A.—PHÆNOGAMIA, FILICES, ET LYCOPODIACEÆ.

REVISED BY PROF. A. GRAY.

I.—RANUNCULACEÆ.

- 1. RANUNCULUS CRASSIPES, Hook. fil.—Very common in and by fresh-water pools, and pretty well up on the hill-sides, among Acæna, and in crevices of wet rocks. Varies greatly in size and vigor of growth in different localities. Begins to flower about December 15.
- 2. Ranunculus trullifolius, Hook. fil.—In small pools and running streams of fresh water. Not uncommon, but not found in flower. In two forms [the larger answering well to Dr. Hooker's specimens from the Falkland Islands; the smaller, with some entire leaves apparently much too near R. hydrophilus, Gaud. Neither of the two were before recorded from Kerguelen Island.—A. G.].
- 3. Ranunculus ——— ?—In low land, between two arms of the sea. Not in flower up to January 2. Found in company with R. crassipes, which here grew much more luxuriantly than near the station (among the hills). [A succulent species, with rounded and somewhat caudate leaves, an inch or more in diameter, deeply and obtusely 3-7-lobed, on fleshy petioles a span or more long. It can hardly be a form of the preceding.—A. G.]

II.—CRUCIFERÆ.

1. Pringlea antiscorbutica, R. Brown.—"Kerguelen cabbage" grows abundantly near the sea-shore, and I have seen it as high as 2,000 feet (Mount Crozier), where all other Phænogams but azorella had given place to Mosses and Lichens. Perennial, stout creeping rhizomes, sometimes 5 or 6 feet long and as many inches in diameter, stated by Dr. Hooker to be apetalous, on the authority of Mr. Anderson, who visited Kerguelen with Captain Cook ("petala nulla!" Fl. Antarctica),

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but I have found very many flowers with a single petal, clawed and faintly pink-tinted at the large end; many with two, some with three, and a few with four petals. They fall early and are easily overlooked when present. Axillary flowers are more frequently petalous than those crowded together upon the spike-like raceme. Observed to be in flower November 2. The leaves were eaten, as cabbage, by ourselves and the ship's company of the Monongahela with relish; our fowls were fond of them, and they constituted the staple food of the live stock brought to the island by the English party and the Monongahela.

III.—CARYOPHYLLEÆ.

L. Colobanthus Kerguelensis, *Hook. fil.*—Found with ripe fruit January 2, growing in both high and low land, among loose gravel and between stones.

IV.—PORTULACEÆ.

1. LYALLIA KERGUELENSIS, Hook. fil.—Grows by preference on the sides of stony hills, almost always the southwest side, where it is' exposed (by rapid drainage and heavy rains) to frequent alternations of dryness and moisture. Root thick, long, fleshy, and partly exposed above ground. One specimen was found straddling a good-sized stone, sending down roots on all sides. Flowers were first observed December 14, and the plant was already in seed December 21, when no flowers could be found. The flowers are not "very inconspicuous," as Dr. Hooker supposed they might be. They are plentiful, although apetalous, and prominent as to their stamens and pistils, lending a pale yellowishgreen bloom to the mound which the plant forms, and quite conspicuous enough to attract the attention of the casual observer. Neither can the plant be properly said to be "very local," in this part of the island at least, since, although rare, many are usually found collected together in the same place. [Dr. Hooker's specimens had only the capsules and calyx. With the present complete specimens, the whole structure of the flower is made out. The sepals are four, thin, somewhat petaloid, oval, nearly unconnected. Petals none. Stamens three, hypogynous or nearly so, larger than the calyx, two of them alternate with sepals, and one before a sepal; anthers didymous, two-celled Style larger than the ovary, two-cleft at summit, the lobes linear, stigmatic for the whole length of the inner face. Ovules two or three from the base of the cell, campylotropous. Utricle fleshy, coriaceous, apiculate with the persistent base of the style, apparently indehiscent. Seeds two or three. Testa small.—A. G.]

2. Montia fontana, L.—Flowers were first observed December 7. Habitat among gravel, near the sea, and (as remarked by Dr. Hooker) almost always very near Callitriche verna and Ranunculus crassipes.

V.—ROSACEÆ.

