marginales 7.5–12.5 × 10–12.5  $\mu$ , mediae 12.5–15 × 15–25  $\mu$ , basales 10–15 × 25–35  $\mu$ , parietibus leptodermibus, trigonis nodulosis, cuticula grosse verrucosa. Dioica. Androecia terminalia vel intercalaria; bracteae 3–5 jugae, foliis caulinis majores, valde ventricosae. Gynoecia terminalia; perianthia semi-exserta, fusi-formia, 1.2 mm longa, 0.6 mm lata, 4-plicata, ore rostrato; perigynium erectum; bracteae 2 jugae, foliis caulinis conformes.

NEPAL. Ghopte–Gosa, 3970 m (Jun. 13, 1972); Banduke Pokhari–Saju Pokhari, 4150 m (Jun. 15, 1972); Saju Pokhari–pass to Topke Gola, 4350 m (Jun. 16, 1972); around Kipuphu, 4550 m (Jun. 26, 1972–type in NICH 312664; dupl. in TR).

Distr. E. Nepal.

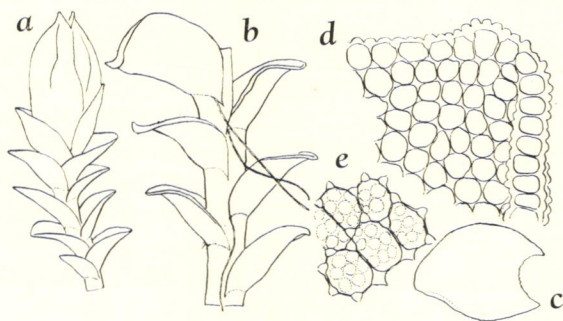


Fig. 25. *Horikawaella grosse-verrucosa* Amak. et Hatt. a. Female plant, dorsal view, × 16, b. Part of stem, ventral view, × 40, c. Leaf, × 40, d. Cells of leaf apex, × 320, e. Cells of leaf-middle, × 320. Drawn from the type.

*Horikawaella grosse-verrucosa*, the second species of the genus, is similar to a member of the subgenus *Solenostoma* of the genus *Jungermannia*, but it is easily distinguished from any species of *Solenostoma* by the conspicuous verrucae covering not only stem-leaves but also the stem-cortex and perianths. *H. subacuta*, the type species of the genus, is larger than *H. grosse-verrucosa*, and has cordiform leaves with subacute apices.

***Horikawaella subacuta*** (Herz.) Hatt. et Amak. in *Miscel. Bryol. Lichenol.* 5: 164 (1971).

*Anastrophyllum subacutum* Herz. in *Ann. Bryol.* 12: 75 (1939).

NEPAL. Saju Pokhari–Topke Gola, 4350 m (Jun. 11, 1972); Hile Chok–Ghopte,

3400 m (Jun. 12, 1972); Gosa-Banduke Pokhari, 4050 m (Jun. 13, 1972); Banduke Pokhari-Saju Pokhari, 4150 m (Jun. 15, 1972); around Kipuphu, 4500 m (Jun. 26, 1972).

Distr. Sikkim and Nepal.

**Jungermannia appressifolia** Mitt. in Journ. Linn. Soc. Bot. **5**: 91 (1861).

*J. Decolyana* Schiffn.: Fl. E. Himal. 510 (1966); **2**: 227 (1971).

NEPAL. Hile Chok-Ghopte, 3450 m (Jun. 12, 1972).

var. **nigricans** (Amak.) Váňa in Journ. Hattori Bot. Lab. **36**: 58 (1972).

*J. Decolyana* var. *nigricans* Amak.: Fl. E. Himal. **2**: 228 (1971).

NEPAL. Chitre-Basantapur, 2350 m (Jun. 6, 1972); Suke-Hile Chok, 3000 m (Jun. 11, 1972).

Distr. Var. *appressifolia*: E. Himalaya, India (Bengal and Assam), Yunnan, Ceylon, Java, Borneo, Formosa, and Japan; var. *nigricans*: E. Himalaya (Nepal) and India (Bengal).

**Jungermannia atrobrunnea** Amak. in Journ. Hattori Bot. Lab. **30**: 192 (1967).

NEPAL. Ghopte-Gosa, 3750-4020 m (Jun. 13, 1972); around Kipuphu, 4550 m (Jun. 26, 1972).

Distr. Nepal and Bengal.

**Jungermannia bengalensis** Amak. in Journ. Hattori Bot. Lab. **31**: 112 (1968).

*J. filamentosa* Amak. l.c. **30**: 194 (1967), non Lehm. et Lindenb. in Lehm., Pugillus **6**: 29 (1834).

NEPAL. Ghopte-Gosa, 3700 m (Jun. 13, 1972); above Topke Gola, 3610 m (Jun. 18, 1972).

Distr. Nepal and Bengal.

**Jungermannia confertissima** Nees in Naturg. Eur. Leberm. **1**: 277 (1833).

*J. Duthiana* Steph.: Amak. l.c. **30**: 196 (1967).

NEPAL. Lamo Pokhari-Gupha Pokhari, 2830 m (Jun. 10, 1972).

Distr. Europe, Kashmir, Himalaya, Siberia, and N. America.

**Jungermannia flavorevoluta** Váňa in Journ. Hattori Bot. Lab. **36**: 63 (1972).

*J. clavellata* (Mitt.) Amak. sensu Grolle in Journ. Jap. Bot. **40**: 208 (1965)-Amak. in Journ. Hattori Bot. Lab. **29**: 253 (1966).

NEPAL. Suke-Hile Chok, 3450 m (Jun. 11, 1972); Janga La-Thudam, 4400 m (Jun. 21, 1972); Lama Chungbu-Slesa, 4250 m (Jun. 24, 1972); Topke Gola-Shewaden, 3400 m (Jun. 28, 1972).

Distr. Nepal, Sikkim, and Bhutan.

**Jungermannia lanigera** Mitt.: Fl. E. Himal. 511 (1966).

NEPAL. Ghopte-Gosa, 4000 m (Jun. 13, 1972); Kipuphu-Phujeng La, 4600 m (Jun. 27, 1972).

Distr. Nepal, Sikkim, Bengal, and W. China (Szechuan and Yunnan).

**Jungermannia limbatifolia** Amak. in Journ. Hattori Bot. Lab. **31**: 112 (1968).

var. **radicellosa** Amak. in Fl. E. Himal. **2**: 228 (1971).

NEPAL. Near Chitre, 2350 m (Jul. 7, 1972).

Distr. var. Nepal and Bhutan.

**Jungermannia macrocarpa** Steph.: Amak. in Journ. Hattori Bot. Lab. **30**: 190 (1967).

NEPAL. Hile-Chitre, 2150 m (Jun. 5, 1972); Chitre-Basantapur, 2350 m (Jun. 6, 1972); Shewaden-Papung, 2050 m (Jun. 29, 1972); Bir Gaon-Dingla, 1400 m (Jul. 1, 1972).

Distr. Nepal, Sikkim, Bengal, and W. China (Szechuan and Yunnan).

**Jungermannia minutiverrucosa** Amak. in Journ. Hattori Bot. Lab. **25**: 390 (1962).

*Nardia granulata* Steph. in Bull. Herb. Boiss. **5**: 100 (1897).

NEPAL. Bir Gaon-Dingla, 1050 m (Jul. 1, 1972).

Distr. Nepal, Thailand, New Guinea, and Japan.

**Jungermannia Ohbae** Amakawa, sp. nov. [Fig. 26 a-g]

Planta major, flaccidula, viridis, saepicula rubescens, dense caespitans. Caulis ascendens, 2.5 cm longus, 0.35 mm diametro, cum foliis 1.5–2.5 mm latus, saepicula ramosus et flagellifer, ramis laterali-intercalaribus, sparsim radiceollosus. Folia caulina remota vel contigua, sinuatim inserta, dorsale secunda, leviter concava, saepicula ad apicem caulinem  $\pm$ conduplicatim concava, in plano ovata, 1.5–1.7 mm longa, 1.5–2 mm lata. Cellulae marginales saepe rubri-tinctae, 25–38  $\times$  20–25  $\mu$ , mediae 32–60  $\times$  25–45  $\mu$ , basales 50–130  $\times$  25–50  $\mu$ , leptodermes, trigonis minutis; cuticula laevis. Dioica videtur; perianthia semi-exserta, pyriformia, 1.8 mm longa, 1 mm lata, ore rostrato; bracteeae 1 jugae, foliis caulinis conformes; sub flore innovata.

NEPAL. Gosainkund-Gopte, 4200 m (Aug. 25, 1972—type in NICH 312380).

Distr. Nepal.

*Jungermannia Ohbae* is hygrophilous, growing on rocks of the stream-side. It looks like a species of the subgenus *Luridae*. The plant is light green, but often tinged with red; the leaves are often bordered by a row of reddish cells.

**Jungermannia parvitexta** Amak. in Journ. Hattori Bot. Lab. **30**: 187 (1967).

NEPAL. Ghopte-Gosa, 3750 m (Jun. 13, 1972); Banduke Pokhari-Saju Pokhari, 4200 m (Jun. 15, 1972).

Distr. Nepal and Bengal.

**Jungermannia pseudodecolyana** Amak. in Journ. Hattori Bot. Lab. **30**: 188 (1967).

NEPAL. Gosa-Banduke Pokhari, 4050 m (Jun. 13, 1972).

Distr. Nepal and Bengal.

**Jungermannia rubripunctata** (Hatt.) Amak. in Journ. Hattori Bot. Lab. **22**: 38 (1960).

NEPAL. Near Chitre, 2350 m (Jul. 7, 1972).

Distr. Nepal and Japan.

**Jungermannia saccaticoncava** Amakawa, sp. nov. [Fig. 26 h-m]

Sterilis, minor, olivacea, caespitans. Caulis simplex, procumbens, 0.5–0.8 cm longus, cum foliis 1.5 mm latus, dense radiceollosus. Folia caulina imbricata, sinuatim transverseque inserta, squarrosa, valde concava, saccatiformia, in plano reniformia, 0.85–0.9 mm longa, 1.3–1.5 mm lata. Cellulae marginales 15–25  $\times$



Fig. 26. *Jungermannia Ohbae* Amak. a. Sterile plant with flagellum, lateral view,  $\times 8$ , b. Part of stem, dorsal view,  $\times 18$ , c, d. Leaves,  $\times 8$ , e. Cells of leaf-apex,  $\times 160$ , f. Cells of leaf-middle,  $\times 160$ , g. Perianth and bracts, with innovations, dorsal view,  $\times 8$ .

*Jungermannia saccaticoncava* Amak. h. Part of sterile plant, dorsal view,  $\times 8$ , i. Young plant, dorsal view,  $\times 16$ , j. Young plant, lateral view,  $\times 8$ , k. Leaf,  $\times 16$ , l. Leaf of young plant,  $\times 16$ , m. Cells of leaf-apex,  $\times 320$ . All figures were drawn from the types.

25–30  $\mu$ , mediae 20–25  $\times$  25–30  $\mu$ , basales 20–30  $\times$  25–45  $\mu$ , parietibus tenuibus, trigonis majoribus, leviter nodulosis; cuticula laevis. Reliqua desunt.

NEPAL. Janga La-Thudam, 4550 m (Jun. 21, 1972—type in NICH 312380).

Distr. Nepal.

The extremely concave, sac-forming leaves are very conspicuous.

***Jungermannia sanguinolenta*** Griff. in Notul. Pl. Asia. 302 (1849).

NEPAL. Ghopte-Gosa, 3700 m (Jun. 13, 1972); above Topke Gola, 3610 m (Jun. 18, 1972).

Distr. Nepal, Sikkim, and Assam.

**Jungermannia subrubra** Steph. in Sp. Hepat. **6**: 93 (1924).

NEPAL. Lama Chungbu-Slesa, 4250 m (Jun. 24, 1972).

Distr. Nepal, Sikkim, and Bengal.

**Jungermannia tetragona** Lindenb. in Bot. Zeit. **6**: 462 (1848).

NEPAL. Dingla-Doban, 1000 m (Jul. 2, 1972); Nessum-Bhujje, 1550 m (Jul. 3, 1972).

Distr. Nepal, Sikkim, Assam, Ceylon, Andaman, Sumatra, Java, Borneo, Ambon, New Guinea, New Caledonia, and Japan.

**Jungermannia truncata** Nees in Hepat. Jav. 29 (1830).

NEPAL. Nigale-Kuwa Pani, 1720 m (Jun. 4, 1972); Nessum-Bhujje, 1700 m (Jul. 3, 1972).

Distr. Ceylon, Nepal, Sikkim, Assam, Bengal, Burma, Thailand, Malay, Sumatra, Bangka, Java, Borneo, New Guinea, Philippines, China, Formosa, Korea, and Japan.

**Mylia Taylori** (Hook.) S.F. Gray: Fl. E. Himal **2**: 228 (1971).

NEPAL. Suke-Hile Chok, 3570 m, on humus (Jun. 11, 1972).

Distr. Circumboreal, southward to Himalayas, China, Formosa (higher elevations), and Japan.

**Nardia nepalensis** Amakawa, sp. nov.

[Fig. 27]

Planta minor, flavo-viridis vel brunnescens, caespitans. Caulis procumbens, 0.8 cm longus, 0.25 mm diametro, cum foliis 1.3 mm latus. Folia caulina contigua vel imbricata, oblique inserta, oblique patula, basi haud decurrentia, leviter concava, rotunda vel quadrato-rotunda, 0.4–0.65 mm longa, 0.5–0.85 mm lata. Cellulae marginales 20–30 × 20–25  $\mu$ , mediae 30–38 × 25–35  $\mu$ , basales 38–50 × 25–35  $\mu$ , parietibus tenuibus, trigonis nodulosis, cuticula laevi. Amphigastria caulina

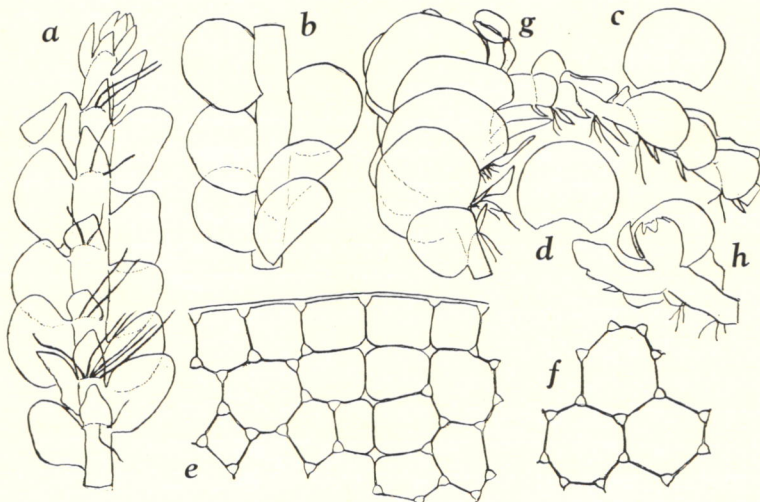


Fig. 27. *Nardia nepalensis* Amak. a. Part of stem, ventral view,  $\times 16$ , b. Part of stem, dorsal view,  $\times 16$ , c, d. Leaves,  $\times 16$ , e. Cells of leaf-apex,  $\times 320$ , f. Cells of leaf-middle,  $\times 320$ , g, h. Female plants with young gynoecia and innovations, lateral view,  $\times 16$ . Drawn from the type.

triangulata, 0.4–0.5 mm longa, 0.3 mm lata, uno latere foliis coalita, apice obtusa. Dioica videtur; gynoecia terminalia, sub flore ventrali omnino uno vel duplo innovata. Perianthia juvenalia, conica; peryginium erectum; folia et amphigastrium floralia caulinis haud diversa, majora.

NEPAL. Banduke Pokhari–Saju Pokhari, 4150 m (Jun. 15, 1972); Saju Pokhari–pass to Topke Gola, 4350 m (Jun. 16, 1972–type in NICH 312067).

Distr. Nepal.

The subfloral innovations from the ventral side of the stem of *Nardia nepalensis* are very remarkable. The species is similar to *N. scalaris*, but the latter has subulate underleaves with acute apices.

**Nardia Poeltii** Váňa in Journ. Hattori Bot. Lab. **36**: 73 (1972).

NEPAL. Dor–Chauke, 1670 m (Jun. 7, 1972); Ghopte–Gosa, 3800 m (Jun. 13, 1972).

Distr. Nepal.

#### LOPHOCOLEACEAE (by Naofumi Kitagawa)

**Chiloscyphus argutus** (Reinw., Bl. et Nees) Nees: Fl. E. Himal. 512 (1966).

NEPAL. Shewaden–Papung, 2250 m, on soil (Jun. 29, 1972).

**Chiloscyphus Bescherellei** Steph.: Fl. E. Himal. 512 (1966).

NEPAL. Shewaden–Papung, 2250 m, 2500 m, on soil, rock (Jun. 29, 1972).

**Chiloscyphus flaccidus** (Mitt.) Steph.: Fl. E. Himal. 512 (1966).

NEPAL. Dor–Chauke, 2850 m, on humus (Jun. 7, 1972); Suke, 2900 m, on humus (Jun. 10, 1972).

Distr. Himalaya.

**Chiloscyphus inflatus** Steph., Sp. Hepat. **3**: 206 (1906).

NEPAL. Hile Chok–Ghopte, 3350 m, on rock (Jun. 12, 1972); Saju Pokhari–pass to Topke Gola, 4200 m, on rock (Jun. 16, 1972); in a forest below Thudam, 3400 m, on tree-trunk (Jun. 22, 1972); around Kipuphu, 4450 m, on rock (Jun. 26, 1972); Kipuphu–Phujeng La, 4650 m, on soil (Jun. 27, 1972); Ramche–Gram, 1800–1900 m (Aug. 20, 1972); Gosainkund–Gopte, 3500–4200 m (Aug. 25, 1972).

Distr. Himalaya.

**Chiloscyphus polyanthus** (L.) Corda: Fl. E. Himal. 512 (1966).

NEPAL. Topke Gola–Shewaden, 3400 m, on rock (Jun. 28, 1972).

Distr. Europe, Himalaya, China, Formosa, Japan, Korea, Siberia, and N. America.

**Lophocolea bidentata** (L.) Dum.: Fl. E. Himal. 512 (1966).

NEPAL. In a mossy forest below Lamo Pokhari, 2700 m, on soil (Jun. 9, 1972).

Distr. Africa, Europe, Himalaya, and N. America.

**Lophocolea sikkimensis** (Steph.) Herz. et Gro.: Fl. E. Himal. 513 (1966).

NEPAL. Suke–Hile Chok, 3570 m & 3600 m, on humus (Jun. 11, 1972); Hile Chok–Ghopte, 3500 m, on rock (Jun. 12, 1972); Ghopte–Gosa, 3700 m & 4000 m, on rotten log, rock (Jun. 13, 1972).

Distr. Himalaya.

#### PLAGIOCHILACEAE (by Hiroshi Inoue)

**Plagiochila Beddomei** Steph.: Fl. E. Himal. 513 (1966).

NEPAL. Near Sanguri Bhanjyang, 1200 m (Jun. 2, 1972).



Distr. S. India, Sikkim, and Thailand.

**Plagiochila Cardotii** Steph.: Fl. E. Himal. 514 (1966).

NEPAL. Hile-Chitre, 2310 m (Jun. 5, 1972); below Lamo Pokhari, 2680 m (Jun. 9, 1972).

**Plagiochila Carringtonii** (Balfour) Grolle

subsp. **lobuchensis** Grolle: Fl. E. Himal. 514 (1966).

NEPAL. Saju Pokhari-pass to Topke Gola, 4150 m (Jun. 16, 1972); Lama Chungbu-Slesa, 4250 m (Jun. 24, 1972).

**Plagiochila chinensis** Steph.: Fl. E. Himal. 514 (1966).

NEPAL. Shewaden-Papung, 2700 m (Jun. 29, 1972); in a forest near Chitre, 2400 m (Jul. 7, 1972).

**Plagiochila cuspidata** Steph., Sp. Hepat. **6**: 144 (1918)—Inoue in Journ. Hattori Bot. Lab. **30**: 128 (1967).

*P. subsymmetrica* Steph.: Fl. E. Himal. 520 (1966); **2**: 229 (1971).

NEPAL. Near Sanguri Bhanjyang, 1200 m (Jun. 2, 1972).

Distr. E. Nepal, Sikkim, and Thailand.

**Plagiochila debilis** Mitt.: Fl. E. Himal. 514 (1966).

NEPAL. Dor-Chauke, 2850 m (Jun. 7, 1972); above Topke Gola, 3650 m (Jun. 18, 1972).

**Plagiochila denticulata** Mitt.: Fl. E. Himal. 515 (1966).

NEPAL. Shewaden-Papung, 2400 m (Jun. 29, 1972).

Distr. E. Nepal, Sikkim, and Bengal.

**Plagiochila Determii** Steph.: Fl. E. Himal. 515 (1966).

NEPAL. Hile-Chitre, 2000 m (Jun. 5, 1972); Dor-Chitre, 2500 m (Jul. 7, 1972).

Distr. E. Himalaya, Thailand, and China (Yunnan).

**Plagiochila Duthiana** Steph.: Fl. E. Himal. **2**: 229 (1971).

NEPAL. Banduke Pokhari-Saju Pokhari, 4100 m (Jun. 15, 1972); Saju Pokhari-Topke Gola, 3600 m (Jun. 16, 1972); above Topke Gola, 3650 m (Jun. 18, 1972); Lama Chungbu-Slesa, 4250 m (Jun. 24, 1972); Topke Gola-Shewaden, 3150 m (Jun. 28, 1972); Shewaden-Papung, 2500 m (Jun. 29, 1972).

**Plagiochila elegans** Mitt.: Fl. E. Himal. 515 (1966).

NEPAL. Topke Gola-Shewaden, 2850 m (Jun. 28, 1972); Shewaden-Papung, 2600 m (Jun. 29, 1972); near Chitre, 2400 m (Jul. 7, 1972).

**Plagiochila firma** Mitt.: Fl. E. Himal. 515 (1966); **2**: 229 (1971).

NEPAL. Basantapur-Dor, 2550 m (Jun. 6, 1972); below Lamo Pokhari, 2850 m (Jun. 9, 1972); above Topke Gola, 3610 m (Jun. 18, 1972); below Thudam, 3250 m (Jun. 25, 1972); Topke Gola-Shewaden, 3300 m (Jun. 28, 1972); Mangen-Khodang Danda, 3100-2500 m (Aug. 28, 1972).

DARJEELING. 2200 m (Jul. 28, 1972).

Distr. Himalaya, Thailand, China, Formosa, and Japan.

**Plagiochila flexuosa** Mitt.: Fl. E. Himal. 516 (1966).

NEPAL. Hile-Chitre, 2350 m (Jun. 5, 1972); Dor-Chauke, 2850 m (Jun. 7, 1972); Shewaden-Papung, 2500 m (Jun. 29, 1972).

Distr. E. Himalaya, Bengal, Thailand, Formosa, and Japan.

**Plagiochila fragillima** Steph., Sp. Hepat. **2**: 326 (1904)—Inoue in Bull. Nat. Sci. Mus. Tokyo **8**: 387 (1965).

NEPAL. Below Thudam, 3250 m (Jun. 25, 1972).

Distr. E. Nepal and Sikkim.

**Plagiochila Gollanii** Steph.: Fl. E. Himal. 516 (1966).

NEPAL. Near Sanguri Bhanjyang, 1200–1300 m (Jun. 2, 1972); Hile–Chitre, 2250 m (Jun. 5, 1972); Chitre–Basantapur, 2350 m (Jun. 6, 1972); Dor–Chitre, 2500 m (Jun. 7, 1972).

Distr. E. Himalaya, Bengal, Thailand, Formosa, and Japan.

**Plagiochila Grollei** Inoue: Fl. E. Himal. 517 (1966); **2**: 229 (1971).

NEPAL. Below Lamo Pokhari, 2650 m (Jun. 9, 1972); Suke–Hile Chok, 3570 m (Jun. 11, 1972); Hile Chok–Ghopte (Tal Pokhari), 3350 m (Jun. 12, 1972); Topke Gola–Shewaden, 3150 m (Jun. 28, 1972).

**Plagiochila microphylla** Steph.: Fl. E. Himal. 517 (1966).

NEPAL. Suke–Hile Chok, 3550 m (Jun. 11, 1972); above Topke Gola, 3650 m (Jun. 18, 1972); Phulchoki, summit area, 2650 m (Jul. 15, 1972).

**Plagiochila mundaliensis** Steph.: Fl. E. Himal. 517 (1966).

NEPAL. Below Thudam, 3250 m (Jun. 25, 1972); Topke Gola–Shewaden, 3050 m (Jun. 28, 1972).

**Plagiochila neorupicola** Inoue: Fl. E. Himal. 517 (1966).

NEPAL. Near Sanguri Bhanjyang, 1270 m (Jun. 2, 1972).

**Plagiochila nepalensis** Lindenb.: Fl. E. Himal. 517 (1966).

NEPAL. Near Sanguri Bhanjyang, 1200 m (Jun. 2, 1972); Kuwa Pani–Hile, 1900 m (Jun. 4, 1972); near Chitre, 2400 m (Jul. 7, 1972).

Distr. E. Himalaya to S. India, Thailand, W. China, and Philippines.

**Plagiochila orientalis** Tayl.: Fl. E. Himal. 518 (1966); **2**: 229 (1971).

NEPAL. Suke–Hile Chok, 2970 m (Jun. 11, 1972); Topke Gola–Shewaden, 3300 m (Jun. 28, 1972); Phulchoki, summit area, 2400 m (Jul. 15, 1972).

Distr. Nepal, Bhutan, Assam, and N. Thailand.

**Plagiochila perserrata** Herz.: Fl. E. Himal. 518 (1966); **2**: 229 (1971).

NEPAL. Dor–Chauke, 2850 m (Jun. 7, 1972); Topke Gola–Shewaden, 2800 m (Jun. 28, 1972); Shewaden–Papung, 2300 m (Jun. 29, 1972).

**Plagiochila phalangea** Tayl.: Fl. E. Himal. 518 (1966).

NEPAL. Below Lamo Pokhari, 2700 m (Jun. 9, 1972); Papung–Bir Gaon, 1800 m (Jun. 30, 1972).

**Plagiochila Pocsii** Inoue in Journ. Hattori Bot. Lab. **31**: 304 (1968).

NEPAL. Chauke–Lamo Pokhari, 2620 m (Jun. 8, 1972); below Lamo Pokhari, 2680 m (Jun. 9, 1972); Thudam, 3420 m (Jun. 22, 1972); Thudam, 3250 m (Jun. 25, 1972).

Distr. E. Nepal, N. Vietnam, and Thailand. This is a new record for Himalaya.

The Himalayan plants sometimes have few terminal branches.

**Plagiochila Poeltii** Inoue et Grolle in Grolle in Trans. Brit. Bryol. Soc. **4**: 656 (1964)–Inoue, l.c. 395 (1965).

NEPAL. Ghopte–Gosa, 4000 m (Jun. 13, 1972); around Banduke Pokhari, 4200 m (Jun. 14, 1972); Banduke Pokhari–Saju Pokhari, 4100 m (Jun. 15, 1972); Saju Pokhari–pass to Topke Gola, 4200 m (Jun. 16, 1972); Lama Chungbu–Slesa, 4250 m (Jun. 24, 1972); below Thudam, 3230 m (Jun. 25, 1972); Topke Gola–Shewaden, 3400 m (Jun. 28, 1972).

Distr. E. Nepal.

**Plagiochila pseudofirma** Herz.: Fl. E. Himal. 518 (1966).

NEPAL. Basantapur-Dor, 2500 m (Jun. 6, 1972); below Lamo Pokhari, 2700 m (Jun. 9, 1972); above Topke Gola, 3600 m (Jun. 18, 1972); below Thudam, 3250 m (Jun. 25, 1972); Phulchoki, summit area, 2400 m (Jul. 15, 1972).

**Plagiochila pseudomicrophylla** Inoue in Fl. E. Himal. 518 (1966); in Journ. Hattori Bot. Lab. **30**: 121 (1967).

NEPAL. Below Lamo Pokhari, 2850 m (Jun. 9, 1972); Suke-Hile Chok, 3550 m (Jun. 11, 1972).

**Plagiochila pseudorientalis** Inoue in Journ. Hattori Bot. Lab. **30**: 126 (1967).

NEPAL. Bir Gaon-Dingla, 1300 m (Jul. 1, 1972).

**Plagiochila retusa** Mitt.: Fl. E. Himal. 518 (1966).

NEPAL. Below Lamo Pokhari, 2650 m (Jun. 9, 1972); Hile Chok-Ghopte, 3400 m (Jun. 12, 1972); Banduke Pokhari-Saju Pokhari, 4170 m (Jun. 15, 1972); Saju Pokhari-pass to Topke Gola, 4350 m (Jun. 16, 1972); above Topke Gola, 3610 m (Jun. 18, 1972); below Thudam, 3300 m (Jun. 25, 1972); around Kipuphu, 4550 m (Jun. 26, 1972); Thale Patil-Mangen, 3100-3400 m (Aug. 27, 1972).

Distr. E. Nepal, Sikkim, and Bengal.

**Plagiochila sciophila** Nees: Fl. E. Himal. 518 (1966).

NEPAL. Hile-Chitre, 2150 m (Jun. 5, 1972); Dor-Chauke, 2750 m (Jun. 7, 1972); Chauke-Lamo Pokhari, 2700 m (Jun. 8, 1972).

**Plagiochila secretifolia** Mitt.: Fl. E. Himal. 519 (1966).

NEPAL. Dor-Chauke, 2600 m (Jun. 7, 1972); below Lamo Pokhari, 2650 m (Jun. 9, 1972).

Distr. Himalaya, Bengal, and N. Thailand.

**Plagiochila semidecurrens** (Lehm. et Lindenb.) Lehm. et Lindenb.: Fl. E. Himal. 519 (1966).

NEPAL. Dor-Chauke, 2850 m (Jun. 7, 1972); around Lamo Pokhari, 2900 m (Jun. 8, 1972); Chauke-Lamo Pokhari, 2800 m (Jun. 8, 1972); below Lamo Pokhari, 2730 m (Jun. 9, 1972); Hile Chok-Ghopte, 3400 m (Jun. 12, 1972); Ghopte-Gosa, 3700 m (Jun. 13, 1972); above Topke Gola, 3650 m (Jun. 18, 1972); Chauke-Dor, 2700 m (Jul. 6, 1972); Gopte-Thale Patil, 3400-3500 m (Aug. 26, 1972).

Distr. E. Himalaya, Khasia, Bengal, Ceylon, Thailand, China, Formosa, Philippines, Japan, Alaska, and W. Canada.

**Plagiochila torquescens** Herz.: Fl. E. Himal. 520 (1966); **2**: 229 (1971).

NEPAL. Chitre-Basantapur, 2350 m (Jun. 6, 1972).

Distr. E. Nepal, Sikkim, and China.

**Plagiochilion Mayebarae** Hatt.: Fl. E. Himal. 521 (1966).

NEPAL. Dor-Chauke, 2850 m (Jun. 7, 1972); around Lamo Pokhari, 2900 m (Jun. 8, 1972); below Lamo Pokhari, 2700 m (Jun. 9, 1972); Suke-Hile Chok, 3550 m (Jun. 11, 1972); Banduke Pokhari-Saju Pokhari, 4100 m (Jun. 15, 1972).

#### ACROBOLBACEAE (by Sinske Hattori)

**Acrobolbus ciliatus** (Mitt.) Schiffn.: Fl. E. Himal. 510 (1966).

NEPAL. Forest below Thudam, 3250 m, on rock (Jun. 25, 1972).

Distr. Himalaya, New Guinea, Formosa, Japan, Aleutian Isl. (Attu Isl.), and N. America (Alaska and Appalachians).

## ARNELLIACEAE (by Sinske Hattori &amp; Naofumi Kitagawa)

**Southbya Gollanii** Steph., Sp. Hepat. **3**: 37 (1906).

NEPAL. In a coniferous forest above Topke Gola, 3610–3650 m, on tree-trunk (Jun. 18, 1972).

Distr. Himalaya (Mussoorie and Nepal).

This is the first real record of this species from Nepal (the previous record is not referable to *S. Gollanii* but to *S. Grollei*). Both species are immediately separated by several salient gametophytic features (Kitagawa 1973). The material cited above has mature sporophytes which offer other distinguishing characters; the inner layer of capsule walls bears semiannular bands (nodular thickenings in *S. Grollei*), the spores are granulate-echinate in coats (more highly echinate in *S. Grollei*), and the elaters possess two spiral thickenings (without thickenings in *S. Grollei*).

**Southbya Grollei** N. Kitag. in Act. Phytotax. Geobot. **25**: 127, f. 1 (1973).

*S. Gollanii* Steph. sensu Grolle in Ergebn. Forsch.-Unt. Nepal Himal. **1**: 287, f. 8 (1966).

