

VI. *Fungi Angolenses*.—*A Description of the Fungi collected by Dr. FRIEDRICH WELWITSCH in Angola during the years 1850–1861. By FRIEDRICH WELWITSCH, M.D., F.L.S., and FREDERICK CURREY, M.A., F.R.S., Sec. L.S.*—PART I.

(Plates 17–20.)

Read April 18th, 1867.

THE Fungi described in this paper were collected partly in Sierra Leone and the islands of Biafra Bay, but for the most part in Angola and Benguella. Some were found near the coast between 7° and 16° south latitude; but the greater portion occurred in the highlands of the interior (from 120 to 260 miles eastward), which in Angola attain a height of 4000, and in Benguella of 6000 feet above the sea.

The present can only be looked upon as a fragmentary contribution to the Mycology of Angola, inasmuch as, from the difficulty of travelling in so wild a country, and the continual predatory wars of the Negro tribes, it is rarely possible to remain long enough in one spot. At the same time we think that the many new forms here described are sufficient to justify the present publication; and, with the permission of the Linnean Society, we propose in a subsequent paper to give an account of the Hymenomycetes, which (especially the Polyporei) are rich in the number and variety of the species.

PHACIDIACEI, Fr.

PHACIDIUM NITIDUM, Welw. & Curr. *Peritheciis* innatis, dimidiatis, interdum confluentibus, folii substantia concretis, orbiculatim dispositis, nigris, nitidis, in 3–4 lacinias latas dehiscentibus; *disco* nigro-olivaceo; *sporidiis* ovalibus vel irregularibus, nigro-fuscis, 0·0006 unciae longis.

Hab. Frequens ad folia perennantia *Parinari* in editis de Morro de Lopollo (5600 ped.), distr. Huilla, Januario 1860.

Obs. The specimens exhibit no asci, but only spores borne on sporophores. They are not in a satisfactory condition; and it is possible that the asci may have been absorbed, or that the plants are only in the stylosporous state.

SPHÆRIACEI, Fr.

XYLARIA AXILLARIS, Welw. & Curr. *Stromate* suberoso, nigro (sterili longiore et fragiliore); *peritheciis* irregulariter sparsis, globosis, mamillatis; *sporidiis* nigro-fuscis, elliptico-acuminatis, 0·0010–0·0013 unciae longis.

Hab. Ad axillas ramulorum arboris e familia Artocarpacearum juxta ripas fluvii Coango, Golungo alto, Decemb. 1855. No. 79.

This plant somewhat resembles *X. hypoxylon*, var. *uviformis*, Mont. ; but the perithecia are fewer, and the sporidia much larger.

TAB. 17. fig. 24, two specimens, × about 6 diameters ; fig. 25, *sporidia*, × 420 diam.

X. ARENICOLA, Welw. & Curr. *Stipite* fragili, elongato, nigro-fusco, profunde sepulto, 1–3 unc. longo ; *capite* fusco, maculato, ostiolis minutis nigris scabro, $\frac{1}{4}$ – $\frac{1}{2}$ unc. longo, conico vel subcylindrico, apicem versus acuminato vel rotundato, aliquando leviter curvato ; *peritheciis* nigris, subglobosis ; *sporidiis* minutis, nigro-fuscis, cymbiformibus, 0·0002 unc. longis.

Hab. Ad terram sabulosam humidam prope Cazella, Pungo Andongo, 2400–3800 ped. elevat., Januario 1857. No. 92.

TAB. 17. figs. 5 & 6, two plants, very slightly magnified, so as to show the *ostiola*, which are hardly visible without a lens.

X. APHRODISIACA, Welw. & Curr. Cæspitosa, *clavulis* subcylindricis, 1–2 unc. altis, fusco-cinereis, tota superficie inordinate areolatis ; *medulla centrali* albissima ; *peritheciis* — ? Basis communis tomento fusco delicato vestitur.

Hab. Rarior ; in silvis primitivis densis ad truncos diu putrefactos, juxta rivum Delamboia, distr. Golungo alto, Januario 1856. No. 102.

Obs. The plant is considered an aphrodisiac by the negros.

TAB. 18. figs. 3 & 4, plants, natural size.

X. VARIABILIS, Welw. & Curr. Simplex vel ramosa, 2–6 unc. longa, fuliginoso-atra, *peritheciis* — ?

Hab. Sparse ad truncos vetustos dejectos cariosos in silvis primitivis de Quisucula prope Bango, Golungo alto, Febuario 1855. No. 104.

Obs. The specimens are barren. The inner tissue collapses in drying (as is the case with many *Xylariæ*), leaving the bark (so to speak) in the form of a brittle detached integument.

TAB. 18. fig. 7, plants, natural size.

X. HYPOXYLON, Fr.

Several specimens of this species were collected in different localities. Some are a little doubtful, as they exhibit no fruit.

No. 87. Ad truncos vetustos prope “Caverna de Salitre” in Sobado de Mussengue, Golungo alto, Maio 1855.

No. 88. Ad truncos emortuos in silvis primitivis montium de Muxâula, distr. Cazengo, Junio 1855.

No. 90. Ad truncos vetustos in silvis editis prope Puri-Cacarombola, Ambaca, Octob. 1856.

No. 91. Ad ramulos emortuos putrescentes in terra sepultos ad dextram rivi Delamboia, Decemb. 1855. These specimens are very imperfect.

No. 135. In silvis densis primitivis, maxime humidis, ad truncos putrescentes denso agmine crescens prope Bumbo, Mossamedes, Oct. 1859.

X. DIGITATA, Fr.

Hab. Ad truncos putrescentes in silvis primitivis ad basin de Serra de Xella prope Bumbo, distr. Mossamedes, Oct. 1859. No. 136.

No. 136*b* seems to be a slender form of the same species, but it may possibly be distinct. The plant is barren.

THAMNOMYCES HIPPOTRICHOIDES, Ehrh.

Obs. We have some doubt as to this species. The specimen is quite barren.

Hab. Ad ramulos stantes Asparagi etc. prope Sange, distr. Golungo alto, Feb. 1855.

PORONIA CLAVIFORMIS, Welw. & Curr. Solitaria vel cæspitosa, nigro-fusca, stipitata, 5 lin. ad $\frac{1}{2}$ unc. alta; *stipite* apicem versus leviter incrassato, in discum aliquanto convexum peritheciolorum ostioliis scabrum expanso; *peritheciis* ovalibus, pallidis (?immaturis), in stromate duro suberoso immersis, *ostioliis* prominentibus. *Sporidiis* — ?

Hab. In cryptis rupium ad ligna putrescentia, rara, Arimo de Salgado, Pungo Andongo, Decemb. 1856. No. 85.