1. ACÆNA AFFINIS, Hook. fil.—"Kerguelen Tea." The leaves have a considerable reputation among the whalers as a febrifuge and antiscorbutic. They are used as an infusion, hence the trivial name. Abundant everywhere, especially on northeast hill-sides near the sea and in low land. In the flowering state, the specimens accord well with the A. adscendens, as described and figured by Dr. Hooker; but in fruit the characters relied upon to distinguish the two become quite apparent.

VI.—HALORAGEÆ.

1. Callitriche Antarctica, Engelm. in Hegel MS. Syst. Callitr. (C. Verna, Hook. fil, Fl. Antarc.).—Grows in wet places, generally in company with Ranunculus crassipes, often under water or beneath precipitous rocks overhanging and limiting rocky sea-beaches. Flowers first observed December 17. Montia fontana is generally to be found near at hand.

VII.—CRASSULACEÆ.

1. Bulliarda Moschata, D'Urv.—Small, white, perfect, regular, tetramerous flowers, first observed in bloom December 18. Pistils and stems blood-red. Plentiful in crevices of rocks overhanging and closely neighboring to the sea.

VIII.—UMBELLIFERÆ.

1. AZORELLA SELAGO, Hook. fil.—One of the commonest plants, growing in mounds closely compacted together, often 2 to 4 feet in diameter, and composed of the dead stalks of old plants. Owing to the density of this crowding, only the surface is green, while deeply in the interior the old stems and leaves seem to be partly transformed into peat. It is this plant which makes walking so fatiguing on this island. The foot sinks into the soft mass at every step, and the hillocks are so closely joined together that for long distances it is impossible to avoid them. I could not find the hairs or bristles figured and described by Dr. Hooker as appearing upon the upper surfaces of the leaves along their venation (Fl. Ant. p. 284). Flowers were first observed November 12, like small starry points, scattered over the mounds. They are never very conspicuous, and do not press well, owing to the strength and

resistance of the stems. Not pink as figured (Fl. Ant.), but always pale greenish-yellow. Here and there is a patch of discolored leaves, white or yellow.

IX.—RUBIACEÆ.

1. Galium Antarcticum, Hook. fil.—A small trailing plant, found as undergrowth with Acæna, Grasses, Ferns, etc., generally near the sea, but extending well up the hill-sides. Flowers first observed December 3. "Flores sessiles, albi, trimeri" (Fl. Ant. p. 303). I have found them quite as often 4-petaled as 3-petaled, and with a distinct peduncle. A single 5-petaled flower was found January 5.

X.—COMPOSITÆ.

1. LEPTINELLA PLUMOSA, *Hook. fil.*—First observed in flower November 30. This plant fringes the cliffs overlooking the sea, grows down to high-water mark in the low-land, and marks the "roads" to Penguin rookeries and the rocks frequented by Cormorants. It grows very thickly, forming a flat matted carpet very welcome to the eye of the wearied pedestrian, less on account of the silvery luster of its leaves than because it is a certain indication of firm ground. A decoction of the leaves is used by the whalers as an emetic, and is said to be prompt and effectual in its action.

XI.—GRAMINEÆ.

- 1. TRIODIA KERGUELENSIS, Hook. fil.—Flowers were first observed December 2. Grows among cliffs, altitude 300 to 2,000 feet. Very long, filiform roots.
- 2. Festuca Cookii, *Hook. fil.*—Very common in hollows on hill-sides near the sea. Flowers early in May. A fine large grass. [The plants seem to be male only; if fertile, they are in a much earlier state of inflorescence than Dr. Hooker's specimens.—A. G.]
- 3. Festuca erecta, D'Urv.—A straight, tussocky grass, with purple panicles, observed in flower December 6. Found in flat land, altitude 200 feet, about a mile from the sea.
- 4. AIRA ANTARCTICA, *Hook.*—A graceful grass, with oat-like panicles. Found in flower near the sea-shore December 21. Also observed among cliffs at considerable altitudes.

XII.—FILICES ET LYCOPODIACEÆ.

