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THE  
ENGLISH FLORA

OF

SIR JAMES EDWARD SMITH.

CLASS XXIV. CRYPTOGAMIA,

BY

WILLIAM JACKSON HOOKER, LL.D. F.R.A. & L.S.

MEMBER OF THE ACADEMIES OF  
LUND, MOSCOW, PHILADELPHIA, NEW YORK, BOSTON, ETC.,  
OF THE IMPERIAL ACAD. NATURÆ CURIOSORUM,  
HONORARY MEMBER OF THE ROYAL IRISH ACADEMY,  
AND  
REGIUS PROFESSOR OF BOTANY IN THE UNIVERSITY OF GLASGOW.

VOL. V.

(OR VOL. II. OF DR. HOOKER'S BRITISH FLORA.)

PART II.

COMPRISING THE

FUNGI;

BY THE

REV. M. J. BERKELEY, M.A., F.L.S., &c., &c.

LONDON:

LONGMAN, REES, ORME, BROWN, GREEN & LONGMAN.

MDCCCXXXVI.

+

# CRYPTOGAMIA FUNGI.

SUBORD. I. HYMENOMYCETES. *Hymenium naked.*

TRIBE I. PILEATI.<sup>1</sup> *Receptacle dilated more or less in a horizontal direction, sometimes branched, tending to an orbicular form. Hymenium inferior. Asci fixed.*

I. AGÁRICUS.<sup>2</sup> *Linn. Agaric.*

*Hymenium* consisting of plates radiating from a common centre, with shorter ones in the interstices, composed of a double closely connected membrane, more or less distinct from the pileus. *Veil* various or absent.—Named from *Agaria*, a region of Sarmatia.

SERIES I. LEUCOSPORUS; (*λευκος*, *white*, and *σπορος*, *seed*.) *Sporules white.*<sup>3</sup>

Subgenus I. AMANÍTA; (a name given to some esculent Fungus by Galen.) *Veil double: one universal, covering the whole plant in a young state, distinct from the epidermis, at length burst by the protrusion of the pileus, part remaining at the base of the stem, part either falling off or forming warts on the pileus; the other partial, at first covering the gills and afterwards forming a reflected sub-persistent ring on the top of the stipes. Stem stuffed, at length hollow, squamoso-fibrillose, thickened at the base. Pileus with the disk fleshy, the margin thin, campanulate, then plane; viscid when saturated with moisture. Gills attenuated behind, free, broader in front, ventricose, close, but little unequal, when full grown denticulated.—Sub-solitary Fungi, growing on the ground or dung, never on wood; not soon decaying.*

\* *Volva* loose, *margin of the pileus even. Poisonous.*

1. *A. phalloides*, Fr. (*Phallus-like Agaric*); pileus more or less scaly, margin not striate, stem hollow above, volva bulbous. *Fr. Syst. Myc. v. 1. p. 13.—Fungus phalloides, Vaill. Bot. Par. p. 74. t. 14. f. 5.—A. bulbosus, Bull. t. 2. 577. With. ed. 7. v. 4.*

<sup>1</sup> The *pileus* is sometimes resupinate, the *hymenium* being uppermost; as, for instance, in some species of *Agaricus*, *Polyporus*, *Thlephora*, &c. But in such cases there is a greater or less tendency to become reflected, so that the *hymenium* may gain its normal inferior position.

<sup>2</sup> By the Rev. M. J. Berkeley.

<sup>3</sup> In *A. alutaceus*, *luteus*, *nitidus*, *fuliginosus*, the sporules are pale yellow or buff.

p. 199; (*wrong synonyms*).—*A. vernalis*, Bolt. t. 48.—*A. muscarius*, Sow. t. 286. fig. sin.—var. 3. *Purt. v. 3. p. 201.*—*A. verrucosus*, Curt. Fl. Lond. t. 312. fig. dext.

Woods and borders of woods. Aug.—Nov. Not uncommon.—*Pileus* 2—3 inches broad, fleshy, at first subhemispherical, then expanded or even slightly depressed, sometimes slightly umbonate, irregularly scaly from the fragments of the volva adhering to the shining surface which is slimy when moist; the margin quite even and free from striæ; white, straw-coloured, olive-green with brown markings, &c. *Gills* numerous, unequal, ventricose, broader in front, pure white, subadnexed, sometimes quite free; when young covered with a membrane which in the course of expansion either falls off or forms a deflexed ring. *Stem* 3—4 inches high, half an inch thick, fibrillose with a few adpressed scales arising from the partial ring which was at first in contact with it, attenuated upwards, bulbous below and there furnished with a variously lobed *volva* which is adnate with the base of the stipes, but has the margin free and more or less expanded, in general hollow at the apex or for some distance down, though occasionally the inner substance is only a little more spongy than the outer, varying much in size and colour and degree of scaliness, and according to Fries in the manner of adherence of the volva. When fresh it has a powerful but not disagreeable smell; when past maturity, its odour becomes almost insupportable. Accounted highly poisonous, especially the yellow variety.—Small specimens of the white variety are with great difficulty distinguished from *A. vernus*. Though it has a strong fungus-like smell, it has not when fresh the fetid odour, which is the distinguishing mark of that species. Fries in his *Elenchus* adds another distinctive character, namely, that *A. phalloides* has the pileus at first convex, then plane; whereas, in *A. vernus* the pileus is at first conico-campanulate, then expanded. This is not however expressed in Bulliard's figure, and I have seen the pileus of *A. phalloides* ovate when young. I have never met with specimens which agree with *A. vernus*. In all, however variable in size and colour, and the degree of hollowness of the stem, the gills are broadest in front, whereas Fries describes and Bulliard figures the gills as lanceolate. Bolton's figure certainly belongs to *A. phalloides*, though it is probable from his remarks that he had met with the true *A. vernus*.—In the new edition of *Withering*, Sowerby's *A. bulbosus* is quoted under this species, with which it has nothing in common except the name. This is by no means the only instance of such a loose manner of compilation.

\*\* *Volva* loose, margin of the pileus striate. *Esulent*.<sup>1</sup>

2. *A. vaginatus*, Bull. (*sheathed Agaric*); margin of the pileus sulcate, gills white, stem fistulose with cottony pith, attenuated upwards almost smooth, volva like a sheath. *Bull. t. 512. 98. Tratt. Fung. Aust. t. 13. n. 25. Fr. Syst. Myc. v. 1. p. 14.*—*A. pulvinatus*, Bolt. t. 49. *With. ed. 7. v. 4. p. 205.*—*A. trilobus*, Bolt. t. 38. f. 2.—*A. plumbeus*, *With. l. c. p. 220.*—*A. badius*, *With. l. c. p. 208.*—*A. muscarius*, var. 6. *Purt. v. 3. p. 203.*

<sup>1</sup> To this division belong *A. ovoides* and *A. Cæsareus*, which appear to be the best of all the esculent Agarics.

Woods and pastures. Aug.—Oct. Not uncommon.—*Pileus* 4 inches or more broad, plane, slightly depressed in the centre, scarcely umbonate, fleshy, except at the extreme margin which in consequence is elegantly grooved; viscid when moist, beautifully shining when dry; at first there are a few broad scales, the remains of the volva, but these soon vanish; the *Epidermis* easily peels off. *Gills* free, ventricose, broadest in front, often imbricated, white. *Sporules* white, round. *Stem* 6 inches or more high,  $\frac{1}{2}$ —1 inch thick, attenuated upwards, obtuse at the base, where it is furnished with a *volva* which is adnate for about an inch and then, in general, closely surrounding it like a sheath, but sometimes the margin is expanded, marked within at the base with the grooves of the pileus; brittle, sericeo-squamulose, scarcely fibrillose, but splitting with ease longitudinally, hollow, or rather stuffed with fine cottony fibres, the very base solid, not acrid, insipid; smell scarcely any. Eaten in Russia, but according to some accounts, poisonous.—The volva is easily overlooked if care be not taken to dig up the very base of the stem, as it is apt to be entangled in the grass. Its peculiar character is evidently owing to the elongated form of the young pileus. This state is admirably figured by Bulliard who established the species. But, occasionally, forms occur in which the volva is more like that in some of Schœffer's figures. It occurs of various colours; the more general one is a mouse-grey. Bolton figures a tawny variety agreeing with *A. fulvus*, Schœff. t. 95. Others are figured by Schœffer of a bluish and bay hue. Batsch has a white and Haller a green variety.—I once found in a grassy riding in Shorne Wood Kent, Aug. 6, 1832, a species apparently distinct, but as I have never met with it since, and had no opportunity of making a drawing, I do not venture to propose it as such. *Pileus* nearly 4 inches broad, slightly fleshy, the margin grooved, without scales, of a grey-umber. *Gills* broad ( $\frac{1}{2}$  an inch or more) obtuse at each end and ventricose, at first white, yellow in decay, subdeliquescent and fœtid. *Stem* 3 inches long,  $\frac{1}{2}$  an inch thick, stuffed, but by no means cottony within, scaly, the scales pointing downwards, equal except at the base, which is thickened and furnished with a thick ample volva rugulose without, smooth within. Bolton's description of his *A. pulvinatus*, especially as regards the inside of the stem, agrees better with this than with the common state of the species.

3. *A. nivâlis*, Grev. (*alpine Agaric*); pileus smooth, the margin sulcate, gills somewhat distant, stem stuffed, volva loose. Grev. Scot. Crypt. Fl. t. 18.

Highland pastures and the summits of mountains. Scottish Alps. Aug. Not uncommon.—"White. *Pileus* 2—3 inches broad, ovate in the volva, then convex, at length plane and subumbonate, the centre subochraceous; at first warty then quite smooth. *Flesh* white, very thin on the margin. *Gills* subdistant, broad in front, narrow behind, entire. *Stem* 3—5 inches high, 3—4 lines thick, naked, stuffed with spongy fibres, bulbous at the base, with a constriction where the volva becomes free. *Volva* loose, persistent." Grev. l. c.—Very near to *A. vaginatus*, the only marks of distinction being the greater distance of the gills and the greater compactness of the stem. In the last character it agrees with the plant found at Shorne, mentioned above. Nothing is known of its qualities. Fries in his *Ind. Alph. p.* 32, considers it the same as *A. vaginatus*.

\*\*\* *Volva obliterated ; margin of the pileus striate. Poisonous.*

4. *A. muscarius*, L. (*Fly Agaric*); margin of the pileus striate, gills white, stem subsolid bulbous, volva scaly. *Linn. Fl. Suec.* 1235. *Sow. t.* 286. *fig. dext. var.* 4. *With. ed.* 7. v. 4. p. 173. *Purt. v.* 2. p. 630. and *var.* 4. v. 3. p. 202. *Fr. Syst. Myc. v.* 1. p. 16. *Klotzsch, Fung. Germ. exs. no.* 1.—*Amanita muscaria*, *Grev. Sect. Crypt. Fl. t.* 54. *Grev. Fl. ed.* p. 369.

Woods, especially of fir and birch. Aug.—Nov. Abundant in the Highlands: less common in the south of England.—*Pileus* 3—7 inches broad, convex, at length sometimes depressed, rich orange scarlet, but occasionally whitish, yellowish or brown, beset with conical, superficial, angular warts, viscid when moist; margin thin, striate; *flesh* partaking of the colour of the pileus to some depth. *Gills* white, broad, ventricose, free or slightly adnexed. *Sporules* white, round. *Stem* 4—9 inches high,  $\frac{1}{2}$ —1 inch thick, stuffed, at length sometimes hollow, brittle, bulbous; *bulb* sending down fibres into the soil, covered with close conical scales, the remains of the volva; above the bulb the surface is broken into scales, beneath these fibrilloso-tomentose, the apex minutely tomentose. *Ring* deflexed.—Highly narcotic, producing in small doses intoxication and delirium, for which purpose it is used in Kamschatka, and in larger, death. For a detailed account of its poisonous effects, see *Roques Hist. des Champ. p.* 123, and, for some curious particulars, a paper by Dr. Greville in the 4th vol. of the *Wernerian Transactions*, of which an extract is given by Lindley, *Int. to Nat. Syst. of Bot. p.* 337.

5. *A. Mariae*, Klotzsch, (*Miss Hooker's Agaric*); "pileus brownish rough with floccose scales convex subumbonate at length plane, the margin even naked, gills not juicy crowded free white, stem nearly equal somewhat hollow and membranaceous in the middle somewhat bulbous at the base, ring loose, veil minutely scaly." *Klotzsch in Linnæa, v.* 7. p. 197. t. 8.

On sandy soil in one of the Conservatories of the Botanic Garden, Glasgow. Aug. 1830. Found by *Miss Maria Hooker*.—"Substance fleshy, tough, elastic, white. *Pileus* 2—3 inches broad, with dark-coloured scales. *Stem* tawny, pruinose, 2—3 inches long, 4 lines to  $\frac{1}{2}$  an inch thick: *Ring* white."—Intermediate between *A. muscarius* and *A. rubescens*. It seems to be a very beautiful species, having when dry somewhat the appearance of a large variety of *A. clypeolarius*, the scales not being merely superficial but intimately connected with the true epidermis. (In *Fries' Ind. Alph. p.* 29. 1832, the above notion is confirmed by the observation, *A. Mariae*, Klotzsch, med. int. *Aman. et Lepiot.*—*Linnæa*, VII. 193.)

6. *A. pantherinus*, Dec. (*Panther Agaric*); pileus warty, margin striate, stem equal subsolid, volva adnate the margin only free. *Dec. Fl. Fr. v.* 6. p. 52. *Fr. Syst. Myc. v.* 1. p. 16.—*A. maculatus*, *Schæff. t.* 90.—*A. muscarius*, *var.* 2. *Purt. v.* 3. p. 200. (*in part*).—*var.* 6. *With. v.* 4. p. 174.—*A. cinereus*, *Roques, Hist. des Champ. t.* 21. f. 2. 3.

Borders of woods. Aug.—Oct. Not common. Lytchett, Dorset.

*Rev. M. J. Berkeley.*—Solitary. *Pileus* 4 inches broad, at first convex with many flat mealy warts which rub off with difficulty; then expanded and slightly depressed, glutinous when moist, when dry soft to the touch like kid leather; beneath the gluten are minute fasciculato-pilose scales, but quite adpressed and innate; reddish grey or brown, according to Fries sometimes livid; margin sulcate and tubercled. *Gills* broad in front, free, white. *Sporules* round, pure white. *Stem* 5 inches high,  $\frac{1}{2}$  an inch thick, stuffed, at length more or less hollow, bulbous, either silky and even or torn into reflexed scales; *ring* deflexed; *volva* quite smooth, connate, the extreme margin only free all round.—Fries describes the warts as white, minute, and subinnate. My specimens agree exactly with Schæffer's figure which is tolerably characteristic; but I find that in the advanced state of the plant the warts vanish. If Persoon's *Amanita umbrina*, *Syn. p.* 254 (which is quoted by Fries) be the same, this accords with his observation "a variety occurs in which the pileus is destitute of warts." The contents of the stem are quite different from those of *A. vaginatus*. The synonym of Purton certainly includes *A. rubescens*, and perhaps belongs entirely to that, but as the synonyms of *A. pantherinus* are also quoted, I consider it incumbent upon me to insert it, though I have not put down his localities, it being uncertain to which of the two species they refer.

\*\*\* *Volva obliterated: margin of the pileus even. Suspicious.*

7. *A. excelsus*, Fr. (*tall Fly Agaric*); pileus unequally warty, margin even, flesh unchangeable, stem solid bulbous, the bulb scaly. *Fr. Syst. Myc. v. 1. p.* 17.—*Amanita ampla*, Pers. *Syn. p.* 256.

Woods. Aug.—Sept. Shorne Wood, Kent, Aug. 9, 1832. *Rev. M. J. Berkeley.*—Solitary. *Pileus* 4 inches broad, umber-grey, slightly viscid, smooth, with a few unequal more or less conical irregular scattered warts, easily rubbed off; *epidermis* tough and clammy, easily peeling off; margin not striate. *Gills* obtuse before and behind, but much broader in front, truly free,  $\frac{1}{2}$  an inch broad, the margin slightly uneven. *Stem* 6 inches or more high, 1 inch thick, going deep into the earth; scaly below the ring, scales thick and squarrose; above the ring the scales are closely adpressed, their interstices finely silky, apex striate, tolerably firm, juicy, of an unchangeable white, distinct from the pileus, though nearly of the same substance; *ring* half-way down, large, substriate within, externally downy. Taste pleasant. The above description, made upon the spot, exactly agrees with that of Fries. The species is evidently very nearly allied to the following, the principal difference consisting in the unchangeable white of the flesh.

8. *A. rubescens*, Pers. sub Am. (*changeable-fleshed Fly Agaric*); pileus clothed with unequal mealy warts, margin not striate, flesh turning red, stem stuffed scaly subbulbous. *Pers. Syn. p.* 254. *Fr. Syst. Myc. v. 1. p.* 18.—*A. pustulatus*, Schæff. t. 91.—*A. myodes*, Schæff. t. 261.—*A. verrucosus*, Curt. *Fl. Lond. t.* 312. *fig. sin. et med.*—*A. muscarius. var. 7. With. v. 4. p.* 174.—*Purt. v. 3. p.* 200 (*in part*) *var. 2.*

Woods, especially fir woods. Autumn.—*Pileus* convex, reddish, unequally warty, warts flat; smooth and even on the margin, in old specimens there is sometimes an appearance of striae on the margin in consequence of its becoming transparent, slightly viscid; flesh turning red when

cut, more or less completely. *Gills* broad in front, narrow behind, adnexed by a fine prominent line. *Sporules* subelliptic. *Stem* stuffed, at length more or less hollow, bulbous, the *bulb* more or less smooth, above the ring clothed with flat adpressed scales; below the ring the scales have their upper margin free and patent; *ring* large, deflexed striate.—Smell strong, taste not unpleasant.—Such is the form which occurs not unfrequently in the South of England. The discoloration of the flesh is by no means strongly marked. Indeed I find specimens in which it is very slight, and the change is rather to brown than red; the stem furfuraceous below the ring, and above striate and pulverulent; the *volva* thick and smooth. Smell strong like that of mould; taste like that of a germinating walnut.—In Scotland where it is exceedingly abundant, the change of colour appears to be much greater, and is very evident in the dry specimens; though in individuals gathered by M. Klotzsch at Inverary, the flesh remains quite white. In a specimen in Dr. Hooker's Herbarium the pileus is 7 inches broad, stem  $7\frac{1}{2}$  inches high,  $1\frac{1}{4}$  thick; the more general size, however, is pileus 3—5 inches broad, stem 2—4 inches high. According to M. Cordier it is much eaten in Lorraine under the name of *Golmelle* or *Golmotte vraie*, whereas, according to Roques, it is poisonous. *Roques, Hist. des Champ. p.* 130. Since the above was written, specimens occurred at Laxton, Norths. in which the change of colour was very strongly marked and almost instantaneous.

9. *A. ásper*, Pers. (*rough-warted Agaric*); pileus subumbonate rough with acute warts, margin even, stem stuffed attenuated squamulose. *Pers. Obs. Myc.* 2. p. 38. *Abbild. d. Schw. F.* 3 cum. ic. *Fr. Syst. Myc.* v. 1. p. 18.—*Amanita aspera*, Pers. *Syn.* p. 256.—*A. verrucosus*, *Bull. t.* 316.—*A. myodes*, *Bolt. t.* 139.—*A. muscarius*, var. 5. *With. v.* 4. p. 174.

Woods. June—Oct. Lee Bridge. Bolton. East Morden, Dors. Collyweston, Norths. *Rev. M. J. Berkeley*.—Solitary or subgregarious. *Pileus* 2—3 inches broad, at first convex, then expanded, scarcely umbonate, reddish, with various tints of livid and grey, clothed with small acute warts, margin not striate; flesh thick permanent white, except immediately beneath the epidermis. *Gills* white, broad in front, with sometimes a little tooth behind running down the stem, at length more or less imbricate. *Stem* 2—3 inches high, sometimes  $1\frac{1}{2}$  inch thick at the base, but often much less, bulbous, the *bulb* rather rough, striate above the ring, diffracto-squamulose, or silky below; stuffed; *ring* broad, striate. *Flesh* of the stem when eaten by maggots and bulb when old, red.—The delicate surface of the ring and stipes is brick-red when touched, or from the pressure of the surrounding grass. Odour strong, taste not unpleasant. Poisonous according to Roques. My specimens accord exactly with Bulliard's figure; but I have found it occasionally much larger; pileus 5 inches broad, stem  $4\frac{1}{2}$  high.

Subgenus 2. LEPIOTA; (from λεπις, a scale.) *Veil* single, universal, closely adhering to, and confluent with the epidermis, when burst forming a more or less persistent ring towards the middle<sup>1</sup> of the stem. *Stem* hollow, stuffed with more or less densely

<sup>1</sup> In *Amanita* the ring takes its origin within the pileus, forming a cover to the gills; in *Lepiota* the ring is merely the free portion of the universal veil, answering to the free portion of the *volva* in *Amanita*.



interwoven arachnoid threads; equal or thickened at the base, fibrillose. Pileus more or less fleshy, but not compact, ovate when young, soon campanulate, then expanded and umbonate. Flesh white, soft. Gills unequal, never distant or decurrent. Colour of the gills white, in some varieties yellow.—Solitary, persistent, autumnal Fungi growing on the ground; not dangerous.

\* Veil at length loose; gills remote, (ending at a considerable distance from the stem.)

10. *A. procérus*, Scop. (large shaggy Agaric); large, epidermis of the pileus breaking up into scales, gills remote, stem cylindrical bulbous, ring moveable. Scop. *Fl. Carn. n.* 1465. Schæff. *t.* 22, 23. Curt. *Fl. Lond. t.* 69. Sow. *t.* 190. With. *v.* 4. *p.* 241. *Purt. v.* 2 and 3. *n.* 954. *Fr. Syst. Myc. v.* 1. *p.* 20. *Greav. Fl. Ed. p.* 370.—*A. colubrinus*, Bull. *t.* 78. 583.—*A. annulatus*, Bolt. *t.* 23.

Gardens, hedge-banks, pastures and woods. July—Oct. Common.—Pileus 3—7 inches broad, at first obtusely conic, at length campanulate, strongly umbonate, fleshy; epidermis velvety, red-brown, broken into subreflexed scales, the whole resembling brown shaggy leather; margin white or pinkish, silky; flesh soft and cottony except in the centre when young. Gills perfectly free, separated by a considerable space from the point of insertion of the stipes, ventricose, margin serrated, pale pinkish yellow or white. Sporules white, elliptic. Stem 8—12 inches high,  $\frac{1}{2}$  an inch thick, attenuated upwards, sunk deep into the flesh of the pileus as into a socket, very bulbous, scaly, hollow but stuffed with a cottony web. Ring coriaceous, thick and spongy, convex below, moveable. Taste and smell pleasant. Forming, on the continent, a frequent article of food. Roques, *Hist. des Champ. p.* 120.

11. *A. excoriátus*, Schæff. (excoriated Agaric); not large, epidermis of the pileus close broken into little patches, gills remote, stem equal, ring moveable. Schæff. *t.* 18, 19. *Fr. Syst. Myc. v.* 1. *p.* 21. *Purt. M.S.S.*—*A. procerus*, var. 4. With. *v.* 4. *p.* 242.—var. *Purt. v.* 3. *p.* 418.

Pastures, especially under trees. May—Sept. Edgbaston, under Spanish Chestnut. Withering. Apethorpe, Northamptonshire. Rev. M. J. Berkeley.—Pileus  $2\frac{1}{2}$  inches across, expanded, often a little irregular, carnose, umbonate; flesh spongy; epidermis cracked into small areolæ, silky between them, especially on the margin, pale fawn, the umbo dark. Gills ventricose, free, so as to leave a broad space round the top of the stem, which is sunk into the substance of the pileus, dull white, slightly watery, imbricate when old; sometimes much broader on one side than on the opposite side of the pileus, and sometimes stained with claret-coloured blotches. Sporules white, elliptic, with an evident transparent border. Stem  $1\frac{1}{2}$ —2 inches high,  $\frac{1}{4}$ — $\frac{1}{3}$  of an inch thick, attenuated regularly upwards without a decided bulb, minutely fibrillose, hollow but stuffed with a beautiful cottony web. Ring deflexed, moveable, but not so free as that of *A. procerus*.—Smell scarcely any; taste like that of *A. oreades*.

\*\* Veil fixed or fugacious; gills remote or free.

12. *A. cepástipes*, Sow. (white bark-bed Agaric); pileus cam-

panulate truncate at length plane, more or less scaly, margin plicate, gills remote, stem hollow ventricose glabrous, ring persistent. *Sow. t.* 2. *Pers. Syn. p.* 416. *Fr. Syst. Myc. v.* 1. *p.* 280. *Grev. Sc. Crypt. Fl. t.* 333.—*A. luteus*, *With. v.* 4. *p.* 212. *Bolt. t.* 50.—*A. cretaceus*, *With. v.* 4. *p.* 201. *Purt. v.* 3. *n.* 1455.— $\beta$ . stem equal.

Bark-beds in stoves. Summer and Autumn. Not uncommon.  $\beta$ . Elton, Hunts. *Rev. M. J. Berkeley*.—"Gregarious or tufted, white, pale sulphur, or yellow. *Pileus* 1—3 inches broad, ovate conical when young, then campanulate, and finally nearly or quite plane, darkest in the centre, and more or less covered with small scattered fibrous scales; flesh thin, margin very thin and semitransparent plicate; substance tough and bears folding between the fingers without tearing. *Gills* numerous, thin, broad, and rounded near the stem, and separated from it by a circular space; but the stem does not penetrate into the substance of the pileus. *Sporules* white, copious, elliptic. *Stem* 3—6 inches high, straight or crooked, firm, even, smooth, narrow at the top, but ventricose below and then narrower again at the very bottom, somewhat pruinose, the centre at first filled with delicate silky fibres, at length hollow. *Ring* perfect, erect, persistent. In decay the pileus becomes brownish, and according to its situation, either dries up or becomes covered with little globules of fluid and gradually dissolves." *Grev. l. c.* In  $\beta$ . the stem is quite equal and the gills have the palest yellow tinge, like that assumed sometimes by *A. cristatus* and *A. polystictus*; in every other respect it agrees with *A. cepæstipes*. *A. cretaceus*, Bull. if rightly placed by Fries, has dark sporules. Every thing about the species indicates a complete affinity with *A. procerus* and *A. cristatus*.

13. *A. Clypeolarius*, Bull. (*Shield-like Agaric*); inodorous, epidermis of the pileus broken into scales, gills approximate, stem floccoso-squamose, ring evanescent. *Bull. t.* 405, 506. *f.* 2. *Fr. Syst. Myc. v.* 1. *p.* 21. *Sow. t.* 14. *With. v.* 4. *p.* 244. *Purt. v.* 3. *p.* 420. (*in part.*) *Grev. Fl. Ed. p.* 370.—*A. Meleagris*, *With. ed.* 2.

Woods, especially of beech; borders of shady fields. Oct.—Nov. Rare. Duddingston. *Greville*. Canterbury. *Rev. M. J. Berkeley*.—*Pileus* 1½ inch broad, subcampanulate, strongly umbonate, whitish with reddish scales. *Gills* numerous, quite free, nearly reaching the stem, ventricose. *Stem* 2—3½ inches high, 2 lines thick, hollow but stuffed with cottony fibres, whitish, pale brownish or rufescent, the whole clothed with fibrillose scales. *Ring* sometimes remaining on the stem, but more generally attached to the margin of the pileus or evanescent. Inodorous and insipid.—Bearing some resemblance to *A. procerus*, but smaller and more delicate. M. Roques informs us that while some pronounce it excellent for food, others declare it to be poisonous, and adds that he has twice eaten a small quantity, without experiencing any bad effects. Sowerby's plant is set down by Fries in *Syst. Myc.* as a variety; but in his *Ind. alph.* as *A. cristatus*, which it cannot be, for the gills are not remote: and M. Klotzsch in *Hook. Herb.*, seems almost disposed to consider it a distinct species. The flesh in the centre is far deeper than in the common state, and the stem nearly naked. His specimens were gathered in the stoves, at Castle-Semple, near Glasgow, in the month of July.

14. *A. polystictus*, Berk. (*fleshy mottled Agaric*); inodorous, fleshy, epidermis of the pileus and stem broken into scales, gills broad approximate, stem attenuated above and below.

On a lawn after a fortnight's stormy weather. July 26, 1828. Cotterstock, Northamptonshire. *Rev. M. J. Berkeley*.—*Pileus*  $1\frac{1}{2}$  inch broad, not at all campanulate, expanded, and broadly and obtusely umbonate; *flesh* thick in the centre, firm and tough, the *epidermis* broken into minute flat scales of a rich red-brown. *Gills* numerous, unequal, rounded before and behind, broad, ventricose, quite free, the margin serrulate, white with a slight yellowish tinge. *Stem* 1 inch high,  $\frac{3}{8}$  of an inch thick in the middle, divided into two distinct portions; the upper one silky of a pinkish hue, the lower scaly like the pileus, but the scales browner; attenuated at the base where it is furnished with many branched fibrous roots, hollow, stuffed with fine silky filaments. *Ring* fugacious, attached in minute portions to the edge of the pileus. Inodorous and insipid.—I have met with this plant only once, but there can be no doubt that it is very distinct from *A. clypeolarius*, with which it has the nearest affinity. It may possibly be *A. colubrinus*, var.  $\beta$ . *pantherinus*, Pers. Syn. p. 259. It agrees with it in many points, but he describes his plant as subbulbous, and I am not sure whether the expression "*subcarnosus*" will apply correctly to a plant in which the flesh is  $\frac{1}{4}$  of an inch thick and only  $1\frac{1}{2}$  across.

15. *A. Meleágris*, Sow. (*chequered Agaric*); pileus carnose spotted with distinct dark scales, gills subremote moderately broad, stem stout scaly like the pileus, the lower half black. *Sow. t.* 171. *Pers. Myc. Eur. v.* 3. p. 346. *Klotzsch, MSS. in Hook. Herb.*—*A. colubrinus*, *Tratt. Fung. Aust. t.* 13. f. 26.—*A. clypeolarius*, *Fl. Dan. t.* 1732. f. 1.

Hot-beds. Melon-beds at Erskine, Scotland, the seat of Lord Blantyre. *Klotzsch*. May—Oct.—The *stem* appears stuffed in M. Klotzsch's specimens. "It has a solid stem and a curious, somewhat reticulated root. In drying it becomes of a blush-red all over, except the lower part which retains the darker hue." *Sow. l. c.* M. Klotzsch's specimens have a very flexuous stem, above three inches long,  $\frac{1}{4}$  inch thick, nearly equal. *Pileus*  $1\frac{1}{4}$  inch broad. In Sowerby's figure and model the stem is incrassated below. But in either case it is much stouter in proportion than in *A. clypeolarius*. Fries' supposition in the *Elenchus* that it is the same as *A. cuneifolius* is certainly wrong.

16. *A. cristátus*, Bolt. (*crested Agaric*); strong-scented, epidermis of the pileus breaking up into scales, gills remote, stem smooth, ring fugacious. *Bolt. t.* 7. *Fr. Syst. Myc. v.* 1. p. 22. *Greav. Fl. Ed. p.* 370. *Sc. Crypt. Fl. t.* 176. *Purt. MSS.*—*A. clypeolarius*, var. 3. *With. v.* 4. p. 245. *Purt. v.* 3. p. 420. (*in part.*)—*A. subantiquatus*, *Batsch, Cent.* 2. f. 205.

In grassy and mossy places, especially on lawns, sometimes on garden-beds. Aug.—Nov. Common.—Solitary or subgregarious. *Pileus*  $\frac{1}{2}$  to  $1\frac{1}{2}$  inch broad, expanded, umbonate, white, the epidermis broken into rufescent scales which are either flat or reflexed, less frequent on the margin; *ring* sometimes attached in fragments to the margin, sometimes moveable on the stem; *flesh* firm, thin. *Gills* remote, numerous, slightly ventricose, the margin uneven often imbricated,

tinged slightly with yellow. *Sporules* white, elliptic. *Stem* 1—2 inches high, 1—2 lines thick, tough, composed of fibres, smooth or fibrillose; hollow but with a few cottony fibres; *flesh* towards the base reddish. “*Root* a mass of white branching fibres of considerable tenacity, and generally retaining a quantity of soil.” Smell and taste strong and unpleasant. There are two distinct forms, besides the white one figured by Micheli. The one described above is that figured by Greville; the other that of Bolton, very different in habit as may be seen on comparing the plates. Bolton’s figure is however by no means uncharacteristic. I found two specimens exactly agreeing with it, amongst sticks, at the root of a tree, under Wollarton Park wall, Notts. The *gills* are broader the scales are sharp, strongly elevated, almost conical, dark brown. *Stem* sericeo-pulverulent above the place of the ring, which is very fugacious; below rufous and furfureous. Odour strong, but resembling that of *A. oreades*.

\*\*\* *Veil fixed or fugacious; gills subadnexed.*

17. *A. granulósus*, Batsch, (*small yellow scaly Agaric*); pileus furfureous, gills fixed, stem more or less hollow scaly beneath the patent ring. *Batsch. El. p. 79. f. 24. Pers. Syn. p. 264. Fr. Syst. Myc. v. 1. p. 24. Grev. Fl. Ed. p. 370. Sc. Crypt. Fl. t. 104.—A. ochraceus, Bull. t. 362, 530. f. 3.—A. flavo-floccosus, Batsch, Cent. 1. f. 97!—A. croceus, Bolt. t. 51. f. 2. Sow. t. 19. With. v. 4. p. 183. Purt. v. 2 and 3. n. 925.—A. carcharias, Pers. Ic. Pict. t. 5. f. 1—3.*

Woods, especially of fir, and on heaths amongst moss, roots of grass, &c., and on the stumps of old fir-trees. Autumn. Not uncommon.—Pure white with a slight rufescent tinge on the centre of the pileus and base of the stem; Almer, Dorsets. *Rev. M. J. Berkeley*.—Flesh-coloured; Scotland. *Klotzsch in Hook. Herb.*—Subgregarious. *Pileus*  $\frac{1}{2}$  to 1 inch broad, in general dull reddish-yellow, but occasionally ferruginous, pink, vermilion or white. *Fleshy* in the centre, at first convex or obtusely umbonate, at length often plane or depressed somewhat wrinkled, covered with furfureous scales. *Gills* white or yellowish white, fixed to the stem; ventricose and nearly free in depressed specimens. *Stem* 1—3 inches high, 1—4 lines thick, slightly incrassated at the base, when young solid, but in age hollow, with a core occasionally running down from the centre of the pileus, and the base stuffed, sometimes slightly compressed, with a subfugacious flocculose ring about the middle, above which it is slightly fibrillose, and beneath it scaly like the pileus. In the white variety above mentioned, the pileus and stem were mealy rather than scaly, and the ring attached in fragments to the edge of the pileus.

Subgenus 3. *ARMILLARIA*; (from *armilla*, a ring.) *Veil* single, partial, springing from the stem, and forming a persistent ring which in the unexpanded plant is joined to the margin of the pileus. *Stem* solid, firm, subfibrillose, unequal. *Pileus* fleshy, convex, expanded, obtuse, the epidermis always close even in the scaly species, plainly distinct from the veil. *Flesh* white, firm. *Gills* broad, unequal, subacute behind. *Colour* of the gills white or pallid.—*Autumnal* species, persistent, esculent. *Ring* superior, (reflected from the top of the stem); or inferior, inserted at the

middle of the stem, closely connected with its epidermis, or inserted above the middle.

18. *A. constrictus*, Fr. (*white meal-scented Agaric*); pileus fleshy plano-convex obtuse smooth, gills close emarginate, stem solid nearly equal, ring very narrow. *Fr. Syst. Myc. v. 1. p. 28. Fr. El. p. 4.*

In a meadow, on a spot bleached and scorched by cow-dung, (in moist places in grass scorched by horse urine. *Fr. l. c.*) and in the path of a wood in a tuft of grass amongst which lay the bones of a rabbit. Sept.—Oct. Woodnewton, King's Cliffe, Northamptonshire. *Rev. M. J. Berkeley.*—Pure white. *Pileus* obtuse, plano-convex, broadly umbonate, fleshy, shining with a silky lustre like *A. prunulus*; when bruised, it assumes a very pale yellow tint. *Gills* close, very deeply emarginate, even when quite young. *Sporules* white, subelliptic. *Stem* 2 inches high,  $\frac{1}{4}$  of an inch thick, rather flexuous, fibrillose, solid, but the substance within more lax and fibrillose, though not eminently so, very brittle. When young there is a delicate web-like *curtain*, but this soon vanishes. Odour very strong, like that of fresh flour.—This agrees so exactly in every point but one with the description of *A. constrictus* in Fries' *Elenchus*, that I cannot persuade myself that it is different, though my specimens, as regards the veil, seem rather to point to *Tricholoma* than *Armillaria*. There is, however, no species of *Tricholoma* with which it at all accords; and as the veil is more subject to vary than almost any other part of an Agaric, I venture, in the absence of any figure, to consider my plant as the same with that of Fries. I am the more confided in doing so, because in thousands of specimens of *A. fastibilis*, even in the youngest stage of growth, I have never been able to see the least trace of a veil, though Fries assigns it, and Schæffer figures a distinct one.

19. *A. múcidus*, Schrad. (*musty Agaric*); more or less tufted, pileus thin glutinous, gills distant adnexed, stem bulbous, ring sulcate superior reflexed and then erect. *Schrad. Spic. p. 116. (fide Fr.) Pers. Syn. p. 266. Tratt. Fung. Aust. t. 14. f. 27. Fr. Syst. Myc. v. 1. p. 28.—A. nitidus, Fl. Dan. t. 773.—A. splendens, Fl. Dan. t. 1130.—A. olivaceo-fuscus, Fl. Dan. t. 1372.*

On trunks and sticks, especially of beech. The Rookery, Dorking, Oct. 9, 1828.—Gregarious, caespitose. *Pileus*  $1\frac{1}{2}$  inch broad, (1—5, *Fr.*) white tinged with brown, hemispherical, clammy, uneven, radiatorugose, tough, margin thin somewhat turned in. *Gills* broad distant rounded behind, but not in front, adnate, margin serrulate. *Stem*  $1\frac{1}{2}$ —3 inches high, 1—2 lines thick, bulbous, attenuated upwards often curved, white, brown at the base where it has very minute adpressed scales, juicy, composed of fibres, solid, with a pale line down the centre. *Ring* persistent, the margin often brown and slimy composed as it were of two coats the one arising from the squamulae, the other from the real epidermis of the stem. Fries describes the ring as superior, deflexed but close, and then again erect. But it adheres so closely to the stem by its upper portion as very easily to escape notice in an advanced stage of growth: when young before the expansion of the pileus, the little channel is visible between the ring and stem.

20. *A. méllcus*, Vahl. (*black-scaled Agaric*); tufted, pileus dirty yellow, rough with black hairy scales, gills distant

adnato-decurrent, stem fibrillose, ring tumid patent. *Fl. Dan. t. 1010. Bolt. t. 141. Fr. Syst. Myc. v. 1. p. 30. Grev. Fl. Ed. p. 379. Sc. Crypt. Fl. t. 332. Klotzsch, Fung. Germ. Exs. n. 2.—A. annularis, Bull. t. 370. 540. f. 3.—A. fusco-pallidus, Bolt. t. 138.—A. congregatus, t. 140.—A. laricinus, t. 14. With. v. 4. p. 179.—A. elasticus, Bolt. t. 16.—A. stipitis, Sow. t. 101. With. v. 4. p. 178. Purst. v. 2 & 3. n. 920.*

Near or upon old stumps. Sept.—Oct. Common.—Densely tufted. *Pileus* 2—7 inches broad, fleshy, at first convex, then plano-expanded, often subumbonate, and variously lobed, dirty yellow, brownish-yellow or reddish, rough with reflexed scales, especially towards the centre, which are first of a bright wax-yellow, but at length become dark brown; margin slightly striate; flesh firm, consisting of fibres. *Gills* distant adnato-decurrent, at first pale, at length reddish, mealy with the white sporules. *Stem* 2—8 inches high, swollen at the base, thinnest in the middle, fibrillose with a slight yellow pubescence at the base, yellowish or reddish, occasionally somewhat scaly near the apex; when old often assuming various tints of blue, cinereous, &c., firm and elastic, solid; *ring* large, yellow, tumid, spreading. In the young state, the stem is nearly white from the fibres of the veil, which, as they become separated, display the subjacent tints, and render the stem fibrillose. Odour agreeable; taste like that of *A. campestris*, with a slight degree of acidity and somewhat acrid.—Notwithstanding Trattinnick's assertion of its good qualities, and frequent use in Austria, in which he could scarcely be mistaken, *Essb. Schw. p. 46. t. D.*, it appears that it has by others been found poisonous. See *Grev. Sc. Crypt. Fl. l. c.* and *Roques, Hist. des Champ.*

Subgenus 4. LIMACIUM; (from *limax*, a slug; in allusion to the sliminess of the species.) *Veil slimy, thin, universal, very fugacious. Stem tolerably firm, equal or attenuated at the base, solid or stuffed, squamulose or spotted, not even. Pileus fleshy, convex, expanded, firm, viscid when young or moist from the veil. Flesh white. Gills constantly adnato-decurrent, rather thick, distant, unequal, quite entire, white, in one species yellow.—Solitary, autumnal, persistent Fungi, growing on the ground, often late in the year.*

\* *Stem squamulose.*

21. *A. cerasinus*, Berk. (*Laurel-scented Agaric*); pileus pale umber, the margin minutely tomentose, gills pinkish, stem solid attenuated below, punctato-squamulose above.

Fir plantation, Winkbourn, Notts, Oct. 15, 1833.—Subgregarious, sometimes three from the same root. *Pileus* 1½—2½ inches broad, pale umber or ochraceous-bistre inclining to grey when old, fleshy, convex, broadly umbonate, often more or less wavy, at length sometimes somewhat depressed, viscid, shining when dry: margin clothed with minute white down, divided into little linear heaps by the pressure of the gills in the early stage of growth. *Gills* broad, decurrent, white with a slight tinge of ochre or flesh colour, thick, very distant, some of them forked. *Sporules* white. *Stem* 1—2 inches high, 2—6 lines thick, white solid, generally attenuated below, punctato-squamulose above.

Odour pleasant, exactly like that of the leaves of *Prunus Lauro-cerasus*. *A. erubescens* seems to be the nearest to this species which is remarkable for its pleasant smell of bitter almonds. It is a very neat-looking Agaric, and an undoubted *Limacium*.

22. *A. eburneus*, Bull. (*Ivory Agaric*); white, smell not unpleasant, pileus smooth, gills broad, stem stuffed squamulose. *Bull. t.* 118. 551. *f.* 2. *Fr. Syst. Myc. v.* 1. *p.* 33. *Grev. Fl. Ed. p.* 371 (*in part*). *Pers. Syn. p.* 264. *Roques, Hist. des Champ. p.* 107.—*A. nitens*, *Sow. t.* 71. *With. v.* 4. *p.* 150.

Woods. Oct.—Nov. Not common. Nork Park. *Lady Arden*. *Packington, Warw. Withering*.—"Pileus 2--3 inches broad, shining when dry. Stem at length hollow, very various in stature, flexuous in elongated specimens." *Fr. l. c.*—Inodorous, according to Bulliard; of a faint pleasant odour, according to Sowerby; and, according to Roques, not disagreeable, eaten in Italy under the name of *jazzolo*.—Fries seems to have been somewhat puzzled with *A. Cossus*, *Sow.*, and in his "Elenchus" says that it has the habit of *A. inamœnus*, but differs from it in having a slimy pileus. Having found the plant, I am enabled to vouch for the accuracy of Sowerby's figure and description, and further, to state positively that it belongs to the tribe *Limacium*, appearing to differ principally from *A. eburneus* in its peculiar odour. The best course at present will be to keep *A. Cossus* distinct, till it shall be ascertained whether *A. eburneus* is constantly mild-scented.—Purton has by some mischance misunderstood *A. eburneus* & *A. Virgineus*; Fries will certainly be found to be correct, if attention be paid to the characters which bring them under two distinct genera. Greville united the two in his *Flora Edinensis*, but in the *Scottish Cryptogamic Flora* he has properly separated them.