NEPAL. Dor-Chauke, 2750 m, on rocky cliff (Jun. 7, 1972); Chauke-Lamo Pokhari, 2620 m, on rock and rocky cliff (Jun. 8, 1972); Shewaden-Papung, 2200 m, on rock (Jun. 29, 1972); Papung-Bir Gaon, 1900 m, on rock (Jun. 30, 1972).

Distr. Himalaya (Nepal), Thailand, and New Guinea.

## ANTHELIACEAE (by Sinske Hattori)

**Anthelia Juratzkana** (Limpr.) Trev. in Mem. R. Ist. Lombardo ser. 3, **4**: 416 (1877).

NEPAL. Ghopte-Gosa, 3750–3800 m, on soil and rock (Jun. 13, 1972); around Banduke Pokhari, 4120 m, in crevices of rocks (Jun. 14, 1972); Saju Pokhari-pass to Topke Gola, 4350 m, on rocky cliff (Jun. 16, 1972); slope above Jalang Chhyongo, 4400 m, in crevices of cliff (Jun. 21, 1972); Janga La-Thudam, 4550, on soil (Jun. 21, 1972).

Distr. Europe, Himalaya, New Guinea, New Zealand, Japan, Siberia, Kurile, and N. & S. America.

## CEPHALOZIACEAE (by Sinske Hattori)

**Cephalozia terminalis** Hatt., sp. nov.

[Fig. 28]

Planta minor, pallide flavescens, dioica, flagellifera; caulis apex saepicule nudus, gemmifer; folia caulina subtransverse inserta, haud decurrentia, ovato-oblonga, ca. 1/2-bifida; gynoecia in caule terminalia, bractea intima oblonga, 2/5–1/2-bifida, margine integerrima, bracteola intima bractea simillima, perianthia cylindrica, exserta, ore lato, breviter lobato, lobis crenulatis; androecia intercalaria, bracteis concavis.

Plants small (to medium-sized), in herbaria pale yellow and sometimes red-tinted at least partially, in small patches with *Riccardia* etc. Stems short (5–10 mm), simple, pale olive-yellow, 0.15(–0.18) mm in diameter, prostrate to more or less ascending, with flagella below, rhizoids hyaline, mainly on flagella, stem-apices often nude (without leaves), gemmiferous, branches few, ventral in origin. Stem-leaves contiguous to somewhat remote, obliquely spreading, conduplicate-concave, ovate-oblong, when well-developed ca. 0.8 mm long and 0.6 mm wide, 30–32 cells wide below middle (at widest

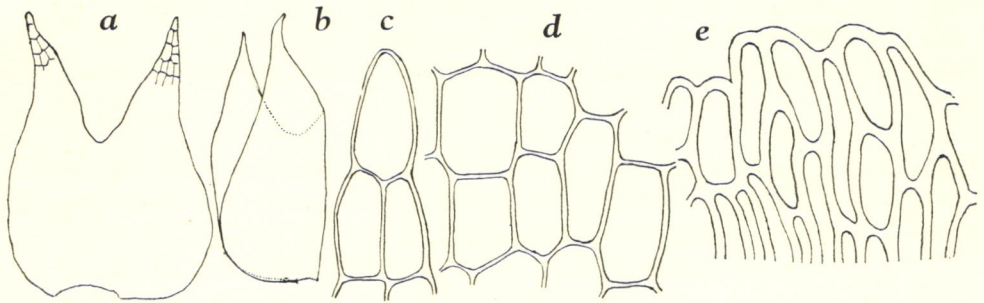


Fig. 28. *Cephalozia terminalis* Hatt. a, b. Stem-leaves,  $\times 46$ , c. Lobe-apex of stem-leaf,  $\times 385$ , d. Inner cells of stem-leaf,  $\times 385$ , e. Mouth-margin of perianth,  $\times 385$ . Drawn from Type, coll. Z. Iwatsuki no. 919.

portion), 9–10 cells wide at base, ca. 1/2-bifid, sinus subacute, lobes triangular-lanceolate, ventral lobe larger, ca. 10 cells long, 10–14 cells wide at base, with more or less pilose apices, insertion nearly transverse, short, not decurrent; cavities of cells subhyaline, of cells of lobe-middle generally  $33\text{--}47 \times 24 \mu$ , of cells near leaf-base generally  $33\text{--}43 \times 18\text{--}24 \mu$ , walls hyaline or nearly so, equally and slightly thickened, trigones small or absent, cuticle smooth. Dioicous. Androecia intercalary, bracts several pairs, smaller, concave. Gynoecia terminal on stems, rarely with subfloral innovation; perichaetial leaves several pairs, larger than stem-leaves, densely imbricate; innermost bract oblong, 1–1.2 mm long and 0.3–0.4 mm wide, 2/5–1/2-bifid, sinus acute and narrow, lobes lanceolate, acute at apex, margin entire throughout; innermost bracteole similar to the bract; perianth exserted, subhyaline or mostly reddish-tinted (mouth always hyaline), but narrow, cylindric, 2–2.5 mm long and 0.4–0.5 mm wide, smooth, mouth wide (ca. 0.35 mm wide), shallowly lobed, lobes crenulate.

NEPAL. Hile Chok–Ghopte, 3350 m, on rocky cliff (Jun. 12, 1972, coll. Z. Iwatsuki no. 919–holotype in NICH, dupl. in TI); Shewaden–Papung, 2500 m, on rotten log (Jun. 29, 1972).

Distr. Endemic.

From the Himalayas and adjacent regions, *C. Gollanii* Steph., *C. Herzogiana* Pandé et Srivastava, and several other species of *Cephalozia* have been known. However, the present new species is separable from each of them by the following diagnostic characteristics: 1) Gynoecia terminal on the stems and sometimes with a subfloral innovation; 2) the entire-margined female bracts and bracteoles; 3) the shallowly lobed, wide mouth of perianth and the crenulate lobe-margin; 4) stem-leaves nearly transversely inserted and not decurrent on the stem; 5) stem-apices often nude (without leaves) and gemmiferous; 6) the walls of leaf-cells equally and slightly thickened; 7) the presence of flagella; and 8) the dioicous plant.

#### SCAPANACEAE (by Tairoku Amakawa)

**Diplophyllum Trollii** Grolle in *Ergebn. Forsch.-Unt. Nepal Himal.* 1: 273 (1966).

NEPAL. Hile Chok–Ghopte (Tal Pokhari), 3400 m (Jun. 12, 1972); Ghopte–Gosa, 3750 m (Jun. 13, 1972); Saju Pokhari–pass to Topke Gola, 4100–4350 m (Jun. 16,

1972); above Topke Gola, 3610 m (Jun. 18, 1972).

Distr. Nepal.

**Scapania bhutanensis** Amak. in Fl. E. Himal. **2**: 230, f. 22 (1971).

NEPAL. Lama Chungbu-Slesa, 4250 m (Jun. 24, 1972).

Distr. Nepal and Bhutan.

**Scapania ciliata** Sande Lac. in Ann. Mus. Bot. Lugd.-Bat. **3**: 209 (1867).

*S. Levieri* K. Muell.: Fl. E. Himal. 522 (1966).

NEPAL. Dor-Chauke, 2600 m (Jun. 7, 1972).

Distr. E. Himalaya, Bengal, China, Formosa, Korea, and Japan.

**Scapania ciliatospinosa** Horik. in Journ. Sci. Hiroshima Univ. B, 2, **2**: 222 (1934).

*S. ferruginea* var. *minor* Amak.: Fl. E. Himal. 521 (1966).

*S. Schifneri* Grolle: Fl. E. Himal. **2**: 231 (1971).

NEPAL. Dor-Chauke, 2850 m (Jun. 7, 1972); Suke-Hile Chok, 3600 m (Jun. 11, 1972); Hile Chok-Ghopte, 3400 m (Jun. 12, 1972); Ghopte-Gosa, 3800-4000 m (Jun. 13, 1972); Gosa-Banduke Pokhari, 4050 m (Jun. 14, 1972); Topke Gola-Shewaden, 2950-3400 m (Jun. 28, 1972).

**Scapania contorta** Mitt.: Fl. E. Himal. 521 (1966).

NEPAL. Around Banduke Pokhari, 4120 m (Jun. 14, 1972).

**Scapania ferruginea** (Lehm. et Lindenb.) Lehm. et Lindenb.: Fl. E. Himal. 521 (1966).

NEPAL. Hile-Chitre, 2350 m (Jun. 5, 1972); Ghopte-Gosa, 3850 m (Jun. 13, 1972); Gosa-Banduke Pokhari, 4050 m (Jun. 13, 1972); Banduke Pokhari-Saju Pokhari, 4170 m (Jun. 15, 1972); Topke Gola-Shewaden, 3350 m (Jun. 28, 1972); Shewaden-Papung, 2300-2500 m (Jun. 29, 1972); near Chitre, 2350 m (Jul. 7, 1972).

**Scapania Griffithii** Schiffn.: Fl. E. Himal. 521 (1966).

NEPAL. Chitre-Basantapur, 2350 m (Jun. 6, 1972).

Distr. Sikkim, Bengal, China (Yunnan, Hunan), and Formosa.

**Scapania Harae** Amak.: Fl. E. Himal. 522 (1966); **2**: 231 (1971).

NEPAL. Banduke Pokhari-Saju Pokhari, 4220 m (Jun. 15, 1972); Saju Pokhari-pass to Topke Gola, 4300 m (Jun. 16, 1972); Gosainkund-Gopte (Aug. 25, 1972).

Distr. E. Himalaya (Nepal, Sikkim, Bhutan).

**Scapania himalayica** K. Muell. ex Herz. in Ann. Bryol. **12**: 80 (1939).

NEPAL. Hile Chok-Ghopte, 3500 m (Jun. 12, 1972); Lama Chungbu-Slesa 4250 m (Jun. 24, 1972).

Distr. Nepal and Sikkim.

**Scapania Karl-muelleri** Grolle in Ergebn. Forsch.-Unt. Nepal Himal. **1**: 270 (1966).

NEPAL. Saju Pokhari-pass to Topke Gola, 4100 m (Jun. 16, 1972).

Distr. Nepal.

**Scapania ligulata** Steph.: Fl. E. Himal. 522 (1966).

NEPAL. Shewaden-Papung, 2350 m (Jun. 29, 1972).

Distr. Nepal, Sikkim, Formosa, and Japan.

**Scapania maxima** Horik. in Journ. Sci. Hiroshima Univ. B, 2, **2**: 223 (1934).

*S. pseudoferruginea* Amak.: Fl. E. Himal. 523 (1966).

NEPAL. Hile-Chitre, 2350 m (Jun. 5, 1972).

Distr. Nepal, Darjeeling, and Formosa.

**Scapania nimbosa** Tayl.: Fl. E. Himal. 522 (1966).

NEPAL. Banduke Pokhari-Saju Pokhari, 4150 m (Jun. 15, 1972).

Distr. Scotland, Norway, Nepal, Sikkim, and China (Yunnan).

**Scapania orientalis** Steph.: Fl. E. Himal. 522 (1966).

NEPAL. Hile Chok-Ghopte, 3400-3500 m (Jun. 12, 1972); Ghopte-Gosa, 3750 m (Jun. 13, 1972); Topke Gola-Shewaden, 3400 m (Jun. 28, 1972).

**Scapania ornithopodioides** (With.) Pears.: Fl. E. Himal. 522 (1966); **2**: 231 (1971).

NEPAL. Dor-Chauke, 2850 m (Jun. 7, 1972); Suke-Hile Chok, 3570 m (Jun. 11, 1972); Hile Chok-Ghopte, 3400-3500 m (Jun. 12, 1972); Thudam-Kipuphu, 3850 m (Jun. 26, 1972); Topke Gola-Shewaden, 3050-4000 m (Jun. 28, 1972).

**Scapania rotundifolia** Nichols. in Hand.-Mzt., Symb. Sin. **5**: 31 (1930).

NEPAL. Ghopte-Gosa, 3750 m (Jun. 13, 1972).

Distr. Nepal and Yunnan.

**Scapania secunda** Steph. in Mem. Soc. Nat. Cherbourg **29**: 220 (1894).

NEPAL. Ghopte-Gosa, 3700 m (Jun. 13, 1972).

Distr. Himalaya and Yunnan.

**Scapania Stephanii** K. Muell. in Nova Act. Acad. Caes. Leop.-Carol. **83**: 273 (1905).

NEPAL. Dor-Chauke, 2850 m (Jun. 7, 1972); Topke Gola-Shewaden, 2850 m (Jun. 28, 1972).

Distr. Nepal and Japan.

#### DELAVAYELLACEAE (by Sinske Hattori)

**Delavayella serrata** Steph.: Fl. E. Himal. 513 (1966); **2**: 228 (1971).

*D. serrata* f. *stolonifera* Hatt. in Fl. E. Himal. 513 (1966).

*D. serrata* var. *purpurea* Chen in Fedde, Repert. **58**: 38, f. 10 (1955).

NEPAL. Basantapur-Dor, 2550 m, on tree trunk (Jun. 6, 1972); Dor, 2300 m, on tree trunk (Jun. 6, 1972); Dor-Chauke, 2850 m, on tree trunk and branches (Jun. 7, 1972); forest below Lamo Pokhari, 2630 m (Jun. 9, 1972).

#### GYMNOMITRIACEAE (by Naofumi Kitagawa)

**Gymnomitrium laceratum** (Steph.) Horik. in Act. Phytotax. Geobot. **13**: 212 (1943).

NEPAL. Ghopte-Gosa, 3850 m, 4020 m, on rock (Jun. 13, 1972); around Banduke Pokhari, 4120 m, in rock crevices (Jun. 14, 1972); in a coniferous forest above Topke Gola, 3610 m, on rock (Jun. 18, 1972); around Kipuphu, 4500 m, 4550 m, on rocky cliff, soil (Jun. 26, 1972).

Distr. Africa, Nepal, Borneo (Mt. Kinabalu-var. *borneense*), Japan, N. America (Appalachians), Mexico, and Peru.

This species belonging to subgen. Archigymnomitrium is very remarkable for its primitive characters as well as for its extraordinarily disjunctive distribution. The range of this relic species is now again disjunctively extended to the Himalayan region. The species seems to be rather common at the high altitudes in Nepal, where the plants grow vigorously bearing mature sporophytes and exhibit a con-

siderable range of variation.

**Gymnomitrium obtusilobum** N. Kitag., sp. nov. [Fig. 29]

Planta monoica (paroica), mediocris, ex fumoso rufo-brunnea, dense caespitosa. Folia conferta, erecte appressa, concava, late ovata, subsymmetrica, 400–550  $\mu$  longa, 370–550  $\mu$  lata, minus quam 1/3-biloba, lobis late ovatis, obtusis, sinu acutissimo. Cellulae apicales et marginales hyalinae, parietibus aequaliter valde incrassatis, subapicales 15.0–20.0  $\mu$ , medianae 20.0–32.0  $\times$  15.0–20.5  $\mu$ , basales 22.5–30.5  $\times$  13.5–21.5  $\mu$  (omnino mensae per lumine), parietibus aliquantum tenuibus et trigonis acutis, cuticula fere laevi. Androecium hypogynum, bracteis 1–2-jugis, confertis, monandris. Gynoecium (cum androecio) compresso-clavatum, tumori ventrali evoluto. Folia floralia multo majora, erecta, cetera foliis caulinis similia (sed intima minora, irregulariter pluriloba, postice coalita). Perianthia nulla. Capsula sphaerica, valvulis bistratis. Sporae rufo-brunneae, 13.5–18.0  $\mu$ , asperae.

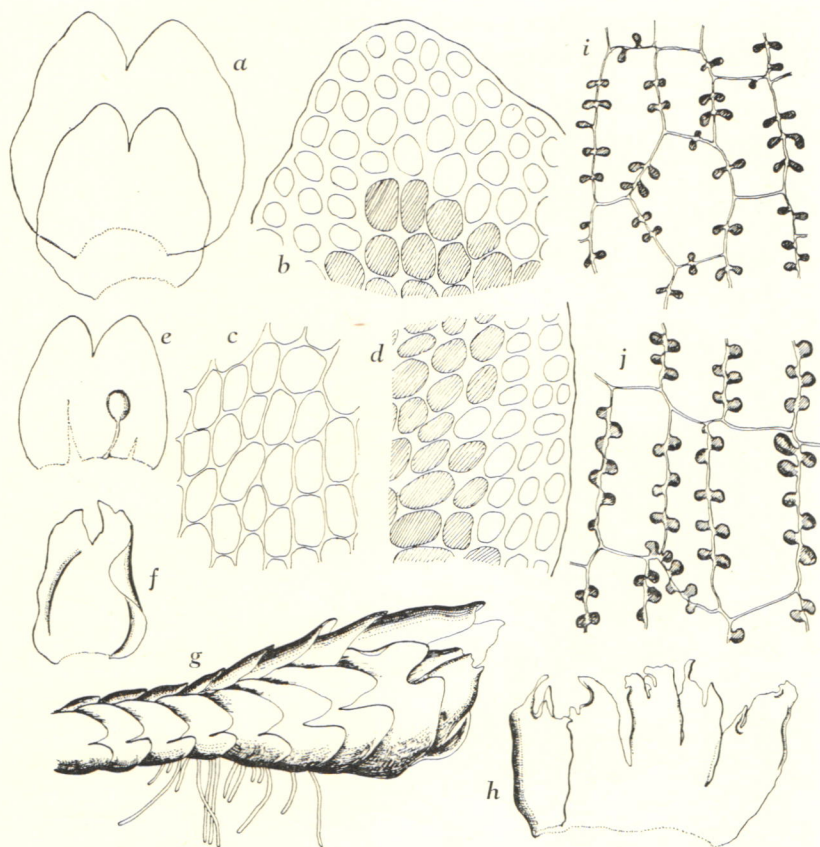


Fig. 29. *Gymnomitrium obtusilobum* N. Kitag. a. Leaves,  $\times 50$ , b. Cells of leaf-apex,  $\times 300$ , c. Cells of leaf-middle,  $\times 300$ , d. Cells of leaf-margin,  $\times 300$ , e. Male bract with an antheridium,  $\times 30$ , f. Outer female bract,  $\times 30$ , g. Part of fertile plant,  $\times 30$ , h. Innermost female bracts,  $\times 50$ , i. Cells of inner layer of capsule-wall,  $\times 450$ , j. Cells of outer layer of capsule-wall,  $\times 450$ . All drawn from the type.



*Elateres bispiri*, 8.5–10.0  $\mu$  lati.

NEPAL. Around Phujeng La, 4750 m, in crevices of rock (Jun. 27, 1972—type in NICH 312677).

Distr. Endemic to Nepal.

This species is well characterized by the following unusual features; the plant is paroicous (this sexuality is not known in any other boreal species of *Gymnomitrium*), and the stem-tissue in the inflorescence is somewhat fleshy and a ventral swelling is weakly developed there (thus the inflorescence forms a blunt angle with the stem-axis. The present species somewhat resembles *G. obtusum* but they can be distinguished even in sterile plants. *G. obtusum* differs from *G. obtusilobum*, aside from the reproductive characters mentioned above, in the comparatively thin-walled cells in the apical and marginal portion of leaves, the distinctly crenulate lobes of leaves, and the minutely verruculose cuticle of leaf-cells. The apical and marginal hyaline cells of leaves whose walls are strongly and evenly thickened recall *G. laceratum*, which is separated from *G. obtusilobum* in the acute lobes and deeper (more than  $1/3$ ) sinuses of leaves, the small underleaves occurring sporadically, and the

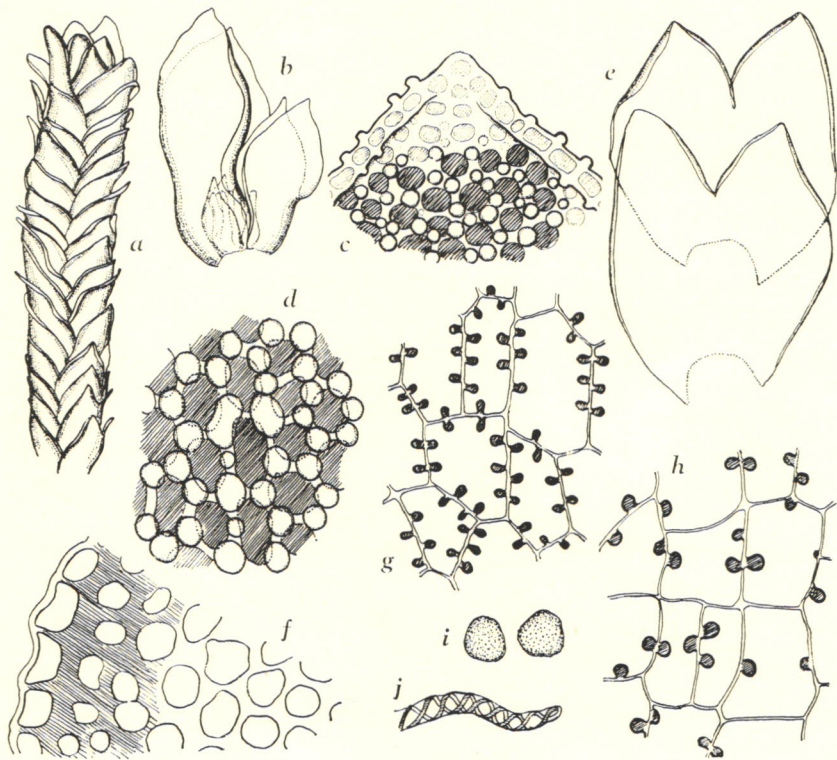


Fig. 30. *Gymnomitrium papillosum* N. Kitag. et Hatt. a. Part of female plant,  $\times 20$ , b. Female bracts with archegonia inside,  $\times 50$ , c. Cells of leaf-apex,  $\times 450$ , d. Cells of leaf-middle,  $\times 450$ , e. Leaves,  $\times 50$ , f. Part of stem cross-section,  $\times 450$ , g. Cells of inner layer of capsule-wall,  $\times 450$ , h. Cells of outer layer of capsule-wall,  $\times 450$ , i. Spores,  $\times 450$ , j. Part of elater,  $\times 450$ . All drawn from the type.

lacerate-ciliate, inner female bracts.

**Gymnomitrium papillosum** N. Kitag. et Hatt., sp. nov. [Fig. 30]

Planta dioica, major, lurida, dense caespitosa. Folia conferta, erecti-appressa, concava, late ovata, subsymmetrica, 600–750  $\mu$  longa, 570–750  $\mu$  lata, ad 1/3 biloba, lobis late ovato-triangularis, subacutis vel obtusiusculis, sinu acutissimo, margine arcte angusteque recurvis. Cellulae apicales hyalinae et saepe erosae, subapicales 7.5–11.5  $\mu$ , medianae 12.5–23.5  $\times$  8.5–11.0  $\mu$ , basales 12–35  $\times$  9.0–12.5  $\mu$  (omnino mensae per lumine), parietibus valde crassis, trigonis magnis sed indistinctis; cuticula dense papillosa, papillis magnis, plerumque trigonis insidentibus. Folia floralia multo majora (sed intima minora), cetera foliis caulinis similia, ad basin soluta. Perianthia nulla. Capsula sphaerica, valvulis bistratosi. Sporae rufo-brunneae, 12–15  $\mu$ , asperae. Elateres bispiri, 6.5–7.5  $\mu$  lati.

NEPAL. Ghopte–Gosa, 4020 m, on rock (Jun. 13, 1972); Gosa–Banduke Pokhari, in crevices of rock, 4210 m (Jun. 14, 1972–type in NICH 311992); Saju Pokhari–pass to Topke Gola, 4350 m, on rock (Jun. 16, 1972); around Kipuphu, 4550 m, on rock (Jun. 26, 1972); Ramche–Gram, 1800–1900 m (Aug. 20, 1972).

Distr. Endemic to Nepal.

This species is best characterized by the densely papillate cuticle of leaf-cells. The papillae are very large (mostly 6.5–9.5  $\mu$  in diameter at leaf-middle) and situated mostly on trigones of leaf-cells (at leaf-base, they are often elongated along cell-walls and confluent with adjacent ones). This species somewhat resembles *Marsupella revoluta*, but differs from it in the dark brown (not blackish) plants, the very closely imbricate and tightly appressed leaves, and the characteristically papillate cuticle of leaf-cells.

**Gymnomitrium sinense** K. Muell. in Rev. Bryol. Lichénol. **20**: 176 (1951).

NEPAL. Janga La–Thudam, 4550 m, on rock (Jun. 21, 1972); around Kipuphu, 4550 m, on rock (Jun. 26, 1972); around Phujeng La, 4500 m, 4650 m, 4750 m, on rock or soil (Jun. 27, 1972).

Distr. Nepal and China (Yunnan).

**Marsupella alpina** (Gott.) Bernet, Cat. Hepat. Suisse 29 (1888).

NEPAL. Around Banduke Pokhari, 4120 m, on rock (Jun. 14, 1972).

Distr. Europe, Himalaya (E. Nepal), Japan, and N. America (Pacific coast of Alaska and Canada). New to Himalaya.

**Marsupella crystallocaulon** Grolle in Ergebn. Forsch.-Unt. Nepal Himal. **1** (4): 281 (1966).

NEPAL. Suke–Hile Chok, 3000 m, on bank (Jun. 11, 1972).

Distr. Endemic to Nepal.

**Marsupella emarginata** (Ehrh.) Dum., Comm. Bot. 114 (1822).

NEPAL. Ghopte–Gosa, 4000 m, on rock (Jun. 13, 1972); Janga La–Thudam, 4600 m, on rock (Jun. 21, 1972).

Distr. Europe, Nepal, Borneo (Mt. Kinabalu), Formosa, Korea, Japan, Saghalien, and N. America (plants of E. Asia belonging to subsp. *tubulosa*). New to Himalaya.

**Marsupella integra** Kitag. in Journ. Hattori Bot. Lab. **30**: 199 (1967).

NEPAL. Gosa–Banduke Pokhari, 4050 m, on humus (Jun. 14, 1972); around Banduke Pokhari, 4120 m, in rock-crevices (Jun. 14, 1972).

Distr. Nepal, New Guinea (Mt. Wilhelm), and Borneo (Mt. Kinabalu).

This species is previously known only from a few localities at high altitudes of New Guinea and North Borneo. It is a highly distinctive species assigned to subgen. *Neomarsupella* N. Kitag.

**Marsupella revoluta** (Nees) Dum.: Fl. E. Himal. 523 (1966).

NEPAL. Hile Chok-Gopte, 3350 m, 3500 m, on rock (Jun. 12, 1972); Gopte-Gosa, 3700 m, 3750 m, 3850 m, 3970 m, 4020 m, on rock, soil (Jun. 13, 1972); around Banduke Pokhari, 4120 m, in rock-crevices (Jun. 14, 1972); Banduke Pokhari-Saju Pokhari, 4150 m, 4170 m, on rock (Jun. 15, 1972); Saju Pokhari-pass to Topke Gola, 4100 m, 4150 m, 4350 m, on rock (Jun. 16, 1972); Jalang Chhyongo-Janga La, 4600 m, on soil (Jun. 21, 1972); around Kipuphu, 4450 m, 4500 m, 4550 m, on soil, rock (Jun. 26, 1972); around Phujeng La, 4750 m, on rock (Jun. 27, 1972); Kipuphu-Phujeng La, 4600 m, 4650 m, on soil (Jun. 27, 1972); Ramche-Gram, 1800-1900 m (Aug. 20, 1972); Gosainkund-Surjakund, 4200-4400 m (Aug. 25, 1972); Thale Patil-Hile Dhap, 3400 m (Aug. 27, 1972).

Distr. Greenland, Europe, Himalaya, Borneo (Mt. Kinabalu), Philippines (Mt. Pulog), China (Yunnan), Formosa, and Japan.

**Marsupella rubida** (Mitt.) Grolle in *Ergebn. Forsch.-Unt. Nepal Himal.* 1 (4): 182 (1966).

NEPAL. Hile Chok-Ghopte, 3400 m, on rock (Jun. 12, 1972); Ghopte-Gosa, 3750 m, 3850 m, on rock (Jun. 13, 1972); in a forest below Thudam, 4350 m, on rock (Jun. 25, 1972).

Distr. Himalaya and Formosa.

#### RADULACEAE (by Kohsaku Yamada)

**Radula auriculata** Steph. in *Bull. Herb. Boiss.* 5: 105 (1897).

NEPAL. Thudam, 3250 m, on rock (Jun. 25, 1972).

Distr. E. Nepal, Korea, Japan, and North America. New to Himalaya.

**Radula madagascariensis** Gott. in *Abhandl. naturwis. Verein Bremen*, 7: 349 (1882).

NEPAL. Basantapur-Dor, 2300-2600 m, on tree trunk (Jun. 6, 1972).

Distr. Madagascar, Mascaren Isl, and E. Nepal. New to Himalaya.

**Radula obscura** Mitt. in *Proc. Linn. Soc.* 5: 107 (1861).

NEPAL. Sanguri Bhanjyang, 1200-1300 m, on rock (Jun. 2, 1972); Papung-Bir Gaon, 2000-1600 m, on rock (Jun. 30, 1972).

Distr. E. Nepal, India, China, Borneo, and Philippines. New to Himalaya.

**Radula tjobodensis** Goebel: Fl. E. Himal. 524 (1966).

NEPAL. Dor-Chauke, 2600-2900 m, on tree branch and leaves (Jun. 7, 1972).

Distr. E. Nepal, Sikkim, Java, Borneo, Philippines, New Guinea, and Samoa.

#### PORELLACEAE (by Sinske Hattori)

**Porella caespitans** (Steph.) Hatt. var. **setigera** (Steph.) Hatt. in *Journ. Hattori Bot. Lab.* 33: 53, f. 9-10 (1970).

NEPAL. Basantapur-Dor, 2350 m, on tree trunk (Jun. 6, 1972).

Distr. Var. *caespitans*: China (Yunnan); var. *setigera*: India, Nepal, China, Korea, and Japan.

**Porella campylophylla** (L. & L.) Trev.: Hatt. in Fl. E. Himal. 524 (1966); in Journ. Hattori Bot. Lab. **32**: 331, f. 10, 11, 13 (1969).

NEPAL. Near Sanguri Bhanjyang, 1260 m, on tree trunk (Jun. 2, 1972); Hile-Chitre, 2150 m, on rock (Jun. 5, 1972); Dor-Chauke, 2750 m, on rocky cliff (Jun. 7, 1972); Chauke-Lamo Pokhari, 2620-2680 m, on rock and bank (Jun. 8, 1972); mossy forest below Lamo Pokhari, 2630 m, on soil (Jun. 9, 1972); Suke-Hile Chok, 2980 m, on humus (Jun. 11, 1972); forest below Thudam, 3250 m, on rock (Jun. 25, 1972); Papung-Bir Gaon, 1800 m, on tree trunks (Jun. 30, 1972); Bir Gaon-Dingla, 1100-1350 m, on rock and tree trunk (Jul. 1, 1972); Dingla-Doban, 950-1000 m, on tree trunks (Jul. 2, 1972); Nessum-Bhujje, 1050 m, on tree trunk (Jul. 3, 1972).

Distr. India, Nepal, Sikkim, and Bhutan.

**Porella nitens** (Steph.) Hatt.: Fl. E. Himal. 525 (1966); **2**: 232 (1971)-Hatt. in Journ. Hattori Bot. Lab. **30**: 141, f. 8 (1967).

NEPAL. Phulchoki, summit area, 2400 m, on rock (Jul. 15, 1972).

**Porella plumosa** (Mitt.) Inoue in Bull. Nat. Sci. Mus. Tokyo **9** (3): 385 (1966)-Hatt., l.c. **30**: 144, f. 9 (1967); **33**: 82 (1970).

NEPAL. Near Sanguri Bhanjyang, 1250 m, on tree trunk (Jun. 2, 1972); Phulchoki, summit area, 2400 m, on rock (Jul. 15, 1972).

Distr. Himalaya, Khasia Hills, Burma, Vietnam, Formosa, and the Philippines (Luzon).

#### FRULLANIACEAE (by Sinske Hattori)

**Frullania Berthoumieui** Steph. in Hedwigia **33**: 140 (1894).

NEPAL. Bir Gaon-Dingla, 1910 m, on tree trunk (Jul. 1, 1972).

Distr. Himalaya, Burma, Thailand, and the Philippines.

Previously this species has been known in Burma; detailed locality of the type collection is not given. I found, however, this species in many collections made in Thailand and the Philippines, as well as Himalayan region.

**Frullania Delavayi** Steph.: Fl. E. Himal. 525 (1966); **2**: 234 (1971).

NEPAL. Chauke-Lamo Pokhari, 2680 m, on branches (Jun. 8, 1972); Suke-Hile Chok, 3500 m, on branches (Jun. 11, 1972); Topke Gola, 3600 m, on fire wood (Jun. 17, 1972); coniferous forest above Topke Gola, 3610 m, on fallen branches and on trunks of trees (Jun. 18, 1972); *Rhododendron* forest above Topke Gola, 3650 m, on tree trunks (Jun. 18, 1972); slope above Jalang Chhyongo, 4400 m, in crevices of cliff (Jun. 21, 1972); forest below Thudam, 3250 m, on branches (Jun. 25, 1972); Topke Gola-Shewaden, 3400 m, on branches (Jun. 28, 1972).