- 1. Lomaria alpina, *Hook. fil.*—Dr. Hooker mentions this Fern as "very scarce". We found it exceedingly common; mostly barren.
- 2. Polypodium (Grammitis) Australe.—In crevices of rocks; rare. New to Kerguelen Island.
- 3. Polypodium vulgare.—Crevices of rocks by running streams; altitude 200 feet and upward. Abundant. New to the island.
- 4. CISTOPTERIS FRAGILIS.—Not common. Crevices of rocks near hill-tops. [* No specimens in the collection.—A. G.] New to the island.
 - 5. LYCOPODIUM SELAGO, Linn.—Rare.
- 6. LYCOPODIUM CLAVATUM (var. MAGELLANICUM).—More common, but very local.

B.—MUSCI.

DETERMINED BY THOMAS P. JAMES, ESQ.

- 1. Andreæa Marginata, Hook. fil. & Wils. Fl. Antarc. ii, p. 355, t. 151, f. 1.—On high rocks, 1,500 feet altitude.
- 2. CERATODON PURPUREUS, Brid. Br. Univers, i, p. 480.—In a variety of forms; very common.
- 3. GRIMMIA FRONDOSA, James, sp. nov.—"Laxe cæspitosa valde fasti giata, ramosa, fusco-viridis, gracilis; folia erecto-patentia, concava cur vata anguste lanceolata canaliculata, in pilum hyalinum sublævem termi nata, costa sub pilo evanida; inferne depilia rigida acuminata; margina erecta, cellulis basi oblongis laxioribus flavidis et usque medium folii quadratis superne remotis subrotundis versus apicem obscuris."

Growing with Andrewa marginata; found only in a barren condition.

4. GRIMMIA KIDDERI, James, sp. nov.—"Compacte globosa, pulvinata, pusilla fastigiata, ramosissima, atrato-viridis, rigida; folia caulina densissima, erecta patentia anguste lanceolata, infeciora canaliculata acuminata strictiuscula superiora elongata curvula in pilum brevem hyalinum sublævem producta; nervo ad basin lato infra apicem evanido margine erecta, cellulis basi angustis elongatis flavidis pellucidis superne sensim quadratis minutis subopacis."

Growing in small globular masses on hill-sides at some distance from the sea. The small balls formed by this curious moss seem not to be rooted to any other plant, but to be blown about by the wind indiscrim-

^{*} Probably lost in transportation. The identification was given me by Rev. A. E. Eaton, of the English transit-party.—J. H. K.

- inately. The detached masses generally were found disposed in a fanshape, radiating apparently from a central point, as if a larger mass in which they had been aggregated had been broken up by the force of the wind. Found only in a barren state. Very local.
- 5. RACOMITRIUM LANUGINOSUM, Brid. i, p. 402, t. 152.—Abounds on high rocks.
- 6. ORTHOTRICHUM CRASSIFOLIUM, Hook. fil. & Wils. l. c. p. 125, t. 57, f. 8; var. β. acutum, C. Müll. Syn. i, p. 691.—This plant is monoicous, the male gemmæ being found terminal on separate, many-branched plants; also at the base of the female plants.
- 7. Webera cruda, Schreb. Spic. Fl. Lips. p. 83.—In the shade of, and in the crevices of rocks; appearing in many forms.
- 8. Webera albicans, Whlb. Fl. Lips. p. 353.—In wet, mostly springy places.
- 9. Webera nutans, Schreb. l. c. p. 81, var. β. cæspitosa.—In wet situations on mountain-sides.
- 10. Webera nutans, Schreb. var. γ. bicolor.—In shady places near the sea.
- 11. BRYUM WARNEUM, Bland. in Brid. p. 675.—Growing with Bryum bimum. Not common.
 - 12. Bryum Gayanum, Mont. in litt. C. Müll. Syn. i, p. 267.—Rare.
- 13. Bryum bimum, Schreb. l. c. p. 83.—Common in wet and boggy places.
- 14. Bryum torquescens, Br. & Schp. Bry. Eur. fas. 6-9, p. 49, t. 20.—From the rear of the transit-house, near the sea.
- 15. Bryum pallescens, Schwaeg. Sup. i, ii, p. 107, t. 75.—In damp situations.
- 16. BRYUM ARGENTEUM, Linn. Sp. Pl. p. 1586.—On exposed rocks and on bare ground.
- 17. Bartramia patens, Brid. Sp. Mus. iii, p. 82.—Among shaded rocks.
- 18. Bartramia flavicans, Mitt. in Hook. Kew Jour. iii, 55.—Rear of the transit-house, among rocks.
- 19. Bartramia appressa, Hook. fil & Wils. Fl. Nov. Zel. 89, t. 86, f. 5 = B. exigua, Sulliv. U. S. Exp. Exped.
- 20. Catharina (Atrichum) compressa, C. Müll. Syn. i, p. 95.— Polytrichum compressum, Hook. fil. & Wils. l. c. ii, p. 410, t. 153.—On hill-sides upon wet rocks.
 - 21. Plagiothecium Donianum, Sm. Eng. Bot. i, 1446.—Hypnum den-