23. *A. Cossus*, *Sow.* (*Goat-Moth Agaric*); fœtid, white, smooth, gills broad, stem stuffed glanduloso-punctate above, clothed below with a matted down. *Sow. t.* 121.

Woods. Oct. Peckham Wood, Surrey. *Sowerby*. King's Cliffe, Northamptonshire. *Rev. M. J. Berkeley*.—"Pileus 1½ inch broad, pure white, slimy (slime consisting of round and oval bodies under a high magnifier), shining when dry, stained here and there with yellowish; the disk sometimes subochraceous. Gills broad, thick, distant, adnato-decurrent, connected by veins and themselves slightly veined. Sporules white, elliptic. Stem 2½ inches high, 1—3 lines thick, nearly equal, here and there yellow when bruised. Smell like that of the Larva of the Goat-Moth, or a damp meadow, and remaining for a long time on the fingers after touching it.

\*\* *Stem spotted.*

24. *A. oliváceo-albus*, *Fr.* (*olive and white Agaric*); pileus umbonate smooth olive-brown, gills connected white, stem solid spotted with brown. *Fr. Syst. Myc. v.* 1. *p.* 34.—*A. limacinus*, *Schaff. t.* 312.

Under trees and in bushy ground. Sept.—Oct. Laxton Park. *Wothorpe*, Northamptonshire. *Rev. M. J. Berkeley*.—"Pileus 2—3 inches broad, at first conic, then expanded and broadly umbonate, livid olive-brown, varied with tints of yellow and umber, very viscid (the slime composed of flexuous filaments under a high magnifier), flesh thin on the mar-

gin which is turned in, white, minutely downy, sometimes slightly grooved or striate. *Gills* adnate, scarcely decurrent, white, in decay greenish yellow, sometimes ventricose, veiny. *Sporules* white, elliptic, with a distinct border. *Stem*  $1\frac{1}{2}$ — $2\frac{1}{2}$  inches high,  $\frac{1}{4}$ — $\frac{1}{2}$  an inch thick, generally curved, fibrous within, above granulato-fibrillose, pitted, covered with milky drops as in *Boletus granulatus*. *Ring* in general indistinct, though sometimes the margin of the viscid veil which clothes the rest of the stem marking it with irregular dark blotches, is visible; the base of the stem yellow.

25. *A. hypothéjus*, Fr. (*yellow slimy Agaric*); pileus obtuse smooth dirty yellow covered with olive slime, gills distinct yellow as well as the somewhat spotted stem. *Fr. Syst. Myc.* v. 1. p. 35.—*A. limacinus*, Sow. t. 8. *Purt.* v. 3. p. 209.—*A. citrinus*, With. v. 4. p. 195.—*A. vitellinus*, Alb. & Schw. p. 179. t. 10. f. 3.

Fir groves (principally, perhaps, where the soil is sandy). Oct. Local.—*Pileus* 1—4 inches broad, fleshy, at first conic obtuse, at length expanded and depressed round the umbo or even infundibuliform, covered with a thick dark gluten; yellow towards the margin and beneath the gluten; the extreme margin turned in. *Flesh* yellow, deeper towards the margin. *Gills* adnato-decurrent, yellow, sometimes varying to a flesh-coloured tint, distinct, distant. *Stem*  $1\frac{1}{2}$ —3 inches high, 2—9 lines thick, flexuous, stuffed above, fibrillose, below slimy, submaculate, yellow. *Odour* fungoid, rather disagreeable.

26. *A. aromaticus*, Sow. (*aromatic Agaric*); pileus smooth cinnamon, gills decurrent when young, rufescent as well as the hollow stem. *Sow. t.* 144. *Pers. Syn.* p. 306. *Fr. Syst. Myc.* v. 1. p. 35.

Walthamstow. *Mr. B. M. Forster*.—*Pileus* 2— $3\frac{1}{2}$  inches broad, fleshy, generally covered with a thick glutinous skin which becomes corrugated in drying, cinnamon, blackish like the rest of the plant when bruised. *Gills* pinkish. *Stem*  $1\frac{1}{2}$ —3 inches long, 3—5 lines thick, hollow and pithy. "Whole plant when fresh so tender that it is difficult to gather. *Odour* agreeable spicy. *Taste* watery with a peppermint-like coolness in the mouth and a lasting roughness in the throat." *Sow. l. c.* The above account is compiled from Sowerby. The stem in the figure appears to be rather reticulated than spotted as Fries supposes; and stuffed rather than truly hollow. The account of the gills in the advanced stage is rather at variance with the figure, in which they are adnate, the decurrent appearance being altered by the growth of the pileus. In my copy the gills appear much darker than they probably are in reality, owing to the colourer having used some preparation of lead. In the section they are represented scarcely of a darker pink than that which is assumed sometimes by the gills of *A. hypothéjus*.

Subgenus 5. TRICHOLOMA; (from  $\theta\tau\iota\zeta$  a hair, and  $\lambda\omega\mu\alpha$  a fringe.) *Veil* partial, fibrillose or floccose, very fugacious. *Stem* fleshy, firm, subattenuated upwards, not even, but scaly, fibrillose, or striate with innate fibrillæ. *Pileus* fleshy, sometimes compact hemispherical, then expanded obtuse; sometimes thinner, cam-



panulate when young; margin thin, when young inflexed contiguous with the veil. Gills unequal, juiceless, obtuse behind, emarginate or rounded.—Rather large Fungi, persistent, solitary or gregarious, growing on the ground; many of them esculent with an agreeable flavour; others bitter.

\* *Pileus slimy when moist.*

27. *A. albo-brúnneus*, Pers. (white and brown Agaric); pileus smooth slimy umber, gills white with a decurrent tooth, stem stuffed. Pers. Syn. p. 293. Myc. Eur. v. 3. p. 193. Fr. Syst. Myc. v. 1. p. 37.—*A. striatus*, Schæff. t. 38.—*A. glutinosus*, Bull. t. 258, 539, 587. f. 2.—*A. viscosus*, Purt. v. 3. p. 208.

In clusters on the ground and on stumps thickly covered with mould. Nov. Iron-cross, near Evesham, and Fairtree near Bridgnorth. Purton.—“Cæspitose. Pileus 3 inches broad, convex, flattish, very glutinous, dirty white, changing to a ferruginous tint. Gills white or brown, very broad and slightly angular near the stem. Stem 3 inches high,  $\frac{1}{2}$  an inch thick, generally swollen near the middle, attenuated above and below, towards the base highly ferruginous. When young covered with a kind of shaggy wool, which disappears in the perfect plant. Remarkably glutinous, so that the leaves and sticks which are in contact with it can scarcely be separated from the pileus without tearing it.” Bulliard describes his plant as having no unpleasant taste nor smell; and Fries in his *Obs. Myc.*, confirms this, and suspects that it may be eatable. Persoon, on the contrary, who describes four states, pronounces all more or less bitter and acrid. The pileus appears when grown to be constantly smooth; but the stem though occasionally smooth appears generally to have the apex pale and squamulose, and the lower part of the stem more or less marked with transverse scales.

28. *A. fúlvus*, Retz, (tawny Agaric); pileus slimy streaked with small fibrillous scales rufous-tawny, gills adnexed yellow, stem hollow equal fibrillose. Bull. t. 555. f. 2. 574. f. 1. Dec. Fl. Fr. v. 2. p. 186. Fr. Syst. Myc. v. 1. p. 37.—*A. incertus*, Schæff. t. 62.—*b.* gills pallid, Retz, V. A. II. 1769. p. 272. (fide Fr.)—*A. compactus*, Sow. Supp. t. 416.

*Var. b.* Grass under trees, and ridings of woods. Sept. Keynston, Dors. Miss Rackett. Fineshade, King's Cliffe, Northamptonshire. Rev. M. J. Berkeley.—Pileus 3 inches or more broad, when young conico-hemispherical, the margin involute and minutely tomentose, when old expanded, discoid, broadly umbonate, fleshy, very slimy when moist, when dry most minutely adpresso-squamulose of a beautiful deep red-brown, the margin paler and slightly tubercled, the tubercles not round but long and simple. Gills pale, a dilute shade of the pileus, somewhat undulated, rounded behind, nearly free (in Sowerby's fig. adnexo-decurrent); when wounded by insects red-brown. Sporules white, round. Stem  $2\frac{1}{2}$  inches high, nearly  $\frac{1}{2}$  an inch thick, rather thickest at the base, round, rufescent below, nearly white above, subfibrillose or subsquamulose below, fibrilloso-glandulose above, at first solid, then more or less hollow. Odour like that of fresh meal.—My specimens agree more nearly with Bull. t. 555. f. 2, than with the other figure, but they

evidently are Fries' var. b. There is little doubt that Sowerby's *A. compactus* is the same, though rather more robust and the stem more strongly marked. He describes it as rather viscid, white, and bluish-coloured within. The gills pale buff, with a blush shade more or less conspicuous. Pileus white within. Fries, however, in his *Ind. alph.* p. 14, considers it his *A. virgatus*.

29. *A. fucatus*, Fr. (*stained Agaric*); pileus flexuous streaked slimy lurid, gills emarginate yellowish-white as well as the subsquamulose stem. *Fr. Syst. Myc. v. 1. p. 40. Pers. Myc. Eur. v. 3. p. 182.*

Open grassy places in woods. Autumn. King's Cliffe, Northamptonshire. *Rev. M. J. Berkeley. Oct.*—Pileus slightly viscid, flesh thick in the centre, the margin thin, yellowish with cinereous fibrillæ, subrimulose, with a satiny lustre. Gills broad, emarginate, slightly wavy, moderately thick, not distant, scarcely connected by veins, with a very slight tinge of yellow. Stem tinged with yellow, as is the outer flesh, punctato-squamulose, bulbous, attenuated upwards. Odour like that of new flour.—Differs from the following in being decidedly viscid. The stem is more shortly bulbous, not apt to become elongated or flexuous, more decidedly squamulose and with the gills of a yellowish tinge. The gills of both are broad in my specimens. Persoon in his specific character of *A. luridus*, calls them narrow, but mentions likewise a state with whitish, broad gills. I find no difference in odour.

30. *A. luridus*, Schæff. (*lurid Agaric*); pileus flexuous not viscid, gills emarginate, stem solid subsquamulose. *Schæff. t. 69. Pers. Syn. p. 321. Myc. Eur. v. 3. p. 181. Fr. Syst. Myc. v. 1. p. 40.*

Grassy paths in woods. Sept.—Oct. Cotterstock, Northamptonshire. *Rev. M. J. Berkeley.*—Subgregarious. Pileus 3 inches broad, at first convex, then expanded, often lobed and waved, brown or greyish with tints of yellow, subumbonate, fibrilloso-striate, fleshy, flesh firm. Gills broad, thick, rounded behind, nearly free, but adnexed by a small tooth, connected by veins much broken, or notched. Stem 2—4 inches long, 3—5 lines thick, obese, nearly equal, or slightly attenuated, solid, minutely and closely fibrillose, pulverulento-squamulose above where it is yellowish, undulated, sometimes but not constantly of a beautiful red when bruised. Odour like that of new flour.—Persoon describes it as varying with a pileus quite smooth and almost shining, or minutely squamulose, the squamulæ black or of the same colour with the pileus. Gills yellowish or dirty white, narrow or broad. Stem straight or incurved and flexuous. Repeated observations will probably convince us of the necessity of uniting this and the foregoing species.

\*\* *Pileus always dry.*

31. *A. pachyphylus*, Berk. (*thick-gilled Agaric*); pileus fleshy waved minutely adpresso-squamulose umbonate ochraceous, the disc umber, gills thick moderately distant nearly free, stem solid nearly equal pruinose.

Fir plantation among fir leaves. Winkbourn, Notts. Oct. 15, 1833.—Gregarious, subcæspitose. Pileus 2—4 inches broad, rather wavy, umbonate, at length often depressed, ochraceous, shaded towards the

centre with umber, minutely squamulose, sometimes in large old specimens the epidermis cracks in broad scales, but then these are clothed with the smaller ones; flesh very firm. *Gills* slightly adnexed or nearly free, acute behind, moderately distant, thick, fleshy, having somewhat the appearance of those of *Dadalea betulina*, acquiring at length an ochraceous hue, here and there stained with umber. *Sporules* white. *Stem*  $1\frac{1}{2}$ —2 inches long,  $\frac{3}{8}$  of an inch thick, solid, nearly equal, pruinose, much paler than the pileus. *Odour* rather strong. It does not appear to be viscid in any state, my specimens being quite dry though gathered in very rainy weather.

32. *A. rutilans*, Schæff. (*crimson-red downy Agaric*); pileus obtuse dry yellow covered with crimson-red scaly down, gills close yellow rounded, stem subsolid variegated. Schæff. t. 219. Pers. Syn. p. 320. Fr. Syst. Myc. v. 1. p. 41. Græv. Fl. Ed. p. 371. Klotzsch, Fung. Germ. exs. n. 4.—*A. xerampelinus*, Sow. t. 31. With. v. 4. p. 197. Purst. v. 3. p. 210.—*A. serratis*, Bolt. t. 14.

Woods, on stumps, especially of fir. Sept.—Oct. Not uncommon.—Subcaespitose. *Pileus* 2—4 inches broad, at first hemispherical or somewhat cylindrical, at length expanded, obtuse, more rarely plane; clothed with a short dense crimson-red, or olive-purple down; margin involute, white; as the pileus expands the yellow epidermis becomes visible in the interstices of the down which is then scattered. *Gills* free, broad, rounded behind, but often when old adnexed, sometimes forked, bright yellow, floccoso-serrate; margin turning sometimes to a rich yellow-brown. *Stem*  $2\frac{1}{2}$ — $3\frac{1}{2}$  inches high,  $\frac{1}{2}$ —1 inch thick, downy like the pileus, only the down is shorter, very obtuse at the base, attenuated upwards, solid at first, afterwards occasionally hollow. *Odour* strong, disagreeable; taste bitter, nauseous.

33. *A. imbricatus*, Fr. (*large brown Agaric*); pileus dry squamulose umber-rufous, margin paler pubescent, gills dirty white with a ruddy tint, stem stuffed pale and pulverulent at the apex. Fr. Syst. Myc. v. 1. p. 42.

In fir plantations. Sept.—Oct. Beeston, Notts. 1832, 1833. On a sandy soil.—Gregarious. *Pileus* 2— $3\frac{1}{2}$  inches broad, dry, obtuse, at first subconic, then convex, expanded, sometimes plane, very broadly umbonate, fleshy, rich red-brown, fibrilloso-squamulose, rimulose, the umbo darker with the fibrillæ closer; occasionally the pileus is scarcely squamulose but clothed with adpressed silky fibrillæ. Margin involute, paler, tomentose. *Gills* slightly rounded behind, subadnate, with a minute tooth, or nearly free, umber when bruised, not very broad. *Sporules* round, white. *Stem*  $2\frac{1}{2}$ —4 inches high;  $\frac{1}{2}$ — $\frac{3}{4}$  of an inch thick, firm, stuffed, at length more or less hollow; sometimes strongly attenuated, but in the same groupe incrassated at the base, fibrillose, of the colour of the pileus, nearly white above, where it is squamulose or pubescenti-squamulose. There is no trace of a ring in any stage of growth. *Odour* and taste scarcely any. Habit somewhat like that of *Boletus scaber*.

34. *A. vaccinus*, Schæff. (*scaly brown Agaric*); pileus umbonate rufous, epidermis torn into hairy scales, margin tomentose,

gills fixed dirty white with a ruddy tinge, stem hollow fibrillose. *Schæff. t. 25. Pers. Syn. p. 293. With. v. 4. p. 185. Fr. Syst. Myc. v. 1. p. 42. Pers. Myc. Eur. v. 3. p. 184.—A. impuber, Batsch, Cont. 1. f. 116.—A. rufus, Pers. Ic. et Descr. p. 6. t. 2. f. 1—4.*

Fir woods. Sept.—Oct. Edgbaston. *Withering*. Kinnordy, Scotland. *Klotzsch, in Hook. Herb.*—"Pileus 1—2 inches broad, when young campanulate, clothed with scales, those in the centre thick, broad, short, on the margin consisting of fasciculate hairs. Gills rather broad, emarginate, nearly free, at first dirty white, in age of a rufous hue, the margin generally stained with rusty spots. Stem 3—4 inches high,  $\frac{1}{2}$  an inch thick, beset with hairy scales which mostly point upwards, paler than the pileus, whitish above; base clothed with white down. Veil fugacious. Taste bitter." *Pers. Ic. et Descr. l. c.*—Fries describes this species as smaller, less firm, thinner, the gills more adnate and distant than in the last. Klotzsch's specimens, which are almost smooth, if he is correct in referring them to *A. vaccinus*, would go far, if we may judge from the dried plant, to show the propriety of uniting them. Persoon in his *Myc. Eur.* does not admit *A. imbricatus* to the rank of a species.

35. *A. multifórmis*, Schœff. (*cinereous downy Agaric*); pileus mouse-grey thin obtuse clothed with matted down more or less raised into minute scales, stem white stuffed fibrillose. *Schæff. t. 14.—A. lividus, Huds. Fl. Ang. p. 616.—A. terreus, Sow. t. 76. var. 4. With. v. 4. p. 176.—A. madreporius, Batsch, Cont. 2. f. 203.—A. myomyces, var. madreporius, Pers. Myc. Eur. v. 3. p. 202.*

Fir plantations. Sept.—Oct. Very common. Gregarious, often in large rings. Pileus 1—2 $\frac{1}{2}$  inches broad, when young conic with a delicate arachnoid veil, then obtuse expanded, quite plane, variously waved, sometimes minutely umbonate, thin, mouse-grey, or very dark cinereous approaching to blue, clothed with flat and matted down, with sometimes a few depressed or raised squamulæ of the same colour; margin inflexed; flesh cinereous. Gills rather distant, broad, the margin wavy more or less rounded behind and attached by a tooth, more or less cinereous especially when young, sometimes almost violet; traversed by a few indistinct connecting veins. Sporules white. Stem 1—3 inches high,  $\frac{1}{4}$ — $\frac{1}{2}$  an inch thick, stuffed, at length hollow, beautifully fibrilloso-sericeous, sometimes a little pulverulent, white, the base occasionally subrufescent; sometimes short and obtuse and sometimes subattenuated. Pileus and stem very brittle. No particular taste or odour.—There appear to be two distinct species included under *A. myomyces* by authors, and that of Fries is probably a third. *A. multifórmis*, Schœff. appears to be one, and *A. argyræus*, Bull. the other. The two frequently grow together in fir plantations, but the latter is by no means confined to them, and while the one is almost void of taste or scent, the other has decidedly a smell like that of new flour, varying occasionally to the peculiar fungoid smell of *Polyporus squamosus*.

36. *A. argyræus*, Bull. (*brown-scaled Agaric*); pileus dry firm tufted with dark hairs, gills emarginate rather distant dirty white, stem solid unequal. *Bull. t. 156, 513. f. 2.—A. terreus,*

Schœff. t. 64. With. v. 4. p. 175.—*A. myomyces*, Pers. Syn. p. 345. Myc. Eur. v. 3. p. 202.

Fir plantations, borders of woods, &c. Oct.—Nov. Not uncommon. *Pileus*  $1\frac{1}{2}$ —3 inches broad, fleshy, obtuse, generally umbonate, often depressed, pale rufescent, lilac-brown, whitish, yellowish, &c., with rufous squamulæ, and sometimes a depressed down. *Gills* rounded behind or emarginate, nearly or quite free, exceedingly brittle, dirty white with sometimes a cinereous tinge towards the margin, turning yellow in decay. *Stem* 1— $1\frac{1}{2}$  inch high,  $\frac{3}{8}$ — $\frac{1}{2}$  of an inch thick, of a more waxy appearance than the last but fibrillose, stuffed, white; sometimes of the same colour as the pileus, swollen below and marked with little dark scales. Odour strong, like that of new flour.—I think it better to call this species by Bulliard's name than by that of Schœffer, as the figure of the latter is not very good, while that of Bulliard, especially t. 513. f. 2, is an exact representation of the plant I have in view. In general there is scarcely any trace of a ring, but I have met with a variety with a very thick, narrow, permanent, woolly ring. Fries' plant has a smell like that of mice and is reddish when cut, characters wholly at variance with this or the foregoing species. According to his *Ind. Alph.* it is now *A. saponaceus*, Linnæa, V. p. 721.

37. *A. Columbetta*, Fr. (*white downy-bordered Agaric*); white, pileus irregular at length often rimoso-squamose, gills close emarginate, stem solid blunt smooth. Fr. Syst. Myc. v. 1. p. 44.—*A. leucocephalus*, Bull. t. 428. f. 1. 536. With. v. 4. p. 176.

Amongst grass. Pasture-land, particularly by the long stew, Edgbaston. Oct. 27, 1790. Withering.—“*Pileus*  $1\frac{1}{2}$ —4 inches broad, convex, silky, centre dilute mouse-colour lightly shaded off, border white when young, sometimes tinged with pink, cracking with age. *Gills* fixed, white, brittle. *Stem* 2 inches high, 3—6 lines thick, solid, white, cylindrical, but often compressed, crooked, silky, central when young, not always so in a more advanced age.” With. l. c. Fries' plant is pure white, often spotted with reddish; that of Bulliard has a yellowish tinge. The only point of discrepancy in Withering's species is the silky stem, but this does not decidedly disprove the correctness of his quotation, and it is therefore inserted on his authority.

38. *A. sejunctus*, Sow. (*yellow-white Agaric*); pileus subumbonate dry yellow streaked with black hairs, gills emarginate broad white as well as the solid stem. Sow. t. 126. Fr. Syst. Myc. v. 1. p. 47.—*A. leucosanthus*, Pers. Syn. p. 319. Myc. Eur. v. 3. p. 180.

Woods. Autumn. Sowerby.—“*Pileus* dirty yellow or nearly white. *Gills* whitish and thickest near the stem, somewhat flattened, as it were, by separating from it in a peculiar manner and partly adhering to each other.” Sow. l. c. “Bitter. *Gills* rather distant, brittle. *Pileus* 2—5 inches broad. *Stem* 2—3 inches high,  $\frac{1}{2}$ —1 inch thick, nearly equal, smooth, slightly striate.” Fr. l. c.

39. *A. personatus*, Fr. (*variable blue-stemmed Agaric*); pileus smooth, margin villosopruinose, gills rounded free inclining to violet as well as the solid somewhat bulbous stem. Fr. Syst. Myc.

v. 1. p. 50.—*A. bulbosus*, Huds. *Fl. Ang.* p. 611. *Bolt.* 147.—*A. violaceus*, Sow. t. 209.—*A. nudus*. var. 2. *With.* v. 4. p. 192.

Pastures. Oct.—Jan. Very common.—Gregarious, frequently in large rings. *Pileus* 2—6 inches broad, fleshy, firm, pale bistre or purple-lilac, occasionally violet, convex, obtuse, very smooth and shining as if oiled but not viscid, margin involute, pulverulento-tomentose. *Gills* rounded, free, not distant, narrow in front, paler than the pileus, sometimes violet, turning to a dirty flesh colour, especially when bruised. *Stem* 1—3 inches high,  $\frac{3}{4}$  of an inch thick, firm, bulbous, solid, mottled within towards the apex with watery spots; clothed more or less with villous fibrillæ, tinged with violet. *Odour* like that of *A. Oreades*, but rather overpowering, taste pleasant. This species has been confounded, by both Purton and Greville, with the true *A. violaceus*; but in a MSS. of the former now before me it is rightly distinguished. Sold, according to Sowerby, in Covent Garden market under the name of *Blewitts*.

40. *A. nudus*, Bull. (*naked violet Agaric*); gregarious, pileus thin smooth lilac changing to rufous, gills rounded pale violet, stem solid equal naked. *Bull.* t. 439. *Fr. Syst. Myc.* v. 1. p. 52.

Gardens, woods, and pastures. Sept.—Oct. Oundle, Woodnewton. Northamptonshire. *Rev. M. J. Berkeley*.—*Pileus* about 2 inches broad, thin, obtuse, plane or subdepressed at first amethyst-coloured, but changing to a pinky rufous; margin involute. *Gills* of the same colour as the pileus, rounded behind though sometimes decurrenti-adnate, connected and traversed by veins. *Stem* 2 inches high, 3—4 lines thick, stuffed with spongy fibres, subequal, at first fibrillose, at length nearly smooth, more or less of the colour of the pileus.

41. *A. blandus*, Berk. (*pulverulent dove-coloured Agaric*); pileus thin pulverulent grey-lilac, gills broad rounded behind and nearly free pure white, stem slender subfibrilloso-rimose subbulbous, the base brown.

Plantations and road-sides. Sept.—Oct. Milton, Norths. *Mr. J. Henderson*. Stibington, Hunts. King's Cliffe, Norths., &c. *Rev. M. J. Berkeley*.—*Pileus* 2½ inches broad, plano-convex, umbonate, very minutely pulverulento-tomentose, so that when touched the impression of the fingers remains upon it, not brittle, moderately fleshy, dry, the margin sometimes undulate, grey-lilac with a tinge of brown on the umbo. In young specimens the *pileus* is sometimes of a browner cast, the edge white and minutely downy, but the pulverulent appearance scarcely discernible. *Gills* broad, rounded behind and nearly free, white, their margin undulate, brittle, becoming rather brown at the edge as they dry. *Sporules* white, round. *Stem* 2 inches high, 2 lines thick, ( $\frac{3}{8}$  of an inch at the base) subbulbous and brownish at the base, the brown colour penetrating the flesh to the centre; solid, rather brittle, composed of fibres, pulverulento-squamulose at the apex, subfibrilloso-rimose below, with a little down at the base.—I cannot find any species at all agreeing with this well-marked and elegant Agaric. The gills have not the slightest tinge of violet, nor is the habit that of *A. nudus*. Indeed, were it not for the subbulbous stem and nearly free gills, I should have placed it in the division *Thrausti* of *Clitocybe*.

Subgenus 6. *RUSSULA*; (a name formed by Scopoli from *rus-*

sulus, red). *Veil none. Stem smooth, spongy within. Pileus with a fleshy disk and thin margin which is not inflexed at any period of growth. Gills juiceless, either all equal, or with a few shorter intermixed or forked, rigid, brittle, broad in front, narrow behind, acute, properly free, but apparently adnato-decurrent from the diffusion of the stem into the pileus. Asci slender, sporules white or subochraceous. Gills white or yellow. Large or middle-sized Fungi, rigid, persistent, solitary, growing on the ground.*

\* *Sporules yellow.*

42. *A. alutaceus*, Pers. (*buff-gilled Agaric*); pileus subcompact, margin at length furrowed, gills broad equal tan-coloured. *Pers. Syn. p. 441. Fr. Syst. Myc. v. 1. p. 55. Roques, Hist. des Champ. t. 10. f. 3.—A. pectinaceus, Bull. t. 509. f. Q.R.S.—A. campanulatus, Pers. l. c. p. 440.—A. auratus, With. v. 4. p. 184.—A. olivaceus, With. l. c. p. 199.—A. sapidus, Roques, l. c. t. 10. f. 4.*

Woods. July—Oct. Not uncommon.—*Pileus* 3 inches broad, fleshy, smooth, viscid when moist, depressed, margin at first even, more or less furrowed and tubercled when old, pink, livid, olive, &c. *Gills* broad, equal, sometimes slightly forked, ventricose, free, connected by veins. *Sporules* yellow. *Stem*  $1\frac{1}{2}$  inch long, 1 inch thick, blunt, surface longitudinally wrinkled or grooved, solid, spongy within, smooth, white, sometimes yellow. *Taste* mild, pleasant, acrid when old. By common consent pronounced esculent, but individual specimens occur which prove almost as acrid as *A. emeticus*.

43. *A. luteus*, Huds. (*yellow simple-gilled Agaric*); middle-sized, margin of the pileus even, gills narrow close equal egg-yellow. *Huds. Fl. Ang. p. 611. Pers. Syn. p. 442. Fr. Syst. Myc. v. 1. p. 55.—A. integer. var. 6. With. v. 4. p. 182.*

Woods. Aug. Kinnordy, Scotland. *Klotzsch, in Hook. Herb.—“Pileus* 1—2 inches broad, plano-depressed, rather viscid, yellow, becoming pale, rarely white. *Gills* connected by veins. *Stem* more or less hollow, slender. *Taste* mild. Brittle.” *Fr. l. c.*

44. *A. nitidus*, Pers. (*neat simple-gilled Agaric*); pileus thin, margin furrowed, gills broad rather distant equal yellow. *Pers. Syn. p. 444. Fr. Syst. Myc. v. 1. p. 56. Grev. Fl. Ed. p. 372.—A. purpureus, Schæff. t. 254.—A. risigallinus, Batsch, Cont. 1. f. 72.*

Woods. Autumn. Not uncommon.—*Pileus* 1—2 inches broad, convex, becoming nearly plane or depressed, viscid when moist, margin very thin, at first even, afterwards furrowed and tubercled, mostly yellow but occasionally tinged with purple. *Gills* buff, connected by veins, all equal, free. *Sporules* round, pale yellow. *Stem* 1—2 inches long,  $\frac{1}{2}$  an inch thick, spongy, at length hollow, white or yellowish, covered with a minute white meal so that the impression of the fingers is left upon it.

\*\* *Sporules white.*

45. *A. emeticus*, Schæff. (*common simple-gilled Agaric*); large

compact, margin of the pileus at length furrowed, gills broad mostly equal white. *Schæff. t. 15. Fr. Syst. Myc. v. 1. p. 57. Grev. Fl. Ed. p. 372. Roques, Hist. des Champ. p. 82. t. 2.—A. cyanoxanthes, Schæff. t. 93. A. virescens, Schæff. t. 94.—A. integer, Boll. t. 1. Sow. t. 201. With. v. 4. p. 180. Purt. v. 2. § 3. n. 922.—A. pectinaceus, Bull. t. 509.*

Woods. July—Dec. Very common.—*Pileus* 2—5 inches broad, glutinous when young, smooth, hemispherical, at length plane, depressed in the centre; margin thin, striato-sulcate, purple, rose-red, bluish, fuscous, yellow or even white. *Gills* rather distant, broad, rigid, thickish, connected by veins, equal, with a very few smaller interspersed, always white. *Stem* 2—3 inches high, longitudinally rugulose, firm, solid, white or tinged with the colour of the pileus, very acrid and poisonous, a very small piece producing bad effects. See *Roques, l. c.*

46. *A. ruber*, Lam. (*red simple-gilled Agaric*); very acrid, pileus deep rose-red, margin even, gills forked white. *Dec. Fl. Fr. v. 2. p. 140. Fr. Syst. Myc. v. 1. p. 58.—Amanita rubra, Lam. Encycl. p. 105. (vide Fries).—A. sanguineus, Bull. t. 42.—A. integer, var. 4. With. v. 4. p. 181.*

Pastures, particularly under large oaks. Aug. Edgbaston. *Withering.*—" *Pileus* compact dry, even, scarcely brittle, of a cellular texture. *Gills* close. *Stem* 2 inches high, firm, often tinged with rose. Very bitter like gall. Extremely acrid." *Fr. l. c.* According to Decandolle the stem is often marked with little black or rose-coloured streaks. *Withering* describes the stem as eminently spongy and this accords with *M. Roques'* description of it when old.

47. *A. fœtens*, Pers. (*fœtid simple-gilled Agaric*); acrid, strong-scented, pileus dirty yellow, margin furrowed and tubercled, gills connected, white as well as the hollow stem. *Pers. Syn. p. 443. Fr. Syst. Myc. v. 1. p. 59.—A. pipratus, Bull. t. 292.—A. incrassatus, Sow. t. 415.*

Woods. July—Sept. Not uncommon.—Gregarious. *Pileus* 4—5 inches broad, at first convex, the margin broadly folded inwards, convex, at length more or less depressed with the margin somewhat vaulted, fleshy in the centre, the margin thin, furrowed and tubercled, the striæ appearing as if a glutinous membrane were stretched over them, dirty yellow, rather brittle. *Gills* forked, dirty white or yellowish, moderately broad, connected by veins. *Stem* 3—4 inches high, above 1 inch thick, obtuse, incrassated at the base, ruggedly hollow within, as if eaten by snails, white or with a dirty yellow tinge, depresso-tomentose; beneath the gills minutely pitted longitudinally, *flesh* rather yellow.—Highly acrid, odour very strong, and penetrating, empyreumatic, somewhat resembling that of prussic acid, but exceedingly disagreeable.

48. *A. furcatus*, Lam. (*green forked-gilled Agaric*); inodorous, subacid, pileus greenish, margin even, gills forked white. *Pers. Syn. p. 446. Fr. Syst. Myc. v. 1. p. 59. Roques, Hist. des Champ. t. 12. f. 2.—Amanita furcata, Lam. Enc. l. p. 106. (vide Fries).—A. bifidus, Bull. t. 26.*

Woods. East Morden, Dors. Sept. *Rev. M. J. Berkeley.*—" *Stem*



stuffed, moderately firm, white. *Pileus* when young plane, the margin deflexed, then subinfundibuliform, green." *Fr. l. c.* Taste acrid in my specimens,—bitterish. *Pers.*—subnauseous. *Fr. Roques.*

49. *A. viréscens*, *Pers.* (*mild forked-gilled Agaric*); mild, pileus nearly plane, margin even, gills forked and dimidiate white. *Pers. Syn. p. 447.* *Tratt. Fung. Aust. t. 11. n. 21.* *Fr. Syst. Myc. v. 1. p. 59.* *Roques, Hist. des Champ. t. 12. f. 3, 4.*—*A. furcatus*, var. *heterophyllus*, *Fr. Syst. Myc. v. 1. p. 59.*

Woods. Not uncommon. July—Sept. Scotland, *Klotzsch in Hook. Herb.* Kensington gardens. Wansford, Norths. *Rev. M. J. Berkeley.*—*Pileus* 4 inches broad, convex, at length slightly depressed and irregular, of various livid hues, yellow, purple and green, fleshy, rugulose, very slightly viscid, margin even. The edge of the pileus sometimes hangs down in a singular manner. The texture is altogether vesiculose, consisting of roundish cells. *Gills* white, forked, sometimes anastomosing at the base, rather close, moderately rigid, elastic. *Sporules* round, white. *Stem* 1—2 inches high,  $\frac{1}{2}$  an inch or more thick, obtuse at the base, various in form, slightly reticulated with raised lines. Taste and odour mild.—Excellent for food according to M. Roques and eaten under the name of "*verdette*," but requires to be carefully distinguished from the foregoing and other acrid *Russulæ*. *Trattinick's* figure belongs apparently to this, his description evidently embraces this and *A. furcatus*.

50. *A. adustus*, *Pers.* (*scorched Agaric*); pileus depressed changing to black as if scorched, margin even, gills unequal distant white, stem solid blunt. *Pers. Syn. p. 459.* *Fr. Syst. Myc. v. 1. p. 60.* *Pers. Myc. Eur. v. 3. p. 207.*—*A. nigricans*, *Bull. t. 212.*

Woods. Sept.—Oct. Common.—*Pileus*  $2\frac{1}{2}$ — $3\frac{1}{2}$  inches broad, white, smooth or clothed with a very minute pubescence or meal, which, when touched, turns black, plano-depressed, at length infundibuliform, flesh thick, firm, crisp, turning red when cut; when old the whole plant is black and remains in that state for a long time. Margin not involute. *Gills* narrow, pale yellowish, thick, distant, forked, decurrent. *Sporules* white, round. *Stem* 3 inches high, nearly 1 inch thick, subincrassated below, very obtuse; substance and surface like that of the pileus. In a specimen with a cinereous-olive pileus, broken into areolæ, the gills were nearly free.

$\beta$ . *elephantinus*; pileus yellowish-brown; gills yellowish-white; stem solid white. *Sow. t. 56. Part. v. 3. p. 203.*—*A. adustus*, var. *elephantinus*, *Grev. Fl. Ed. p. 373.*

Woods and shady places.—*Pileus* large, inelegant, 4—7 inches broad, rather pale when young and glutinous becoming yellowish dingy brown and cracking, at length blackish as if it had been exposed to fire. *Stem* 2—3 inches high, 2 inches thick, dirty white." *Grev. l. c.*

Subgenus 7. GALORRHEUS; (from  $\gamma\alpha\lambda\alpha$ , milk, and  $\rho\acute{\epsilon}\omega$ , to flow). *Veil none.* *Stem* naked, firm, subequal, diffused into the pileus. *Pileus* fleshy, firm, plano-depressed, umbilicate, margin even, when young involute. *Gills* unequal, often forked, narrow, attenuated

behind, adnato-decurrent. The whole plant abounding with a <sup>1</sup> milky juice. Asci small. Sporules white, yellow in *A. fuliginosus*. Large or middle-sized persistent frequently acrid Fungi growing on the ground.

\* *Pileus more or less viscid.*

51. *A. torminosus*, Schoeff. (bearded pepper Agaric); pileus smooth zoned pale, margin shaggy, stem hollow even. Schoeff. t. 12. Sow. t. 103. Purt. v. 3. p. 397. (quoad syn. Bull.) Fr. Syst. Myc. v. 1. p. 63. Grev. Fl. Ed. p. 373.—*A. piperatus*, Linn. Suec. 1195. With. v. 4. p. 164.—*A. Necator*, Bull. t. 529. f. 2. With. v. 4. p. 168. Roques, Hist. des Champ. t. 13. f. 3, 4. Klotzsch, Fung. Germ. exs. n. 5.

Woods, especially of fir, heaths, thickets, borders of fields, &c. June—Oct. Local. Dundas Hill near Edinburgh. Dr. Greville. Clifton. Lambley, Notts. Laxton, Norths. Rev. M. J. Berkeley. N. Wales, W. Wilson, Esq.—*Pileus* 2—5 inches broad, smooth or nearly so, except the involute margin which is most copiously shaggy; depressed, more or less zoned, of a beautiful ochre or (sometimes) strawberry colour, at first viscid. Milk white, very acrid, not changeable. Gills rather narrow, nearly of the same colour as the pileus, but yellower and paler, slightly forked. Stem  $1\frac{1}{2}$ —2 inches long,  $\frac{1}{2}$  an inch thick, sometimes shining, obtuse, paler than the pileus, at length hollow, clothed with a minute depressed down. Very acrid; but the Russians preserve it in salt and eat it seasoned with oil and vinegar. See Roques, Hist. des Champ. p. 88.

52. *A. cilicioides*, Fr. (downy milky Agaric); pileus tomentose, dingy pale reddish or salmon-colour, gills yellowish, stem robust partly hollow. Fr. Syst. Myc. v. 1. p. 63. Grev. Fl. Ed. p. 373. Johnst. Fl. Berw. v. 2. p. 165.—*A. Necator*, var. 2. With. v. 4. p. 168.

In woods or in grassy places under large trees. Autumn. Under large Spanish Chestnut trees in Edgbaston Park. Withering. Braid Hermitage near Edinburgh. Grev. Near Berwick. Johnston.—“*Pileus* 2—4 inches broad, depressed, margin rounded, involute, reddish-buff, sometimes glutinous, very downy, becoming fibrillose at the margin. Gills yellowish, irregular and often branching, apparently decurrent from the expansion of the stipes into the substance of the pileus. Flesh yellowish-white, darker towards the surface. Stem about 2 inches high, nearly 1 inch thick, dingy white, yellow or brown. There is no juice, but a considerable moisture on the surface of the pileus which seems to originate from the plant.” Grev. l. c.

53. *A. Necator*, Bull. (deadly milky Agaric); pileus smooth zoned olivaceous-umber, margin shaggy, stem stuffed. Bull. t. 14.—*A. torminosus*, Purt. v. 3. p. 396 (quoad Syn. Bull).

<sup>1</sup> In *A. Voleman* I have seen particles in the milk moving about in every direction with immense rapidity, exactly like those observable in Gamboge mixed with water. Sometimes specimens of various species occur entirely destitute of milky juice, and at other times the juice is watery.

Woods and heaths. Rare. Sept. Purton.—“Stem short, attenuated, paler than the pileus, white within. Pileus regular, often plano-disciform, viscid, firm, margin at length unrolled. Gills dirty white, yellow or flesh colour.” *Fr. l. c.* The account of *A. torminosus* and *A. Necator* is somewhat confused in the Midland Flora, but after a careful consideration of it, as well as of a MSS. now before me, it appears quite certain that Mr. Purton’s *A. Necator* is the real *A. torminosus*, as he quotes *Bull. t. 529. f. 2!!*, though not so sure whether he has ever found the real *A. Necator*. His account, however, as regards the surface of the pileus, agrees with that of Bulliard, who describes and figures it not only as ciliated on the border, but as having the whole surface tufted. I feel myself therefore bound to insert it.<sup>1</sup>

54. *A. zonarius*, With. (*lurid-zoned Agaric*); pileus viscid zoned lurid, gills white, milk changing to red, stem hollow. *With. v. 4. p. 180. Sow. t. 203. Purton. v. 2. p. 632 & 3. p. 398. (in part).*—*A. luridus*, Pers. *Syn. p. 436. Fr. Syst. Myc. v. 1. p. 65.*—*A. fuscus*, Schæff. *t. 235.*

Plantations and heaths. Aug.—Oct. Rare. Edgbaston. *Withering*. Kinnordy. Garscube, Scot. *Klotzsch in Hook. Herb.*—“Pileus 2—3 inches broad, nearly plane, rufescent from cinereous with brown zones. Milk at first white. Stem 1½ inch high, pale.” *Fr. l. c.* As there is a species with the specific name of *luridus* in the subgenus TRICHOLOMA, it is necessary to alter that of Persoon and Fries, I have therefore restored *Withering’s* name.

55. *A. acris*, Bolt. (*acid milky Agaric*); pileus viscid not zoned sooty-cinereous, gills yellow, milk turning red, stem stuffed. *Bolt. t. 60. With. v. 4. p. 166. Fr. Syst. Myc. v. 1. p. 65.*—*Omphalomyces*, &c. *Batt. t. 13. E.*—*A. deliciosus*, var. *Batsch, Cont. 1. f. 68.*

Woods. Aug.—Nov. Near Halifax. Bolton. Grounds of C. Lyell, Esq. Kinnordy, Scotland. *Klotzsch, in Hook. Herb.*—“Pileus almost always excentric, emarginate, unequal, livid brown. Gills rather distant. Stem attenuated downwards, short, pallid. Milk extremely acid, dirty white, then rose-coloured, then yellowish; seldom unchangeable.” *Fr. l. c.* I find a state of this scarcely excentric, and viscid only when young. The milk undergoes precisely the same changes, but apparently with much less intensity.

56. *A. uridus*, Fr. (*lilac-fleshed milky Agaric*); pileus viscid not zoned livid flesh colour or fuscous, gills white, flesh changing from white to lilac, stem hollow. *Fr. Syst. Myc. v. 1. p. 66.*—*A. livido-rubescens*, *Batsch, Cont. 2. f. 202. With. v. 4. p. 165.*

Woods. July—Sept. Edgbaston. *Withering*. King’s Cliffe, Norths. Abundant.—Pileus 2—2½ inches broad, fleshy, depressed, sometimes absolutely zoned, viscid, pale dirty rufescent or cinereous with a shade of lilac, speckled with small watery spots, which originate beneath the epidermis. Gills paler, adnato-decurrent, the shorter ones very obtuse

<sup>1</sup> In the *Index Alphabeticus*, published with the concluding part of the third volume of the *Systemat Mycologicum*, if I understand him right, Fries seems to consider his *A. Necator* as not distinct after all from *A. torminosus*.

and truncate behind, connected by veins. *Milk* white, acid. *Stem* 2 inches high,  $\frac{1}{3}$  inch thick, spongy, at length hollow, marked with little longitudinal pits, strigose at the base, the whole plant when cut white turning to a beautiful lilac. It is not however the milk which changes colour, on exposure to air, but the flesh itself.