**Frullania Duthiana** Steph.: Fl. E. Himal. 525 (1966)-Hatt. in Journ. Hattori Bot. Lab. **37**: 92, f. 49 (1973).

*F. Duthiana* Steph. var. *appendiculata* Hatt. in Fl. E. Himal. **2**: 234, f. 24 (1971)-Hatt., l.c. **37**: 94, f. 50 (1973).

NEPAL. Mossy forest below Lamo Pokhari, 2850 m, on fallen branches (Jun. 9, 1972); Suke, 2900 m, on branches (Jun. 10, 1972); coniferous forest above Topke Gola, 3600-3650 m, on tree trunks (Jun. 18, 1972); forest below Thudam, 3420 m, on branches (Jun. 22, 1972).

var. **laevis** Hatt., var. nov.

A typo recedit perianthio carinis 3 altis laevis praedito, foliorum lobis anguste incurvatis, amphigastrii marginibus lateralibus angustissime recurvatis.

NEPAL. Dor-Chauke, 2850 m, on tree trunks (Jun. 7, 1972); Chauke-Lamo Pokhari, 2580 m, on tree trunk (Jun. 8, 1972); mossy forest below Lamo Pokhari, 2700-2850 m, on fallen branches (Jun. 9, 1972, coll. Z. Iwatsuki 595-holotype in НИИ, dupl. in TI); Suke, 2900 m, on fallen branches (Jun. 10, 1972); Suke-Hile Chokey, 2970 m, on branches (Jun. 11, 1972); forest below Thudam, 3420 m, on branches (Jun. 22, 1972).

Distr. sp. India, Nepal, Sikkim, and Bhutan.

**Frullania ericoides** (Nees) Mont.: Fl. E. Himal. 2: 236 (1971).

NEPAL. Near Sanguri Bhanjyang, 1250 m, on rock (Jun. 2, 1972); Dhara Pani-Mohamabedi Khola, 950 m, on tree trunks (Jun. 3, 1972); Teku Nala-Dhankuta, 1250-1970 m, on tree trunks and roots (Jun. 4, 1972); Dhankuta-Nigale, 1550 m, on tree trunks (Jun. 4, 1972); Nigale-Kuwa Pani, 1720 m (Jun. 4, 1972); Kuwa Pani-Hile, 1860 m, on rock (Jun. 4, 1972); Hile-Chitre, 1950-2150 m, on tree trunks and rock (Jun. 5, 1972); Papung-Bir Gaon, 1900 m, on stone wall (Jun. 30, 1972); Bir Gaon-Dingla, 1350-1610 m, on rock and trees (Jul. 1, 1972); Nessum-Bhujje, 1600 m, on tree trunks (Jul. 3, 1972); around Sanguri Bhanjyang, 1150 m, on rock (Jul. 10, 1972); Phulchoki, 1650 m, on tree trunks (Jul. 15, 1972).

The present species is a highly plastic taxon, previously called as *F. squarrosa*, and is accompanied by a number of synonyms.

**Frullania muscicola** Steph.: Fl. E. Himal. 526 (1966).

NEPAL. Dhankuta-Nigale, 1550 m, on tree trunks (Jun. 4, 1972); Suke-Hile Chok, 3600 m, on branches (Jun. 11, 1972); Bir Gaon-Dingla, 1300 m, on tree trunks (Jul. 1, 1972); Nessum-Bhujje, 1050 m, on tree trunks (Jul. 3, 1972).

The present species is a very variable taxon, closely related to European *F. dilatata* and North American *F. Brittoniae*.

**Frullania nepalensis** (Spreng.) Lehm. et Lindenb.: Fl. E. Himal. 526 (1966)-Hatt., in Journ. Hattori Bot. Lab. 37: 131, f. 73-77 (1973).

NEPAL. Near Sanguri Bhanjyang, 1250 m, on rock (Jun. 2, 1972); Hile-Chitre, 2150 m, on rock (Jun. 5, 1972); Chitre-Basantapur, 2350 m, on soil and tree trunks (Jun. 6, 1972); Basantapur-Dor, 2370 m, on rock and tree trunks (Jun. 6, 1972); Dor-Chauke, 2600-2850 m, on tree trunks and bush (Jun. 7, 1972); Chauke-Lamo Pokhari, 2580-2680 m, on tree trunks, banks, and on humus (Jun. 8, 1972); mossy forest below Lamo Pokhari, 2700 m, on decaying branches (Jun. 9, 1972); Lamo Pokhari-Gupha Pokhari, 2830 m, on bank (Jun. 10, 1972); Suke, 2900 m, on tree trunks (Jun. 10, 1972); forest below Thudam, 3250 m, on tree trunks (Jun. 25, 1972); Shewaden-Papung, 2200 m, on rotten log (Jun. 29, 1972); Gupha Pokhari-Chauke, 2600 m, on branches (Jul. 4, 1972); Chauke-Dor, 2600 m, on branches (Jul. 6, 1972); forest near Chitre, 2350 m, on branches (Jul. 7, 1972); and many others.

Distr. Widely distributed in temperate to tropic regions of Asia, northward to Japan and Korea, southward to New Guinea; most common in Himalaya and as epiphytes in mossy forests in northern Luzon, the Philippines, whereas rather rare in other areas.

**Frullania neurota** Tayl.: Fl. E. Himal. 526 (1966); 2: 237 (1971)-Hatt. in Journ. Hattori Bot. Lab. 36: 133, f. 19 a-h (1972).

*F. Hieronymi* Steph. ex Bonner, Index Hepat. 5: 326 (1965), sine descr.

*F. neurota* var. *Pfleidereri* Hatt., l.c. 36: 133, f. 18 (1972).

NEPAL. Basantapur-Dor, 2370 m, on branches (Jun. 6, 1972); forest near Chitre, 2350 m, on branches (Jul. 7, 1972).

***Frullania pallide-virens*** Steph., Sp. Hepat. 4: 454 (1911)—Hatt. in Journ. Hattori Bot. Lab. 37: 101, f. 55 (1973).

NEPAL. Shewaden-Papung, 2200 m, on rotten log (Jun. 29, 1972); near a waterfall below Chitre, 2250 m, on rock (Jul. 8, 1972).

Distr. Himalaya and China (Kong Tcheou and N.W. Yunnan).

This species was previously known from the type collected in Pin-fo, Prov. Kong Tcheou, and a collection made in Maliwan, northeastern Yunnan, China. The plant in the type collection is pallid greenish in herbaria (the specific epithet was thus derived), whereas the plants in the above-cited two collections are reddish to dark brown (shoot apices are often pallid greenish). The pale color of the plant in the type is considered as caused by shaded habitat conditions.

***Frullania physantha*** Mitt.: Fl. E. Himal. 527 (1966); 2: 237 (1971).

NEPAL. Near Sanguri Bhanjyang, 1250 m, on rock (Jun. 2, 1972); Hile-Chitre, 1950 m, on tree trunks (Jun. 5, 1972).

The very large perianths of this species are very remarkable, by which we can easily recognize this species in the field.

***Frullania retusa*** Mitt.: Fl. E. Himal. 527 (1966); 2: 237 (1971)—Hatt. in Journ. Hattori Bot. Lab. 37: 96–97, f. 51 (1973).

NEPAL. Near Sanguri Bhanjyang, 1270 m, on rock (Jun. 2, 1972); mossy forest below Lamo Pokhari, 2650 m, on fallen branches (Jun. 9, 1972); Nessum-Bhujé, 1800 m, on rock (Jul. 3, 1972); near a waterfall below Chitre, 2250 m, on rock (Jul. 8, 1972).

Distr. India, Nepal, Sikkim, Bhutan, and E. Tibet.

***Frullania subclavata*** Steph., Sp. Hepat. 4: 354 (1910).

[Fig. 31]

Plants reddish-brown in herbaria, small to medium-sized; stem 2–3 cm long, irregularly pinnately branched, branches more or less remote and obliquely spreading, short (2–5 mm) but occasionally long and similar to the stem. Lobes of stem-leaves slightly distant, dorsally extending more than stem-width beyond the

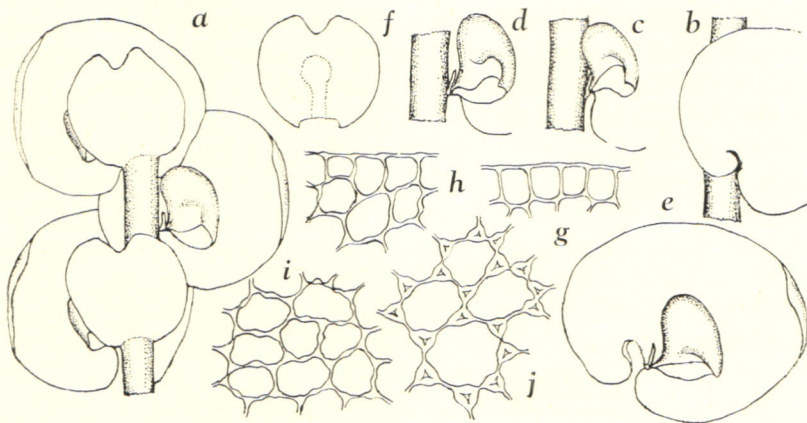


Fig. 31. *Frullania subclavata* Steph. a. Portion of stem, ventral view,  $\times 30$ , b. Basal portion of leaf-lobe, showing the insertion on stem, dorsal view,  $\times 30$ , c, d. Leaf-lobules and styli on stems,  $\times 30$ , e. Stem-leaf, appressed,  $\times 30$ , f. Stem-underleaf, appressed,  $\times 30$ , g–j. Cells of lobes of stem-leaves, g, h from margins, i from middle, j from base, all  $\times 330$ . Drawn from type in G (1972).

farther edge of stem, concave with incurved apical margin, when flat ovate, 0.85–1 mm long and 0.85–0.9 mm wide, with rounded to obtuse apex, both dorsal and ventral bases strongly rounded-appendiculate; cell-cavities  $10\text{--}16 \times 10\text{--}12 \mu$  along margin,  $17\text{--}20 \times 11\text{--}16 \mu$  at middle,  $22\text{--}30 \times 18\text{--}27 \mu$  at base, cell-walls thin and substraight with small or indistinct trigones and intermediate thickenings at middle, with large and nodulose trigones at base; leaf-lobules contiguous to the stem, cucullate, mouth wide with arched inner margin and straight outer margin, beak poorly developed with short, subtruncate tip, styli small, filiform, of several uniseriate cells. Underleaves of stem flat and almost appressed, nearly orbicular in outline, ca. 0.48 mm long and 0.55 mm wide, 1/4–1/3-bifid, sinus wide and subacute, lobes wide and subtriangular with obtuse to subacute apex, rhizoid-initial at the center of underleaf, insertion nearly transverse. Dioicous? (gynoecia not seen). Androecia capitate, comparatively small, shortly stalked, capitate with 2–3 bracts.

NEPAL. Dhankuta–Nigale, 1550 m, on tree trunks (Jun. 4, 1972); Bir Gaon–Dingla, 1610 m, on rock (Jul. 1, 1972).

Distr. E. Himalaya.

From the above description and Fig. 31 (based on the type collection made in Darjeeling, India, by Wichura in 1852, in herb. G no. 7972) the present species seems to be closely related to, and may possibly be conspecific with, *F. muscicola* Steph. Previously the present species has been known only from the type collection made in Darjeeling. The collection made between Bir Gaon and Dingla (coll. Z. Iwatsuki 2139) is a form somewhat different from the type in the shape of leaf-lobules and some other features.

**Frullania Wallichiana** Mitt.: Fl. E. Himal. 528 (1966)–Hatt. in Journ. Hattori Bot. Lab. 36: 135 (1972).

NEPAL. Dhankuta–Nigale, 1550 m, on tree trunks (Jun. 4, 1972); Kuwa Pani–Hile, 1890 m, on bush (Jun. 4, 1972); Hile–Chitre, 2150 m, on rock (Jun. 5, 1972); Basantapur–Dor, 2370 m, on branches (Jun. 6, 1972); Dor–Chauke, 2580–2850 m, on tree-branches, -trunks, and on bush (Jun. 7, 1972); Chauke–Dor, 2600 m, on branches (Jul. 6, 1972); Dor–Chitre, 2350 m, on branches (Jul. 7, 1972); forest near Chitre, 2350 m, on branches (Jul. 7, 1972).

Distr. Widely distributed in tropical Africa, Asia, and? C. to S. America.

**Frullania yunnanensis** Steph.: Fl. E. Himal. 528 (1966); 2: 238 (1971).

*F. Horikawana* Verd. in Hand.-Mzt., Symb. Sin. 5: 36, f. 14 (1930).

NEPAL. mossy forest below Lamo Pokhari, 2850 m, on fallen branches (Jun. 10, 1972); coniferous forest above Topke Gola, 3610 m (Jun. 18, 1972); forest below Thudam, 3250 m, on fallen branches (Jun. 25, 1972); Topke Gola–Shewaden, 2650–3200 m, on branches (Jun. 28, 1972).

#### LEJEUNEACEAE (by Masami Mizutani)

**Cheilolejeunea imbricata** (Nees) Hatt.: Fl. E. Himal. 529 (1966).

NEPAL. Chitre–Basantapur, 2350 m, on tree-trunks (Jun. 6, 1972); Topke Gola–Shewaden, 2650 m, on branches (Jun. 28, 1972).

**Cheilolejeunea subopaca** (Mitt.) Mizt.: Fl. E. Himal. 529 (1966); 2: 239 (1971).

NEPAL. Near Chitre, 2350 m, on branches (Jul. 7, 1972).

**Cololejeunea lanciloba** Steph. in Hedwigia **34**: 250 (1895).

NEPAL. Dharan, 200–240 m, on tree-trunks (Jun. 1, 1972); Dhankuta–Nigale, 1550 m, on tree-trunks (Jun. 4, 1972); Dor–Chauke, 2550 m, on branches of fallen tree (Jun. 7, 1972); Bir Gaon–Dingla, 1100 m, on tree-trunks (Jul. 1, 1972); Gupha Pokhari–Chauke, 2600 m, on branches (Jul. 4, 1972).

Distr. Nepal, S. India, Nicobar, Borneo, S. China, and S. Japan.

**Cololejeunea minutissima** (Smith) Schiffn.: Fl. E. Himal. 533 (1966).

NEPAL. Chauke–Lamo Pokhari, 2680–2850 m, on branches (Jun. 8, 1972); Dor, 2300 m, on branches (Jul. 6, 1972).

**Cololejeunea spinosa** (Horik.) Hatt.: Fl. E. Himal. 533 (1966).

NEPAL. Dor–Chauke, 2620 m, on leaves (Jun. 7, 1972).

**Colura tenuicornis** (Evans) Steph., Sp. Hepat. **5**: 942 (1916).

NEPAL. Suke, 2900 m, on branches (Jun. 10, 1972).

Distr. Madagascar, Nepal, Malay, Sumatra, Java, Borneo, S. China, Formosa, Japan, Hawaii, and S. America. New record of the genus for Himalaya.

**Dicranolejeunea javanica** Steph.: Fl. E. Himal. 530 (1966).

NEPAL. Near Chitre, 2350 m, on branches (Jul. 7, 1972).

**Drepanolejeunea angustifolia** (Mitt.) Grolle: Fl. E. Himal. 530 (1966).

NEPAL. Basantapur–Dor, 2550 m, on tree-trunks (Jun. 6, 1972); Chauke–Lamo Pokhari, 2680 m, on branches (Jun. 8, 1972); below Lamo Pokhari, 2630 m, on tree-trunks (Jun. 9, 1972); Dor, 2300 m, on branches (Jul. 6, 1972).

**Drepanolejeunea monophthalma** (Herz.) Mizt.: Fl. E. Himal. 530 (1966).

NEPAL. Basantapur–Dor, 2550 m, on branches (Jun. 6, 1972); Dor–Chauke, 2850 m, on branches (Jun. 7, 1972); Chauke–Lamo Pokhari, 2850 m, on branches (Jun. 8, 1972); Nessum–Bhuje, 1850 m, on rocks (Jul. 3, 1972); Gupha Pokhari–Chauke, 2600 m, on decaying branches (Jul. 4, 1972); near Chitre, 2350 m, on branches (Jul. 7, 1972).

**Lejeunea bidentula** Herz.: Fl. E. Himal. 530 (1966).

NEPAL. Suke, 2900 m, on branches (Jun. 10, 1972); Gupha Pokhari–Chauke, 2600 m, on branches (Jul. 4, 1972).

Distr. N.W. India (Mussoorie), Nepal, and W. China (Yunnan).

**Lejeunea cavifolia** (Ehrh.) Lindb. in Act. Soc. Sci. Fenn. **10**: 43 (1871).

NEPAL. Near Sanguri Bhanjyang, 1250 m, on tree-trunks (Jun. 2, 1972); Papung–Bir Gaon, 1850 m, on rocks (Jun. 30, 1972).

Distr. Europe, Caucasus, N.W. India (Mussoorie), Nepal, Sikkim, Assam, Siberia, and N. America.

**Lejeunea flava** (Sw.) Nees: Fl. E. Himal. **2**: 239 (1971).

NEPAL. Basantapur–Dor, 2350–2550 m, on branches (Jun. 6, 1972); Chauke–Lamo Pokhari, 2680–2850 m, on branches (Jun. 8, 1972); below Lamo Pokhari, 2650–2850 m, on branches (Jun. 9, 1972); Shewaden–Papung, 2350 m, on leaves (Jun. 29, 1972); Gupha Pokhari–Chauke, 2600 m, on decaying branches (Jul. 4, 1972); Chauke–Dor, 2300–2600 m, on branches (Jul. 6, 1972); Chitre, 2350 m, on branches (Jul. 7, 1972).

**Lejeunea nepalensis** Steph., Sp. Hepat. **5**: 780 (1915).

NEPAL. Chauke–Dor, 2600 m, on branches (Jul. 6, 1972); Phulchoki, 2400 m, on rocks (Jul. 15, 1972).

Distr. N.W. India (Mussoorie), Nepal, Sikkim, and Assam.

**Lejeunea obfusca** Mitt. in Journ. Linn. Soc. Bot. **5**: 114 (1861).



NEPAL. Below Lamo Pokhari, 2630 m, on branches (Jun. 9, 1972); near Chitre, 2350 m, on branches (Jul. 7, 1972).

Distr. India, Nepal, and Ceylon. New to Nepal.

**Lejeunea princeps** (Steph.) Mizt. in Journ. Hattori Bot. Lab. **34**: 454 (1971).

NEPAL. Hile-Chitre, 2150 m, on rocks (Jun. 5, 1972); Basantapur-Dor, 2510 m, on rotten logs (Jun. 6, 1972).

Distr. Nepal, Sikkim, and Assam.

**Lejeunea tuberculosa** Steph., Sp. Hepat. **5**: 790 (1915).

NEPAL. Sanguri Bhanjyang, 1250 m, on tree-trunks (Jul. 10, 1972).

Distr. N.W. India, Nepal, Sikkim, and Assam. New to Nepal.

**Lejeunea ulicina** (Tayl.) Tayl. in Gott. et al., Synop. Hepat. 387 (1845).

NEPAL. Basantapur-Dor, 2550 m, on branches (Jun. 6, 1972); Chauke-Lamo Pokhari, 2680 m, on branches (Jun. 8, 1972); below Lamo Pokhari, 2850 m, on branches (Jun. 9, 1972); Dor, 2300 m, on branches (Jul. 6, 1972); near Chitre, 2350 m, on branches (Jul. 7, 1972).

Distr. Europe, Himalaya, E. Asia, and N. America.

**Lejeunea Wallichiana** Lehm., Pugillus **3**: 5 (1831).

NEPAL. Basantapur-Dor, 2350-2370 m, on branches (Jun. 6, 1972); Dor-Chauke, 2550-2850 m, on branches (Jun. 7, 1972); Chauke-Lamo Pokhari, 2680 m, on branches (Jun. 8, 1972); below Lamo Pokhari, 2700-2850 m, on branches (Jun. 9, 1972); Suke, 2900 m, on branches (Jun. 10, 1972); Suke-Hile Chok, 2970 m, on branches (Jun. 11, 1972); Gupha Pokhari-Chauke, 2600 m, on branches (Jul. 4, 1972); Chauke-Dor, 2600 m, on branches (Jul. 6, 1972).

Distr. Nepal and Sikkim.

**Leptolejeunea elliptica** (Lehm. & Lindenb.) Schiffn. in Engl. et Prantl, Nat. Pfl.-fam. I, **3**: 126 (1895).

NEPAL. Shewaden-Papung, 2500 m, on leaves (Jun. 29, 1972).

Distr. Widely distributed in tropical and subtropical regions in Asia.

**Leucolejeunea turgida** (Mitt.) Verd. in Ann. Bryol. Suppl. **4**: 71 (1934).

NEPAL. Dor-Chauke, 2850 m, on tree-trunks (Jun. 7, 1972); below Lamo Pokhari, 2630-2700 m, on trunks and branches of trees (Jun. 9, 1972); Suke-Hile Chok, 3200 m, on tree-trunks (Jun. 11, 1972); near Chitre, 2350 m, on tree-trunks (Jul. 7, 1972).

Distr. Nepal, Sikkim, and Thailand. New to Nepal.

**Lopholejeunea subfusca** (Nees) Steph.: Fl. E. Himal. 531 (1966).

NEPAL. Papung-Bir Gaon, 1800 m, on tree-trunks (Jun. 30, 1972); Dingla, 1550 m, on rocks (Jul. 1, 1972); Sanguri Banjyang, 1250 m, on tree-trunks (Jul. 10, 1972).

**Mastigolejeunea humilis** (Gott.) Schiffn. in Engl. & Prantl, Nat. Pfl.-fam. I, **3**: 129 (1895).

NEPAL. Dharan, 200-240 m, on tree-trunks (Jun. 1, 1972); Bir Gaon-Dingla, 1100 m, on tree-trunks (Jul. 1, 1972).

Distr. Widely distributed in tropical and subtropical Asia and Pacific Islands.

**Ptychanthus striatus** (Lehm. & Lindenb.) Nees: Fl. E. Himal. 531 (1966).

NEPAL. Dhankuta-Nigale, 1550-1860 m, on tree-trunks (Jun. 4, 1972); Hile-Chitre, 1950-2150 m, on tree-trunks (Jun. 5, 1972); Chitre-Basantapur, 2350 m, on tree-trunks (Jun. 6, 1972); Chauke-Lamo Pokhari, 2580-2850 m, on trunks and branches of trees (Jun. 8, 1972); Lamo Pokhari, 2700 m, on decaying branches (Jun. 9, 1972); Shewaden-Papung, 2350-2450 m, on branches (Jun. 29, 1972); Bir Gaon-Dingla, 1100 m, on tree-

trunks (Jul. 1, 1972); Gupha Pokhari-Chauke, 2600 m, on branches (Jul. 4, 1972); Chauke-Dor, 2600-2650 m, on branches (Jul. 6, 1972); Dor-Chitre, 2350-2620 m, on branches (Jul. 7, 1972); Phulchoki, 1650 m, on branches (Jul. 15, 1972).

**Spruceanthus semirepandus** (Nees) Verd.: Fl. E. Himal. 532 (1966).

NEPAL. Chitre-Basantapur, 2350-2550 m, on tree-trunks (Jun. 6, 1972); Dor-Chauke, 2850 m, on tree-trunks (Jun. 7, 1972); Chauke-Lamo Pokhari, 2680-2850 m, on branches (Jun. 8, 1972); Suke, 2900 m, on tree-trunks (Jun. 10, 1972); Topke Gola-Shewaden, 2650 m, on branches (Jun. 28, 1972); Shewaden-Papung, 2000-2350 m, on branches (Jun. 29, 1972); Papung-Bir Gaon, 2050 m, on tree-trunks (Jun. 30, 1972).

**Trocholejeunea infuscata** (Mitt.) Verd.: Fl. E. Himal. 533 (1966).

NEPAL. Sanguri Bhanjyang, 1270 m, on rocks (Jun. 2, 1972); Kuwa Pani-Hile, 1870-1890 m, on rocks (Jun. 4, 1972); Hile-Chitre, 2150 m, on rocks (Jun. 5, 1972); Papung-Bir Gaon, 1800 m, on rocks (Jun. 30, 1972); Nessum-Bhuje, 1850 m, on rocks (Jul. 3, 1972); below Chitre, 2250 m, on rocks (Jul. 8, 1972).

**Trocholejeunea sandvicensis** (Gott.) Mizt.: Fl. E. Himal. 533 (1966).

NEPAL. Phulchoki, 2600 m, on tree-trunks (July 15, 1972).

**Tuzibeanthus chinensis** (Steph.) Mizt. in Journ. Hattori Bot. Lab. **24**: 151 (1961).

NEPAL. Near Sanguri Bhanjyang, 1260 m, on tree-trunks (Jun. 2, 1972); Phulchoki, 2400 m, on rocks (Jul. 15, 1972).

Distr. N.W. India (Mussoorie), Nepal, Burma, Thailand, China, and Japan. New to Nepal.

#### PELLIACEAE (by Sinske Hattori)

**Calycularia crispula** Mitt.: Fl. E. Himal. 534 (1966).

NEPAL. Dor-Chauke, 2750 m, on rocky cliff (Jun. 7, 1972); forest below Thudam, 3250 m, on humus-covered rock (Jun. 25, 1972); Shewaden-Papung, 2500 m, on rock (Jun. 29, 1972).

Distr. Himalaya, Thailand, Korea, and Japan.

**Pellia Neesiana** (Gott.) Limpr.: Fl. E. Himal. 534 (1966).

NEPAL. Chitre-Basantapur, 2350 m, on soil (Jun. 6, 1972).

#### METZGERIACEAE (by Sinske Hattori)

**Apometzgeria pubescens** (Schrank) Kuwah.: Fl. E. Himal. 543 (1966).

NEPAL. Chitre-Basantapur, 2350 m, on tree trunk (Jun. 6, 1972); Basantapur-Dor, 2350 m, on tree trunk (Jun. 6, 1972); coniferous forest above Topke Gola, 3610 m, on tree trunk (Jun. 18, 1972).

**Metzgeria conjugata** Lindb.

subsp. **japonica** (Hatt.) Kuwah.: Fl. E. Himal. 534 (1966).

NEPAL. Mossy forest below Lamo Pokhari, 2850 m, on tree trunk (Jun. 9, 1972); Suke-Hile Chok, 2980-3000 m, on humus and tree trunk (Jun. 11, 1972).

Distr. E. Africa, Madagascar, Himalaya, Annam, Sumatra, Borneo, Java, Philippines, Micronesia, Japan, Korea, and Saghalien.

**Metzgeria hamata** Lindb. in Act. Soc. F. Fl. Fenn. **1**: 25 (1877).

NEPAL. Basantapur-Dor, 2350 m, on tree trunk (Jun. 6, 1972); Phulchoki, summit area, 2400 m, on rocky cliff (Jul. 15, 1972).

Distr. Widely distributed in temperate to tropical regions in the world.

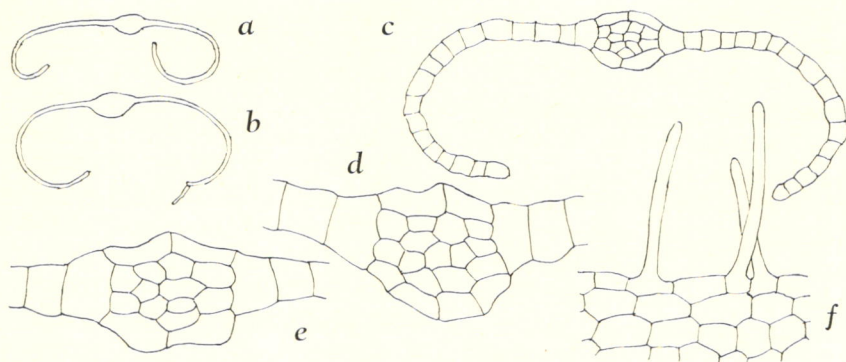


Fig. 32. *Metzgeria involvens* Hatt. a-c. Cross-sections of thalli, a, b  $\times 27$ , c  $\times 67$ , d-e. Cross-sections of midribs of thalli,  $\times 138$ , f. Marginal portion of thallus,  $\times 138$ . Drawn from type.

***Metzgeria involvens* Hatt., sp. nov.**

[Fig. 32]

Sterilis, frons olivacei-flavescens in herbario, dichotoma, convexa dorsale, ad 3 cm longa, ca. 1.5 mm lata. Alae valde involutae, 15-20 cellulas latae, margine solum parvisetuloso, setis soritaribus, strictis. Costa nuda, ventrale convexa, 2-4 cellulas lata, dorsale subplana, semper 2 cellulas lata, cellulis internis 10-15 seriatis, quam cellulis corticalibus multo minoribus, parietibus tenuibus. Cellulae alarum fere  $28-38 \times 10-20 \mu$  metientes, parietibus tenuibus.

NEPAL. Gosa-Banduke Pokhari, 4050 m, on humus (Jun. 14, 1972); Topke Gola-Shewaden, 2850 m, on rock (Jun. 28, 1972, coll. Z. Iwatsuki no. 1914-holotype in NICH, dupl. in TI).

This new species is easily distinguished from other members of the genus known in the Himalayan and neighboring regions by its strongly involute thalli.

***Metzgeria macrospora* Kuwah.: Fl. E. Himal. 2: 240 (1971).**

NEPAL. Mossy forest below Lamo Pokhari, 2630-2700 m, on soil and branches of tree (Jun. 9, 1972); Suke-Hile Chok, 2970 m, on branches of tree (Jun. 11, 1972); Hile Chok-Ghopte, 3350 m, on fallen branches (Jun. 12, 1972); Ghopte-Gosa, 3850 m, on soil (Jun. 13, 1972); coniferous forest above Topke Gola, 3610 m, on fallen branches (Jun. 18, 1972); forest below Thudam, 3250 m, on tree-trunk (Jun. 25, 1972); Shewaden-Papung 2350 m, on leaves (Jun. 29, 1972); Dor, 2300 m, on rock (Jul. 6, 1972).

***Metzgeria molokaiensis* Kuwah.: Fl. E. Himal. 535 (1966).**

NEPAL. Dor-Chauke, 2850 m, on rock (Jun. 7, 1972); forest below Thudam, 3250 m, on branches of tree (Jun. 25, 1972).

MARCHANTIACEAE (by Sinske Hattori)

***Dumortiera hirsuta* (Swartz) Reinw. et al. in Nova Act. Acad. Caes. Leop.-Carol. Nat. Cl. 12: 410 (1824).**

NEPAL. Mohamabedi Kholo-Tamur Bridge, 370 m, on rock (Jun. 3, 1972); Doban-Nessum, 900 m, on rock (Jul. 2, 1972).

var. ***nepalensis* (Tayl.) Frye et Clark: Fl. E. Himal. 535 (1966).**

NEPAL. Hile-Chitre, 2350 m, on soil (Jun. 5, 1972); Papung-Bir Gaon, 1800 m, on rock (Jun. 30, 1972).

Distr. Var. *hirsuta*: Widely distributed in warm-temperate to tropic regions; var. *nepalensis*: India, Malaysia, Philippines, Formosa, China, Japan, Hawaii, Samoa, and N. & S. America.

**Marchantia linearis** Lehm. et Lindenb. in Lehm., Pugillus **4**: 8 (1832).

NEPAL. Nigale-Kuwa Pani, 1850 m (Jun. 4, 1972); Kuwa Pani-Hile, 1860 m (Jun. 4, 1972); Bir Gaon-Dingla, 1550 m (Jul. 1, 1972).

Distr. India, Ceylon, and Malacca.

**Marchantia paleacea** Bertol.: Fl. E. Himal. 535 (1966); **2**: 240 (1971).

*M. nepalensis* Lehm. et Lindenb. in Lehm., Pugillus **4**: 10 (1832).

*M. nitida* Lehm. et Lindenb. in Lehm. in Journ. Hattori Bot. Lab. 11 (1932).

NEPAL. Hile-Chitre, 2150 m, on soil (Jun. 5, 1972).

**Marchantia subintegra** Mitt. in Journ. Linn. Soc. Bot. **5**: 125 (1861).

NEPAL. Nigale-Kuwa Pani, 1850 m, on soil (Jun. 4, 1972); Basantapur-Dor, 2350 m, on soil (Jun. 6, 1972); Shewaden-Papung, 2050 m, on soil (Jun. 29, 1972).

Distr. Nepal, Sikkim, and Bhutan.

**Preissia quadrata** (Scop.) Nees, Naturg. Eur. Leberm. **4**: 135 (1838).

NEPAL. Topke Gola-Jalang Chhyongo, 4000 m, on soil (Jun. 20, 1972).

Distr. Europe, Himalaya, Japan, Siberia, and North America.