ticulatum, Linn.—H. obtusum, Whlb.—On shaded ground, with Webera cruda.

- 22. HYPNUM GRACILLIMUM, *Hrsch*. Fl. Bras. i, p. 78.—Found deep in the interior of a small dark cavern in a rock; 300–400 feet altitude; caves had been tenanted by birds.
- 23. HYPNUM UNCINATUM, Hedw. Musc. Fr. iv, p. 65, t. 25.—Abundant on hill-sides, among and on the sides of azorella mounds.
- 24. HYPNUM FLUVIATILE, Sw. Musc. Suec. p. 63.—On wet and damp rocks in rear of transit-house, and other localities.
- 25. Hypnum frigidum, C. Müll. in Bot. Zeit. 1856.—Growing with Bryum Warneum.
 - 26. HYPNUM LECHLERI, C. Müll. l. c. 456, 1856.—On low ground.
- 27. HYPNUM FLUITANS, Linn. Fl. Suec. p. 1074.—In fresh water and among bogs.
- 28. Hypnum riparium, Linn. Sp. Pl. p. 1596.—Growing with Ranunculus crassipes in wet places.

C.—LICHENES.*

DETERMINED BY PROF. EDW. TUCKERMAN.

The Lichens of this island were first observed by Dr. J. D. Hooker during the voyage of the Erebus and Terror (1839–1843), and his specimens were studied by Dr. Thomas Taylor, according to whose reckoning (Lich. Antarct. in Lond. Journ. Bot. 3, p. 634) the whole number of species was sixteen. Dr. Taylor's herbarium is now included in that of the Boston Society of Natural History, but contains unfortunately very little to illustrate his Kerguelen determinations; and the lack of microscopical analysis makes it difficult, therefore, to avail ourselves of his work.

The collection now before me, made by Dr. Kidder, naturalist of the United States Transit Expedition of the present year, contains more or less satisfactory evidence of as many as twenty species, though not all of them determinable. Adding the three found in the Taylor herbarium, the whole number, according to this reckoning, will be twenty-three. And as eight or nine others are found in Taylor's list, there is no doubt that this little Lichen-Flora is larger than it was taken to be.

1. USNEA SULPHUREA, Müll. Th. Fr.—U. melaxantha, Ach.—Rocks.—According to Taylor, the place of this well-known antarctic lichen is taken in Kerguelen's Land by another, the U. Taylori, J. D. Hook.,

^{*} Extracted from the Bulletin of the Torrey Botanical Club, October, 1875, pp. 57-59.

called "handsomest of the vegetable products of this the island of Desolation". But this last, though received by Nylander (Neuropogon Taylori, Nyl. Syn. i, p. 273), is hardly well discriminated from the older species by the description of either author; and I cannot separate any of the numerous specimens before me from others got, during the same voyage, at the Falkland Islands (Herb. Hook.), which Taylor and Nylander appear to have referred to U. melaxantha.