HYPOXYLON SERPENS, Fr.

Hab. Frequens ad cortices ramorum putrescentium variarum arborum prope Banca de Muddingue, Golungo alto, Julio 1855. No. 81.

Obs. It is doubtful whether this is *H. serpens* or an effused form of *H. multiforme*, Fr. The perithecia are more crowded and more immersed than in the typical form of *H. serpens*.

H. SUBORBICULARE, Welw. & Curr. *Stromate* suborbiculari, $1\frac{1}{2}$ –2 unc. lato, $\frac{3}{8}$ – $\frac{5}{8}$ unc. crasso, subtus leviter concavo, centro adfixo; superne plano vel plano-convexo et leviter undulato, intus favoso et albido, extus nigro, pulvere rubiginoso consperso; margine inverso et crassescente; *peritheciis* stipatis, immersis, stromatis faciem superiorem et marginem inversum colentibus; *ostioliis* prominentibus, papillatis; *sporidiis* nigro-fuscis, ellipticis vel cymbiformibus, 0.0005 unc. longis.

Hab. Juxta truncos vetustos in silvis inter Monino et lacum Ivantála, Huilla, sed rarum, Martio 1860. No. 137.

TAB. 17. fig. 18, vertical section of a plant, natural size.

H. NUMMULARIUM, Bull.

Hab. Ad ramos emortuos in silvis de Serra de alta Queta, Golungo alto, Decemb. 1855. No. 93.

Obs. An effused form, with small sporidia. There is another specimen (No. 98) of this species, also an effused form, of which the habitat is "Ad truncos, prope Capopa, Golungo alto, Junio 1856."

H. AGGREGATUM, Welw. & Curr. Aquilum, late cæspitosum, sessile; individuis sphaeroideis conico-rostratis vel irregulariter expansis plurima ostiola præstantibus.
Sporidia — ?

Hab. Ad truncos vetustos, totam eorum superficiem obtegens, prope Bumba, Golungo alto, Maio 1855. No. 94.

Obs. Allied to *Hyp. cænopus*, Fr., but sessile.

TAB. 17. fig. 22, detached *perithecia*, magnified.

H. CETRARIOIDES, Welw. & Curr. *Stromate* decumbente, laciniato, habitu et crescendi modo *Cetrariam tristem* simulante; *laciniis* dilatatis, multifidis, apicem versus in *perithecia* transeuntibus; *peritheciis* dense aggregatis aliquando complanatis irregularibus, plurima ostiola præstantibus; *sporidiis* — ?

Hab. Ad truncos magnos putrescentes in silvis primitivis prope Quilanga, Pungo Andongo, Aprili 1857: No. 97. Ad cortices arborum putrescentium in silvis primitivis prope Quibolo, Golungo alto, Aprili 1856: No. 80.*

Obs. This species is developed between the decayed bark and the wood. The lichenoid expansion of the stroma is probably due to the absence of light.

TAB. 18. fig. 5, a plant, natural size; fig. 6, one of the ramifications, magnified.

H. CONCENTRICUM, Bolt. ?

Not fully developed, exhibiting neither sporidia nor *perithecia*.

Hab. Sub cortice truncorum putrescentium in silvis primitivis prope Quilanga, distr. Pungo Andongo, Januario 1857.

H. ANGOLENSE, Welw. & Curr. Claviforme, nigerrimum, lucidum; *peritheciis* dense aggregatis, ostioliis minutis parum prominentibus; *sporidiis* nigro-fuscis, ovatis vel leviter curvulis, 0·0005–0·0006 unc. longis.

Hab. Ad corticem putrescentem, Quibolo, Golungo alto, Martio 1856. No. 103.

TAB. 17. fig. 19, plants, nat. size; fig. 20, sporidia, \times . In one of the plants the rudiments of a branch are seen.

H. USTULATUM, Bull., var. *Sporidiis* minoribus, 0·0005–0·0006 unc. longis.

Perhaps a distinct species; but the specimens are not satisfactory.

Hab. Gregatim, at rarum, ad truncos emortuos arborum (*Spondias* et affn.) prope Ponte de Felix Simões, Golungo alto, Nov. 1854. No. 101.

* A less perfect form.

H. RUBIGINOSUM, Fr.

Hab. Ad ramos emortuos dejectos in silvis de Serra do alto Queta, Golungo alto, Martio 1855. Nos. 82, 82 b.

H. SCOPIFORME, Mont.

Hab. Ad truncos vetustos in silvis editis (2500 ped.) in insula Principis, Sept. 1853 : No. 86. Quilombo Quiacatubia, Golungo alto, Febuario 1855 : No. 89.

H. ANNULATUM, Fr., β . *depressum*. Sporidiis fuscis, strictis, irregulari-ovalibus, 0·0003 unc. longis.

Hab. Ad truncos vetustos in silvis calidioribus prope Puri Cacarambola, Ambaca, Octob. 1856 : No. 83. No. 69 ad truncos vetustos cariosos prope Cabinda, Ambaca, Octob. 1856.

No. 84 seems to be the same species, but in an exoete condition.

SPHÆRIA LANARIS, Welw. & Curr. (Confertæ). *Peritheciis* conicis vel subglobosis sub epidermide nigrefacta in acervos vel tubercula irregulariter stipatis, *ostiolis* minutis prominentibus; *stromate* fusco, lanuginoso, e folii substantia formato; *sporidiis* 1-2-seriatis, pallidis, ellipticis vel subpyriformibus, 0·0006-0·0007 unc. longis, interdum 1-2-nucleatis.

Hab. Ad folia variarum specierum *Fici* prope Sange, Golungo alto, Novemb. 1854 : No. 74. Ad folia viva *Fici*, Sangué, Golungo alto, Maio 1855 : No. 75. Frequens ad folia vetustiora *Fici*, Quibige, Golungo alto, Decemb. 1855 : No. 76.

S. BOMBARDA, Batsch.

Hab. Ad ligna cariosa in silvis primitivis de Quisucula, prope Bango, Golungo alto, Aprili 1856. No. 95.

DOTHIDEA — ? Statu stylosporifero. Erumpens, difformis, sinuosa, cæσιο-atra; *stylosporidis* late ovatis, pallidis vel leviter luteolis, 0·0006 unc. longis.

Hab. Ad truncos semiemortuos arboris ex Artocarpacearum familia in silvis editis, Sobati de Quilombo Quiacatubia, Golungo alto, Januario 1856. No. 96.