#### CONOCEPHALACEAE (by Sinske Hattori)

**Conocephalum conicum** (L.) Dum.: Fl. E. Himal. **2**: 240 (1971).

NEPAL. Kuwa Pani-Hile, 1860 m, on rock (Jun. 4, 1972); Hile-Chitre, 2350 m, on soil (Jun. 5, 1972); Dor-Chauke, 2850 m, on soil (Jun. 7, 1972); Shewaden-Papung, 2500 m, on soil-covered rock (Jun. 29, 1972).

**Wiesnerella denudata** (Mitt.) Steph.: Fl. E. Himal. 536 (1966).

NEPAL. Chauke-Lamo Pokhari, 2680 m, on soil (Jun. 8, 1972); Shewaden-Papung, 2250 m, on soil (Jun. 29, 1972).

#### EXORMOTHECACEAE (by Sinske Hattori)

**Exormotheca tuberifera** Kashyap in New Phytol. **13**: 309 (1914); Liverw. W. Himal. Panjab Pl. **1**: 47, pl. 7 (1929).

*E. Gollani* Steph., Sp. Hepat. **6**: 18 (1917).

NEPAL. Banduke Pokhari, 4120 m, on soil (Jun. 14, 1972); coniferous forest above Topke Gola, 3650 m (Jun. 18, 1972); Topke Gola-Jalang Chhyongo, 3700 m, on soil (Jun. 20, 1972); Lama Chungbu-Thudam, 3750 m, on bank (Jun. 24, 1972).

Distr. Himalaya (Mussoorie and E. Nepal) and S. India (Madras).

#### REBOULIACEAE (by Sinske Hattori; *Asterella* by Riclef Grolle)

**Asterella Blumeana** (Nees) Pande et al. in Journ. Hattori Bot. Lab. **11**: 8 (1954).

*Fimbriaria Blumeana* Nees in Gott. et al., Synop. Hepat. 564 (1846).

NEPAL. Hile-Chitre, 2050 m, on soil (Jun. 5, 1972); Papung-Bir Gaon, 1750-1850 m, on soil and bank (Jun. 30, 1972); Bir Gaon-Dingla, 1300-1610 m, on soil and soil-covered rock (Jul. 1, 1972); waterfall below Chitre, 2250 m, on rocky cliff (Jul. 8, 1972).

Distr. India, Nepal, and Java.

**Asterella mussuriensis** (Kashyap) Verd. in Ann. Bryol. **8**: 156 (1935).

*Fimbriaria mussuriensis* Kashyap in Journ. Bombay Nat. Hist. Soc. **24**: 345 (1916).

NEPAL. Shewaden-Papung, 2070-2350 m, on soil (Jun. 29, 1972); Nessum-Bhujé, 2700 m, on bank (Jul. 3, 1972); Chauke-Dor, 2850 m, on bank (Jul. 6, 1972).

Dist. India and Nepal.

**Asterella reticulata** (Kashyap) Pande et al. in Journ. Hattori Bot. Lab. **11**: 9 (1954).

*Fimbriaria reticulata* Kashyap, l.c. **25**: 270 (1917); Liverw. W. Himal. Panjab Pl. **1**: 65, pl. 14, 1-3 (1929).

NEPAL. Nessum-Bhujé, 2750 m, (Jul. 3, 1972).

Distr. India (Kashmir) and Nepal.

**Mannia rupestris** (Nees) Frye et Clark in Univ. Wash. Publ., Biol. **6**: 67, f. 1-6 (1937).

NEPAL. Mossy forest below Lamo Pokhari, 2850 m, on bank (Jun. 9, 1972); Thudam, 3350-3430 m, on soil and bank (Jun. 22, 1972); Thudam-Lama Chungbu, 3550 m, on soil (Jun. 23, 1972); Phulchoki, 2550 m, on rock (Jul. 15, 1972).

Distr. Europe, Nepal, Japan, and North America.

**Plagiochasma articulatum** Kashyap in New Phytol. **13**: 320 (1914); Liverw. W. Himal. Panjab Pl. **1**: 75, pl. 16, 1-3 (1929).

NEPAL. Thudam-Lama Chungbu, 3550 m, on soil (Jun. 23, 1972).

Distr. India and Nepal.

#### CLEVEACEAE (by Sinske Hattori)

**Sauteria spongiosa** (Kashyap) Hatt. in Journ. Hattori Bot. Lab. **12**: 62 (1954).

*Sauchia spongiosa* Kashyap in Journ. Bombay Nat. Hist. Soc. **24**: 347 (1916).

NEPAL. Lama Chungbu-Slesa, 4250 m, on soil (Jun. 24, 1972); forest below Thudam, 3250 m, on soil (Jun. 25, 1972); Thudam-Kipuphu, 3800 m, on bank (Jun. 26, 1972); Topke Gola-Shewaden, 3350 m, on soil (Jun. 28, 1972).

Distr. Himalaya.

#### TARGIONIACEAE (by Sinske Hattori)

**Targionia hypophylla** L.: Fl. E. Himal. 536 (1966).

NEPAL. Near Sanguri Bhanjyang, 1200 m, on soil (Jun. 2, 1972); Kuwa Pani-Hile, 1860 m, on rock (Jun. 4, 1972); Hile-Chitre, 2150 m, on rock (Jun. 5, 1972); Dor-Chauke, 2750 m, on rock (Jun. 7, 1972); Janga La-Thudam, 4550 m, on soil (Jun. 21, 1972); Shewaden-Papung, 2150 m, on rock (Jun. 29, 1972); Bir Gaon-Dingla, 1150-1610 m, on rock and soil-covered rock (Jul. 1, 1972); near waterfall below Chitre, 2250 m, on rocky cliff (Jul. 8, 1972); around Sanguri Banjyang, 1250 m, on rock (Jul. 10, 1972); Phulchoki, summit area, 2400 m, on rock (Jul. 15, 1972).

#### RICCIACEAE (by Sinske Hattori)

**Riccia himalayensis** Steph. in Kashyap in Journ. Bombay Nat. Hist. Soc. **24**: 349 (1916); Liverw. W. Himal. Panjab Pl. **1**: 93, pl. 20, 5-9 (1929).

NEPAL. Bir Gaon-Dingla, 1350 m, on rock (Jul. 1, 1972).

Distr. India and Nepal.

MUSCI (organized by Akira Noguchi and Zenoske Iwatsuki)<sup>1)</sup>

SPHAGNACEAE (by Hyoji Suzuki)

**Sphagnum cuspidatum** C. Muell.: Fl. E. Himal. 537 (1966).

NEPAL. Hile Chok-Ghopte, 3350 m, on soil, associated with *Sph. khasianum* (Jun. 12, 1972); Topke Gola-Shewaden, 3150 m, on soil (Jun. 28, 1972); loc. cit., 2850 m, on soil (Jun. 28, 1972); loc. cit., 2650 m, on soil (Jun. 28, 1972); Bhujе-Chauke, 2800 m, on soil (Jul. 4, 1972).

**Sphagnum Girgensohnii** Russ.: Fl. E. Himal. 538 (1966); 2: 241 (1971).

NEPAL. Banduke Pokhari-Saju Pokhari, 4150 m, on soil (Jun. 15, 1972).

**Sphagnum imbricatum** Hornsch. ex Russ.: Fl. E. Himal. 538 (1966).

NEPAL. Phujeng La-Topke Gola, 3700 m, on soil (Jun. 27, 1972).

Distr. Europe, Caucasus, Himalaya (E. Nepal, Sikkim), Japan, Korea, Siberia, Kamchatka, Alaska, Canada, U.S.A., Central America, Cuba, and Chile. New to E. Nepal.

**Sphagnum Junghuhnianum** Dozy et Molk.

subsp. **pseudomolle** (Warnst.) H. Suzuki: Fl. E. Himal. 538 (1966).

NEPAL. Dor-Chauke, 2850 m, on soil (Jun. 7, 1972); Lamo Pokhari-Gupha Pokhari, 2850 m, on soil (Jun. 10, 1972); Gupha Pokhari-Suke, 2950 m, on soil (Jun. 10, 1972); Chauke-Dor, 2850 m, on soil (Jul. 6, 1972).

Distr. Himalaya (E. Nepal, Darjeeling, Sikkim), Thailand, Sumatra, Philippines, China (Yunnan, Szechuan, Kweichow, Chekiang), Formosa, Japan, and Canada (Queen Charlotte Islands).

**Sphagnum khasianum** Mitt.: Fl. E. Himal. 539 (1966).

NEPAL. In a mossy forest below Lamo Pokhari, 2680 m, on soil (Jun. 9, 1972); Topke Gola-Shewaden, 3150 m, on soil (Jun. 28, 1972); Shewaden-Papung, 2250 m, on soil (Jun. 29, 1972); Bhujе-Gupha Pokhari, 2800 m, on soil (Jul. 4, 1972).

Distr. Himalaya (E. Nepal, Darjeeling), India (Khasia Hills, Assam, Manipur), Thailand, and China (Yunnan, Szechuan). New to E. Nepal.

ANDREAEACEAE (by Zenoske Iwatsuki)

**Andreaea densifolia** Mitt. in Journ. Linn. Soc. Bot. Suppl. 1: 7 (1859).

NEPAL. Ghopte-Gosa, near Kobche, 4020 m, on rock (Jun. 13, 1972); Banduke Pokhari-Saju Pokhari, 4100 m, on rock (Jun. 15, 1972); Lama Chungbu-Slesa, 4250 m, on rock (Jun. 24, 1972).

Distr. E. Himalaya. New to Nepal.

**Andreaea rupestris** Hedw., Sp. Musc. 47 (1801).

NEPAL. Ghopte-Gosa, near Kobche, 4020 m, on rock (Jun. 13, 1972); Gosa-Banduke Pokhari, 4210 m, on rocky cliff (Jun. 14, 1972); Saju Pokhari-pass to Topke Gola,

1) The following authorities are in charge of the study and preparation of manuscripts for the families in parentheses: Dr. H. Suzuki (Sphagnaceae), Dr. Gary L. Smith (Polytrichaceae), Dr. N. Takaki (Dicranaceae, Brachytheciaceae), Dr. K. Saito (Pottiaceae), Dr. H. Ochi (Funariaceae, Bryaceae, and Bartramiaceae), Dr. W. C. Steere (Splachnaceae), Dr. U. Mizushima (Entodontaceae), Dr. T. Seki (Sematophyllaceae), and Dr. H. Ando (Hypnaceae).

4100 m, on rock (Jun. 16, 1972).

Distr. Almost cosmopolitan.

TETRAPHIDACEAE (by Akira Noguchi)

**Tetrodontium Brownianum** (Dicks.) Schwaegr., Sp. Musc. Suppl. **2** (1): 102 (1824).

NEPAL. In a mossy forest below Lamo Pokhari, 2650 m, on rocks (Jun. 9, 1972); Suke-Hile Chok, 3570 m, in crevices of rocks (Jun. 11, 1972).

Distr. Europe, Himalaya, Japan, New Zealand, and N. America. New to Himalaya.

POLYTRICHACEAE (by G. L. Smith)

**Atrichum Haussknechtii** Jur. & Milde in Verh. Zool.-Bot. Ges. Wien **20**: 598 (1870).

*A. undulatum* var. *Haussknechtii* (Jur. et Milde) Frye: Fl. E. Himal. 542 (1966).

NEPAL. Dhankuta-Nigale, 1550 m (Jun. 4, 1972).

Distr. E. Europe, Asia, and W. N. America.

**Atrichum longifolium** Card. et Dixon ex Gangulee, Mosses E. India **1**: 81 (1969).

NEPAL. In a mossy forest below Lamo Pokhari, 2650 m (Jun. 9, 1972); Topke Gola-Shewaden, 2600 m (Jun. 28, 1972); Shewaden-Papung, 2300-2500 m (Jun. 29, 1972).

Distr. Himalaya.

**Atrichum pallidum** Ren. & Card. in Bull. Soc. Bot. Belg. **34** (2): 63 (1896).

NEPAL. Kuwa Pani-Hile, 1860 m (Jun. 4, 1972); Hile-Chitre, 1990-2350 m (Jun. 5, 1972); Papung-Bir Gaon, 1950 m (Jun. 30, 1972); Chauke-Dor, 2600 m (Jul. 6, 1972).

Distr. Himalaya and China.

**Oligotrichum falcifolium** (Griff.) G. Sm. in Phytologia **18**: 403 (1969).

*O. semilamellatum* (Hook. f.) Mitt.: Fl. E. Himal. 543 (1966).

*O. aligerum* Mitt.: Fl. E. Himal. **2**: 241 (1971).

NEPAL. Hile-Chitre, 2150 m (Jun. 5, 1972); Basantapur (Bilbatay Bhanjyang)-Dor, 2350 m (Jun. 6, 1972); Topke Gola-Shewaden, 3350 m (Jun. 28, 1972, + *Pogonatum microstomum*); Shewaden-Papung, 2250 m (Jun. 29, 1972); Dor-Chitre, 2350 m (Jul. 7, 1972).

Distr. Himalaya.

**Oligotrichum obtusatum** Broth. in Symb. Sin. **4**: 133 (1929).

NEPAL. Lama Chungbu-Slesa, 4350 m (Jun. 24, 1972); Thudam-Kipuphu, 3900 m (Jun. 26, 1972); Topke Gola-Shewaden, 3350 m (Jun. 28, 1972).

Distr. E. Nepal and China (Yunnan).

**Pogonatum fastigiatum** Mitt.: Fl. E. Himal. 543 (1966); **2**: 241 (1971).

NEPAL. Suke-Hile Chok, 2980 m (Jun. 11, 1972).

Distr. Himalaya and S. W. China.

The plants treated as *Pogonatum cirratum* (Sw.) Brid. by Gangulee (Mosses E. India, 1969) are mostly *P. fastigiatum*; those he describes as *P. fastigiatum* and varieties of this species are *P. gymnohyllum* Mitt.

**Pogonatum flexicaule** Mitt. in Journ. Linn. Soc. Bot. Suppl. **1**: 152 (1859).

NEPAL. Dor-Chauke, 2850 m (Jun. 7, 1972).

Distr. Himalaya and E. Asia.

**Pogonatum fuscatum** Mitt. in Journ. Linn. Soc. Bot. Suppl. **1**: 154 (1859).

NEPAL. Shewaden-Papung, 2050 m (Jun. 29, 1972).

Distr. Himalaya.

**Pogonatum gymnophyllum** Mitt. in Journ. Linn. Soc. Bot. Suppl. **1**: 153 (1859).

NEPAL. Chitre-Basantapur, 2350 m (Jun. 6, 1972); Shewaden-Papung, 2500 m (Jun. 29, 1972).

Distr. Himalaya, E. Asia, and Malaysia.

**Pogonatum microstomum** (R. Br.) Brid.: Fl. E. Himal. 543 (1966); **2**: 241 (1971).

NEPAL. Kuwa Pani-Hile, 1900 m (Jun. 4, 1972); Hile-Chitre, 1990-2050 m (Jun. 5, 1972); Dor-Chauke, 2630-2750 m (Jun. 7, 1972); Suke-Hile Chok, 2980-3000 m (Jun. 11, 1972); Topke Gola-Shewaden, 3250-3350 m (Jun. 28, 1972, + *Oligotrichum falcifolium*); Shewaden-Papung, 2350 m (Jun. 29, 1972); Bhuje-Gupha Pokhari, 2800 m (Jul. 4, 1972); in a forest near Chitre, 2350 m (Jul. 7, 1972); Phulchoki, 2100 m (Jul. 15, 1972).

Distr. Himalaya, E. Asia, and Malaysia.

**Pogonatum Neesii** (C. Müll.) Dozy et Molk., Bryol. Javan. **1**: 40 (1856).

*P. akitense* Besch. in Ann. Sci. Nat. Bot. ser. 7, **17**: 354 (1893).

*P. Junghuhnianum* (Dozy et Molk.) Dozy et Molk.: Fl. E. Himal. 543 (1966); **2**: 241 (1971).

NEPAL. Near Sanguri Bhanjyang, 1200-1250 m (Jun. 2, 1972); Dhankuta-Nigale, 1720 m (Jun. 4, 1972); Hile-Chitre, 2000-2100 m (Jun. 5, 1972, + *Pogonatum perichaetiale*); Chauke-Lamo Pokhari, 2850 m (Jun. 8, 1972); Phulchoki, 2100 m (Jul. 15, 1972).

Distr. Caucasus, Himalaya, E. Asia, Malaysia, and Australia.

**Pogonatum patulum** (Harv.) Mitt. in Journ. Linn. Soc. Bot. Suppl. **1**: 152 (1859).

NEPAL. Near Sanguri Bhanjyang, 1250 m (Jun. 2, 1972).

Distr. E. Himalaya.

**Pogonatum perichaetiale** (Mont.) Jaeger: Fl. E. Himal. 543 (1966); **2**: 241 (1971).

NEPAL. Hile-Chitre, 2000-2150 m (Jun. 5, 1972, + *Pogonatum Neesii*); Lamo Pokhari-Gupha (Shita) Pokhari, 2830 m (Jun. 10, 1972); Suke-Hile Chok, 2950 m (Jun. 11, 1972); Ghopte-Gosa, 4000 m (Jun. 13, 1972); Gosa-Banduke Pokhari, 4100 m (Jun. 14, 1972); Saju Pokhari-pass to Topke Gola, 4300-4350 m (Jun. 16, 1972); Jalang Chhyongo-Janga La, 4600 m (Jun. 21, 1972); in a forest below Thudam, 3350-3420 m (Jun. 22, 1972, + *Pogonatum urnigerum*); Lama Chungbu-Slesa, 4250 m (Jun. 24, 1972); Bhuje-Gupha Pokhari, 2750 m (Jul. 4, 1972).

**Pogonatum seminudum** Mitt. in Journ. Linn. Soc. Bot. Suppl. **1**: 152 (1859).

NEPAL. Chauke-Dor, 2600 m (Jul. 6, 1972).

Distr. Himalaya.

**Pogonatum tortipes** (Mitt.) Jaeger: Fl. E. Himal. 544 (1966).

NEPAL. Gosa-Banduke Pokhari, 4050 m (Jun. 14, 1972).

Distr. E. Himalaya and S. W. China.



**Pogonatum urnigerum** (Hedw.) Beauv.: Fl. E. Himal. 544 (1966).

NEPAL. Suke-Hile Chok, 3170 m (Jun. 11, 1972); Hile Chok-Ghopte, 3350 m (Jun. 12, 1972); in a forest below Thudam, 3350 m (Jun. 22, 1972, +*Pogonatum perichaetiale*); Topke Gola-Shewaden, 3150 m (Jun. 28, 1972).

Distr. Widespread in Northern Hemisphere.

**Polytrichastrum Emodi** G. Sm. in Journ. Hattori Bot. Lab. **38**: 633 (1974).

NEPAL. Lama Chungbu-Slesa, 4350 m (Jun. 24, 1972).

Distr. Nepal.

**Polytrichastrum papillatum** G. Sm. in Journ. Hattori Bot. Lab. **38**: 633 (1974).

NEPAL. Janga La-Thudam, 4600 m (Jun. 21, 1972).

Distr. Kashmir and E. Nepal.

**Polytrichastrum torquatum** Mitt. ex Osada et G. Sm. in Journ. Hattori Bot. Lab. **38**: 636 (1974).

NEPAL. Topke Gola-Shewaden, 3150-3250 m (Jun. 28, 1972).

Distr. E. Nepal and Bhutan.

**Polytrichastrum xanthopilum** (Mitt.) G. Sm. in Mem. N. Y. Bot. Gard. **21**(3): 35 (1971).

*Polytrichum xanthopilum* Mitt.: Fl. E. Himal. 544 (1966).

NEPAL. Ghopte-Gosa, 4000-4020 m (Jun. 13, 1972); in a coniferous forest above Topke Gola, 3600-3650 m (Jun. 18, 1972); Topke Gola, in coniferous forest side of a pond, 3600 m (Jun. 19, 1972); Topke Gola-Jalang Chhyongo, 3650 m (Jun. 20, 1972); Thudam-Kipuphu, 4350 m (Jun. 26, 1972); Phujeng La-Topke Gola, 3700 m (Jun. 27, 1972).

Distr. E. Nepal and Sikkim.

#### FISSIDENTACEAE (by Zenoske Iwatsuki)

**Fissidens anomalus** Mont.: Fl. E. Himal. 544 (1966).

NEPAL. Chitre-Basantapur, 2350 m, on tree trunk (Jun. 6, 1972); Dor-Chauke, 2850 m, on tree root (Jun. 7, 1972); Below Lamo Pokhari, 2850 m, on tree trunk (Jun. 9, 1972); Nessum-Bhujc, 2400 m, on tree trunk (Jul. 3, 1972); Chauke-Dor, 2600-2650 m, on tree trunk and branch (Jul. 6, 1972).

**Fissidens areolatus** Griff.: Fl. E. Himal. 544 (1966).

NEPAL. Shewaden-Papung, 2500 m, on bank (Jun. 29, 1972).

Distr. Himalaya, Assam, Indo-China, Sumatra, Borneo, Philippines, China, Formosa, and Japan.

**Fissidens biformis** Mitt. in Journ. Linn. Soc. Bot. Suppl. **1**: 141 (1859).

NEPAL. Hile-Chitre, 1990 m, on rock (Jun. 5, 1972); Dor-Chauke, 2730 m, on soil (Jun. 7, 1972); Shewaden-Papung, 2250 m, on soil covered rock (Jun. 29, 1972).

Distr. Ceylon, Himalaya, and S. India.

**Fissidens bryoides** Hedw., Sp. Musc. 153 (1801).

NEPAL. Topke Gola-Shewaden, 2850 m, on soil covered rocks (Jun. 28, 1972); Shewaden-Papung, 2400 m, on bamboo (Jun. 29, 1972).

Distr. Widely distributed in the Northern Hemisphere and S. America.

**Fissidens grandifrons** Brid.: Fl. E. Himal. 544 (1966); **2**: 242 (1971).

NEPAL. Topke Gola-Shewaden, 3400 m, on rock in a stream (Jun. 28, 1972).

**Fissidens Kurzii** C. Muell. in *Linnaea* **37**: 163 (1872).

NEPAL. Chauke-Lamo Pokhari, 2620 m, on rock and soil (Jun. 8, 1972); Papung-Bir Gaon, 1950 m, on rock (Jun. 30, 1972).

Distr. Himalaya and Burma.

**Fissidens laxitextus** Broth. ex Gangulee in *Nova Hedwigia* **8**: 144 (1964).

NEPAL. Shewaden-Papung, 2400 m, on soil (Jun. 29, 1972).

Distr. E. Himalaya.

**Fissidens Mittenii** Par., *Index Bryol.* 477 (1896).

NEPAL. Dor-Chauke, 2650 m, on soil (Jun. 7, 1972); Shewaden-Papung, 2250-2350 m, on rocks (Jun. 29, 1972); Chauke-Dor, 2750 m, on bank (Jul. 6, 1972).

Distr. Ceylon, S. India, Himalaya, Indo-China, Indonesia, Philippines, Formosa, and Japan.

**Fissidens nobilis** Griff.: *Fl. E. Himal.* 545 (1966).

NEPAL. Papung-Bir Gaon, 1800 m, on rock (Jun. 30, 1972); Bir Gaon-Dingla, 1050 m, on rocky cliff (Jul. 1, 1972).

Distr. Ceylon, Himalaya (Nepal, Sikkim), Khasia, Assam, Indo-China, Indonesia, Philippines, New Guinea, China, Formosa, and Japan.

**Fissidens Nymanii** Fleisch., *Musci Fl. Buitenz.* **1**: 19 (1902).

NEPAL. Phulchoki, 2100 m, on clayey soil (Jul. 15, 1972).

Distr. Himalaya, S. India, Java, and Borneo.

**Fissidens obscurus** Mitt. in *Journ. Linn. Soc. Bot. Suppl.* **1**: 138 (1859).

NEPAL. Bhuje-Gupha Pokhari, 2800 m, on soil (Jul. 4, 1972).

Distr. Himalaya and E. India.

**Fissidens Rambii** Gangulee, *Mosses E. India* **2**: 475 (1971).

NEPAL. Chauke-Dor, 2600 m, on rock (Jul. 6, 1972).

Distr. Endemic to E. Himalaya.

**Fissidens Schmidii** C. Muell. in *Bot. Zeit.* **11**: 18 (1853).

NEPAL. Basantapur-Dor, 2350 m, on soil (Jun. 6, 1972); Shewaden-Papung, 2400 m, on base of tree (Jun. 29, 1972); Dingla-Doban, 1000 m, on rock (Jul. 2, 1972); Gupha Pokhari-Chauke, 2600 m, on stone wall (Jul. 4, 1972); near Chitre, 2350 m, on tree trunk (Jul. 7, 1972).

Distr. C. Africa, Pakistan, Ceylon, Himalaya, S. India, Malay, Java, New Guinea, Philippines, and Japan.

**Fissidens splachnobryoides** Broth. in *Schum. et Lauterb., Fl. Deutsch. Schutzgeb. Suedsee* 81 (1900).

NEPAL. In a *Shorea* forest south of Dharan, 200-240 m, on soil (Jun. 1, 1972); Bir Gaon-Dingla, 1300 m, on soil covered rock (Jul. 1, 1972).

Distr. Ceylon, Himalaya, S. India, Burma, Java, Borneo, New Guinea, Philippines, Formosa, and Japan.

**Fissidens sylvaticus** Griff. in *Calcutta Journ. Nat. Hist.* **2**: 507 (1842).

NEPAL. Chitre-Basantapur, 2350 m, on soil (Jun. 6, 1972); Basantapur-Dor, 2350 m, on soil (Jun. 6, 1972); Dor-Chauke, 2750 m, on rock (Jun. 7, 1972); Shewaden-Papung, 2200-2250 m, on rocks (Jun. 29, 1972); Bir Gaon-Dingla, 1050-1610 m, on rocks (Jul. 1, 1972); Phulchoki, 2400 m, on rock (Jul. 15, 1972).

Distr. C. Africa, Madagascar, Algeria, Ceylon, India, Himalaya, Burma, Indo-China, Indonesia, China, Philippines, New Guinea, Samoa, and New Zealand.

**Fissidens taxifolius** Hedw., Sp. Musc. 155 (1801).

NEPAL. Chitre-Basantapur, 2350 m, on soil (Jun. 6, 1972); Chauke-Lamo Pokhari, 2680 m, on bank (Jun. 8, 1972); Dingla-Doban, 1000 m, on bank (Jul. 2, 1972); Nessum-Bhujje, 1800 m, on rock (Jul. 3, 1972); Chauke-Dor, 2600 m, on bank (Jul. 6, 1972); Phulchoki, 2400 m, on soil (Jul. 15, 1972).

Distr. Almost cosmopolitan.

**Fissidens xiphioides** Fleisch. in Hedwigia 38 (Beibl.): 125 (1899).

NEPAL. Below Lamo Pokhari, 2630 m, on decaying tree (Jun. 9, 1972); Shewaden-Papung, 2200-2500 m, on rock (Jun. 29, 1972).

Distr. S. India, Himalaya, Burma, Thailand, Vietnam, Java, Philippines, Formosa, and Japan.

## DITRICHACEAE (by Zenoske Iwatsuki)

**Ceratodon purpureus** Brid.: Fl. E. Himal. 545 (1966).

NEPAL. Saju Pokhari-pass to Topke Gola, 4350 m, on soil (Jun. 16, 1972); in a *Rhododendron* forest above Topke Gola, 3610 m, on soil covering rocks (Jun. 18, 1972); Topke Gola-Jalang Chhyongo, 3910 m, on soil (Jun. 20, 1972); Janga La-Thudam, 4200 m, on dung (Jun. 21, 1972); in a forest below Thudam, 3250 m, on soil (Jun. 25, 1972); Phujeng La-Topke Gola, 4050 m, on soil (Jun. 27, 1972).

**Distichium capillaceum** (Hedw.) B.S.G.: Fl. E. Himal. 2: 242 (1971).

NEPAL. Ghopte-Gosa, 3870 m, on rock (Jun. 13, 1972); Banduke Pokhari-Saju Pokhari, 4200 m, in crevices of cliff (Jun. 15, 1972); Saju Pokhari-pass to Topke Gola, 4230 m, on soil covering rocks (Jun. 16, 1972); Topke Gola, a coniferous forest by a pond, 3600 m, on rocks (Jun. 19, 1972); Jalang Chhyongo-Janga La, 4510 m, on soil (Jun. 21, 1972); Janga La-Thudam, 4400-4600 m, on rocks and soil (Jun. 21, 1972); around Kipuphu, 4550 m, on rock (Jun. 26, 1972); Kipuphu-Phujeng La, 4650 m, on soil (Jun. 27, 1972); Topke Gola-Shewaden, 3450 m, on rocks (Jun. 28, 1972).

**Garckea comosa** (Doz. et Molk.) Wijk et Marg. in Taxon 9: 190 (1960).

NEPAL. Around Sanguri Bhanjyang, 1250 m, on rocks (Jul. 10, 1972).

Distr. Tropical Asia (including E. Himalaya), Formosa, Japan, Australia, Oceania, and C. America.

## DICRANACEAE (by Noriwo Takaki)

**Aongstroemia orientalis** Mitt.: Fl. E. Himal. 545 (1966)-Nog. et al. in Bull. Nat. Sci. Mus. Tokyo 9: 361 (1966), det. Iwatsuki.

NEPAL. Basantapur-Dor, 2350 m, on rocks (Jun. 6, 1972); Dor-Chauke, 2650-2750 m, on humus, rocks, and rocky cliff (Jun. 7, 1972); Chauke-Lamo Pokhari, 2630 m, on soil (Jun. 8, 1972); Lamo Pokhari-Gupha Pokhari, 2850 m, in crevices of rock (Jun. 10, 1972); Gupha Pokhari-Suke, 2950 m, on humus (Jun. 10, 1972); Suke-Hile Chok, 3350 m, on soil (Jun. 11, 1972); Hile Chok-Ghopte, 3350 m (Jun. 12, 1972); Ghopte-Gosa, 3800 m, on soil and rocks (Jun. 13, 1972); around Banduke Pokhari, 4120 m, on soil (Jun. 14, 1972); Janga La-Thudam, 4400 m, in crevices of rock (Jun. 21, 1972); in a forest below Thudam, 3420 m, on soil (Jun. 22, 1972); Kipuphu-Phujeng La, 4600 m, in crevices of rock (Jun. 27, 1972); Topke Gola-Shewaden, 3350 m, on rocks (Jun. 28, 1972); Chauke-Dor, 2850 m, on bank (Jul. 6, 1972); Mangen-Khodang Danda, 2500-3100 m (Aug. 28, 1972).

DARJEELING. Phalut-Singalila, 3600-3700 m (Aug. 3, 1972).

Distr. W. Himalaya, Nepal, Sikkim, Bhutan, Burma, S. W. China (Yunnan, Szechuan), N. Borneo, Philippines, Formosa, Japan, Siberia, and Mexico.

**Atrectylocarpus erectifolius** Mitt. ex Dix. in Not. Bot. Gard. Edinb. **19**: 281 (1938).

NEPAL. Lama Chungbu-Slesa, 4200 m, on dung? (Jun. 24, 1972).

Distr. E. Himalaya (E. Nepal, Bhutan).

**Brothera himalayana** Broth. in Nat. Pfl. **1**(3): 330 (1901)-Tak. in Journ. Hattori Bot. Lab. **31**: 289, f. 3 (1968).

NEPAL. Suke-Hile Chok, 3500 m, on soil (Jun. 11, 1972); in a forest below Thudam, on bank (Jun. 25, 1972); Shewaden-Papung, 2200 m, on rotten logs (Jun. 29, 1972), det. Iwatsuki.

Distr. E. Himalaya (E. Nepal, Sikkim).

Bearing numerous fruits. These specimens agree well with the type specimen in structural details mentioned by the writer in 1968.

**Brothera Leana** (Sull.) C. Muell.: Fl. E. Himal. 545 (1966), det. Iwatsuki.

NEPAL. Hile-Chitre, 2150 m, on fallen log (Jun. 5, 1972); Basantapur-Dor, 2370 m (Jun. 6, 1972).

**Campylopodia tenella** Card. in Bull. Herb. Boiss. sér. 2, **8**: 90, f. 1 (1908)-Tak. in Journ. Hattori Bot. Lab. **37**: 512, f. 1, 2 (1973).

NEPAL. In a forest below Thudam, 3250 m (Jun. 25, 1972).

Distr. E. Nepal and Sikkim.

Two packets. One of them was found on log being charred by the fire, and another one was on fragments of rotten trunk. In the latter packet, this is mixed with *Brothera himalayana*.

**Campylopus Goughii** (Mitt.) Jaeg.: Nog. et al. in Bull. Nat. Sci. Mus. Tokyo **9**: 363 (1966).

NEPAL. Suke-Hile Chok, 3200 m, on soil (Jun. 11, 1972).

Distr. S. India, Ceylon, W. Himalaya, E. Nepal, Sikkim, Bhutan, and Khasia.

**Campylopus nilghiriensis** (Mitt.) Jaeg.: Fl. E. Himal. 546 (1966); **2**: 242 (1971)-Nog. et al., l.c. **9**: 363 (1966).

