

NEW OR UNRECORDED MOSSES OF NORTH AMERICA. II.¹

J. CARDOT and I. THÉRIOT.

(WITH PLATES XVI-XXV)

Phascum hyalinotrichum Card. & Thér., sp. nova.—Plantulae minimae, pusillae, gemmaceae, solitariae vel gregariae, pallide virides. Folia imbricata, inferiora brevia, superne majora, media superioraque ovata, 0.8–1^{mm} longa et 0.6^{mm} lata, concava, acuminata, integra vel subintegra, marginibus undique planis vel inferne leniter reflexis, costa angusta, 24 μ in medio folii crana, inferne attenuata, in cuspidem piliformem, flexuosam, hyalinam, tertiam vel dimidiam partem folii aequantem excurrente, rete laxo, omnino-laevis, parum chlorophylloso, pallide viridi, superne hyalino, cellulis mediis irregularibus, quadratis, breviter rectangulis vel subhexagonis, long. 18–30 μ , lat. 12–18 μ , parietibus crassiusculis, inferioribus majoribus, parietibus tenerrimis, superioribus longioribus, parietibus incrassatis. Capsula in pedicello perbrevis, 0.2^{mm} longo, geniculato, immersa, globosa, apiculata, diam. 0.7^{mm}. Calyptra cucullata, dimidiam partem capsulae obtegens. Sporae maturae ignotae. *Plate XVI.*

California: Soldier's Home, Los Angeles county (Dr. Hasse, 1902; herb. C. F. Baker).

A quite peculiar species, very distinct by its habit, which recalls that of an Acaulon, its puliform excurrent nerve, and its loose smooth areolation, a little chlorophyllose below and hyaline above.

Pleuridium Bakeri Card. & Thér., sp. nova.—Humile, laxiuscule cespitosum, viridi-lutescens. Caulis 2–4^{mm} altus, erectus, simplex. Folia erecta, inferiora minuta, remota, brevia, superiora longiora, lanceolato-subulata, acuta, integra, rarius apice subdenticulata, marginibus inflexis subcanaliculata, 1.3^{mm} longa, 0.35^{mm} lata; perichaetia duplo longiora, sensim subulata; costa lata (80–100 μ), percurrens, in foliis perichaetialibus paululum angustior; cellulae inferiores pellucidae, subrectangulae, 24 μ longae,

¹ See for No. I, BOT. GAZ. 30: 12. 1900.

12 μ latae, mediae superioresque angustiores, 29–30 μ longae, 5 μ latae, opacae, parietibus incrassatis. Capsula in pedicello erecto, brevi, 0.4^{mm} longo, immersa, ovata, leniter gibbosa, obtusissime apiculata, laevis, matura fusco-lutescens, 1^{mm} longa, 0.6^{mm} crassa. Calyptra cucullata, tertiam dimidiamve partem capsulae obtegens. Sporae elliptico-subglobosae, minutissime papillosae, 24–30 μ crassae. Dioicum videtur (floribus masculis ignotis). *Plate XVI.*

California: on ground in old pastures, foothills near Stanford University (C. F. Baker, 1902).

Var. **elongatum** Card. & Thér., var. nova.—A forma typica differt caulibus altioribus foliisque superioribus longioribus et magis flexuosis.

California: on wet clay soil, foothills near Palo Alto (C. F. Baker, 1902).

Distinguished from *P. subulatum* Br. Eur. by the shorter and less finely subulate leaves, with a broader costa. The latter character also separates our species from *P. Bolanderi* C. Müll., which, besides, has the leaves distinctly denticulate on the margins from the middle upward. *P. Ravenelii* Aust., of which we have seen no authentic specimen, according to the description has carinate leaves, excurrent costa, and synoicous inflorescence. If the inflorescence of *P. Bakeri* is, as we think, really dioicous, this character would distinguish it from all the other North American and European species of *Pleuridium*.

DICRANELLA CURVATA Sch. var. **missourica** Card. & Thér., var. nova.—A forma typica differt capsula minus distincte striata et areolatione foliorum e cellulis latioribus brevioribusque composita.

Missouri: Seligman, on ground (B. F. Bush, 1898).

Dicranum alatum (Barnes) Card. & Thér., sp. nova. (*D. Bonjeani* de Not. var. *alatum* Barnes, Bot. Centralbl. 44: 386. 1890).—Atroviride, dense cespitosum, intus tomentosum, 4–6^{cm} altum. Folia falcato-secunda, 3–5^{mm} longa, 1^{mm} lata, lanceolata, acuta, superne carinata, haud vel vix undulata, in tertia parte superiore acute dentata, dentibus in foliis superioribus longioribus et magis numerosis, costa basi 120 μ , medio circa 100 μ lata, in dimidio superiore dorso duabus alis altis dentatis ornata, cellulis inferioribus rectangulis, hyalinis, haud porosis, mediis 40–50 μ longis, 12–15 μ latis, valde porosis, superioribus brevioribus latioribusque, 30–36 μ longis, 18 μ latis, valde chlorophyllosis, alaribus

breviter rectangulis, inflatis, lutescentibus. Caetera ignota. *Plate XVII.*

Illinois: Chicago (Dr. J. Röhl, 1888). Wisconsin: Madison (Cheney and True). W. Minnesota: Cedar Lake, near Montevideo, Chippewa county (J. M. Holzinger, 1901).

The nerve bearing on the back two high, serrate lamellae, and the shorter, thinner-walled cells of the areolation, seem characters of sufficient value to separate this moss from *D. Bonjeani*.

Fissidens Bushii (Card. & Thér.) Card. & Thér. sp. nova. (*F. subbasilaris* var. *Bushii* Card. & Thér. in BOT. GAZETTE 30: 16. 1900).—Monoicus, laxe cespitosus, pallide vel lutescenti-viridis. Caulis brevis, 5–8^{mm} longus, divisus. Folia oblongo-lanceolata, obtusa, abrupte apiculata, toto ambitu minute denticulata, 1.2–1.4^{mm} longa, 0.45^{mm} lata, lamina dorsali basi rotundata, haud undulata, costa percurrente, basi 40 μ crassa, rete opaco e cellulis minutis, angulosis subrotundatisve, 6–7 μ latis, parietibus incrassatis, marginalibus haud vel parum translucen-tibus. Flores feminei in ramulis brevibus basalibus. Caetera ignota. *Plate XVII.*

Missouri: Eagle Rock, on gravelly ground (B. F. Bush, 1897). Texas (Elsa Baumann; herb. Dr. Zickendrath).

At first we considered this moss as a variety of *F. subbasilaris* Hedw., but further observations led us to a different conclusion, and now we think it preferable, on account of the inflorescence and the costa reaching the apex, to place it near *F. taxifolius* Hedw., of which it may be a subspecies, characterized by the nearly twice smaller size, the obtuse abruptly apiculate leaves with the dorsal wing not undulate at base and with smaller cells. From *F. subbasilaris* it is easily distinguished by the inflorescence and the costa reaching the apex.

FISSIDENS PUSILLUS Wils. var. **brevifolius** Card. & Thér., var. nova.—A forma typica differt foliis innovationum sterilium multo brevioribus, magis abrupte et brevius acuminatis.