- 2. Pannaria Taylori, sp. nov.—Thallo foliaceo cartilagineo appresso luteo-fulvo, lobis apice rotundatis crenatis incisisque, subtus nigris hypothallo obsolescente; apotheciis (demum plusquam 2 millim. latis) lecanorinis sessilibus, margine crasso ruguloso, disco plano fuscescente. Sporæ ellipsoideæ, simplices, incolores, 0,016-21^{mm} long. 0,009-11^{mm} crass.—Rocks, Hooker (Herb. Taylor).—Medullary layer of compact, elongated cells. Collogonidia 0,002-5^{mm} in diameter, solitary or in chains of 2-5. The specimen is rather more than an inch across. It occurs with Placodium elegans, but wrapped apart, in Dr. Taylor's collection.
- 3. Pannaria glauce-cinerascente, sp. nov.—Thallo foliaceo cartilagineo arcte appresso glauce-cinerascente, subtus pallido hypothallo obsoleto, lobis radiantibus subintegris; apotheciis (0^{mm}. 006–8 latis) lecanorinis adnatis, margine integro demisso, disco dein convexo fusco-nigro. Sporæ immaturæ.—Rocks.—Specimens scarcely half an inch across. Elongated cells of medullary layer compact. Collogonidia 0,004–9^{mm} in diameter, in chains often of 4–10.
- 4. Placodium elegans, Link. D. C.—Rocks, Hooker (Herb. Tayl.).— Spores 0,010–17^{mm} long and 0,007–9^{mm} thick. Called Lecanora murorum by Dr. Taylor (Herb.), but not reckoned in his Lichenes Antarct. l. c. It is perhaps better referable as above.
- 5. Placodium bicolor, sp. nov.—Thallo crustaceo adnato rimoso areolato aurantiaco, cephalodio centrali (6-10^{mm}. lat.) pluribusve depressis radiatim rimosis, concoloribus onusto, ambitu lobato; apotheciis (2-3^{mm}. lat.) sessilibus, disco plano nigro-fusco, margine tenui demisso subintegro. Sporæ in thecis uniserialiter octonæ, ellipsoideæ, polaribiloculares, 0,020-30^{mm} lat., 0,012-20^{mm} crass., paraphysibus capillaribus.—Rocks.—Collogonidia of the cephalodia 0,006-9^{mm} in diameter, reddish, solitary or in short chains. The name and much of the character of *Lecanora dichora*, Tayl., l. c., suggests the present lichen; but the infertile specimen, called (notwithstanding its orange color) *Lecanora gelida* by Taylor (Herb.), appears to me to belong here. Thallus at length two inches wide.

6. LECANORA GELIDA, L. Ach.—Rocks.—Thallus and cephalodia stouter than I have seen them in the northern lichen. Spores 0,015–23^{mm} long and 0,006–12^{mm} thick.

- 7. L. Hageni, Ach. Koerb.—Rocks.—Several minute, lecanorine apothecia with white, crenate margins, appear to belong here, but have afforded no sufficient analysis. Taylor reckons L. subfusca in his list.
- 8. L. MACROPHTHALMA, Tayl. Nyl. Urceolaria, Tayl. l. c., Lecanora, Nyl. in Flora, 1858 cit. Krempelh.—Rocks.—Thallus like that of L. gelida, with which it agrees in possessing similar, but more depressed, cephalodia; being the third lichen thus curiously characterized in this small collection. The apothecia are externally best comparable with those of Lecidea endochlora (Tayl. sub Urceolaria), but the lichen is probably to be referred to the sect. Aspicilia; though spermogones have not been observed. Thalli exceeding two inches in width.
- 9. Urceolina, Geng. nov.—Apothecia urceolata, excipulo proprio albido connivente discum rubrum submarginante, margine thallino evanido. Sporæ ellipsoideæ, incolores. Spermatia acicularia, arcuata, sterigmatibus subsimplicibus. Thallus crustaceus, effiguratus.

URCEOLINA KERGUELIENSIS, *sp. nov.*—Thallo crustaceo adnato areolato verrucoso aurantiaco-fuscescente, verrucis gibbosis centroque substipitatis in ambitum effiguratum coalescentibus; apotheciis (circ. 1^{mm}. lat.) immersis, margine proprio tenui pallido v. dein livido-nigrescente. Sporæ in thecis uniserialiter octonæ, simplices, limbatæ, 0,021–30^{mm} long., 0,015–20^{mm} crass., paraphysibus filiformibus.—Rocks.—Specimen scarcely two inches in diameter. Whole habit of the pale-ash-colored young thalli that of similar thalli of *Lecanora chlorophana*; but the wart-like areoles becoming a little stalked, and the color finally making as close as possible approach, in the brown series, to dirty-orange in the lemon-colored. More or less radiation is evident in the arrangement of the warts toward the margin, which becomes lobulate, and the extreme edge blackish. Habit of apothecia that of *Urceolaria scruposa* with undeveloped thalline margin. The lichen is not referable to *Lecanora* § *Aspicilia*, and is excluded by its exciple from § *Squamaria*.