NEPAL. Basantapur-Dor, 2550 m, on rocky cliff (Jun. 6, 1972); Sim Chotala-Gram, 900-1900 m (Aug. 20, 1972).

Distr. Himalaya (C. & E. Nepal, Sikkim, Bhutan) and E. India.

**Campylopus Richardii** Brid.: Fl. E. Himal. 546 (1966).

NEPAL. Kuwa Pani-Hile, 1900 m, on soil (Jun. 4, 1972); Hile-Chitre, 1900, 1990, 2250 m, on rocks (Jun. 5, 1972); Basantapur-Dor, 2350 m, on decaying log (Jun. 6, 1972); Dor-Chauke, 2850 m, on rocky cliff (Jun. 7, 1972); Shewaden-Papung, 2500 m, on rock (Jun. 29, 1972).

Distr. India, Ceylon, Himalaya, Khasia, Burma, Malay, Sumatra, Borneo, Celebes, Tahiti, Philippines, China (Kwangsi, Fukien), Formosa, and Japan.

This is apparently a common and abundant moss in Nepal.

**Campylopus Schwarzii** Schimp.: Fl. E. Himal. 546 (1966)-Nog. et al., l.c. **9**: 363 (1966).

NEPAL. Dor-Chauke, 2730 m, on rock (Jun. 7, 1972); Ghopte-Gosa, 3800 m, on soil and rock, 4000 m, on soil (Jun. 13, 1972); Gosa-Banduke Pokhari, 4050 m, on soil and rock (Jun. 14, 1972); Saju Pokhari-pass to Topke Gola, 4000-4400 m, on soil

(Jun. 16, 1972); Lama Chungbu-Slesa, 4200–4500 m (Jun. 24, 1972); Topke Gola-Shewaden, 3400 m, on soil (Jun. 28, 1972); Singum Gompa-Gosainkund, 3200–4200 m (Aug. 23, 1972); Thale Patil-Mangen, 3100–3400 m (Aug. 27, 1972).

Distr. Europe, E. Himalaya (Nepal), Formosa, Korea, Japan, and N. America. This is apparently quite common in Nepal.

**Campylopus subgracilis** Ren. et Card.: Fl. E. Himal. 547 (1966).

NEPAL. Lamo Pokhari-Gupha Pokhari, 2830 m, on bank (Jun. 10, 1972).

**Cynodontium gracilescens** (Web. et Mohr) Schimp. in Bruch, Schimper & Gumbel, Bryol. Eur. Coroll. 12 (1846).

NEPAL. Basantapur-Dor, 2370 m, on decaying tree trunk (Jun. 6, 1972); loc. cit., 2510 m, on soil (Jun. 6, 1972).

Distr. Greenland, Europe, Caucasus, E. Nepal, Sikkim, China, Japan, Amur, and N. America.

**Dichodontium pellucidum** (Hedw.) Schimp.: Fl. E. Himal. 2: 242 (1971).

NEPAL. In a forest below Thudam, 3420 m, on soil (Jun. 22, 1972).

Distr. Europe, Caucasus, Pakistan, E. Nepal, Sikkim, Japan, and N. America.

**Dicranella heteromalla** (Hedw.) Schimp.: Fl. E. Himal. 547 (1966); 2: 242 (1971)—Nog. et al., l.c. 9: 363 (1966).

NEPAL. In a mossy forest below Lamo Pokhari, 2650 m, on rock (Jun. 9, 1972); Suke, 2900 m, on bank (Jun. 10, 1972); Suke-Hile Chok, 3250 m, on soil (Jun. 11, 1972); Phujeng La-Topke Gola (Jun. 27, 1972); Bhuje-Gupha Pokhari, 2800 m, on soil (Jul. 4, 1972).

Distr. Cosmopolitan, including N. & C. Africa, Europe, Caucasus, C. Asia, W. Himalaya, E. Nepal, Sikkim, Bhutan, Assam, E. Tibet, Japan, Korea, Amur, and America.

**Dicranodontium asperulum** (Mitt.) Broth.: Fl. E. Himal. 548 (1966)—Nog. et al. in Bull. Nat. Sci. Mus. Tokyo 9: 363 (1966).

NEPAL. Dor-Chauke, 2850 m, on rock (Jun. 7, 1972); around Banduke Pokhari, 4120 m, in crevices of rock (Jun. 14, 1972); Topke Gola-Jalang Chhyongo, 3750 m, on soil (Jun. 20, 1972).

Distr. Europe, E. Nepal, Sikkim, Naga Hills, Yunnan, Japan, and N. America.

**Dicranodontium denudatum** (Brid.) Britt.: Fl. E. Himal. 548 (1966); 2: 242 (1971).

NEPAL. Basantapur-Dor, 2300 & 2350 m, on decaying stump and tree trunk (Jun. 6, 1972); Chauke-Lamo Pokhari, 2850 m, on tree trunk (Jun. 8, 1972); Ghopte-Gosa, 3700 m, on rotten log (Jun. 13, 1972).

Distr. Europe, Caucasus, E. Nepal, Sikkim, China, Japan, Siberia, and N., C. & S. America.

**Dicranodontium uncinatum** (Harv.) Jaeg.: Fl. E. Himal. 550 (1966)—Nog. et al. in Bull. Nat. Sci. Mus. Tokyo 9: 363 (1966).

NEPAL. Basantapur-Dor, 2550 m, on tree trunk (Jun. 6, 1972); Ghopte-Gosa, 3750 m, on rock and soil (Jun. 13, 1972).

Distr. Europe, Ceylon, E. Nepal, Sikkim, Khasia, Manipur, Burma, Indo-China, Java, Moluccas, Philippines, Formosa, and Japan.

**Dicranoweisia alpina** (Mitt.) Par., Index Bryol. 339 (1896).

NEPAL. Around Kipuphu, 4550 m, in crevices of cliff (Jun. 26, 1972).

Distr. Himalaya (E. Nepal and Sikkim).

**Dicranoweisia indica** (Wils.) Par., Index Bryol. 341 (1896).

NEPAL. Around Kipuphu, 4550 m, in crevices of cliff (Jun. 26, 1972).

Distr. W. Himalaya, E. Nepal, Sikkim, and Yunnan.

**Dicranum crispifolium** C. Muell.: Fl. E. Himal. 550 (1966); **2**: 242 (1971).

NEPAL. Topke Gola-Shewaden, 3150 m, on humus (Jun. 28, 1972).

**Dicranum gymnostomum** Mitt.: Fl. E. Himal. 550 (1966)-Nog. et al. in Bull. Nat. Sci. Mus. Tokyo **9**: 364 (1966).

NEPAL. In *Rhododendron* forest above Topke Gola, 3610 m, on soil (Jun. 18, 1972); Thudam-Lama Chungbu, 3650 m, on tree trunk (Jun. 23, 1972).

Distr. E. Nepal, Sikkim, Burma, and Yunnan.

Readily known by the narrow-mouthed and oblong-cylindrical capsules lacking peristome teeth.

**Dicranum himalayanum** Mitt.: Fl. E. Himal. 550 (1966)-Nog. et al. in Bull. Nat. Sci. Mus. Tokyo **9**: 364 (1966).

NEPAL. Suke-Hile Chok, 3550 m, on tree trunk (Jun. 11, 1972); Topke Gola, 3600 m (Jun. 17, 1972); Topke Gola-Shewaden, 3300 m, on branch (Jun. 28, 1972).

When sterile, this is known by the leaf margin being entire throughout.

**Dicranum lorifolium** Mitt.: Fl. E. Himal. 550 (1966).

NEPAL. In a mossy forest below Lamo Pokhari, on rock (Jun. 9, 1972); Dor-Chitre, 2500 m, on humus, 2630 m, on tree trunks (Jul. 7, 1972).

**Dicranum scoparium** Hedw.: Fl. E. Himal. 550 (1966); **2**: 243 (1971)-Nog. et al. in Bull. Nat. Sci. Mus. Tokyo **9**: 364 (1966).

NEPAL. Dor-Chauke, 2850 m, on rock (Jun. 7, 1972).

**Oncophorus Wahlenbergii** Brid.: Fl. E. Himal. 550 (1966); **2**: 243 (1971)-Nog. et al., l.c. **9**: 364 (1966).

NEPAL. Suke-Hile Chok, 3600 m, on humus (Jun. 11, 1972); Ghopte-Gosa, 3700 m, on rock (Jun. 13, 1972); Banduke Pokhari-Saju Pokhari, 4200 m, on humus (Jun. 15, 1972); Topke Gola-Shewaden, 3300 m, on branch (Jun. 28, 1972).

Distr. Europe, Caucasus, W. Himalaya, W. & E. Nepal, Sikkim, Yunnan, Korea, Japan, Siberia, and N. America.

**Oreoweisia laxifolia** (Hook. f.) Kindb.: Fl. E. Himal. 551 (1966); **2**: 243 (1971)-Nog. et al. in Bull. Nat. Sci. Mus. Tokyo **9**: 364 (1966).

NEPAL. Hile-Chitre, 2300 m, on tree trunk (Jun. 5, 1972); Basantapur-Dor, 2510 m, on rocky cliff (Jun. 6, 1972); in a mossy forest below Lamo Pokhari, 2850 m (Jun. 9, 1972); Banduke Pokhari-Saju Pokhari, 4150 m, on rock (Jun. 15, 1972); in a coniferous forest above Topke Gola, 3650 m, in crevices of rock (Jun. 18, 1972); Topke Gola-Jalang Chhyongo, 3750 m, on rock (Jun. 20, 1972).

This is apparently quite common in Nepal. Fruits are found in 6 of 7 packets.

**Paraleucobryum enerve** (Thed.) Loesk.: Nog. et al. in Bull. Nat. Sci. Mus. Tokyo **9**: 364 (1966).

NEPAL. Suke-Hile Chok, 3000-3600 m, on humus (Jun. 11, 1972); Ghopte-Gosa, 4000 m, on soil (Jun. 13, 1972); Gosa-Banduke Pokhari, 4050 m, in crevices of rock (Jun. 14, 1972); Saju Pokhari-pass to Topke Gola, 4200 m, on rock (Jun. 16, 1972); around Kipuphu, 4550 m, on soil (Jun. 26, 1972); around Phujeng La, 4750 m, on soil (Jun. 27, 1972); Gosainkund-Gopte, 3500-4200 m (Aug. 25, 1972).

Distr. Europe, Caucasus, W. Himalaya, C. & E. Nepal, Sikkim, China, Formosa, Japan, Aleutians, and N. America.

This seems to be one of the commonest mosses in Nepal.

**Rhabdoweisia crenulata** (Mitt.) James in Rev. Bryol. **17**: 6 (1890).

NEPAL. Ghopte-Gosa, 3500 m, on humus (Jun. 13, 1972); around Banduke Pokhari, 4050 & 4120 m, on soil (Jun. 14, 1972); in a coniferous forest above Topke Gola, 3610 m, on soil (Jun. 18, 1972); Topke Gola-Shewaden, 3550 m, on soil (Jun. 28, 1972); Shewaden-Papung, 2350 m, on rock (Jun. 29, 1972).

Distr. N. & S. Africa, E. Nepal, Sikkim, Formosa, and America.

**Symblepharis vaginata** (Hook.) Wijk et Marg. in Taxon **8**: 75 (1959).

*S. helicophylla* Mont.: Fl. E. Himal. 551 (1966); **2**: 243 (1971)-Nog. et al. in Bull. Nat. Sci. Mus. Tokyo **9**: 364 (1966).

NEPAL. Basantapur-Dor, 2550 m, on rock (Jun. 6, 1972); Dor-Chauke, 2850 m, on tree trunk (Jun. 7, 1972); Chauke-Lamo Pokhari, 2850 m, on tree trunk (Jun. 8, 1972); in a mossy forest below Lamo Pokhari, 2850 m, on fallen branch (Jun. 9, 1972); Suke-Hile Chok, 3200 m, on tree trunk (Jun. 11, 1972); in a coniferous forest above Topke Gola, 3610 m, on fallen branch (Jun. 18, 1972); Topke Gola-Shewaden, 2850 & 3300 m, on rock (Jun. 28, 1972); Gopte-Thale Patil, 3400-3500 m (Aug. 26, 1972).

Distr. W. Himalaya, C. & E. Nepal, Sikkim, Bhutan, Assam, Naga Hills, China (Yunnan, Szechuan), and N. & C. America (Mexico to Panama).

This seems to be one of the commonest mosses in Nepal. Fruits are found in all the 10 packets.

**Trematodon conformis** Mitt. in Journ. Linn. Soc. Bot. Suppl. **1**: 12 (1859).

NEPAL. Summit area of Phulchoki, 2600 m, on soil (Jul. 15, 1972).

Distr. S. India, W. Himalaya, C. & E. Nepal, Sikkim, Bhutan, and Indo-China.

**Trematodon Kurzii** Hamp. ex Gangulee in Bull. Bot. Soc. Beng. **14**: 12 (1960).

NEPAL. Dingla-Doban, 1000 m, on soil (Jul. 2, 1972).

Distr. E. Nepal, Sikkim, and Burma.

This species is characterized in having distinctly papillose and subobscure laminal cells in the extending upper part of the leaf.

#### LEUCOBRYACEAE (by Akira Noguchi)

**Octoblepharum albidum** Hedw.: Fl. E. Himal. 551 (1966).

NEPAL. Swayambhu temple, 1500 m (May 28, 1972); Papung-Bir Gaon, 1800 m, on tree trunks (Jun. 30, 1972); Dingla-Doban, 950 m, on tree trunks (Jul. 2, 1972); Phulchoki, 1650 m, on tree trunks (Jul. 15, 1972).

#### CALYMPERACEAE (by Zenoske Iwatsuki)

**Syrrhodon Gardneri** (Hook.) Schwaegr.: Fl. E. Himal. 551 (1966).

NEPAL. Chitre-Basantapur, 2350 m (Jun. 6, 1972); Chauke-Lamo Pokhari, 2620 m (Jun. 8, 1972); Papung-Bir Garon, 1950 m (Jun. 30, 1972).

Distr. Ceylon, Himalaya, Khasia, Indo-China, Java, Borneo, Philippines, and N. E. New Guinea.

## ENCALYPTACEAE (by Zennoske Iwatsuki)

**Encalypta alpina** Sm. in Engl. Bot. **20**: 1419 (1805).

NEPAL. Janga La-Thudam, 4600 m, on soil (Jun. 21, 1972).

Distr. Europe, Africa, E. Himalaya, Mongol, Japan, Siberia, and N. America.  
New to Himalaya.

**Encalypta ciliata** Hedw., Sp. Musc. 61 (1801).

NEPAL. Saju Pokhari-pass to Topke Gola, 4230 m, in crevices of cliff (Jun. 16, 1972); in a coniferous forest above Topke Gola, 3610 m, on soil (Jun. 18, 1972); Thudam-Lama Chungbu, 3550 m (Jun. 23, 1972); Thudam-Kipuphu, 3800 m, on bank (Jun. 26, 1972); Topke Gola, 3600 m, on stone wall (Jun. 28, 1972).

Distr. Widely spread in the Northern Hemisphere (including C. America, N. W. part of S. America), Australia, and New Zealand.

## POTTIACEAE (by Kamezo Saito)

**Anoetangium aestivum** (Hedw.) Mitt. in Journ. Linn. Soc. **12**: 175 (1869).

NEPAL. Janga La-Thudam, 4580 m (Jun. 21, 1972); Shewaden-Papung, 2350 m (Jun. 29, 1972); Papung-Bir Gaon, 1950 m (Jun. 30, 1972).

Distr. Widely distributed in the Northern Hemisphere and New Zealand. New to E. Himalaya.

**Anoetangium clarum** Mitt. in Journ. Linn. Soc. Bot. Suppl. **1**: 31 (1859).

NEPAL. Dor-Chauke, 2850 m (Jun. 7, 1972); Hile Chok-Ghopte, 3500 m (Jun. 12, 1972).

Distr. Himalaya and China (Yunnan).

**Anoetangium Stracheyanum** Mitt. in Journ. Linn. Soc. Bot. Suppl. **1**: 31 (1859).

NEPAL. Bir Gaon-Dingla, 1300 m (Jul. 1, 1972); Dunche-Singum Gomba, 2000-2300 m (Aug. 22, 1972).

Distr. Himalaya, India, Burma, Vietnam, and China.

**Anoetangium Thomsonii** Mitt. in Journ. Linn. Soc. Bot. Suppl. **1**: 31 (1859).

NEPAL. Hile-Chitre, 2150 m (Jun. 5, 1972); Shewaden-Papung, 2200 m (Jun. 29, 1972).

Distr. Himalaya, India, China, Japan, and Siberia.

**Barbula amplexifolia** (Mitt.) Jaeg. in Ber. S. Gall. Naturw. Ges. **1871-1872**: 424 (1873).

*Tortula amplexifolia* Mitt., l.c. **1**: 29 (1859).

*Hydrogonium amplexifolium* (Mitt.) Chen in Hedwigia **80**: 240 (1941).

NEPAL. Phulchoki, 2650 m (Jul. 15, 1972).

Distr. Himalaya.

**Barbula arcuata** Griff. in Calcutta Journ. Nat. Hist. **2**: 491 (1842).

*Hydrogonium arcuatum* (Griff.) Wijk et Marg. in Taxon **7**: 289 (1958).

NEPAL. Mohamabedi Khola-Tamur Bridge, 370 m (Jun. 3, 1972).

Distr. Himalaya, India, Burma, Indo-China, Java, New Guinea, Borneo, Philippines, China, Formosa, and Japan.

**Barbula confertifolia** Mitt. in Journ. Linn. Soc. Bot. Suppl. **1**: 36 (1859).



NEPAL. Chauke-Dor, 2650 m (Jul. 6, 1972).

Distr. Endemic to Himalaya.

There has been known no asexual reproductive organ for this species. In our collection, many, brown, unicellular gemmae are sprouting from leaf-axils in group without any gemmifer. Although the ovate leaves with an obtuse apex and the mode of gemmae formation are very similar to those of *B. perobtusa* (Broth.) Chen, this species is distinguished from *B. perobtusa* by the presence of three to four, C-shaped papillae on lamina cells.

**Barbula javanica** Doz. et Molk. in Ann. Sci. Nat. Bot. sér. 3, **2**: 300 (1844).

*Hydrogonium javanicum* (Doz. et Molk.) Hilp. in Beih. Bot. Centralbl. **50**: 632 (1933).

NEPAL. Bir Gaon-Dingla, 1550 m (Jul. 1, 1972); Dingla-Doban, 800 m (Jul. 2, 1972).

Distr. Himalaya, India, Ceylon, Java, Philippines, and China.

**Bellibarbula Kurziana** (Hampe) Chen: Fl. E. Himal. 552 (1966).

NEPAL. Hile Chok-Ghopte, 3400 m (Jun. 12, 1972).

Distr. Himalaya and India.

**Bryoerythrophyllum dentatum** (Wils.) Chen: Fl. E. Himal. 552 (1966).

NEPAL. Thudam-Kipuphu, 4200 m (Jun. 26, 1972).

Distr. Himalaya, India, and Indo-China.

**Bryoerythrophyllum Noguchianum** (Gangulee) Saito, stat. nov.

*B. yunnanense* (Herz.) Chen var. *Noguchianum* Gangulee, Moss. E. Ind. **3**: 750 (1972).

*B. yunnanense* (Herz.) Chen sensu Noguchi in Fl. E. Himal. 552 (1966).

NEPAL. Thudam, 3420 m (Jun. 22, 1972).

Distr. Endemic to Himalaya (Nepal).

This species was first recognized by Noguchi (1966) who temporarily reported it as *Bryoerythrophyllum yunnanense* (Herz.) Chen and referred to a difference in dentating portion of leaf margin between his material (NICH 201496, holotype of var. *Noguchianum*) and the figures of *B. yunnanense* by Chen (cf. Hedwigia **80**: 256, 1941). Later Gangulee (1972) described the plant as a new variety, *B. yunnanense* var. *Noguchianum* Gangulee, by the difference in having the leaf-margin revolute only at the base of leaves and not all along up to a little below the tip.

The leaves of *B. yunnanense* (Ten 67a, holotype in B) are narrowly lanceolate with obtuse apex, and their marginal teeth are irregular in shape and angle, while the leaves of *B. Noguchianum* are narrowly spatulate to narrowly ligulate with an acute apex, and their marginal teeth are regular in shape and angle. Differences in these characters are sufficient to distinguish both taxa from each other, and *B. Noguchianum* seems to be rather similar to *B. Wallichii* as regarding above mentioned characters.

**Bryoerythrophyllum recurvum** (Griff.) Saito, comb. nov.

*Gymnostomum recurvum* Griff. in Calcutta Journ. Nat. Hist. **2**: 48 (1842).

*Didymodon recurvus* (Griff.) Broth. in Nat. Pfl. **1** (3): 405 (1902).

NEPAL. Hile-Chitre, 2300 m (Jun. 5, 1972); Dor-Chauke, 2750 m (Jun. 7, 1972); Papung-Bir Gaon, 1850 m (Jun. 30, 1972); Bir Gaon-Dingla, 1300 m (Jul. 1, 1972); Nessum-Bhuje, 1450 m (Jul. 3, 1972).

Distr. Himalaya and India.

This species has long been treated as a member of the genus *Didymodon*, but it differs from *D. rigidulus* which is the type species of the genus, in its iron-rusted color, and having densely papillose costa covered with C-shaped papillae and quadrate, thin-walled, papillose lamina cells. These characters of this species agree well with those of *Bryoerythrophyllum recurvirostre* which is the type species of the genus *Bryoerythrophyllum*.

**Bryoerythrophyllum Wallichii** (Mitt.) Chen in *Hedwigia* **80**: 260 (1941).

NEPAL. Hile-Chirte, 2250 m (Jun. 5, 1972); Dor-Chauke, 2730 m (Jun. 7, 1972); Chauke-Lamo Pokhari, 2620 m (Jun. 8, 1972); Topke Gola-Shewaden, 3050 m (Jun. 28, 1972).

Distr. Endemic to Himalaya.

**Gymnostomum aeruginosum** Sm., *Fl. Brit.* **3**: 1163 (1804).

NEPAL. Basantapur-Dor, 2300-2600 m (Jun. 6, 1972).

Distr. Widely distributed in the Northern Hemisphere.

**Gymnostomum recurvirostre** Hedw.: *Fl. E. Himal.* 552 (1966); **2**: 243 (1971).

NEPAL. Topke Gola-Shewaden, 3500 m (Jun. 28, 1972).

**Hyophila comosa** Dix. et P. Vard. in *Arch. Bot.* **1**(8-9): 166 (1927).

NEPAL. Bir Gaon-Dingla, 1300 m (Jul. 1, 1972).

Distr. E. Himalaya (Nepal) and India. New to E. Himalaya.

There has not been known any gemma for this species. In our collection, there were many, greenish, star-formed gemmae on gemmifers sprouting from leaf-axils of the upper portion of stem, and the ventral surface of costa was almost smooth from leaf base to apex.

**Hyophila involuta** (Hook.) Jaeg.: *Fl. E. Himal.* 552 (1966).

NEPAL. Swayambhu temple, Kathmandu, 1500 m (May 28, 1972); Mohamabedi Khola-Tamur Bridge, 370 m (Jun. 3, 1972); Teku Nala-Dhankuta, 800-1300 m (Jun. 4, 1972); Kuwa Pani-Hile, 1860 m (Jun. 4, 1972); Papung-Bir Gaon, 1800 m (Jun. 30, 1972); Bir Gaon-Dingla, 1610 m (Jul. 1, 1972); Phulchoki, 2550 m (Jul. 15, 1972).

**Leptodontium flexifolium** (With.) Hampe in *Lindb., Oefv. Foerh. Svensk. Vet. Ak.* **21**: 227 (1864).

NEPAL. Gupha Pokhari-Suke, 2950 m (Jun. 10, 1972); Gosa-Banduke Pokhari, 4080 m (Jun. 14, 1972).

Distr. Widely distributed in the tropical to subtropical regions throughout the world, often extending to the warm temperate regions.

**Leptodontium viticulosoides** (P. Beauv.) Wijk et Marg. in *Taxon* **9**: 51 (1960).

*L. squarrosom* (Hook.) Par.: *Fl. E. Himal.* 553 (1966); **2**: 243 (1971).

NEPAL. Basantapur-Dor, 2450 m (Jun. 6, 1972); Dor-Chauke, 2650 m (Jun. 7, 1972); Chauke-Lamo Pokhari, 2580 m (Jun. 8, 1972).

Distr. Widely distributed in tropics.

**Molendoa Hornschuchiana** (Hook.) Lindb. ex Limpr., *Laubm. Deutschl.* **1**: 248 (1886).

NEPAL. Jalang Chhyongo, 4400 m (Jun. 21, 1972).

Distr. Europe, N. Africa, Himalaya (Nepal), and China. New to Himalaya.

**Molendoa Sendtneriana** (B.S.G.) Limpr., Laubm. Deutschl. **1**: 250 (1886).

NEPAL. Phujeng La-Topke Gola, 3850 m (Jun. 27, 1972).

Distr. Europe, Himalaya, China, Formosa, Japan, Siberia, and Alaska.

**Pseudosymblepharis angustata** (Mitt.) Hilp.: Fl. E. Himal. **2**: 243 (1971).

NEPAL. Chitre, 2350 m (Jul. 7, 1972).

Distr. Ceylon, Himalaya (Nepal to Bhutan), Thailand, Vietnam, Java, China, Formosa, and Japan.

**Pseudosymblepharis subduriuscula** (Wils.) Chen in Hedwigia **80**: 152 (1941).

NEPAL. Chitre-Basantapur, 2350 m (Jun. 6, 1972).

Distr. Himalaya (Nepal), China, and Philippines.

**Scopelophila cataractae** (Mitt.) Broth. in Nat. Pfl. **1**: 436 (1902).

*Merceya Gedeana* (Lac.) Noguchi: Fl. E. Himal. 553 (1966).

*Hyophila spathulata* (Harv.) Jaeg. sensu Noguchi in Fl. E. Himal. 553 (1966).

NEPAL. Sanguri Bhanjyang, 1200 m (Jun. 2, 1972); Chauke-Lamo Pokhari, 2620 m (Jun. 8, 1972); Janga La-Thudam, 3620 m (Jun. 21, 1972); Papung-Bir Gaon, 1950 m (Jun. 30, 1972); Nessum-Bhuje, 1350 m (Jul. 3, 1972).

Distr. Himalaya, India, Java, Philippines, Formosa, Japan, Korea, and S. America.

The previous report of *Hyophila spathulata* proved to be a misidentification. Both specimens (NICH 236838, 236839) are revealed to be *Scopelophila cataractae* by the absence of ventral stereid band of costa in cross section and rounded to irregularly quadrate, nearly smooth, incrassate lamina cells.

**Scopelophila ligulata** (Spruce) Spruce in Journ. Bot., n. ser. **10**: 14 (1881), det. Iwatsuki.

*Merceya ligulata* (Spruce) Schimp.: Fl. E. Himal. 553 (1966).

NEPAL. In a coniferous forest above Topke Gola, 3610 m, on rock (Jun. 18, 1972).

Distr. Europe, Azores, Caucasus, Himalaya, Java, China, Formosa, Japan, and America.

**Semibarbula orientalis** (Web.) Wijk et Marg. in Taxon **8**: 75 (1959).

NEPAL. Teku Nala-Dhankuta, 1150 m (Jun. 4, 1972).

Distr. Widely distributed in the tropical to warm temperate regions of Asia and Africa.

**Tortella tortuosa** (Hedw.) Limpr., Laubm. Deutschl. **1**: 604 (1888).

NEPAL. Topke Gola-Jalang Chhyongo, 3980 m (Jun. 20, 1972); Jalang Chhyongo-Janga La, 4510 m (Jun. 21, 1972).

Distr. Widely distributed in the Northern Hemisphere.

**Trichostomum tenuirostre** (Hook. et Tayl.) Lindb. in De Tort. 225 (1864).

*T. cylindricum* (Brid.) C. Muell.: Fl. E. Himal. 553 (1966).

*Oxystegus cylindricus* (Brid.) Hilp. in Beih. Bot. Centralbl. **50**: 620 (1933).

NEPAL. Dhankuta-Nigale, 1550 m (Jun. 4, 1972); Hile-Chitre, 2350 m (Jun. 5, 1972).

Distr. Almost cosmopolitan.

#### GRIMMIACEAE (by Akira Noguchi)

**Ptychomitrium Tortula** (Harv.) Jaeg.: Fl. E. Himal. 553 (1966); **2**: 243 (1971).

NEPAL. In a forest below Thudam, 3230 m, on rocks (Jun. 25, 1972); Topke Gola-Shewaden, 2850 m, on rocks (Jun. 28, 1972).

**Racomitrium crispulum** (Hook. f. et Wils.) Dix.: Fl. E. Himal. 554 (1966); **2**: 243 (1971).

NEPAL. Basantapur-Dor, 2550 m, on rocks (Jun. 6, 1972); Dor-Chauke, 2650-2850 m, on rocks (Jun. 7, 1972); Chauke-Lamo Pokhari, 2580 m, on bank (Jun. 8, 1972); Hile Chok-Ghopte, 3400 m, on rocky cliff (Jun. 12, 1972); Ghopte-Gosa, 3700 m, on rocks (Jun. 13, 1972); around Banduke Pokhari, 4120 m, on rocks (Jun. 14, 1972); Banduke Pokhari-Saju Pokhari, 4200 m, on rocky cliff (Jun. 15, 1972); around Kipuphu, 4450 m, on rocks (Jun. 26, 1972); Kipuphu-Phujeng La, 4570 m, on rocks (Jun. 27, 1972); Phujeng La-Topke Gola, 3700 m, on rocky cliff (Jun. 27, 1972); in a forest near Chitre, 2350 m, on rocks (Jul. 7, 1972); Sim Chotala-Gram, 900-1900 m (Aug. 20, 1972); Thale Patil-Mangen, 3100-3400 m (Aug. 27, 1972).

DARJEELING. Sandakphu-Phalut, 3600 m (Aug. 2, 1972).

**Racomitrium fasciculare** (Hedw.) Brid., Mant. Musc. 80 (1819).

NEPAL. Phujeng La-Topke Gola, 3700 m, on soil (Jun. 27, 1972).

Distr. Widely distributed in the Northern Hemisphere (including E. Himalaya), southern part of S. America, and New Zealand.

**Racomitrium heterostichum** var. **sudeticum** (Funck) Bauer in Musc. Eur. Am. Exs. **43**: n. 2019 (1931).

NEPAL. Ghopte-Gosa, 3750 m, on rocks (Jun. 13, 1972); Janga La-Thudam, 4550 m, on rocks (Jun. 21, 1972).

Distr. Europe, Caucasus, E. Himalaya, Japan, and N. America.

#### ERPODIACEAE (by Zennoske Iwatsuki)

**Aulacopilum abbreviatum** Mitt. in Journ. Linn. Soc. Bot. **13**: 308 (1873).

NEPAL. Bir Gaon-Dingla, 1300 m, on rocks (Jul. 1, 1972).

Distr. Himalaya, India, Indo-China, and China. New to E. Himalaya.

#### FUNARIACEAE (by Harumi Ochi)

**Funaria hygrometrica** Hedw.: Fl. E. Himal. 555 (1966).

NEPAL. Hile Chok-Ghopte, 3350 m, on soil (Jun. 12, 1972).

#### SPLACHNACEAE (by Zennoske Iwatsuki and William C. Steere)

**Tayloria Froelichiana** (Hedw.) Mitt. in Broth. in Nat. Pfl. **1** (3): 502 (1903).

NEPAL. Janga La-Thudam, 4580 m, on soil (Jun. 21, 1972); Kipuphu-Phujeng La, 4650 m, on soil (Jun. 27, 1972).

Distr. Europe, Caucasus, Himalaya, Greenland, and N. America. New to E. Himalaya.

This species has been reported from N. W. Himalaya. The above specimens extend the known range of this species to E. Himalaya.

**Tayloria indica** Mitt.: Fl. E. Himal. 555 (1966); **2**: 244 (1971).

NEPAL. Shewaden-Papung, 2500 m, on rock (Jun. 29, 1972).

Distr. Ceylon, Himalaya, India, Burma, Thailand, and Philippines.

Previous expeditions brought back many specimens of *T. indica* Mitt. and its related species, *T. subglabra* (Griff.) Mitt. In spite of careful search, we found only

one specimen of *T. indica* and none of *T. subglabra*. It might be caused by seasonal differences.

**Tayloria splachnoides** (Schwaegr.) Hook. in Journ. Sci. Arts **2**: 144 (1816).

NEPAL. Phujeng La-Topke Gola, 3700 m (Jun. 27, 1972, mixed with *Tayloria* sp., no. 1781); Topke Gola-Shewaden, 3350 m, on rock (Jun. 28, 1972, no 1831).

Distr. Europe, E. Himalaya, Japan, and N. America. New to Himalaya.

One specimen (no. 1831) was found on rock in a forest below Topke Gola, 3700 m alt., while the other specimen (no. 1781) was growing on the stone wall of a small shrine (gompa) mixed with another species of *Tayloria*.