California: Soldier's Home, Los Angeles county (Dr. Hasse, 1902; herb. C. F. Baker).

Pottia nevadensis Card & Thér., sp. nova.—Monoica? viridis, densiuscule cespitosa. Caulis erectus, brevis, 1–2^{mm} altus. Folia erecta, ovata, concava, media 1^{mm} longa, 0.6^{mm} lata, inferiora minora, omnia laevia, marginibus integris, saltem uno latere parce

revolutis, costa angusta, in cuspidem subpiliformem abrupte excurrente, cellulis mediis hexagonis rhomboidalibusve, parce chlorophyllosis, circa 18μ longis, 15μ latis, superioribus paululum minoribus, basilaribus elongato-rectangulis, 40μ longis, 18μ latis, omnibus perfecte laevibus. Folia perichaetialia multo majora et latiora, valde concava, usque 2^{mm} longa. Capsula in pedicello pallido, flexuoso, $10\text{--}15^{\text{mm}}$ longo, erecta, oblonga, basi attenuata, ore truncata, pallida, gymnostoma, $1.5\text{--}2^{\text{mm}}$ longa, 0.75^{mm} crassa, operculo depresso, longe tenuirostro, 1.2^{mm} longo, columellae parum adhaerente. Sporae dense papillosae, $24\text{--}30\mu$ crassae. *Plate XVIII.*

Nevada: Kings Cañon, near Carson, on ground about willow thickets (C. F. Baker, 1902).

This species seems very distinct from any other European or North American Pottia.

DIDYMODON TOPHACEUS Jur. var. **decurrens** Card & Thér., var. nova.—Var. *elatae* similis. Folia remota, madida recurva, longe decurrentia, dorso valde papillosa, costa scabra.

Texas: Shovel Mt., Burnet county (Rev. Franciscus Ebeling; herb. Dr. E. Zickendrath).

Desmatodon Bushii Card & Thér., sp. nova.—Laxiuscule cespitosus, olivaceo-viridis. Caulis erectus, $5\text{--}15^{\text{mm}}$ altus, simplex vel divisus. Folia sicca crispatula, madida erecto-patentia, $1\text{--}1.5^{\text{mm}}$ longa, 0.4^{mm} lata, oblongo-lanceolata, plerumque obtusa, costa breviter excurrente mucronata, marginibus integris longe revolutis, cellulis inferioribus rectangulis, hyalinis vel paululum lutescentibus, $35\text{--}40\mu$ longis, 9μ latis, caeteris quadrato-rotundatis, valde papillosis, opacis, diam. $7\text{--}8\mu$, costa basi 60μ crassa. Folia perichaetialia majora, in tertia vel dimidia parte inferiore hyalina, magis acuminata, marginibus tantum superne revolutis. Capsula in pedicello pallide rubello, circa 10^{mm} longo, erecta, subcylindrica, cum operculo 2^{mm} longa, 0.44^{mm} crassa, operculo conico, breviusculo, 0.5^{mm} longo. Calyptra dimidiam partem capsulae obtegens. Peristomium 0.35^{mm} altum, purpureum, membrana basilari brevi, dentibus leniter contortis, usque ad basin in 2 crura filiformia, papillosa, saepissime inferne 2 vel 3 trabeculis coalita divisis. Sporae laeves, variables, globulosae vel

ellipticae, diam. 20–30 μ . Dioicum videtur (floribus masculis ignotis). *Plate XVII.*

Missouri: Courtney, on wet rocks (B. F. Bush, 1898).

Much resembling *Barbula unguiculata* Hedw. by the habit and the shape and areolation of the leaves, but readily distinguished from it by the peculiar structure of the peristome, which is hardly twisted, and by the spores twice larger. C. Müller described a *B. cancellata*, the peristome of which according to the description must have a similar structure to that of our *D. Bushii*, but the teeth are smooth (likely twisted), and the lid is as long as the capsule.

DESMATODON SYSTILIOIDES Ren. & Card., BOT. GAZETTE 30:16. 1900 is not a *Desmatodon* but a new *Pottia* of the group *Heimii*.

Barbula macrotricha Card & Thér., sp. nova.—Pulvini compacti, superne grisei. Caulis brevissimus, 1–2 mm altus. Folia madida erecta, gemmatim conferta, sicca contortula, 1–1.5 mm longa, 0.6–0.8 mm lata, ovata vel breviter subspathulata, apice late obtuso, praecipue in foliis inferioribus saepe emarginato, aetate eroso, marginibus integerrimis, basi planis, deinde usque apicem versus revolutis, costa angusta, 4–8 μ crassa, in pilo laevi, hyalino, in foliis inferioribus brevi, in superioribus limbo aequilongo, imo longiore excurrente, cellulis inferioribus quadratis vel breviter rectangulis, 18 μ latis, hyalinis vel vix chlorophyllosis, sublaevibus, caeteris minoribus, circa 12 μ latis, quadratis subrotundatisve, valde chlorophyllosis et grosse papillosis inde obscuris, indistinctis. Capsula in pedicello basi rubello, superne pallidiore, brevi, 6–8 mm longo, erecta, subcylindrica, curvatula, unacum operculo conico-elongato 2.5 mm longa. Ob capsulas immaturas caetera ignota. Dioica videtur (floribus masculis in planta fructifera non visis). *Plate XVIII.*

California: Soldier's Home, Los Angeles county (Dr. Hasse, 1902; herb. C. F. Baker).

In general appearance resembling the smallest forms of *B. muralis* Timm., from which it differs by the smaller size, the short pedicel, the much shorter leaves obtuse or emarginate and finally eroded at the apex, the hair of the upper leaves as long as or even longer than the lamina, etc.

Barbula Bakeri Card & Thér., sp. nova.—Dioica, laxiuscule cespitosa, olivaceo- vel lurido-viridis, 3–8 mm alta. Folia sicca erecta, contortula vel crispatula, madida patulo-squarrosa, 1.4–1.5 mm longa, 0.6–0.7 mm lata, e basi ovata longiuscule acuminata,

carinata, marginibus integris e basi usque apicem versus valde revolutis, costa percurrente, basi 60μ crassa, rete laevi vel vix papilloso, cellulis subuniformibus, quadrato-rotundatis, 6μ latis, nonnullis ad basin folii juxta costam breviter rectangulis, 9μ longis. Folia perichaetialia caulinis subsimilia, tamen paululum, longius acuminata. Capsula in pedicello rubello, circa 10^{mm} longo, erecta, oblonga subcylindricave, unacum operculo conico-rostrato $2.5\text{--}3^{\text{mm}}$ longa. Calyptra dimidiam partem capsulae obtegens. Annulus distinctus, persistens. Peristomium purpureum, 0.6^{mm} altum, dentibus semicontortis. Sporae laeves, pallidae, diam. $8\text{--}9\mu$. *Plate XVIII.*

California: Stanford University, on stones bordering flower beds (C. F. Baker, 1901); foothills near Palo Alto, on ground (C. F. Baker, 1902); Alma, Santa Clara county, on boulder (C. F. Baker, 1902); Soldier's Home, Los Angeles county (Dr. Hasse, 1902; herb. C. F. Baker).