57. *A. hysginus*, Fr. (*pink-dyed Agaric*); pileus viscid even zoneless flesh-coloured, gills and milk white, stem hollow spotted. *Fr. Syst. Myc. v. 1. p. 67.*—*A. depressus*, *With. v. 4. p. 171.*

In grassy places, fir woods, &c. Aug.—Oct. Edgbaston Park. *Withering.*—“*Pileus* 4—5 inches broad, pinky or brownish white, viscid. *Gills* white yellowish with age. *Stem* 3—4 inches high,  $\frac{1}{2}$  an inch thick, solid (hollow and scrobiculate, *Fr.*) white with a pinky tinge. Juice dilutely milky, very acid.” *With. l. c.* The only difference between this and *A. hysginus*, *Fr.* is the solid stem, but no character is more variable in this tribe. No other species will answer at all to the characters.

58. *A. blénnius*, Fr. (*greenish-flecked Agaric*); pileus viscid pitted not zoned greenish, gills and milk white. *Fr. Syst. Myc. v. 1. p. 67.* *Fl. Dan. t. 1961. f. 2.*—*A. xylophilus*, var. *viscosus*, *Pers. Syn. p. 438.*—*A. Listeri*, var. 5. *With. v. 4. p. 154. var. 2, Part. v. 3. p. 191.*

Woods, especially of beech. Sept.—Oct. Not uncommon. Beeston, Notts. King’s Cliffe, Norths. *Rev. M. J. Berkeley.*—*Pileus* 2—4 inches broad, fleshy, rarely subzonate, convex, the margin generally involute and adpresso-tomentose, (quite smooth, *Fr.*) at length more or less depressed, dull cinereous-green, at first viscid; more or less pitted. *Milk* white, not changeable. *Gills* rather narrow, pale ochraceous, scarcely forked not connected by veins. *Stem* 1 inch long,  $\frac{1}{4}$ — $\frac{1}{2}$  an inch thick, paler than the pileus, attenuated downwards, obtuse, smooth, at length hollow, sometimes pitted. Very acid.

59. *A. deliciosus*, L. (*orange-milked Agaric*); pileus viscid obsoletely zoned orange turning pale, gills and milk orange, stem hollow smooth scrobiculate. *Lin. Succ. 1211. Schæff. t. 11. Sow. t. 202. With. v. 4. p. 163. Tratt. Essb. Schwam. t. M. Part. v. 3. p. 187. Fr. Syst. Myc. v. 1. p. 67. Grev. Fl. Ed. p. 374. Roques, Hist. des Champ. p. 93. Klotzsch, Fung. Germ. exs. n. 6.*

Fir woods. Sept.—Oct. Not uncommon.—Gregarious, sometimes subcæspitose.—*Pileus* 4 inches or more broad, zoned, orange-rufous, dull as if there were the remains of a minute very closely pressed dirty white web, hemispherical when young, in which state the margin is decidedly involute and tomentose, at length expanded, depressed, fleshy. The whole plant abounding with orange milk and when bruised or old, stained with green. *Gills* decurrent, from the first of the same colour as the pileus, forked at the base, rather broad and distant. *Sporules* round, white. *Stem* 3 inches high, curved, stuffed, more or less hollow, scrobiculate, strigose at the base. *Odour* and *taste* agreeable, like that of *Cantharellus cibarius*, but slightly acid. From the account given by M. Roques it should seem that this Agaric however delicious is not always to be eaten with impunity. I have always found the milk acid.

\*\* *Pileus dry.*

60. *A. Volémum*, Fr. (*mild red milky Agaric*); large, sweet, pileus obtuse dry tawny becoming pale, gills white changing to yellow, stem solid blunt. *Fr. Syst. Myc. v. 1. p. 69.*—*A. ruber*, *Tratt. Fung. Aust. t. 15. n. 29.* *Essb. Schwam. t. M.*—*A. lactifluus*, *Schæff. t. 5.*

Woods. July—Aug. Inverary. *Klotzsch in Hook. Herb. King's Cliffe, Norths.*—*Pileus* 4 inches broad, flesh thickish, moderately firm, obtuse, minutely umbonate, though the umbo at length vanishes, sub-depressed, sometimes very faintly zoned, with a few minute wrinkles towards the margin, dry, at length cracked, of a rich orange brown darker in the centre, the whole rather dull than shining; margin not the least involute, though when young the edge of the pileus is regularly incurved. *Milk* white, abundant, not acrid, quite mild. *Gills* pale ochraceous, becoming fuscous on being touched, not very close, scarcely decurrent even in depressed specimens, sometimes slightly forked. *Sporules* white round. *Stem*  $2\frac{1}{2}$ — $3\frac{1}{2}$  inches high, above 1 inch thick, obese, minutely attenuated downwards, sculptured longitudinally, paler than the centre of the pileus: it bears a strong compression without giving way, but it is spongy in the centre; outer flesh reddish. *Schæffer's* figure agrees exactly with *Trattinnick's*, and is now in the *Ind. Alph.* allowed to be the same. *A. ruber*, Pers. has acrid milk. It is pronounced by *Trattinnick* to be excellent for food if properly prepared, but very unwholesome if not sufficiently stewed. *M. Roques'* account, if in the cases he mentions there was no mistake as to the species, is even more unfavourable. In *Dr. Hooker's Herbarium* there is a *MSS.* species of *M. Klotzsch*, which he states to be intermediate between *A. Volémum* and *A. subdulcis*; not being able to draw up from his notes a satisfactory specific character, though as far as may be judged from dried specimens it should seem to be really distinct, I give its description here.—*A. Smithii*, *Klotzsch. Pileus*  $1\frac{1}{2}$ — $2\frac{1}{2}$  inches broad, obsolete umbonate, then altogether infundibuliform, tawny with a shade of fuscous, dry, opaque: margin sulcate tubercled. *Gills* 2—3 lines broad, dilute, tawny-fuscous or flesh-coloured, adnato-decurrent. *Stem* 1—2 inches high, 4—6 lines thick, spongy, at length more or less hollow, smooth, tawny-rufous turning pale.—In beech woods in mountainous places. Aug.—Oct. Inverary. *Rev. Colin Smith. Helensburgh. Mr. Joseph D. Hooker. Near Glasgow. Klotzsch.*

61. *A. quitus*, Fr. (*mild rufous Agaric*); sweet, pileus obtuse even dry opaque, gills testaceo-rufescent, stem solid firm. *Fr. Syst. Myc. v. 1. p. 69.*—*A. rubescens*, *Fl. Dan. t. 1069. f. 2.* (*vide Fries*).—*A. scrosus*, *With. v. 4. p. 160.*

Woods. Sept.—Nov. Very common.—*Pileus* 2 inches or more broad, opaque, rufescent, often slightly zoned, at first deep liver-coloured, obtuse, at length depressed, smooth, the margin incurved and delicately downy. *Flesh* thick, firm; *milk* white, but sometimes of a decided but pale yellow, the plant differing in no other respect. *Gills* pale rufescent, gradually becoming darker, decurrent, forked at the base, rather numerous, and narrow. *Sporules* white, round. *Stem* 2 inches long,  $\frac{1}{4}$ — $\frac{1}{2}$  an inch thick, thickest upwards, of the same texture and colour as the pileus; *flesh* firm, bearing a strong pressure without breaking; when old less firm, but not hollow. Mild; odour oily and sometimes like that of bugs.

The variety with yellow milk I have found at Barnby in the willows near Newark and at King's Cliffe, Norths., where *A. theiogalus* abounds; but the two are quite distinct.

62. *A. subdulcis*, Bull. (*subacrid rufous Agaric*); subacrid, pileus smooth polished dry rufescent, gills flesh-colour at length ferruginous, milk white unchangeable, stem smooth at length hollow. *Bull. t.* 224. *Pers. Syn. p.* 433. *Fr. Syst. Myc. v. 1. p.* 70. *Greav. Fl. Ed. p.* 374. *Klotzsch, Fung. Germ. exs. n. 8.*—*A. lactifluus*, *Sow. t.* 204. *With. v. 4. p.* 160. *Purt. v. 2. & 3. n.* 906.—*A. Bulliardii*, *Fl. Dan. t.* 1069. *f. (fide Fries).*— $\beta$ . *camphoratus*, *Bull. t.* 567. *f. 1.*—*A. cimicarius*, *Purt. v. 3. p.* 191. *Batsch, Cont. 1. f.* 69.

Woods. Sept.—Oct. Not so common as the last. — *Pileus* 1—4 inches broad, dark chocolate, sometimes slightly viscid when young. *Milk* white, acrid when the plant is old. *Gills* at length deep red-brown, scarcely at all forked. *Stem* 1—2 inches high,  $\frac{1}{4}$ — $\frac{1}{2}$  an inch thick, substance looser than in the last at length hollow. I once found a most splendid variety of this at Collyweston, Norths., in which the pileus and stem were of a bright orange, very like *Bolt. t.* 9, but the milk was not yellow.

63. *A. theiogalus*, Bull. (*yellow-milked Agaric*); subacrid, pileus dry smooth somewhat zoned, milk white changing to yellow. *Bull. t.* 567. *f. 2.* *Pers. Syn. p.* 431. *Fr. Syst. Myc. v. 1. p.* 71.—*A. cimicarius*, *var. 3.* *With. v. 4. p.* 165.—*A. zonarius*, *Bolt. t.* 144.

Woods amongst dead leaves. July—Nov. Woolhope, Herefordshire. *Mr. Stackhouse.* King's Cliffe, Norths. *Rev. M. J. Berkeley.*—*Pileus* 1—3 inches broad, buff, sometimes slightly tinged with tawny, at first hemispherical, dimpled, at length depressed, more or less zoned; margin wavy, involute and minutely downy when young; *flesh* firm, crisp. *Gills* very slightly decurrent, connected by veins, distant, by no means rigid, salmon-coloured, slightly forked, about as broad as the flesh of the pileus. *Milk* white, rather acrid with a peculiar taste, changing instantly on exposure to air to a delicate but beautiful yellow, as does the whole plant when cut. *Stem*  $1\frac{1}{2}$  inch high,  $\frac{1}{3}$ —1 inch thick, at first nearly white, obese, paler than the pileus, downy at the base, more or less hollow.—A very elegant species, not to be confounded with the variety of *A. quietus* mentioned above. *A. zonarius*, Bolt, is quoted by Fries under *A. deliciosus*, but a comparison of the figure with the description shows it I think to be certainly the present species.

64. *A. rufus*, Scop. (*rufous milky Agaric*); extremely acrid, pileus subobtuse dry polished or squamulose rufous, milk white, stem subsolid. *Scop. 451.* *Fr. Syst. Myc. v. 1. p.* 71. *Klotzsch, Fung. Germ. exs. n. 7.*—*A. ruber*, *Pers. Syn. p.* 433. (*exc. Syn. Schæff.*)—*A. rubescens*, *With. v. 4. p.* 159. *b.*—*A. helvus*, *Fr. Syst. Myc. v. 1. p.* 72.

Plantations at Edgbaston in clayey soil. *Withering.* Fir plantation between Poole and Bourne Mouth, on a sandy bank. Sept.—*Pileus* 3 inches broad, plano-convex, slightly or strongly umbonate, with a depression round the umbo as the plant advances, deep rufescent, adpresso-

tomentose, the margin slightly turned in and substriate, fleshy, firm, not very brittle nor zoned. *Milk* white, insupportably acrid, not changeable. *Gills* at first pale, then slightly rufescent, decurrent, here and there forked. *Stem*  $2\frac{1}{2}$  inches high,  $\frac{1}{8}$  of an inch thick, nearly equal, obtuse, firm, bearing a strong pressure, rufescent, but hoary or mealy; turning brown when bruised, somewhat stuffed at length partly hollow base downy. The differences between *A. rufus* and *A. helvus* which are now united by Fries are said by him to depend upon their place of growth. My specimens, according to the place of growth, should be *A. rufus*, whereas in character they come nearest to *A. helvus*. Withering speaks of his plant as hot and acrid like *Mezereon* or *Cuckow Pint* which can scarce apply to any state of *A. subdulcis*.

65. *A. glyciósmus*, Fr. (*sweet-scented milky Agaric*); strong-scented, pileus thin squamulose opaque sublurid, gills yellowish close, milk white, stem smooth. *Fr. Syst. Myc. v. 1. p. 72.*

Woods especially of Pine. Sept.—Oct. Scotland. *Klotzsch, in Hook. Herb.*—"Pileus more or less plane, often umbonate, various in colour, lurid-brown, brick-red, flesh colour, or rufous; known by its peculiar scent; brittle. *Gills* opaque, pale when young. *Sporules* white. *Milk* white, at length acrid." *Fr. l. c. Pileus* 1—3 inches broad. *Gills* narrow. *Stem*  $1\frac{1}{2}$  inch long, 3—4 lines broad.

66. *A. plumbeus*, Bull. (*lead-coloured milky Agaric*); pileus dry not zoned dark fuscous or deep dingy grey, gills yellowish, milk white. *Bull. t. 282. t. 559. f. 2. Pers. Syn. p. 435. Fr. Syst. Myc. v. 1. p. 73. Grev. Fl. Ed. p. 375.—A. Listeri, Sow. t. 245. Johnston. Fl. Berw. v. 2. p. 164.*

Woods. Autumn. Rare. Dundas Hill near Edinburgh. *Greville*. Near Berwick. *Johnston*.—"Pileus 3—5 inches broad, large, convex, becoming depressed, firm, never zoned or glutinous, margin mostly involute, dark, fuliginous-grey or brown. *Flesh* compact, white. *Gills* numerous, yellowish, varying with different shades. *Stem* 2—3 inches high, firm, thick, brownish or dingy olive." *Grev. l. c.*

67. *A. fuliginósus*, Fr. (*coffee-coloured Agaric*); pileus zoneless dry amber sprinkled with brown meal, gills ochraceous, flesh changing from white to saffron. *Fr. Syst. Myc. v. 1. p. 73.—A. azonites, Bull. t. 567. f. 3.*

Woods. Aug.—Nov. Inverary. *Klotzsch, in Hook. Herb. Canterbury. King's Cliffe, Norths. Rev. M. J. Berkeley.*—"Pileus 1—3 inches broad, not viscid, minutely pitted, plane, slightly depressed, of a dull grey-buff or amber with a minute bloom; not zoned; the margin not the least involute; *flesh* when cut soon changing to salmon-colour. *Milk* white, not changeable. *Gills* slightly forked at the base, not connected with veins, ochraceous, subdecurrent, mealy, with the yellow sporules, which are very minute, round and echinulate. *Stem*  $1\frac{1}{2}$ —3 inches long, 4—5 lines thick, solid, but the inner substance less dense, obese, much paler than the pileus, with a minute bloom.—The colour of the pileus is exactly that of coffee and milk, as observed by Decandolle, who however confounds two species. It may be always known from *A. acris* by attending to the sporules.

68. *A. pyrógalus*, Bull. (*small-zoned Agaric*); pileus dry smooth more or less zoned livid, gills distant yellow, stem

hollow cinereous. *Bull. t.* 529. *f.* 1. *Pers. Syn. p.* 436. *Fr. Syst. Myc. v. 1. p.* 74. *Roques, Hist. des Champ. t.* 13. *f.* 5.

Woods and meadows amongst grass. Eaglesham, Scotl. *Klotzsch, in Hook. Herb.* King's Cliffe, Norths. Aug.—“*Pileus* 2—3 inches broad, firm but thinner than the following species; at length dirty-yellowish; in shady places almost zoneless. *Milk* abundant, extremely acrid. *Stem*  $1\frac{1}{2}$  inch long, 3—5 lines thick, stuffed, soon hollow, often attenuated, smooth or scrobiculate.” *Fr. l. c.*

69. *A. flexuosus*, *Pers.* (*woody-zoned Agaric*); compact, edge of pileus turned down dry smooth, gills distant pale, stem solid short. *Fr. Syst. Myc. v. 1. p.* 74.—*a. pileus umber*.—*A. azonites*, *Bull. t.* 559. *f.* 1.—*A. umbrinus*, *Pers. Syn. p.* 435.—*b. pileus ruddy-yellow*. *Fungus lignosus*, &c. *Vaill. Bot. Par. p.* 61. *t.* 12. *f.* 7. !—*A. zonarius*, *Bull. t.* 104.—*A. flexuosus*, *Pers. Syn. p.* 430.

Pastures amongst bushes. July—Oct. Hamilton, Scotland. *Klotzsch, in Hook. Herb.*—Cotterstock, Tansor, Norths. *Rev. M. J. Berkeley. (b.)*—Cæspitose or solitary. *Pileus* 4 inches or more broad, crisped, and waved, infundibuliform, zoned, more or less rufescenti-ochraceous, viscid when moist, fleshy, milk white very acrid. *Margin* almost smooth, very slightly involute; flesh zoned. *Gills* nearly of the same colour, very much forked and anastomosing below from the intermediate veins. *Stem* short and thick, blunt, white and very minutely downy, occasionally quite smooth, firm and solid. Sometimes very much deformed and scarcely rising above the soil; very harsh and woody. My specimens, though certainly belonging to *A. flexuosus*, have the pileus viscid when moist. The sporules I find decidedly ochraceous, as also in *A. pyrogalus*.

70. *A. piperatus*, *Scop.* (*Pepper Agaric*); pileus infundibuliform rigid smooth white, gills very narrow close, milk and the solid blunt stem white. *Scop. p.* 449. *Bolt. t.* 21. *Pers. Syn. p.* 429. *Fr. Syst. Myc. v. 1. p.* 76. *Greav. Fl. Ed. p.* 375. *Roques, Hist. des Champ. t.* 13. *f.* 1.—2—*A. amarus*, *Schæff. t.* 83.—*A. Listeri. var. 1.* *With. v. 4. p.* 153. *Purt. v. 2. p.* 624. & 3. *p.* 394.

Woods. Not quite so common as the next. July—Aug.—*Pileus* 3—7 inches broad, slightly rugulose, quite smooth, white, a little clouded with yellow or stained with umber where scratched or bruised, convex more or less depressed, often quite infundibuliform more or less waved, fleshy, thick, firm, but brittle; margin involute at first; sometimes excentric. *Milk* white, hot. *Gills* generally very narrow,  $\frac{1}{2}$  to  $\frac{1}{3}$  of an inch broad, but sometimes much broader, cream-coloured, repeatedly dichotomous, very close “like the teeth of an ivory comb,” decurrent from the shape of the pileus, when bruised changing to umber. *Stem* 1—3 inches high,  $1\frac{1}{2}$ —2 inches thick, often compressed, minutely pruinose, solid but spongy within, the substance breaking up into transverse cavities. Specimens occur, exactly similar in habit to *A. pargamenus*. Though very acrid when raw, it loses its bad qualities entirely by cooking and is extensively used on the continent, prepared in various ways. It is preserved for winter-use by drying or pickling in a mixture of salt and vinegar.



71. *A. vellereus*, Fr. (*fleecy Agaric*): white, pileus tomentose rigid, gills narrow distant, milk white, stem solid blunt. *Fr. Syst. Myc. v. 1. p. 76.*—*A. Listeri*, *Sow. t. 104.* *Klotzsch, Fung. Germ. exs. n. 9.*

Woods. July—Oct. Exceedingly common.—*Pileus* 4—7 inches broad more or less infundibuliform, the whole surface minutely but densely tomentose; white, firm, fleshy; margin at first involute. Milk white, acrid. *Gills* white, narrow (but occasionally broad and brittle like *A. exsuccus*) distant, forked, connected by veins, at length slightly buff or yellowish, rufescent after being bruised. *Stem* 1 inch high, 2 inches thick, blunt, rather less downy than the pileus, solid.

72. *A. exsuccus*, Otto, (*juiceless Agaric*); not milky, pileus infundibuliform clothed with a depressed down, gills broad crisp pallid.—*A. vellereus*, var. *exsuccus*, *Fr. Syst. Myc. v. 1. p. 77.*—*A. piperatus*, var., *Pers. Syn. p. 429.*

Woods. July—Sept. Common.—*Pileus* broader even than in the last, white, fleshy; flesh white without milk and not changing colour. *Gills* distant, white with often a tinge of verdigris, very crisp and brittle somewhat forked,  $\frac{1}{4}$  of an inch broad, connected by veins. *Sporules* white, round. *Stem* obtuse, short, thick, surface like that of the pileus. This is not precisely the same plant as *A. vellereus*, putting out of view the absence of milk, and seems to have as much claim to rank as a species as *A. vellereus*, differing as much from that, as that does from *A. piperatus*. The gills are very different; though as there is a state of *A. piperatus* very near to *A. vellereus* as regards the gills, so again looking to the same organ there is a state of *A. vellereus* approaching to *A. exsuccus*.

Subgenus 8. CLITOCYBE; (from κλιτύς a steep or declivity, and κεφαλή a head, pointing to the shape of the pileus when young, in contradistinction to OMPHALIA in which the pileus when young is umbilicate). *Veil* none. *Pileus* convex when young, not umbilicate; at length often depressed or infundibuliform. *Gills* unequal, juiceless, unchangeable, tough, variously fixed or free. *Sporules* white.

A. DASYPHYLLI (from δασύς, close, and φύλλον, a leaf.) *Pileus* dry, smooth. *Gills* close decurrent or acutely adnate.

73. *A. gilvus*, Pers. (*subinvolute Agaric*); pileus convex obtuse then infundibuliform smooth rigid, gills decurrent from pallid becoming reddish, stem stuffed somewhat rooting shaggy at the base. *Pers. Syn. p. 448.* *Fr. Syst. Myc. v. 1. p. 80.* *Fr. Fl. 1. p. 10.*—*A. subinvolutus*, *Batsch, Cont. 2. f. 204.*—*A. sordido-flavus*, *With. v. 4. p. 183.*—*A. cyathiformis*, *Fl. Dan. t. 1011.*

Under trees in Edgbaston Park. Withering. Aug.—Sept.—“Very distinct as a species from all the forms of *A. gibbus* and *A. nebularis*, and when once seen can be confounded with neither. Its distinguishing marks are, stem stout fleshy; pileus when springing up moist, when full grown dry, polished, here and there spotted; flesh compact or brittle not flaccid, reddish like the pileus, not white; gills very close, often

branched, never white. There never is a central umbo. Scent none. In other respects, its stature size and intenseness of colour vary, so that it is hard to believe that certain specimens belong to the same species. Stem attenuated, sometimes above, sometimes below." *Fr. El. l. c.*—This species is introduced solely on account of Fries' reference to Withering. One of his references however I have rejected, being certainly another species and probably the true *A. cinnamomeus*, and I perfectly agree with Dr. Greville that Bolton's *A. cinnamomeus*, is quite different. I believe it to be a state of *A. fastibilis*. *A. pileolarius*, Bull. quoted by Fries, does not agree with the account given above. It is described as farinose or subtomentose and its odour and taste as very agreeable, especially when young. Of this I once found some small specimens in Laxton Park, Norths. under Scotch firs, and I have before me what I believe to be the same (as far as I can judge from dried specimens) from the Sandy Denes of Yarmouth; but never having seen it fully developed and having neglected to take notes at the time, I leave the point for further investigation.—Whatever may be thought of the correctness of Fries' citation of Withering's *A. sordido-flavus*, the remarks given above from his Elenchus will be found of great value as affording points of comparison between this and the two next species.

74. *A. flaccidus*, Sow. (*flaccid Agaric*); pileus thin depressed obtuse even, margin deflexed, gills decurrent very close dirty white, stem slender equal. *Sow. t. 185. Fr. Syst. Myc. v. 1. p. 81. El. 1. p. 11.*

Fir plantations. Sept. Not uncommon. Seldom in other situations. Amongst grass, Almer. Dorset. *Rev. M. J. Berkeley.*—*Pileus* 2—3 inches broad, always of a peculiar form and substance; orbicular, depressed, rather plane than infundibuliform by reason of the deflexed margin. No central umbo; very even and smooth, various in colour, generally reddish but sometimes white. *Gills* very much attenuated behind, very close, tender and narrow, not running far down. *Stem* 1—2 inches long, 2 lines thick, slender, generally equal, smooth with a subcartilaginous bark; not fleshy as in *A. gilvus*, nor elastic and spongy as in *A. infundibuliformis*, but stuffed and soon hollow or fistulose; not rooting nor incrassated and villous, except from peculiarity of situation." *Fr. El. l. c.* In grassy places, as in the locality mentioned above, the stem is sometimes densely covered with wool above the peculiar bark-like coat, evidently springing from the villosity of the base; the pileus in the same locality was very brittle. Fries' remarks apply admirably to the form well figured by Sowerby, which commonly occurs in fir plantations. Schœffer's figure when compared with his character will be seen to belong clearly to some other species; and most of Bulliard's figures *t. 553*, except perhaps that marked P., rather to the following species. He says expressly that it has a fungoid smell, which is one of the distinguishing marks of *A. infundibuliformis*. Few Agarics have greater pretensions to beauty.

75. *A. infundibuliformis*, Bull. (*variable wood Agaric*); pileus umbonate smooth at length infundibuliform, gills decurrent reddish, stem stuffed elastic attenuated upwards. *Bull. t. 286. 553. Fr. El. 1. p. 12. Ind. Alph. p. 22.—A. gibbus, Pers. Syn. p. 449. Fr. Syst. Myc. v. 1. p. 82. Klotzsch, Fung. Germ. exs. n. 10.*

Woods, roadsides, &c. amongst roots of grass, rotten leaves, &c. Aug.—Oct. Extremely common. *Pileus*  $1\frac{1}{2}$ —2 inches or more broad, dry, elastic, pale reddish cream colour, at first convex quite white and narrower than the stem and scarce to be distinguished from it, then umbonate, soon depressed or quite infundibuliform with traces of the umbo, variously crisped and lobed, the margin involute and downy; the whole being clothed with a delicate closely-woven web which is often on the margin pinched up as it were into little raised striæ; these however in general vanish as the pileus becomes completely expanded. *Flesh* moderately thick in the centre, of the same colour as the pileus. *Gills* white, attenuated at each end, numerous, unequal, some of them forked at the base. *Stem* very various in length, 2—9 lines thick, attenuated upwards, elastic, stuffed, paler than the pileus. Odour strong but grateful like that of *A. oreades*.—Differs from the last in the following characters, “odour pleasant. Pileus with a thin margin at first inflected at length erect, truly infundibuliform, with a central umbo on account of the more fleshy centre which is rarely absent in this, though always in the foregoing species. The surface of the pileus is dry, never moist on account of its silkiness, always more or less perceptible, nor is the stem polished. Gills close, but not very close, very decurrent.” *Fr. El. l. c.*

*β. major.* *Fr. El. l. c.* pileus firm broadly and obtusely umbonate.—*A. geotrupus*, *Bull. t. 573. f. 2.*—*A. pileolarius*, *Sow. t. 61. Pert. v. 2 & 3. n. 902.*—*A. gilvus*, *Grav. Sc. Crypt. Fl. t. 41.*

Woods. Not uncommon.—*Pileus* 4 inches broad. *Stem* 6 inches long, nearly 1 inch thick,  $1\frac{1}{2}$  at the base, more or less fibrillose, sometimes with broad transverse closely-pressed scales. I quite agree with Fries that this is nothing more than a large variety of *A. infundibuliformis*, agreeing with it in every point except the superior development of all its parts.

76. *A. giganteus*, *Sow.* (not of *Fr. El.*) (*giant Agaric*); very large dirty-white, pileus broadly infundibuliform, gills close decurrent, stem solid subpubescent blunt. *Sow. t. 244. With. v. 4. p. 150. Pert. v. 2 & 3. n. 915. Grav. Fl. Ed. p. 375.*—*A. infundibuliformis*, *γ. maximus*, *Fr. El. p. 13.*

Meadows and woods. Sept. Not common. Blynhill, Shropshire. *Mr. Dickenson.* Newliston, near Edinburgh. *Captain Waugh.* Wol-larton, Notts. *Rev. M. J. Berkeley.*—*Pileus* 4—14 inches broad, fleshy, often splitting at the margin, broadly infundibuliform, the base of the funnel sunk into the stem with no trace of an umbo, dirty white with an ochraceous tinge, minutely adpresso-squamulose to the naked eye, sometimes guttate; the whole surface under a lens clothed with a fine matted silkiness; margin grooved, the grooves shallow. *Gills* close, forked, yellow-white, as broad as the flesh of the pileus. *Stem*  $2\frac{1}{2}$ —3 inches high, nearly 2 thick at the base, firm, fleshy, elastic, quite solid, subbulbous, sometimes attenuated upwards, minutely but conspicuously pubescent; when bruised dirty rufescent. Odour strong like that of *A. oreades*.—Certainly very nearly allied to the last, and differing only in its larger size, pubescent stem, and in its growing in rings which are sometimes seventeen yards in diameter. I am not however convinced of the propriety of accounting it a mere variety. Its large size certainly does

not, as Fries supposes, depend upon the mere richness of the soil on which it grows, for I have found it in abundance above a foot in diameter on extremely barren soil. Fries finds it with an umbo, in my specimens there is not the slightest trace of one.

77. *A. nigréscens*, Lasch. (*dark infundibuliform Agaric*); pileus plane fleshy at length infundibuliform cinereous-brown, dark in the centre, gills decurrent, stem thickest above solid lanato-pubescent. *Lasch. Linnæa. IV. p. 528. Fr. Ind. Alph. p. 31.*

Amongst dead leaves. Scotland. *Klotzsch, in Hook. Herb.*—*Pileus*  $1\frac{1}{2}$ —2 inches broad. *Gills* when dried of the same colour as the edge of the pileus, very decurrent even in young specimens. *Stem*  $1\frac{1}{2}$  inch high, 4 lines thick.—The characters given above are necessarily taken from dried specimens, as I have no opportunity of referring to the work in which the species is described. There is no doubt of its being perfectly distinct. Found originally near Dresden.

78. *A. phyllophilus*, Pers. (*white wood Agaric*); gregarious, white, pileus even umbonate, at length infundibuliform, gills subdecurrent, stem hollow, the base incurved villous. *Pers. Syn. p. 457. Fr. Syst. Myc. v. 1. p. 83. Fl. Dan. t. 1847.*

Amongst dead leaves, especially in beech and fir woods. Sept. Kinnordy. *Klotzsch, in Hook. Herb.* amongst fir leaves.—“Generally sweet-scented, subcæspitose. *Pileus* 2—3 inches broad, slightly fleshy; when young nearly plane; sometimes repand. *Stem* 2—3 inches long, obliquely-rooted at the base.” *Fr. l. c.*

79. *A. nebulâris*, Batsch, (*new-cheese Agaric*); pileus compact even cinereous, gills subdecurrent close whitish, stem stuffed, attenuated upwards. *Batsch, Cont. 2. f. 193. Pers. Syn. p. 349. Fr. Syst. Myc. v. 1. p. 86. Fl. Dan. t. 1784. Roques, Hist. des Champ. t. 15. f. 5.—A. mollis, Bolt. t. 40.—A. caseus, With. v. 4. p. 152.*

Fields and fir woods. Autumn. Not common. Halifax. Bolton. Pendarvis, Cornw. *Mr. Stachhouse.* Duglestone, Garscube (amongst fir leaves) *Klotzsch, in Hook. Herb.* Margate (pastures) *Rev. M. J. Berkeley.*—*Pileus*  $\frac{1}{2}$  inches broad, at first conico-convex, fuligineo-cinereous, obtuse, the margin waved, involute and pruinose; gradually expanded with a broad umbo and quite smooth, dirty white or ochraceo-fuliginous, spotted by rain; *flesh* thick white. *Gills* paler than the pileus, rather broad, slightly decurrent or slightly emarginate, with a decurrent tooth; often forked in distorted specimens. *Stem* 2—3 inches high,  $\frac{1}{2}$  an inch thick, 1 at the base, more or less bulbous at first fibrilloso-squamulose, paler than the pileus; solid but the central substance softer, sometimes twisted; *odour* strong, like that of *A. oreades*. Excellent for food.

80. *A. canaliculâtus*, Schum. (*swollen-stemmed Agaric*); pileus even smooth convex compact greyish-brown, gills narrow pale flexuous behind with a decurrent tooth, stem bulbous stuffed streaked. *Schum. Flor. Siell. v. 2. p. 331. Fl. Dan. t. 1844. f. 2. Fr. Syst. Myc. v. 1. p. 46. Grev. Syn. Scot. Crypt. Fl. p. 32.—A. turgidus, Grev. Crypt. Fl. t. 9.*

Dry woods amongst beech and other leaves. Autumn. Foxhall, near Edinburgh. On worn-out bark in a cold Grape-house. March. Apithorpe, Norths. *Rev. M. J. Berkeley*.—"Plants much scattered. *Pileus* 2—3½ inches in diameter, flattish in young plants, more or less convex in the old ones, of a greyish-brown, very smooth, feeling, a short time after gathering like fine kid leather, margin rounded, slightly depressed. *Flesh* very thick, extremely white, rather dense, becoming spongy and loose as it enters the stem. *Gills* very slightly decurrent, pale-yellowish, numerous, narrow. *Stem* 4—5 inches high, about 1 inch in diameter at the top, much thicker and ventricose downwards, and again somewhat swollen at the base, hollow; white, with an uneven but not striated surface, streaked with pale pink, brown or dirty-yellow, white and downy at the base, which is very obtuse. The whole stem feels extremely hollow and elastic between the fingers. *Root* a fine dense white down, intermixed with a few minute fibres." *Grev. l. c.* My specimens, which are not fully developed, differ from the above description, in the place of growth, in being gregarious and very minutely tomentose; in the gills being flexuous behind with a decurrent tooth, so as to form a little channel round the stem, and in the stem being spongy and not hollow. Schumacher describes the gills as truncate behind, and forming a canal round the solid stem. The gills in Greville's figure do not accord with that of Schumacher; nor the figure of either with my specimens; which, combining the peculiarities of both, tend to prove that both are correct, and that Fries judged rightly in considering them as identical, while he pointed out their proper affinity to be with *A. nebularis*, and *A. Schumacheri*. There is a peculiarity in the gills in my specimens, which is evidently accidental; they are minutely crenate and plicate so as to appear marked with prominent veins.

81. *A. fumosus*, Pers. (*smoky Agaric*); pileus smooth light bistre, gills adnate close dirty-white as well as the even stuffed stem. *Pers. syn. p.* 348.  *Ic. Pict. t. 7. f. 3, 4. Fr. Syst. Myc. v. 1. p.* 88.

Woods. The Cheverill near Hockerton, Notts. Oct.—*Pileus* 2½—3 inches broad, fleshy but thin on the margin, more or less wavy, slightly umbonate, with a thick skin marked with little pits so as to present the appearance of innate fibrillæ; bistre-coloured. *Gills* rather pale, variously adnate, rounded behind or emarginate, sometimes almost decurrent. *Stem* 1—2½ inches long, ⅓ of an inch thick, quite smooth except at the apex where it is punctato-squamulose, nearly equal, stuffed. *β. A. polius*, very thickly caespitose, pileus grey, gills and stem unequal dirty-white. *A. albellus*, Sow. *t.* 122. *Stems* 40 or 50 growing together by their bases into a fleshy body, wavy, smooth. *Pileus* ½—2 inches broad, plano-convex, white or greyish, reddish where bruised.

82. *A. viridis*, With. (*green Agaric*); pileus smooth green, gills adnate narrow white as well as the solid smooth stem. *With. v. 4. p.* 184. *Fr. Syst. Myc. v. 1. p.* 90.—*A. caeruleus*, *Bolt. t.* 12.

Woods. Aug. Rare. Wheatly, Yorks. Bolton.—*Pileus* 2—3 inches broad, carnose; *flesh* white, obtuse, convex, rugose, dry, greyish blue, firm and hard but very brittle. *Gills* white, thick and brittle.

narrow, adhering to the stem by their base. *Stem* 2—3 inches high, 2—3 lines thick, dusky white, hard and solid.

83. *A. odórus*, Bull. (*green sweet-scented Agaric*); fragrant nearly plane more or less green, pileus even, gills decurrentiaduate rather close, stem stuffed unequal smooth. *Bull. t.* 176, 556. *f.* 3. *Sow. t.* 42. *Pers. Syn. p.* 323. *With. v.* 4. *p.* 376. *Purt. v.* 2 & 3. *n.* 904. *Fr. Syst. Myc. v.* 1. *p.* 90. *Gre. Sc. Cryp. Fl. t.* 28. *Fl. Ed. p.* 376.—*A. anisatus*, *Roques, t.* 15. *f.* 4.

In shady thick woods amongst moss and dead leaves. Aug.—Nov. General but seldom abundant.—*Pileus* 3 inches broad, plano-convex, with or without an umbo, smooth, of a lurid pale green, sometimes here and there whitish so as to appear zoned; fleshy but rather watery; *flesh* dull dirty-white, margin not striate but sometimes transparent; in the young plant inflected tomentose. *Gills* pale, rather waned decurrentiaduate, the interstices wrinkled. *Sporules* round, white. *Stem* 2 inches high, 4 lines thick, firm somewhat flexuous, subfibrillose with a little scattered down, stuffed, attenuated towards the base, which is downy and furnished with strong-branched greenish or whitish roots. *Odour* like that of anised.

84. *A. cándicans*, Pers. (*shining-white depressed Agaric*); small shining white, pileus even convex at length umbilicated, gills adnate at length decurrent, stem even fistulose. *Pers. Syn. p.* 456. *Fr. Syst. Myc. v.* 1. *p.* 91. *Fl. Dan. t.* 2021. *f.* 1.—*A. umbilicatus*, *Bull. t.* 411. *f.* 2. *Bolt. t.* 17.

Amongst leaves of oak and beech. *Fr. l. c.* Plantations of fir and larch, Fixby Hall. *Bolton.* July—Oct.—“*Pileus* scarce 1 inch broad, subcarnose, tough, regularly deflexed at the margin, rarely subdeformed. *Gills* rather close. *Stem* 1—2 inches high, 1—2 lines thick, nearly equal, incurved at the base, rooted and villous, the rest smooth. Aberrant forms numerous.” *Fr. l. c.*

85. *A. dealbátus*, Sow. (*dirty-white Agaric*); inodorous dirty-white, pileus more or less unequal thin even, gills adnate close, stem stuffed equal smooth. *Fr. Syst. Myc. v.* 1. *p.* 92.

Gregarious on the roots of grass in old pastures.—*Pileus*  $\frac{3}{4}$ —1 $\frac{1}{2}$  inch broad, at first convex, then plano-convex, the margin somewhat undulate very slightly involute, dry, smooth though when examined with a lens clothed with a very minute farinaceous silkiness which retains the marks of the fingers, dirty-white, subcoriaceous, cream-coloured or of a beautiful rose colour. *Gills* adnate, slightly emarginate when young, brittle, white, moderately broad. *Sporules* white round. *Stem* 1 inch high, 2 lines thick, often curved, farinaceous at the apex whitish or rose-coloured, stuffed, occasionally in age hollow above, but appearing as if the more tender inner substance were carried down by the knife. *Odour* fungoid.—This very common species I believe to be Fries' *A. dealbatus*, but if so my specimens are certainly not inodorous.

$\gamma$ . pileus repand and lobed, stem short. *Sow. t.* 123. *Gre. Fl. Ed. p.* 376.

Pastures, woods, &c. Autumn.—“*Pileus* 1—1½ inch broad, smooth slightly fleshy, plane, umbonate sometimes depressed from the turning up of the margin. *Gills* narrow, irregular, white. *Stem* short, crooked or straight, rather tough, smooth, white. Subgregarious, polymorphous. *Grev. l. c.*

86. *A. cerussatus*, Fr. (*white lead Agaric*); inodorous white, pileus fleshy even, gills adnate close, stem solid even tomentose at the base. *Fr. Syst. Myc. v. 1. p. 92. El. 1. p. 15.*—*A. opacus*, Sow. *t. 142. With. v. 4. p. 172.*

Woods and heaths. Sept.—April.—“Often gregarious. *Pileus* 2—3 inches broad, a little convex but soon plane and obtuse, rather shining. *Gills* not decurrent. *Stem* 2—3 inches high, somewhat thickened at the base, furnished frequently with fibrillose radicles.” *Fr. l. c.* Sowerby describes his plant as distinguishable by the silvery glare and opaque surface of the pileus. *Taste* like that of *A. orades*.

87. *A. grammopodium*, Bull. (*sulcate-stemmed Agaric*); large, pileus obsoletely umbonate even, gills adnate close, stem solid smooth sulcate. *Bull. t. 548, 585. f. 1. Fr. Syst. Myc. v. 1. p. 93.*—*A. graveolens*, *With. v. 4. p. 170. Purst. v. 3. p. 206.* (not of Sow.)

Woods and plantations amongst grass. June—Oct. Edgbaston. In rings under trees at Packington. *Withering.* In rings under trees, Ragley Park. *Purton.*—“*Pileus* 3—5 inches broad, fleshy, margin thin, rather brittle convex firm campanulate, then somewhat plane, also depressed and repand. *Gills* not decurrent, narrow, sometimes divided. *Stem* 3 inches high, ½ an inch thick, firm, of the colour of the pileus, thickened at the base and villous.” *Fr. l. c.* *A. graveolens*, Sow. is certainly very different from the plant of Bulliard quoted above, and as Persoon suspects, probably a state of *A. fastibilis*. It is however quoted by Fries in his *Ind. Alph. p. 23.* as a synonym of *A. saponaceus*, (*A. myomyces*, *Fr. Syst. Myc.*)

88. *A. millus*, Sow. (*large-collared Agaric*); pileus subumbonate even brownish, gills decurrent with a tooth, the base loose and curiously recurved, stem solid equal woolly. *Sow. t. 184. Fr. Syst. Myc. v. 1. p. 93.*

Kensington gardens. Jan.—*Pileus* 2 inches broad. *Stem* 2—3 inches high, ½ an inch or more thick. *Root* reticulated.

89. *A. inornatus*, Sow. (*smooth bistre-coloured Agaric*); pileus obtuse even bistre, gills adnate at length subdecurrent, stem solid even smooth thickened below. *Sow. t. 342. Fr. Syst. Myc. v. 1. p. 93.*

*Pileus* 3 inches broad, fleshy, plane or subdepressed, margin turned in. *Gills* of the same colour as the pileus. *Stem* 2 inches long, ½ an inch thick, paler than the pileus. *Fries El. p. 15,* thinks that this may be a variety of *A. fumosus*, Pers. and my specimens of that species described above, seem to connect them, as also *A. amplus*, Pers.

90. *A. fimbriatus*, Bolt. (*fimbriated Agaric*); dirty-white, pileus even at length infundibuliform, margin sinuated and

lobed, gills adnate very tender, stem short stuffed. *Bolt. t.* 61. *Pers. Syn. p.* 466. *Fr. Syst. Myc. v. 1. p.* 94.

On the ground and upon rotten wood. Aug. Halifax, Northowran. *Bolton*.—"Gregarious or tufted. *Pileus* 3 inches broad, slightly fleshy, plano-convex when young, often excentric; turning pale like *A. metachrous*, &c. *Gills* very close, narrow and tender, often forked. *Stem* about 1 inch long, smooth." *Fr. l. c.*

$\beta$ . *A. lobatus*; pileus thin brownish-red, gills much paler decurrent, stem stuffed thickened upwards. *Sow. t.* 186. *Pers. Syn. p.* 450.

Kensington Gardens.—*Sowerby*. *Pileus* 4 inches broad. *Stem* 2 inches high, 3—4 lines thick.

91. *A. adhærens*, Alb. & Schw. (*adhæsive Agaric*); cæspitose gluey, pileus unequal lacunose at length dirty-pallid, gills very thin very decurrent white, stem hollow somewhat rooting. *A. & S. p.* 187. *Fr. Syst. Myc. v. 1. p.* 96.