PEMPHIDIUM NOBILE, Welw. & Curr. *Peritheciis* sparsis, solitariis vel 2-3 conjunctis, dimidiatis, basin versus matrice concretis, *ostiolo* nudo, subconico, deciduo, prominente, pertuso, annulato-marginato; *sporidiis* 1-seriatis (?), oblongis, nigro-fuscis, 1-septatis, ad septum leviter constrictis, interdum inferne angustatis, 0·00010-0·00011 unc. longis.

Hab. Ad petiolos foliorum palmarum (*Elais guineensis*) prope rivum de Capopa, Golungo alto, Junio 1856. No. 60.

TAB. 17. fig. 12, *sporidia*, \times highly; fig. 13, a *perithecium*, \times slightly.

MICROPELTIS — ? *Sporidiis* biserialibus, hyalinis, uniseptatis, leviter curvatis, utrinque acuminatis.

Hab. Ad folia plantæ acaulis monocotyledonæ, Mata de Quisucula, prope Banjo, Golungo alto, Julio 1857. No. 13.

Obs. The specimens are not in good condition; so that the description is necessarily imperfect.

PERISPORIACEI, Fr.

MELIOLA FORMOSA, Welw. & Curr. *Mycelio* procumbente, effuso, implicato, pinnato, nigro-fusco, setis sparsis erectis obsito; *peritheciis* globosis, demum profunde depressis, cupulatis; *sporidiis* pallidis, elongato-ellipticis vel leviter curvatis, 3-4-septatis, 0.0006 unc. circiter longis.

Hab. Ad folia, Quibolo, Golungo alto, Aug. 1856. No. 40.

Tab. 17. fig. 1, a branch of the mycelium, slightly \times ; fig. 2, setæ, *id.*; fig. 3, spores, highly \times ; fig. 4, fragments of the mycelium, \times 420 diam.

Obs. The specimens exhibited only a few detached sporidia, which appeared to be produced from the perithecia; so that the description of the fruit is doubtful. The specimens are not in good condition. The outer coat of the perithecia appears to be formed by the curling round and approximation of the ramifications of the threads of the mycelium, within which outer coat a membrane is afterwards formed. It is not clear whether or not the curling threads sprang from the tips of the sides of the branches. The large swellings in the threads exactly resemble the spores of some *Helminthosporia*, and frequently break off from the mycelium and become free during examination under the microscope, so that in the absence of perithecia the plant might easily be taken for a *Helminthosporium*.

ASTERINA DIFFORMIS, Welw. & Curr. *Peritheciis* orbicularibus vel irregularibus complanatis, *filis* fuscis (e tota peritheciolorum superficie orientibus et ad basin super folium radiatim extensis) amictis; *ascis* rotundatis vel obovatis; *sporidiis* biserialibus, obovatis, pallidis, 1-septatis, ad septum constrictis, 0.0005 unc. longis vel rarius 0.0007 unc. æquantibus.

Hab. Ad folia viva fruticis Menispermacearum in silva primitiva "Mata do Pungo," Pungo Andongo (2400-3800 ped. elevat.), Decemb. 1856. No. 39.

Tab. 17. fig. 21, *asci* and *sporidia*, \times 420 diam.

Obs. We are uncertain whether or not the perithecium is formed of the substance of the leaf.

EUROTIIUM HERBARIORUM, Lk.

Hab. Ad folia fruticis scandentis ex ordine Apocynacearum in silvis primitivis prope Sange, Golungo alto, Feb. 1855. No. 152.

SPHÆROPSIDEI, Leveill.

PESTALOZZIA DEPAZEOIDES, Welw. & Curr. Macula oblonga, grisea, $\frac{3}{4}$ unc. longa, margine fusco; *peritheciis* minutis, nigris, macula insidentibus; *sporis* pallide fuscis, simplicibus vel 1-septatis, setis tribus longis coronatis; *sporis* (sine appendicibus) 0.0005-0.0006 unc. longis.

Hab. Rarius ad folia *Fici andongensis*, Welw., in summis jugis rupium Præsidi (Pedra de Cazella), Pungo Andongo, Decemb. 18, 1856. No. 17.

Tab. 17. fig. 14, spores, \times highly.

PHYLLOSTICTEI, Fr.

PHOMA CONFLUENS, Welw. & Curr. *Peritheciis* spuriis e substantia folii formatis, rotundatis, vel elongatis et irregularibus, in tubercula nigra rugosa minuta confluentibus; tuberculis approximatis, acervos latos (1-2 unc. longos) formantibus; *nucleis* biformibus, altero e tela floccosa sporas nudas gerente constante, altero ascigero; *sporidiis* oblongis, pallidis, biseriatis, 1-septatis, 0·0007 circiter unciae longis.

Hab. Ad foliola fruticis scandentis Leguminosarum floribus paniculatis albis, Golungo alto, Aug. 1856. No. 63.

Tab. 17. fig. 16, *perithecia*, ×; fig. 18, *sporidia*, × highly.

Obs. The naked spores resemble sporidia, but are more irregular in shape. Perhaps this plant ought to form a new genus; but new genera ought not be hastily proposed, especially in such a family as the Phyllosticti.

ISO THEA RHYTISMOIDES, Fr., vel proxima species.

Hab. Ad folia spec. *Fici* in silvis de Monino, Huilla, Maio 1860. No. 141.

I. MINUTISSIMA, Welw. & Curr. *Nucleo* pallido, e filamentis ascis subclavatis intermixtis formato; *sporidiis* monostichis vel distichis, irregulariter ellipticis, hyalinis, 0·0005 unc. circiter longis.

Hab. Ad folia *Peniseti gigantei*, Benth., prope Cangunho, Golungo alto, Sept. 1855. No. 31.

Obs. We do not know where to place this plant, if not in the genus *Isothea*, although the nucleus there is defined as "*coloratus*." It would be absurd to form a new genus on the absence of colour. The plant forms excessively minute black specks of irregular shape (being the discoloured epidermis), sometimes pierced in the centre with a circular pore.

I. IRREGULARIS, Welw. & Curr. *Nucleis* segregatis vel conjunctis (siccitate pallidofuscis), his maculas nigras irregulares 1 lin. (plus minus) longitudine mesurantes, illis maculas minutas rotundatas conicas formantibus; *ostiolis* prominentibus, mamillatis; *ascis* subelongatis et strictis; *sporidiis* oblique monostichis, ellipticis, granulosis, 0·0006 unc. longis.

Hab. Ad folia arboris ignotæ, Alta Queta, Golungo alto, Martio 1856. No. 2.

DEPAZEA, Fr.

Several plants, apparently belonging to this genus, occur in the collection. They are, however, all barren, and the specific names therefore indeterminable. The following is a short account of them.

No. 24. Ad foliola speciei *Eriodendri*, prope Capope, Golungo alto, Septembri 1855.