A species belonging to the perplexing group of *B. fallax* Hedw., differing from this species by its smooth or very slightly papillose leaves with margins more broadly revolute, and by its shorter, slightly twisted peristome. From *B. virescens* Lesq. it is distinguishable by its shorter leaves, broader at base, its almost uniform areolation, and its lower cells small, quadrate, chlorophyllose, with thinner walls.

BARBULA HUMILIS Hedw., Sp. Musc. 116, tab. xxv, figs. 1-4.

Missouri: Swan, on rocks (B. F. Bush, 1899).

A reduced form of *B. caespitosa* Schw. (See: Cardot, Revision des types d'Hedwig et de Schwaegrichen, in Bull. Herb. Boiss. 7: 304. 1899).

Grimmia cognata Card. & Thér., sp. nova.—Verisimiliter dioica, densiuscules cespitosa, superne lutescenti-viridis, inferne fusca. Caulis pro more basi longe denudatus, ascendens arcuatusve, parce ramosus, $2\text{--}5^{\text{cm}}$ longus. Folia sicca erecto-flexuosa, madida erecto-patentia, $2.5\text{--}3.5^{\text{mm}}$ longa, 0.7^{mm} lata, lanceolata, sensim et longe acuminata, carinata, pilo hyalino integro praedita, marginibus uno latere parce revolutis, rete opaco, cellulis inferioribus linearibus, $30\text{--}40\mu$ longis, $6\text{--}8\mu$ latis, parietibus valde incrassatis et sinuosis, caeteris quadrato-rotundatis vel breviter rectangulis, in dimidio superiore bistratosi. Caetera ignota. *Plate XIX.*

Colorado: along the Cogwheel Railway to Pike's Peak, alt. 2100-3000^m (J. M. Holzinger, 1896).

Closely allied to *G. trichophylla* Grev., of which it may be considered as a subspecies; differing from it in its more robust size, recalling that of *G. elatior* Br. Eur., its stems naked below, and the basal areolation with much thicker and more sinuate walls.

GRIMMIA HENDERSONI Ren. & Card., Rev. Bryol. 19: 86. 1892.
—A *G. decipienti* Lindb. proxima differt caulibus brevioribus, 10–15^{mm} altis, foliis minoribus, 2.5^{mm} longis, 0.8^{mm} latis, costa angustiore, 65 μ basi crassa, cellulis mediis minoribus, 6–8 μ latis, inferioribus laxioribus, 24–35 μ longis, 10–14 μ latis, pedicello brevior, 4–5^{mm} longo, capsula angustiore, subcylindrica, 1.6^{mm} longa, 0.7^{mm} crassa, minus profunde sulcata, operculo longius rostrato, 1^{mm} longo, peristomii dentibus minus profunde fissis, 0.36^{mm} altis, denique sporis laevibus, multo minoribus, 9 μ crassis.
Plate XX.

Oregon: sunny dry rocks in rill bed, Hood River (L. F. Henderson, 1889).

BARTRAMIA ITHYPHYLLA Brid. var. **fragilifolia** Card. & Thér., var. nova.—A forma typica differt foliis rigidis, fragilibus, plerumque effractis.

Colorado: along the Cogwheel Railway to Pike's Peak, 2100–3000^m alt. (J. M. Holzinger, 1896).

By its brittle and usually broken leaves, this form much resembles *B. breviseta* Lindb.; but in the latter the leaf base is hardly glossy and less abruptly contracted to the subula.

Webera chlorocarpa Card. & Thér., sp. nova.—Densiuscule cespitosa, basi terra obruta, inferne fusco-viridis, superne lutescens. Caulis 1–2^{cm} altus, erectus, simplex divisusve. Folia erecto-appressa, 2^{mm} longa, 1^{mm} lata, ovato-lanceolata, acute acuminata, basi paulo decurrente, marginibus planis integris, costa inferne 80 μ crassa breviter excurrente, cellulis basilaribus quadratis vel breviter rectangulis, subinflatis, 40–60 μ longis, 25–40 μ latis, mediis hexagono-rhomboidalibus, 40 μ longis, 18–20 μ latis, marginalibus e tertia parte inferiore angustis, linearibus, 4–5-seriatis quemdam limbum lutescentem subefformantibus. Capsula in pedicello rubello, superne pallido, plus minus flexuoso, 2–2.5^{cm} longo, nutans vel pendula, ovato-pyriformis, collo sporangio aequilongo attenuata, pallide flavescens, aetate plicata, sub ore haud constricta, parietibus mollibus, sto-

matibus numerosis, emersis, 2–2.5^{mm} longa, 0.75^{mm} crassa, operculo convexo, obtuse apiculato. Annulus latus. Exostomii dentes 0.44^{mm} alti, 20–25 lamellis praediti; endostomii membrana praealta, ultra medium dentium producta, processus in carina late hiantes, cilia solitaria vel bina, plus minus elongata, ut processus subtiliter granulosa. Sporae 18–20 μ crassae. Dioica videtur (floribus masculis in planta fructifera non visis).

Plate XX.

Nevada: Marlette Lake, Washoe county, on stream bank (C. F. Baker, 1902).

Resembles in habit *W. gracilis* De Not., but much stronger, with a very different areolation of broad and short cells. The leaf areolation recalls that of the genus *Mniobryum* Limpr., but the stomata of the capsule are superficial and the annulus is quite distinct.

Webera Debat Card. & Thér., sp. nova — Laxe cespitosa, lutescenti-viridis, habitu philonotideo. Caulis 1.5–2.5^{cm} altus, inferne dense radiculosus, inde tomentosus, innovationibus gracilibus erectis. Folia inferiora sat remota, erecto-patentia, superiora magis conferta, appressa, circa 1.3^{mm} longa, 0.33^{mm} lata, lanceolata, acuta, basi haud decurrentia, marginibus planis toto fere ambitu denticulatis, costa basi 40 μ crassa, sub summo apice evanida, cellulis mediis linearibus, 140–170 μ longis, 28–30 μ latis, inferioribus latioribus brevioribusque, rectangulis vel subhexagonis, marginalibus longioribus, anguste linearibus. Caetera ignota. *Plate XX.*

N. America: Alexander county (Herb. L. Debat, without name of collector.)

This species seems closely connected with *W. annotina* Bruch, from which it is distinguished by the larger size, the habit resembling that of a small *Philonotis*, the tomentose stems and the leaves plane on the margins.

BRYUM PENDULUM Sch. var. **nevadense** Card. & Thér., var. nova.—A forma typica differt capsula angustiore, illae varietatis *angustatum* Ren. simili sed majore, operculo convexo-apiculato, haud conico, denique foliis costaque basi viridibus, nec rubentibus.

Nevada: King's Cañon, near Carson, along stream (C. F. Baker, 1902).