$\beta$ . *A. adhæsivus*, pileus plane discoid viscid, gills decurrent white as well as the solid attenuated stem. *With. v. 4. p.* 154. *Purt. v. 3. p.* 187.

In very shady woods and plantations. Sept.—Oct. Red Rock Plantations, Edgbaston. *Withering*. Ragley Wood. *Purton*.—*Pileus* 1½—2½ inches broad, brownish-white. *Stem* 3 inches high, ½ a line thick.

92. *A. adematopus*, Schœff. (*swollen-stemmed Agaric*); sub-cæspitose, pileus conic pulverulent rufous, gills decurrent rufescent as well as the solid ventricose pulverulent stem. *Schœff. t.* 259.—*A. fusiformis*, *Bull. t.* 676.

$\beta$ . pileus small rufous convex, gills narrow white as well as the stem. *Batt. p.* 51. *t. IX. f. F. A. coralloides*, *Dicks. Crypt. Brit. 1. p.* 16. *With. v. 4. p.* 158.—The synonym of *Sibthorpe* quoted by *Fries* appears to belong rather to *A. puniceus*. The only authority therefore that remains for introducing the species (if indeed it is really distinct from *A. fusiformis*) as British, is the undeveloped plant of *Dickson*.

**B. CAMAROPHYLLI**; (from *καμαρα* a vault, and *φυλλον* a leaf.) *Pileus* subcompact, dry. *Gills* very distant, vaulted decurrent.

93. *A. camarophyllus*, Alb. and Schw. (*arch-gilled Agaric*); pileus subcompact streaked smoky, gills decurrent white at length glaucous, stem long stout fibrillose. *Alb. et Schw. p.* 177. *Fr. Syst. Myc. v. 1. p.* 99.—*A. elixus*, *Sow. t.* 172. *Pers. Syn. p.* 460

Damp meadows. Autumn. Kensington gardens. *Sow. Garscube*, Scotland. *Klotzsch, in Hook. Herb.*—"Pileus 3—6 inches broad, convex, expanded, fibrilloso-striate, at length brittle, sometimes black or bluish. *Stem* 3—4 inches high, ½ an inch thick, nearly equal, changing to cinereous, white within." *Fr. l. c.*



94. *A. pratensis*, Pers. (*reddish Field Agaric*); firm, pileus subcompact convex becoming partially expanded smooth, gills thick decurrent, stem short stuffed attenuated below. Pers. *Syn.* p. 304. *Fr. Syst. Myc.* v. 1. p. 99. *Greav. Fl. Ed.* p. 376. *Greav. Sc. Crypt. Fl.* t. 91.—*A. miniatus*, Schæff. t. 313. *Sow.* t. 141.—*A. fulvosus*, Bolt. t. 56.—*A. fulvus*, With. v. 4. p. 169.—*A. ficoides*, Bull. t. 587. f. 1.

Pastures and grassy places. Aug.—Nov. Not uncommon, but scarce in some seasons. In the two last years I have not met with a single specimen.—“*Pileus* 1—2 inches broad, at length spreading towards the margin, but leaving the centre more or less convex as if umbonate glabrous, margin often cracked, frequently contracted or lobed, buffish reddish or brownish; *flesh* whitish, thick in the centre, thin at the margin. *Gills* thick, distant, decurrent, connected by veins, separable from the flesh of the pileus. *Stem* 1—2 inches high, 3—8 lines thick, whitish, attenuated towards the base.” *Greav. l. c.* *A. ericeus*, With. is a white variety with buff gills; but with an incorrect synonym from Bulliard.

95. *A. virgineus*, Wulf. (*white Field Agaric*); white, pileus thin moist convex then umbilicated, gills decurrent distant connected by veins, stem slender stuffed attenuated downwards. *Wulf. in Jacq. Coll.* 2. t. 15. f. 1. *Sow.* t. 32. *Pers. Syn.* p. 456. *Greav. Sc. Crypt. Fl.* t. 166.—*A. niveus*, Schæff. t. 232. *With.* v. 4. p. 214.—*A. ericeus*, Bull. t. 188.—*A. eburneus*, *With.* v. 4. p. 149. *Greav. Fl. Ed.* p. 371.

Pastures. Sept.—Nov. Extremely common.—*Pileus* 1 inch or more broad, slightly viscid when moist and shining as if oiled, with a satiny lustre when dry, white, sometimes with a tinge of yellow or pink; various in shape, sometimes umbonate, often quite plane or depressed, frequently obconic, margin more or less thin and transparent. *Gills* broad, distant, with very prominent connecting veins, adnato-decurrent, sometimes forked above. *Stem* 2 inches long, 1—2 lines thick, under a lens fibrillose and sometimes pulverulento-squamulose at the apex, stuffed, the centre composed of crisped fibres, at length more or less hollow, with frequently a core running down from the pileus; white, with sometimes a tinge of pink at the base. *Taste* like that of *A. orcadus*.—This and the last are both eatable. There is no glandular appearance at the top of the stem as in *A. eburneus*; with which when once understood, the present species cannot be confounded.

C. HYGROCYSBI; (from  $\nu\gamma\gamma\epsilon\omicron\varsigma$  moist and  $\alpha\upsilon\beta\eta$  a head.) *Pileus* thin, viscid when moist. *Stem* hollow.

96. *A. psittacinus*, Schæff. (*parroquet Agaric*); green changing to yellow viscid, pileus campanulate spreading striate when moist, gills adnate rather distant, stem equal even. *Schæff. t.* 301. *Sow.* t. 32. *With.* v. 4. p. 336. *Purt.* v. 2 § 3. n. 948. *Fr. Syst. Myc.* v. 1. p. 102. *Greav. Sc. Crypt.* t. 74. *Fl. Ed.* p. 376.—*A. chamaeleo*, Bull. t. 545. f. 1.

Pastures. Sept.—Nov. Common.—“*Pileus* 1 inch broad, conical, at length spreading, sometimes concave from the margin turning up,

smooth, glutinous, green at first, partly changing to yellow of various intensity, often cracking. *Gills* slightly adnate, bright yellow, often shaded with green, subdistant, thick, broad in the centre. *Stem* 2—3 inches high, about 2 lines thick, hollow, splitting, green, yellow at the base very slimy." *Grav. l. c.*

97. *A. ceráceus*, Wulf. (*wax-like Agaric*); pileus convex thin plane viscid substriate dull-yellow, gills adnato-decurrent distant yellow as well as the somewhat unequal stem. *Wulf. l. c. f. 2. Sow. t. 20. With. v. 4. p. 235. Pers. Syn. p. 337. Fr. Syst. Myc. v. 1. p. 102. Grav. Fl. Ed. p. 377.*

Pastures. July—Nov. Not uncommon.—*Pileus* 1 inch broad, convexo-plane, occasionally subumbonate, viscid, subcarinose, margin substriate. *Gills* very broad ( $\frac{3}{4}$  of an inch), ventricose, connected by veins. *Stem* 2—3½ inches long, 2 lines or more thick, flexuous, equal or slightly unequal, sometimes compressed, yellow, occasionally orange at the base.

98. *A. cónicus*, Schæff. (*conic black-stained Agaric*); pileus conic acute more or less lobed, gills close ascending ventricose attenuated and free, stem cylindrical striate. *Schæff. t. 2. Pers. Syn. p. 335. Fr. Syst. Myc. v. 1. p. 103. Grav. Fl. Ed. p. 377.—A. croceus, Bull. t. 50, 524. f. 3.—A. aurantius, Curt. Lond. t. 308. Bolt. t. 67. f. 2. Sow. t. 381. right hand figs.*

Pastures. Sept.—Nov. Common.—*Pileus* 1—2 inches high, acutely conic, variously waved and lobed, fibrillose, viscid when moist or young, juicy, turning black, as does the whole plant when broken or bruised, orange, yellow, scarlet, brown, dusky &c., various colours often blended together. *Gills* thick, fleshy, ventricose, attenuated behind, free or adnexed, yellowish with frequently a cinereous tinge. *Stem* 3—4 inches long, 2—½ lines thick, often splitting, fibrilloso-striate, coloured like the pileus. Fries has observed the gills to pour forth a sulphur-coloured milk like *A. scrobiculatus*.

99. *A. puníceus*, Fr. (*swollen-stemmed scarlet Agaric*); pileus campanulate obtuse lobed orange-scarlet, gills fixed ascending yellow, stem thick ventricose, base white. *Fr. Syst. Myc. v. 1. p. 104.—A. aurantius, Fl. Dan. t. 833. f. 1.—A. rigidus, Bolt. 43.—A. œdematopus, Sibth. Fl. Ox. p. 350. With. v. 4. p. 196.—b. smaller.—A. coccineus, Bull. t. 202.*

Plantations and woody grounds. July—Aug. Not common. Fixby Hall. *Bolton*.—" *Pileus* 2—4 inches broad, at first campanulate, then explanato-convex, broadly and obtusely umbonate, even, undulated and lobed, irregular, when moist subviscid, blood-coloured; when dry the centre becoming pale. *Gills* ventricose, 2—4 lines broad, at length connected by veins, altogether adnate, but because of the form of the pileus appearing free, yellow, varying to whitish-yellow and purplish at the base. *Stem* 3 inches long, ½—1 inch thick, attenuated at both ends, dry, striate, often squamulose at the apex; stuffed when young, then hollow, yellowish or of the colour of the pileus." *Fr. l. c.*

100. *A. coccíneus*, Wulf. (*changeable scarlet Agaric*); pileus convex expanded viscid at length depressed, gills adnate with

a decurrent tooth connected changing colour, stem compressed scarlet. *Wulf. l. c. 2. p. 106. Pers. Syn. p. 334. Fr. Syst. Myc. v. 1. p. 105.*—*A. Kermesinus, Fl. Dan. t. 715.*—*A. scarlatinus, Bull. t. 570. f. 2.*—*A. aurantius, Sow. t. 381. (scarlet figure.) With. v. 4. p. 234.*

Pastures. Sept.—Oct. Extremely common.—*Pileus* 1—2 inches broad, at first obtuse, conico-campanulate, at length inverted, sometimes strongly umbonate, splitting from the centre, yellow, orange or scarlet, viscid when moist, when dry pallid, appearing to the eye fibrillose, but not really so; margin thin, more or less wavy. *Gills* broad, ventricose, wrinkled, thick, connected by veins, retaining their colour longer than the pileus, adnate, with a decurrent tooth in depressed specimens. *Stem*  $1\frac{1}{2}$  inch long,  $\frac{1}{3}$  of an inch thick, more or less hollow, subflexuous, smooth, though apparently subfibrillose, tough, but easily splitting. —Fries describes the gills when full grown as purple at the base, yellow in the middle, glaucous at the edge; and the stem as scarlet above, always yellow at the base.

101. *A. miniatus, Fr. (dry scarlet Agaric;)* pileus convex dry at length umbilicate scarlet as well as the cylindrical equal subsolid stem, gills adnate distinct yellowish. *Fr. Syst. Myc. v. 1. p. 105.*—*A. glutinosus, Fl. Dan. t. 1009. f. 2.*—*A. coccinellus, Ehr. Syl. Ber.*

Grassy places in woods, especially such as are boggy. July—Aug. Highlands of Scotland. *Klotzsch, in Hook. Herb.*—*Pileus*  $\frac{1}{2}$ —1 inch broad, obtuse, even, moist but not viscid, turning pale. *Gills* not decurrent nor connected by veins, distant, broad, plane, yellow with a tinge of scarlet, or dull yellow. *Stem* 2 inches long, 1 line thick, brittle, even, shining, at length hollow at the apex." *Fr. l. c.*

D. *ÆSYPHII*; (from *αἰσπός*, *dirty wool*, alluding to the more or less scaly opaque epidermis.) *Pileus* dry, minutely squamulose. *Gills* generally arcuato-decurrent, seldom adnate.

102. *A. laccátus, Scop. (lake Agaric);* gregarious, pileus subcarnose tough farinaceous with minute scales at length pale, disk depressed in age, gills subdecurrent distinct distant, stem long elastic. *Scop. Fl. Carn. n. 1530. Schaff. t. 13. Fr. Syst. Myc. v. 1. p. 106.*—a. pileus reddish or flesh-coloured, when dry ochraceous.—*A. rubellus* & *carneus, Schaff. t. 303, 304.*—*A. farinaceus, Bolt. t. 64. Sow. t. 208.*—*A. rosellus, & subcarnoseus, With. v. 4. 162 & 237.*—*A. laccatus, Grev. Fl. Ed. p. 378. Scot. Crypt. Fl. t. 249.*—b. pileus amethyst-coloured, whitish when dry. *A. amethystinus, Bolt. t. 63. Sow. t. 187. With. v. 4. p. 169. Grev. Fl. Ed. p. 378.*—*A. livido-purpureus, With. v. 4. p. 233.*

Woods. June—Nov. Extremely common.—*Pileus* 1—2 inches broad, convex, the centre more or less depressed, often cracked or squamulose with a mealy appearance, subcarnose, brownish-red, flesh-coloured, or bright amethyst, turning pale when dry; margin incurved, often very much lobed and waved. *Gills* more or less of the colour of

the pileus, not changing colour, horizontal, broad behind and adnate, thick, distant, sometimes forked above, mealy from the white round sporules. *Stem* 1—6 inches long, thickest and downy below, fibrillose, tough, hollow, of the colour of the pileus but not becoming pale.—However striking at first the difference may be between the two varieties, there is no doubt of their specific identity. Schæffer rightly included both in his *t.* 13, and his synonyms show that he did so advisedly, Purton had come to the same conclusion. See *Mid. Fl. v. 3. p.* 399. His *A. subfarinaceus* however is not the same, but *A. gentilis*. The specific name refers to the peculiar red of the pileus, resembling that of gum-lac. It has a singular tendency to form monstrosities, reminding us of analogous states of *Halymenia purpurascens*. See *Grev. Crypt. Fl. t.* 240.

103. *A. bellus*, Pers. (*orange farinaceous Agaric*); pileus sub-carnose depressed squamulose orange-tawny, gills distant paler as well as the tough stem. *Pers. Syn. p.* 452. *Fr. Syst. Myc. v. 1. p.* 107.

Fir plantations. East Morden, Dors. Sept. 12, 1832.—Cæspitose, foetid. *Pileus* 2½ inches or more broad, tough, subcarnose, at first without any umbilicus, at length deeply umbilicate, deep orange-brown, squamulose, wavy and crisped at the margin, becoming gradually pale. *Gills* exceedingly broad, at first adnate, then decurrent with a tooth, crisped, distant, incarnato-ferruginous. *Sporules* round, white. *Stem* 2½ inches high, ¼ of an inch thick, tough, thickest below, almost coriaceous, fibrillose, hollow in age.—Growing with the two varieties of *A. laccatus* in great abundance, and certainly very nearly allied. But it is very foetid, much tufted, and, when young, not nearly so tall in proportion. The gills in the earliest state extend beyond the margin of the pileus, whereas in *A. laccatus* the edge of the pileus is rather incurved.

104. *A. sulphureus*, Bull. (*brimstone Agaric*); pileus carnose subumbonate slightly silky dirty-yellow with a tinge of red, gills arcuato-adnate rather distant sulphur-coloured as well as the stuffed stem. *Bull. t.* 168, 545. *f.* 2. *Sow. t.* 44. *Purt. v. 2 & 3. n.* 912. *Fr. Syst. Myc. v. 1. p.* 110.

Thick woods, amongst leaves and rotten sticks. Sept.—Nov. Not uncommon.—*Pileus* 1—2 inches broad, fleshy, obtuse, at length expanded or depressed with a slight appearance of an umbo, sometimes flexuous and irregular, dirty-yellow or ochraceous-umber, darker in the centre, the margin at first involute and minutely tomentose, the whole clothed with extremely minute silkiness or squamulæ so as to give it a pulverulent appearance, retaining the impression of the fingers; *flesh* yellow. *Gills* subdistant, rounded, flexuous, emarginate or arcuato-adnate. *Stem* 2 inches or more high, 4 lines thick, occasionally sub-bulbous, stuffed, sometimes at length hollow, the surface of the cavity rather slimy, yellow within, furnished at the base occasionally with many rather strong yellow fibrous roots. *Odour* disagreeable, at first farinaceous, then like that of *Hemerocallis flava*. *Taste* unpleasant, but not acid.

105. *A. lascivus*, Fr. (*pale strong-scented Agaric*); pileus fleshy obtuse slightly silky pallid-tan, gills arcuato-adnate,

close white as well as the downy solid equal rooting stem. *Fr. Syst. Myc. v. 1. p. 110.*

Woods. Canterbury. Oct. 23, 1833.—*Pileus*  $2\frac{1}{2}$  inches broad, convex, at length depressed, firm, fleshy, under the lens minutely adpresso-silky, margin at first involute; *flesh* white. *Gills* white, when young arcuato-adsnate, nearly horizontal, when old subdecurrent, very brittle, closer than in the last, but still not very close. *Stem* firm, solid, composed of fibres, more or less fibrillose or fibrilloso-squamose, the fibrillæ curved up from below; paler than the pileus; rooting, downy at the base, not bulbose, apex pruinose. *Odour* in all respects like the last, only not quite so strong.

106. *A. inamænus*, Fr. (*white strong-scented Agaric*); pileus fleshy subumbonate nearly smooth whitish, gills variously fixed distant white as well as the equal rooting stem. *Fr. Syst. Myc. v. 1. p. 111.*

Woods. Oct. Not uncommon. Cranbourne Chase, Dors. Cotterstock, King's Cliffe, Norths. &c. *Rev. M. J. Berkeley*.—*Pileus* 1—3 inches broad, convex, with or without an umbo, fleshy, but not very thick on the margin, under the lens adpresso-silky; white with a slight tinge of ochre in the centre. *Gills* broad ( $\frac{1}{2}$ — $\frac{3}{4}$  of an inch.) distant, emarginate. *Stem* 2 inches or more long, 3—6 lines thick, equal, tough, composed of fibres, not rooting in my specimens. *Odour* like that of the two last.—I find a state of this with the pileus singularly compressed all round, minutely pitted and wrinkled, the epidermis cracked so as to appear tessellated. Fries in his specific character describes it as smooth, but in his subjoined remark implies that it is "sericeo-adpressus." *A. Cossus*, Sow. with which Fries compares it in his *Elenchus*, is certainly quite different, as stated above. My specimens have not so much the habit of that, as of *A. cinerascens*, Bull. or *A. Columbeta*.

**E. CALODONTES**; (from *καλός* beautiful, and *ὄδους* a tooth.) *Pileus* smooth, subhumid. *Gills* arcuato-adsnate, connected by reticulate veins, margin with little tooth-like processes.

107. *A. peliánthinus*, Fr. (*black-toothed Agaric*); pileus convex livid-purplish, margin striate, gills arcuato-adsnate purple with black teeth, stem fistulose equal. *Fr. Syst. Myc. v. 1. p. 112.*—*A. denticulatus*, Bolt. t. 4. f. 1. *Pers. Syn. p. 423.*

Woods near Halifax. Sept. Bolton.—"*Pileus* 1—2 inches broad, when moist transparent, when dry, whitish tinged with purple, the disk fleshy, even, rather obtuse; *flesh* white. *Gills* elegantly connected by a net-work of veins, distant, purple; when dry, fuscous-umber. *Sporules* white; *veil* none. *Stem* 2—3 inches high,  $1\frac{1}{2}$ —2 lines thick smooth, becoming pallid." *Fr. l. c.*

**F. THRAUSTI**; (from *θραύστος*, brittle.) *Pileus* thin, dry. *Gills* emarginate. *More or less brittle.*

108. *A. murináceus*, Bull. (*large mouse-scented Agaric*); pileus subcarnose irregular cinereous cracked and squamulose, gills distant branched and inosculating with a cinereous tint as

well as the irregular hollow stem. *Bull. t.* 520. *Sow. t.* 106. *Fr. Syst. Myc. v. 1. p.* 116.—*A. nitratus*, *Pers. Myc. Eur. v. 3. p.* 209.

Woods. Peckham Wood, *Sowerby*.—"Odour nitrous. *Pileus* 1—4 inches broad, at first campanulate, then plane, rigid, brittle. *Gills* emarginate, broad, thick, dirty-white, at length cinereous. *Stem* 2 inches high, 1 inch thick, rarely stuffed when young, ventricose, compressed, with deep furrows." *Fr. l. c.*

109. *A. cuneifolius*, *Fr.* (*wedge-gilled Agaric*); pileus sub-carnose even at length cracked, gills white ventricose, stem hollow pruinose at the apex. *Fr. Syst. Myc. v. 1. p.* 116.—*A. ovinus*, *Bull. t.* 580. *AB.*—*A. cinereo-rimosus*, *Batsch, Cont. 2. f.* 106.

Pastures. Sept.—Nov. Margate. King's Cliffe, Norths. *Rev. M. J. Berkeley*.—*Pileus* about 1 inch broad, brownish or subochraceous, subcarnose, at first conic, obtuse, afterwards expanded with a strong umbo, much waved and split at the margin which is at first involute and minutely tomentose; the surface rimose. *Gills* distant, broad in front, ventricose, acutely arcuato-adsnate, thick, connected and traversed by veins, white with a slight reddish-cinereous tinge. *Stem* 1—1½ inch high, 2—4 lines thick, nearly equal, stuffed, at length hollow, pruinose above, with sometimes a few superficial squamulæ towards the base.

**G. RHIZOPODES;** (from  $\rho\iota\zeta\alpha$ , a root, and  $\pi\omicron\upsilon\varsigma$ , a foot.) *Pileus* fleshy, viscid. *Gills* subadfixed. *Stem* rooting.

110. *A. radicatius*, *Relh.* (*deep-rooting Agaric*); pileus wrinkled glutinous, gills fixed white, stem long rigid, root long fusiform. *Relh. Fl. Cant. ed. 3. p.* 529. *With. v. 4. p.* 202. *Sow. t.* 48. *Purt. v. 2 & 3. n.* 931. *Fr. Syst. Myc. v. 1. p.* 118. *Grev. Fl. Ed. p.* 378. *Grev. Sc. Crypt. Fl. t.* 217. —*A. longipes*, *Bull. t.* 232, 515.—*A. Umbraculum*, *With. v. 4. p.* 155.

About the roots of trees. June—Sept. Common.—*Pileus* 3 inches or more broad, flat, more or less umbonate, radiato-rugose, smooth, at first slimy, carnose, tough and elastic, delicate fusco-ochraceous, olivaceous &c. often irregular, triangular &c. *Gills* white, thick, distant, ventricose, adsnate, with or without a tooth, sometimes almost decurrent. *Sporules* white, nearly round. *Stem* 4—8 inches high, about  $\frac{3}{8}$  of an inch thick, attenuated upwards, twisted, not smooth but rather furfuraeous, sometimes striate above with raised lines, paler than the pileus, juicy, brittle, splitting longitudinally, but sometimes tough, stuffed, at length sometimes hollow, rufescent within, penetrating very deeply into the ground by a fusiform root.

111. *A. velútipes*, *Curt.* (*velvet-stemmed Agaric*); pileus unequal tawny slimy, gills ventricose white tinged with yellow, stem incurved velvety dark-bay. *Curt. Lond. t.* 70. *Bolt. t.* 135. *Sow. t.* 263, 384. *f.* 3. *With. v. 4. p.* 258. *Purt. v. 2 & 3. n.* 965. *Fr. Syst. Myc. v. 1. p.* 119. *Grev. Fl. Ed. p.* 378.—*Fungus glutinosus*, &c.—*Vaill. Bot. Par. t.* 12. *f.* 8, 9. —*A. nigripes*, *Bull. t.* 344, 519. *f.* 2.—*A. sulcatus*, *With. Purt.*

Rotten stumps, trees, &c. The whole year. Extremely common.—  
Cæspitose. *Pileus* 1—3 inches broad, smooth, slimy, of a beautiful tawny  
colour, convex, expanded, fleshy; margin thin subtransparent. *Gills*  
ventricose, broad, scarcely adnate, ochraceous. *Stem* 2—9 inches high,  
 $\frac{2}{3}$  of an inch thick, incurved, velvety, rich tawny-brown, pale above,  
often compressed and striate, fistulose.

**H. CHONDROPODES;** (from  $\chi\omicron\nu\delta\acute{\omicron}\nu\varsigma$ , *cartilage*, and  $\pi\omicron\upsilon\varsigma$ , a *foot*.)  
*Pileus* tough, dry. *Gills* nearly free, close, white. *External coat*  
*of the stem* subcartilaginous.

112. *A. fúsipes*, Bull. (*spindle-stemmed Agaric*); gregarious,  
pileus fleshy loose, gills nearly free serrated, stem hollow  
ventricose sulcate dirty-white rooting. *Bull. t.* 106, 516. *f.* 2.  
*Fr. Syst. Myc. v.* 1. *p.* 120.—*A. crassipes*, Schæff. *t.* 87, 88.  
*Sow. t.* 129. *With. v.* 4. *p.* 172. *Purt. v.* 2 & 3. *n.* 917.  
—*A. elasticus*, *With. v.* 4. *p.* 177. *Purt. v.* 3. *p.* 199.

Old trunks of trees, felled stumps, &c. July—Aug. Not uncommon.  
—Densely tufted. *Pileus*  $1\frac{1}{2}$  inch broad, when young hemispherical,  
smooth, dull vinous-brown, fleshy, margin incurved; then expanded,  
cracked, sometimes tessellated and warty, paler but here and there  
towards the margin marked with dark patches, as if burnt. *Gills*  
pale umber, free or only apparently adnate from the change of form  
of the pileus, sometimes rounded behind and then separating from the  
stem, as represented by Bulliard *t.* 106, they have a rather watery appear-  
ance, though dry, like that of a piece of half dry parchment, connected  
by veins, distant. *Stem* 2—6 inches long,  $\frac{1}{2}$ —1 inch thick, ventricose,  
rooting, paler than the pileus, marked towards the base with little dark  
specks, striate longitudinally, not truly though apparently fibrillose, often  
cracked longitudinally and transversely, the transverse cracks extending  
only through the cartilaginous coat; substance within loose and fibrous,  
the fibres crisped; at length hollow. *Taste* agreeable.—A small variety  
occurred at Margate, Oct. 9, 1832, amongst grass on buried wood, of a  
reddish-brown, changing to dirty-white, subviscid when moist. *Gills*  
white, broad, ventricose. *Stem* dark red-brown with sometimes a few  
scattered branny scales, attenuated below and somewhat strigose, striate,  
fistulose, the inner walls woolly as in *A. erythropus*. *A. contortus*,  
Bull. seems very like this variety, though more fleshy.

113. *A. maculátus*, Alb. & Schw. (*spotted Agaric*); pileus  
fleshy nearly plane obtuse dry dirty-white spotted with rufous,  
gills free close, stem stuffed ventricose striate. *Alb. & Schw. p.*  
186. *Fr. El. 1. p.* 17.—*A. carnosus*, *Sow. t.* 246. *Curt. Lond.*  
*t.* 315. *With. v.* 4. *p.* 245.—*A. fúsipes*, *b. Fr. Syst. Myc. v.* 1.  
*p.* 121.

Fir plantations, in moist mossy places.—“*Pileus* 3—6 inches broad,  
even, smooth, truly carnosé, rather compact, hemispheric at first with  
an involute margin, then quite plane, the margin often repand, white,  
here and there spotted with rufous, at length altogether dirty-rufous.  
*Gills* free, very close, narrow, scarcely above 2 lines broad, linear, dirty-  
pallid. *Stem* 3—4 inches high, but much drawn out when growing  
amongst moss, 4—10 lines thick, stout, unequal with an obsolete carti-  
laginous bark, more or less ventricose and attenuated below.” *Fr. l. c.*  
Nearly allied to *A. fúsipes*.

114. *A. butyraceus*, Bull. (*oily Agaric*); pileus fleshy at length umbonate, gills nearly free crenulate, stem stuffed striate rufescent the outer coat cartilaginous, incrassated and tomentose at the base. *Bull. t.* 572. *Fr. Syst. Myc. v. 1. p.* 121. —*A. trichopus* & *leucophyllus*, Pers. *Syn. p.* 308, 309.

Amongst leaves in woods and fir plantations. June—Oct. Not uncommon. Beeston, Notts. *Rev. M. J. Berkeley*.—*Pileus*  $1\frac{1}{2}$  inch broad, subcarnose, convex, expanded, umbonate, subviscose of a livid ochre or dull green; when quite young livid-brown, the margin subrufescent, but a portion below the umbo soon grows pale, so that the pileus appears of four colours. The umbo is always dark, but sometimes the rest of the pileus is pale rufescent or ochraceous; margin occasionally striate; flesh white, mottled with rufous. *Gills* close, free, not ventricose, rounded, edge rather uneven and notched. *Sporules* white. *Stem*  $1\frac{1}{2}$ —2 inches high,  $\frac{3}{8}$  of an inch thick below, somewhat twisted, smooth, slightly striate, downy at the bulbous base, stuffed, white within, the outer coat being of quite a different structure and rufescent.

115. *A. compréssus*, Sow. (*flat-stalked Agaric*); pileus subcarnose irregular smooth thin fuscous, gills distant white, stem hollow whitish compressed. *Sow. t.* 66. *With. v. 4. p.* 221. *Pers. Syn. p.* 363. *Purt. v. 2 & 3. n.* 942. *Fr. Syst. Myc. v. 1. p.* 115. *Pers. Myc. Eur. v. 3. p.* 215.

In woods and pastures. Oct.—Nov.—“*Pileus* 2—3 inches broad, campanulate at length nearly plane, dry, smooth, thin, brittle, pellucid, grey-brown lighter at the margin. *Gills* distant, thickish, white, almost free, broad towards the stem and truncate “sometimes forked at the outer end.” *With.*—“*Stem* 2—3 inches high,  $\frac{1}{4}$ — $\frac{1}{2}$  inch thick, compressed, often splitting, twisted or irregular. Whole plant brittle and of a watery substance.” *Greav. l. c.* I am not acquainted with this species except from dried specimens, marked by M. Klotzsch, and the original ones of Sowerby. I feel, however, quite convinced from these, that its closest affinities are with *A. butyraceus* and other similar species of this section.

116. *A. confluens*, Pers. (*confluent hoary Agaric*); confluent cæspitose, pileus subcarnose dirty-white, gills free close, stem fistulose compressed villosopulverulent. *Pers. Ic. & Descr. t. 5. f.* 1, 2. *Fr. Syst. Myc. v. 1. p.* 123. *Klotzsch, Fung. Germ. exs. n.* 12.

Woods. Aug.—Oct. Not uncommon. Wanstead. *Sow. Herb. Scotland. Klotzsch, in Hook. Herb. Yarwell, Norths. Beeston, Notts. Rev. M. J. Berkeley*.—Densely tufted, often in large rings. *Pileus* 1— $1\frac{1}{2}$  inch broad, reddish-brown, changing when dry to cream-colour, at first convex, with the gills perfectly free so as to leave a naked ring round the top of the stem, at length expanded obsolete umbonate more or less irregular and compressed, the margin when fresh finely striate. *Gills* distinct, free, linear, finely serrulate, pale changing to cream colour. *Stem* 2 inches or more high, above 1 line thick, compressed, thickest upwards, and pale rufous below; the whole villous with white mealy pubescence; not strigose.

117. *A. xánthopus*, Fr. (*yellow-stemmed Agaric*); pileus sub-



carnose subumbonate even pallid-yellow, gills free rather broad, stem fistulose equal yellow. *Fr. Syst. Myc. v. 1. p. 124. Pers. Myc. Eur. v. 3. p. 149.*—*A. tremulus*, Batsch, *Cont. 2. f. 209.*

Fir plantations. Kirriemuir, Scotland. July. *Klotzsch, in Hook. Herb.*—"Pileus tough, subconvex, becoming pale. Stem 3 inches high, rigid, strigose at the base." *Fr. l. c.*

118. *A. dryophilus*, Bull. (*oak-leaf Agaric*); pileus subcarnose expanded even sometimes depressed, gills nearly free stem fistulose smooth yellowish thickened at the base. *Bull. t. 434. Fr. Syst. Myc. v. 1. p. 124. Pers. Myc. Eur. v. 3. p. 149.*—*A. dryophyllus*, Sow. *t. 127. With. v. 4. p. 256. Pert. v. 3. n. 1469. Grev. Fl. Ed. p. 379.*

Amongst leaves, especially oak-leaves. May.—Oct. Very common.—"Solitary or tufted, very variable in size and colour. Pileus 1—3 inches broad, whitish, pinkish, yellowish or livid, plane, sometimes depressed, fleshy, thin, tender, easily injured, of a watery substance. Gills free, white or very pale flesh-colour, soft, tender, entire or serrate, numerous. Stem 2—3 inches high,  $\frac{1}{4}$ — $\frac{1}{3}$  of an inch thick, shining, splitting, sometimes twisted, of the same colour as the pileus, but the summit is generally darker and pinkish. The whole plant is fragile and the pileus easily detached from the stem." *Grev. l. c.* I copy the above description from Dr. Greville, as applying more generally than my own notes which are taken from red-stemmed varieties. In those neither the pileus nor stem are so tender, but this arises probably from their being examined when the pileus had become pale in consequence of having parted with a great deal of its moisture. I believe *A. aquosus* to be only a variety. Fries seems never to have found specimens about which he could satisfy himself, and mine differ only from small varieties of *A. dryophilus* in the scattered fasciculate pubescence of the stem. I have found a variety of *A. peronatus* in which the strigæ were arranged exactly in the same way, so that not improbably the appearance is entirely owing to casual circumstances. Persoon quotes *A. mollis*, Bull., adding "ex ipso auctore;" but, allowing all that can be allowed for the depression of the pileus and consequent decurrence of the gills, the figure will show this to be almost impossible. He is probably right in supposing *A. hariolorum*, Bull. *t. 585. f. 2*, to which *A. nemoralis*, *With.* and *Pert.* is referred, a variety of *A. peronatus*. Bulliard's other plate seems to be something quite different.

I. SCORTEI; (from *scorteus*, coriaceous.) Pileus subcoriaceous, dry. Gills free, subdistant, at length pallid.

119. *A. peronatus*, Bolt. (*spatterdash Agaric*); pileus fleshy convex then expanded subcoriaceous, gills distant pale-reddish or buffish, stem solid rooting below and there clothed with yellow strigæ. *Bolt. t. 58. Sow. t. 37. With. v. 4. p. 196. Pert. v. 3. n. 1440. Fr. Syst. Myc. v. 1. p. 126. Grev. Fl. Ed. p. 379. Fl. Dan. t. 2018. f. 2. Klotzsch, Fung. Germ. exs. n. 13.*

Amongst rotten leaves, especially oak-leaves; in woods. July—Nov. Common.—Pileus 1—2½ inches broad, convex or campanulate at length

expanded, sometimes umbonate, carnosio-coriaceous, subrufescent or yellowish, pallid when dry, clothed with a minute matted silkiness. *Gills* of the colour of the pileus with a yellowish margin, distant, rounded behind, almost free. *Stem* 2—3 inches high, 2 lines thick, composed of fibres, solid above and downy, hollow below and there covered with dense yellow strigæ. *Taste* acrid.—*A. urens*, Bull. figured in *Fl. Dan. t. 2018, f. 1.*, is Fries' var.  $\beta$  *tomentellus*.

120. *A. oréades*, Bolt. (*fairy-ring Agaric, Scotch bonnets, Champignon*); pileus fleshy tough subumbonate, first rufous then pallid, gills distant whitish as well as the round solid fibrous-barked stem. *Bolt. t. 151. Fr. Syst. Myc. v. 1. p. 127. Grev. Fl. Ed. p. 379. Sc. Cryp. Fl. t. 323. Klotzsch, Fung. Germ. exs. n. 14.—A. Orcades, With. v. 4. p. 202. Purt. v. 2 & 3. n. 932.—A. caryophyllæus, Schæff. t. 77. Pers. Myc. Eur. v. 3. p. 144.—A. pseudo-mouceron, Bull. t. 144, 528. f. 2.—A. pratensis, Sow. t. 247.*

Pastures, often forming rings. May—Nov. Common.—Gregarious. *Pileus*  $\frac{1}{2}$ —1 inch broad, smooth, fleshy, convex, at length nearly plane, more or less umbonate, generally more or less compressed and sinuate, tough, coriaceous, elastic, wrinkled and sometimes cracked, watery brown; as it becomes dry cream-coloured; margin pale. *Flesh* white, quite distinct from that of the stem. *Gills* free, pale, distant, slightly ventricose. *Stem* 1—2 inches high, 2—3 lines thick, equal, solid, very tough, composed of fibres splitting longitudinally, the outer coat squamuloso-fibrous, base downy, somewhat rooting and attached to the roots of grass. *Taste* and *odour* strong but agreeable. Though tough, much used as an article of food on the continent and occasionally in this country, but too frequently very different and poisonous fungi are gathered under the name. See *Mush. and Champ., Illust. by J. D. C. Sowerby, Jun. and Roques, Hist. des Champ. p. 115.* It seems to vary in the degree of smoothness of the stem.

121. *A. pórreus*, Fr. (*velvety garlic Agaric*); strong-scented, pileus subcarnose even, gills almost free white, stem long downy rufescent. *Fr. Syst. Myc. v. 1. p. 128. Fl. Dan. t. 2020. f. 2. Klotzsch, Fung. Germ. exs. n. 15.—A. alliaceus, Bull. t. 158, 524. f. 1. Sow. t. 81. Purt. v. 2 & 3. n. 959. t. 11.—A. peronatus, var. 3. With. v. 4. p. 196.*

In woods, amongst dead leaves especially oak-leaves. Sept.—Nov. Not common. Oversley wood. *Purton. Scotland. Klotzsch, in Hook. Herb. Collyweston, Norths. Rev. M. J. Berkeley.—Pileus*  $\frac{1}{2}$ —1 inch broad, plane slightly depressed, dirty-white with a brownish shade, paler on the margin which is membranaceous, and regularly striate. *Gills* nearly free, paler than the pileus, slightly connected by veins. *Stem* 2—3 inches high, 2—3 lines thick, velvety, albido-pulverulent, as is at once evident even in dry specimens, rufescent, tomentose below, pale above, fistulose; generally growing on the midrib of the leaves. *Odour* like that of garlic, very powerful. Specimens in Sowerby's Herbarium gathered July 31, 1796, still retain their garlic scent.—Bulliard's plant *t. 158*, has the stem attenuated upwards, more tomentose and solid, and the gills not so distant, and in consequence a doubt has arisen whether it is correctly quoted here. The stem, however, is

fistulose, and not so tomentose in *t.* 524. *f.* 1.; and Sowerby's plant, though figured as hollow, is said in the text to be often solid. Fries has carefully re-examined the point and finds nothing to alter on a comparison of specimens of *A. porreus*, *A. scorodónius*, and *A. alliaceus*. My plant is certainly the same as that of Sowerby and Purton, and I think also that intended by Fries. Klotzsch's specimens, both Scottish and German, are clearly identical. Specimens on the other hand from the station mentioned by Greville in *Fl. Ed.* and marked by him, are certainly different from the true *A. alliaceus*. Persoon in the *Myc. Eur.* unites the plants of Sowerby and Greville as a variety of his *A. croceus*, keeping *A. porreus*, Fr. distinct with Bulliard's synonym.

122. *A. fusco-purpúreus*, Pers. (*purple-brown Agaric*); pileus subcarnose rugulose purple-brown turning pale, gills free rufescent, stem fistulose rusty, base elongated and strigose. *Pers. Ic. & Descr. Fung. t.* 4. *f.* 1—3. *Fr. Syst. Myc. v.* 1. *p.* 128.

Woods on beech leaves and small rotten sticks. Yarwell, Norths. Sept. 28, 1827. *Rev. M. J. Berkeley*.—Gregarious. *Pileus* 1 inch or more broad; at first conic, obtuse, then expanded, rugose, dark brown-purple, changing to pallid amber, subcarnose; *flesh* white, firm, elastic. *Gills* slightly ventricose, almost free, nearly of the same colour as the pileus: not very close, the edge dark denticulate. *Sporules* white, round. *Stem* 1½ inch long, 2 lines thick, fistulose, composed of fibres, sometimes slightly compressed, elastic, distinct from the pileus, amber, with a few scattered dark fibrillose specks, strigose at the base, the strigæ pale-brown, and sending down many matted roots amongst the leaves on which it grows.

Subgenus 9. COLLYBIA; (from *κόλλησις*, a small piece of money). *Stem* fistulose, though often very indistinctly so, slender, equal, round, firm, often rooting. *Pileus* carnoso-membranaceous, tough, convex, then plane, sometimes depressed in the centre, smooth, dry. *Gills* obtuse behind, free or fixed, never decurrent, unequal, juiceless, plane, quite entire.—Small dry persistent fungi, growing on the ground or epiphytes.

\* *Gills genuine.*

123. *A. scorodónius*, Fr. (*small garlic Agaric*); strong-scented, pileus subcarnose dirty-white as well as the crisp adnate gills, stem short smooth fistulose rufous. *Fr. Syst. Myc. v.* 1. *p.* 130. *Pers. Myc. Eur. v.* 3. *p.* 129. *Klotzsch, Fung. Germ. exs. n.* 16.—*A. alliatus*, *Schæff. t.* 99. *Pers. Syn. p.* 373. *Tratt. Essb. Schw. p.* 62. *t.* II.—*Fungus, &c. Mich. p.* 144. *t.* 77. *f.* 2.

Heaths and dry pastures.—“*Pileus* ½ an inch or more broad, plane, rugulose. *Gills* connected by veins, seceding. *Stem* 1 inch or more high, nearly 1 line thick, scarcely rooting.” *Fr. l. c.*—My only authority for the admission of this species as British, is a single dried specimen in a collection of fungi from the neighbourhood of Bungay, made by Mr. Stock. It is, however, in such good condition, and so closely resembles Schæffer's figure, that I feel quite confident of its being the true

*A. scorodonius*. According to Persoon and Trattinnick, notwithstanding its strong garlic scent, it forms an article of food.

124. *A. esculéntus*, Wulf. (*small esculent Agaric*); pileus subcarnose obtuse clay-coloured, gills adnexed 'loose white, stem fistulose rooting smooth yellowish. *Wulf. in Jacq. Coll. 2. t. 14. f. 4. Pers. Syn. p. 389. Tratt. Essb. Schw. p. 65. t. 1. Fr. Syst. Myc. v. 1. p. 131.—A. Clavus, Schæff. t. 59. Pers. Myc. Eur. v. 3. p. 150.—A. perpendicularis, Bull. t. 422. f. 2.*

Fir plantations. Oct.—May. Very common in Scotland. *Klotzsch, in Hook. Herb.* Blackadder plantations, Berwickshire. *Johnston.*—“*Pileus*  $\frac{1}{2}$  an inch or more broad, sometimes striate and occasionally fuscous. *Gills* broad, rather close. *Stem* 2 inches high, 1 line thick, obsoletely fistulose. *Root* generally smooth.” *Fr. l. c.* The root is sometimes six inches long and downy when growing amongst leaves, either perpendicular or flexuous. Much eaten in Austria, where, in the beginning of April, large baskets of it are brought to market under the name of *Nagelschwämme*, which accords with Linnæus's name, *A. Clavus*. It has, however, a bitter, unpleasant taste.

125. *A. tenacéllus*, Pers. (*dark fir-cone Agaric*); pileus subcarnose, gills adnexed loose subdistant rather broad snow-white, stem fistulose very long tawny, the base villous and rooting. *Pers. Ic. Pict. t. 1. f. 3, 4. Fr. Syst. Myc. v. 1. p. 131. Fl. Dan. t. 2021. f. 2.—A. spinipes, Sow. t. 206.*

On fir-cones, principally those of the spruce fir. Oct.—Nov. Not uncommon. Ashton, Norths. Lambley, Notts. *Rev. M. J. Berkeley.*—*Pileus*  $\frac{1}{2}$ —1 inch broad, when young conic, then convex and sub-hemispherical, at length expanded and nearly plane, sometimes slightly umbilicate; not striate, subcarnose, smooth, dry, cinereous, inclining to yellowish: often altogether abortive. *Gills* free or often adnexed, ventricose, sometimes remarkably so, rather distant, the shorter ones truncate behind; in general pure white but sometimes with a tinge of grey; under a powerful lens covered with variously hooked or conic papillæ. *Stem* 2—4 inches long, scarcely 1 line thick, flexuous, filiform, attenuated very much towards the base and somewhat strigose, hollow, pale above, below tawny, very minutely pubescent under a good lens; when young beautifully downy and then not distinctly hollow, but with only a pale line down the centre. *Taste* very pleasant.