No. 30. Ad folia speciei *Alsodeia*, Golungo alto, Junio 1855.

Obs. A very doubtful plant, in an unsatisfactory condition.

No. 23. Ad folia vetusta speciei *Bauhinia*, in dumetis campestribus prope Izanga et Ngombe, Ambaca, Octobri 1856.

No. 3. Ad folia speciei *Hippocrateæ* in silvis de Capopa, Golungo alto (1000–2400 ped. elevat.), Aug. 1855.

No. 14. Ad folia fruticis ex ordine Hippocrateacearum prope Luxillo, Pungo Andongo, Novembri 1856.

No. 15. Non frequens, ad paginam superiorem foliorum fruticis ex ordine Hippocrateacearum, Luxillo, Pungo Andongo, Novembri 1856.

No. 65. Ad foliola arboris e familia Spondeacearum, (Munguenga) Golungo alto (1000–2400 ped. elevat.), Februario 1856. Planta minutissima.

No. 78. Ad frutices prope Præsidium, Pungo Andongo, Februario 1857.

No. 77. Ad folia *Bandeirææ speciosæ* in collinis dumetosis ad rivum Delamboia, Golungo alto, Aug. 1855.

CRYPTOSPORIUM CIRCINANS, Welw. & Curr. *Peritheciis* stipatis, subglobosis vel irregularibus, in circulis concentricis dispositis; *sporis* pallidis, subclavatis vel subfusiformibus, leviter curvatis, longitudine variis, 0·0006 unc. assequentibus.

Hab. Frequens ad folia fruticis spinosissimi e Capparidearum familia in dumetis prope Loanda, Januario 1854. No. 64.

Obs. The circles of perithecia are sometimes confluent, entirely concealing the under surface of the leaf. Some of the perithecia open with a rimose dehiscence, showing an affinity with *Labrella*.

SEPTORIA CRUSTACEA, Welw. & Curr. *Peritheciis* minutissimis, crusta nigra, in acervos multiformes confluentes ostiolis minutis punctiformibus obsitos compactis; *sporis* filiformibus, tenuibus, pallidis, longitudine variis.

Hab. Ad folia arboris familiæ Artocarpearum, Trombeta, Golungo alto, Octob. 1856.

Obs. Under a lens, the plant looks exactly like some effused *Hypoxyton*.

PHALLODEI, Fr.

PHALLUS TUNICATUS, Schlecht. Linnæa, vol. xxxi. p. 123.

Hab. Ad terram humosam in silvis densis de Serra de Alta Queta, tempore pluvio, Aprili 1855. Rarissime obvius. Annis 1854–57 tria tantum specimina observata fuerunt. No. 121.

Obs. The specimens are not perfect, the veil being much broken, so that there is some doubt about the species; but it accords well (as far as can be judged) with *Ph. tunicatus*, Schl. This species seems to have been rightly separated by Schlechtendal from the *Ph. indusiatus* of Ventenat, figured in Mém. d. l'Inst. Nat. i. p. 520, tab. vii. f. 3. A comparison of the latter figure with that in the Dict. d. Sc. Nat. Champignons, tab. 7, figs. 1, 1a, 1b, will show that the two plants are very different.

LATERNEA ANGOLENSIS, Welw. & Curr. *Peridio* griseo, fusco maculato, crassissimo, gelatina farcto; *receptaculi* ramis quatuor, splendide albidis, apice connatis; *strato mucoso* fusco-atro, odoris vini fermentescentis.

Hab. Ad rupes arenaceas humo tectas ipsius Præsidi, prope Catete, Pungo Andongo, 10 Dec. 1856. No. 120.

TAB. 17. fig. 7, the plant, natural size, after a sketch taken on the spot.

Obs. A single specimen, gathered in fine weather. This species is manifestly nearly allied to *Laternea columnata*, Bosc, but differs in the colour, and apparently also in the form of the ramifications of the receptacle, as well as in the smell (not fetid) of the *stratum mucosum*.

LYSURUS CORALLOCEPHALUS, Welw. & Curr. *Utero* ovoideo, basi fibris albicantibus stipitato; *strato gelatinoso* crasso, distento, stipite increcente irregulariter dehiscente, extus ex albido cinerascete, intus albido lævigato; *stipite* cylindrico, cavo, albo, spongioso, poroso-reticulato, fragili, apice membrana carnosio-spongiosa coccinea rugulosa oblique clauso, duabus tribusve foraminibus parvis subcircularibus eccentricis relictis. Hac ex membrana ramenta crebra complanata transverse rugulosa divaricatim dichotoma ramosa undique surgunt, ex basi ad medium usque circum strato mucoso viscido fœtido tecta, apicibus belle coccineis, varie flexis, emersis, nudis, coralliformibus, cito collabentibus.

Hab. Inter *Zea Maydis* plantationes, solo arenoso-argillaceo humidiusculo, tempore sereno, 3 dies post pluvias frequentes, itaque nec cœlo tonante, nascens, in Præsidio, Pungo Andongo, unicum specimen, Dec. 10, 1856. No. 119.

TAB. 17. fig. 8, plant, of the natural size, after a sketch taken on the spot.

Obs. The coral-like ramifications become much contracted in drying. This plant is more nearly allied to *Lysurus* than *Aseroe*, although it differs from the species of *Lysurus* hitherto described in having a perforated membrane. It may be doubtful whether there is any substantial difference between the genera *Lysurus* and *Aseroe*. It would seem, from this specimen, that in *Lysurus* the apex of the receptacle is not always entirely closed. The perforations of the membrane do not afford a sufficiently marked character for the formation of a new genus.

NIDULARIACEI, Fr.

CYATHUS STRIATUS, Hoffm.

Hab. Sparsim ad ligna putrescentia in silvis primitivis humidis prope Præsidium, Pungo Andongo, Februario 1857: No. 113. Ad ramulos dejectos inter folia putrescentia in apricis cultis neglectis prope Sansamanda ad ripas fluminis Cuanza, Pungo Andongo, Martio 1857: No. 114.

LYCOPERDACEI, Fr.

GEASTER FIMBRIATUS, Fr.

Hab. Rarius ad terram juxta rivulum de Casalalé, in Præsidio Pungo Andongo, Decemb. 1856. No. 108.

G. MIRABILIS, Mont. Sylloge, p. 286; Ann. d. Sc. Nat. ser. iv. vol. iii. p. 139, t. 6. f. 8. *Sporis* minutissimis, vix 0.0001 unc. superantibus, sub microscopio pellucidis.