- 10. CLADONIA PYXIDATA, L. Fr.—On the earth.
- 11. BIATORA RUBELLA, *Ehrh*. Rabenh.—Apothecia varying no little in color and size, but all referable to the v. *inundata*, Nyl. (Hepp. Eur. n. 289), as that is represented in North America. Spores 0,030–46^{mm} long and 0,0015–25^{mm} thick. Reaction of hymenial gelatine with iodine violet.

- 12. LECIDEA ENTEROLEUCA, Fr.—On dead grasses.
- 13. L. ENDOCHLORA, Tayl. sub Urceolaria.—Rocks. (Herb. Tayl.)
- 14. L. Fusco-Atra, Ach., Fr.—Rocks.—And traces occur of three other Lecideæ.
 - 15. Buellia Parasema, Ach., Koerb.—Rocks.
 - 16. B. STELLULATA, Tayl., Br. and Rostr.—Rocks.
 - 17. B. GEOGRAPHICA, L.—Rocks.
- 18. SAGEDIA CHLOROTICA, Ach., Mass.—And there are insufficient traces of two other Verrucarieï.

ALGÆ.

DETERMINED BY DR. W. G. FARLOW.

- 1. D'URVILLÆA UTILIS, Bory.
- 2. D'URVILLÆA HARVEYI, Hook.

Two large specimens of what seems to be this species were brought home by Dr. Kidder. In the *Flora Antarctica*, the only species of *D'Urvillæa* mentioned as found in Kerguelen's Land is *D. utilis*, but, in the two specimens above mentioned, the perforations of the root correspond clearly to the description given of *D. Harveyi*.

- 3. Desmarestia viridis, Lam. x.!—Apparently very common.
- 4. MACROCYSTIS PYRIFERA, Ag.—Partly of the typical form, partly the var. luxurians of the Flora Antarctica.
 - 5. Adenocystis Lessonii, H. & H.
- 6. SPHACELARIA FUNICULARIS, Mont.?—Quite a number of specimens, too small for accurate determination, probably belong to this species.
- 7. Rhodomela Gaimardi, *Mont.*—A single specimen of this species was collected by Dr. Kidder. This species is new to Kerguelen's Land, the nearest recorded station being the Auckland Islands.
- 8. Dasya (Polysiphonia, H. & H.) Berkleyi, Ag.—Apparently very common.
 - 9. PTILONIA MAGELLANICA, Ag.—Fine specimens in fruit.
 - 10. Delesseria Lyallii, H. & H.
 - 11. NITOPHYLLUM LIVIDUM, H. & H.
 - 12. NITOPHYLLUM FUSCO-RUBRUM, H. & H.
 - 13. RHODYMENIA PALMATA, Grev.
 - 14. RHODYMENIA CORALLINA, Grev.—Attached to Macrocystis roots.
 - 15. Rhodymenia variolosa, H. & H.—A single specimen in fruit.
 - 16. GIGARTINA RADULA, Ag.

- 17. CALLOPHYLLIS VARIEGATA, Ag.
- 18. CERAMIUM RUBRUM, var. SECUNDATUM, Lyngb.
- 19. BALLIA CALLITRICHA, Ag.
- 20. Callithamnion Ptilota, H. & H.—New to Kerguelen's Land; previously recorded at the Crozet Islands.
- 21. Codium adhærens, Ag.—New to Kerguelen's Land; a not uncommon species of Europe.
 - 22. ULVA LATISSIMA, L.

CROZET FLORA.

From some specimens preserved by officers of the Monongahela, when that ship visited Possession Island, the largest of the Crozets, on its way to Kerguelen, I have been enabled to identify the following-named plants as common to both islands:—

- 1. Pringlea antiscorbutica.—Growing much less luxuriantly than on Kerguelen Island.
 - 2. ACÆNA AFFINIS.
 - 3. AZORELLA SELAGO.
 - 4. GALIUM ANTARCTICUM.
 - 5. LEPTINELLA PLUMOSA.
 - 6. LOMARIA ALPINA.
 - 7. A moss believed to be ANDREÆA MARGINATA.
- 8. Also "a small vine, with blue flowers, growing among scoriæ." No specimens preserved.