126. *A. conígenus*, Pers. (*mealy-stemmed fir-cone Agaric*); pileus subcarnose unequal, gills free close linear dirty-white, stem fistulose pulverulent, base rooting strigose. *Pers. Syn. p. 388. Myc. Eur. v. 3. p. 153. (excl. var. spinipes). Fr. Syst. Myc. v. 1. p. 132.—A. hippopinus, With. v. 4. p. 188. Purton. v. 3. n. 1452.*

On fir-cones, principally of the Scotch fir. Oct.—Nov. Probably not uncommon. Packington, Warw. *Withering.* Bunker's Hill, near Stourbridge, Worcest. *Purton.* Ashton, Norths. Beeston, Notts. *Rev. M. J. Berkeley.*—Gregarious. *Pileus* 1 inch or more broad, rather irregular, umbonate, expanded, often depressed, sometimes quite smooth, but occasionally more or less lanato-pubescent; sometimes

tinged with chocolate, but generally ochraceo-rufous; pale when dry, and then occasionally zoned: *flesh* woolly when dry, firm when moist. *Gills* very numerous, linear, free or only adnexed, tinged with yellow, or of the colour of the pileus, the unequal ones very long. *Sporules* white, globose. *Stem* very various in height,  $\frac{1}{2}$ — $1\frac{1}{2}$  lines thick, tough, pulverulent-pubescent with a long very strigose rooting base, rufous, hollow, the inside woolly.—Certainly a very distinct species from the last. I do not find any processes on the gills. It must not be confounded with *A. confluens*.

127. *A. undátus*, Berk. (*small wrinkled Agaric*); pileus tough submembranaceous radiato-rugose minutely pulverulent, gills adnate, stem velvety strigose at the base.

Small stumps and sticks in woods. Oct. King's Cliffe, Wothorpe, Norths.—*Pileus* 1 line—1 inch broad, campanulate, at length convexo-plane, wrinkled in the direction of the gills, tough, submembranaceous, minutely pulverulent, dull-brown or cinereous. *Gills* truly adnate, ascending or horizontal, moderately distant, connected by veins, white with a yellowish tinge. *Stem* 2— $2\frac{1}{2}$  inches high,  $\frac{1}{2}$ —1 line thick, strigose at the base, rufous, minutely velvety, fistulose, sometimes compressed.—A very well marked species, but I can find no description of it.

128. *A. tuberósus*, Bull. (*small parasitic Agaric*); white, pileus subcarnose at length umbonate, gills close adnate, stem fistulose nearly naked. *Bull. t.* 256, 522. *f.* 4. *Fr. Syst. Myc. v. 1. p.* 133. *Grev. Sc. Crypt. Fl. t.* 23. *Fl. Ed. p.* 380. *Pers. Myc. Eur. v. 3. p.* 126.—*A. alumnus*, *Bolt. t.* 155.—*A. Amanita*, *Batsch, Cont. 1. f.* 93.

On dry blackened *Agarics*, either immediately, or growing upon different species of *Sclerotium*; also amongst decayed leaves and moss, with or without a *Sclerotium*. Aug.—Nov. Not uncommon.—*Pileus* 2—9 lines broad, subcarnose, at first convex then expanded, and subumbonate, sometimes depressed, white, shining with a satiny lustre. *Gills* numerous, close, acutely adnate. *Stem* 1 inch long, very slender, white or subrufescent, under the lens pulverulent, falsely fistulose. The stems have a tendency to become engrafted on each other. There is little doubt that *A. racemosus*, Sow. is a state of this species. The tuber I believe to be quite distinct, and the *Agaric* to be parasitic on it. A variety is figured in *Fl. Dan. t.* 2022. *f.* 1. with broader gills and a stem pubescent at the base.

129. *A. ocellátus*, Fr. (*cyllet Agaric*); pileus subcarnose plane white at length umbilicate, the umbilicus dusky, gills white adnate, stem fistulose subpulverulent subrufescent rooting and fibrillose at the base. *Fr. Syst. Myc. v. 1. p.* 134.—*A. Clavus*, *Bull. t.* 569. *f.* 1.—*A. tuberosus*, var. *cirratus*, *Pers. Syn. p.* 374.—*A. cirratus*, *Pers. Myc. Eur. v. 3. p.* 125.—*b. A. pallor*, *Batsch, Cont. 1. f.* 95.

On the ground amongst leaves. Sept.—Oct. Kinnordy. *Klotzsch, in Hook. Herb.*—" *Pileus* even, smooth, sometimes repand; disk yellow-brown or rufous. *Gills* close, narrow. *Stem* obsoletely fistulose, 1—3 inches long, subfiliform, paler above." *Fr. l. c.*

130. *A. Clávus*, Bull. (*pin Agaric*); pileus subcarnose nearly plane orange-red, gills fixed rather broad whitish as well as the short smooth stuffed stem. *Bull. t.* 148. *Bolt. t.* 39. *B. With. v.* 4. *p.* 205. *Purt. v.* 3. *n.* 1478. *Fr. Syst. Myc. v.* 1. *p.* 134. *Greiv. Fl. Ed. p.* 380.

Amongst leaves, on rotten sticks, &c. Aug.—Oct. Not common. Pophills. *Purton.* Balmuto, &c. *Greville.* Wansford, Norths. Margate. *Rev. M. J. Berkeley.*—*Pileus*  $\frac{1}{2}$ — $\frac{1}{4}$  lines broad, campanulate, generally umbonate, margin striate, under a powerful lens most minutely pilose, bright orange, the umbo darkest, subcarnose, within deep orange. *Gills* few, somewhat ventricose, adnexed or adnate with shorter ones between them, white tinged with yellow. *Stem* about 1 inch long, quite filiform, flexuous, nearly equal, minutely pilose like the pileus, pale yellow with a line within showing it to be fistulose. When growing on sticks there are a few minute strigæ at the base.

131. *A. rameális*, Bull. (*stick Agaric*); pileus subcarnose nearly plane dirty-white with a rufescent tinge, gills white adnate, stem stuffed short mealy. *Bull. t.* 336. *With. v.* 4. *p.* 149. *Purt. v.* 3. *n.* 1438. *Fr. Syst. Myc. v.* 1. *p.* 135. *Greiv. Fl. Ed. p.* 381. *Pers. Myc. Eur. p.* 124.—*A. candidus*, *Bull. t.* 39. *D.*

Common upon small decaying branches, especially of bramble and hazel, during the whole year.—Gregarious. *Pileus* 3—4 lines broad, plano-convex, at length wrinkled and depressed, pale-rufescent the centre darker, under a lens clothed with minute matted silkiness. *Gills* distant, adnate, sometimes broad behind, whitish or subrufescent; margin denticulate. *Stem*  $\frac{1}{2}$ — $\frac{3}{4}$  inch high,  $\frac{1}{2}$  line thick, curved, fibrillose with furfuraceous scales; the base minutely dilated, whitish or subrufescent.—I believe *A. anadelphus* to be only a state of this species. The gills are not unfrequently reddish or ochraceous; generally so in decay, and though often narrow, they vary in breadth and degree of adherence to the stem.

132. *A. parasíticus*, Bull. (*parasitic Agaric*); pileus subcarnose convex soon plane pruinose pale-grey, gills thick adnate darker, stem fistulose villous. *Bull. t.* 574. *f.* 2. *Sow. t.* 343. *Fr. Syst. Myc. v.* 1. *p.* 135. *Pers. Myc. Eur. v.* 3. *p.* 127.—*A. umbratus*, *With. v.* 4. *p.* 186.—*Merulius parasíticus*, *Purt. v.* 3. *n.* 1425 (*in part*).

On blackened *Agarics*. Aug.—Oct. Not common. Oban, Argyle-shire. Thornhaugh. Norths. *Rev. M. J. Berkeley.*—*Pileus*  $\frac{1}{3}$  of an inch broad, conico-campanulate, silky, subcarnose, somewhat irregular, grey with a slight tinge of umber at the apex; *flesh* dark. *Gills* darker than the pileus, paler at the edges, thick, distant, somewhat forked and anastomosing, connected by veins broader towards the apex, slightly adnate, ventricose. *Stem* 1—2 inches high, 1 line thick, thickest downwards, very silky especially at the base, crisp, dark within. *Odour* like that of *Polyporus squamosus*.

Fries has made a new genus of this somewhat anomalous species in the *Syn. Orb. Veg.*, under the name of *Nyctalis*, characterized by its universal silky veil and fold-like gills. But in his *Ind. Alph.*, which contains his latest views, I can find no trace of it, and therefore con-

clude that he is not quite satisfied about the propriety of doing so. It certainly has little affinity with the species with which it is here associated, but I know not where to place it more advantageously. It must not be confounded with *Asterophora agaricoides*, which is a perfectly distinct plant, though its analogy is very striking. The plicæ in that species do not bear sporules.

\*\* *Gills more or less resembling veins, homogeneous with the pileus.*

133. *A. Vaillantii*, Fr. (*Vaillant's Agaric*); pileus plane plicate white as well as the distant broadly adnate gills, stem solid smooth reddish-brown incrassated above and paler. Fr. *Syst. Myc.* v. 1. p. 136. *Pers. Myc. Eur.* v. 3. p. 70.—*Fungus pileolo candicante*, &c., *Vaill. Bot. Par.* p. 69. t. 11. f. 21—24.—*Merulius androsaceus*, *With.* v. 4. p. 143.

On sticks and decayed leaves in beech woods. Packington Park, amongst moss. *Withering*.—"Pileus  $\frac{1}{2}$  an inch broad, plane, now and then depressed, striato-rugose. Gills distinct, simple, triangular and thence apparently decurrent. Stem 1 inch high, very tough, yellowish when young, base smooth, black, even and shining; the middle bay, the apex whitish, most minutely pruinose." Fr. l. c. *Withering's* description accords with his synonym from *Vaillant*, and will not apply to any of the other species usually confounded under the name of *A. androsaceus*.

134. *A. Rótula*, Scop. (*wheel Agaric*); pileus convex umbilicate plicate white as well as the gills which are attached to a free collar surrounding the smooth dark fistulose stem. *Scop. Fl. Carn.* n. 1569. *Sow. t.* 95. Fr. *Syst. Myc.* v. 1. p. 136. *Grev. Fl. Ed.* p. 381. *Pers. Myc. Eur.* v. 3. p. 275.—*Merulius collariatus*, *With.* v. 4. p. 144. *Purt.* v. 2 & 3. n. 893.—*A. androsaceus*, *Bull. t.* 64, 569. f. 3.

On sticks, stumps, dead leaves, &c. The whole year. Common.—*Pileus* 1—3 lines broad, hemispherical, umbilicate, and minutely umbonate, plaited, smooth, margin crenate; white or pale buff with a dark umbilicus. *Gills* broad, distant, equal, or occasionally with a few short ones of the same colour as the pileus, connate behind and separating from the stem so as to present the appearance of being fixed to a free collar surrounding the stem. *Stem* setiform, slightly flexuous, white above, then tawny, deep-shining brown at the base, striate, fistulose, frequently branched and sarmentose, with or without abortive pilei.

135. *A. androsáceus*, L. (*Androsace-like Agaric*); pileus convex plicate white tinged with brown, gills adnate distinct simple, stem fistulose sulcate black quite smooth. *Linn. Succ.* 1193. *Bolt. t.* 32. *Sow. t.* 94! Fr. *Syst. Myc.* v. 1. p. 137. *Grev. Fl. Ed.* p. 381. *Pers. Myc. Eur.* v. 3. p. 273. *Klotzsch, Fung. Germ. exs.* n. 17.—*A. epiphyllus*, *Bull. t.* 569. f. 2.—*Merulius androsaceus*, *Purt.* v. 2 & 3. n. 849. (*not of With.*)

On fern stems, oak and beech leaves, &c., generally on the principal nerves. The whole year. Common.—*Pileus* 3—6 lines broad, convex, with a slight depression, pale rufescent, darker in the centre,

grooved and notched, under a lens clothed with a minute matted silkiness. *Gills* adnate, sometimes quite simple (about 15) with shorter ones between and no rugæ; occasionally forked with wrinkles in the interstices. *Stem* 1—2 inches high, filiform, quite smooth, shining-black, twisted when dry, often branched and sarmentose at the base like the last.—*A. androsaceus*, Sow. t. 94, though represented as growing on oak-leaves, is pronounced by Fries to be *A. perforans*; but an inspection of the specimens in Sowerby's Herbarium proves them to be undoubtedly the true *A. androsaceus*. *A. perforans*, of which I have before me specimens from Mougeot, is quite different. The stem is not smooth and shining, but velvety. I am not aware that it has been found in Great Britain.

136. *A. caulicinâlis*, Bull. (*small scaly Agaric*); pileus umbilicate whitish minutely velvety or scaly, gills nearly free, stem bright brown subfistulose fibrillose or scaly. *Bull. t. 522. f. 1.* *Pers. Myc. Eur. v. 3. p. 156.*—*A. stipitarius*, *Fr. Syst. Myc. v. 1. p. 138.*—*A. scabellus*, *Alb. §. Schw. t. 9. f. 6.*

On grass, sticks, stumps, &c. Aug.—Sept. Not uncommon.—On grass. *Dickson* in *Sowerby's Herbarium*, marked "*A. gramineus?*" On living *Festuca pinnata*, at Wansford, Norths. On *Clematis Vitalba*, at Margate.—*Pileus* 2—7 lines broad, convex at first and minutely umbonate, then expanded, depressed or umbilicate, whitish, with small shining red-brown scales, disposed sometimes in zones, rendering the margin jagged; in large specimens it is sulcate. *Gills* distant with very few shorter ones, nearly free, thickish, of a yellowish tinge, various in breadth, sometimes rather ventricose. *Stem*  $\frac{3}{4}$ — $1\frac{1}{2}$  inch high, not  $\frac{1}{2}$  a line thick, flexuous, filiform, clothed with red-brown woolly tomentum or squamules, darker than the pileus, often perforating the substance on which it grows, composed of fibres, with a narrow fistulose line down the centre.—I have long considered *A. scabellus* as the same species with the present, though placed by Fries in "*Derminus*," and gathered by himself. *Persoon* has come to the same conclusion in the *Myc. Eur.* and Fries in the *Ind. Alph.* declares himself to be now of the same opinion. I strongly suspect *A. graminicola*, *Nees v. Esenbeck*, to be another form. The gills are indeed darker, but the colouring of his plates is generally too much exaggerated; his description does not accord ill with it. When in perfection, few *Agarics* are more elegant.

137. *A. fœtidus*, Sow. (*small fœtid Agaric*); pileus convexo-plane umbilicate plicate bay-tawny, gills paler adhering to a collar, stem velvety fistulose bright brown. *Fr. Syst. Myc. v. 1. p. 138.* *Grev. Fl. Ed. p. 382.*—*Merulius fœtidus*, *Sow. t. 21. With. v. 4. p. 146.* *Relh. Fl. Cant. ed. 3. p. 520.*—*A. venosus*, *Pers. Myc. Eur. v. 3. p. 275.*

Rotten wood. Aug.—Nov. Rare. Madingley Wood, Camb. *Relhan*. Foxhall, near Edinburgh. *Captain Wauch.* Scent like that of garlic. *Relh. Sow.*—" *Pileus*  $\frac{1}{4}$ — $\frac{3}{4}$  of an inch broad, convex, rarely quite plane, plicate, reddish-brown, thin, glabrous. *Gills* adnate, yellow, narrow, distant. *Stem* 1 inch high, thin, dark-brown, minutely velvety or hairy." *Grev. l. c.* At the base is a small radiated membrane. This appears to be a rare species. *Purton's* plant is not certainly the true one, according to his own statement. In *Dr. Hooker's Herbarium* are specimens



sent by Bertero from the island of Juan Fernandez, gathered March, 1830, marked (*A. alliiodorns*), and others gathered in Scotland with a pileus and stem paler than usual, and the interstices of the gills very much veined.

138. *A. epiphýllus*, Pers. (*scale-like Agaric*); pileus nearly plane rugose white as well as the few adnate veinlike gills, stem fistulose minutely velvety brown bright below. *Pers. Syn. p.* 468. *Myc. Eur. v. 3. p.* 272. *Fr. Syst. Myc. v. 1. p.* 139. *Grev. Fl. Ed. p.* 381.—*A. Squamula*, Batsch, *Cont. 1. f.* 84. *Sow. t.* 93.—*Merulius Squamula*, With. *v. 4. p.* 146. *Purt. v. 2 & 3. n.* 895.—*A. umbelliferus*, Bolt. *t.* 39. *A. (not of With.)*

Dead leaves, especially of ivy. Sept.—Dec. Very common.—*Pileus* 3 lines broad, plane, at length umbilicate, cream-coloured, rugose. *Gills* veiny, branched, adnate, broad at the base; in large specimens they are seen, when accurately examined, to form a close collar round the stem, which is evident even when the gills are almost obsolete; margin of the collar cream-coloured. *Stem* 1—2 inches high, filiform, brown or blackish below, paler upwards, minutely velvety.—*Helotium Melanopus*, Pers.  *Ic. et Descr. t. 9. f.* 7, 8, is nothing more than this species with the gills obsolete.

139. *A. Hudsóni*, Pers. (*small hairy Agaric*); pileus convexo-expanded whitish beset with red erect hairs as well as the red-brown stem, gills whitish. *Pers. Syn. p.* 390. *Myc. Eur. v. 3. p.* 276. *Dec. Fl. Fr. v. 2. p.* 164. *Purt. v. 2 & 3. n.* 970. *Fr. Syst. Myc. v. 1. p.* 139.—*A. pilosus*, Huds. *Fl. Angl. p.* 622. *Sow. t.* 164.

In woods on decayed leaves, especially holly-leaves. Winter months. Rare. Croydon. *Dickson*. Hollybush Hill, Wansted. *Mr. B. M. Forster*.—" *Pileus* 3 lines broad, convex, almost hemispherical, white, clothed with red erect subrigid hairs. *Gills* dirty-white. *Stem* 1—2 inches high, filiform, whitish, red-brown or reddish, somewhat hairy at the base." *Huds. l. c.* Decandolle compares this species with *A. Rotula*, and ascribes to it a shining black stem and a pileus beset with black hairs. Sowerby represents the gills as attached to a collar.

Subgenus 10. MYCENA; (from *μυκη*, a fungus). *Stem* highly fistulose, graceful, subcartilaginous, distinct from the pileus, generally villous or rooting at the base, never bulbous. *Pileus* membranaceous, conic or subglobose, then campanulate, seldom more expanded, substriate, generally smooth without scales, more or less diaphanous. *Gills* unequal, ascending, acute behind. *Asci* distinct.—*Small graceful fungi.*

\* *Stem* rooting (except in *A. Iris*) even, juiceless. *Gills* free, the margin of the same colour.

140. *A. alliáceus*, Jacq. (*rooting garlic Agaric*); strong-scented, pileus tough white with a brownish tint, gills free dirty-white, stem tall blackish between pruinose and velvety.

*Jacq. Aust. t. 82. (fide Fries). With. v. 4. p. 246. Fr. Syst. Myc. v. 1. p. 140. Pers. Myc. Eur. v. 3. p. 245. Grev. Fl. Ed. p. 382. (excl. syn.)—Fungus alpinus, &c., Mich. p. 144. t. 78. f. 4.*

Amongst leaves and on rotten wood. Rare. Foxhall, near Edinburgh. *Captain Wauch. Bungay. Mr. Stock.*—"Pileus 1 inch or more broad, at length plane, subumbonate, even or obsoletely striate, becoming pallid. Stem long, attenuated upwards, rigid rather horny, incurved at the base and rooting." *Fr. l. c.* "Root crooked, thick, knotty, sunk about an inch into the earth, and always attached to rotten wood." *With.*—Withering's account scarcely admits of a doubt that he was acquainted with the true plant of Jacquin, though perhaps he confounded with it other garlic-scented species. Greville's plant is certainly this, and not *A. porreus*, as proved by specimens from himself now before me. The stem when dry is shining and striate, not dull as in *A. porreus*. Its horny texture also is very different.

141. *A. atro-álbus*, Bolt. (*black and white Agaric*); pileus even blackish the margin and the free gills whitish, stem tumid at the base and strigose. *Bolt. t. 137. Fr. Syst. Myc. v. 1. p. 141. Pers. Myc. Eur. v. 3. p. 250.—A. varius, var. 8. With. v. 4. p. 219.*

In pastures and on sticks in moist shady places. Aug.—Nov. *Purton, MSS.* Amongst moss about the roots of trees near Halifax. *Bolton.*—"Solitary or gregarious, rather firm. Pileus obtuse. Stem 2—3 inches long, sometimes pruinose at the apex." *Fr. l. c.*

142. *A. filopes*, Bull. (*thread-stemmed Agaric*); pileus obtuse striate livid-brown, gills free white ventricose, stem long even, root hairy. *Bull. t. 320. Fr. Syst. Myc. v. 1. p. 142. Fl. Dan. t. 2022. f. 2.—A. pilosus, Batsch, El. f. 2.*

Woods. Aug.—Oct. Probably not uncommon. Abundant in Scotland. *Klotzsch, in Hook. Herb.*—Winkbourn, Notts. Cotterstock, Norths. *Rev. M. J. Berkeley.*—Pileus  $\frac{1}{2}$  an inch broad, convex or conico-campanulate, striate, livid-brown or umber with a tinge of flesh-colour, striate. Gills free or minutely adnexed, slightly ventricose, white or a dilute shade of the pileus. Stem 2—3 inches long, fistulose, juicy, smooth, except the rooting base which is pilose, livid, dirty-white or brownish.—It is difficult to distinguish this species from some small varieties of *A. galericulatus*, in which the manner of adherence of the gills varies very much. Similar forms of *A. alcalinus* are known by their nitrous odour.

143. *A. Iris*, Berk. (*many-coloured Agaric*); pileus obtuse striate subviscid adorned with blue fibrillæ, gills almost free, stem fasciculato-pilose.

Fir stumps. Oct. Clifton, Notts.—Fasciculate or scattered, brittle, when young the pileus and stem are bright sky-blue and beautifully tomentose. Pileus  $\frac{3}{8}$ — $\frac{5}{8}$  of an inch broad, membranaceous, hemisphærical, obtuse, striate, umber, clothed with blue fibrillæ which are glued down to the epidermis, scattered in the centre, thicker and more free on the margin which is slightly denticulate. Gills free or slightly adnexed, linear, pale cinereous, the margin sometimes denticulate. Stem

1½—3½ inches high, not 1 line broad, not rooting, blue below, above subrufescent, the tomentum below depressed and blue, above nearly white, minutely but distinctly fasciculato-pilose; in very elongated specimens obsolete.—Another form has the *pileus* much longer, subcampanulate, rufescent, varied with yellow-green towards the margin and blue nearer to the centre; sometimes the whole rufescent except the extreme margin which is deep blue. The *gills* paler, but not always so, and more denticulate, their edges milky. *Smell* strong.—A most elegant though small species. The variety is not unlike the state of *A. galericulatus* figured by Sowerby in form and disposition of colour; but its essential characters are quite different. I can find no description at all answering to it. *A. anictus* seems the nearest, and on this account, but especially because of the nature of the gills, though it has no root, it is placed next to it. The wood on which it grew was very little decayed; and perhaps under other circumstances the stem might have been elongated in a softer nidus, and have assumed the appearance of a root.

144. *A. pauperculis*, Berk. (*small white rooting Agaric*); strong-scented, pileus obtuse minutely innato-fibrillose, gills at first free then adnexed, stem smooth except the rooting base.

Inside of decayed stumps. Clifton, Notts. Sept. 20, 1832.—*Pileus* 1 line broad, fleshy, for the size of the plant firm, scarcely membranous, obtusely conic or hemispherical, most minutely but decidedly innato-fibrillose, pale ochraceous-white, in age almost tawny, probably stained by the wood on which it grows. When moist, the gills shine through, giving it a striate appearance, but not always. *Gills* white, adnexed by reason of the growth of the pileus; in youth they are really free. *Sporules* white, round. *Stem* ½—1 inch high, ½ a line thick, white, curved, rooting, the root villous, minutely stuffed, smooth, even under a high magnifying power, powdered at the top with the sporules, generally thicker below. *Odour* farinaceous.—Allied to *A. alcalinus*, but I think distinct from all its small varieties. For its size it is much more fleshy, and seems to have no tendency to be coloured like that species.

\*\* *Stem even, juiceless, more or less rooting. Gills adnate; the margin of the same colour.*

145. *A. alcalinus*, Fr. (*strong-scented helmet Agaric*); strong-scented, pileus obtuse cinereous striate, gills adnate white then glaucous, stem even firm villous at the base. *Fr. Syst. Myc. v. 1. p. 142.*—*Fungus multiplex obtusè conicus, &c. Vaill. Bot. par. p. 71. t. 12. f. 1, 2.*

Woods and hedges, on sticks, stumps, &c. Very common. Ashton, Norths. Margate, &c. *Rev. M. J. Berkeley.*—Solitary or densely caespitose. *Pileus* ½—2 inches broad, subcampanose, umbonate, subumbonate or quite obtuse, even, with or without imbedded fibrillæ at first conico-papillate, rugose, cinereous or tinged with olive, substriate, when old expanded or depressed but little changed in colour, though occasionally with a pink or yellow hue. *Gills* adnate with a tooth, distant, when old slightly ventricose, at first pale then glaucous, pinkish or yellowish, more or less connected by veins. *Asci* distinct, linear, clavate, sporules quite globose. *Stem* 3 inches high, 1—2 lines thick, fistulose,

subfibrilloso-striate, attenuated upwards, downy at the base, the down sometimes rather tawny, sometimes firm and tenacious, sometimes very brittle, grey above, yellowish or reddish beneath when young, but when old sometimes changing above to a bright yellow. *Odour* pungent, like that of fermented or putrid walnuts.—A very variable species; often passing away into a loathsome mass before it fully expands, sometimes becoming dry and tough, but still with the same peculiar odour and a taste similar to it.

146. *A. galericulátus*, Scop. (*helmet Agaric*); inodorous, pileus uneven brownish, gills dirty-white adnate with a decurrent tooth, stem even tough, the base rooting strigose. Scop. *Fl. Carn. n.* 1564. Schæff. *t.* 52. Sow. *t.* 165. *Purt. v.* 2 & 3. *n.* 941. *Fr. Syst. Myc. v.* 1. *p.* 143. *Grev. Fl. Ed. p.* 382.—*Fungus multiplex campaniformis*, &c., Vaill. *Bot. Par. p.* 73. *t.* 12. *f.* 3, 4.—*A. fistulosus*, Bull. *t.* 518. (*in part.*)—*A. varius*, With. *v.* 4. *p.* 217. *Purt. v.* 3. *n.* 1459.—*A. proliferus*, Sow. *t.* 169.

On or about trunks of trees, &c. Autumn. Extremely common.—Solitary or densely cæspitose. *Pileus* 3–9 lines broad, sometimes, however, much larger, campanulate or conical, often subumbonate, at length depressed, innato-fibrillose, striate, brownish-white, with sometimes tints of blue or yellow. *Gills* rather distant, not so broadly adnate as the last, sometimes nearly free, often pinkish. *Stem* very various in length, rigid, smooth, except at the base which is densely strigose. Inodorous, insipid.

\*\*\* *Stem juiceless, striated. Gills with the margin of the same colour.*

147. *A. polygrámmus*, Bull. (*scored Agaric*); pileus obsolete striate subcinereous, gills white attenuato-adnexed, stem long rigid striate shining. Bull. *t.* 395. Sow. *t.* 222. *Fr. Syst. Myc. v.* 1. *p.* 146. *Grev. Fl. Ed. p.* 383.—*A. fistulosus*, Bull. *t.* 518. *f.* H.—*A. varius*, 4. *Purt. v.* 3. *p.* 217.

Woods, on stumps, especially hazel stumps. Sept.—Dec. Common.—*Pileus* 1—1½ inches broad, at first cinereous, umber towards the margin, glandiform, pruinose, then livid-brown, conico-campanulate, submembranaceous, rugose with innate fibres, margin striate. *Gills* rather distant, at first dirty-white, then pinkish, ventricose though sometimes almost linear, all but free, margin subserrulate. *Stem* 3 inches high, 1 line or more thick, regularly and deeply striate, the interstices fibrillose, but occasionally the striæ are obsolete, silvery, rooting, fistulose, nearly the colour of the pileus, but paler, twisted brittle. Inodorous, insipid.

\*\*\*\* *Stem even, milky, somewhat rooting.*

148. *A. gálopus*, Pers. (*milky helmet Agaric*); pileus striate blackish-glaucous, gills fixed white, stem replete with white milk. Pers. *Syn. p.* 379. *Fl. Dan. t.* 1550. *f.* 2. *Fr. Syst. Myc. v.* 1. *p.* 148.

Amongst leaves in woods. Sept.—Oct. Common. Hainault

Forest, Oct. 1795. *Sowerby*, Canterbury. King's Cliffe, Norths. Beeston, Notts. *Rev. M. J. Berkeley*.—*Pileus*  $\frac{1}{2}$ —1 inch broad, campanulate or convex, ochraceous, the centre blackish, (varying somewhat in colour,) pellucid, striate. *Gills* white, arcuato-adsnate or even decurrent. *Stem* 2—3 inches high, about 1 line thick, pale umber, the base somewhat rooting, fibrilloso-tomentose or even strigose, fistulose not brittle. *Milk* mild. *Taste* like that of radishes. Subject to some variation in size and form and colour, but known by its white milk.

149. *A. sanguinolentus*, Alb. & Schw. (*blood-juiced Agaric*); slender, pileus striate vinous, gills fixed the margin dark-purple, stem replete with vinous juice. *Alb. & Schw.* p. 196. *Fr. Syst. Myc. v. 1. p. 149.*

Woods, on stieks, &c., but especially on cones of the Scotch Fir. Probably not uncommon. Sept.—Oct. Canterbury. Beeston, Notts. King's Cliffe, Norths. *Rev. M. J. Berkeley*.—Solitary or gregarious. *Pileus* 1—2 lines broad, obtuse, margin striate, brownish-purple, resembling that of the crust of port wine. *Gills* paler, adnate, with a tooth, margin purple. *Stem* straight, smooth, sometimes attenuate upwards, of the same colour as the pileus, darker below, fistulose, replete with pellucid juice of the same colour. When growing on fir-cones strigose at the base. *Odour* strong, like that of *A. alcalinus*.

\* 5. *Stem even, not milky, gills adnate, margin of a different colour.*

150. *A. elegans*, Pers. (*yellow-bordered Agaric*); pileus striate livid-yellow, gills adnate linear livid, margin yellow, stem rigid even, the base fibrillose. *Pers. Syn. p. 391.* *Fr. Syst. Myc. v. 1. p. 149.* *Fl. Dan. t. 2024. f. 2.*

Woods, on sticks amongst leaves. Sept.—Oct. Probably not uncommon. Canterbury (on bramble). *Rev. M. J. Berkeley*.—*Pileus*  $\frac{1}{2}$  an inch broad, obtuse, striate, livid-yellow, margin paler. *Gills* rather broad, adnate, with a minute tooth, scarcely ventricose; the part nearest the pileus livid; margin beautiful yellow. *Stem* 1—2 inches high, rather brittle, slender, minutely pilose, yellow above, brown below, fistulose, the base strigose, rather swollen, filled with watery juice.

151. *A. strobilinus*, Pers. (*scarlet fir-cone Agaric*); scarlet, pileus acutely umbonate, margin striate, gills adnate the margin darker, stem firm juiceless furnished with white strigae at the base. *Pers. Syn. p. 393.* *Fr. Syst. Myc. v. 1. p. 150.* *Grav. Fl. Ed. p. 383.* *Fl. Dan. t. 2025. f. 1.*—*A. coccineus*, *Sow. t. 197.*

In woods, on dead leaves and twigs, and on the cones of the Scotch Fir. Rare. Near Newmarket. *Mr. Hemsted*. Balmuto near Edinburgh. *Graville*.—"Subgregarious, subfasciculate. *Pileus* 3—5 lines broad, campanulate, with a rather short fleshy umbo, smooth, bright-red or red-orange, striate at the margin. *Gills* adnate, with a decurrent process, distant, whitish-red, edges dull and darker red. *Stem* 1—2 inches high, hollow, firm, smooth, pale red, strigose at the base and whitish, often with a long root." *Grav. l. c.*

\* 6. *Stem even, juiceless, scarcely rooting. Gills fixed, margin of the same colour.*

152. *A. púrus*, Pers. (*rose Agaric*;) pileus between fleshy and membranaceous obtuse purplish or rose-coloured, gills paler rounded ventricose, stem even villous at the base. *Pers. Syn. p. 339. Fr. Syst. Myc. v. 1. p. 151.*—*A. roseus*, *Bull. t. 162, 507. Sow. t. 72. With. v. 4. p. 231. Purt. v. 2 & 3. n. 945. & 3. p. 224. Grev. Fl. Ed. p. 383.*—*A. purpureus*, *With. v. 4. p. 222.*—*A. subcæruleus*, *With. l. c.*

Woods and mossy heaths. June—Nov. Very common.—Gregarious. *Pileus*  $\frac{1}{2}$ —2 inches broad, subcarinose, obtuse, convex, at length depressed, the margin thin, pellucid; sometimes marked with two or three concentric grooves, amethyst or rose-coloured, soon changing to a pale brown-purple, at last nearly white. *Gills* broad, adnate, sometimes almost decurrent, at first whitish, then amethyst or rose, then subrufescent; connected by veins; margin uneven. *Stem* often twisted, more or less fibrillose, at length smooth, tough, hollow, the cavity lined with white silky fibres, splitting easily upwards, the base often strigose.—Sometimes the pileus from the first is pure white, also occasionally brownish or yellowish. Always distinguishable by its taste and odour like that of radishes.

153. *A. Adónis*, Bull. (*beautiful various-coloured Agaric*); pileus obtuse even, gills white adnate, stem even smooth not rooting. *Bull. t. 560. f. 2. Sow. t. 385. f. 2, 3? Pers. Syn. p. 391. Fr. Syst. Myc. v. 1. p. 152.*

On the ground in woods. Rare. Kirriemuir, Scotland. *Klotzsch, in Hook. Herb.*—"Pileus 3—4 lines high and broad, campanulate, rose-coloured, white, yellowish or green. *Gills* not decurrent. *Stem* 2 inches or more high." *Fr. l. c.*

154. *A. luteo-álbus*, Bolt. (*yellow and white Agaric*); pileus umbonate striate yellow as well as the slender stem, gills white adnate. *Bolt. t. 38. f. 1. Pers. Syn. p. 383. Myc. Eur. v. 3. p. 264. Fr. Syst. Myc. v. 1. p. 152.*

Amongst moss in fir plantations. Aug.—Sept. Common about Halifax. *Bolton.*—"Pileus 3—4 lines high and broad, dry. *Gills* subventricose. *Stem* 1—2 inches high, filiform, subflexuous." *Fr. l. c.*

155. *A. lacteus*, Pers. (*milk-white Agaric*); pileus subumbonate finely striate white with a tinge of yellow, gills fixed or adnexed distinct white as well as the even rather rigid stem. *Pers. Syn. p. 394. Myc. Eur. v. 3. p. 267. Fr. Syst. Myc. v. 1. p. 152. Fl. Dan. t. 1845. f. 1.*—*A. nanus*, *Bull. t. 260, 563. f. 3.*—*A. ochraceus*, *Pers. Myc. Eur. v. 3. p. 264.*

Amongst moss at the roots of trees, or amongst small sticks and leaves. Oct.—Dec. Probably not uncommon. Margate, Canterbury. Beeston, Notts. Woodnewton, Norths. *Rev. M. J. Berkeley.*—"Pileus 3—6 lines broad, conico-campanulate, at length expanded, minutely umbonate, white with a pale ochraceous tinge, when dry pure white; *flesh* thin, margin transparent more or less striate and cren-

ulate. *Gills* white, slightly ventricose, adnate or adnexed, in which latter case when young they are quite free : connected by veins. *Stem* 1—2 inches high,  $\frac{1}{2}$  a line thick, sometimes rooting, pulverulent above, pulverulento-fibrillose below, with a little down at the base not brittle. —My specimens come very near to Bulliard's figures, and though the gills vary much in the degree of adherence, I can see no well-marked variety. The stem is always more or less pulverulent.

\* 7. *Stem juiceless, not rooting but adhering by an orbicular disk.*

156. *A. stylóbates*, Pers. (*disk-stemmed Agaric*); tender, pileus obtuse striate subpilose, gills free distinct, stem adhering by an orbicular striate membrane. *Pers. Syn. p.* 390. *t.* 5. *f.* 4. *Ditm. in Sturm's Deutsch. Fl. t.* 29. *Nees. Syst. f.* 189. (*copied from Ditm.*) *Fr. Syst. Myc. v.* 1. *p.* 153. *Fl. Dan. t.* 2025. *f.* 3. (*not very good.*)

On Fern, sticks, leaves, &c. Probably not uncommon. Yarwell, Norths. Aug. *Rev. M. J. Berkeley.*—Pure white. *Pileus* 2 lines or more broad, campanulate or hemispherical, sometimes broadly and obtusely umbonate, striate, with a round mark (in thinner specimens) in the centre caused by the insertion of the stem, minutely pilose, not granulose. *Gills* unequal, rounded, free. *Stem* 1—2 inches high,  $\frac{1}{2}$  a line thick, rather thicker at the base, flexuous, fistulose, downy or minutely pilose, though sometimes, as the pileus becomes quite smooth, fragile, adhering by a broad, membranous, tomentose, radiato-striate disk.

157. *A. tenérrimus*, Berk. (*smallest disk-rooted Agaric*); pileus hemispherical subpubescent frosted with minute granules, gills free ventricose, stem pilose adhering by a minute disk which is not striate.

On cones of the Scotch fir, sticks, &c. Aug.—Dec. Probably not uncommon. Oundle, Norths. Margate. *Rev. M. J. Berkeley.*—Gregarious, pure white. *Pileus* 1—1 $\frac{1}{2}$  line broad, very delicate, tender and easily injured, not pilose but frosted with minute granules. *Gills* distant, unequal. *Sporules* white, round. *Stem* 1 inch high, scarce  $\frac{1}{2}$  of a line thick, flexuous, fistulose, adhering by a minute pubescent disk, which is not the least striate.—A very minute but distinct species, and as far as I can discover undescribed, except it be *A. clavularis*, *Batsch, Cont. l. f.* 81, which is considered by Fries as *A. Corticola*. The figure is a tolerably correct representation of it, even to the disk. It is however described as light blue, and though the stem is stated to be subsericeous, nothing is said about the granules on the pileus or the free gills.

158. *A. pilipes*, Sow. (*hairy-stemmed parasitic Agaric*); caespitose brown, pileus obtuse even smooth, gills free close, stem rather thick hairy. *Sow. t.* 249. *Fr. Syst. Myc. v.* 1. *p.* 154.

*Pileus* 5—8 lines high and broad, subcarnose, obtuse. *Gills* ascending. *Stem* 2 inches high, hairy, the same colour as the pileus, fistulose. —A very obscure species figured by Sowerby from specimens preserved in Hungary water, and therefore no great dependance can be placed upon the colour. It certainly has no affinity with the species with which Fries has associated it, but as I have no fresh light to throw

upon the subject, it would be useless to remove it to any other equally uncertain neighbourhood.

\* 8. *Pileus and stem viscid.*

159. *A. epipterygius*, Scop. (*yellow fern Agaric*); pileus obtuse striate viscid as well as the elongated yellow stem, gills unciniate. *Scop. Fl. Carn. n.* 1565. *Fr. Syst. Myc. v. 1. p.* 155. *Pers. Myc. Eur. v. 3. p.* 263.—*A. plicatus*, Schæff. *t.* 31.—*A. flavipes*, With. *v. 4. p.* 249. *Purt. n.* 1473.—*A. nutans*, Sow. *t.* 92.

On fern-stems, leaves, sticks, &c., in woods. Aug.—Nov. Common.—*Pileus* an inch or more broad and high, obtuse, sometimes umbilicate, cinereous-yellow, but also occasionally, according to Fries, white, bluish or rufous, submembranaceous, the margin striate and toothed; epidermis viscid; when moist easily tearing off. *Gills* arcuato-adnate, subdecurrent, partaking of the colour of the pileus. *Stem* 3—4 inches high, about 1 line thick, full yellow, viscid, smooth, tomentose at the base.

\* 9. *Dry: pileus more or less depressed; gills decurrent.*

160. *A. camptophyllus*, Berk. (*elbow-gilled Agaric*); pileus dark-brown, margin deeply striate grey, gills distant white ascending then suddenly decurrent, stem minutely pubescent, the base radiato-strigose.

On sticks, &c. Aug.—Oct. Margate.—Solitary or only subgregarious. *Pileus*  $\frac{1}{2}$  an inch broad, dry, convex, obtuse, subhemispherical, smooth. *Gills* rather distant, at first adnate, nearly plane, then ascending and suddenly decurrent, though, as far as I have observed, there is no absolute depression but only a flattening of the centre of the pileus. *Stem* 2 inches or more high, not a line thick, subflexuous, somewhat rigid, minutely fistulose with a few white fibres; under a lens minutely but beautifully pubescent, the base radiato-strigose; at first yellow, when full-grown pale above, pale rufescent below.—This species does not agree with any described by Fries. Of those with which its affinity is evident, 47—51 have the gills more or less coloured, 52 has a white stem and a variegated campanulate pileus, 53 has a pubescent pileus, and 54 has evidently a very different habit. It seems to come the nearest to the two last. There are besides four supposed species described in a note, but neither does it seem identical with any of these.

161. *A. corticola*, Bull. (*bark Agaric*); small, pileus thin hemispherical then umbilicate striate, gills uncinato-decurrent, stem minutely pulverulent short incurved. *Pers. Syn. p.* 394. *Fr. Syst. Myc. v. 1. p.* 159.—*A. corticalis*, Bull. *t.* 519. *f.* 1. *Sow. t.* 243. *Purt. v. 3. n.* 1457.—*A. horizontalis*, Sow. *t.* 341.

Trunks of trees, dead bark, &c. Oct. and during the whole winter. Common.—Gregarious. *Pileus* 1—3 lines broad, hemispherical, in general obtuse, but sometimes slightly papillose, rarely umbilicate; umber, white, cinereous, lilac and according to Fries, flesh-coloured, rufous, bluish, &c.; *flesh* rather thick in proportion. *Gills* variously adnato-uncinate or subdecurrent, partaking more or less of the colour



of the pileus. *Stem*  $\frac{1}{2}$ —1 inch high, incurved, minutely pulverulent, stuffed and not truly fistulose, minutely strigose or tomentose at the base. The whole plant dries up in fine weather, but revives with the first shower.—The above description applies to four different states of this species, which is very variable. I always find the stem pulverulent when accurately examined. *A. corticalis*, Sow., Fries suspects in his *Ind. Alph.* to be *A. supinus*; though that has the gills nearly free; but I think it is clearly the same species as Bulliard's. Sommerfelt quotes it under his *A. corticola*.

162. *A. horizontális*, Bull. (*horizontal Agaric*); small, pileus unequal convex reddish-brown, gills adnexed, stem short incurved. *Bull. t.* 324. *With. v.* 4. *p.* 205. *Sow. t.* 341. *Purt. v.* 2. *n.* 937. *Pers. Myc. Eur. v.* 3. *p.* 166.