Hab. Rarissimus, ad truncos putrescentes in silvis primitivis de Quisucula et prope Casengue, Golungo alto, Aprili et Augusto 1850. No. 107. Primum in Guyana Gallica a clar. Leprieur ad Cayennam observatus.

PODAXON LOANDENSIS, Welw. & Curr. *Stipite* duro, lignoso, semipedali (vel fere 8 poll. alto), fibroso, torto, intus ex aurantiaco flavo, subtiliter fibrilloso, siccitate fusco, basi bulboso; *peridio* obovato, elliptico, $1\frac{1}{2}$ – $2\frac{1}{2}$ poll. longo, membranaceo, albido, ruguloso, apice obtusiusculo; *capillitio* primum albido, quasi molliter caseoso, subcarnosulo, dein floccoso flavo, demum ex tabacino nigrescente; *sporis* transparentibus, junioribus nitido-flavis, maturescentibus fuscis, globosis, ellipticis vel subturbinatis, 0·0004–0·0006 unciaë longis.

Podaxon loandensis, Welw. Apont. Flor. Angol. p. 535 (Lisbon 1858).

Hab. Frequentissime in pascuis breviherbidis arenosis juxta oceani littus Angolense, prope Penedo agri Loandensis. Paulo post primas pluvias adparet et ad Maii finem usque nova semper individua prouiguntur. No. 115.

TAB. 20. figs. 5, 6, 7, plants, of the natural size.

P. MOSSAMEDENSIS, Welw. & Curr. 5–9 unc. altus, *stipite* æquo vel apicem versus attenuato, hic illic rubro tincto, firmo, lignoso, ad basin bulboso; *peridio* conico vel oblongo, 2–4 unc. longo, $1\frac{1}{4}$ – $2\frac{1}{4}$ unc. lato, siccitate flavescente aut nigro-fusco et longitudinaliter rugoso; *sporis* nigro-fuscis, numerosissimis, globosis vel subturbinatis, et tunc pediculo minutissimo aliquando ornatis, 0·0004 unc. circiter diametro; *capillitio* fusco, *sporis* aliquanto pallidiore, simplici (*i. e.* non spiraliter lineato).

Hab. Sporadice in dumetosis arenosis ad ripas fluvii Maiombo, distr. Mossamedes, Oct. 1859. No. 149.

TAB. 17. fig. 23, spores, × highly.

TAB. 19. figs. 1, 2, plants, of the natural size; fig. 3, a plant (nat. size) with the *peridium* removed, showing the *capillitium*.

There is a plant numbered 149 *a*, as to which we have some doubt, but which is probably a small form of this species. The habitat is:—"In pratis et pascuis arenosis maritimis prope Loandam, Dec. 1853, Feb. 1858."

P. ELATUS, Welw. & Curr. 6–13 unc. altus, *stipite* lignoso, durissimo, $\frac{1}{2}$ – $\frac{3}{4}$ unc. lato, æquo, basi curvato, e mycelio arachnoideo cartilagineo subaurantiaco emergente; *peridio* elongato-ovato, 3–8 unc. longo, apice rotundato vel acuminato, vegeto albido, siccitate fusco; *sporis* (junioribus) flavis, dein fuscis, ellipticis, sæpissime uno extremo truncatis, 0·0004 unc. longis; *capillitio* flavo vel subolivaceo, membrana lineis spiralibus confertis obscure signata et fracturam spiralem exhibente.

Hab. Sparsissime in silvis arenosis mixtis (*i. e.* e *Protea*, *Eugenia*, *Strychni*, *Acacia*, *Cesalpinie* etc. speciebus conflatis) inter Lopollo et Monino, Januario 1860. No. 148.

TAB. 19. figs. 4 & 5, plants, of the natural size; fig. 6, a fragment of a thread of the *capillitium* spirally ruptured.

Obs. The spiral markings are not visible in all the threads of the *capillitium*; probably they vary according to age.

LYCOPERDON TOMENTOSUM, Welw. & Curr. *Peridio* globoso vel subturbinato, corneo, fragili, nigro-purpureo, tomento denso rufo separabili ex omni parte amicto; *capil-*

litio fusco; *sporis* fuscis, minutis, 0·0001 unc. vix superantibus, globosis, echinulis minutissimis obsitis.

Hab. Sporadice ad terram humosam inter folia putrida in silvis primitivis de Quisucula prope Bango, distr. Golungo alto, Feb. 1855. No. 117.

TAB. 19. figs. 7 & 8, plants, of the natural size.

Obs. The spores are so minute that, without careful observation and a high power of the microscope, they might be supposed to be smooth.

L. GOLUNGENSE, Welw. & Curr. *Peridio* globoso vel obovato, tomento delicato fastigiato amicto, e mycelio denso concolori nascente; *capillitio* —?; *sporis* —?

Hab. Ad basin truncorum putrescentium in silvis editissimis montis dicti Cungolungulu, Golungo alto, Feb. 1855. No. 118.

TAB. 20. fig. 13, plants, of the natural size.

Obs. These specimens are unripe, exhibiting neither capillitium nor spores.

L. RADICATUM, Welw. & Curr. Subturbinatum, radicatum, 3–4 unc. altum, 2–4 unc. latum; *peridio* papyraceo, fragili, plumbeo-ferrugineo, hic illic in vetustate subpurpurascente; *capillitio* obscure lilacino; *sporis* concoloribus, globosis, echinatis, 0·0002 unc. latis.

Hab. Rarissime, in pascuis graminoso-dumetosis prope Penedo, distr. Loanda, Martio 1854. No. 116.

TAB. 20. figs. 8 & 9, old plants, of the natural size.

L. ASPERRIMUM, Welw. & Curr. Subglobosum, 1 unc. circiter altum; *peridio* cinnamomeo, papyraceo, statu juniore spinis asperrimis demum caducis obsito; *capillitio* subrubiginoso; *sporis* capillitio concoloribus, globosis, 0·00015 unc. diametro, minutissime echinatis.

Hab. In dumetosis arenosis ad marginem de Lagoa de Giraul, distr. Mossamedes, locis subsalsis, Julio 1859. No. 142.

TAB. 20. fig. 14, plants, of the natural size.

Obs. The spines of the spores are so minute that they are seen with difficulty even under a high power.

No. 144 seems to be the same species, but exhibits no spines on the peridium. The peridium, however, is larger, and the spores reach 0·0002 inch. The habitat is:—"In arenosis graminosis prope Maiombo, distr. Mossamedes, Oct. 1859."

No. 144 is shown in TAB. 20. figs. 3 & 4.