In addition to the species mentioned above, we have two or three possible new species of *Tayloria*. These will be described elsewhere in the near future.

**Tetraplodon angustatus** (Hedw.) B.S.G.: Fl. E. Himal. 555 (1966).

NEPAL. Topke Gola-Jalang Chhyongo, 3910 m, on dung (Jun. 20, 1972); Janga La-Thudam, 4050 m, on dung (Jun. 21, 1972).

Distr. Europe, Himalaya, China, Japan, Siberia, and N. America.

**Tetraplodon mnioides** (Hedw.) B.S.G.: Fl. E. Himal. **2**: 244 (1971).

NEPAL. Banduke Pokhari-Saju Pokhari, 4150 m, on dung (Jun. 15, 1972, nos. 1129, 1161); Saju Pokhari-pass to Topke Gola, 4230-4300 m, on dung (Jun. 16, 1972, nos. 816, 817, 818, 819\*, 820\*, 821, 824, 825\*, 834\*, 835\*); above Topke Gola, 3610 m, on dung (Jun. 18, 1972, no. 1312); Topke Gola-Jalang Chhyongo, 3910 m, on dung (Jun. 20, 1972, no. 1365\*); Jalang Chhyongo-Janga La, 4510-4550 m, on dung (Jun. 21, 1972, nos. 1402, 1411\*); Lama Chungbu-Slesa, 4350 m, on dung (Jun. 24, 1972, no. 1601); Thudam-Kipuphu, 4110 m, on dung (Jun. 26, 1972, no. 1668); Phujeng La, 4800 m, on dung (Jun. 27, 1972, no. 1744\*); Phujeng La-Topke Gola, 4300-3700 m, on dung (Jun. 27, 1972, nos. 1765, 1777\*); Kipuphu-Phujeng La, 4750 m, on dung (Jun. 27, 1972, nos. 1715, 1718).

Distr. Europe, C. Africa, Borneo, New Guinea, E. Himalaya, China, Japan, Siberia, and N. & S. America.

This is the commonest species of the family in this area, and shows much variation in size of plants, length of setae, etc. It usually grows on yak dung above 3600 m alt. *Tetraplodon urceolatus* (Brid.) B.S.G. was reported previously from Sikkim and E. Nepal. However, we consider it as an environmental form. Specimen number with an asterisk (\*) in the above localities indicates this form.

#### BRYACEAE (by Harumi Ochi)

**Brachymerium acuminatum** Harv.: Fl. E. Himal. 555 (1966).

NEPAL. Nessum-Bhujé, 1550 m, on soil bank (Jul. 3, 1972).

Distr. Tropical to subtropical regions of Africa, Asia, Australia, and Ecuador; at lower altitudes.

**Brachymerium exile** (Doz. et Molk.) Bosch et Lac., Bryol. Jav. **1**: 139 (1860).

NEPAL. Nessum-Bhujé, 1550 m, on soil bank (Jul. 3, 1972).

Distr. Tropical to warm-temperate regions of Africa, Asia, and Hawaii; at lower altitudes.

**Brachymerium nepalense** Hook.: Fl. E. Himal. 556 (1966); **2**: 244 (1971)-Ochi in Journ. Fac. Educ. Tottori Univ. Nat. Sci. **23**: 32 (1972).

NEPAL. Suke, 2900 m, on tree-trunk (Jun. 10, 1972).

Distr. Tropical C. Africa, Madagascar, Mauritius I., S. to S. E. Asia, New Guinea, Japan, and Rossica I. near Vladivostoc.

**Bryum algovicum** Sendtn. ex C. Muell., Syn. Musc. **2**: 569 (1851)—Crundw. in Trans. Brit. Bryol. Soc. **6**: 137 (1970)—Crum, Steere et Anders. in Bryologist **76**: 92 (1973).

*B. pendulum* (Hornsch.) Schimp. in Coroll. 70 (1856), nom. illeg.; non Oeder ex Brid. (1803).

*B. angustirete* Kindb. in Macoun in Bull. Torr. Bot. Cl. **16**: 94 (1889).

NEPAL. Topke Gola—Jalang Chhyongo, 3910 m (Jun. 20, 1972); Phujeng La—Topke Gola, 3700 m (Jun. 27, 1972).

Distr. Higher latitudes or altitudes of the Northern and Southern Hemispheres.

**Bryum argenteum** Hedw., Sp. Musc. 181 (1801).

NEPAL. Chauke—Lamo Pokhari, 2850 m (Jun. 8, 1972); Hile Chok—Ghopte, 3450 m (Jun. 12, 1972); Ghopte—Gosa, 3800 m (Jun. 13, 1972); Banduke Pokhari—Saju Pokhari, 4150 m (Jun. 15, 1972); Saju Pokhari—pass to Topke Gola, 4200 m (Jun. 16, 1972); in *Rhododendron* forest above Topke Gola, 3610 m (Jun. 18, 1972); Topke Gola—Jalang Chhyongo, 4000 m (Jun. 20, 1972); in forest below Thudam, 3250 m (Jun. 25, 1972); Topke Gola—Shewaden, 3350 m (Jun. 28, 1972); Bir Gaon—Dingla, 1300 m (Jul. 1, 1972).

Distr. Cosmopolitan.

**Bryum** (Subgen. Anomobryum) **auratum** Mitt.: Fl. E. Himal. 557 (1966)—Ochi, l.c. **23**: 38 (1972).

NEPAL. Dor—Chauke, 2730 m, on rock (Jun. 7, 1972); Chauke—Lamo Pokhari, 2620 m, on rocky cliff (Jun. 8, 1972); Shewaden—Papung, 2150 m (Jun. 29, 1972); Papung—Bir Gaon, 1750–2050 m, on rocks (Jun. 30, 1972).

Distr. S. to S. E. Asia and Africa.

**Bryum** cf. **Billardieri** Schwaegr.: Fl. E. Himal. **2**: 244 (1971)—Ochi in Bryologist **74**: 505 (1972).

*B. truncorum* (Brid.) Brid. sensu Ochi in Fl. E. Himal. 558 (1966).

NEPAL. Chauke—Dor, 2600 m, on humus (Jul. 6, 1972).

Distr. Pan-tropical, and also extending up or down to warm-temperate regions of Northern and Southern Hemispheres; at lower altitudes.

**Bryum blandum** subsp. **Handelii** (Broth.) Ochi in Journ. Jap. Bot. **43**: 482, f. 2 (1968).

NEPAL. Banduke Pokhari—Saju Pokhari, 4150 m, on rock (Jun. 15, 1972).

Distr. E. Himalaya, China (prov. Yunnan), Formosa, and Japan. New to E. Himalaya.

**Bryum capillare** Hedw.: Fl. E. Himal. 557 (1966); **2**: 244 (1971).

NEPAL. Lamo Pokhari—Gupha Pokhari, 2830 m, on rock (Jun. 10, 1972); Phulchoki, summit area, 2550 m, on soil bank (Jul. 15, 1972).

**Bryum** (Subgen. Anomobryum) **filiforme** Dicks.

var. **concinatum** (Spr.) Boul.: Fl. E. Himal. 558 (1966).

NEPAL. Suke, 2900 m, on tree-trunk (Jun. 10, 1972, + *Brachymenium nepalense*).

**Bryum** (Subgen. Rhodobryum) **giganteum** (Schwaegr.) Arnott: Fl. E. Himal. 558 (1966)—Ochi in Journ. Fac. Educ. Tottori Univ. Nat. Sci. **23**: 118 (1972).

NEPAL. below Lamo Pokhari, in mossy forest, 2700 m (Jun. 9, 1972); Nessum—Bhuje,

1850 m, on soil bank (Jul. 3, 1972).

Distr. S. Africa, Madagascar S. to S. E. Asia, Japan, and Hawaii; at lower altitudes.

**Bryum** (Subgen. *Rhodobryum*) **laxe-limbatum** Hamp. ex Ochi: Fl. E. Himal. **2**: 244 (1971).

NEPAL. Basantapur-Dor, 2510–2550 m, on humus (Jun. 6, 1972); Topke Gola-Shewaden, 2600 m, on humus (Jun. 28, 1972); Shewaden-Papung, 2500 m, on humus (Jun. 29, 1972); Nessum-Bhujje, 2500–2600 m, on soil or humus (Jul. 3, 1972); Chauke-Dor, 2600 m, on soil bank (Jul. 6, 1972).

**Bryum nitens** Hook. in Icon. Pl. **1**: 19, f. 6 (1836)–Ochi in Journ. Jap. Bot. **45**: 22, f. 47 (1970); in Journ. Fac. Educ. Tottori Univ. Nat. Sci. **21**: 34 (1970); **23** (1): 62 (1972).

*B. plumosum* Doz. et Molk.: Fl. E. Himal. 558 (1966).

NEPAL. Mohamabedi Khola-Tamur Bridge, 370 m, on rock (Jun. 3, 1972); Dingla-Doban, 800 m, on soil (Jul. 2, 1972).

Distr. Tropical and subtropical regions of S. to S. E. Asia, Australia, Africa, and Pacific islands; at lower altitudes.

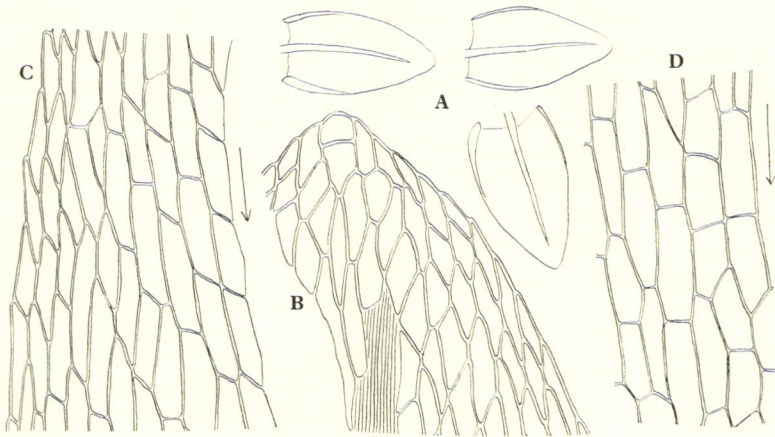


Fig. 33. *Bryum pellucidum* (Dix. et Badhw.) Ochi. A. Leaves,  $\times 28$ , B. Leaf apex,  $\times 250$ , C. Lamina-cells in the median-marginal portion,  $\times 250$ , D. Ditto in the basal portion along costa,  $\times 250$ . Drawn from holotype (BM).

**Bryum** (Subgen. *Anomobryum*) **pellucidum** (Dix. et Badhw.) Ochi in Journ. Hattori Bot. Lab. **35**: 67 (1972). [Fig. 33]

*Anomobryum pellucidum* Dix. et Badhw. in Rec. Bot. Surv. India **12**: 173 (1938).

NEPAL. Kipuphu-Phujeng La, 4650 m, on soil (Jun. 27, 1972).

Distr. Himalaya. New to E. Himalaya.

This species was described on the basis of sterile material from N. W. Himalaya, at 15500 ft., and has not yet been recorded from any other localities. This thus is a new record from E. Himalaya for this moss.

Very densely tufted, slender stems, which are occasionally branched by subfloral innovations, very small (up to  $0.8 \times 0.45$  mm) leaves having an obtuse, rounded apex, costa ceasing below the apex, a very lax areolation consisting of

thin-walled, very broad, relatively short cells, etc. are remarkable characteristics of this species.

In *B. Yasudae* (Broth.) Ochi, the leaves are also obtuse and have a lax areolation. But plants are far robuster, and the leaves larger (up to  $1.7 \times 1$  mm) and having a far stronger, percurrent costa. In *B. auratum* Mitt., the leaves also have an obtuse apex occasionally and the costa ceasing below or far below the apex. But the lamina-cells are linear-vermicular in the median to upper portions in this species.

*B. pellucidum* has not yet been illustrated adequately before.

**Bryum pseudotriquetrum** (Hedw.) Gaertn. in Meyer et Scherb., Oek. Techn. Fl. Wetterau **3**: 102 (1802); Fl. E. Himal. **2**: 245 (1971), ut *B. pseudotriquetrum* (Hedw.) Schwaegr.

NEPAL. Topke Gola, in coniferous forest, 3610 m, on soil (Jun. 18, 1972); Topke Gola-Jalang Chhyongo, 4000 m, on soil (Jun. 20, 1972); Thudam-Lama Chungbu, 3850 m, on soil (Jun. 23, 1972).

Distr. Widespread in the Northern and Southern Hemispheres.

**Bryum recurvulum** Mitt.: Fl. E. Himal. 558 (1966); **2**: 245 (1971).

NEPAL. Topke Gola-Jalang Chhyongo, 3980 m, on rock (Jun. 20, 1972); Topke Gola-Shewaden, 3500 m, on soil covering rocks (Jun. 28, 1972).

**Bryum reflexifolium** (Ochi) Ochi, stat. nov.

*B. pseudo-alpinum* var. *reflexifolium* Ochi in Journ. Jap. Bot. **39**: 52, f. 10 (1964).

*B. teretiusculum* var. *reflexifolium* (Ochi) Ochi in Fl. E. Himal. 558 (1966).

*B. paradoxum* var. *reflexifolium* (Ochi) Ochi in Hikobia **5**: 158 (1969).

NEPAL. Basantapur-Dor, 2350 m, on soil (Jun. 6, 1972); in mossy forest below Lamo Pokhari, 2850 m, on soil (Jun. 9, 1972); Suke-Hile Chok, 3000 m, on rocky cliff (Jun. 11, 1972); Topke Gola, 3600 m, on soil (Jun. 28, 1972); Bhuje-Gupha Pokhari, 2700 m (Jul. 4, 1972).

Distr. E. Himalaya.

Since *B. pseudo-alpinum* var. *reflexifolium* was proposed, many additional specimens, including the above cited ones, have been available for study. After studying them in detail, I have recently come to consider that it may be better to treat this variety as a distinct species, emphasizing the following respects distinguishable from *B. paradoxum*: Plants more spread in style when individuals are moistened, the leaves softer, broader and having a gradually narrowed base (scarcely or abruptly narrowed in *B. paradoxum*), always reflexed or even plane margins (mostly revolute strongly throughout in *B. paradoxum*) and laxer areolation.

**Bryum salakense** Card.: Fl. E. Himal. **2**: 245 (1971).

NEPAL. Hile-Chitre, 2250 m, on rock (Jun. 5, 1972); Dor-Chauke, 2750 m, on rock (Jun. 7, 1972); Ghopte-Gosa, 3650 m, on humus (Jun. 13, 1972); Shewaden-Papung, 2400 m, on rock (Jun. 29, 1972); Chitre, in forest, 2350 m, on tree-trunk (Jul. 7, 1972); Phulchoki, summit area, 2400 m, on rocky cliff (Jul. 15, 1972).

Distr. Nepal, Bhutan, Java, and Formosa.

**Bryum** (Subgen. Anomobryum) **Yasudae** (Broth.) Ochi in Rev. Bryaceae Japan 97 (1959); in Act. Phytotax. Geobot. **20**: 145 (1962).

NEPAL. Dhankuta-Nigale, 1350 m, on rock in stream (Jun. 4, 1972).

Distr. E. Himalaya, China (Shensi), Formosa, and Japan. New to E.



Himalaya.

The above cited specimen consists of sterile, slenderer stems. But it well represents respects of this species.

**Mielichhoferia** cf. **Sasaokae** Broth. in Oef. F. Vet.-Soc. Foerh. **62A**: 15 (1921)—Ochi, l.c. **19**: 25 (1968).

NEPAL. Janga La—Thudam, 4580 m, in crevices of rock (Jun. 21, 1972); Phujeng La—Topke Gola, 3700 m, in crevices of rocky cliff (Jun. 27, 1972).

Distr. W. Pakistan, N. W. to E. Himalaya, and Japan. New to E. Himalaya.

**Plagiobryum Giralddii** (C. Muell.) Par., Ind. Bryol. 957 (1897). [Fig. 34]  
*Bryum Giralddii* C. Muell. in Nuov. Giorn. Bot. Ital. n. ser. **3**: 94 (1896).

*P. Zierii* var. *longicollum* C. Muell., l.c. **5**: 166 (1898), syn. nov.

NEPAL. Ghopte—Gosa, 3950 m, on soil (Jun. 13, 1972); around Banduke Pokhari, 4120 m, on soil or rock (Jun. 14, 1972); Banduke Pokhari—Saju Pokhari, 4150 m, on rocky cliff (Jun. 15, 1972).

Distr. E. Himalaya and China (Shensi). New to E. Himalaya.

This species is similar to *P. Zierii*. But, in *P. Giralddii*, the stem-leaves are harder, more fragile, with the costa regularly short-excurrent denser areolation consisting of thicker-walled cells, and the longer-clavate capsules have a longer neck, which is not much slenderer than the theca.

It is difficult to recognize any constant differences between *P. Giralddii* and *P. Zierii* var. *longicollum* except for the longer-clavate capsules in the latter. *P. Zierii* var. *longicollum* seems merely a modification of *P. Giralddii*.

The present species has not yet been illustrated adequately before.

**Pohlia acuminata** Hopp. et Hornsch.: Fl. E. Himal. 559 (1966); **2**: 245 (1971).

NEPAL. Topke Gola—Jalang Chhyongo, 4130 m, on soil (Jun. 20, 1972); Kipuphu—Phujeng La, 4570 m, on soil (Jun. 27, 1972).

Distr. Higher latitudes or altitudes in the Northern Hemisphere.

**Pohlia crudoides** var. **revolvens** (Card.) Ochi, Rev. Bryaceae Japan 13, f. 3 (1959); in Misc. Bryol. Lichenol. **3**: 118 (1964).

NEAPL. Gosa—Banduke Pokhari, 4210 m, in crevices of rocky cliff (Jun. 14, 1972).

Distr. E. Himalaya, Formosa, and Japan; at higher altitudes. New to E. Himalaya.

**Pohlia elongata** Hedw.: Fl. E. Himal. 559 (1966); **2**: 245 (1971).

NEPAL. Basantapur—Dor, 2510 m (Jun. 6, 1972); Dor—Chauke, 2650–2850 m (Jun. 7, 1972); Chauke—Lamo Pokhari, 2620–2680 m (Jun. 8, 1972); in mossy forest below Lamo Pokhari, 2850 m (Jun. 9, 1972); Suke—Hile Chok, 3350 m (Jun. 11, 1972); Gosa—Banduke Pokhari, 4080 m (Jun. 14, 1972); Topke Gola, in coniferous forest, 3610 m (Jun. 18, 1972); in forest below Thudam, 3350 m (Jun. 22, 1972); Gosainkund—Gopte, 3500–4400 m (Aug. 25, 1972); Gopte—Thale Patil, 3200–3500 m (Aug. 26, 1972).

Distr. Widespread in the Northern Hemisphere and Africa.

**Pohlia leucostoma** (Bosch et Lac.) Fleisch., Musci Fl. Buit. **2**: 514 (1904); Ochi, l.c. **19**: 28, f. 3 (1968).

NEAPL. Near Chitre, in forest, 2350 m, on soil bank (Jul. 7, 1972).

Distr. India, Nepal, Indonesia, Japan, and Hawaii.

**Pohlia longicolla** (Hedw.) Lindb.: Fl. E. Himal. 559 (1966); **2**: 245 (1971).

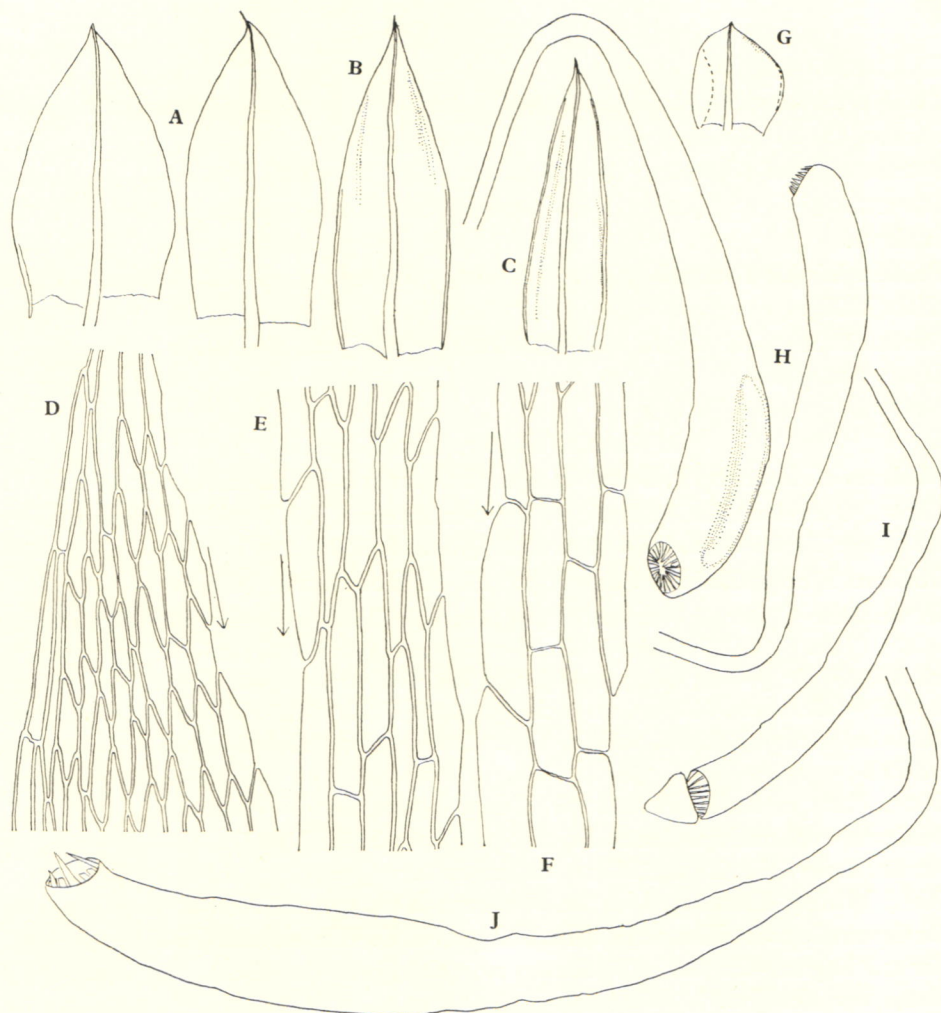


Fig. 34. *Plagiobryum Giraldui* (C. Muell.) Par. A & B. Stem-leaves,  $\times 28$ , C. Perichaetial leaf,  $\times 28$ , D. Upper margin of leaf,  $\times 250$ , E. Lamina-cells in the median portion,  $\times 250$ , F. Ditto in the basal portion,  $\times 250$ , G. Innovation leaf,  $\times 28$ , H, I & J. Capsules,  $\times 14$ . A-H drawn from isotype of *P. Giraldui* (PC), and I & J, from isotype of *P. Zierii* var. *longicollum* (PC).

NEPAL. Chitre-Basantapur, 2350 m, on soil (Jun. 6, 1972); below Lamo Pokhari, in mossy forest, 2730 m, on rock (Jun. 9, 1972); Gupha Pokhari-Suke, 2950 m, on soil (Jun. 10, 1972); Suke-Hile Chok, 3000 m, on soil (Jun. 11, 1972); Hile Chok-Gopte, 3350 m, on soil (Jun. 12, 1972); Topke Gola-Jalang Chhyongo, 3750 m, on soil (Jun. 20, 1972); Jalang Chhyongo-Janga La, 4510 m (Jun. 21, 1972); Topke Gola-Shewaden, 3150 m, on rock (Jun. 28, 1972).

***Pohlia nutans*** (Hedw.) Lindb., *Musc. Scand.* 18 (1879).

NEPAL. Banduke Pokhari-Saju Pokhari, 4150 m, on soil (Jun. 15, 1972); above Topke Gola, in forest, 3610 m, on rotten log or soil (Jun. 18, 1972); Lama Chungbu-

Slesa, 4350 m, on soil (Jun. 24, 1972); around Phujeng La, 4800 m, in crevices of rock (Jun. 27, 1972); Gosainkund-Gopte, 3500-4400 m (Aug. 25, 1972).

Distr. Antipodal.

**Pohlia proligera** (Kindb.) Broth. in Nat. Pfl. **1** (3): 551, f. 421 E-K (1903)-Ochi, l.c. **19**: 31 (1968).

NEPAL. Around Kipuphu, 4500 m, on soil (Jun. 26, 1972).

Distr. At higher altitudes or latitudes in the Northern Hemisphere. New to E. Himalaya.

**Pohlia Wahlenbergii** (Web. et Mohr) Andrews in Grout, Moss Fl. N. Am. **2**: 203 (1935).

NEPAL. Papung-Bir Gaon, 1850-2050 m, on rock (Jun. 30, 1972).

Distr. Antipodal.

#### MNIACEAE (by Akira Noguchi)

**Mnium** cf. **heterophyllum** (Hook.) Schwaegr.: Fl. E. Himal. **2**: 245 (1971).

NEPAL. Gosa-Banduke Pokhari, 4050 m, on humus (Jun. 14, 1972); in a coniferous forest above Topke Gola, 3610 m, on soil (Jun. 18, 1972).

**Mnium lycopodioides** Schwaegr.: Fl. E. Himal. 561 (1966).

NEPAL. Hile-Chitre, 2350 m, on rocks (Jun. 5, 1972); Chauke-Lamo Pokhari, 2680 m, on rocks (Jun. 8, 1972); Saju Pokhari-pass to Topke Gola, 4230 m, on rocky cliff (Jun. 16, 1972); Jalang Chhyongo-Janga La, 4510 m, on soil (Jun. 21, 1972); in forest below Thudam, 3350 m, on rocks (Jun. 22 & 25, 1972); Topke Gola-Shewaden, 2950 m, on rocks (Jun. 28, 1972); Shewaden-Papung, 2250-2500 m, on bank (Jun. 29, 1972).

Distr. Europe, India, Himalaya, China, Japan, and N. America.

**Mnium orthorrhynchum** Brid., Sp. Musc. **3**: 45 (1817).

NEPAL. Suke-Hile Chok, 2980 m, on rotten logs (Jun. 11, 1972).

Distr. Widely distributed in the Northern Hemisphere. New to E. Himalaya.

**Orthomniopsis dilatata** (Mitt.) Nog.: Fl. E. Himal. 563 (1966).

NEPAL. Papung-Bir Gaon, 1850 m, on rocks (Jun. 30, 1972); Bir Gaon-Dingla, 1300 m, on rocks (Jul. 1, 1972).

**Orthomnium bryoides** (Griff.) Wijk et Marg.: Fl. E. Himal. 563 (1966); **2**: 246 (1971).

NEPAL. Near Sanguri Bhanjyang, 1270 m, on rocks and fallen tree branches (Jun. 2, 1972); Dor-Chauke, 2850 m, on fallen tree branches (Jun. 7, 1972); Bir Gaon-Dingla, 1610 m, on rocks (Jul. 1, 1972); Nessum-Bhujje, 1900 m, on rocks (Jul. 3, 1972).

**Orthomnium Loheri** Broth. in Oefv. Finsk. Vet. Soc. Foerh. **47**: 6 (1905).

NEPAL. Shewaden-Papung, 2350 m, on fallen tree branches (Jun. 29, 1972); Bir Gaon-Dingla, 1150-1610 m, on rocks and tree trunks (Jul. 1, 1972).

Distr. Philippines and Himalaya. New to Himalaya.

**Plagiomnium confertidens** (Lindb. et Arn.) Kop. in Ann. Bot. Fenn. **5**: 146 (1968).

*Mnium confertidens* (Lindb. et Arn.) Kindb.: Fl. E. Himal. 559 (1966); **2**: 245 (1971).

NEPAL. Around Lamo Pokhari, 2900 m, on humus (Jun. 8, 1972); Lamo Pokhari-Gupha Pokhari, 2860 m, on humus (Jun. 10, 1972); Topke Gola-Shewaden, 3350 m,

on bank (Jun. 28, 1972); Chauke-Dor, 2750 m, on bank (Jul. 6, 1972); Singum Gompa-Gosainkund, 3200-4200 m (Aug. 23, 1972).

**Plagiomnium cuspidatum** (Hedw.) Kop. in Ann. Bot. Fenn. **5**: 146 (1968).

*Mnium cuspidatum* Hedw.: Fl. E. Himal. **2**: 245 (1971).

NEPAL. Dor-Chauke, 2850 m, on rocks (Jun. 7, 1972).

**Plagiomnium rostratum** (Schrad.) Kop.

subsp. **rhynchophorum** (Hook.) Nog., stat. nov.

*Mnium rhynchophorum* Hook., Icon. Pl. **1**: 20, f. 3 (1836).

NEPAL. Hile-Chitre, 2250 m, on tree trunks (Jun. 5, 1972); Chitre-Basantapur, 2350 m, on rotten logs (Jun. 6, 1972); Dor-Chauke, 2850 m, on decaying logs (Jun. 7, 1972); Chauke-Lamo Pokhari, 2680 m, on rocks (Jun. 8, 1972); in a mossy forest below Lamo Pokhari, 2630 m (Jun. 9, 1972); Shewaden-Papung, 2500 m, on rocks (Jun. 29, 1972); Nessum-Bhujje, 2750 m, on rocks (Jul. 3, 1972).

Distr. Himalaya and Formosa.

subsp. **vesicatum** (Besch.) Nog., stat. nov.

*Mnium vesicatum* Besch. in Ann. Sci. Nat. sér. 7, Bot. **17**: 345 (1893): Fl. E. Himal. 563 (1966).

NEPAL. Hile-Chitre, 1990 m, on rocks (Jun. 5, 1972); Dor-Chauke, 2750 m, on humus (Jun. 7, 1972); loc. cit., 2600 m, on bank (Jul. 6, 1972); Janga La-Thudam, 3750 m, on bank (Jun. 21, 1972); in a forest below Thudam, 3350 m, on rocks (Jun. 22, 1972); Topke Gola-Shewaden, 2800 m, on rocks (Jun. 28, 1972); Shewaden-Papung, 2150-2500 m, on rocks and soil (Jun. 29, 1972); Nessum-Bhujje, 1800 m, on rocks (Jul. 3, 1972).

**Plagiomnium succulentum** (Mitt.) Kop. in Ann. Bot. Fenn. **5**: 147 (1968).

NEPAL. Bir Gaon-Dingla, 1350 m, on rocks (Jul. 1, 1972).

Distr. E. Himalaya, China, Formosa, and Japan.

**Rhizomnium pseudopunctatum** (Bruch et Sch.) Kop. in Ann. Bot. Fenn. **5**: 143 (1968).

*Mnium pseudopunctatum* Bruch et Sch.: Fl. E. Himal. 561 (1966).

NEPAL. Topke Gola-Shewaden, 2900-3400 m, on rocks and soil (Jun. 28, 1972).

**Rhizomnium punctatum** (Schreb. ex Hedw.) Kop.

subsp. **Horikawae** (Nog.) Nog., stat. nov.

*Mnium Horikawae* Nog. in Trans. Nat. Hist. Soc. **24**: 290 (1934).

*M. punctatum* var. *Horikawae* (Nog.) Nog. in Fl. E. Himal. 562 (1966); **2**: 246 (1971).

NEPAL. In a mossy forest below Lamo Pokhari, 2680 m, on tree trunks (Jun. 9, 1972); Hile Chok-Ghopte, 3350 m, on rocky cliff (Jun. 12, 1972); Gosa-Banduke Pokhari, 4050 m, on humus (Jun. 14, 1972); in a coniferous forest side of a pond near Topke Gola, 3600 m, on humus (Jun. 19, 1972).

#### AULACOMNIACEAE (by Zennoske Iwatsuki)

**Aulacomnium palustre** (Hedw.) Schwaegr., Sp. Musc. Suppl. **3** (1): 216 (1827).

NEPAL. Thudam-Lama Chungbu, 3850 m, on soil (Jun. 23, 1972); Lama Chungbu-Slesa, 4200 m, on humus (Jun. 24, 1972); Phujeng La-Topke Gola, 3700 m, on soil (Jun. 27, 1972).

Distr. Almost cosmopolitan.

## BARTRAMIACEAE (by Harumi Ochi)

**Bartramia** cf. **ithyphylla** Brid.: Fl. E. Himal. 566 (1966); **2**: 246 (1971).

NEPAL. Around Banduke Pokhari, 4120 m, in crevices of rocky cliff (Jun. 14, 1972).

Distr. At higher latitudes or altitudes in the Northern Hemisphere.

**Bartramidula Roylei** (Hook. f.) B.S.G., Bryol. Eur. **4**: 55 (1846)—Ochi in Nova Hedwigia **5**: 114, pl. 15 M-N (1963).

NEPAL. Along pass to Sanguri Bhanjyang, 600 m, on soil (Jun. 2, 1972); Phulchoki, summit area, 2400–2600 m, on rock or soil (Jul. 15, 1972).

Distr. Ceylon, India, N. to E. Himalaya, China (Yunnan), Philippines, and Formosa; at lower altitudes. New to E. Himalaya.