Bryum polycladum Card. & Thér., sp. nova.—Synoicum dense lateque cespitosum, intus fuscum, superne laete viride. Caulis

brevis, 3–5^{mm} altus, ramis gracilibus, erectis, numerosis, sub perichaetio nascentibus. Folia erecto-appressa, conferta, inferiora breviora, 1^{mm} longa, 0.5^{mm} lata, media superioraque paulo majora, 1.5^{mm} longa, 0.5–0.6^{mm} lata, basi haud decurrentia, ovata vel ovato-oblonga, breviter acuminata, marginibus e basi usque apicem versus anguste revolutis, superne denticulatis, costa valida, rubente, basi 60–65 μ crassa, in foliis mediis et superioribus brevissime excurrente, in inferioribus apicem vix excedente, cellulis mediis et superioribus breviter subhexagonis, 30–35 μ longis, 12 μ latis, parietibus incrassatis, marginalibus linearibus, 2–3-seriatis, inferioribus majoribus, laxioribus, rectangulis, 35–50 μ longis, 12–18 μ latis. Capsula in pedicello rubello flexuoso, elongato, 4–6^{cm} alto, nutans vel pendula, oblonga, 4–4.5^{mm} longa, 1–1.2^{mm} crassa, collo madore in pedicello abrupte contracto, operculo convexo-apiculato. Annulus latus. Exostomii dentes angusti, pallidi, inferne rubelli, 18–22 lamellis instructi, 0.35–0.4^{mm} alti, basi 50 μ lati. Endostomium exostomio adhaerens, membrana ad $\frac{1}{3}$ dentium producta, processibus linearibus, in carina fissis, ciliis brevissimis obsoletisve. Sporae minutae, pallidae, diam. 12 μ . *Plate XXI.*

Nevada: Spooner, Douglas county, in large mats on moist banks (C. F. Baker, 1902).

This moss can be placed near *B. longisetum* Bland., but it is easily distinguished from it by the numerous sterile branches arising from below the perichaetium, the smaller leaves with a shorter acumen, the peristomial teeth, which are narrower and paler, and have more numerous lamellae, and finally the much smaller spores.

Bryum anceps Card. & Thér., sp. nova.—Dense cespitosum, lutescenti-viride. Caulis simplex vel parce ramosus, 5–10^{mm} altus, interrupte foliosus. Folia ad apicem innovationum in comam congesta, circa 1.5^{mm} longa, 0.8^{mm} lata, concava, e basi paulo decurrente late ovata, brevissime acuminata, inferiora mediaque obtusa, superiora subobtusa vel subacuta, apice integro subdenticulato, marginibus saltem uno latere in dimidio superiore revolutis, costa valida, basi dilatata, 100 μ crassa, sensim attenuata et sub apice evanida, rete perlaxo, cellulis inferioribus quadratis vel rectangulis, caeteris hexagonis, circiter 50 μ longis,

20 μ latis, omnibus parietibus mollibus, angustis. Caetera ignota.

Plate XIX.

N. W. Montana: in the vicinity of Lake MacDonald, Flathead county, 1000-2100^m alt. (J. M. Holzinger and J. B. Blake, 1898).

The relationship of this moss is rather doubtful; it seems, however, to have some affinity with *B. capitellatum* C. Müll. & Kindb., which it resembles in habit and form of the leaves, but it has more slender stems, the leaves somewhat decurrent, revolute in the lower part at least on one side, a looser areolation formed of much wider and softer cells with thinner walls, and a much broader nerve (100 μ wide at base, instead of 60), ending at a little distance below the apex.

BRYUM SANGUILENTUM Ren. & Card. Rev. Bryol. 20: 31. 1893; Bull. Herb. Boissier 4: 17. 1896. (*B. occidentale* var. Sulliv. & Lesq. Musci Bor.-Amer. exsicc., ed. 2, nos. 283 and 284).—Dioicum, dense cespitosum, superne viride, inferne fuscum. Caulis 10-15^{mm} altus, radiculosus, innovationibus gracilibus. Folia conferta, madida erecto-imbricata, concava, sicca plus minus flexuosa, haud vel vix spiraliter torta, circa 3^{mm} longa et 1^{mm} lata, subspathulato-oblonga, marginibus integris vel apice minute denticulatis, e-basi longe revolutis, superne planis, costa basi 90 μ crassa, sensim angustata, longiuscule et tenuiter excurrente, rete laxo, cellulis basilaribus rectangulis, 60-120 μ longis, 24-30 μ latis, mediis hexagonis rhomboidalibusve, 40-50 μ longis, 15 μ latis, superioribus brevioribus, marginalibus 1-2-seriatis, angustioribus, limbum parum distinctum saepe subnullum efformantibus. Capsula in pedicello pallide rubello, flexuoso, 1.5-3^{cm} longo, nutans pendulave, anguste subcylindrica, basi attenuata, arcuatula, 5^{mm} longa, 0.9^{mm} crassa, matura in dimidio superiore plerumque sanguinea, basin versus pallidiore, operculo nitido, convexo. Annulus latus, triplex. Endostomii membrana elata, usque ad $\frac{2}{3}$ dentium producta, ciliis appendiculatis. Sporae laeves, diam. 12-15 μ . *Plate XXIII.*

California: "in truncis emortuis et deustis Californiae (Bigelow et Bolander comm.)." Sulliv. et Lesq. Musci Bor.-Amer. Exsicc. ed. 2, no. 284, as *B. occidentale* var.; Mill Valley, Marin county, on old stumps of *Sequoia sempervirens* (Marshall A. Howe, 1892 and 1894; Ren. & Card. Musci Amer. Sept. Exsicc. no 223); Sonoma county (Miss Martha R. Mann, 1886); foothills near Palo Alto, on old logs (C. F. Baker, 1902). We have a specimen from Sonoma county labeled "*Bryum arenarium* Hpe.," sent by the Königl. Bot. Museum in Berlin.

Differs from the small forms of *B. capillare* L. by its capsule generally narrower, light red in the upper part when ripe, and by the less distinct border of its leaves. *B. torquescens* Br. Eur. is a more robust plant, with the leaves generally strongly twisted when dry, distinctly bordered, and a synoicous inflorescence.

Bryum brevicuspis Card. & Thér., sp. nova. — Synoicum, dense cespitosum lurido-viride. Caulis 1–2^{cm} altus, radiculosus, sub perichaetio innovans. Folia madida erecto-patentia, sicca spiritaliter contorta, circiter 1.5^{mm} longa et 0.65^{mm} lata, ovato oblonga, breviter acuminata, marginibus e basi usque apicem versus revolutis, superne denticulatis, costa inferne rubella, 72–82 μ crassa, percurrente vel saepius brevissime excurrente, cellulis mediis hexagonis vel rhomboidalibus, 30–35 μ longis, 12 μ latis, valde chlorophyllosis, parietibus angustis, superioribus longioribus, inferioribus majoribus, laxioribus, breviter rectangulis, hyalinis, marginalibus angustis, 2–3-seriatis, limbum sat distinctum efformantibus. Capsula in pedicello flexuoso, circa 1.5^{cm} longo, pendula, brevis, matura et sicca sub ore paulo constricta, 1.6^{mm} longa, 0.9^{mm} crassa, operculo convexo-apiculato. Peristomium perfectum, ciliis appendiculatis. Sporae laeves, diam. 13–15 μ .
Plate XXII.