L. CÆSPITOSUM, Welw. & Curr. Subglobosum, $\frac{1}{4}$ – $1\frac{1}{2}$ unc. altum, $\frac{1}{4}$ – $1\frac{1}{2}$ unc. latum, radicatum, vivum niveum, siccitate flavido-albidum, papyraceum, primo verrucosum, demum subnudum; *capillitio* argillaceo-lilacino, sub lente flavido; *sporis* argillaceo-lilacinis, globosis, lævibus, 0·0001–0·0002 unc. diametro.

Hab. In graminosis macris editis de Morro de Lopollo, distr. Huilla, gregatim crescens, Aprili 1860. No. 145.

TAB. 20. figs. 1 & 2, plants, of the natural size.

L. BICOLOR, Welw. & Curr. Stipitatum, $1\frac{1}{2}$ –2 unc. altum, stipite albido, subcylindrico, basi attenuato; *peridio* plumbeo-fusco, papyraceo; *capillitio* fusco; *sporis* fuscis, globosis, lævibus, 0·0001–0·0002 unc. diametro.

Hab. In pascuis humidiusculis silvaticis inter Lopollo et Empalanea, distr. Huilla, Maio 1860. No. 146.

TAB. 20. fig. 12, plants, of the natural size.

With the Lycoperdons above described there is one unripe specimen (No. 143) which seems to be an undescribed species. It is subglobose, about 1 inch high, with a horny peridium irregularly areolated. It is too immature to deserve a specific name. The habitat is:—"In dumetosis arenosis prope Vicum Nene, Huilla, Maio 1860."

TULOSTOMA ANGOLENSE, Welw. & Curr. Albidum, $1\frac{3}{4}$ unc. altum, *stipite* ab apice ad basin sensim diminvente; *peridio* subgloboso (ore imperfecto); *capillitio* ferrugineo; *sporis* ferrugineis, subglobosis vel subellipticis, 0·0002 unc. diametro.

Hab. In collinis arenosis hic illic Euphorbiis cactiformibus obsitis ad austrum vici de Mossamedes, ast rarissimum, Julio 1857. No. 147. Jove pluvio forsitan frequentius.

TAB. 20. figs. 10 & 11, plants, of the natural size.

Obs. Possibly not distinct from *Tulostoma Meyenianum*, figured in Nov. Act. Leop. xix. Suppl. i. t. 5; but it is much smaller than that species, and differs in not having the longitudinal furrows on the stem.

SPHERICEPS, n. g. *Stipite* cylindrico, dure fibroso, firmo, ex albido badio, centrali, ubique æqualiter farcto, quidquam longitudinaliter striato; *peridio* albo, lævigato, sphærico, medio, ut videtur, orbiculatim dehiscente, nec vertice aperto; *capillitio* partim filiformi, partim membranaceo-expanso, elateribus intermixtis; *sporidiis* copiosis-simis, ferrugineis, globosis vel subglobosis, 0·0002 unc. diametro.

Unica species:—

SPHERICEPS LIGNIPES, Welw. & Curr.

Characteres generis.

Hab. In dumetis arenosis, præcipue e *Tamarice articulata*, Vahl, conflatis, ad ripas flum. Caroca prope Cabo Negro, circa 16° lat. austr., circa 12 mil. ab oceano, Sept. 1859. No. 150.

TAB. 18. fig. 2, a plant of the natural size. Fig. 1 shows the underside of the same plant. In fig. 1 it will be observed that the stem has been slightly shortened for the convenience of the plate.

MYXOGASTRES, Fr.

STEMONITIS FUSCA, Roth.

No. 112. Ad folia vegeta *Jussiaæ* spec. juxta rivulum Quiapoza, Golungo alto, Decemb. 1855.

No. 109. Ad caudices emortuos et ad folia viva *Musæ sapientum* prope fluvium Luinha cultæ, Januario 1855, distr. Cazengo.

No. 110. Ad ligna cariosa in silvis primitivis de Quisucula prope Bango, Golungo alto, Aug. 1857.

No. 111. Ad cortices dejectos in silvis humidis de Serra de Alto Queta, Golungo alto, Decemb. 1855.

Obs. All these plants approach the variety of *Stemonitis* known as "*typhoides*;" but the peridia are more crowded than in the typical *Stemonitis fusca*, var. *typhoides*.

ARCYRIA INCARNATA, P.

Hab. Ad corticem truncorum annosorum in silvis de Alto Queta, Golungo alto, rarissime obvia. No. 122.

Obs. We have some doubt about the plant; but it appears to be an *Arcyria*, and, if so, must, we think, be the above species.

SPOROCYBACEI, Fr.

STILBUM ATERRIMUM, Welw. & Curr. Minutum, cæspitosum, totum aterrimum, *capitulo* obovato vel clavæformi; *stipite* complanato; *sporidiis* ovalibus, hyalinis, 0·0002 unc. longis.

Hab. E rimulis corticum vetustorum arborum putrescentium generis *Fici* erumpens, in silvis ad Quibongo, Golungo alto, Aprili 1855. No. 52.

S. SERICEUM, Welw. & Curr. *Stipite* rigido, fusco-virescente; *capitulo* sphærico, vivo carneo-rubro, siccitate armeniaco; *sporis* ovalibus, hyalinis, 0·0002 unc. longis.

Hab. Ad *Zygam fastigiatam* in silvis, Alto Queta, Golungo alto, Januario 1856. No. 49.

Obs. The stem is by no means villous; but under an inch power of the compound microscope it sometimes appears to have a very slight silky down.

S. CÆSPITOSUM, Welw. & Curr. Minutum, vegetum roseum, siccitate cinnamomeo-fuscum, cæspitosum, acervis gregariis aliquando dense aggregatis; *stipite* simplici vel dichotomo; *capite* globoso vel subgloboso; *sporis* irregulari-ovalibus, hyalinis, 0·0003 unc. longis.

Hab. Ad truncos vetustos *Fici* prope Canguerasange, Golungo alto, tempore pluvio, Nov. 1854: No. 50. Ad truncos putrescentes *Ficorum* in silvis humidis Sobati de Quilombo Quiacatubia, Golungo alto, Febuario et Maio 1855: No. 50b. Ad corticem var. *Fici* specierum, frequentissimum tempore pluvio prope Lopollo, distr. Huilla, Febuario 1860: No. 131.

MUCEDINES, Fr.

PENICILLIUM GLAUCUM, Lk.

Hab. Nimis frequens in superficie atramenti, in forma pelliculæ glauco-flavescentis, jove pluvio, Loanda, Novemb. 1857. No. 38.

HAPLOTTRICHUM CAPITATUM, Link.

Hab. Rarius ad folia *Celastris* spec., prope Calunga, Pungo Andongo, Jan. 11, 1857. No. 48.

HYMENULACEI, Fr.