Trunks of trees, especially pear, apple and elm. Oct. Not common. Mettingham and elsewhere near Bungay. *Woodward*.—*Pileus*  $\frac{1}{2}$  an inch broad. *Gills* adnexed or nearly free. *Stem*  $\frac{1}{2}$  an inch long, 1 line thick.—I have not met with this species, which appears to be very nearly allied to *A. corticola*, differing principally in its adnexed gills. The specimens in Sowerby's Herbarium quite confirm this notion as far as his figure is concerned. The stem is probably not solid but minutely stuffed.

163. *A. junícicola*, Fr. (*rush Agaric*); delicate, pileus convex striate bright rufous-tawny, gills distant whitish, stem brown capillary. *Fr. Syst. Myc. v.* 1. *p.* 160. *Pers. Myc. Eur. v.* 3. *p.* 243.—*Fungus Sc. Mich. p.* 162. *t.* 80. *f.* 9.

On grass and rushes in boggy ground. June—July. Rare. Rugeley, Staffords. King's Cliffe, Norths.—*Pileus* 1 line broad, sometimes at first minutely umbonate, at length expanded convex and slightly depressed in the centre, distinctly and broadly striate, deep rich red tawny, the umbos darker; sometimes the striæ are paler. *Gills* few, pale, yellowish-white, broad, adnate; at length detached so as to form a collar round the stem, but not very distinct. *Stem* 1 inch or rather more high, brown, paler at the top, flexuous, capillary, smooth. A most elegant species, well described by Micheli, analogous if not very closely related to the species in the second division of "*Collybia*." His figure is smaller than my specimens.

164. *A. pterígicus*, Fr. (*rose-coloured fern Agaric*); delicate rose-coloured, pileus campanulate even, gills broad distant, stem capillary with a strigose bulb. *Fr. Syst. Myc. v.* 1. *p.* 160.—*A. filicinus*, *Pers. Myc. Eur. v.* 3. *p.* 243. *t.* 28. *f.* 6. (not *A. rosellus*, *With.*)

$\gamma$ . stem lemon-coloured. On an oak leaf. Canterbury. *Rev. M. J. Berkeley*.—*Pileus* 1 line broad, obtuse, smooth, of a delicate salmon-colour; *flesh* rather thick in proportion; margin pellucid. *Gills* adnate with a decurrent tooth, more than 6 or 8. *Stem* 1 inch high, pale lemon-coloured, fistulose! with a minute strigose bulb; its hairs patent, not adpressed. Fries' reference to *A. rosellus*, *With.*, is certainly incorrect. It is but a variety of *A. luccatus*, as may be seen by referring to *Batsch, f.* 99. I have found only a single specimen and that differing in having a lemon-coloured stem, rather more numerous

gills, and the pileus scarcely campanulate; but in this latter respect Persoon's figures vary a little.

165. *A. capillaris*, Schum. (*hair Agaric*); white, pileus at first conic then campanulate dimpled very tender, gills adnate distant, stem capillary subrufescent above. *Schum. Fl. Scell.* p. 268. *Fr. Syst. Myc. v. 1. p. 160.* *Fl. Dan. t. 1670.* *Pers. Myc. Eur. v. 3. p. 271.*—*Fungus &c. Mich. p. 166. t. 80. f. 11. & p. 146. t. 80. f. 10.*

On beech leaves. Oct. Rare. Canterbury. *Rev. M. J. Berkeley.*—*Pileus*  $\frac{1}{2}$ —1 line broad, at first conic, like the head of a very small pin, grey, the margin rounded, the stem dark above and minutely pulverulent; gradually the stem elongates extremely, becoming much finer; the *pileus* hemispherical, delicate white, with a dimple in the centre. *Gills* very few; two or three only in general reaching the stem; in specimens 1 line broad regularly ascending, about 9, adnate, with two or three intermediate ones. *Stem* flaccid extremely slender, very minutely dilated at the base.

166. *A. setosus*, Sow. (*bristly pin-head Agaric*); brownish, pileus hemispherical smooth, gills distant, stem flexuous extremely slender clothed with long patent distant hairs. *Sow. t. 302.* *Pers. Myc. Eur. v. 3. p. 276,* (*sub A. Hudsoni*).

Beech leaves. Rare. Costessy, near Norwich. *Sowerby.*—*Pileus* not  $\frac{1}{16}$  of an inch broad. *Stem*  $\frac{1}{2}$  an inch long, finer than a hair.—Apparently nearly related to *A. capillaris* and very distinct from *A. Hudsoni*.

167. *A. integréllus*, Pers. (*minute uniform Agaric*); white, pileus hemispherical, margin striate, gills like wrinkles decurrent distant, stem hairy below. *Pers. Ic. & Descr. t. 13. f. 5.* *Fr. Syst. Myc. v. 1. p. 161.*—*Fungi plures &c. Raii Syn. Ed. 3. p. 10. t. 1. f. 2. a a.*—*A. Duboisii, Johns. Fl. Berw. v. 2. p. 180.*

In shady places on the ground, leaves, wood, &c. Nov. Rare.—“Insidious, caespitose. *Pileus* 1—1 $\frac{1}{2}$  line broad at first hemispherical, obtuse, at length rather plane, substance thin, pellucid. *Gills* narrow arcuate, decurrent notwithstanding the form of the pileus, some branched, especially in younger specimens, with but few short ones. *Stem* 1 inch high, fistulose, subpulverulent, villous at the base.” *Pers. l. c.*

Subgenus II. OMPHALIA; (from *ομφαλος*, an *umbilicus*). *Veil* none. *Stem* stuffed, at length generally hollow, not bulbous. *Pileus* membranaceous carnosomembranaceous, or even carnosocoriaceous and almost corky; when young, umbilicate, then expanded or altogether infundibuliform, the margin reflexed or patent. *Gills* adnate or decurrent, never only adnexed or free; unequal, juiceless. *Asci* long. *Sporules* white.

\* *Pileus* submembranaceous. *Gills* decurrent.

168. *A. stellatus*, Fr. (*trumpet Agaric*); white, pileus convex smooth, gills thin distant, stem adhering by a convex radiated

membrane. *Fr. Syst. Myc. v. 1. p. 162.*—*A. buccinalis*, Sow. *t. 107. Pers. Myc. Eur. v. 3. p. 111.*—*Merulius buccinalis*, *With. v. 4. p. 144. Purst. v. 3. n. 1426.*

Amongst grass, on rotten wood, &c. Feb.—Oct. Rare. Packington, Warw. *Withering. Ragley. Purlon.*—"Gregarious. *Pileus* 4 lines broad, striated. *Gills* thin (in which it differs from *A. cricetorum*), *Stem* scarcely 1 inch high, stuffed, incurved, brittle." *Fr. l. c.*

169. *A. Fibula*, Bull. (*small orange Agaric*); rather delicate, pileus convex orange-yellow, gills whiter distant, stem dull yellow. *Bull. t. 186, 550. f. 1. Sow. t. 45. Purst. v. 3. n. 939. Græ. Fl. Ed. p. 384. Pers. Myc. Eur. v. 3. p. 67.*—*A. parvus*, *With. v. 4. p. 216.*— $\gamma$ .—*A. Swartzii*, *Pers. l. c. p. 68.*

Amongst moss. Sept.—May. Common,  $\alpha$ . &  $\gamma$ .—*Pileus* 1—6 lines broad, at first hemispherical, the margin inflexed, then plane; more or less depressed, yellow or tawny with a dusky centre, obscurely striated, the whole minutely pilose. *Gills* yellowish or white, distinct, not ventricose, decurrent. *Sporules* white, round. *Stem* 1—1½ inch high, not a line thick, slender, yellow, or tawny with a violet-brown apex, the whole minutely pilose like the pileus and obsolete fibrillose. I find the pileus both in  $\alpha$ . &  $\gamma$ . to be constantly minutely pilose. There seems no doubt that the latter is but a variety, differing in no respect, except in colour. Withering has an excellent description of it.

170. *A. pyxidatus*, Bull. (*box-like Agaric*); reddish-brown pale when dry, pileus infundibuliform, disk even, gills narrow, stem firm. *Bull. t. 568. f. 2. Nees, Syst. f. 192 (copied from Bull.) Fr. Syst. Myc. v. 1. p. 164. Pers. Myc. Eur. v. 3. p. 67.*—*A. subhepaticus*, *Batsch, Cont. 2. f. 211.*—*A. turfusus*, *Sow. t. 210.*

Turfy ground. Nov. *Rev. Mr. Francis*, of Edgefield, Norfolk.—"*Pileus* smooth, disk submembranaceous. *Gills* decurrent, rather distant, narrower than in any neighbouring species, dirty white, with a rufescent tinge, then of the same colour as the pileus. *Stem* when young stuffed, then hollow, thickened at the base and there clothed with whitish down, subattenuate upwards." *Fr. l. c.*—Greatly varying in size and colour: flesh-coloured, brick-red, dirty-tawny, rufous, &c. *A. turfusus*, Sow. must be considered as a variety of this species, differing from the state figured by Bulliard, as the dwarf varieties of *A. umbelliferus* do from *A. pseudo-androsacus*, Bull.

171. *A. muralis*, Sow. (*wall Agaric*); pileus convex umbilicate striate, gills broad pale, stem solid short thickish. *Sow. t. 322. Fr. Syst. Myc. v. 1. p. 165. Græ. Fl. Ed. p. 381. Pers. Myc. Eur. v. 3. p. 64.*

On walls capped with mud or turf, and in pastures. Autumn. Cotterstock, Norths. *Rev. M. J. Berkeley*. About London and Edinburgh.—"Gregarious. *Pileus*  $\frac{1}{4}$ —1 inch broad, convex, reddish-brown, striate, margin often turned up in age. *Gills* broad, pale, whitish-brown, distant, decurrent. *Stem*  $\frac{1}{4}$ — $\frac{1}{2}$  an inch high, thickish, usually subincurved, pale brown, solid." *Græ. l. c.*

172. *A. umbelliferus*, L. (*variable heath Agaric*); pileus

depressed in the centre plane, margin turned down striate, gills distant very broad behind white, stem short pubescent at the base. *Linn. Succ. n.* 1192. *Fr. El. p.* 22.—*A. pseudo-androsaceus*, *Bull. t.* 276. *Purt. v.* 3. *n.* 1432.—*A. vulgus*, *Holmsk. v.* 2. *t.* 34.—*A. ericetorum*, *Pers. Obs. 1. t.* 4. *f.* 12. *Fr. Syst. Myc. v.* 1. *p.* 165. *Greav. Fl. Ed. p.* 384.—*Merulius fuscus*, *With. v.* 4. *p.* 144.

On the ground in sandy and heathy places. May—Nov. Rare. Wixford, on the top of an old wall. *Purton*. Pentland Hills. *Greville*. Kirriemuir. *Klotzsch*, in *Hook. Herb.*—Subgregarious. “*Pileus*  $\frac{1}{2}$ —1 inch broad, depressed in the centre, margin deflexed and sometimes waved, striate, whitish, whitish-brown or yellow, (green, *Fl. Dan.*), darker when moist. *Gills* broad towards the stem, whitish, decurrent. *Stem*  $\frac{1}{2}$ —1 inch high, about 1 line thick, whitish or yellowish, paler below and pubescent.” *Greav. l. c.*—Liable to great variation in colour and in the length and firmness of the stem. The following varieties, which do not accord with any in Fries, deserve notice:—

ε. Amongst grass in the riding of a wood near Canterbury. Oct. 23, 1832. *Rev. M. J. Berkeley*.—Grey. *Pileus*  $\frac{1}{2}$  an inch broad, turbinate, umbilicate, more or less plane; the margin obscurely striate, covered with a minute, matted silkiness, almost membranaceous. *Gills* broad, decurrent, some forked. *Stem* 1 inch high, equal, subsericeous, sometimes curved, rather spongy, the base furnished with white down.

ζ. On a mud wall. Stibbington, Hunts. *Rev. M. J. Berkeley*.—Brown, inclining to umber; *pileus*  $\frac{1}{4}$  of an inch or more broad, at first minutely farinaceo-squamulose, striate, umbilicate; the margin at length crenulate and less evidently striate; the whole when dry paler. *Gills* very distant and broad, some of them forked at the end; the shorter ones mere wrinkles. *Sporules* elliptic, white. *Stem*  $\frac{1}{2}$  an inch high, not 1 line thick, thickest upwards; when young very minutely squamulose, at length smooth, solid. *Pers. Myc. Eur. v.* 3. *t.* 28. *f.* 3. is a very good representation of this, but I can find no reference to the figure.

η. Abundant in the Scottish Highlands, var. *monticola*, *Klotzsch*.—*Pileus* 2—5 lines broad, yellow, or in more elevated regions, orange, pale when dry, margin plicate, subinvolute and crenulate. *Gills* paler, sometimes connected by veins. *Stem* 2—5 lines high,  $\frac{1}{2}$  a line thick, incurved, stuffed and pubescent at the base.

173. *A. Campanella*, *Batsch*, (*bell Agaric*); subcæspitose, pileus convex umbilicate striate ferruginous, gills yellowish, stem fistulose reddish-brown villous below. *Batsch, El. p.* 74. *Pers. Syn. p.* 469. *Nees, Syst. f.* 191 (copied from *Schæff.*)—*A. fragilis*, *Schæff. t.* 230.

On pine trunks and on the ground. Scottish Highlands. Aug. *Klotzsch*, in *Hook. Herb.*—“*Pileus* 3—7 lines broad, tough. *Gills* connected by veins. *Stem* 2 inches long, rooting firm below.” *Fr. l. c.*—β. *badipus*. Solitary or subcæspitose; stem stuffed, thickened at the base, clothed with ferruginous down.—*A. caulicinalis*, *Sow. t.* 163.—In plantations amongst leaves and fir-cones. Oct. Not common. *Mr. Hemsted* of Newmarket. Winkbourn, Notts. *Rev. M. J. Berkeley*.—*Pileus* 3—11 lines across, broadly campanulate, umbilicate, sometimes quite plane, of a beautiful yellow, inclining to ferruginous, edge

slightly silky. *Gills* yellow, arcuato-subdecurrent, beautifully connected by veins. *Stem* 1—2 inches high,  $\frac{1}{2}$ —1 line thick, scarcely fistulose, yellow above then rufescent, clothed with little yellow scales, thickest below and there covered with a dense, tawny tomentum.—A beautiful species, resembling *A. stipitarius* and *A. ficioides*.

174. *A. sphagnicola*, Berk. (*pale funnel-shaped Agaric*); rather elastic, pileus infundibuliform, gills narrow dirty ochraceous, stem fistulose.

On *Sphagnum acutifolium*, adhering by its downy base. June 21, 1827. Chartley Moss, Staffs.—Whole plant tough and elastic. *Odour* scarcely any. *Pileus* 1—1 $\frac{1}{2}$  inch broad, funnel-shaped from a very early stage of growth, faintly striate and minutely squamulose, dirty ochraceous, becoming darker in age: moist but not viscid. *Gills* pale, decurrent, narrow, moderately distant, thick so as to present in front a flat edge. *Sporules* white. *Stem* 1—2 inches long, 1 line thick, hollow, somewhat crooked, smooth, except at first when it is very minutely squamulose above: in age it is nearly pervious above.—This species agrees in many points with *A. epichysium*, var. *icematophila*; but its tough and elastic nature is so different, that I cannot but consider it as distinct. The pileus is not membranaceous even on the edge, which must separate it from *A. pyxidatus*.

\*\* *Pileus carnosomembranaceous. Gills adnate.*

175. *A. fragrans*, Sow. (*anise-scented Agaric*); strong-scented, pileus nearly plane dirty-white white when dry, gills distinct white as well as the hollow attenuated stem. *Sow. t.* 10. *With. v.* 4. *p.* 154. *Pers. Syn. p.* 455. *Fr. Syst. Myc. v.* 1. *p.* 171. *Grav. Fl. Ed. p.* 384. *Pers. Myc. Eur. v.* 3. *p.* 107. *t.* 27. *f.* 5.

Woods and mossy pastures. Aug.—Oct. Not uncommon. Claverton Downs, near Bath. *Major Valley*, Edgbaston. *Withering*, Scotland. *Greville*, Cotterstock, King's Cliffe, Norths. *Rev. M. J. Berkeley*.—*Pileus* 1—2 inches broad, convex, then plano-convex, minutely dimpled, dirty white, very rarely slightly zoned, when dry nearly white; margin thin and transparent, turned in when young and minutely tomentose. *Gills* very broad, decurrent, distinct, not pure white. *Stem* 2—3 inches high, 2—3 lines thick, attenuated upwards, minutely fibrillose, villous at the base, sometimes pruinose above. *Odour* very agreeable like that of aniseed.

176. *A. métuchrous*, Fr. (*changeable-coloured Agaric*); inodorous, gills close dirty-white, stem at length hollow equal pruinose above. *Fr. Syst. Myc. v.* 1. *p.* 172.—*A. cyathiformis*, *Bull. t.* 248. *Purt. v.* 3. *n.* 1429.

In woods. Oct. Canterbury. *Rev. M. J. Berkeley*.—Subcaespitose. *Pileus* 1—2 inches broad; in its very earliest stage of growth conic, gradually depressed, but in general not deeply infundibuliform, almost membranaceous; when moist livid-grey, margin which is slightly turned in pellucid, when dry nearly white. *Gills* of the same colour as the pileus adnate scarcely decurrent, not ventricose, not turning pale so fast as the pileus, often separating from the stem at the base. *Stem* 3 inches or more high, at length hollow, the outer flesh livid, inner white, downy at the base, minutely fibrillose above under the lens,

apex pulverulent. Sometimes the pileus is irregular and the stem compressed. *Taste* like that of *A. Oreades*.—My specimens accord well with Bulliard's figure, and appear really distinct from *A. cyathiformis*. It must, however, be considered as a variety of Fries' species: indeed his description scarcely accords with the figure, but he states it to be most variable.

177. *A. cyathiformis*, Bull. (*late cup-shaped Agaric*); pileus subcarnose infundibuliform even smooth blackish-umber, margin reflexed, gills distant cinereous, stem elastic attenuated upwards. *Bull. t.* 575, 568, *f.* 1. *Fr. Syst. Myc. v.* 1. *p.* 173. *Grev. Fl. Ed. p.* 385.—*A. sordidus*, Dicks. *Crypt. p.* 16. *t.* 3. *f.* 1. *Bolt. t.* 59. *Sow. t.* 363. *With. v.* 4. *p.* 186. *Purt. v.* 3. *n.* 1444, § *v.* 2 § 3 *n.* 940 (*A. umbilicatus*).—*A. tardus*, Pers. *Myc. Eur. v.* 3. *p.* 80.—*A. cyathoides*, Bolt. *t.* 145.

Pastures and woods. Oct.—Jan. Extremely common.—*Pileus* 2½ inches or more broad, subcarnose, more or less infundibuliform, the margin often wavy involute and minutely downy, dark blackish-umber with a shade of red, of a moist unctuous appearance but not the least viscid; pellucid when moist, nearly white when dry. *Gills* rather distant, of the same colour, apparently (but not truly) decurrent on account of the form of the pileus; adnate when young. *Stem* 2—3½ inches long, ½ an inch thick at the base, subfibrillose, at length hollow, tough, elastic.—A small variety occurs not one inch broad, agreeing in colour; but the gills are almost ventricose and more distant, the stem more nearly equal, the margin more crisped. Both when young are convex and not truly umbilicate; in the true form there is a minute umbo. The gills are not then the least decurrent. In *A. cyathiformis* the gills are subsascending, rounded behind; in the variety subventricose horizontal and adnate with a tooth; in the one of a cinereous, in the other of an umber tint.

\*\*\* *Pileus carnosocoriaceus*, somewhat corky, tough and pliant. *Gills decurrent*.\*

178. *A. Dunali*, Dec. (*Dunal's Agaric*); pileus unequal dirty-white adorned with blackish scales, gills unequal white, stem equal squamulose at the base. *Dec. Fl. Fr. v.* 6. *p.* 47. *Fr. Syst. Myc. v.* 1. *p.* 177.

On the root of a large ash tree overhanging a pond by the water-side at Cranbourne, Dors., immediately below Lord Salisbury's old house. June 14, 1826. On a willow by the Trent. Aug. 1834.—Cæspitose. *Pileus* 2 inches broad, more or less unequal, carnosocoriaceous, umbilicate, the margin deflexed, sometimes variously split and sinuated, yellow-white with brownish rather close scales, the margin nearly smooth. *Gills* dichotomous, crenate, sinuated, covered with minute spiculae, subdecurrent. *Stem* 1 inch high, 3 lines thick, tough, the lower part clothed with dark nearly square adpressed scales; the upper half not scaly, white, resembling the under-side of white kid-leather. *Odour* subacid, farinaceous.

\* Fries has formed a new genus of this division under the name of *Lentinus*; but I am not quite convinced of the propriety of doing so, there being through *A. cochleatus* a regular gradation of increasing closeness in the flesh of the pileus. Some of the next subgenus have almost the same substance.

179. *A. tigrinus*, Bull. (*Tiger Agaric*); pileus regular umbilicate dirty-white, scales pilose blackish, gills white denticulate, stem slender minutely scaly. *Bull. t.* 70. *Sow. t.* 68. *With. v.* 4. *p.* 152. *Pers. Syn. p.* 458.

Trunks of trees, especially elm and ash. May—Sept. Rare. Birdbrook, Essex. *T. Walford, Esq.*, on ash. Powick, near Worcester. Pendarvis, Cornwall. *Mr. Stackhouse*. Packington Park, amongst moss. *Withering*.—"Pileus 2 inches broad, thin, margin at length split. *Stem* 1—2 inches long, dirty-white." *Fr. l. c.* "When fresh very tender and easily lacerated, when dry coriaceous and the stem of a very firm and solid texture." *Sow. l. c.*

180. *A. lepideus*, Fr. (*decorticated Agaric*); pileus compact unequal dilute ochraceous with a few obscure spotty scales, stem stout scaly. *Fr. Syst. Myc. v.* 1. *p.* 176.—*A. squamosus*, *Scheff. t.* 29, 30. *Dicks. Crypt. 2. p.* 24.

*b. monstrosus*. *A. tubaeformis*, *Scheff. t.* 248, 249. *Sow. t.* 382. *With. v.* 4. *p.* 167. *Fucus, Fl. Dan. t.* 405.—*Clavaria lignosa*, *Dicks. 4. t.* 12. *f.* 9.

On pine trunks. May—June. Rare.—*Pileus* 2—4 inches broad, convex or depressed, central or lateral. *Stem* short, hard. "Very tender when fresh."—Monstrous forms occur in dark situations with or without a pileus, exactly analagous to certain states of *Polyporus squamosus*.

181. *A. cochleatus*, *Pers.* (*cornucopia Agaric*); caespitose, pileus tough lobed twisted smooth rufescent, gills pale toothed, stem firm sulcate rufescent. *Pers. Syn. p.* 450. *Myc. Eur. p.* 51. *Nees, Syst. f.* 173. (copied from Bolt.) *Fr. Syst. Myc. v. p.* 178.—*A. cornucopioides*, *Bolt. t.* 8. *Purt. v.* 3. *n.* 437. *t.* 12!—*A. confluentis*, *Sow. t.* 168.—*Merulius cornucopioides*, *With. v.* 4. *p.* 146.

Old trunks of trees. Aug.—Oct. Rare. Near Halifax. *Bolton*. *Ragley*. *Mrs. Rafford*. Inverary. *Klotzsch, in Hook. Herb.* On beech. King's Cliffe, Norths. On *Tilia parvifolia*.—Very much tufted. Several *stems* are confluent in such a way as to make it doubtful whether the several *pilei* are really distinct, or only lobes of one large one, the circle of gills being always incomplete on the side of the common centre, the whole forming a lobed funnel with deflected edges. The surface is rough with prominent minute ribs or prickles, (as expressed in Sowerby's figure), pale rufescent, often powdered with the white sperules, 1—1½ inch broad. Sometimes the surface is more even, but still somewhat sculptured so as to be rough with raised lines. *Stem* compound strongly ribbed and sulcate, the ribs being continuations of the serrated paler decurrent gills. At first the pileus and gills are tender; stem firm and leathery. *Odour* agreeable.—There is a great resemblance between this species and *A. vulpinus*, *Sow.*; the principal difference consisting in the one being absolutely without a stem and horizontal, and the other being decidedly stipitate and more or less erect.

Subgenus 12. PLEUROPUS; (from *πλευρῶν*, a side, and *πῶς*, a foot.) *Pileus* unequal, excentric or lateral. *Stem* when present

*solid and firm. Gills unequal, juiceless, unchangeable, acute behind. Growing on trees or wood.*

\* *Veil universal ; pileus compact horizontal.*

182. *A. dryinus*, Pers. (*oak Agaric*); solitary hard, pileus oblique nearly smooth dirty-white with brownish scales, veil fugacious. *Pers. Syn. p. 478. Myc. Eur. v. 3. p. 40. Nees, Syst. t. 177. (copied from Schæff.) Fr. Syst. Myc. v. 1. p. 181. Fl. Dan. t. 1616.—A. dimidiatus. Schæff. t. 233. With. v. 4. p. 265.*

On trees. Oct. Rare.—On ash. Ditchingham. *Mr. Woodward. Biggin. Norths. Rev. M. J. Berkeley.—Pileus*  $\frac{3}{4}$ —3 inches broad, excentric, white, the surface broken into light-brown adpressed scales; the margin involute, with fragments of the broad woven veil adhering to it; flesh continued into the stem. *Gills* white, not very broad, decurrent, forked, crisp. *Sporules* white. *Stem* 3 inches high (in my specimen elongated from growing in a hollow ash), attenuated downwards, firm, almost woody, tomentose but not scaly. *Taste* like that of *A. campestris*. The plant assumes partially a yellowish tint when dry or cut. *Fl. Dan. t. 1616*, is quoted by Fries under *A. ostreatus*, but it seems to me to be the true *A. dryinus*.

\*\* *Veil none. Pileus carnose. Gills decurrent.*

183. *A. incónstans*, Pers. (*inconstant Agaric*); pileus tough depressed subentire flexuous subrufescent, gills rather branched at the base crisp pale, stem short. *Pers. Syn. p. 475. Myc. Eur. v. 3. p. 45. Fr. Syst. Myc. v. 1. p. 181.—A. dimidiatus, Bull. t. 517. O.—A. flabelliformis, Schæff. t. 43, 44.—A. conchatus, var. Pert. v. 3. p. 429.*

Trunks of trees; chiefly beech. Margate, on Elm. Aug.—Oct. Beeston. Notts. On Fir. *Rev. M. J. Berkeley.—“Cæspitose. Pileus* 4 inches broad, minutely tomentose or sericeo-squamulose when young, and when older minutely mottled; imbricated, irregular, at first quite round and flat but soon depressed, deeply umbilicate, varying from ochraceous to pale fawn with shades of cinnamon, and not black or blackish from the very first, though occasionally when older there is a slight cinereous tinge, shining like kid leather, wrinkled when old, fleshy, flesh white rather tough but easily splitting; edge thin subinvolute. *Gills* very decurrent, white, at length pallid, very unequal, anastomosing at the base and forming subrhomboidal reticulations; when dry, crisp and rigid. *Asci* cylindrical; *sporules* round, white. *Stem* very short, at first central, at length excentric or quite lateral, many frequently grafted together, tough, almost corky at the base, substance not at all fibrous; downy below, the rest smooth; or the whole downy; sometimes obsolete. *Smell* rather disagreeable and pungent when old. *Taste* like that of *Polyporus squamosus*. When growing on a horizontal surface the pileus is quite regular and deeply depressed.

My specimens agree exactly with Bulliard's figure quoted above, which has no fuliginous shade on the stem, nor indeed is there any in those of Schæffer; and on the faith of this synonyme I consider them to belong to *A. incónstans*, notwithstanding this point of difference. Persoon does not, however, admit the dark colour of the stem into his



specific character; and, Fries never having seen the plant, I have followed Persoon. The description above given will at least enable any one to recognise the fungus I have in view. I have not admitted *A. orcellus* into the British list, though referred to by Purton for *A. subcantharellus*, v. 3. n. 1431; his whole description showing that he refers to some state of *Cantharellus aurantiacus*, of which the dichotomous gills and blackish stem are quite characteristic.

184. *A. conchátus*, Bull. (*shell-like Agaric*); pileus tough irregular flesh-colour inclining to cinnamon, gills quite entire pale, as well as the short irregular stem whose base is pubescent. *Bull. t.* 293. *With. v.* 4. *p.* 265. *Purt. v.* 2. & 3. *n.* 972. *Fr. Syst. Myc. v.* 1. *p.* 183.

On trunks of dead trees. July—Sept. Edgbaston. *Withering.*—“*Pileus* flaccid, even; *gills* not anastomosing at the base, rather thick not close. *Stem* not 1 inch high, sometimes obsolete.” *Fr. l. c.*

185. *A. glandulosus*, Bull. (*glandular-gilled Agaric*); cæspitose, pileus compact sublateral dilute bay, gills glandular white, stem smooth. *Bull. t.* 426. *Pers. Syn. p.* 476. *With. v.* 4. *p.* 264. *Relh. Fl. Cant. Ed.* 3. *p.* 542.

Trunks of trees. Sept.—Oct. Rare. Babraham. *Relhan.*—“*Pileus* 18 inches or more across; thick, fleshy; *flesh* white, rather soft, compact, sometimes lobed, even. *Gills* broad, anastomosing at the base.” *Relh. Fr. l. c.* The glands are described as velvety; I strongly suspect that this circumstance is not however by itself conclusive as to the propriety of considering the present a distinct species; similar downy nodules often occurring on other Agarics; I have seen them here and there in *A. ostreátus*, and suspect that they arise from the sporules being drawn together into little heaps in consequence of small globules of water collecting on the gills, and when the moisture is dried up, affording a nidus for the development of some small mucedinous parasite, or of delicate downy matter from the parent plant.

186. *A. ostreátus*, Jacq. (*oyster Agaric*); cæspitose, pileus fleshy smooth blackish then cinereous at length paler, gills anastomosing behind not glandular white, stem sublateral. *Jacq. Aust. t.* 288 (*vide Fries.*) *Curt. Lond. t.* 216. *Sow. t.* 241. *Pers. Syn. p.* 477. *With. v.* 4. *p.* 264. *Tratt. Essb. Schw. t. O. Purt. v.* 2 & 3. *n.* 971. *Fr. Syst. Myc. v.* 1. *p.* 182. *Grav. Fl. Ed. p.* 396.—*A. dimidiatus*, Bull. *t.* 508.—*A. nigricans*, *Tratt. Fung. Aust. t.* 20. *f.* 40.

On trunks of trees, as Apple, Laburnum, &c. Autumn—Spring. Not uncommon.—Imbricated, large. *Pileus* subdimidiate, very thick and fleshy; *flesh* white, dusky towards the surface, 1 inch deep; the border at first fibrillose or even decidedly squamulose, margin involute; as the pileus expands the white fibrillæ vanish and the colour changes from dusky to bistre; margin paler and rimulose, the whole surface shining and satiny when dry, soft and clammy when moist; towards the base in age there is a little white down. *Gills* broad, here and there forked, anastomosing at the base, dirty-white, the edge serrated umber.—In large specimens there is often a distinct stem, clothed with a dense short white down, which runs up between the gills. When

dry, the pileus becomes pallid or yellowish. *Taste* and *odour* like that of *A. personatus*, which it resembles somewhat in colour. *Stem* strigose at the base, according to Fries.

187. *A. salignus*, Pers. (*willow Agaric*); gregarious, pileus dilated, base depressed substrigose, gills dirty-white somewhat branched, stem tough clothed with white down. *Pers. Syn.* p. 478. *Tratt. Fung. Aust. t. 4. f. 8.* *Fr. Syst. Myc. v. 1. p. 183.*

On trunks of trees. Oct.—Jan. Dugaldstone, (on Alder.) *Klotzsch, in Hook. Herb.*—"Pileus convex, 4—6 inches broad. *Stem* excentric or lateral, sometimes obsolete. Fuliginous, white or ochraceous, according to its stage of growth." *Fr. l. c.*

188. *A. petaloïdes*, Bull. (*petal-like Agaric*); ascending, pileus spathulate dirty-white with a fuscous tinge, disk and stem somewhat downy, gills close linear white. *Bull. t. 226, 557, f. 2.* *Fr. Syst. Myc. v. 1. p. 183.*—*β. spathulatus*, Pers. *Syn. p. 479.* *Myc. Eur. v. 3. p. 32.* *Purt. v. 3. p. 430.*—*A. planus*, *Purt. v. 2. n. 974.*

*β.* on the ground amongst grass. Autumn. Rare.—"Gills whitish, tender, decurrent; *stem* flat, often channelled, nearly erect; solitary, *stem* about an inch long, erect." *Purt. l. c. § MSS.*

189. *A. porrigens*, Pers. (*ascending ear-shaped Agaric*); white, pileus ascending sessile ear-shaped nearly smooth, gills narrow linear quite entire. *Pers. Syn. p. 480.* *Pers. Myc. Eur. v. 3. p. 21.* *Fr. Syst. Myc. v. 1. p. 184.*

Old pine trunks. Aug. Inverary. *Klotzsch, in Hook. Herb.*—"Imbricated, various in size, subflaccid, the base stretching forward, often tomentose, very rarely stipitate. *Pileus* even, margin thin, inflexed, lobed in large specimens. *Gills*, when young, vein-like, somewhat divided." *Fr. l. c.* A very distinct species, allied to *A. petaloïdes*. *Gills* only  $\frac{1}{2}$  a line broad in the Scotch specimens.

190. *A. flabelliformis*, Bolt. (*fan-shaped Agaric*); pileus nearly plane smooth fawn-coloured, margin and gills crenate, stem short or none. *Bolt. t. 157.* *Pers. Syn. p. 479.* *Myc. Eur. v. 3. p. 23.* *Fr. Syst. Myc. v. 1. p. 185.*—*A. reniformis*, *With. v. 4. p. 267.* *Purt. v. 2 & 3. n. 977.*

Trunks of trees. Feb. Mixenden Mill, near Halifax. *Bolton.*—*Pileus* 2—3 inches broad. *Gills* rather broad.

191. *A. vulpinus*, Sow. (*fox-coloured Agaric*); pileus fleshy sessile reddish-buff carnose subspathulate, epidermis thick cartilaginous echinulate. *Sow. t. 361.* *Fr. Syst. Myc. v. 1. p. 273.*

On rotten Elms. Rare. Margate. *Rev. M. J. Berkeley.*—Cæspitose, imbricated. *Pileus* 1—2 inches long, ascending, obovato-spathulate; margin involute, fleshy, tough; the outer surface cartilaginous, longitudinally lacunose and echinulate, reddish-buff, hoary with the round white (!) sporules; and within the white flesh is a line of the same substance parallel with the surface. *Gills* pale, more or less notched

and sinuate, broad, not forked. *Stem* obsolete. *Smell* very strong and overpowering, somewhat resembling that of *Mentha arvensis*.—I have not the least doubt that this fungus, though not quite so dark or fleshy, is the true *A. vulpinus* of Sowerby. Fries (who pronounces it in his *Ind. Alph.* to be *A. nidulans*, Pers.) places it in the tribe *Crepidotus*. The sporules, however, are white and so copious that the pileus is quite hoary with them, an appearance which is represented in Sowerby's figure. There is the strongest affinity between this species and *A. cochleatus*; the smell though somewhat similar, has a mouldy odour in addition, which makes it disagreeable.

\*\*\* *Veil* none. *Pileus* carnose, horizontal when young. *Gills* not truly decurrent.

192. *A. ulmarius*, Bull. (*elm Agaric*); pileus compact smooth pallid, gills emarginate white, stem stout ascending subtomentose. *Bull. t.* 510. *Sow. t.* 67. *Pers. Syn. p.* 473. *Myc. Eur. v.* 3. *p.* 48. *Purt. v.* 3. *n.* 1445. *Fr. Syst. Myc. v.* 1. *p.* 186. *Grav. Fl. Ed. p.* 395.

Trunks of trees, especially elm. Sept.—Dec. Rare. Carlowrie, near Edinburgh. *Greville*.—"Pileus 3—12 inches broad, obtuse, smooth, subcoriaceous, but within very white, soft yet compact, thick, sometimes marbled with livid spots. *Gills* numerous, broad, white, adnate or subdecurrent, irregular. *Stem* excentric, ascending, 2—3 inches long, about 1 inch thick, solid, firm, incrassated at the base, white, sometimes furfuraceous, single or in tufts, varying a good deal in its texture." *Grav. l. c.*

193. *A. palmatus*, Bull. (*excentric gelatinous Agaric*); pileus smooth reddish, epidermis wrinkled and gelatinous, gills adnate of the same colour, stem excentric smooth white. *Bull. t.* 216. *Sow. t.* 62. *With. v.* 4. *p.* 266. *Pers. Syn. p.* 474. *Purt. v.* 2 & 3. *n.* 973. *Fr. Syst. Myc. v.* 1. *p.* 187.—*A. fetidus*, *With. v.* 4. *p.* 268.

Trunks of trees, squared timber, &c. Oct.—Nov. Not uncommon. Popphills. *Mr. Rufford*. Oversley. *Purtom*. Margate. *Rev. M. J. Berkeley*.—"Pileus 2—4 inches broad, excentric, at first convex, the margin involute, then more expanded. *Epidermis* thick, tough, elastic, gluey but not moist, so that several individuals are frequently glued together, not easily separable from the flesh, distilling drops of a limpid reddish fluid with a hot and astringent styptic taste, the margin beautifully reticulated like the Hymenium of a *Merulius*, of a beautiful pale orange-buff or nankin colour, pruinose, very fleshy, the flesh mottled somewhat like that of *Fistulina hepatica*. *Gills* paler, rounded behind, connected by veins, free, joined together at the base by an obsolete collar so as not to touch the stem. *Stem* 1—2 inches high,  $\frac{1}{2}$  an inch thick, oblique, thickest below, smooth, whitish, of a fibrous structure, sometimes a little hollow. In old specimens the veins on the pileus are occasionally obsolete in consequence of the stretching of the epidermis. A most beautiful and distinct species.

194. *A. stypticus*, Bull. (*styptic Agaric*); pileus between coriaceous and fleshy kidney-shaped, epidermis furfuraceous, gills connected by veins, stem lateral pruinose. *Bull. t.* 140.

557. f. 1. *Fr. Syst. Myc. v. 1. p. 188. Klotzsch, Fung. Germ. exs. n. 17.*—*A. semipetiolatus, Schæff. t. 208.*—*A. betulinus, Bolt. t. 72. f. 1.*—*A. flabelliformis, Sow. t. 109. With. v. 4. p. 266. Purt. v. 2 & 3. n. 975.*—*A. ficoides, With. v. 4. 267. Purt. l. c. n. 976.*

On stumps. Oct.—April. Very common.—Gregarious or cæspitose. *Pileus* 1—1½ inch broad, semiorbicular, the margin entire or lobed, surface nearly even, pruinose or furfuraceous, often zoned, varying in depth of colour, margin involute. *Gills* often branched, beautifully connected by veins, pale cinnamon. *Stem* about ¼ of an inch high, ascending, dilated above, pruinose.

195. *A. mitis, Pers. (larch Agaric)*; *pileus* subcarnose smooth even dry, *gills* adnate close distinct white as well as the stem which is lateral squamulose and dilated upwards. *Pers. Syn. p. 481. Myc. Eur. p. 43. Fr. Syst. Myc. v. 1. p. 188.*

On larch. Oct. Scotland. *Klotzsch, in Hook. Herb.*—“*Pileus* ½ an inch broad, at length almost sessile. *Gills* distinct from the horizontal stem, very close, linear-lanceolate, pallid-whitish.” *Fr. l. c.* Firm, tasteless, white or rufescent. In a young state it is spatulate, and the stem quite distinct, resembling some states of *A. stypticus*; the *pileus* gradually dilates, the stem becomes obsolete, and the *pileus* reniform, the outer margins meeting, and the one overlapping the other.

\*\*\*\* *Veil none. Pileus* carnose, when young resupinate. *Gills* meeting together at an excentric point.

196. *A. mastrucatus, Fr. (furred Agaric)*; *pileus* carnose rough mouse-grey, the upper layer of the flesh gelatinous, *gills* greyish-white. *Fr. Syst. Myc. v. 1. p. 190.*—*A. echinatus, Sow. t. 99.*

On trunks of trees, rare. Norwich. *Mr. Pitchford, Greenwich, (on maple.) Sowerby.*—Subimbricate. Substance elastic, gelatinous. “*Pileus* 1—4 inches broad, lobed in large specimens, flaccid, rough with hairs and rigid points intermixed. *Gills* radiating from a downy knob.” *Fr. & Sow. l. c.*

\*\*\*\*\* *Veil none. Pileus* membranaceous. *Gills* adnate or meeting together at an excentric point.

197. *A. trémulus, Schæff. (delicate grey Agaric)*; grey, *pileus* kidney-shaped diaphanous, *gills* linear, stem marginal ascending villous. *Schæff. t. 224. Sow. t. 242. Purt. v. 3. n. 1479. Fr. Syst. Myc. v. 1. p. 191. Pers. Myc. Eur. v. 1. p. 30.*—*A. glaucus, Batsch, Cont. 1. f. 123.*—*A. planus, Bolt. t. 72. f. 3. With. v. 4. p. 266.*

On the ground, on moss, &c. Aug.—Dec. Rare.—Sent to Sowerby by Mr. Abbott of Bedford, parasitic upon *Thelephora caryophyllæa*. Malvern Hills, *Purton*. Highlands of Scotland. *Dr. Hooker.*—“*Pileus* ¼—⅔ of an inch broad, turning pale; sometimes sessile, the base villous. *Gills* distinct, distant.” *Fr. l. c.*

198. *A. sépticus, Fr. (small shell Agaric)*; white, *pileus*

resupinate then reflexed even pubescent, gills radiating, stem slender incurved pubescent, with byssoid radicles. *Fr. Syst. Myc. v. 1. p. 192. Pers. Myc. Eur. v. 3. p. 29.—A. pubescens, Sow. t. 321.*

On rotten trunks. Scotland. *Captain Carmichael*.—"Pileus 3—5 lines broad, at length free, slightly carnose. Gills rather broad, distinct. Stem 2 lines high, attenuated upwards, sometimes obsolete as well as its radicles." *Fr. l. c.* Colour of *A. variabilis*; form and radicles of *A. byssoides*, but distinct from both in its white sporules.

199. *A. hypnophilus*, Pers. (*white-sporuled variable Agaric*); sessile resupinate flat white, pileus subreniform nearly smooth, gills simple of the same colour. *Pers. Myc. Eur. v. 3. p. 28. t. 24. f. 5. a.*

On the larger mosses and on fallen leaves; probably not uncommon. Scotland, *Captain Carmichael*, and apparently the same species sent by Purton to Dr. Hooker marked *A. variabilis*, but with white sporules. Exactly the habit of *A. variabilis*, but the sporules are white, and in consequence the gills do not change colour. The figures in *Pers. l. c.* seem to have been taken from dried specimens. Nothing is stated as to the colour in the text, but the inference from what is said, is that they are white; when dry the whole is of a pale tan. Fries in his *Ind. Alph.*, refers Persoon's plant to *A. depluens*, Batsch.

200. *A. chioneus*, Pers. (*snow-flake Agaric*); snow-white subsessile resupinate minute, pileus very thin villous, gills rather broad, stem very short villous at length obsolete. *Pers. Myc. Eur. v. 3. p. 28. t. 26. f. 10, 11.*

On wood or dung. Sept. Rare. Lytchett, Dorsets., on horse-dung.—Pileus 2 lines broad, extremely delicate and fragile, clothed with white down, fixed by a few downy threads, the margin involute. Gills radiating, distant, with sometimes a single smaller one in the interstices. Sporules white. Fries refers Persoon's plant in his *Ind. Alph.* to *A. mollis*, var. *dubius*; but it is clearly a very distinct species.