Missouri: Eagle Rock, on tree (B. F. Bush, 1898).

Easily distinguished from *B. capillare* L. by its synoicous flowers, very briefly excurrent costa and shorter capsule. Differs from *B. provinciale* Philib. by its smaller leaves, more narrowly revolute, with a shorter point, not so much denticulate in the upper part, and also by its shorter capsule. It seems more closely connected with *B. oreganum* Sulliv.; but from Sullivant's description and drawings (Exped. Wilkes, Musci, 10, *pl.* 7, B) the latter has shorter stems, more serrate leaves, not twisted when dry, and a longer capsule.

Bryum distantifolium Card. & Thér., sp. nova. — Cespites molli, luridi, circa 5^{cm} alti. Caulis erectus, parce radiculosus, simplex vel superne 3–5 innovationes graciles emittens. Folia dimorpha, omnia integra, anguste sed distincte decurrentia, marginibus planis vel basi tantum subrevolutis: inferiora remota, parva, breviter acuminata, saepe obtusa subobtusave, 0.9^{mm} longa, 0.5^{mm} lata, limbo nullo vel indistincto, costa haud excurrente; media superioraque minus remota, majora, 2–2.4^{mm} longa et 0.9^{mm} lata, lanceolata, longe acuminata, costa basi 70 μ crassa in cuspidem

rubentem breviter excurrente, cellulis mediis rectangulis, $60-80\mu$ longis, 15μ latis, marginalibus 2-3-seriatis angustis, linearibus, limbum distinctum efformantibus. Caetera ignota. *Plate XXI.*

Assiniboia: Wood Mountains (Macoun, 1895. Sent as *B. erythrophylloides* Kindb.).

Somewhat recalling the slender forms of *B. pallens* Sw., but differing by its dimorphous leaves, which are plane on the margins or nearly so. The leaves decurrent at base, the upper distinctly limbate, at once distinguish this moss from Kindberg's *B. erythrophyllum* and *B. erythrophylloides*.

Bryum subdrepanocarpum Card. & Thér., sp. nova.—Dioicum, laxe cespitosum, viride. Caulis brevis, $5-7^{\text{mm}}$ altus, inferne radiculosus, sub perichaetio innovans, innovationibus gracilibus, laxe foliosis. Folia inferiora remota, superiora in rosulam congesta, $1-1.5^{\text{mm}}$ longa, $0.6-0.75^{\text{mm}}$ lata, ovato-oblonga, breviter acuminata, marginibus longe revolutis, superne planis et denticulatis, costa basi 80μ crassa, pro more infra apicem evanida, rete laxo, cellulis basilaribus rectangulis, mediis superioribusque oblongo-hexagonis, 60μ longis, $18-20\mu$ latis, marginalibus angustis, linearibus, lutescentibus, 1-2-seriatis. Capsula in pedicello inferne rubello, superne pallido, $1.5-2^{\text{cm}}$ longo, pendula vel nutans, oblonga, arcuata, longicollis, operculo convexo-apiculato. Annulus latus. Peristomium perfectum, ciliis appendiculatis. Sporae $8-12\mu$ crassae. *Plate XXII.*

California: Soldier's Home, Los Angeles county (Dr. Hasse, 1902; herb. C. F. Baker).

This moss is very near *B. drepanocarpum* Philib., from which it differs by its shorter and broader leaves, denticulate in the upper part, and forming a small rosette or bud at the top of each stem, and by its costa generally vanishing below the apex.

Bryum camptocarpum Card. & Thér., sp. nova.—Monoicum, laxiuscule cespitosum, lutescenti-viride. Caulis brevis, circa 5^{mm} altus, radiculosus, simplex ramosusve. Folia erecta, sat conferta, oblongo-lanceolata, acuminata, media superioraque 2^{mm} longa, $0.6-0.7^{\text{mm}}$ lata, inferiora breviora, marginibus incrassatis, planis vel inferne vix reflexis, apicem versus subdenticulatis, costa rubente, basi $80-90\mu$ crassa, in foliis inferioribus breviter, in superioribus longius excurrente, cellulis mediis superioribusque hexagonis-rhomboidalibusque, $54-70\mu$ longis, $18-24\mu$ latis, basi-

laribus rectangulis, $80-90\mu$ longis, $25-30\mu$ latis, marginalibus linearibus, limbum pulchre distinctum lutescentem, incrassatum, 2-3-stratosum efformantibus. Flos masculus in ramo proprio terminalis. Capsula in pedicello rubello, $1.5-3\text{ cm}$ longo, nutans, oblonga, arcuata, $4-4.5\text{ mm}$ longa, 1 mm crassa, collo attenuato sporangio aequilongo, operculo convexo, breviter apiculato. Annulus duplex et triplex. Peristomium perfectum, 0.48 mm altum; endostomii membrana ultra medium dentium producta, processus in carina anguste et parce fissi, cilia 1-3, appendiculata. Sporae papillosae, diam. 24μ . *Plate XXII.*

Newfoundland: John's Beach, wet places (Rev. Arthur C. Waghorne, 1895).

Allied to *B. meeseoides* Kindb., *B. drepanocarpum* Philib., and *B. subdrepanocarpum* Card. & Thér. by the form of the capsule, but distinct from these species by the monoicous inflorescence and by the leaves plane on the margins, or nearly so, with a very distinct and thickened border. It also much resembles *B. pallens* Sw. var. *arcuatum* Sch., from which, however, it differs by the shorter leaves, with margins plane or scarcely reflexed at base and denticulate or sinuate at apex.

Bryum dimorphophyllum Card. & Thér., sp. nova.—Verisimiliter dioicum, sat robustum. Cespites compacti, cohaerentes, superne lutescenti-virides, intus dense rufo-tomentosi. Caulis erectus, $4-5\text{ cm}$ altus, pluries divisus. Folia sicca erecta, ramea contorta, madida erecto-patentia, dimorpha: inferiora valde concava, e basi longe decurrente ovata vel oblonga, 1.5 mm longa, 1 mm lata, apice cucullato obtusissimo, costa sub apice evanida, superiora majora et angustiora, 2.2 mm longa, 0.8 mm lata, lanceolata, acuminata, acuta, minus decurrentia, costa percurrente vel breviter excurrente; omnia marginibus integris, e basi usque apicem versus revolutis, cellulis quadratis, breviter rectangulis vel rhomboidalibus, 30μ longis, 14μ latis, parce chlorophyllosis, parietibus crassis, marginalibus angustioribus, linearibus. Folia perichaetialia minora, angustiora, acuta, costa breviter excurrente. Capsula in pedicello purpurascens circa 2 cm longo nutans pendulae, anguste subpyriformis, 3 mm longa, 0.9 mm crassa, sicca et matura sub orificio paulisper constricta, operculo convexo-conico. Annulus latus, triplex. Endostomii membrana elata, ciliis 2-3, appendiculatis. Sporae laeves, inaequales, aliae, magis numer-

osae, minores, diam. 11μ , aliae, rariores, majores, diam. 18μ . Planta mascula ignota. *Plate XIX.*

N. W. Montana: Mt. Lottie Stanton and Mt. Trilby, in the vicinity of Lake MacDonald, Flathead county, 1100–1800^m alt. (J. M. Holzinger and J. B. Blake, 1898).