HYMENULA VULGARIS, Fr. Forma rosea.

Hab. Ad folliculos Apocynacearum prope Luxillo, Pungo Andongo, Jan. 1857. No. 20.

SCLEROTIACEI, Fr.

SCLEROTIUM STIPITATUM, Berk. & Curr., Trans. Linn. Soc. vol. xxiii. pp. 91, 93.

Hab. Ad radices arborum emortuarum, sub terra ad profunditatem 1-3 ped. absconditum, in arvis *Solano tuberoso* cultis, prope Lopollo, Huilla, Apr. et Maio 1861. No. 138.*Obs.* In India this species has hitherto been found only in the nests of the white ant.

S. FLAVIDUM, Welw. & Curr. Tubercula varia, subglobosa, reniformia vel deformia, flavida vel fulva, a mole grani sinapis (vel minus) ad pisi parvuli crassitudinem varia.

Hab. In declivis parce graminosis, ad 800-1000 ped. altitudinis, locis humidiusculis ad oras silvarum primitivarum ad terram inter cæspites putrescentes, Insula Principis in sinu Benin, Sept. 1853. No. 27.Under No. 37 we find *Panicum plicatum* bearing an Ergot of the kind common in other grasses. As there is no fruit on the Ergot, we can only place it here amongst the Sclerotiacei. It would doubtless, at the proper season, produce some species of *Claviceps*.

SPORIDESMIACEI, Fr.

SPORIDESMIUM CELATUM, Welw. & Curr. Foliicolum, mycelio sub folii cuticula nigrefacta dense compacto; sporæ fuscae, leviter curvatæ vel fere rectæ, 3-5-septatæ, interdum substipitatæ, pedicello pallidiore.

Hab. Ad folia plantæ e familia Euphorbiacearum, Coango, Golungo alto, Octob. 1855. No. 77.

TAB. 17. fig. 15, spores, highly magnified.

Obs. The place and mode of growth are somewhat unusual for a *Sporidesmium*, but the characters are not sufficiently definite for the formation of a new genus.

DEMATIACEI, Fr.

HELMINTHOSPORIUM CORDIÆ, Welw. & Curr. Epiphyllum, sistens maculas circulares, 1-4 lin. diam., fuscæ, hic illic confluentes, e filis rigidulis crispulis exarticulatis parce ramosis fusco-luteis conflatas; ramulis patentissimis, plerumque leviter curvatis, crassitudine filamenta primaria æquantibus, ad basin hic illic fructiferis; sporis rectis vel curvulis, ellipsoideo-cylindricis, obtuse apiculatis, filamentis duplo crassioribus, 3-5-septatis, pellucidis.

Hab. Ad paginam superiorem foliorum *Cordiæ* spec. in silvis primitivis prope Sange, Golungo alto, Martio 1856. No. 1.

TAB. 17. figs. 9, 10 & 11, filaments and spores, × highly.

UREDINEI.

ÆCIDIUM.

A few *Æcidia* were collected, to which we do not venture to give specific names. Fries remarked long since (Syst. Myc. iii. 512):—"Æcidium in singula planta describere

immensus esset labor, et omne eorum studium, haud mere physiologicum, mihi saltem, irritum visum est;" and Tulasne (Ann. d. Sc. Nat. ser. iv. vol. ii. p. 174) speaks of *Æcidium* as "genus vulgatissimum plantis permultis et diversissimis infestum, e formis numerosissimis at vix dissimilibus, plerisque enim non nisi sede seu matrice sibi propria distinguendis." The recent observations of De Bary tend to show that *Æcidium* is not an autonomous genus, but only a stage of development of other Uredineous genera.

The following are the descriptions of the *Æcidia* collected by Dr. Welwitsch:—

No. 105. *Peridiis* stipatis, minime profundis, petiolum tegentibus, et subinde in folia transeuntibus, margine subcrenulato, laciniis brevissimis; *sporis* vivis aurantiacis, siccitate pallidis, subglobosis vel ovato-oblongis, forma et crassitudine variis, 0·0009–0·0012 longis.

Hab. Ad folia *Cissi* spec. prope Caghúy, Pungo Andongo, Novemb. 1856.

No. 128. Hardly differs from No. 105, except in the more scattered peridia and more irregularly shaped spores.

Hab. Ad folia fruticuli e familia Ebenacearum in rupestribus de Morro de Monino, distr. Huilla, rarius obvium, April 1860.

No. 128 a. *Peridiis* albis, cylindricis, elongatis, marginis laciniis irregularibus; *sporis* ut in No. 128.

Hab. Ad folia spec. *Euphorbiae*, in pascuis dumetosis aliquanto petrosis, subsiccis, prope Lopollo, Huilla, Mart. 1860.

No. 127. *Peridiis* sparsis, campanulatis, pallidis; marginis laciniis brevibus et crenulatis; *sporis* ut in 105.

Hab. Rarius ad folia suffruticis Rubiacearum in dumetis prope lacum magnum de Ivantala, distr. Huilla, Feb. 1860.

No. 8 is also a species of *Æcidium*, but it is not describable from dried specimens.

UROMYCES ALLIORUM, DC.

Hab. Ad folia *Liliaceæ asphodeloideæ*, in pratis humidis prope Muta Lucala, Pungo Andongo, Martio 1857. No. 19.

Ad folia et scapos *Albuca juncifoliae*, Pungo Andongo, Maio 1857. No. 22.

No. 130 is an effused *Uredo*, covering the underside of the leaves of a Rubiaceous plant. The spores are subglobose or elliptical, echinulate, 0·0011 to 0·0013 long.

DESCRIPTION OF THE PLATES.

PLATE 17.

- Figs. 1–4. *Meliola formosa*, Welw. & Curr.: fig. 1, a branch of the mycelium, slightly magnified; fig. 2, setæ, *id.*; fig. 3, spores, × highly; fig. 4, fragments of the mycelium, × 430 diameters.
 Figs. 5 & 6. *Xylaria arenicola*, Welw. & Curr., × slightly.
 Fig. 7. *Laternea angolensis*, Welw. & Curr., natural size.

Fig. 8. *Lysurus corallocephalus*, Welw. & Curr., natural size.

Figs. 9–11. *Helminthosporium Cordiae*, Welw. & Curr., filaments and spores, \times highly.

Figs. 12 & 13. *Pemphidium nobile*, Welw. & Curr.: fig. 12, *sporidia*, \times 420 diameters; fig. 13, a *perithecium*, \times slightly.

Fig. 14. *Pestalozzia depazeoides*, Welw. & Curr., spores, \times highly.

Fig. 15. *Sporidesmium celatum*, Welw. & Curr., spores, \times highly.