201. *A. applicatus*, Batsch, (*small dark-grey Agaric*); pileus subsessile resupinate then reflexed pruinose villous at the base dark-cinereous. *Batsch, Cont. 1. f. 125. Sow. t. 301. With. v. 4. p. 268. Purton. v. 2 & 3. n. 980. Nees, Syst. f. 183 (copied from Batsch.) Fr. Syst. Myc. v. 1. p. 192.—A. epixylon, Bull. t. 581. f. 2. Pers. Myc. Eur. v. 3. p. 15.*

On rotten wood. Autumn and Spring. Not uncommon. Scotland, *Captain Carmichael*.—Pileus 2—4 lines broad, when young cup-shaped, resupinate, slightly carnose, striate when moist, more or less villous. Gills broad, distant, radiating, grey, the margin whitish. Stem none. The several forms of this species and its allies require fresh and minute observation, especially as regards the sporules. I have found specimens, apparently the same, with the sporules rose-coloured. Bulliard represents one state with subrufous gills, and Sowerby's plant is of a greenish hue. The sporules are certainly white in Carmichael's specimens.

202. *A. striatulus*, Pers. (*minute striate Agaric*); minute

pale-cinereous, pileus resupinate then sessile striate smooth, gills distant. *Pers. Syn. p.* 485. *Myc. Eur. v.* 3. *p.* 18.

On fir-wood, twigs of hazel, &c. May—Dec. Scotland. *Captain Carmichael*.—Scattered or gregarious, persistent. “*Pileus* 3—4 lines broad, convex, wrinkled when dry, of the colour and nature of *A. corticola*. *Gills* few, unequal, distant, sometimes dirty-white. Sometimes the whole plant is brown.” *Fr. l. c.*

SERIES II. HYPORHODEUS; (from  $\nu\pi\omicron$ , a diminutive, and  $\rho\omicron\delta\epsilon\omicron\varsigma$ , rose-coloured.) *Sporules* pale rose-coloured.

Subgenus 13. CLITOPILUS; (from  $\kappa\lambda\iota\tau\omicron\varsigma$ , a declivity, and  $\pi\iota\lambda\omicron\varsigma$ , a cap.) *Stem* tolerably firm, subequal distinct from the pileus. *Pileus* fleshy campanulate or convex, then somewhat plane, dry, regular. *Gills* unequal, changing colour, fixed or free.—In the anomalous *A. Mouceron*, the stem is diffused into the pileus, the pileus subdepressed, and the gills decurrent.

\* *Gills* fixed.

203. *A. prinulus*, Scop. (*Mouceron*); pileus compact flattish white, gills white then flesh-coloured. *Scop. Fl. Carn. p.* 437. *Pers. Syn. p.* 457. *Fr. Syst. Myc. v.* 1. *p.* 193.—*A. albellus*, *Schæff. t.* 78. *Roques, t.* 16. *f.* 1—3.—*A. Mouceron*, *Bull. t.* 142.—*A. pallidus*, *Schæff. t.* 50. *Sow. t.* 143. *Purt. v.* 3. *n.* 1430.

Woods and pastures. June—Oct. Common.—*Pileus* 2—4 inches broad, convex, more or less wavy, at length plane or subdepressed, very fleshy, white, shining or opaque with a slight tendency to cinereous, smooth, but under a lens minutely though densely tomentose, so that the impression of the fingers is left upon it, margin involute. *Gills* decurrent, narrow, more or less forked, covered with very minute conical papillæ, ending in four spiculæ. *Sporules* rose-coloured, elliptic, often seated upon the spiculæ. *Stem*, in general, short, white, solid, thickest at the base and downy. *Odour* like that of fresh meal. Much esteemed on the continent as an article of food. Trattinnick's plant however is evidently another species; according to Fries' *Index Alph. A. graveolens*, (Pers.) He compares the odour of his plant to that of *Primula Auricula*.

204. *A. sericellus*, Fr. (*silky rose-gilled Agaric*); pileus sub-carnose obtuse silky white as well as the slender fibrillose fistulose stem, gills adnate rose-coloured. *Fr. Syst. Myc. v.* 1. *p.* 196.— $\beta$ . *A. sericeus*, *Pers. Ic. ct. Desc. t.* 6. *f.* 2. (*larger*.)

Woods. July—Sept. East Morden, Dors. King's Cliffe, Norths. *Rev. M. J. Berkeley*.—Subgregarious. *Pileus*  $\frac{3}{4}$  of an inch broad, white, subcarnose, silky, slightly umbilicate. *Gills* pale rose colour, broad, adnate, nearly horizontal, subdecurrent. *Sporules* round, rose-coloured. *Stem* 2 inches or more high, 1 line thick, thickest and downy at the base, sometimes subbulbous, solid or closely stuffed, white, silky. *Odour* and *taste* like that of *A. campestris*. My plant agrees in every respect with that of Fries, except in the stem not being fistulose; but I do not think this a sufficient ground to doubt its identity.

205. *A. rhodopólius*, Fr. (*dull rose-gilled Agaric*); pileus

subumbonate subsericeous livid, gills adnate dull rose-coloured, stem hollow smooth white. *Fr. Syst. Myc. v. 1. p. 197.*—*A. hydrogrammus*, *Bull. t. 564. f. C.D.E.O.*—*A. repandus*, *Bolt. t. 6.*

Pastures and woods, amongst leaves. Sept. Probably not uncommon. Near Halifax. *Bolton.* East Morden. Dors. King's Cliff, Norths. *Rev. M. J. Berkeley.*—*Pileus*  $1\frac{1}{2}$ — $2\frac{1}{2}$  inches broad, plano-expanded or subdepressed, occasionally minutely umbonate, ochraceous with a brownish tint, the margin sometimes darker and waved, in large specimens sub-carnose, smooth and shining with a satiny lustre, most minutely silky under a lens, but the silkiness is quite adpressed. *Gills* very broad, thick and adnate, more or less rounded behind and separating from the stem, covered with elongated conical processes, surmounted by three divaricate spiculae. *Sporules* elliptic, rose-coloured. *Stem* 2—4 inches high, 2 lines or more thick, hollow, stringy within or occasionally with transverse imperfect partitions, subflexuous, pulverulent at the apex, downy at the base, minutely fibrilloso-striate. *Odour* strong, sometimes resembling that of nitric acid, sometimes that of *Polyporus squamosus*.

206. *A. fertilis*, Pers. (*fertile Agaric*); pileus subumbonate smooth or pulverulento-squamulose, gills flesh-coloured adnixed, stem stuffed smooth or fibrillose subbulbous. *Pers. Syn. p. 328. Fr. Syst. Myc. v. 1. p. 197.*—*A. phnospermus*, *Bull. t. 534, 547. f. 1. 590.*

Amongst rotten leaves. Cotterstock, Norths. Oct. 27, 1826.—Subgregarious. *Pileus*  $4\frac{1}{2}$  inches broad, expanded, obtuse, somewhat lobed, pulverulento-squamulose, fleshy, dry, pinkish-buff, with sometimes a tinge of yellow. *Gills* rose-coloured, adnixed, nearly free. *Sporules* rose-coloured. *Stem*  $2\frac{1}{2}$ — $3\frac{1}{2}$  inches high,  $1\frac{3}{4}$ —1 inch thick, stuffed, firm, fibrillose, subsquamulose, subcompressed, somewhat bulbous at the base, paler than the pileus. *Odour* like that of fresh meal. My specimens resemble very much those figured by *Bull. t. 590. f. 547. f. 1*, except that the pileus is not smooth, nor the stem white. The species seems to be very variable, but the following one differs so materially that I cannot but regard it as distinct. On January 27, 1834, specimens occurred at Apethorpe, Norths., differing from the state described above in being smaller, of a livid-bistre and decidedly viscid. The *gills* were  $\frac{5}{8}$  of an inch broad, distant, very thick, connected and traversed by veins. *Stem* white, fibrillose, generally split. There was the same strong smell of meal.

207. *A. mammósus*, Bolt. (*umbonate rose-gilled Agaric*); pileus at first strongly umbonate, gills adnixed pale flesh-coloured, stem solid nearly equal fibrillose. *Bolt. t. 69. With. v. 4. p. 213. Part. n. 936.*

Woods and pastures. Autumn. Stibbington, Hunts. *Rev. J. M. Berkeley.* *Pileus* 2 inches broad, convex, very strongly umbonate, less so however, when fully expanded, when it is plano-convex, of a pinkish-grey or cinereous; the apex darkest, nearly smooth, shining, but under a lens subsericeous; margin compressed when young. *Gills* slightly ventricose, nearly free, but connected with the stem by a tooth; sometimes notched and waved. *Sporules* rose-coloured. *Stem* 3 inches high,  $\frac{1}{2}$ — $\frac{1}{2}$  an inch thick, nearly equal, when young swollen at the base,

fibrillose, firm, solid, dirty-white. *Odour* like that of fresh meal. I cannot be quite sure that my plant is the same as Bolton's quoted above, his figure being very indifferent; but it is probably that of Withering and Purton, though the latter seems to include *A. pascuus*, and perhaps some others. *A. irregularis*, Bolt. is described as having a hollow stem; in other respects it appears very similar.

208. *A. ardosiacus*, Bull. (*slate-coloured Agaric*); pileus smooth at length subdepressed, greenish cinereous, gills broad, nearly free, stem hollow smooth. *Bull. t.* 348. *Pers. Syn. p.* 466. *Sibth. Fl. Ox. p.* 357. *With. v. 4, p.* 257. *Fr. Syst. Myc. v. 1, p.* 198.

Moist meadows. Sept. Pastures near Headington. Wick Copse. *Sibthorpe*.—"Pileus 3 inches broad, fleshy, when young campanulate, margin subsinuate. Gills 4 lines broad, rufescent. Stem 4—5 inches long, 2—3 lines thick, attenuated, of the same colour as the pileus." *Fr. l. c.*

\*\* *Gills free.*

209. *A. leoninus*, Schæff. (*tawny rose-gilled Agaric*); brittle, pileus smooth submembranaceous, stem solid striate. *Schæff. t.* 48. *Pers. Ic. & Desc. t. 7, f.* 3, 4. *Fr. Syst. Myc. v. 1, p.* 199.—*A. pyrrospemus*, Bull. *t.* 547. *f.* 3.

On rotten wood, sawdust, &c. Sept.—Oct. Apethorpe, (with a bright orange pileus). Cotterstock, King's Cliffe, Norths.—Solitary or subgregarious, varying much in size and colour. Pileus 1—3 inches broad, tawny-yellow, shaded with bright orange, or purplish-brown tinged with yellow, umbonate; *flesh* thick in the centre, margin thin, firm in the orange-coloured specimens, covered with a smooth wrinkled glutinous epidermis; sometimes pitted round the umbo, margin more or less striate. Gills rather broad, rounded behind and in front, flesh-coloured, moderately distant, perfectly free, the edge at first yellowish, afterwards when drying up orange in the orange variety; I could detect no pellucid processes. Spores rose-coloured, elliptic. Stem 2—3 inches high, 2—6 lines thick, downy at the base, sometimes rooting, attenuated upwards, twisted and striate, yellow or ochraceous shaded with orange, solid, or at length imperfectly hollow, composed of crisped filaments. I have considered *A. leoninus*, Schæff. and *A. pyrrospemus*, Bull. as the same species, because Fries has done so, and I have not had sufficient opportunities of observing Schæffer's plant to justify me in calling his judgment into question. Bulliard's plant, however, is differently coloured, watery and more tender; the gills almost deliquescent, and the stem of a full yellow, more equal and not so solid. The orange variety, noticed above, is a most splendid Agaric, equalling in richness of colour *A. coccineus*.

210. *A. repandus*, Bull. (not of Fr.), (*conic rose-gilled Agaric*); pileus conic fleshy umbonate, the margin incurved and lobed, stem short solid. *Bull. t.* 423. *f.* 2.

Amongst grass. East Morden. Dors. Sept.—Pileus 1—2 inches broad, conic, obtuse, at length expanded, very fleshy, the margin incurved and lobed, pale whitish-ochraceous, with a few streaky shades, clothed with a very close, adpressed indistinct silkiness. Gills pale dull-



rose, broad in front. *Sporules* round, rose-coloured. *Stem*  $1\frac{1}{2}$  inch high, 3 lines thick, white, beautifully adpresso-sericeous, composed of fibrous cells, distinct from those of the pileus. *Odour* like that of fresh meal. My specimens agree precisely with Bulliard's plant quoted above, except that the colour is not so lively. He says expressly that the seminal powder is "rougeatre" which can hardly apply to any species of the subgenus INOCYBE. Fries indeed tells us that Bulliard's plant does not accord with his *A. repandus* in habit.

211. *A. Pluteus*, Batsch, (*roof Agaric*); pileus convex smooth sooty, stem firm clothed with black fibrillæ. *Batsch, Fl. p. 79. Pers. Syn. p. 357. Ditm. in Sturm's Deutsch. Fl. t. 28. Nees, Syst. f. 201. (copied from Ditm.) Fr. Syst. Myc. v. 1. p. 199.—A. cervinus, Schaff. t. 10.—A. lividus, Bull. t. 382.—A. latus, Bolt. t. 2. Sow. t. 108. With. v. 4. p. 211.*

About rotten stumps. May—Nov. Not uncommon.—"Solitary. *Pileus* 2—3 inches broad, carnose, here and there wrinkled, campanulate, at length more or less plane, umber, at length dark brown. *Gills* free, ventricose, moderately close, at first white, then rose-red. The texture consists of long cells, and between the asci which cover their surface under a high power at tolerably regular distances are transparent bodies, longer than the asci, ending in two or three curved spiculæ. *Sporules* round, rose-coloured. *Stem* 3—4 inches high, firm, thicker at the base, whitish or here and there of the colour of the pileus, but paler, covered with fine black streaks." *Ditm. l. c.* The above is an excellent description of the common state of this variable species. A variety or nearly allied species occurs, with a plane grey minutely squamulose pileus; the stem white, fibrilloso-squamulose. The processes on the gills are longer than those represented by Ditmar, not ovate or urn-shaped;\* the spicules always three; the pubescence of the pileus consists of elliptic, pear-shaped, or elongated cells, filled with minute granules. *Sporules* oval. Another distinct nearly allied form occurred at Wollaton, Notts. Sept. *Pileus* 2 inches broad, expanded, the margin very thin, umber with a rufescent tinge, tender, quite smooth; margin not striate; *flesh* pure white. *Gills* broad, rounded. *Stem* 3 inches high, 2 lines or more thick, above tomentososquamulose, below fibrillose, twisted, exceedingly brittle. *Odour* like that of *A. justibilis*.

212. *A. phlebóphorus*, Ditm. (*veiny Agaric*); pileus subcarnose smooth, more or less venoso-rugose, stem fistulose incurved smooth. *Ditm. in Sturm's Deutsch. Fl. t. 15. Nees, Syst. f. 202. Fr. Syst. Myc. v. 1. p. 200. Grv. Fl. Ed. p. 385. Sc. Crypt. Fl. t. 173.—A. reticulatus, With. v. 4. p. 255.—A. molliusculus, Sow. t. 174.—A. vaseiceps, Fr. l. c.*

On rotten stumps, wood, &c. July—Oct. Rare. Edgbaston. *Withering.* Under poplar trees in Lambeth Marsh. *Sowerby.* Foxhall near Edinburgh. *Captain Waugh* and *Dr. Greville.* Biggin, Norths. *Rev. M. J. Berkeley.*—"Pileus 1—2 $\frac{1}{2}$  inches broad, slightly

\* I find, however, the processes in the normal state of *A. Pluteus* simply conical with three spicules. The pubescence of the pileus consists entirely of elongated cells.

convex or plane in maturity; thin for the size of the plant, but rather firm; pleasant yellowish-brown; *epidermis* rugose, the rugæ branched like veins. *Gills* broad, ventricose, free, white changing to rose-colour from the sporules. *Stem* 2—4 inches high, 3—4 lines thick, whitish, somewhat twisted, mostly hollow, frequently incurved at the base which is slightly thickened." *Greav. Fl. Ed.* It does not appear that there are processes upon the gills.

Subgenus 14. LEPTONIA; (from λεπτός, slender.) *Stem distinct from the pileus, when young stuffed with down, then more or less hollow, equal, slender, rather firm, tinged with blue. Pileus carnosomembranaceous campanulate or convex, then expanded, dry, never striate, fibrillose or squamulose, sometimes umbilicate. Gills obtuse, behind free or fixed, not decurrent, unequal, rather broad, at length flesh-coloured. Bluish or grey.*

213. *A. griseo-cyaneus*, Fr. (*grey & blue Agaric*); pileus squamulose lilac-grey, gills free, stem hollow fibrillose blue. *Fr. Syst. Myc. v. 1. p. 202.*—*A. atro-cyaneus*, Pers. *Syn. p. 344.*

Grassy places. July—Sept. East Morden. Dors.—*Pileus* 1 inch broad, subcarnose, at first conico-hemispherical, then convex, at length umbilicate, scaly, the scales sometimes reflexed, of a beautiful pinkish mouse-grey, turning pale when dry; margin not striate. *Gills* quite free, ventricose, rose-coloured. *Sporules* elliptic, rose-coloured. *Stem* 1—2 inches high,  $\frac{1}{8}$  of an inch thick, deep blue or lilac-grey, finely fibrillose, brittle, downy at the base. My specimens differ from those of Fries in being umbilicate when old. The gills are quite free and very different in shape behind from *A. serrulatus*. Bolton's *A. purpureus* quoted here by Fries, is evidently a small state of *A. purus*. It is described as clammy, which is wholly at variance with the species before us.

214. *A. chalybeus*, Pers. (*dark-blue Agaric*); pileus squamose blue, gills adnate bluish-white then purplish, stem stuffed smooth blue. *Pers. Syn. p. 343. Ic. Pict. t. 4. f. 3, 4. Fr. Syst. Myc. v. 1. p. 203. Greav. Fl. Ed. p. 385.*—*A. columbarius*, Sow. *t. 161. b.*—*A. glaucus*, Bull. *t. 521. f. 1.*

Amongst grass. July—Sept. Kirriemuir. *Klotzsch, in Hook. Herb. East Morden. Dors. Rev. M. J. Berkeley.*—Subgregarious. *Pileus*  $\frac{1}{2}$ —1 inch broad, convex, minutely umbonate, scaly, dark-blue or almost black, subcarnose, slightly striate on the margin; *flesh* dark-blue. *Gills* at first pale then clouded lightly of the colour of the pileus. *Sporules* rose-coloured, elliptic with a globular nucleus. *Stem*  $1\frac{1}{2}$  inch high, 1 line thick, stuffed, at length hollow, indigo without, dark within, nearly smooth above, downy at the base.

215. *A. columbarius*, Bull. (*dove-coloured Agaric*); pileus nearly plane grey streaked with black fibrillæ, gills adnate at length nearly free, stem elongated. *Bull. t. 413. f. 1.*—*A. serrulatus*, var.  $\beta$ . *Fr. Syst. Myc. v. 1. p. 204.*

Amongst grass. Autumn. Locko Park, near Derby. *Rev. M. J. Berkeley.*—*Pileus*  $1\frac{1}{2}$  inch broad, umbilicate, lilac-grey streaked with

black fibrillæ, subsquamulose. *Gills* broad, ventricose, adnate. *Stem* 3 inches high,  $2\frac{1}{2}$  lines broad, hollow, twisted, fibrillose, blue, downy at the base. The margin of the gills in my specimens has not the slightest appearance of black teeth. They agree very well with Bulliard's figure, except that the gills are really adnate in Bulliard's plant; however, according to Fries, they are free only in consequence of the expansion and depression of the pileus, which causes them to start away from the stem. Having never found a species of this tribe with serrated gills, I am unable to form any opinion as to the importance which ought to be attached to this character, and Fries does not say whether the gills of his *var. β.* are serrated or no, though the presumption is that they are so. In this uncertainty, I venture to keep *A. columbarius* distinct for the present, as less likely to lead to confusion and error than a virtual expression of an opinion as to the nonimportance of the character, which might throw a doubt upon what after all may be a very valid distinction.

Subgenus 15. *NOLANEA*; (from *nola*, a little bell.) *Brittle. Stem* fistulose, rarely stuffed with down, distinct from the pileus. *Pileus* submembranaceous, campanulate, then expanded, not fibrillose or scaly, when moist striate subpellucid, when dry turning pale, often with a satiny lustre, never umbilicate. *Gills* free or slightly adnexed, broad, ventricose, subascending.

216. *A. páscuus*, Pers. (*pasture Agaric*); pileus campanulate expanded dark-sooty when dry pallid subsericeous, gills nearly free dirty flesh-colour, stem slender fistulose nearly straight. *Pers. Syn. p. 427. Fr. Syst. Myc. v. 1. p. 205.—A. sericeus, Bull. t. 413. f. 2, 526.—A. fuliginus, Pers. Syn. p. 427.*

Pastures. Sept.—Oct. Not uncommon. Inverary. *Klotzsch, in Hook. Herb. Almer, Dors. Margate. Rev. M. J. Berkeley.—Pileus* 1 inch or more broad, subcarinose, brown, when dry changing to ochraceous-brown, umbonate, smooth, satiny, not fibrillose, the margin striate when moist. *Stem* 1 inch high, stuffed, minutely fistulose, when old quite hollow, and fibrillose within and without, often compressed, paler than the pileus. Sometimes the pileus is depressed and the gills appear decurrent. *Odour* like that of fresh meal. The above is a description of one state of the species, but it will not apply universally. The stem is sometimes much longer, and the gills vary considerably in shape. It occurs of various colours and the form of the pileus is by no means constant. I have found specimens resembling very much *A. lanuginosus*, which though very different from the common state I imagine to be only a variety. The pileus is conico-campanulate, umbonate, umbergrey, decidedly silky; the gills adnate with a distinct tooth or subadnexed, dull pink with a shade of umber; extreme margin white, scarcely serrulate. *Stem* pale, darker below, fibrillose. It has the same odour.—Another form of the species, if not distinct, has very broad secedenti-adnate gills, and a subfibrillose pileus. I can, however, find no other mark of distinction; this also has the mealy odour.

Subgenus 16. *ECCILIA*; (from *εκεχιλωω*, to hollow out.) *Stem* when young stuffed with light down, then fistulose, slender, equal, slightly diffused into the pileus; paler than the pileus and not

tinged with blue. *Pileus* thin, membranaceous, convex then plane, umbilicate, striate, smooth or minutely squamulose. *Gills* adnate or subdecurrent, subacute behind, broad, subdistant.

217. *A. Sowerbèi*, Berk. (*green mouse-scented Agaric*); *pileus* smooth striate shaded with green and yellowish-brown, *gills* adnate paler than the *pileus*, stem green.—*A. murinus*, Sow. t. 162.

Pastures. Sept. East Morden, Dors. *Rev. M. J. Berkeley*.—*Pileus* 1 inch broad, convex or subcampanulate, at length umbilicate, submembranaceous, shining, very brittle. *Gills* broad, at length rose-coloured, as the *pileus* expands starting away from the stem; not at all decurrent. *Sporules* oval, rose-coloured. *Stem* 1 inch high, 1 line thick, very brittle, of a beautiful yellow-green, above darker, inclining to verdigris; stuffed, at length hollow; sometimes compressed, minutely fibrillose, downy at the base. The whole plant, when cut, turns to a beautiful verdigris-green. *Odour* exactly like that of mice.

This species in the *Syst. Myc.* is considered as doubtful; in the *Ind. Alph.* it is referred to *A. asperellus*, but there is so much discrepancy in the characters, that I think it expedient for the present to keep it distinct. No species can be more decidedly marked, and Sowerby's figure is very accurate.

218. *A. rufo-cárneus*, Berk. (*rufous rose-gilled Agaric*); *pileus* hemispherical red-brown, *gills* adnate ventricose, stem elongated rufescent.

On a heath, East Morden, Dors. Sept. *Rev. M. J. Berkeley*.—*Pileus* 1 inch broad, umbilicate, membranaceous, indistinctly fibrilloso-squamulose, margin striate, dark red-brown. *Gills* adnate, ventricose, waved, rose-coloured, slightly connected and traversed by veins. *Sporules* elliptic, rose-coloured. *Stem* 2½ inches high, 1 line thick, curved at the base where it is slightly thickened, pale rufescent, nearly white above, fistulose, smooth, under a lens minutely fibrillose. *Taste* rather bitter.—After an attentive examination I can find no plant according with this, which appears a well-marked species.

SERIES III. CORTINARIA. (*from cortina, a veil*.) *Sporules\**  
reddish-ochre. *Veil* arachnoid.

Subgenus 17. TELAMONIA; (*from τελαμων, lint.*) *Veil* consisting of arachnoid fibres woven into a subpersistent ring. *Stem* solid, at length softer, within firm, fibrillose. *Pileus* more or less fleshy, the margin thin, campanulate or convex then expanded, dry, squamulose or fibrillose. *Gills* adnate or emarginate, broad, distant, changing colour.—Large firm fungi, growing on the ground.

219. *A. tórvus*, Fr. (*hosed Agaric*); *pileus* obtuse fibrillose

\* The sporules in this series are distinguishable from those of the following, when accurately examined, by a redder tinge. As far as I have been able to pay attention to the point, the colour appears to vary very little, whereas in the following series, the sporules in different species are seen to assume many different shades. No difficulty, however, will be found in referring each Agaric to its proper series, when once a single individual of the present shall be accurately determined.

whitish\* with a brick-red tinge, gills adnate purple, veil closely sheathing the stem. *Fr. Syst. Myc. v. 1. p. 211.*—*A. araneosus*, *Bull. t. 600. Q. R. S.*—*A. umbrinus*, *Pers. Syn. p. 280.*

Woods. Sep.—Oct. Glasgow. *Klotzsch, in Hook. Herb. Collyweston, Norths. Rev. M. J. Berkeley.*—*Pileus* 3 inches or more broad. *Stem* 3—5 inches high,  $\frac{1}{2}$ —1 inch thick, violet, but clothed below with the white veil.

Klotzsch's specimens are evidently the genuine form, figured by Bulliard: mine are slightly different, but clearly belonging to the same species. The youngest plants have no tinge of violet, but this is probably owing to their being found in very dry weather. *Pileus* (in the variety)  $1\frac{3}{4}$  inch broad, obtuse, convex, at length plane, shining with a satiny lustre, at length sometimes rimulose, whitish tinged with umber, fleshy in the centre, the margin thin; portions of the veil persistent on the edge. *Gills* adnate, deep umber, distant, sometimes very slightly emarginate in old specimens. *Stem*  $2\frac{1}{2}$  inches high,  $\frac{1}{2}$  an inch thick, nearly equal or slightly attenuated below, paler than the pileus, hosed, as it were, with the white veil; reddish within. *Odour* like that of *A. fastibilis*.

220. *A. brúnneus*, *Pers. (brown Agaric)*; pileus obtuse umbonate subfibrillose umber turning pale, stem subbulbous striate paler than the pileus, veil woven. *Pers. Syn. p. 274. Fr. Syst. Myc. v. 1. p. 211.*—*A. spongiosus*, *With. v. 4. p. 186.*

Pine-groves. Autumn. Packington Park, Warw. *Withering.*—“*Pileus* 2—3 inches broad, at length nearly plane, disk fleshy. *Gills* when bruised umber-purple. *Stem* 3—5 inches high, 3—5 lines thick, stuffed, dilute brown.” *Fr. l. c.*

221. *A. evérnius*, *Fr. (purplish satiny Agaric)*; pileus sub-carnose purplish-bay then fibrillose reddish or whitish, stem long equal violet. *Fr. Syst. Myc. v. 1. p. 212.*—*A. impuber*, *Sow. t. 125.*

Beech-woods. Sept.—Nov. Not uncommon. King's Cliffe, Norths. *Rev. M. J. Berkeley.*—Tufted or subgregarious. *Pileus* 1—2 inches broad, purple-brown, shining with a satiny lustre, umbonate, the umbos generally subumbilicate; *flesh* moderately thick in the centre. *Gills* very broad, at length subferruginous, distant, adnate for half their breadth. *Stem*  $2\frac{1}{2}$ —4 inches high,  $\frac{3}{8}$  of an inch thick, undulated, silky, much paler than the pileus, with a few slight traces of the veil.—Sowerby's plant and that of Fries seem to be the same; but if so, the former is not, as Fries supposes, merely the young state, but arrived at its full growth. *A. impuber*, Batsch, is clearly *A. vaccinus*.

222. *A. gentilis*, *Fr. (variable tawny Agaric)*; pileus sub-carnose umbonate more or less of a changeable cinnamon-hue, gills adnate cinnamon, stem slender equal nearly straight.—*Fr. Syst. Myc. v. 1. p. 212.*—*A. hinnuleus*, *Sow. t. 173. With. v. 4. p. 211.*—*A. helvolus*, *Pers. Syn. p. 273. Grev. Fl. Ed. p. 387.*—*A. farinaceus*, *Purt. v. 2. p. 214.*

\* The colour in the specific characters in this and the two following subgenera is to be understood of the young plant only.

Fir and Beech-woods. Sept.—Nov. Not uncommon. Swanston wood near Edinburgh, *Dr. Greville*. Canterbury. King's Cliffe, Norths. *Rev. M. J. Berkeley*.—*Pileus*  $\frac{1}{2}$ —3 inches broad, at first conic-obtuse, then more or less acutely umbonate, with, frequently, a depression round the umbo, cinnamon changing to a pale tawny, marked in decay with brown streaky blotches, shining, somewhat cracked, sub-fibrillose, sometimes with a few very minute silky scales. *Gills* very distant, thick, adnate, rounded behind, cinnamon or dark ferruginous. *Stem* 3 inches high, 2—3 lines thick, of the same colour as the pileus, nearly equal, at first marked with the remains of the woven spongy ring, fibrillose, wavy, at length hollow.

223. *A. limónius*, Fr. (*orange-tawny Agaric*); pileus obtuse orange-tawny becoming pale, gills yellow soon tawny-cinnamon, stem equal, veil floccose. *Fr. Syst. Myc. v. 1. p. 213.*—*A. kermesinus*, *Holmsk. v. 2. t. 40.*

Alpine Pine-woods. Oct. Highland woods. *Klotzsch, in Hook. Herb.*—“*Pileus* 2—4 inches broad, when dry ochry-yellow, subsquarrose. *Gills* sometimes adnate, sometimes emarginate; veil rarely forming a perfect ring. *Stem* 2—4 inches high,  $\frac{1}{2}$  an inch thick, firm, fibrillose, dull yellow sometimes saffron-red.” *Fr. l. c.*

224. *A. validus*, Berk. (*stout tawny Agaric*); pileus rich tawny-ferruginous obtuse clothed with very minute reflexed scales, gills pale tawny fixed, stem rooting stout bulbous fibrillose.

Amongst dead leaves in woods. Sept. Yarwell, Norths. *Rev. M. J. Berkeley*.—*Pileus* 4 inches broad, fleshy, the margin thin, deep tawny inclining to ferruginous; at first convex, flatly hemispherical or subcampanulate, very obtuse, at length expanded plano-convex clothed with very minute reflexed scales; *flesh* whitish, partaking very slightly of the colour of the pileus; margin at first subinvolute. *Gills*  $\frac{3}{8}$  of an inch broad, brittle, undulate, nearly horizontal, adnate, soon starting from the stem and connected with it by a few fibres, very minutely emarginate, pale tawny clouded with the sporules. *Stem* 4 inches high, nearly 1 thick in the centre,  $1\frac{1}{4}$  at the base, bulbous, fibrillose from the remains of the fugacious veil which forms in the very young plant a slight extremely evanescent ring which is coloured by the sporules; solid, tawny like the pileus. At the base are a few strong roots.—There is not the slightest tinge of purple or violet in any stage of growth.

225. *A. sublanátus*, Sow. (*woolly Agaric*); pileus squamulose reddish-olive, gills yellowish then cinnamon, stem bulbous squamulose, veil brown. *Sow. t. 224. Fr. Syst. Myc. v. 1. p. 214.*

Hampstead Wood. Oct. *Sowerby*.—“Smell like that of radishes. *Pileus* 3 inches broad, at length broadly and obtusely umbonate, colour variable, yellowish-brown; scales brownish or white, sometimes silky adpressed. *Gills* adnate or emarginate. *Stem* 3 inches high, yellowish-pallid, sometimes violet above.” *Fr. l. c.*

226. *A. bulbósus*, Sow. (*bulbous Agaric*); pileus obtusely umbonate nearly smooth reddish-brown, when dry brick-red, gills cinnamon, stem long bulbous dirty-white as well as the

veil. *Sow. t.* 130. *Pers. Syn. p.* 295. *Fr. Syst. Myc. v. 1. p.* 214. *Purt. v. 2* § 3. *n.* 930.

Fir plantations and grassy places. Rare. Earlham. *Sowerby. Oversley. Purton. Glasgow. Klotzsch, in Hook. Herb.*—"Smell like that of radishes. *Pileus* 2—3 inches broad, fibrillose under a lens, brittle, margin thin. *Gills* rounded, subadnate, distinct, 3—5 lines broad. *Stem* 3—4 inches high, subfibrillose, in full grown specimens ferruginous at the base." *Fr. l. c.* According to Purton the whole turns in drying to a blood-red or brick-colour, like *A. sanguineus*; and this is the case in a small specimen marked by him in Dr. Hooker's Herbarium. The appearance at the base is precisely that which would be produced by particles of brick-dust adhering to it. Klotzsch's specimens, however, have not the least tinge of red.

Subgenus 18. INOLOMA; (from *v*, a fibre, and *λομα*, a fringe.)  
*Veil fugacious, marginal, consisting of free, arachnoid threads. Stem solid, bulbous, fibrillose, more or less diffused into the pileus, fleshy. Pileus fleshy, convex when young, then expanded, fibrillose or viscid, regular. Substance juicy. Gills emarginato-adnexed, broad, changing colour. Colour of the pileus or gills violet.—Large autumnal fungi, growing on the ground.*

\* *Pileus dry.*

227. *A. violaceus*, Linn. (*violet Agaric*); obscure violet, pileus villososquamose, gills distant connected, stem spongy within, cinereous tinged with violet. *Linn. Succ. p.* 448. *Bolt. t.* 52. *Pers. Syn. p.* 277. *With. v. 4. p.* 193 (*in part*). *Purt. v. 3. n.* 928 (*in part*). *Fr. Syst. Myc. v. 1. p.* 217. *Roques, Hist. des Champ. t. 17. f.* 1.—*A. hercynicus*, *Pers. Syn. p.* 278.—*A. arancosus*, *Bull. t.* 250, 598. *f.* 2. *A.*

Woods and Pine-groves. Aug.—Oct. Not common. On mounds of compost. *Purton. Near Kinnordy. Klotzsch, in Hook. Herb.*—"Large, handsome. *Pileus* 3—6 inches broad, obtuse, expanded. *Gills*, when young deep violet, almost black. *Stem* 4 inches high, when young subtomentose." *Fr. l. c.* If attention be paid to the sporules and arachnoid veil, there will be no danger of confounding this with any of the varieties of *A. personatus*. It is eatable, according to M. Roques.

228. *A. spiloméus*, Fr. (*spotty-stemmed Agaric*); pileus umbonate nearly smooth brownish-pallid, gills close violet at length cinnamon, stem attenuated variegated with tawny scales. *Fr. Syst. Myc. v. 1. p.* 220.—*A. arancosus*, *Sow. t.* 384. *f.* 1.

Mossy Fir-woods. Aug.—Sept. Rare.—"*Pileus* 1 inch broad, slightly fleshy, colour various, when young whitish, then ferruginous tinged with fuscous, yellowish when dry. *Gills* violet, then lilac, at length cinnamon. *Stem* 2—4 inches high, 2—3 lines thick, white, tinged with violet. *Fr. l. c.* Fries himself suspects this to be only a variety of the following species, and it seems to have no really distinctive character; but as I have not met with it, I follow Fries in leaving it open to further investigation.

229. *A. anómalus*, Fr. (*variable violet Agaric*); pileus carnose obtuse nearly smooth, gills close at first bluish-purple, stem slender squamulose thickened at the base. *Fr. Syst. Myc. v. 1. p. 220.*—*A. araneosus*, *Bull. t. 431. f. 4, 5. t. 544. f. 1. With. v. 4. p. 187. Purton. v. 2 & 3. n. 926.*

Woods. Aug.—Oct. Probably not uncommon. Beech-woods, at King's Cliffe, Norths., very abundant. *Rev. M. J. Berkeley.*—“*Pileus* 1—2 inches broad, very obtuse, sometimes broadly but very flatly umbonate, tinged at first with violet, minutely silky so as to present a white satiny appearance, gradually changing to ochraceous or slightly tawny; flesh thick, except at the extreme margin, which has often traces of the arachnoid veil dusted with the sporules. *Gills* close, rounded behind, at first violet, at length pale ferruginous. *Stem* 2½ inches high, ⅔ of an inch thick, in the middle subbulbous, more or less tinged with violet, solid, fibrillose with more or less distinct transverse closely-pressed brownish scales, which originate in the veil: the top is adorned with the descending fibres of the veil, which form a spurious ring dusted with the sporules, and beneath this there is sometimes another red circle which is the true ring.—The above description belongs to *var. γ tabularis* of Fries, (*A. araneosus*, *Bull. t. 431. f. 5.*) and of this variety there are many aspects. As I have not found all the different states described by Fries, and it being impossible to refer the synonyms of Withering and Purton accurately to them, I have given the specific character of Fries under a slightly altered form, and have referred all Bulliard's figures to it.

\*\* *Pileus smooth, viscid when moist.*

230. *A. scaurus*, Fr. (*olive-gilled Agaric*); pileus equal viscid, gills close olive shaded with purple, stem attenuated bulbous. *Fr. Syst. Myc. v. 1. p. 223.*—*A. fulvo-fuliginosus*, & *subsimitis*, *Pers. Syn. p. 284.*—*A. orichalceus*, *Batsch, Cont. 2. f. 184.*—*A. defossus*, *Batsch, Cont. 1. f. 73.*—*A. glaucopus*, *var. b. With. v. 4. p. 191. (excl. syn. Scheff.)*

Woods. June—Oct. Packington Park, Warw. *Withering.*—Glasgow, *Klotzsch, in Hook. Herb.*—“Soft, insipid. *Pileus* 2—3 inches broad, sometimes depressed. *Gills* rather thin, at length cinnamon. *Stem* about 3 inches high, fibrillose, sometimes marginatobulbous, sometimes when growing amongst moss nearly equal.” *Fr. l.c.*

231. *A. callochrous*, *Pers. (violet-gilled Agaric)*; pileus equal even viscid, gills close violet-purple, stem bulbous at first violet then dirty-white. *Fr. Syst. Myc. v. 1. p. 224.*—a. flesh when broken and the rather slender stem purplish-violet.—*A. subpurpurascens*, *Batsch, Cont. 1. f. 74. With. v. 4. p. 190.*—b. flesh and stem dirty-white.—*A. callochrous & decolorans*, *Pers. Syn. p. 282, 283.*

Woods and pastures. Aug.—Oct. a. Edgebaston. *Withering.*—Helensburgh, *Klotzsch, in Hook. Herb.*—b. Collyweston, Norths. *Rev. M. J. Berkeley.*—*Pileus* 3—4 inches broad, truly carnose, viscid when moist, nearly smooth with a satiny lustre, olivaceous-tawny when young, tawny when full-grown; *flesh* tinged with yellow, and when



young, very dilute violet. *Veil* arachnoid, the threads arising partly from the apex, partly from the middle of the stem. *Gills* close, thin, emarginate, serrulate, at first bright violet, then ferruginous with a dilute violet tinge; not at all olivaceous. *Sporules* elliptic. *Stem* 1—3 inches high, 1 inch thick, fibrillose, the fibrillæ above copious and densely dusted with the sporules, bulbous, violet towards the gills, the rest whitish, when young very shaggy at the base.—The plant described above seems to be the *var. b.* of Fries. The taste is astringent and the odour nauseous like that of *A. radicosus*, whereas Fries describes his species as inodorous and insipid. The bright violet of the gills is not very persistent, but this may be owing to the dryness of the summer in which it occurred.

232. *A. glaucopus*, Schæff. (*blue-stemmed Agaric*); compact, pileus subolivaceous with a sooty tinge viscid when young at length undulated irregular, gills bluish-clay colour, stem thick blue. *Schæff. t.* 53. *With. v.* 4. *p.* 190. *Sow. t.* 223. *Pers. Syn. p.* 282. *Fr. Syst. Myc. v.* 1. *p.* 225. *Greav. Fl. Ed. p.* 386.—*A. araneosus*, *Bull. t.* 96. *Purt. v.* 3. *p.* 204. *var. 2.*

Woods. Autumn. Not uncommon.—Tufted, irregular. Whole plant when cut or bruised of a beautiful violet. *Pileus* 3 inches broad, at first viscid dirty umber-tawny and brown, then tawny with a very faint tinge of purple, expanded, shining, minutely fibrillose, the fibrillæ quite adpressed. *Gills* very broad, at first violet then cinnamon, emarginate, distant. *Stem* 1½ inch high, ½—1 inch thick, composed of fibres, bulbous, at first tinged with violet, nearly smooth except towards the bulb where are a few fibrillæ dusted with the sporules.

233. *A. varius*, Schæff. (*variable bulbous-stemmed Agaric*); firm, pileus dull-yellow subsquamose viscid when moist, gills close serrated whitish tinged with blue, stem attenuate white. *Schæff. t.* 42. *Fr. Syst. Myc. v.* 1. *p.* 225.—*A. turbinatus*, *Sow. t.* 102—*A. pachypus*, *Holmsk. v.* 2. *t.* 39.

Woods. Sept.—Nov. Nork Park, Surrey. *Sowerby*.—*Taste* and smell, according to Sowerby, unpleasant, causing a bitterness in the throat. "Very variable in size, but nearly constant in colour. Differs from the two last in never having a blue tint on the stem. *Gills* when young, pale, (purplish, the margin yellow, *Schæff.*) at length dilute, of a clay colour inclining to cinnamon. Stem short or elongated, marginato-bulbous or nearly equal, even or scaly." *Fr. l. c.*

Subgenus 19. DERMOCYBE; (from *δέρμα*, skin or membrane, and *κεφαλή*, a head.) *Veil* dry, arachnoid, very fugacious. *Stem* not truly bulbous fibrillose, stuffed when young. *Pileus* clothed with fibrillæ, rarely with gluten. *Gills* unequal, rather broad, close.

\* *Pileus* innato-squamulose or fibrillose. *Stem* paler, or of the same colour as the pileus.

234. *A. sanguineus*, Wulf. (*blood-coloured Agaric*); pileus slightly fleshy subsquamulose dark blood-coloured as well as the slender equal stem, gills fixed darker. *Wulf. in Jacq. Coll. 2. p.* 107. *t.* 15. *f.* 3. *Sow. t.* 43. *Pers. Syn. p.* 289. *Fr. Syst. Myc. v.* 1. *p.* 229.—*A. rubens*, *Bolt. t.* 36.

Beech and Fir-woods.—“*Pileus* about 1 inch broad, convex. *Gills* sometimes adnate, sometimes emarginate. *Stem* stuffed, then hollow.” *Fr. l. c.* Dry specimens retain their colour many years. Those in Sowerby’s collection are still of a dark blood red.

235. *A. cinnamomeus*, Linn. (*cinnamon Agaric*); pileus slightly fleshy obtusely umbonate silky cinnamon, gills close fixed, stem slender equal yellowish. *Lin. Fl. Suec. n.* 1205. *Bolt. t.* 150. *With. v.* 4. *p.* 231. *Sow. t.* 205 (marked 206.) *Pers. Syn. p.* 297. *Purt. v.* 3. *n.* 1461. *Fr. Syst. Myc. v.* 1. *p.* 229. *Greav. Fl. Ed. p.* 386.—*A. fusco-flavus*, *With. v.* 4. *p.* 225.