Belongs to the group of *B. pseudotriquetrum* Schw., but is at first sight distinguished from all the other species of this group by its dimorphous leaves.

AULACOMNIUM PALUSTRE Schw. var. **dimorphum** Card. & Thér., var. nova.—Caulis superne innovationibus numerosis ramosissimus. Folia dimorpha, caulina elongata, acute acuminata, apice sinuato-subdenticulata, valde papillosa, ramea multo breviora, obtusa, integerrima, minus papillosa, interdum laevia.

Colorado: near Breckenridge, 175^{km} from Denver, alt. 3000^m (J. M. Holzinger, 1896).

A similar form is recorded by Mr. Dixon in his admirable *Handbook of British Mosses* 282.

AULACOMNIUM PALUSTRE Schw. var. **lingulatum** Card. & Thér., var. nova.—Gracile, formis majoribus *A. androgyni* simile. Folia lingulata, omnia obtusa, integra apiceve sinuolata.

Colorado: bog near Chamber's Lake (C. S. Crandall, 1894; herb. J. M. Holzinger).

Distinguished from the var. *imbricatum* Br. Eur. by its smaller size and its longer, not imbricated leaves.

Fontinalis subcarinata Card., sp. nova.—Mollis, lutescenti vel lurido-viridis. Caulis 15–20^{cm} longus, inferne denudatus, ramis elongatis, gracilibus, erectis, attenuatis, subcuspidatis. Folia mollia, quadrifaria, erecta, 4–5^{mm} longa, 1–2^{mm} lata, anguste lanceolata, longe acuminata, integerrima apiceve subdenticulata, plerumque sulco longitudinali medio distincte notata, lateralia subconduplicata, cellulis angustissimis longissimisque, alaribus paucis, parvis, parum distinctis, saepe subnullis. Caetera ignota. *Plate XXIII.*

Assiniboia: Cypress Hills, Battle Creek (Macoun, 1895. Sent as *F. Lescurii*).

This species belongs to the sect. MALACOPHYLLAE, and is closely allied to *F. seriata* Lindb., but differs from it by its plicate leaves, with less distinct alar cells.

FONTINALIS OBSCURA Card. Minn. Bot. Stud. 3: 120. 1903.—In the note following the description of this species, the phrase: "It belongs to the section HETEROPHYLLAE" should be stricken out.

CLIMACIUM AMERICANUM Brid. var. *pseudo-Kindbergii* Card. & Thér., var. nova.—Habitu *C. Kindbergii* omnino simile, sed areolatione cum *C. americano* exacte congruit.

Missouri: Paw Paw Junction, on old log; Pleasant Grove, on wet bank (C. F. Bush, 1897 and 1899).

Contrary to the opinion of Dr. A. J. Grout, we think that *C. Kindbergii* cannot be distinguished specifically from *C. americanum*. We have specimens on which the distinctive characters become attenuated. The plant of which we make the var. *pseudo-Kindbergii* is just one of these forms.

LESCURAEA STRIATA Br. Eur. fasc. 46-47.

Labrador: Lack Harbour, on rocks (Rev. Arthur C. Waghorne).

This specimen, sent by Waghorne as *L. saxicola* Milde seems to us nearer to *L. striata*, on account of its leaves less imbricate and not homomalous; yet it differs from the European type by the shorter acumen of the leaves, distinctly denticulate towards the apex. *Pseudoleskea substriata* Best has much smaller leaves, but is also merely a form of *L. striata*.

Brachythecium subasperrimum Card. & Thér., sp. nova.—Laxe intricato-cespitosum, lutescenti-viride, nitidulum. Caulis gracilis, 3-6^{cm} longus, prostratus, radicosus, ramis inaequalibus attenuatis, ascendentibus irregulariter pinnatus. Folia caulina erecto-patentia, e basi decurrente deltoidea, sensim longe et anguste acuminata, vix plicatula, sublaevia, 1.8-2^{mm} longa, 0.75^{mm} lata, marginibus basi leniter reflexis, subintegris vel inferne parce denticulatis, costa angusta, 36 μ basi crassa, medium versus evanida, cellulis mediis linearibus, angustis, 60-85 μ longis, 6 μ latis, basilaribus laxioribus, hyalinis, rectangulis vel subhexagonis; folia ramea oblonga, longe et anguste acuminata, nec deltoidea, nec decurrentia, distinctius plicatula, 1.6^{mm} longa, 0.5^{mm} lata, marginibus plus minus longe revolutis, superne minute denticulatis. Folia perichaetialia enervia, e basi ovata amplexicauli in acumen patulum vel reflexum, angustum, elongatum, integrum abrupte constricta. Capsula in pedicello purpureo scaberrimo, papillis altis dense oblecto, 1.5^{cm} longo, inclinata vel subhorizontalis, ovata, gibbosa, sicca sub ore leniter constricta, 1.7^{mm} longa,

0.8 mm crassa, operculo ignoto. Peristomium perfectum, ciliis appendiculatis. Sporae 15μ crassae. Dioicum videtur (floribus masculis ignotis). *Plate XXIV.*

British Columbia: New Westminster (A. J. Hill, 1902; herb. C. F. Baker).

By the habit, dioicous inflorescence and very rough pedicel this moss stands near *B. asperrimum* (Mitt.) Kindb. and *B. Washingtonianum* Eaton, differing from both in having the leaves scarcely plicate, almost smooth, with the acumen much longer and narrower, and the borders very slightly denticulate or subentire and partly revolute.

Plagiothecium sulcatum Card. & Thér., sp. nova.—Monoicum, laxiuscule depresso-cespitosum, nitidulum. Caulis gracilis, repens, ramis ascendentibus, subarcuatis, circa 1 cm longis, compressulis. Folia ramea laxe subdisticho-homomalla, 1.2–1.5 mm longa, 0.4–0.5 mm lata, haud decurrentia, lanceolata, sensim longe acuminata, marginibus planis, e medio, nonnunquam e basi serrulatis, costa gemella, nunc brevi, nunc longiore et uno crure fere ad medium producta, cellulis anguste linearibus, 70–90 μ longis, 6 μ latis, inferioribus brevioribus, laxioribus, non porosis, 20–40 μ longis, 12–15 μ latis. Flores masculi prope femineos nascentes. Folia perichaetialia erecta, appressa, enervia, breviter ovata, apice rotundata, apiculo erecto brevi abrupto. Capsula in pedicello pallide purpurascens, tenui, flexuoso, 2 cm longo, subhorizontalis inclinatave, 2 mm longa, 0.7 mm crassa, subcylindrico-arcuata, vacua infra orificium contractula, tam juvenilis quam matura profunde sulcata, operculo obtuse conico. Annulus duplex. Peristomium perfectum, 0.42 mm altum, ciliis nodulosis, minute papillois. Sporae laeves, diam. 12 μ . *Plate XXIV.*

N. Minnesota: on Fall Lake, near the foot of Kawasatchong Falls, 11 km north of Ely (J. M. Holzinger, 1897. Sent as *P. Muehlenbeckii* Br. Eur.).