**Fleischerobryum longicolle** (Hamp.) Loesk.: Fl. E. Himal. 566 (1966).

NEPAL. Bir Gaon–Dingla, 1050 m, on rocky cliff (Jul. 1, 1972).

**Philonotis falcata** (Hook. f.) Mitt.: Fl. E. Himal. **2**: 246 (1971).

NEPAL. Hile–Chitre, 2150 m, on soil (Jun. 5, 1972).

**Philonotis fontana** (Hedw.) Brid., Bryol. Univ. **2**: 18 (1827).

NEPAL. Above Topke Gola, in forest, 3600 m, on soil (Jun. 18, 1972); Lama Chungbu–Thudam, 4050 m, on soil (Jun. 24, 1972); Topke Gola, 3600 m, on soil (Jun. 28, 1972, + *Bryum reflexifolium*); Topke Gola–Shewaden, 3300 m, on soil (Jun. 28, 1972).

Distr. At higher latitudes or altitudes of the Northern Hemisphere, S. America, and N. to C. Africa.

var. **seriata** (Mitt.) Kindb.: Fl. E. Himal. 566 (1966).

NEPAL. Gosainkund–Gopte, 3500–4400 m (Aug. 25, 1972).

Distr. Europe, Greenland, Caucasus, C. Asia, Himalaya, Japan, Korea, Siberia, and N. America.

**Philonotis lancifolia** Mitt. in Journ. Linn. Soc. **8**: 151 (1864)—Ochi in Nova Hedwigia **5**: 94 (1963); in Hikobia **5**: 35 (1967).

NEPAL. Bir Gaon–Dingla, 1350 m, on rock (Jul. 1, 1972).

Distr. E. Himalaya, Sumatra, China, Korea, and Japan; at lower altitudes. New to E. Himalaya.

**Philonotis Turneriana** (Schwaegr.) Mitt.: Fl. E. Himal. 566 (1966).

NEPAL. Hile–Chitre, 2300 m, on soil (Jun. 5, 1972).

## ORTHOTRICHACEAE (by Akira Noguchi)

**Macromitrium consanguineum** Card. in Beih. Bot. Centralbl. **17**: 11 (1904).

NEPAL. Suke–Hile Chok, 3550 m, on tree trunks (Jun. 11, 1972); in a coniferous forest side of a pond near Topke Gola, 3600 m, on tree trunks (Jun. 19, 1972).

Distr. E. Himalaya, Formosa, Korea, and Japan.

## RHACOPIACEAE (by Akira Noguchi)

**Rhacopilum cuspidigerum** (Schwaegr.) Aongstr. in Oefv. K. Vet. Ak. Foerh. **29**: 10 (1872).

NEPAL. Papung–Bir Gaon, 1900 m, on rocks (Jun. 30, 1972); Bir Gaon–Dingla, 1350 m, on rocks (Jul. 1, 1972); around Sanguri Bhanjyang, 1050 m, on tree trunks (Jul. 10, 1972).

Distr. E. Himalaya, Indo-China, Indonesia, Oceania, and southern part of S.

America. New to Himalaya.

HEDWIGIACEAE (by Akira Noguchi)

**Brywijkia ambigua** (Hook.) Nog. in Journ. Hattori Bot. Lab. **37**: 241 (1973).

*Cleistostoma ambiguum* (Hook.) Brid.: Fl. E. Himal. 566 (1966).

NEPAL. Hile-Chitre, 2150 m, on rocks (Jun. 5, 1972); Papung-Bir Gaon, 2050 m, on tree trunks (Jun. 30, 1972); in a forest near Chitre, 2350 m, on branches of tree (Jul. 7, 1972).

CRYPHAEACEAE (by Zenoske Iwatsuki)

**Acrocryphaea concavifolia** (Griff.) Bosch et Lac.: Fl. E. Himal. 567 (1966); **2**: 247 (1971).

NEPAL. In a *Shorea* forest, south of Dharan, 200–240 m, on fallen tree branches (Jun. 1, 1972); Basantapur-Dor, 2370 m, on tree branches (Jun. 6, 1972); Papung-Bir Gaon, 1800 m, on tree trunks (Jun. 30, 1972); Bir Gaon-Dingla, 1100 m, on tree trunks (Jul. 1, 1972).

Distr. Ceylon, India, Himalaya, Indo-China, Indonesia, New Guinea, and Philippines.

**Sphaerotherciella sphaerocarpa** (Hook.) Fleisch.: Fl. E. Himal. 567 (1966); **2**: 247 (1971).

NEPAL. Dor-Chauke, 2850 m, on tree trunks (Jun. 7, 1972); in a mossy forest below Lamo Pokhari, 2850 m, on fallen tree branches (Jun. 9, 1972); Suke, 2900 m, on tree branches (Jun. 10, 1972); in a forest below Thudam, 3400 m, on tree branches (Jun. 22, 1972).

TRACHYPODACEAE (by Akira Noguchi)

**Diaphanodon blandus** (Harv.) Ren. et Card.: Fl. E. Himal. 567 (1966); **2**: 248 (1971).

NEPAL. Chitre-Basantapur, 2350 m, on tree branches (Jun. 6, 1972); Basantapur-Dor, 2100–2550 m, on tree branches (Jun. 6, 1972); in a mossy forest below Lamo Pokhari, 2700 m (Jun. 9, 1972); Suke, 2900 m, on tree branches (Jun. 10, 1972, + *Thuidium brachymenium*); Topke Gola-Shewaden, 3000 m, on rocks (Jun. 28, 1972); Phulchoki, 2100 m, on tree branches (Jul. 15, 1972, + *Meteoriopsis squarrosa*).

Distr. Tropical Asia, north to Himalaya.

**Duthiella flaccida** (Card.) Broth. in Nat. Pfl. **1** (3): 1010 (1908), det. Iwatsuki.

NEPAL. Bir Gaon-Dingla, 1050 m, on rocks (Jul. 1, 1972); Phulchoki, 2100 m, on soil (Jul. 15, 1972).

Distr. India, E. Himalaya, N. Vietnam, China, Philippines, Borneo, New Guinea, Formosa, and Japan. New to Himalaya.

**Trachypodopsis auriculata** (Mitt.) Fleisch.: Fl. E. Himal. 568 (1966).

NEPAL. Chauke-Lamo Pokhari, 2580 m, on bank (Jun. 8, 1972); Topke Gola-Shewaden, 2850 m, on rocks (Jun. 28, 1972).

**Trachypodopsis serrulata** Fleisch.

var. **crispulata** (Hook.) Zant.: Fl. E. Himal. 568 (1966); **2**: 248 (1971).

NEPAL. Hile-Chitre, 2100–2300 m, on tree trunks, soil, and rock (Jun. 5, 1972); Chitre-Basantapur, 2350 m, on tree trunks (Jun. 6, 1972, + *Neckera himalayana*); Dor-

Chauke, 2850 m, on rocks (Jun. 7, 1972); Bir Gaon–Dingla, 1300 m, on rocks (Jul. 1, 1972); in a forest near Chitre, 2350 m, on tree trunks (Jul. 7, 1972); around Sanguri Bhanjyang 1300 m, on tree trunks (Jul. 10, 1972); Phulchoki, 1200 m (Jul. 15, 1972, + *Meteoriopsis squarrosa*).

var. **Guibertii** (Thér. et P. de la Vard.) Zant.: Fl. E. Himal. 569 (1966); **2**: 248 (1971).

NEPAL. Basantapur–Dor, 2550 m, on rocky cliff (Jun. 6, 1972); Dor–Chauke, 2850 m, on tree roots (Jun. 7, 1972, + *Trachypus bicolor*).

Distr. Himalaya, Indo-China, and Borneo.

**Trachypus bicolor** Reinw. et Hornsch.: Fl. E. Himal. 569 (1966).

NEPAL. Hile–Chitre, 2350 m, on rocks (Jun. 5, 1972); Chitre–Basantapur, 2350 m, on tree trunks (Jun. 6, 1972); Dor–Chauke, 2850 m, on tree roots (Jun. 7, 1972); Chauke–Lamo Pokhari, 2850 m, on tree trunks and rocks (Jun. 8, 1972); Lamo Pokhari–Gupha Pokhari, 2830 m, on soil (Jun. 10, 1972); Ghopte–Gosa, 3700 m, on rocks (Jun. 13, 1972); on a slope above Jalang Chhyongo, 4400 m, in crevice of cliff (Jun. 21, 1972); Lama Chungbu–Slesa, 4180 m, on rocks (Jun. 24, 1972); Papung–Bir Gaon, 2050 m, on rocks (Jun. 30, 1972); Bir Gaon–Dingla, 1300 m, on rocks (Jul. 1, 1972); Chauke–Dor, 2600 m, on rocks (Jul. 6, 1972); Dor–Chitre, 2500 m, on tree trunks (Jul. 7, 1972, + *Neckera himalayana*).

#### PTEROBRYACEAE (by Akira Noguchi)

**Calypothecium Hookeri** (Mitt.) Broth.: Fl. E. Himal. 569 (1966); **2**: 248 (1971), det. Iwatsuki.

NEPAL. Chitre–Basantapur, 2350 m, on tree trunks (Jun. 6, 1972); in a mossy forest below Lamo Pokhari, 2700 m, on tree branches (Jun. 9, 1972, + *Floribundaria sparsa*, *Diaphanodon blandus*); Shewaden–Papung, 2350 m (Jun. 29, 1972).

**Calypothecium pinnatum** Nog.: Fl. E. Himal. 565 (1966).

NEPAL. Near Sanguri Bhanjyang, 1250 m, on tree trunks (Jun. 2, 1972); Hile–Chitre, 2250 m, on tree trunks (Jun. 5, 1972, + *Penzigiella cordata*); Basantapur–Dor, 2300 m, on tree trunks (Jun. 6, 1972, + *Meteoriopsis squarrosa*, *Trachypodopsis serrulata* var. *crispatula*).

Distr. E. Himalaya (Nepal, Sikkim), Khasia, Burma, and Formosa.

**Penzigiella cordata** (Harv. et Hook.) Fleisch.: Fl. E. Himal. 570 (1966); **2**: 248 (1971).

NEPAL. Hile–Chitre, 2250 m, on tree trunks (Jun. 5, 1972); Chitre–Basantapur, 2300–2400 m, on tree trunks (Jun. 6, 1972).

**Pterobryopsis acuminata** (Hook.) Fleisch. in Hedwigia **45**: 59 (1905).

NEPAL. Chitre–Basantapur, 2350 m, on tree trunks (Jun. 6, 1972); Chauke–Lamo Pokhari, 2620 m, on tree trunks (Jun. 8, 1972); Papung–Bir Gaon, 2050 m, on tree trunks (Jun. 30, 1972); Dor–Chitre, 2350 m, on tree branches (Jul. 7, 1972).

Distr. E. Himalaya (Nepal, Sikkim), Khasia, and Formosa.

**Pterobryopsis auriculata** Dix. in Journ. Bombay Nat. Hist. Soc. **39**: 782 (1937).

NEPAL. Near Sanguri Bhanjyang, 1250 m, on tree trunks (Jun. 2, 1972).

Distr. E. Himalaya and Assam. New to Himalaya.

**Pterobryopsis divergens** (Mitt.) Nog.: Fl. E. Himal. 570 (1966).

NEPAL. Papung–Bir Gaon, 2050 m, on tree trunks (Jun. 30, 1972).

Distr. E. Himalaya (Nepal, Sikkim), Khasia, and Burma.

**Pterobryopsis Foulkesiana** (Mitt.) Fleisch.: Fl. E. Himal. 570 (1966).

NEPAL. Near Sanguri Bhanjyang, 1260 m, on tree trunks (Jun. 2, 1972); Nigale-Kuwa Pani, 1720 m, on tree trunks (Jun. 4, 1972).

Distr. E. Himalaya (Nepal, Sikkim) and Nilghiri.

#### METEORIACEAE (by Akira Noguchi)

**Aerobryidium aureo-nitens** (Schwaegr.) Broth. in Nat. Pfl. **1** (3): 820 (1906).

NEPAL. Near Sanguri Bhanjyang, 1270 m, on rocks (Jun. 2, 1972, + *Papillaria Feae*); Kuwa Pani-Hile, 1890 m, on rocks (Jun. 4, 1972); Hile-Chitre, 1990 m, on rocks (Jun. 5, 1972, + *Meteoriopsis squarrosa*, *Papillaria Feae*); Bir Gaon-Dingla, 1100-1300 m, on rocks and tree trunks (Jul. 1, 1972); Phulchoki, 1650 m, on tree trunks (Jul. 15, 1972).

Distr. Ceylon, India (including Khasia and Nilghiri), E. Himalaya (Nepal, Sikkim), Burma, and Indo-China.

**Aerobryidium filamentosum** (Hook.) Fleisch.: Fl. E. Himal. 570 (1966); **2**: 249 (1971).

NEPAL. Near Sanguri Bhanjyang, 1270 m, on rocks (Jun. 2, 1972); Hile-Chitre, 2350 m, on bush (Jun. 5, 1972); Chitre-Basantapur, 2350 m, on tree trunks (Jun. 6, 1972); Chauke-Lamo Pokhari, 2580 m, on tree trunks (Jun. 8, 1972), det. Iwatsuki; in a mossy forest below Lamo Pokhari, 2650 m, on fallen tree branches (Jun. 9, 1972), det. Iwatsuki; Lamo Pokhari-Gupha Pokhari, 2850 m, on rocks (Jun. 10, 1972), det. Iwatsuki; Shewaden-Papung, 2450 m, on tree branches (Jun. 29, 1972), det. Iwatsuki; Papung-Bir Gaon, 2050 m, on tree trunks (Jun. 30, 1972), det. Iwatsuki; Nessum-Bhujje, 1800 m, on rocks (Jul. 3, 1972), det. Iwatsuki; Gupha Pokhari-Chauke, 2600 m, on tree branches (Jul. 4, 1972), det. Iwatsuki; Dor, 2550 m, on fallen tree branches (Jul. 6, 1972, + *Floribundaria aurea*); in a forest near Chitre, 2350 m, on tree branches and rocks (Jul. 7, 1972); Phulchoki, 2400 m, on tree trunks and branches (Jul. 15, 1972), det. Iwatsuki.

**Barbella enervis** (Thw. et Mitt.) Fleisch. in Broth. in Nat. Pfl. **1** (3): 824 (1906).

NEPAL. Near Sanguri Bhanjyang, 1250 m, on bush (Jun. 2, 1972).

Distr. Ceylon, Himalaya, Nilghiri, Philippines, Formosa, Japan, E. Australia, Lord Howe Isl., and New Caledonia.

**Barbella Stevensii** (Ren. et Card.) Fleisch.: Fl. E. Himal. 571 (1966).

NEPAL. Hile-Chitre, 2250 m, on bush (Jun. 5, 1972); in a mossy forest below Lamo Pokhari, 2850 m (Jun. 9, 1972).

**Chrysocladium phaeum** (Mitt.) Fleisch.: Fl. E. Himal. 572 (1966).

NEPAL. Dor-Chauke, 2850 m, on tree branches (Jun. 7, 1972); around Lamo Pokhari, 2900 m, on tree trunks (Jun. 8, 1972); in a mossy forest below Lamo Pokhari, 2700-2850 m, on tree branches (Jun. 9, 1972); Lamo Pokhari-Gupha Pokhari, 2830 m, on soil (Jun. 10, 1972); Suke, 2900 m, on tree branches (Jun. 10, 1972); Suke-Hile Chok, 3000 m (Jun. 11, 1972); Chauke-Dor, 2750 m, on tree branches (Jul. 6, 1972), det. Iwatsuki; Dor, 2550 m, on tree branches (Jul. 6, 1972); in a forest near Chitre, 2350 m, on tree branches (Jul. 7, 1972).

**Floribundaria armata** Broth. in Symb. Sin. **4**: 83 (1929).

NEPAL. Basantapur-Dor, 2300-2600 m, on tree branches (Jun. 6, 1972); in a forest below Thudam, 3400 m, on tree trunks (Jun. 22, 1972); Topke Gola-Shewaden, 3000 m,



on tree trunks (Jun. 28, 1972); Dor, 2600 m, on tree branches (Jul. 6, 1972).

Distr. Himalaya and China (Yunnan). New to Himalaya.

**Floribundaria aurea** (Mitt.) Broth.: Fl. E. Himal. 572 (1966).

NEPAL. Dor-Chauke, 2850 m, on tree branches (Jun. 7, 1972); Bhujé-Gupha Pokhari, 2850 m, on soil (Jul. 4, 1972); Dor, 2550 m, on tree branches (Jul. 6, 1972, + *Aerobryidium filamentosum*).

**Floribundaria floribunda** (Doz. et Molk.) Fleisch.: Fl. E. Himal. 572 (1966); **2**: 249 (1971).

NEPAL. Near Sanguri Bhanjyang, 1250 m, on tree trunks (Jun. 2, 1972); Shewaden-Papung, 2500 m, on tree trunks and rocks (Jun. 29, 1972); Papung-Bir Gaon, 1800 m, on tree trunks (Jun. 30, 1972).

**Floribundaria sparsa** (Mitt.) Broth.: Fl. E. Himal. 572 (1966); **2**: 249 (1971).

NEPAL. In a mossy forest below Lamo Pokhari, 2700 m, on tree branches (Jun. 9, 1972); Shewaden-Papung, 2500 m, on tree branches (Jun. 29, 1972); in a forest near Chitre, 2350 m, on bank (Jul. 7, 1972); Phulchoki, 2100 m, on tree trunks (Jul. 15, 1972).

var. **pilifera** (Nog.) Nog.: Fl. E. Himal. 573 (1966); **2**: 249 (1971).

NEPAL. Kuwa Pani-Hile, 1890 m, on bush (Jun. 4, 1972); Hile-Chitre, 2150-2350 m, on bush (Jun. 5, 1972); Chitre-Basantapur, 2350 m, on soil (Jun. 6, 1972); Dor-Chauke, 2600-2750 m, on tree branches (Jun. 7, 1972); in a forest near Chitre, 2350 m, on tree branches (Jul. 7, 1972).

**Meteoriopsis ancistrodes** (Ren. et Card.) Broth. in Nat. Pfl. **1** (3): 826 (1906).

NEPAL. Chauke-Dor, 2750 m, on tree branches (Jul. 6, 1972).

Distr. Tropical Asia.

**Meteoriopsis formosana** Nog. in Journ. Hattori Bot. Lab. **3**: 92 (1948).

NEPAL. Shewaden-Papung, 2050 m, on trees (Jun. 29, 1972); Bir Gaon-Dingla, 1300-1600 m, on rocks (Jul. 1, 1972); around Sanguri Bhanjyang, 1200 m, on rocks (Jul. 10, 1972, + *Papillaria Feae*).

Distr. E. Himalaya and Formosa. New to Himalaya.

**Meteoriopsis reclinata** (C. Muell.) Fleisch.: Fl. E. Himal. 573 (1966); **2**: 249 (1971), det. Iwatsuki.

NEPAL. Near Sanguri Bhanjyang, 1250 m, on tree branches (Jun. 2, 1972); Phulchoki, 2100 m, on tree branches (Jul. 15, 1972, + *Papillaria Feae*).

**Meteoriopsis squarrosa** (Hook.) Fleisch.: Fl. E. Himal. 573 (1966); **2**: 249 (1971), det. Iwatsuki.

NEPAL. Hile-Chitre, 2350 m, on rocks (Jun. 5, 1972, + *Aerobryidium aureo-nitens*, *Papillaria Feae*); Chitre-Basantapur, 2350 m, on tree branches (Jun. 6, 1972); Basantapur-Dor, 2300 m (Jun. 6, 1972); Shewaden-Papung, 2050 m, on tree branches (Jun. 29, 1972, + *Papillaria Feae*); Bir Gaon-Dingla, 1050 m, on tree trunks (Jul. 1, 1972); Phulchoki, 2100-2600 m, on tree branches (Jul. 15, 1972, + *Diaphanodon blandus*, *Trachypodopsis serrulata* var. *crispatula*).

**Meteorium Buchananii** (Brid.) Broth.: Fl. E. Himal. 573 (1966); **2**: 249 (1971), det. Iwatsuki.

NEPAL. Hile-Chitre, 2150-2250 m, on bush and rocks (Jun. 5, 1972, + *Papillaria Feae*); in a forest near Chitre, 2350 m, on tree branches (Jul. 7, 1972, + *Aerobryidium filamentosum*).

**Meteorium Miquelianum** (C. Muell.) Fleisch. in Broth. Nat. Pfl. **1** (3): 818

(1906).

NEPAL. Chitre-Basantapur, 2350 m, on tree branches (Jun. 6, 1972); Basantapur-Dor, 2300 m, on tree branches (Jun. 6, 1972); Shewaden-Papung, 2500 m, on tree branches (Jun. 29, 1972).

Distr. Widely distributed in the tropical and subtropical Asia, Oceania, and Australia. New to Himalaya.

**Papillaria cf. chrysoclada** (C. Muell.) Jaeg. in Ber. S. Gall. Naturw. Ges. 1875-76: 270 (1877).

NEPAL. Hile-Chitre, 2150 m, on rocks (Jun. 5, 1972).

Distr. Ceylon, E. Himalaya (Nepal, Sikkim), and Thailand.

**Papillaria Feae** C. Muell. ex Fleisch.: Fl. E. Himal. 2: 250 (1971).

NEPAL. Near Sanguri Bhanjyang, 1270 m, on rocks (Jun. 2, 1972, + *Aerobryidium aureo-nitens*); Nigale-Kuwa Pani, 1720 m, on tree trunks (Jun. 4, 1972); Hile-Chitre, 1900-2250 m, on rocks (Jun. 5, 1972, + *Aerobryidium aureo-nitens*, *Meteoriopsis squarrosa*); Chitre-Basantapur, 2350 m, on fallen tree trunks (Jun. 6, 1972); Dor-Chauke, 2550 m, on tree branches (Jun. 7, 1972); Shewaden-Papung, 2450 m, on tree branches and logs (Jun. 29, 1972, + *Meteoriopsis squarrosa*); around Sanguri Bhanjyang, 1050 m, on rocks and soil (Jul. 10, 1972, + *Meteoriopsis formosana*); Phulchoki, 2100 m, on tree branches (Jul. 15, 1972, + *Meteoriopsis reclinata*).

Distr. Ceylon, E. Himalaya, Burma, and Thailand.

**Papillaria semitorta** (C. Muell.) Jaeg.: Fl. E. Himal. 574 (1966); 2: 250 (1971).

NEPAL. Chitre-Basantapur, 2350 m (Jun. 6, 1972, + *Neckera crenulata*); Chauke-Lamo Pokhari, 2680 m, on humus (Jun. 8, 1972); Papung-Bir Gaon, 1800 m, on tree trunks (Jun. 30, 1972), det. Iwatsuki; Bir Gaon-Dingla, 1350 m, on rocks (Jul. 1, 1972), det. Iwatsuki; Bhuje-Gupha Pokhari, 2700 m, on humus (Jul. 4, 1972); Chauke-Dor, 2600 m, on rocks (Jul. 6, 1972); Phulchoki, 2100 m (Jul. 15, 1972).

#### NECKERACEAE (by Akira Noguchi)

**Handeliobryum setschwanicum** Broth.: Fl. E. Himal. 574 (1966).

NEPAL. Shewaden-Papung, 2500 m, on rocks (Jul. 29, 1972).

**Homaliodendron microdendron** (Mont.) Fleisch.: Fl. E. Himal. 575 (1966).

NEPAL. Phulchoki, 2100 m (Jul. 15, 1972).

**Homaliodendron Montagneanum** (C. Muell.) Fleisch.: Fl. E. Himal. 576 (1966); 2: 250 (1971).

NEPAL. Hile-Chitre, 2350 m, on rocks (Jun. 5, 1972); Basantapur-Dor, 2510 m, on rotten logs (Jun. 6, 1972); Dor-Chauke, 2650-2850 m, on rocks (Jun. 7 & Jul. 6, 1972); Chauke-Lamo Pokhari, 2850 m, on rocks (Jun. 8, 1972); Gupha Pokhari-Chauke, 2600 m, on tree trunks (Jul. 4, 1972); Phulchoki, 2450 m, on rocks (Jul. 15, 1972).

Distr. Himalaya, Assam, Indo-China, Indonesia, and S. W. China (Yunnan, Szechuan).

**Homaliodendron sphaerocarpum** Nog.: Fl. E. Himal. 576 (1966); 2: 251 (1971).

NEPAL. Basantapur-Dor, 2350 m, on tree trunks (Jun. 6, 1972).

Distr. E. Himalaya and Thailand.

**Neckera crenulata** Harv.: Fl. E. Himal. 576 (1966); 2: 251 (1971).

NEPAL. Hile-Chitre, 2250 m, on tree trunks (Jun. 5, 1972); Basantapur-Dor, 2350 m,

on tree trunks (Jun. 6, 1972); Chitre-Basantapur, 2350 m, on tree trunks, branches and logs (Jun. 6, 1972, +*Papillaria semitorta*); Chauke-Dor, 2650 m, on tree trunks (Jul. 6, 1972); Dor-Chitre, 2500 m, on tree trunks (Jul. 7, 1972); in a forest near Chitre, 2350 m, on tree trunks (Jul. 7, 1972).

**Neckera himalayana** Mitt.: Fl. E. Himal. 577 (1966); **2**: 251 (1971).

NEPAL. Hile-Chitre, 2310 m, on rocky cliff (Jun. 5, 1972); Shewaden-Papung, 2450 m, on tree trunks (Jun. 29, 1972); Dor-Chitre, 2250 m, on tree trunks (Jul. 7, 1972); Phulchoki, 2400 m, on tree trunks (Jul. 15, 1972); Bhorlang-Sundarijar, 2400-1400 m (Aug. 31, 1972).

**Porotrichum fruticosum** (Mitt.) Jaeg.: Fl. E. Himal. 577 (1966).

NEPAL. In a mossy forest below Lamo Pokhari, 2730 m, on rocks (Jun. 9, 1972); Topke Gola-Shewaden, 2600 m, on rocky cliff (Jun. 28, 1972); Shewaden-Papung, 2300 m, on rocks (Jun. 29, 1972).

Distr. Himalaya and Formosa.

**Thamnobryum latifolium** (Bosch et Lac.) Nieuwl. in Amer. Midland Natur. **5**: 50 (1917).

NEPAL. Shewaden-Papung, 2350 m, on rocks (Jun. 29, 1972).

Distr. E. Himalaya, Indonesia, China, Philippines, and New Zealand. New to Himalaya.

**Thamnobryum siamense** (Horik. et Ando) Noguchi, comb. nov.

*Thamnium siamense* Horik. et Ando in Nature & Life in S. E. Asia **3**: 23 (1964).

NEPAL. Hile-Chitre, 2250 m, on tree trunks (Jun. 5, 1972).

Distr. E. Himalaya, Assam, and Thailand. New to E. Himalaya.

#### HOOKERIAACEAE (by Akira Noguchi)

**Daltonia marginata** Griff. in Calcutta Journ. Nat. Hist. **3**: 270 (1843).

NEPAL. Dor-Chauke, 2550 m, on fallen branches (Jun. 7, 1972).

Distr. E. Himalaya and India (Khasia). New to Himalaya.

**Hookeria acutifolia** Hook. et Grev. in Edinb. Journ. Sci. **2**: 225 (1825), det. Iwatsuki.

NEPAL. In a mossy forest below Lamo Pokhari, 2850 m, on bank (Jun. 9, 1972); Shewaden-Papung, 2250 m, on soil (Jun. 29, 1972); Chauke-Dor, 2850 m, on bank (Jul. 6, 1972).

Distr. Asia (including E. Himalaya), America, and Oceania.

#### HYOPTERYGIACEAE (by Akira Noguchi)

**Cyathophorella adiantum** (Griff.) Fleisch.: Fl. E. Himal. 577 (1966), det. Iwatsuki.

NEPAL. Shewaden-Papung, 2150 m, on trees (Jun. 29, 1972); Nessum-Bhuje, 1800 m (Jul. 3, 1972).

Distr. Himalaya and Philippines.

**Cyathophorella Hookeriana** (Griff.) Fleisch., Mus. Fl. Buit. **3**: 1094 (1908).

NEPAL. Hile-Chitre, 2310 m, on tree trunks (Jun. 5, 1972); Dor-Chauke, 2850 m, on branches of bamboo (Jun. 7, 1972); around Lamo Pokhari, 2800 m, on tree trunks (Jun. 8, 1972); in a mossy forest below Lamo Pokhari, 2650 m (Jun. 9, 1972).

Distr. Warm Temperate, subtropical, and tropical Asia.

**Cyathophorella intermedia** (Mitt.) Broth.: Fl. E. Himal. 577 (1966), det. Iwatsuki.

NEPAL. Chauke-Dor, 2600 m, on tree branches (Jul. 6, 1972); Dor, 2300 m, on rocks (Jul. 6, 1972).

Distr. Himalaya, Philippines, and Formosa.

THELIACEAE (by Zenoske Iwatsuki)

**Myurella sibirica** (C. Muell.) Reim. in Hedwigia **76**: 292 (1937).

NEPAL. Janga La-Thudam, 4580 m, in crevices of rock (Jun. 21, 1972).

Distr. Europe, E. Himalaya, China, Siberia, Japan, and N. America. New to Himalaya.

FABRONIACEAE (by Akira Noguchi)

**Fabronia Schensiana** C. Muell.: Fl. E. Himal. 578 (1966), det. Iwatsuki.

NEPAL. Teku Nala-Dhankuta, 1070 m, on tree trunk (Jun. 4, 1972); Nessum-Bhujje, 1050 m, on tree trunk (Jul. 3, 1972).

**Schwetschkeopsis formosana** Nog.: Fl. E. Himal. 578 (1966).

NEPAL. Topke Gola, 3600 m, on stone wall (Jun. 17 & 28, 1972); in a forest above Topke Gola, 3600 m, on rocks and tree trunks (Jun. 18, 1972); in a forest below Thudam, 3420 m, on rocks (Jun. 22, 1972).

LESKEACEAE (by Akira Noguchi)

**Lescuraea incurvata** (Hedw.) Lawt. in Bull. Torrey Bot. Cl. **84**: 290 (1957).

NEPAL. Ghopte-Gosa, 3750 m (Jun. 13, 1972).

Distr. Widely distributed in the Northern Hemisphere.

**Rhagmatodon declinatus** (Hook.) Brid.: Fl. E. Himal. 578 (1966).

NEPAL. Bir Gaon-Dingla, 1300 m, on rocks (Jul. 1, 1972); Phulchoki, 2100 m (Jul. 15, 1972).

THUIDIACEAE (by Zenoske Iwatsuki)

**Abietinella abietina** (Hedw.) Fleisch.: Fl. E. Himal. **2**: 252 (1871).

NEPAL. Janga La-Thudam, 4400 m, on humus (Jun. 21, 1972, +*Rhytidium rugosum*); Lama Chungbu-Slesa, 4180 m, on humus (Jun. 24, 1972); Phujeng La-Topke Gola, on humus (Jun. 27, 1972).

**Actinothuidium Hookeri** (Mitt.) Broth.: Fl. E. Himal. 578 (1966); **2**: 253 (1971).

NEPAL. Basantapur-Dor, 2510 m, on rocks (Jun. 6, 1972); Singum Gompa-Gosainkund, 3200-4200 m (Aug. 23, 1972); Gopte-Thale Patil, 3500 m (Aug. 26, 1972).

Distr. E. Himalaya, Assam, Burma, S. W. China (Yunnan), Formosa, and Soviet Far East.

**Anomodon acutifolius** Mitt.: Fl. E. Himal. **2**: 253 (1971).

NEPAL. Dor-Chauke, 2730 m, on rocks (Jun. 7, 1972); Topke Gola-Shewaden, 2950 m, on rocks (Jun. 28, 1972); Phulchoki, 2650 m, on rocks (Jul. 15, 1972).

**Anomodon minor** (Hedw.) Fuernr.

subsp. **integerrimus** (Mitt.) Iwats.: Fl. E. Himal. 578 (1966); **2**: 253 (1971).

NEPAL. Bir Gaon-Dingla, 1300 m, on rocks (Jul. 1, 1972); Phulchoki, 2400 m, on

tree trunks (Jul. 15, 1972).

**Anomodon Rugelii** (C. Muell.) Keissl.: Fl. E. Himal. 578 (1966).

NEPAL. Chauke-Lamo Pokhari, 2620 m, on tree trunks (Jun. 8, 1972); Phulchoki, 2400 m, on rocks (Jul. 15, 1972).

**Anomodon viticulosus** (Hedw.) Hook. et Tayl., Musc. Brit. 79 (1818).

NEPAL. Phulchoki, 2400 m, on rocks (Jul. 15, 1972).

Distr. Widely distributed in the Northern Hemisphere.

**Claopodium nervosum** (Harv.) Fleisch.: Fl. E. Himal. 578 (1966).

NEPAL. Shewaden-Papung, 2150 m, on rocks (Jun. 29, 1972).