Figs. 16 & 17. *Phoma confluens*, Welw. & Curr.: fig. 16, *perithecia*, \times ; fig. 17, *sporidia*, \times highly.

Fig. 18. *Hypoxyylon suborbiculare*, Welw. & Curr., vertical section, natural size.

Figs. 19 & 20. *Hypoxyylon angolense*, Welw. & Curr.: fig. 19, plants, of the natural size; fig. 20, *sporidia*, \times highly.

Fig. 21. *Asterina difformis*, Welw. & Curr., *asci* and *sporidia*, \times 420 diameters.

Fig. 22. *Hypoxyylon aggregatum*, Welw. & Curr., detached *perithecia*, \times .

Fig. 23. Spores of *Podaxon mossamedensis*, Welw. & Curr., \times highly.

Figs. 24 & 25. *Xylaria axillaris*, Welw. & Curr.: fig. 24, two plants, \times ; fig. 25, *sporidia*, \times 420 diameters.

PLATE 18.

Figs. 1 & 2. *Sphaericeps lignipes*, Welw. & Curr., plants, of the natural size.

Figs. 3 & 4. *Xylaria aphrodisiaca*, Welw. & Curr., plants, of the natural size.

Figs. 5 & 6. *Hypoxyylon cetrarioides*, Welw. & Curr.: fig. 5, natural size; fig. 6, one of the ramifications, magnified.

Fig. 7. *Xylaria variabilis*, Welw. & Curr., natural size.

PLATE 19.

Figs. 1–3. *Podaxon mossamedensis*, Welw. & Curr., natural size: fig. 3 represents a plant with the *peridium* removed, showing the *capillitium* adhering to the *stipes*.

Figs. 4, 5 & 6. *Podaxon elatus*, Welw. & Curr.: figs. 4 & 5, plants, of the natural size; fig. 6, a fragment of a thread of the *capillitium*, spirally ruptured.

Figs. 7 & 8. *Lycoperdon tomentosum*, Welw. & Curr., natural size.

PLATE 20.

Figs. 1 & 2. *Lycoperdon caespitosum*, Welw. & Curr., natural size.

Figs. 3 & 4. *Lycoperdon asperrimum*, Welw. & Curr., natural size.

Figs. 5, 6 & 7. *Podaxon loandensis*, Welw. & Curr., natural size.

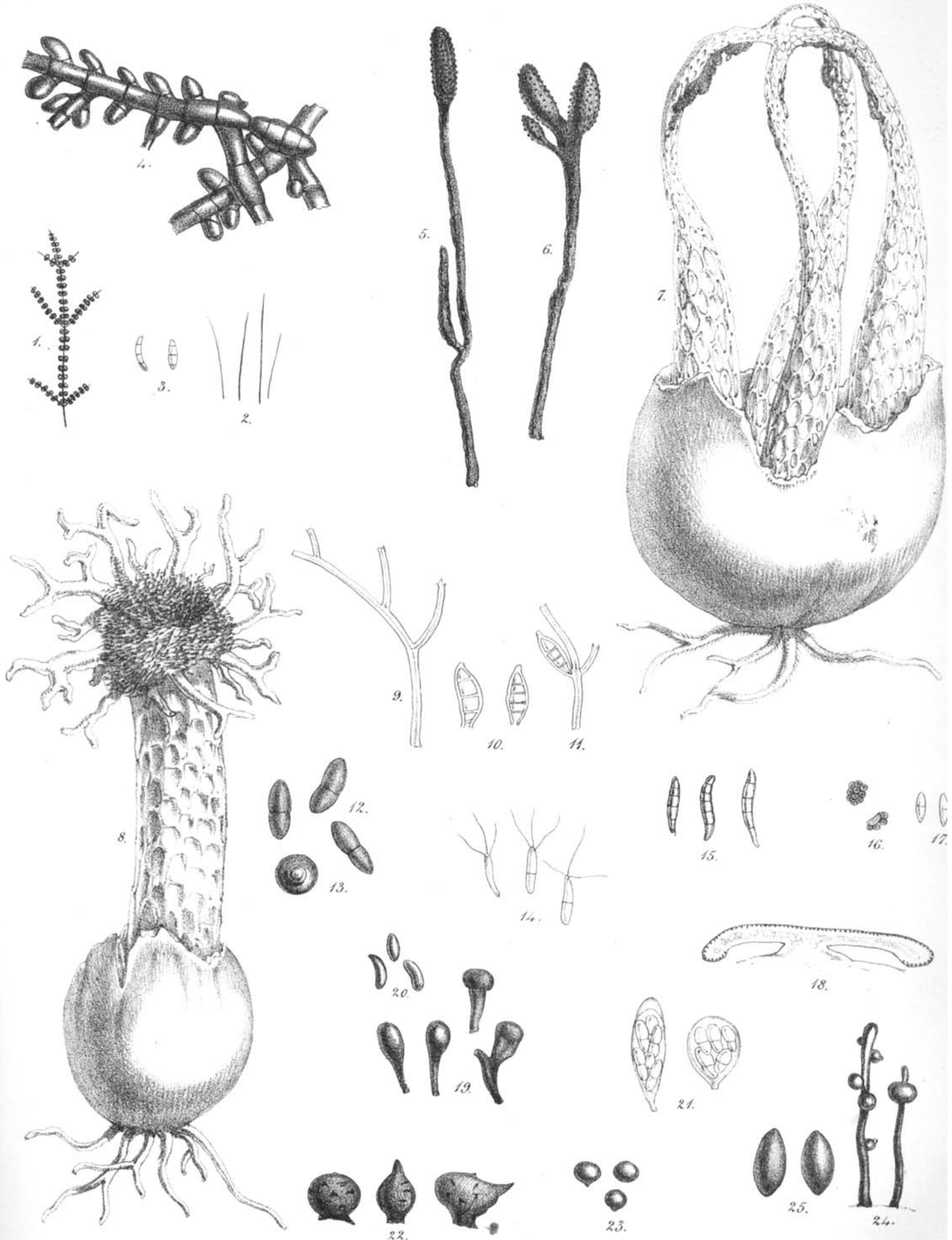
Figs. 8 & 9. *Lycoperdon radicatatum*, Welw. & Curr., natural size.

Figs. 10 & 11. *Tulostoma angolense*, Welw. & Curr., natural size.

Fig. 12. *Lycoperdon bicolor*, Welw. & Curr., natural size.

Fig. 13. *Lycoperdon golungense*, Welw. & Curr., natural size.

Fig. 14. *Lycoperdon asperrimum*, Welw. & Curr., natural size.





W.F. del. et. lith.

J.N. Fitch, imp.