This moss seems somewhat intermediate between *P. striatellum* Lindb. (*P. Muehlenbeckii* Br. Eur.) and *P. silesiacum* Br. Eur., differing from the former by its non-decurrent leaves; narrower at base, with a more distinct costa, its much longer cells, the basilar ones not porose, its more arcuate capsule, and the form of its perichaetial bracts; and from the latter by its capsule being deeply sulcate, even when young, and its more compressed branches. According to the description, *P. pseudosilesiacum* Sch. differs from our species by its much shorter pedicel (1 cm), and its ecostate leaves.

Plagiothecium Groutii Card. & Thér., sp. nova.—Monoicum, tenellum, nitidum, densiuscule depresso-cespitosum. Caulis tenuis, prostratus, ramis brevibus numerosis complanatis. Folia minuta, compressa, distiche erecto-patentia, 0.7–0.8^{mm} longa, 0.3–0.35^{mm} lata, haud decurrentia, oblongo-lanceolata, lateralia subcultriformia, breviter et latiuscule acuminata, margine plana, enervia, caulina subintegra vel obsolete denticulata, ramea in tertia parte superiore vel fere e medio minute sed distincte serrulata, cellulis mediis linearibus, angustissimis, 60–90 μ longis, 6 μ latis, superioribus brevioribus, inferioribus rectangulis, infimis majoribus subdilatis. Folia perichaetia oblonga, subito breviter cuspidata, subintegra vel ad basin acuminis sinuolata. Capsula in pedicello tenui, erecto, rubello, 1–1.5^{cm} longo, horizontalis, inclinata suberectave, minuta, ovata, vix 1^{mm} longa, 0.5–0.7^{mm} crassa, laevis, sicca sub orificio non constricta, collo brevi, operculo rostrato. Sporae irregulares, diam. 8–20 μ . *Plate XXIV.*

Delaware: Hampstead, depression in base of a chestnut tree (A. J. Grout, 1899).

Allied to *P. elegans* Sch., but easily distinguished from it by the shorter leaves, more abruptly and broadly acuminate, the rameal rather strongly denticulate in the upper third, the perichaetial bracts subentire, with a shorter acumen, the smaller capsule, the beak of the lid thinner, and the monoicous inflorescence.

Amblystegium laxirete Card. & Thér., sp. nova.—E sectione *A. riparii*, sat robustum, fluitans, sordide viride, usque 10^{cm} longum, vage pinnatum, ramis inaequalibus patulis, attenuatis, laxe foliosis. Folia compressa, distiche patula, ovato-lanceolata, breviuscule acuminata, circiter 3^{mm} longa, 1^{mm} lata, marginibus planis integris, costa valida, 100 μ basi crassa, longe ultra medium evanida, rete laxo, cellulis 60–80 μ longis, 12 μ latis, parietibus angustis, mollibus. Caetera ignota. *Plate XXV.*

Missouri: Monteer, in spring (B. F. Bush, 1899).

The leaves shorter acuminate, the longer and thicker costa, and chiefly the loose areolation, at first sight distinguish this moss from *A. riparium*. The last character also separates it from *A. vacillans* Sulliv. From *A. Kochii* Br. Eur. it differs by its larger leaves and its much stronger and longer nerve.

AMBLYSTEGIUM BREVIPES Card. & Thér., Minn. Bot. Stud.

3:124. 1903.—In the note following the description of this species, this phrase has been omitted in the printing: "Differs from *A. Kochii* Br. Eur. by its leaves much more shortly and less narrowly acuminate and by the short pedicel."

Hypnum malacocladum Card & Thér., sp. nova.—Monoicum, tenellum, molle, laxiusculum, lutescenti-viride. Caulis filiformis, prostratus, denudatus, ramis ascendentibus, circa 1^{cm} longis. Folia sat remota, mollia, concava, patentia, 0.8–1.1^{mm} longa, 0.4–0.5^{mm} lata, e basi valde constricta ovata vel oblonga, latissime et brevissime acuminata, apice rotundato vel subacuto, marginibus planis integris, costa tenui simplici ad medium vel ultra producta, interdum superne subfurcata, 35–40 μ basi crassa, cellulis alaribus rectangulis vel subhexagonis, hyalinis, sed auriculas distinctas non efformantibus, mediis sublinearibus, 35–70 μ longis, 7 μ latis, superioribus brevioribus, rhomboidalibus, parietibus crassioribus. Folia perichaetialia erecta, longius acuminata, costata. Capsula in pedicello brevi crassiusculo purpurascente, 8–10^{mm} longo, horizontalis vel oblique erecta, brevis, gibbosa, 1–1.5^{mm} longa, 0.75^{mm} crassa, operculo convexo-apiculato. Annulus simplex, distinctus. Peristomium 0.4^{mm} altum, processus in carina anguste fissi, superne papillosuli; cilia 1–2. Sporae 12 μ crassae. *Plate XXV.*

North America: Without locality or name of collector, in herb. L. Debat.

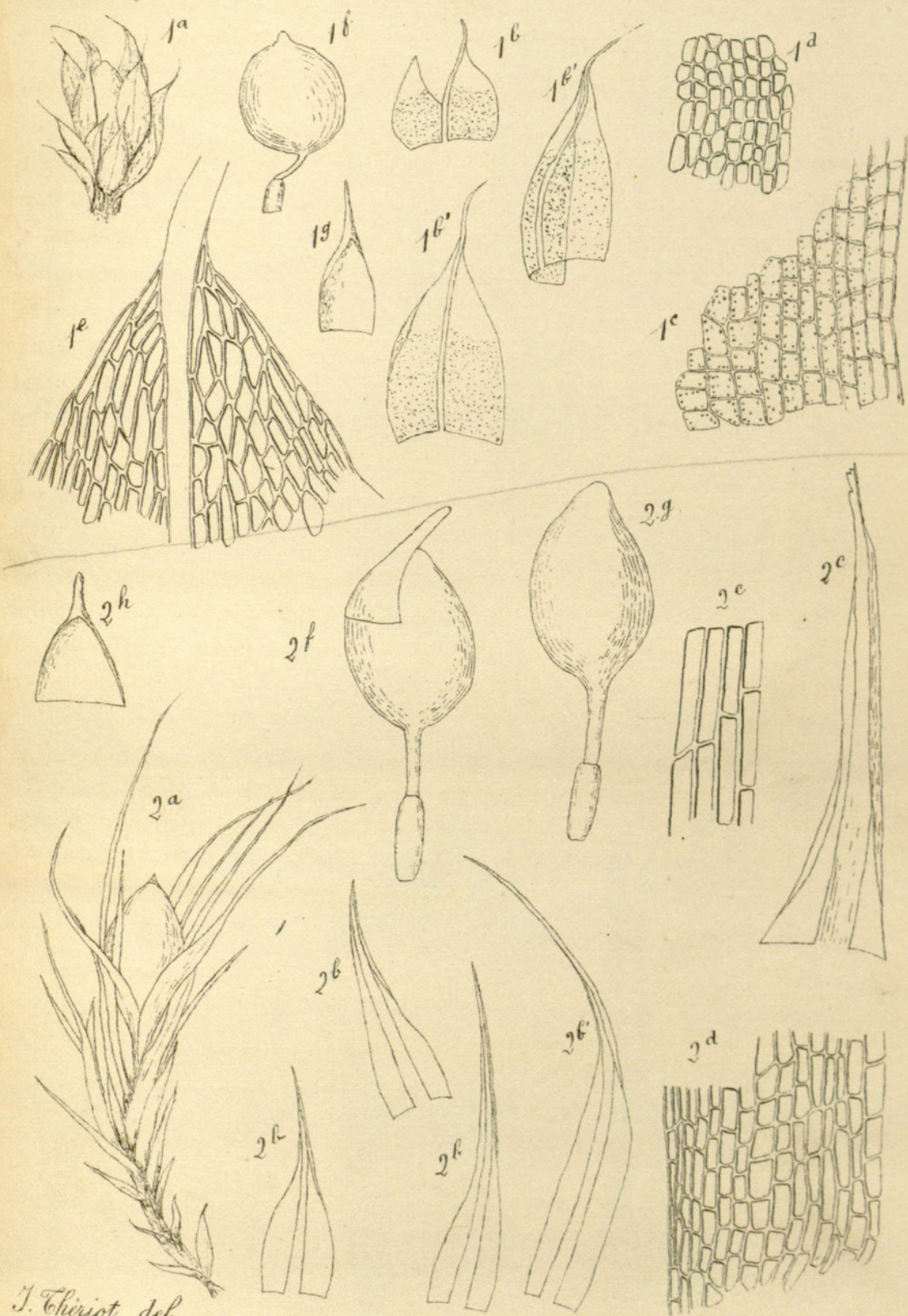
This species somewhat resembles *H. Goulardi* Sch., from which it differs by its longer leaves with a single long costa. It is also distinguished from *H. Closteri* Aust. (*Amblystegium Holzingeri* Ren. & Card.) by its greater size and longer costa.