Distr. India, Himalaya, Thailand, Malaya, Indonesia, Philippines, E. China, Formosa, Korea, Japan, Oceania, and Hawaii.

**Haplocladium angustifolium** (Hampe et C. Muell.) Broth.: Fl. E. Himal. 2: 253 (1971), det. Noguchi.

NEPAL. Dhankuta-Nigale, 1550 m (Jun. 4, 1972).

**Herpetineuron toccoe** (Sull. et Lesq.) Card. in Beih. Bot. Centralbl. 19: 127 (1905).

NEPAL. Teku Nala-Dhankuta, 1220 m, on rocks (Jun. 4, 1972); Nigale-Kuwa Pani, 1720 m, on tree trunks (Jun. 4, 1972); Bir Gaon-Dingla, 1350 m, on rocks (Jul. 1, 1972).

Distr. Almost cosmopolitan, excluding Europe and Siberia.

**Thuidium brachymerium** Herz.: Fl. E. Himal. 579 (1966); 2: 253 (1971), det. Noguchi.

NEPAL. Suke, 2900 m, on tree branches (Jun. 10, 1972, +*Diaphanodon blandus*); in a forest below Thudam, 3250 m, on rocks (Jun. 25, 1972); Papung-Bir Gaon, 2050 m, on tree trunks (Jun. 30, 1972).

**Thuidium cymbifolium** (Doz. et Molk.) Doz. et Molk.: Fl. E. Himal. 578 (1966); 2: 253 (1971), det. Noguchi.

NEPAL. Numerous collections.

Distr. Tropical and subtropical Asia, and Oceania, north to Japan.

**Thuidium glaucinum** (Mitt.) Bosch et Lac.: Fl. E. Himal. 579 (1966); 2: 253 (1971), det. Noguchi.

NEPAL. Nessum-Bhuje, 1800 m, on rocks (Jul. 3, 1972).

Distr. Tropical and subtropical Asia, north to Japan.

**Thuidium Meyenianum** (Hampe) Doz. et Molk., Bryol. Jav. 2: 121 (1865), det. Noguchi.

NEPAL. In a *Shorea* forest, south of Dharan, 200-240 m, on tree root (Jun. 1, 1972).

Distr. Tropical and subtropical Asia, Australia and Oceania, north to Japan.

**Thuidium Tamariscellum** (C. Muell.) Bosch et Lac.: Fl. E. Himal. 579 (1966); 2: 253 (1971), det. Noguchi.

NEPAL. Mohamabedi Khola-Tamur Bridge, 350 m, on tree trunks (Jun. 3, 1972); Bir Gaon-Dingla, 1050 m, on tree trunks (Jul. 1, 1972).

Distr. Tropical Asia, north to Japan (Ryukyu).

#### AMBLYSTEGIACEAE (by Zennoske Iwatsuki)

**Cratoneuron filicinum** (Hedw.) Spruce: Fl. E. Himal. 2: 254 (1971).

NEPAL. Janga La-Thudam, 3900 m, on rocks (Jun. 21, 1972).

**Calliergon sarmentosum** (Wahlenb.) Kindb. in Canad. Rec. Sci. 6: 72

(1894), det. Noguchi.

NEPAL. Janga La-Thudam, 4450 m, on rocks (Jun. 21, 1972).

Distr. Wide spread in the Northern Hemisphere, southern part of S. America, and New Zealand.

**Drepanocladus uncinatus** (Hedw.) Warnst.: Fl. E. Himal. **2**: 254 (1971).

NEPAL. Ghopte-Gosa, 3500-4100 m, on soil (Jun. 13, 1972); around Banduke Pokhari, 4120 m, on humus (Jun. 14, 1972); Saju Pokhari-pass to Topke Gola, 4350 m, on humus (Jun. 16, 1972); in a coniferous forest side of a pond near Topke Gola, 3600 m (Jun. 19, 1972); Jalang Chhyongo-Janga La, 4510 m, on soil (Jun. 21, 1972); Janga La-Thudam, 4600 m, on soil (Jun. 21, 1972); around Kipuphu, 4500 m, on rock (Jun. 26, 1972); Phujeng La-Topke Gola, 4650 m, on soil (Jun. 27, 1972); Gosainkund-Gopte, 3500-4400 m (Aug. 25, 1972).

#### BRACHYTHECIACEAE (by Noriwo Takaki)

**Brachythecium Buchananii** (Hook.) Jaeg.: Fl. E. Himal. 579 (1966); **2**: 254 (1971); Nog. et al. in Bull. Nat. Sci. Mus. Tokyo **9**: 374 (1966).

NEPAL. Kuwa Pani-Hile, 1860 m, on soil (Jun. 4, 1972); Janga La-Thudam, 4050 m, on rock (Jun. 21, 1972).

**Brachythecium rivulare** B.S.G.: Fl. E. Himal. 580 (1966).

NEPAL. Hile-Chitre, 2310 m, on rock (Jun. 5, 1972); Thudam-Lama Chungbu, 3710 m, on soil (Jun. 23, 1972); Topke Gola-Shewaden, 3400 m, on rock (Jun. 28, 1972).

**Brachythecium rutabulum** (Hedw.) B.S.G.: Fl. E. Himal. 580 (1966).

NEPAL. Ghopte-Gosa, 3650 m, on humus (Jun. 13, 1972).

**Brachythecium salebrosum** (Web. et Mohr) B.S.G.: Fl. E. Himal. 580 (1966); Nog. et al., l.c. **9**: 374 (1966).

NEPAL. Kuwa Pani-Hile, 1860 m, on rock (Jun. 4, 1972); Nessum-Bhuje, 1850 m, on tree trunk (Jul. 3, 1972).

Distr. Europe, Azores, Canaries, Morocco, Algeria, Himalaya, Tibet, Japan, Siberia, Amur, Saghalin, N. America, and Tasmania.

**Brachythecium Wichuriae** (Broth.) Par.: Fl. E. Himal. 580 (1966).

NEPAL. Kuwa Pani-Hile, 1890 m, on soil (Jun. 4, 1972); Bir Gaon-Dingla, 1610 m, on soil (Jul. 1, 1972); Nessum-Bhuje, 1800 & 1850 m, on rock (Jul. 3, 1972).

**Bryhnia novae-angliae** (Sull. et Lesq.) Grout: Fl. E. Himal. 580 (1966).

NEPAL. In a mossy forest below Lamo Pokhari, 2850 m, on soil (Jun. 9, 1972).

**Cirriphyllum cirrhosum** (Schwaegr.) Grout in Bull. Torrey Bot. Cl. **25**: 223 (1898), det. Iwatsuki.

NEPAL. Janga La-Thudam, 4600 m, on soil (Jun. 21, 1972).

Distr. Europe, Caucasus, Turkistan, E. Nepal, China, Siberia, Greenland, and N. America. New to Himalaya.

**Eurhynchium riparioides** (Hedw.) Richs.: Fl. E. Himal. 580 (1966); **2**: 254 (1971).

NEPAL. Hile-Chitre, 2350 m, on rock (Jun. 5, 1972); Thudam-Lama Chungbu, 3850 m, on rock (Jun. 23, 1972); Shewaden-Papung, 2150 m, on rock (Jun. 29, 1972); Dor, 2300 m, on rock (Jul. 6, 1972).

**Palamocladium nilgheriense** (Mont.) C. Muell. in Flora **82**: 465 (1896).

NEPAL. Chitre-Basantapur, 2350 m, on tree trunk (Jun. 6, 1972); in a forest near Chitre, 2350 m, on tree trunk (Jul. 7, 1972); Dor-Chitre, 2500 m, on tree trunk (Jul. 7, 1972).

Distr. E. Nepal, Assam, Nilghiri Hills, Ceylon, Java, and China.

In some packets, numerous dwarf males are found on the leaves of female plants.

**Rhynchostegium vagans** (Harv.) Jaeg.: Fl. E. Himal. 581 (1966).

NEPAL. Shewaden-Papung, 2200 m, on bank (Jun. 29, 1972); Doban-Nessum, 900 m, on rock (Jul. 2, 1972).

#### ENTODONTACEAE (by Urara Mizushima)

**Campylodontium flavescens** (Hook.) Bosch et Lac.: Fl. E. Himal. 581 (1966).

NEPAL. Bir Gaon-Dingla, 1610 m (Jul. 1, 1972).

**Entodon angustifolius** (Mitt.) Jaeg.: Fl. E. Himal. 581 (1966).

NEPAL. Hile-Chitre, 1990 m (Jun. 5, 1972); Bir Gaon-Dingla, 1150 m and 1350 m (Jul. 1, 1972).

**Entodon concinnus** (De Not.) Paris.

subsp. **caliginosus** (Mitt.) U. Miz.: Fl. E. Himal. 582 (1966).

NEPAL. Dor-Chauke, 2850 m (Jun. 7, 1972).

**Entodon flavescens** (Hook.) Jaeg.: Fl. E. Himal. 583 (1966).

NEPAL. Topke Gola-Shewaden, 2650 m (Jun. 28, 1972); Chauke-Dor, 2600 m (Jul. 6, 1972).

**Entodon laetus** (Griff.) Jaeg.: Fl. E. Himal. 583 (1966); **2**: 254 (1971).

NEPAL. Hile-Chitre, 2350 m (Jun. 5, 1972); Dor-Chauke, 2730 m (Jun. 7, 1972).

**Entodon** cf. **luridus** (Griff.) Jaeg. in Ber. S. Gall. Nature. Ges. **1876-77**: 294 (1878).

NEPAL. Lamo Pokhari, 2620 m (Jun. 8, 1972); in a mossy forest below Lamo Pokhari, 2650 m (Jun. 9, 1972).

The above material lacks the capsule which is the most important characteristic of the plant, so I cannot make clear determination of this species. The other characteristics, the appearance of the plant, leaf shape, and the cells of the leaf blade and the alar parts are very similar to those of *E. luridus*. If the present specimens are identical with *E. luridus*, this is the first record for the Nepalese Flora. The known distribution of *E. luridus* covers Assam, China (Kweichow), Korea, and Japan.

**Entodon myurus** (Hook.) Hampe: Fl. E. Himal. 584 (1966).

NEPAL. Papung-Bir Gaon, 1650 m (Jun. 30, 1972); Bir Gaon-Dingla, 1350 m and 1610 m (Jul. 1, 1972).

**Entodon plicatus** C. Muell.: Fl. E. Himal. 584 (1966); **2**: 254 (1971).

NEPAL. Teku Nala-Dhankuta, 1230 m (Jun. 4, 1972); Dhankuta-Nigale, 1550 m (Jun. 4, 1972); Papung-Bir Gaon, 1800 m (Jun. 30, 1972); Bir Gaon-Dingla, 1300 m (Jul. 1, 1972); around Sanguri Bhanjyang, 1050 m (Jul. 10, 1972).

**Entodon prorepens** (Mitt.) Jaeg.: Fl. E. Himal. 586 (1966); **2**: 254 (1971).

NEPAL. Teku Nala-Dhankuta, 800-1800 m (Jun. 4, 1972); Dhankuta-Nigale, 1300-1600 m (Jun. 4, 1972); Hile-Chitre, 1990 m (Jun. 5, 1972); Dor-Chauke, 2850 m (Jun. 7, 1972); Chauke-Lamo Pokhari, 2620 m (Jun. 8, 1972); Shewaden-Papung, 2500 m (Jun. 29, 1972); Phulchoki, 2550 m (Jul. 15, 1972).

**Entodon rubicundus** (Mitt.) Jaeg.: Fl. E. Himal. 586 (1966); **2**: 254 (1971).

NEPAL. Near Sanguri Bhanjyang, 1250 m (Jun. 2, 1972); Hile-Chitre, 1900 m (Jun. 5, 1972); Shewaden-Papung, 2150 m (Jun. 29, 1972); Bir Gaon-Dingla, 1300 m (Jul. 1, 1972); near a waterfall below Chitre, 2250 m (Jul. 8, 1972).

**Erythrodontium julaceum** (Schwaegr.) Paris: Fl. E. Himal. 587 (1966); **2**: 255 (1971), det. Noguchi.

NEPAL. Teku Nala-Dhankuta, 980 m, on tree trunk (Jun. 4, 1972), Bir Gaon-Dingla, 1400 m, on tree trunk (Jul. 1, 1972).

**Orthothecium intricatum** (Hartm.) B.S.G., Bryol. Eur. **5**: 108 (1851), det. Iwatsuki.

NEPAL. Janga La-Thudam, 4550 m, on rock (Jun. 21, 1972).

Distr. Europe, Pyrenees, Caucasus, N. Africa, Kashmir, Himalaya, Japan, N. America, and Greenland. New to Himalaya.

**Rozea pterogonioides** (Hook.) Jaeg.: Fl. E. Himal. 588 (1966); **2**: 255 (1971), det. Noguchi.

NEPAL. Suke-Hile Chok, 3200 m, on tree trunk (Jun. 11, 1972); Ghopte-Gosa, 3750 m, on rocks (Jun. 13, 1972); in a coniferous forest above Topke Gola, 3600 m, on rocky cliff (Jun. 18, 1972); in a forest below Thudam, 3250 m, on rotten log (Jun. 25, 1972); Topke Gola-Shewaden, 3450 m, on tree trunk (Jun. 28, 1972).

**Trachyphyllum inflexum** (Harv.) Gepp: Fl. E. Himal. 588 (1966), det. Iwatsuki.

NEPAL. Near Sanguri Bhanjyang, 660 m, on tree trunk (Jun. 2, 1972); Dhara Pani-Mohamabedi Khola, 880 m, on tree trunk (Jun. 3, 1972); Mohamabedi Khola-Tamur Bridge, 350 m, on tree trunk (Jun. 3, 1972); Dingla-Doban, 800 m, on tree trunk (Jul. 2, 1972).

Distr. Madagascar, Ceylon, E. Himalaya, C. & S. India, Indo-China, Malacca, Philippines, Java, and New Caledonia.

#### PLAGIOTHECIACEAE (by Zenoske Iwatsuki)

**Isopterygiopsis Muelleriana** (Schimp.) Iwats.: Fl. E. Himal. **2**: 255 (1971).

NEPAL. Suke-Hile Chok, 3250-3350 m, on soil (Jun. 11, 1972); Hile Chok-Ghopte, 3400 m, on rock in shade (Jun. 12, 1972); Ghopte-Gosa, 3750 m, on rock (Jun. 13, 1972); above Topke Gola, 3610 m, on soil (Jun. 18, 1972); Phujeng La-Topke Gola, 4800-3600 m, in crevices of rock (Jun. 27, 1972).

Distr. Europe, E. Himalaya, China, Japan, Soviet Far East, and N. America.

**Isopterygium albescens** (Hook.) Jaeg.: Fl. E. Himal. 588 (1966).

NEPAL. Below Lamo Pokhari, 2680-2730 m, on tree trunk and rotten wood (Jun. 9, 1972).

**Isopterygium distichaceum** (Mitt.) Jaeg.: Fl. E. Himal. 588 (1966).

NEPAL. Hile-Chitre, 2250-2350 m, on rock and base of tree (Jun. 5, 1972); Basantapur-Dor, 2510 m, on rock (Jun. 6, 1972); Chitre-Basantapur, 2350 m, on soil (Jun. 6, 1972); Suke, 2900 m, on soil (Jun. 10, 1972); above Topke Gola, 3650 m (Jun. 18, 1972); Shewaden-Papung, 2250-2500 m, on soil (Jun. 29, 1972).

Distr. Ceylon, India, E. Himalaya, and N. America.

**Plagiothecium cavifolium** (Brid.) Iwats.: Fl. E. Himal. **2**: 255 (1971).

NEPAL. Gosa-Banduke Pokhari, 4050 m, on soil (Jun. 14, 1972); Shewaden-Papung, 2500 m, on rock (Jun. 29, 1972).



Distr. Europe, Caucasus, Himalaya, Korea, Japan, Soviet Far East, and N. America.

**Plagiothecium denticulatum** (Hedw.) B.S.G., Bryol. Eur. 5: 190 (1851).

NEPAL. Ghopte-Gosa, 4020 m, on soil (Jun. 13, 1972).

Distr. Almost cosmopolitan.

**Plagiothecium neckeroideum** B.S.G.: Fl. E. Himal. 589 (1966); 2: 255 (1971).

NEPAL. Chitre-Basantapur, 2350 m, on tree trunk (Jun. 6, 1972); Dor-Chauke, 2650-2850 m, on rotten stump (Jun. 7, 1972); above Topke Gola, 3610 m, on rock (Jun. 18, 1972); below Thudam, 3250-3650 m, on rock (Jun. 25, 1972); Phujeng La-Topke Gola, 4600 m, in crevices of cliff (Jun. 27, 1972); Topke Gola-Shewaden, 3150 m, on rock (Jun. 28, 1972); Thale Patil-Mangen, 3100-3400 m (Aug. 27, 1972).

Distr. Europe, India, E. Himalaya (Nepal, Sikkim), Indo-China, Indonesia, Philippines, New Guinea, Formosa, Japan, and Soviet Far East.

var. **sikkimense** Ren. et Card.: Fl. E. Himal. 2: 255 (1971).

NEPAL. Hile-Chitre, 2350 m, on rock (Jun. 5, 1972); Basantapur-Dor, 2370-2510 m, on tree trunk (Jun. 6, 1972); Saju Pokhari-pass to Topke Gola, 4200 m, on rock (Jun. 16, 1972); above Topke Gola, 3610 m, on rock (Jun. 18, 1972); Thudam-Lama Chungbu, 3650 m, on tree trunk (Jun. 23, 1972); Topke Gola-Shewaden, 3050-3300 m, on tree trunk (Jun. 28, 1972); Shewaden-Papung, 2500 m, on rock (Jun. 29, 1972).

**Plagiothecium nemorale** (Mitt.) Jaeg. in Ber. S. Gall. Naturw. Ges. 1876-1877: 451 (1878).

*P. sylvaticum* (Brid.) B.S.G. sensu Iwatsuki in Fl. E. Himal. 589 (1966).

NEPAL. Basantapur-Dor, 2300-2600 m, on shaded cliff (Jun. 6, 1972); Dor-Chauke, 2750 m, on rock (Jun. 7, 1972); Chauke-Lamo Pokhari, 2620 m, on rock (Jun. 8, 1972); Ghopte-Gosa, 3750 m, on rock (Jun. 13, 1972); Lama Chungbu-Slesa, 4250 m, on soil (Jun. 24, 1972); Topke Gola-Shewaden, 3150-3400 m, on rock (Jun. 28, 1972); Chauke-Dor, 2850 m, on bank (Jul. 6, 1972).

Distr. Europe, Africa, Himalaya, India, Indo-China, China, Formosa, Korea, Japan, and Siberia.

**Stereophyllum Tavoyense** (Hook.) Jaeg. in Ber. S. Gall. Naturw. Ges. 1877-1878: 279 (1880).

NEPAL. Dhankuta-Nigale, 1550-1800 m, on tree trunk (Jun. 4, 1972); Bir Gaon-Dingla, 1150-1350 m, on tree trunk (Jul. 1, 1972).

Distr. India, Himalaya (Nepal, Sikkim), Burma, and Thailand.

**Taxiphyllum taxirameum** (Mitt.) Fleisch.: Fl. E. Himal. 589 (1966).

NEPAL. South of Dharan, 200-240 m, on soil (Jun. 1, 1972); Mohamabedi Khola-Tamur Bridge, 270 m, on soil (Jun. 3, 1972); Topke Gola-Shewaden, 3050 m, on rock (Jun. 28, 1972); Bir Gaon-Dingla, 1050-1350 m, on rock (Jul. 1, 1972).

Distr. Ceylon, India, Himalaya, Indo-China, Indonesia, Philippines, New Guinea, China, Formosa, Korea, Japan, Soviet Far East, America, West Indies, and Samoa.

#### SEMATOPHYLLACEAE (by Tarow Seki)

**Aptychella planula** (Mitt.) Fleisch.: Fl. E. Himal. 589 (1966); 2: 255 (1971).

NEPAL. Chauke-Lamo Pokhari, 2580 m, on tree branch (Jun. 8, 1972, c.fr.).

**Brotherella curvirostris** (Schwaegr.) Fleisch. in Nov. Guinea **12**: 120 (1914).

NEPAL. Topke Gola, 3600 m, on fire woods (Jun. 17, 1972); Topke Gola-Shewaden, 3450 m, on rock (Jun. 28, 1972, c.fr.).

Distr. Himalaya.

**Brotherella nictans** (Mitt.) Broth. in Nat. Pfl. ed. 2, **11**: 425 (1925).

NEPAL. Basantapur-Dor, 2510 m, on tree trunk (Jun. 6, 1972).

Distr. E. Himalaya and S. W. China (Yunnan, Szechuan).

**Brotherella perpinnata** (Broth.) Fleisch.: Fl. E. Himal. **2**: 256 (1971).

NEPAL. Chauke-Lamo Pokhari, 2680 m, on tree trunk (Jun. 8, 1972); Gosa-Banduke Pokhari, 4050 m, on tree (Jun. 14, 1972, +*Drepanocladus uncinatus*); Topke Gola-Shewaden, 3300 m, on tree trunk (Jun. 28, 1972).

**Brotherella propinqua** (Harv.) Fleisch.: Fl. E. Himal. **2**: 256 (1971).

NEPAL. Basantapur-Dor, 2510 m, on tree trunk (Jun. 6, 1972).

**Clastobryum subplanulum** Broth. et Dix. in Ann. Bryol. **6**: 33 (1933).

NEPAL. Basantapur-Dor, 2510 m, on root of tree (Jun. 6, 1972, c.fr.); Chauke-Lamo Pokhari, 2680 m, (Jun. 8, 1972, c.fr.).

Distr. Himalaya.

**Glossadelphus glossoides** (Bosch et Lac.) Fleisch., Musci Fl. Buit. **4**: 1358 (1923).

NEPAL. Basantapur-Dor, 2350 m, on rock (Jun. 6, 1972).

Distr. Himalaya, Thailand, Java, Sumatra, and New Guinea. New to Himalaya.

**Pylaisiopsis speciosa** (Mitt.) Broth. in Nat. Pfl. **1**(3): 1232 (1909).

NEPAL. Suke-Hile Chok, 2900-3600 m (Jun. 11, 1972, c.fr.); Topke Gola, 3600 m (Jun. 17, 1972, c.fr.); Topke Gola-Shewaden, 3550 m, on branch (Jun. 28, 1972, c.fr.).

Distr. E. Himalaya (Nepal, Sikkim). New to Nepal.

**Sematophyllum subhumile** (C. Muell.) Fleisch., Musci Fl. Buit. **4**: 1264 (1923)-Seki in Journ. Sci. Hiroshima Univ., ser. B, div. 2, **12**: 42 (1968).

subsp. **subhumile**.

NEPAL. Bir Gaon-Dingla, 1300 m, on tree (Jul. 1, 1972, c.fr.).

Distr. Ceylon, S. India, E. Himalaya (Nepal), Assam, Burma, Thailand, and Java.

**Struckia argentata** (Mitt.) C. Muell.: Fl. E. Himal. 589 (1966); **2**: 255 (1971).

NEPAL. Dor-Chauke, 2730 m, on rock (Jun. 7, 1972); Ghopte-Gosa, 3850 m, on branch (Jun. 13, 1972); loc. cit., 4000 m, on rock (Jun. 13, 1972).

**Wijkia lepida** (Mitt.) Crum in Bryologist **74**: 172 (1971).

NEPAL. Shewaden-Papung, 2500 m, on rock (Jun. 29, 1972).

Distr. E. Himalaya (Nepal, Sikkim). New to Nepal.

**Wijkia penicillata** (Mitt.) Crum in Bryologist **74**: 173 (1971).

NEPAL. Basantapur-Dor, 2550 m, on tree trunk (Jun. 6, 1972, c.fr.); Dor-Chauke, 2850 m, on rotten log (Jun. 7, 1972, +*Hypnum subimponens* subsp. *ulophyllum*); in a mossy forest below Lamo Pokhari, 2730 m, on rotten trunk (Jun. 9, 1972); loc. cit., 2730 m, on rock (Jun. 9, 1972, c.fr.); loc. cit., 2680 m, on tree trunk (Jun. 9, 1972, c.fr., phylloidiocous); Shewaden-Papung, 2500 m, on tree trunk (Jun. 29, 1972, c.fr.).

Distr. E. Himalaya (Nepal, Sikkim). New to Nepal.

## HYPNACEAE (by Hisatsugu Ando)

**Bryosedgwickia aurea** (Schwaegr.) Fleisch. in *Hedwigia* **63**: 211 (1922).

*Pylaisia aurea* (Schwaegr.) Broth.: Fl. E. Himal. 591 (1966).

NEPAL. Phulchoki, summit area, 2700 m, on tree trunk (Jul. 15, 1972, c.fr.).

Distr. Himalaya (Nepal, Sikkim, Bhutan) and Khasia.

**Gollania clarescens** (Mitt.) Broth.: Fl. E. Himal. **2**: 256 (1971).

NEPAL. Ghopte-Gosa, 3900-4020 m, on soil and humus (Jun. 13, 1972).

**Hypnum macrogynum** Besch. in Ann. Sci. Nat. Bot. 7 sér. **15**: 91 (1892).

*H. flaccens* Besch.: Fl. E. Himal. **2**: 256 (1971).

NEPAL. Chauke-Lamo Pokhari, 2680-2850 m, on humus (Jun. 8, 1972); Lamo Pokhari-Gupha Pokhari, 2800-2850 m, on soil and humus (Jun. 10, 1972); Hile Chok-Ghopte, 3400 m, on humus (Jun. 12, 1972); Ghopte-Gosa, 3800 m, on humus (Jun. 13, 1972); Gosa-Banduke Pokhari, 4210 m, on humus (Jun. 14, 1972); Banduke Pokhari-Saju Pokhari, 4010 m, on soil (Jun. 15, 1972); in a coniferous forest above Topke Gola, 3600-3610 m, on tree trunk and rotten log (Jun. 18, 1972); Lama Chungbu-Slesa, 4180 m, on humus (Jun. 24, 1972); Thudam-Kipuphu, 4000 m, on soil (Jun. 26, 1972); Gopte-Thale Patil, 3500-3200 m (Aug. 26, 1972).

Distr. E. Himalaya, Burma, S. China, and Formosa.

**Hypnum setschwanicum** (Broth.) Ando in *Hikobia* **6**: 211 (1973).

NEPAL. Dor-Chauke, 2850 m, on rock (Jun. 7, 1972); Ghopte-Gosa, 3700 m, on rock (Jun. 13, 1972).

Distr. E. Himalaya (Nepal, Bhutan) and S. China (Yunnan, Szechuan).

**Hypnum sikkimense** Ando: Fl. E. Himal. **2**: 256 (1971).

NEPAL. In a forest below Thudam, 3250 m, on tree trunk (Jun. 25, 1972, c.fr.); Topke Gola-Shewaden, 3000 m, on branch (Jun. 28, 1972, c.fr.).

Distr. E. Himalaya (Nepal, Sikkim, Bhutan). New to Nepal.

**Hypnum subimponens** Lesq.

subsp. **ulophyllum** (C. Müll.) Ando: Fl. E. Himal. **2**: 257 (1971).

NEPAL. Dor-Chauke, 2850 m, on rotten log (Jun. 7, 1972, c.fr.); in a coniferous forest above Topke Gola, 3600 m, on soil (Jun. 18, 1972, c.fr.); Topke Gola-Shewaden, 3400 m, on rock (Jun. 28, 1972, c.fr., + *Hypnum macrogynum*); Shewaden-Papung, 2500 m, on rock (Jun. 29, 1972, c.fr.).

Distr. E. Himalaya (Nepal, Bhutan), Assam, China, Formosa, Korea, and Japan.

**Leiodontium gracile** Broth. in *Symb. Sin.* **4**: 127 (1929).

NEPAL. In a forest below Thudam, 3250 m, on rock (Jun. 25, 1972); Topke Gola-Shewaden, 3200 m, on tree trunk (Jun. 28, 1972, c.fr.).

Distr. Nepal and S. China (N. W. Yunnan). New to Himalaya.

The genus *Leiodontium* Broth. (1929), described from Yunnan with two species, is possibly identical with the genus *Stenotheciopsis* Fleisch. (1923) which was established based on *S. serrula* (Mitt.) Fleisch. (Sikkim & Kumaon; sterile). A decisive conclusion, however, is reserved until sporophytes of *S. serrula* are found. *Leiodontium gracile* is distinguished from *S. serrula* by the more slender-acuminate leaves with longer laminal cells.

**Leptohymenium tenue** (Hook.) Schwaegr.: Fl. E. Himal. 590 (1966); **2**:

257 (1971), det. Noguchi.

NEPAL. Topke Gola-Shewaden, 3400 m, on rocks (Jun. 28, 1972); Shewaden-Papung, 2200 m, on rotten logs (Jun. 29, 1972).

Distr. India, Himalaya, Khasia, Burma, Thailand, S. W. China (Yunnan), and Philippines.

**Macrothamnium macrocarpum** (Reinw. et Hornsch.) Fleisch.: Fl. E. Himal. 590 (1966); **2**: 257 (1971), det. Noguchi.

NEPAL. Near Sanguri Bhanjyang, 1200 m, on rocks (Jun. 2, 1972); Dor-Chauke, 2630 m, on rocks (Jun. 7, 1972); Lamo Pokhari-Gupha Pokhari, 2850 m, on rocks (Jun. 10, 1972); Suke-Hile Chok, 3200 m, on tree trunks (Jun. 11, 1972); Hile Chok-Ghopte, 3350 m, on rocks (Jun. 12, 1972); Topke Gola-Shewaden, 3350 m, on rocks (Jun. 28, 1972); Shewaden-Papung, 2500 m, on rocks (Jun. 29, 1972); Papung-Bir Gaon, 1800 m, on rocks (Jun. 30, 1972); in a forest near Chitre, 3200 m, on tree trunks (Jul. 7, 1972).

**Macrothamnium psilurum** (Mitt.) Nog. in Kumamoto Journ. Sci. Biol. **11**: 10 (1972), det. Noguchi.

*Leptocadiella psilura* (Mitt.) Fleisch.: Fl. E. Himal. **2**: 257 (1971).

NEPAL. Gupha Pokhari-Chauke, 2600 m (Jul. 4, 1972).

**Macrothamnium submacrocarpum** (Ren. et Card.) Fleisch.: Fl. E. Himal. 590 (1966); **2**: 257 (1971), det. Noguchi.

NEPAL. Chitre-Basantapur, 2350 m, on rotten logs (Jun. 6, 1972); Basantapur-Dor, 2350 m, on rocks (Jun. 6, 1972); in a forest below Thudam, 3250 m, on tree trunks and rocks (Jun. 25, 1972); Topke Gola-Shewaden, 3300 m, on tree trunks (Jun. 28, 1972); Shewaden-Papung, 2250 m, on rocks (Jun. 29, 1972).

**Pleurozium Schreberi** (Brid.) Mitt. in Journ. Linn. Soc. Bot. **12**: 437 (1869), det. Noguchi.

*Calliargonella Schreberi* (Brid.) Grout: Fl. E. Himal. 590 (1966); **2**: 256 (1971).

NEPAL. Suke-Hile Chok, 3550 m, on humus (Jun. 11, 1972); Gosa-Banduke Pokhari, 4050 m, on humus (Jun. 14, 1972); Janga La-Thudam, 4400 m, on humus (Jun. 21, 1972); Lama Chungbu-Slesa, 4180 m, on humus (Jun. 24, 1972); in a forest below Thudam, 3230 m, on rocks (Jun. 25, 1972); Thudam-Kipuphu, 3850 m, on soil (Jun. 26, 1972).

**Ptilium crista-castrensis** (Hedw.) De Not., Cronac. Briol. Ital. **2**: 17 (1867).

*Hypnum crista-castrensis* Hedw.: Fl. E. Himal. **2**: 256 (1971).

NEPAL. Gosa-Banduke Pokhari, 4050 m, on humus (Jun. 14, 1972); in a coniferous forest above Topke Gola, 3600 m, on soil (Jun. 18, 1972).

**Rhytidium rugosum** (Hedw.) Kindb.: Fl. E. Himal. **2**: 258 (1971), det. Noguchi.

NEPAL. Janga La-Thudam, 4400 m, on soil (Jun. 21, 1972, + *Abietinella abietina*); Lama Chungbu-Slesa, 4200 m, on humus (Jun. 24, 1972); Phujeng La-Topke Gola, 3650 m, on soil (Jun. 27, 1972).

#### HYLOCOMIACEAE (by Akira Noguchi)

**Hylocomium himalayanum** (Mitt.) Jaeg.: Fl. E. Himal. 591 (1966).

NEPAL. Topke Gola-Shewaden, 3050 m, on soil covering rocks (Jun. 28, 1972).

**Hylocomium splendens** (Hedw.) B.S.G.: Fl. E. Himal. **2**: 258 (1971), det.

**Iwatsuki.**

NEPAL. Suke-Hile Chok, 3550 m, on humus (Jun. 11, 1972); in a coniferous forest side of a pond near Topke Gola, 3600 m, on humus (Jun. 19, 1972).