CHARLEVILLE AND LE HÂVRE, FRANCE.

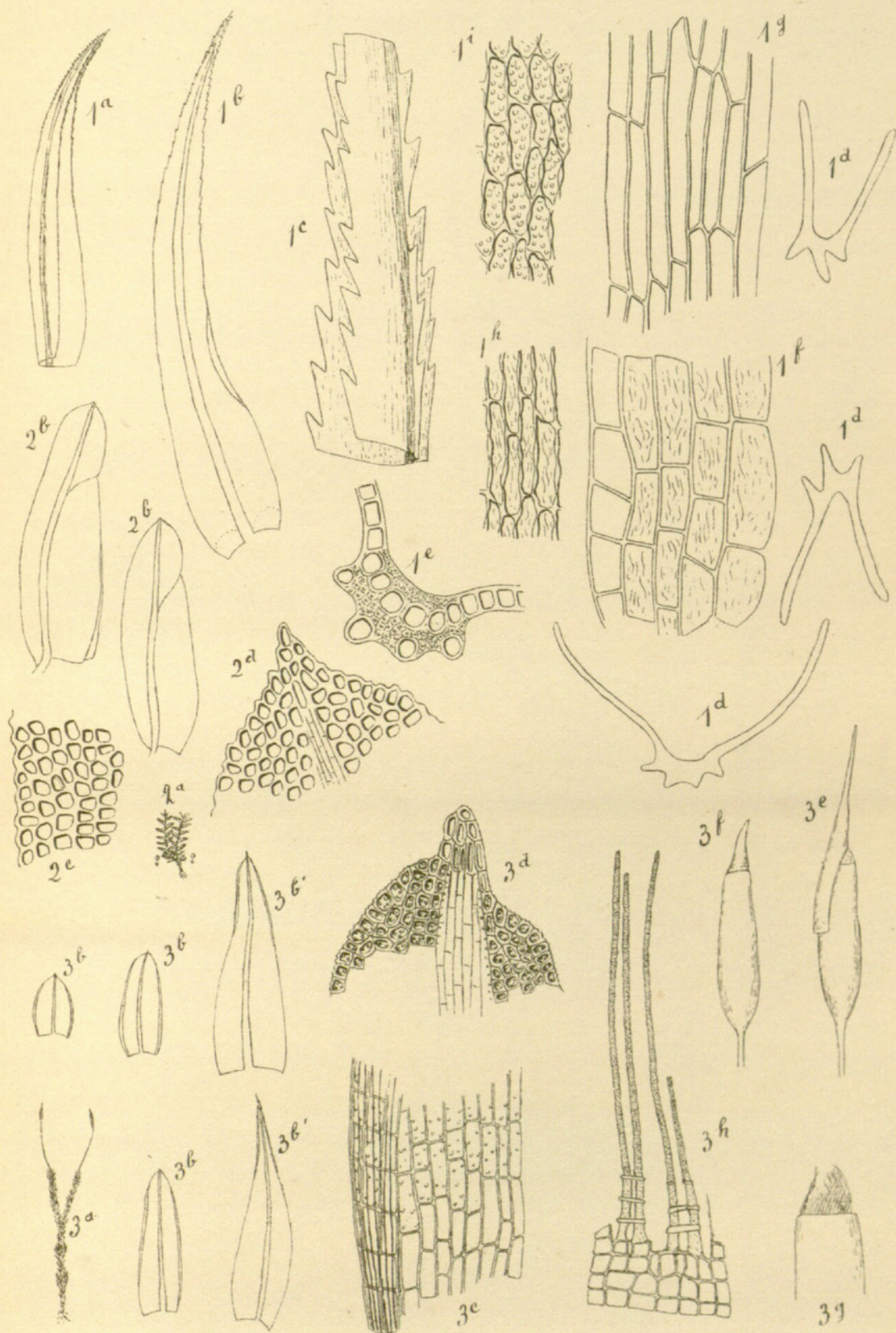
EXPLANATION OF PLATES XVI–XXV.

Plate XVI.—1. *Phascum hyalinotrichum*. *a*, entire plant $\times 17$; *b*, lower leaf $\times 26$; *b'*, *b'*, upper leaves $\times 26$; *c*, basal areolation $\times 135$; *d*, areolation in the middle $\times 135$; *e*, areolation in the upper part $\times 135$; *f*, capsule unripe $\times 26$; *g*, calyptra $\times 26$.—2. *Pleuridium Bakeri*. *a*, entire plant $\times 17$; *b*, *b*, *b*, leaves $\times 26$; *b'*, perichaetial leaf $\times 26$; *c*, apex of a leaf $\times 90$; *d*, basal areolation $\times 200$; *e*, areolation in the middle $\times 270$; *f*, capsule with calyptra, in moist state $\times 26$; *g*, capsule in moist state $\times 26$; *h*, calyptra $\times 26$.

Plate XVII.—1. *Dicranum alatum*. *a*, *b*, leaves $\times 13$; *c*, part of a leaf



J. Chériot del.



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riot, I. 1904. "New or Unrecorded Mosses of North America. II." *Botanical gazette* 37(5), 363–382. <https://doi.org/10.1086/328495>.

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