Woods. Autumn. Frequent in Scotland, more rare in the South of England.—“*Pileus* 1—2½ inches broad, convex or even obtusely conical when young, becoming nearly plane, obtusely umbonate, deep reddish-cinnamon, often cracking at the margin which is thin and sometimes fibrillose, smooth, somewhat fleshy. *Flesh* yellowish. *Gills* numerous, adnate, yellow-cinnamon, broad, margin often notched. *Stem* 2—3 inches high, 2—4 lines thick, equal, fibrillose, yellow, solid, hollow in old (?) large plants.” *Greav. l. c.*

236. *A. raphanoïdes*, Pers. (*radish-scented Agaric*); subolivaceous, pileus slightly fleshy obtusely umbonate silky, gills fixed not close, stem stuffed thickened downwards. *Pers. Syn. p.* 324. *Fr. Syst. Myc. v.* 1. *p.* 230.—*Fungus odore*, &c. *Mich. p.* 179. *t.* 75. *f.* 2.

Beech and Fir-woods. July—Oct. Highland woods. *Klotzsch, in Hook. Herb.*—“Allied to the last. *Pileus* 2 inches broad, when moist brownish-olive, when dry yellowish-olive, convex at first, then expanded. *Gills* broad, darker, adnate or emarginate. *Stem* 3 inches high, 4 lines thick, subsascending, fibrillose, villous at the base.” *Fr. l. c.*

237. *A. iliopódus*, Bull. (*sharp-bossed Agaric*); cinnamon turning pale, subcarnose, at length umbonate, gills broad adnate, stem equal slender.—*A. iliopodius*, *Bull. t.* 586 (*in part.*) *Fr. Syst. Myc. v.* 1. *p.* 231.

Woods. July—Nov. Scotland. *Klotzsch, in Hook. Herb. Canterbury. Rev. M. J. Berkeley.*—*Pileus* ¾ of an inch broad, at first conic, with the silky veil attached to the margin, then convex, rather acutely umbonate, the umbo cinnamon, then brownish changing to ochraceous, subcarnose, silky especially on the margin which is pellucid when moist. *Gills* at first pale, changing to dark-cinnamon. *Stem* 2 inches or more high, scarce 1 line thick, rufescent, pruinose or sericeo-squamulose, moderately tough, at length hollow.—My specimens described above are smaller than the more usual state, approaching in this respect *A. Cucumis*, now removed to the tribe *Galera*. *Taste* not acrid. *Gills* moderately broad. According to Fries, the pileus is from ½—1 inch broad. *Stem* 2—4 inches high. *Taste* approaching that of radishes.

\*\* *Stem white.*

238. *A. Armeniacus*, Schoeff. (*apricot Agaric*); pileus subcarnose, at length obtusely umbonate tawny-cinnamon turning

pale, gills close cinnamon, stem stuffed white attenuated upwards. *Schæff. t.* 81. *Pers. Syn. p.* 299. *Fr. Syst. Myc. v. 1. p.* 234.—*A. helvohus, Bull. t.* 531.—b. pileus bay, ferruginous, &c.—*A. castaneus, Bolt. t.* 10.

Woods. July—Nov. Ovenden near Halifax. *Bolton*.—"Pileus 2—4 inches broad, campanulate soon convex, expanded, sometimes acutely umbonate, margin thin, patent, moist, not viscid; when dry tan, inclining to light red. Gills distinct, 2—3 lines broad, when young watery-cinnamon. Stem 2—3 inches high, 2 lines—2 inches thick, rather soft, sometimes violet above, conic or subequal; veil rather woven." *Fr. l. c.*

239. *A. castaneus, Bull. (chestnut Agaric)*; pileus subcar-nose convex at length obtusely umbonate chestnut or dirty-violet, gills fixed close at first violet or purplish-umber, then reddish, stem short firm. *Bull. t.* 268. 527. *f.* 2. *Pers. Syn. p.* 298. *Fr. Syst. Myc. v. 1. p.* 235. *Roques, Hist. des Champ. p.* 118.—*A. leucopesus, Holmsk. v. 2. t.* 37.

Woods. July—Nov. Probably not uncommon. Canterbury. *Rev. M. J. Berkeley*.—Gregarious. Pileus 1 inch or more broad, subcar-nose, at first obtuse with a delicate fibrillose veil which makes the margin appear silvery, dark-bay or dirty-violet, sometimes with a tawny tint, soon expanded, broadly umbonate; umbo more or less obtuse. Gills of the colour of the pileus, or purplish-umber, at length subferruginous, ventricose, adnate. Stem  $1\frac{1}{2}$  inch high, 2 lines thick, beautifully fibrillose and white from the veil beneath, much paler than the pileus, but with more or less of the same tint, sometimes tinged with violet. Odour none; taste like that of *A. oreades*. Eatable. When growing on wood it is conical and more tawny.

\*\*\* Gills free.

240. *A. livido-ochraceus, Berk. (livid-ochraceous Agaric)*; pileus quite smooth livid-ochraceous, gills free, stem attenuated downwards hollow stuffed with cottony fibres.

On the ground in a wood thinly covered with leaves. Aug. King's Cliffe, Norths. *Rev. M. J. Berkeley*.—Pileus 1 inch broad, quite smooth, shining, covered with a thick subcartilaginous skin, the margin very thin but not striate, plane, livid-ochraceous; edge with a few indistinct fragments of the veil. Gills cinnamon, the extreme margin pale, moderately distant, broad in front, appearing as if adnexed, but the tooth does not properly belong to the gills, but to the stem, and is a small plate inserted between the two laminae of the gills. Sporules elliptic. Stem 1 inch high,  $\frac{3}{8}$  thick in the middle where it is swollen, attenuated below, silky, of a beautiful violet, ochraceous at the base; subsquamose, the portion above the obsolete ring striate, stuffed with cottony fibres. Inodorous; taste like that of *A. campestris*.

SERIES IV. DERMISUS; (from  $\delta\epsilon\rho\mu\alpha$ , skin or membrane.)

Veil not arachnoid. Sporules ferruginous.

Subgenus 20. PHOLIOTA; (from  $\varphi\omicron\lambda\iota\tau\acute{\iota}$ , a scale.) Veil dry,

forming a ring which is sometimes membranaceous, sometimes radiato-floccose. Stem more or less scaly. Pileus convex at length more or less plane, not umbilicate. Gills unequal, juiceless, changing colour. Sporules ferruginous or fulvo-ferruginous.

241. *A. aureus*, Bull. (*golden Agaric*); tawny, pileus fleshy, scales few pilose, gills adnexed, stem stuffed, ring small. *Bull. t. 92. Sow. t. 77. With. v. 4, p. 158. Pers. Syn. p. 269. Purt. v. 3. n. 1442. Fr. Syst. Myc. v. 1. p. 241.*

On stumps of fir, hawthorn, alder, &c. Sept.—Oct. Common.—Gregarious, tufted. Pileus 4 inches or more broad, convexo-expanded, rich tawny with broad adpressed silky scales in the centre, which towards the margin become mere streaks, fleshy; *flesh* pale yellow. Gills at length tawny-ferruginous from the sporules, adnexed, rounded behind or decurrent in the same group. Sporules elliptic, tawny-ferruginous. Stem 4 inches high, 1 inch or more thick, solid, tough and spongy, the centre a little looser, thickened downwards and bulbous, furnished with a small deflexed, rather thick ring near the top, which is densely powdered with the sporules; under the gills minutely squamulose, below fibrillose, the fibrillæ close, paler than the pileus, rhubarb-coloured within. Root consisting of a few downy fibres. Taste bitter.—Sometimes the pileus is dull, the scales not adpressed; the stem fibrilloso-squamulose below, pulverulent above the ring; and upon the same stump, specimens occur with a shining pileus clothed with adpressed scales.

242. *A. caperátus*, Pers. (*wrinkled Agaric*); pileus lacunose lemon-coloured, disk uniform sprinkled with whitish down squamulose towards the margin, stem solid white squamulose above the reflexed ring. *Pers. Syn. p. 273. Fl. Dan. t. 1675. Fr. Syst. Myc. v. 1. p. 241.—b. pale. A. pudicus, Bull. t. 597. f. 2.*

b. On an Elder stump near the barracks, Canterbury. At the foot of an ash. Nassington, Norths. Aug.—Oct.—Pileus 3 inches or more broad, quite smooth; margin pitted, white with a slight tinge of umber, fleshy, especially in the centre, firm and tough. Gills broad, slightly rounded behind, adnate, dirty-white clouded with the sporules. Sporules oval, dirty-ferruginous. Ring persistent, deflexed, membranous. Stem white, fibrillose, subhorizontal, the fibrillæ sometimes assuming the form of fibrous squamulæ, tough, equal, brown within towards the base, solid. Taste pleasant. My specimens are quite smooth, like those described by Persoon.

243. *A. radicósus*, Bull. (*rooting slimy Agaric*); pileus carnose smooth pallid, stem solid clothed with transverse scales, incrassated and rooting at the base. *Bull. t. 160. Pers. Syn. p. 266. Fr. Syst. Myc. v. 1. p. 242.*

Woods. Aug.—Oct. Probably not uncommon. Lytchett, Dors. Fineshade, King's Cliffe, Norths.—Tufted. Pileus convex, 3 inches or more broad, fleshy, the whole covered at first with a slimy web which leaves behind broad adpressed scales on the stem and pileus; besides these there are many fine close silky scales, pallid-ochre, margin downy involute. Gills incarnato-ferruginous, pale, adnate,

(scarcely rounded in my specimens) nearly horizontal, minutely serrulate. *Sporules* oval, incarnato-ferruginous. *Stem* 4 inches high, 1 inch thick, deeply rooting, firm, solid, white within; *ring* thick, suberect, beneath the slimy coat silky and furfuraceous; above the ring pruinose. *Odour* resembling that of prussic acid. *Taste* at first pleasant, but soon disagreeable.—A very distinct and remarkable species, perhaps more properly belonging to the subgenus *Myxaciium*. The length of the stem in my specimens is much greater than in those figured by Bulliard, and the gills are not rounded. The Northamptonshire specimens resemble his figure more than those from Dorsetshire; the stem being bulbous and the scales more squarrose. This latter point depends in great measure upon the quantity of the slimy coating left upon the stem, when the pileus separates from the ring; the squarrose scales being seated beneath it.

244. *A. aurivellus*, Batsch, (*golden-fleccc Agaric*); compact, pileus dull-yellow clothed with scattered adpressed scales, gills rounded, stem solid fibrillose rooting. *Batsch, Cont. 1. f. 115. Fr. Syst. Myc. v. 1. p. 242. Klotzsch, Fung. Germ. exs. n. 19. —A. filamentosus, Schæff. t. 209.—A. villosus, Bolt. t. 42.—A. pilosus, var. 2. With. v. 4. p. 161.—A. squarrosus, var. Pers. Syn. p. 268.—β. heteroclitus, excentric.—A. aurantio-ferrugineus, With. v. 4. p. 265. Fr. Ind. Alph. p. 8.*

Trunks of trees, especially birch and willow. Oct.—Nov. Near Halifax. *Bolton. Woolhope, Herefordshire. Mr. Stackhouse.*—“Generally solitary. *Pileus* when young hemispherical, 2—3 inches broad, at length expanded, 4 inches or more; pallid, yellowish or tawny. *Gills* fixed, very broad, plane, pallid-olive, at length ferruginous. *Stem* hard, abrupt, various in length, incurved, subbulbous, whitish, within rhubarb-coloured at the base, veiled at the very apex.” *Fr. l. c.* Mr. Stackhouse considers Bolton’s plant a variety of *A. pilosus*, *Schæff.* It is introduced here as *A. aurivellus*, on the authority of M. Fries, who, however, pronounces the figure bad.

245. *A. adiposus*, Batsch, (*viscid tawny Agaric*); caespitose, pileus fleshy viscid dull-yellow clothed with concentric ferruginous scales, gills at first yellow, stem squarrose thickened at the base. *Fr. Syst. Myc. v. 1. p. 242.—A. squarrosus, adiposus & imbricatus, Batsch, f. 31, 113, 114.*

Old stumps. Biggen, Norths. Oct. 2. On ash. A single young specimen. *Rev. M. J. Berkeley.*—Pileus convex, firm, fleshy, the margin thin, of a beautiful tawny, very viscid, smooth and shining with a few superficial darker scales; remains of the woven ring attached to the margin. *Gills* broad, rounded behind, and adnate with a tooth, ferruginous; edge white. *Stem* equal, scarcely incrassated at the base, solid, firm, brown below, yellowish above with tawny adpressed scales, near the apex whiter and more silky.

246. *A. squarrosus*, Müll. (*squarrose Agaric*); caespitose, pileus fleshy dry bright ferruginous-saffron, scales close revolute, gills pallid-olive then ferruginous, stem squarrose attenuated below. *Fl. Dan. t. 491. Pers. Syn. p. 268. Fr. Syst. Myc. v. 1. p. 243.—A. floccosus, Schæff. t. 61. Curt. Lond. t. 264.*

*Sow. t.* 284. *Purt. v.* 2 & 3. *n.* 949. *Grev. Scot. Crypt. Fl. t.* 2. *Fl. Ed. p.* 387.—*A. squamosus*, *Bull. t.* 266. *Purt. v.* 2 & 3. *n.* 924.—*A. floccosus*, *pilosus*. *With.*

On trees. Aug.—Dec. Not uncommon. Densely tufted.—*Pileus* 2—5 inches broad, firm, convex, expanded, obtusely umbonate, yellow clothed with rich brown scales; *flesh* yellow near the surface. *Gills* at first yellowish, then pale olive changing to ferruginous, broad rounded behind and adnate or subdecurrent. *Stem* 3—7 inches high,  $\frac{1}{2}$ —1 inch thick, at first pale then croceo-ferruginous, solid, pithy in the centre, equal or attenuated at the base from the tufted mode of growth, fibrillose and squarrose with reflexed scales; above the ring very pale yellow and smooth. *Ring* near the apex radiato-floccose, rich brown inclining to orange. *Odour* disagreeable.—This species differs so much in colour and degree of scabiness, that it is difficult sometimes to recognise it. The gills too vary as in *A. aureus*. I have found it on apple-trees, quite pale, destitute of an umbo, clothed with only a few scattered scales, the gills emarginate; and the stem not at all attenuated at the base. Another state occurs in which the pileus is between grey and ochraceous or yellow, minutely scaly and subviscose, the gills quite yellow at first, and the stem with a few minute, reflexed scales. The quotation by the Editor of the last edition of *Withering*, of *A. pilosus*, *Huds.*, is only equalled by his considering *A. bulbosus*, *Sow.* the same as *A. phalloides*.

247. *A. flammans*, *Batsch*, (*rhubarb-Agaric*); cæspitose, pileus fleshy dry dull-yellow, scales scattered pilose, gills at first yellow, stem equal squarrose. *Batsch, El. f.* 30. *Fr. Syst. Myc. v.* 1. *p.* 244.—*A. rheoides*, *With. v.* 4. *p.* 197.—*A. rhabarbarinus*, *Pers. Syn. p.* 271.

On stumps of hawthorn, alder, pine, &c. Sept.—Oct. Edgebaston. *Curdworth*, *Warw. Withering*. *Inverary*, *Dugaldstone*, &c. *Klotzsch, in Hook. Herb.*—“*Taste* bitter. Smaller than the last, more elegant. *Pileus*  $1\frac{1}{2}$ —3 inches broad, margin at first inflexed then repand; scales concentric, yellow, scarcely innate. *Gills* rather thin, close, adnate, without a tooth, at length ferruginous. *Stem* 3 inches high, 2—3 lines thick, stuffed, at length hollow, yellow; *ring* entire, close to the gills.” *Fr. l. c.*—A most elegant species, retaining its characters admirably when dried.—*A. luteus*, *Bolt.* is considered by *Fries* the same as his *A. muricatus*; but it seems to me to be either the yellow state of *A. cepæstipes* or some nearly allied species, consequently it is omitted here.

248. *A. mutabilis*, *Schæff.* (*changeable stump Agaric*); pileus slightly fleshy smooth cinnamon turning pallid, gills subdecurrent close pale ferruginous, stem slender fistulose scaly. *Schæff. t.* 9. *With. v.* 4. *p.* 252. *Fr. Syst. Myc. v.* 1. *p.* 245.—*A. xylophilus*, *Bull. t.* 530. *f.* 2. *Purt. v.* 2 & 3. *n.* 944.—*A. annularis*, *Bull. t.* 543. *f.* O. *P.*—*A. caudicinus*, *Tratt. Essb. Schw. t. E. Fung. Aust. f.* 14.—*b.* stem fibrillose.—*A. marginatus*, *mutabilis*, *Batsch, f.* 207, 208.

On stumps, &c. May—Nov. Not common. *a.* Edgebaston. *Withering*. *Oversley*. *Purton*. *Loch Laggan*, *Inverary*, *Klotzsch, in Hook. Herb.* *Laxton*, *Norths. Rev. M. J. Berkeley.*—*b.* Biggen.

Cotterstock, Norths.—Very variable in size; fasciculate. *Pileus* expanded, obtuse, cinnamon, becoming pale when dry; centre of the pileus at length bright tawny, quite smooth, the margin thin transparent; flesh white. *Gills* broad, rounded behind or subdecurrent, pale umber. *Stem* slender, fistulose, dark-brown, smooth above or minutely pulverulent and pale, below squamulose; *ring* woven, suberect. In the variety, which is eatable according to Trattinnick, the stem is attenuated upwards, fibrillose below the ring, furfuraceous above it: ring sometimes deflexed and striate. *A. xylophilus*, Sow. and *A. mutabilis*, Grev., I am inclined to think are *A. furfuraceus*.

Subgenus 21. MYXACIUM; (from *μυζα*, slime.) *Veil universal, viscid, fugacious. Stem stuffid, stout, long, equal, soft, clothed with the viscid veil, which breaks up into transverse floccoso-gelatinous scales. Pileus smooth, viscid. Gills easily starting away from the stem, subdecurrent, rather thick, at length obscurely ferruginous.—Large solitary fungi, growing on the ground.*

249. *A. collinatus*, Sow. (*slime-coated Agaric*); pileus fleshy even orange-tawny, gills purplish then ferruginous or cinnamon, stem broken transversely into bluish gelatinous scales. *Sow. t. 9. With. v. 4. p. 207. Part. v. 3. n. 1428. Pers. Syn. p. 281. Fr. Syst. Myc. v. 1. p. 248.—A. mucosus, Bull. t. 596. f. 1. t. 549. A. B. C.—A. senescens, Batsch, f. 197.—β. mucosus, stouter, gills dirty-white then ferruginous, stem firm even white somewhat silky. Bull. t. 549. D. J. F.*

Woods. July—Nov.—*Gills* and *stem* sometimes purplish, sometimes without any purple tint, except when very young. *Pileus* 3 inches broad, expanded, very slimy, shining when dry, tawny-ochraceous; margin thin. *Gills* broad, ventricose, rounded behind and adnate with a tooth connected by veins, distant. *Sporules* ferruginous. *Stem* 4 inches high,  $\frac{3}{4}$  of an inch thick, solid, white within except at the base, which is rhubarb-coloured; without covered below with a white silky slimy coat broken transversely into scales, beneath which it is rhubarb-coloured; fibrillose above the obsolete ring.

250. *A. elatus*, Batsch, (*tall slimy Agaric*); pileus subcarnose plicato-rugose dirty-ochre, gills brownish-ferruginous, stem very long clothed with white scales. *Batsch, Cont. 2. f. 188. Pers. Syn. p. 332. Fr. Syst. Myc. v. 1. p. 248.*

Woods. Aug.—Nov. Probably not uncommon. King's Cliffe, Norths. *Rev. M. J. Berkeley.*—*Pileus* 4 inches broad, dirty-ochre or livid-yellow, viscid when moist, thick in the centre, margin very thin, deeply plicate. *Gills*  $\frac{3}{4}$  of an inch broad, dirty-ferruginous, connected and traversed by veins, thick, rather distant, adnate, ventricose. *Stem* 5 inches high, 1 inch thick, attenuated at both ends, quite smooth below for two inches as if varnished, white with a slight tinge of violet, above rough with adpressed squamule. Sometimes the stem is of a delicate violet, quite smooth up to the ring, above fibrillose.

Subgenus 22. HEBELOMA; (from *ηβη*, down, and *λωμα*, a fringe.) *Veil marginal, floccose, dry, thin fugacious (sometimes*

quite obsolete as in some *Tricholomata*). *Stem fibroso-squamose. Pileus fleshy, convex then plane, smooth, even, viscid when moist. Gills emarginate or rounded, close, watery, cinnamon. Sporules ferrugineo-argillaceous, rather pale.*—Growing on the ground, *fatid, poisonous.*

251. *A. fastibilis*, Pers. (*strong-scented Agaric*); strong-scented, pileus subrepand opaque, stem white squamulose, sporules subargillaceous. *Pers. Syn. p. 326. Fr. Syst. Myc. v. 1. p. 249. Pers. Myc. Eur. v. 1. p. 172.*—*A. gilvus*, Schæff. t. 221.—*A. crustuliniformis*, Bull. t. 308, 546. *Sibth. Fl. Ox. p. 348. With. v. p. 211.*—*A. laterinus, subtetaceus, clavus, Batsch, f. 195, 198, 199.*—*A. graveolens, Sow. t. 281.*

Woods, pastures, &c. July—Oct. Every where.—Densely gregarious or solitary. *Pileus 1—3 inches broad, viscid; moist or dry, very fleshy, though sometimes only subcarinose, subhemispherical, sometimes rugosoplicate, in large specimens ochraceous with a rufous tinge, the margin pale, involute and downy. Gills broad, the edges often lachrymose, ventricose, adnexed, emarginate or adnate rather irregular, subargillaceous or cinnamon. Sporules elliptic. Stem 2—4½ inches high, 2 lines—1 inch thick, subbulbous or nearly equal, somewhat rooting, clothed with scattered fibrillose scales, especially towards the apex, often twisted, at length hollow. Odour disagreeable, somewhat resembling that of the flowers of Prunus Lauro-cerasus, or Sida pulchella.*—A most abundant and variable species, in general easily recognised by its peculiar odour, but specimens occur sometimes quite scentless. *A. gilvus*, Schæff. is represented as having a veil, and it is so described by Fries; but I have never been able to detect any in the earliest stage of growth, nor is there the slightest trace of any in Bulliard's excellent figures. His account of its mode of growth is admirable:—"Nothing," he says, "can be more curious than the manner in which this Agaric is disseminated on the ground; sometimes round the foot of a tree, but at the distance of 8 or 10 feet; sometimes in the middle of a pasture; sometimes in the centre of a forest you fall in with prodigious colonies forming very regular rings of greater or less size, or, as it were, undulating paths two or three hundred feet in length and one in breadth, in which they grow five or six deep and so close together that though thousands are visible, you cannot see a single stem."—*A. crustuliniformis*, Purt. seems to belong to *A. mutabilis*.

Subgenus 23. FLAMMULA; (from *flammula*, a little flame, in allusion to the more or less yellow colour of the species.) *Veil marginal, fibrillose, very fugacious, not glutinous. Stem stuffed when young, at length generally hollow, not bulbous, firm, fibrillose. Pileus fleshy, convexo-expanded, even, generally smooth, dry or viscid. Flesh not thick but firm. Gills not emarginate.*—*Gregarious, firm, subcæspitose, rather bitter, yellowish fungi.*

252. *A. flavidus*, Schæff. (*dirty-yellow Agaric*); cæspitose, pileus even dirty-yellow, gills adnate yellow then ferruginous, stem fibrillose. *Schæff. t. 35. With. v. 4. p. 193. Pers. Syn.*



p. 295. *Fr. Syst. Myc. v. 1. p. 250.*—*A. testaceus*, *Huds. Fl. Ang. p. 615.* (not of *With.*)—*A. lignatilis*, *Bull. t. 554. f. 1.*

Trunks of trees, especially of pine. Aug.—Nov. Packington Park, Warw. *Withering.*—“Very various in size. *Pileus* obtuse, 1—2 inches or more broad, never viscid, when moist dirty-yellow. *Gills* obtusely adnate. *Veil* web-like, sometimes forming a ring. *Stem* stuffed, sometimes hollow, ferruginous at the base, sometimes attenuated.” *Fr. l. c.*

253. *A. inopus*, *Fr. (brown-yellow Agaric)*; subcæspitose, pileus even smooth yellowish, gills fixed yellow, stem stuffed fibrillose pallid. *Fr. Syst. Myc. v. 1. p. 252.*—*A. radicato-ramosus*, *Bolt. t. 148.*—*A. connatus*, *With. v. 4. p. 194.*

Plantations. Autumn. Fixby, Darlington. *Bolton.* Packington. *Withering.*—*Pileus*  $\frac{1}{2}$ —2 inches broad. *Veil* fugacious. *Stem* 3 inches high,  $\frac{1}{4}$  an inch thick.

254. *A. sapineus*, *Fr. (fir Agaric)*; pileus carnose yellowish, gills fixed dirty-white inclining to yellow, here and there tawny-cinnamon, stem subsolid striate pale. *Fr. Syst. Myc. v. 1. p. 239.* *El. 1. p. 31.*— $\beta$ . *hybridus*; pileus convex moist orange or tawny, gills dull-yellow, stem more or less hollow. *A. hybridus*, *Sow. t. 221.* *Hook. in Fl. Lond. cum ic.*

Epping Forest. Sept.—Oct. *Sowerby.*—*A. flavidus*, *Sow. t. 266*, is also, according to Fries in his *Ind. Alph.*, a variety of this species.

255. *A. lentus*, *Pers. (tough Agaric)*; dirty-white, pileus even viscid, gills adnate, stem stuffed scaly. *Pers. Syn. p. 287.* *Fr. Syst. Myc. v. 1. p. 253.*

On the ground, branches, &c. Sept.—Nov. Scotland. *Klotzsch, in Hook. Herb.*—“Gregarious, subcæspitose. *Pileus* 2—3 inches broad, plane, obtuse, very glutinous in wet weather, varying with a yellowish or pallid-livid hue. *Stem* 2—3 inches high, at length hollow.” *Fr. l. c.*

Subgenus 24. INOCYBE; (from *v*, a fibre, and *zōβη*, a head.)  
*Veil* very fugacious, arising from the fibrillæ of the pileus. *Stem* solid, rarely hollow, subequal, firm, clothed with small scales or fibrillæ, distinct from the pileus. *Pileus* more or less fleshy, campanulate, then convex, at length expanded, subumbonate, dry, firm, silky or scaly from the longitudinal innate fibrillæ. *Gills* properly free, but often adnixed from the altered form of the pileus, close, ventricose, dirty-white often changing colour, often denticulate or with the margin of a different colour.—Middle-sized or small fungi, growing on the ground.

256. *A. fibrósus*, *Sow. (fibrous Agaric)*; pileus slightly fleshy even yellowish, margin cracked flexuous, gills free, stem long solid fibroso-squamose above. *Sow. t. 414.*—*A. repandus*, *Fr. Syst. Myc. v. 1. p. 255.* *Ind. Alph. p. 19.*

Pine-woods. July—Sept. Keynston, Dors. *Miss Rackett.*—“*Pileus* 3 inches broad, fleshy especially in the disk, campanulate, irregular, longitudinally rimose, silky, dingy. *Gills* semilanceolate, 2—3 lines

broad, pallid. *Stem* 2 inches or more high, 3 lines thick, equal, striate, dirty-white. *Odour* nauseous." *Fr. l. c.*

257. *A. pyriodorus*, Pers. (*pear-scented Agaric*); pileus fleshy umbonate fibrillose subsquamose pallid, gills adnexed, stem fibrous. *Pers. Syn. p.* 300. *Fr. Syst. Myc. v. 1. p.* 255. —*A. furfuraceus*, Bull. t. 532. f. 1.—*A. pallidus*, Sow. t. 365 (*var.*)

Woods and gardens. Sept.—Oct. Scotland, *Klotzsch, in Hook. Herb. Canterbury. Winkbourn, Notts. Rev. M. J. Berkeley.*—*Pileus* 1½—3 inches broad, broadly and strongly umbonate, the margin at length a little turned up, fibrilloso-squamulose; fleshy, pallid-umber. *Gills* adnexed, ventricose, pale. *Stem* 2—3 inches high, 4 lines thick (solid in my specimens and in Bulliard's figure), fibrillose, white, when bruised somewhat of the same hue as the pileus. *Veil* very fugacious. *Odour* penetrating, like that of rotten pears or *Hyacinthus racemosus*.

258. *A. scaber*, Müll. (*ragged-stemmed Agaric*); pileus carnose obtuse squamose pallid subfuliginous, gills nearly free, stem solid fibrillose. *Fl. Dan. t.* 832. f. 3. *Sow. t.* 207. *Pers. Syn. p.* 301. *Purt. v. 3. n.* 1447. *Fr. Syst. Myc. v. 1. p.* 255. *Grev. Fl. Ed. p.* 388.

Shady woods on the ground. Rare. Oversley and Ragley. *Purton. Foxhall near Edinburgh. Wauch & Greville. Kirriemuir. Klotzsch, in Hook. Herb.*—" *Pileus* ½—1 inch broad, campanulate, subumbonate, dingy greyish-brown, scaly. *Gills* pale dingy-brown, rather numerous, nearly free. *Stem* 1—1½ inch high, 2—3 lines thick, solid, whitish, fibrillose, furnished with a bark-like external coat. Sometimes subgregarious." *Grev. l. c.*

259. *A. relucinus*, Fr. (*fleshy downy Agaric*); pileus fleshy conic expanded squarroso-tomentose dingy as well as the solid fibrillose stem, gills adnate yellowish. *Fr. Syst. Myc. v. 1. p.* 256.

In marshy Fir-woods amongst *Sphagna*. July—Sept. Kinnordy. *Klotzsch, in Hook. Herb.*—" Gregarious. *Pileus* at first conic-obtuse, 4 lines high, then expanded, 1 inch or more broad. *Gills* close, alternate, at length dingy-olive. *Stem* 2 inches high, 2 lines thick." *Fr. l. c.*

260. *A. plumosus*, Bolt. (*feathery Agaric*); pileus subcarnose hemispherical mouse-coloured and squarrose with scales as well as the solid long slender stem, gills nearly free. *Bolt. t.* 33. *With. v. 4. p.* 176. *Pers. Syn. p.* 347. *Fr. Syst. Myc. v. 1. p.* 256.

Woods. Ovenden near Halifax, *Bolton*. Aug.—*Pileus* 1½ inch broad, thickly covered with little downy tufts. *Stem* 4 inches high, 1 line or more thick.

261. *A. lamuginosus*, Bull. (*downy Agaric*); pileus subcarnose hemispherical clothed with downy scales brownish-fawn colour, gills free pallid as well as the solid fibrillose stem. *Bull. t.* 370. *With. v. 4. p.* 212. *Purt. v. 3. n.* 1456. *Fr. Syst. Myc. v. 1.*

p. 257. *El. l. p. 32.*—*Fungus minor*, &c. *Vaill. Par. p. 67. t. 13. f. 4—6.*—*A. cervicolor*, *Pers. Ic. pict. t. 8. f. 4.*

Woods near pathways. July—Sept. Packington. *Withering. Arrow, Oversley. Purton.* Glasgow. *Klotzsch, in Hook. Herb.*—“Inodorous. *Pileus* 1 inch or less broad, campanulato-convex, obtuse then expanded, subumbonate, clothed with close squamulose squarrose down, which at length becomes obsolete and leaves the pileus yellowish. *Flesh* of the pileus and stem dirty-white. *Gills* broad, ventricose, close, pallid at length brownish. *Stem* 1½—2 inches high, 1—2 lines thick, equal, tough, covered with brown fibrillose down, the apex minutely pruinose.” *Fr. El. l. c.*

262. *A. flocculosus*, Berk. (*brown-fawn Agaric*); pileus subcarnose umbonate sericeo-squamulose, gills adnate, stem fibrillose squamulose at the apex.

Pastures, amongst grass or on the naked soil. Barnby in the Willows, Notts. Sept. *Rev. M. J. Berkeley.*—*Pileus* 1 inch broad, convex, subcampanulate, umbonate, sericeo-squamulose, brownish-fawn colour; the margin smoother; veil white, fibrillose, fugacious. *Gills* at first pale-fawn, at length dull-ferruginous; ventricose, arched behind and then adnate but not broadly so, the margin white. *Stem* 1½ inch high, 2 lines thick, fibrillose, pale-fawn; beneath the fibrillæ brown, the apex minutely squamuloso-pulverulent. *Odour* like that of new meal, but nauseous.—On the naked soil, the characters are as described above; amongst grass the pileus is smoother, more tawny, rimoso-sericeous; gills not arcuate behind but broadly adnate.—Very nearly allied to the last and to *A. lucerus*, *Fr.*

263. *A. rimosus*, Bull. (*chinky Agaric*); pileus carnosé campanulate at length expanded rimose brownish-yellow, gills adnexed, stem solid, apex clothed with white mealy scales. *Bull. t. 388. 599. Sow. t. 323. With. v. 4. p. 188. Pers. Syn. p. 310. Part. v. 2 & 3. n. 927. Fr. Syst. Myc. v. 1. p. 258. Grev. Fl. Ed. p. 388. Grev. Sc. Crypt. Fl. t. 128.*—*A. aurivenius*, *Batsch, Cont. 1. f. 107.*

Woods and waste places. June—Sept. Very common.—Subgregarious. *Pileus* 1—2 inches broad, shining, satiny with adpressed fibrillæ, brown-yellow, at first campanulate then nearly plane and umbonate, cracked in a radiate manner, the inner substance appearing through the cracks of a yellow hue; sometimes the epidermis cracks concentrically and the lower edge of the cracked portions is reflected so as to present a squarrose appearance. *Gills* ventricose, adnexed, at first nearly white, the margin opaque, then olivaceous with the margin white and crenate. *Sporules* elliptic, ferruginous. *Stem* 1½—2½ inches high, composed of fibres, distinct from the pileus, subbulbous, nearly white, fibrillose at the base, clothed above with white mealy scales.—Specimens occur of a yellow tinge, with very few cracks; and sometimes the stem is nearly as dark as the pileus.

264. *A. Hookéri*, Klotzsch, (*purple-gilled branny Agaric*); pileus submembranaceous obtuse umbonate clothed with branny scales, gills purple adnexed at length cinnamon, stem shining-purple pruinose. *Klotzsch, MS.*

Flower-pots. April—Oct. Botanic Garden, Glasgow. *Mr. Joseph D. Hooker*.—"Pileus 5—8 lines broad, fawn-coloured, centre umber. Gills 1—1½ line broad, beautiful purple, at length cinnamon. Veil floccoso-fibrillose, very fugacious. Stem 1—1½ inch high, ½ a line thick, fistulose, shining-purple, pruinose with fawn-coloured meal." *Klotzsch, MS.*

265. *A. geophyllus*, Bull. (*earthy-gilled Agaric*); pileus sub-carnose conic then expanded umbonate silky, gills adnate, stem stuffed slender covered with white meal. *Bull. t. 522. f. 2. Sow. t. 124. Pers. Syn. p. 340. Purt. v. 2 & 3. n. 929. Fr. Syst. Myc. v. 1. p. 288. Grev. Fl. Ed. p. 388.*—*A. ileopodius*, Bull. t. 578. L.—*A. inodorus*, Bull. t. 524. f. 2.—*A. affinis*, Pers. Ic. & Desc. t. 1. f. 1.—*A. auricomus*, Batsch, *El. f. 21. With. v. 4. p. 220.*

Woods. July—Nov. Very common.—Pileus ½—1 inch broad, umbonate, at length subinverted, white, lilac, brownish, yellowish, &c., satiny, often rimose. Gills adnate or adnexed, ventricose, earthy not cinnamon, the margin white, subdentate. Stem 1—3 inches high, 1—2 lines thick, flexuous, equal or subbulbous, firm, very minutely farinaceous above, solid, but the inner substance less compact. *Odour* strong and disagreeable.

Subgenus 25. NAUCORIA; (from *naucus*, the peel of a nut.) *Veil* homogenous with the squamulose epidermis, very fugacious. *Stem* subfistulose, equal, slender, squamulose, within flocculose. *Pileus* carnosomembranaceous, covered with innate squamulae or fibrillae. *Gills* cinnamon.—*Small, gregarious, epiphyte Fungi.*

266. *A. crinaceus*, Fr. (*small woolly Agaric*); small, pileus carnosomembranaceous umbilicate floccoso-squamose umber-ferruginous, gills adnate, stem fistulose incurved hairy. *Fr. El. 1. p. 33. Ind. Alph. p. 26.*—*A. lanatus*, Sow. t. 417. *Purt. Mid. Fl. v. 3. n. 1454.*—*A. aridus*, Pers. *Myc. Eur. v. 3. p. 193.*

On dead branches. Aug.—March. Rare. On sloe, Mount Edgecumbe, *Sowerby*. On oak. *Purton*.—"Small, solitary, persistent; stem slightly fistulose (pithy, *Sow.*), adnate on the epidermis of branches by a dilated base clothed with white pubescence, not originating beneath it as in *A. tuberculosus*, incurved, equal, about 4 lines high, scarce 1 line thick, umber-ferruginous. Pileus subcarnose, disk umbilicate, (not in *Sow.* fig.) ½ an inch broad, scaly with very dense fasciculate locks, umbrino-ferruginous; margin at first involute. Gills rather broad, not close, adnate." *Fr. El. l. c.*

267. *A. furfuraceus*, Pers. (*branny Agaric*); gregarious, pileus subcarnose then umbilicate scaly or silky, gills sub-decurrent cinnamon, stem fistulose branny. *Pers. Syn. p. 454. Fr. Syst. Myc. v. 1. p. 262. Pers. Myc. Eur. v. 3. p. 161.*—*A. pulverulentus*, Schæff. t. 226.—*A. xylophilus*, Sow. t. 167.—*A. mutabilis*, Grev. *Fl. Ed. p. 387.*

Hedges, gardens, &c., on sticks. The whole year. Very common.—

*Pileus*  $\frac{1}{3}$ —1 inch broad, subcarnose, at first convex, at length expanded, often umbilicate, rich-umber, or cinnamon when moist, margin transparent, sprinkled especially towards the margin with white fibrillæ or little branny scales, when dry white or reddish-tan. *Gills* broad, subdecurrent, moderately distant, pale cinnamon. *Sporules* elliptic, pale ferruginous. *Stem* 1—2 inches high, 1—2 lines thick nearly equal, or slightly thickened at the base, flexuous, fistulose, fibrillose or furfuraecous. *Taste* not unpleasant. It is very doubtful whether *A. virdarius*, With., quoted by Fries, is this species. It seems rather to be *A. melinoides*.

268. *A. inquilinus*, Fr. (*dark-stemmed branny Agaric*); pileus submembranaceous umbonate striate brownish, when dry even turning pale, gills adnate triangular ferruginous-brown, stem short tough reddish-brown. *Fr. Syst. Myc. v. 1. p. 264. Pers. Myc. Eur. v. 3. p. 165.*— $\beta$ . *squarulosus*; stem squarrose with sealy fibrillæ. *A. squarrosus*, Bull. t. 538. f. 3. *Fr. El. 1. p. 39.*

$\beta$ . Apethorpe. Norths. Sept. Upon moss.—Not always umbonate. *Pileus* 3—6 lines broad. *Stem* 1 inch or more high, minutely fistulose, dark-umber with white fibrillæ and scales.—This species is placed by Fries in a new Tribe, *Phacotus*, but for the present I leave it and the other species, as they were at first arranged by him in the *Syst. Myc.*, till I shall have had leisure for an extended examination of the sporules of this and the two neighbourings series.

Subgenus 26. GALERA; (from *galea*, a helmet.) *Veil floccose, very fugacious, but present in all the species. Stem fistulose, equal or attenuated upwards, slender, distinct from the pileus, in general pruinose or fibrillose, seldom naked. Pileus membranaceous, conic soon campanulate, seldom more expanded, when moist substrate, when dry even, turning pale, destitute of adnate scales or fibrillæ. Gills adnexed or adnate.—Slender brittle Fungi, mostly growing on the ground.*

269. *A. Cúcumis*, Pers. (*cucumber-scented Agaric*); pileus carnosomembranaceous broadly campanulate even bay-brown turning pale, gills adnexed ventricose pallid, stem brown-black. *Pers. Syn. p. 316. Fr. Syst. Myc. v. 1. p. 231. El. 1. p. 34.*—*A. nigripes*, Sow. t. 344.

Woods, gardens, &c. Oct. Costessey near Norwich. *Sowerby, Kirriemuir. Klotzsch, in Hook. Herb.*—"Pileus 1—1½ inch broad, even, smooth, when moist bay-brown with a purplish tinge, pale about the margin; when dry fawn-coloured or tan. *Gills* very ventricose, close, distinct, dirty-white with somewhat of a saffron tint. *Sporules* ferruginous. *Stem* 1½—2 inches high, 1—1½ line thick, attenuated downwards, firm, smooth, hollow, pale at the apex. *Odour* exactly that of fresh cucumber." *Fr. El. l. c.*—Formerly placed by Fries in *Dermocybe*, but he is now of opinion that it is a true *Galera*.

270. *A. laterinus*, (*lateritius*) Fr. (*cinnamon-gilled tender Agaric*); pileus submembranaceous even ferruginous turning pale, gills nearly free cinnamon, stem long smooth dirty-white.

*Fr. Syst. Myc.* v. 1. p. 265. *Fl. Dan.* t. 1846. f. 2.—*Bulla lateritia*, *Batt.* p. 58. t. 28. T.

Dungy ground, about woods. July—Oct. Fineshade, Norths.—*Pileus* and *stem* more ferruginous than in *A. tener*. *Gills* much more ferruginous, inclining to cinnamon; *sporules* larger and darker.—As there is another *A. lateritius* in the tribe *Hypholoma*, it is necessary to change the name, as it seems scarcely permissible so long as *Agaricus* is regarded as one large genus to have the same specific name in different tribes.

271. *A. tener*, Schæff. (*tender Agaric*); *pileus* obtuse striate when moist when dry even ochraceous, *gills* linear adnate, *stem* long straight. *Schæff.* t. 70. *Sow.* t. 33. *Pers. Syn.* p. 386. *Purt.* v. 3. n. 1462. *Fr. Syst. Myc.* v. 1. p. 265. *Pers. Myc. Eur.* v. 3. p. 279. *Grev. Fl. Ed.* p. 389.—*A. foraminulosus*, *Bull.* t. 535. f. 1, 403. B. C.

In pastures, about dunghills, &c. May—Nov.—*Pileus* 1 inch high and broad, subcarnose, campanulate or conico-campanulate, smooth, shining, ochraceous when dry. *Gills* pale-ferruginous, ascending, more or less adnate, ventricose or sublinear, margin white, subserrulate. *Stem* 3—5 inches high, 1½ line thick, striate, pulverulento-fibrillose, not brittle, bulbous at the base.—It is not always easy to distinguish between this species and some states of *A. melinoides*. Sowerby's figure is very good. *A. colus*, With., referred by Fries to his *A. apalus*, probably is not different; the individual in Sowerby's plate to which reference is made, being clearly nothing more than an altered state of the species from being drawn up amongst long grass.

272. *A. melinoides*, Bull. (*yellowish Agaric*); *pileus* obtuse margin striate ochraceous inclining to light-red turning pale, *gills* fixed ventricose paler as well as the pruinose stem, *Bull.* t. 560. f. 1. F. H. *Pers. Syn.* p. 387. *Fr. Syst. Myc.* v. 1. p. 266. *Pers. Myc. Eur.* v. 3. p. 280.—*A. lachrymalis*, *With.* v. 4. p. 224. *Purt.* v. 3. n. 1460.

Lawns and pastures. Oct. Very common.—*Pileus* 2 lines to 1 inch broad, submembranaceous, umbonate, when moist tawny, margin pellucid, ochraceous or whitish when dry. *Gills* very variable, adnexed or broadly adnate, ventricose, at first paler than the *pileus*, at length cinnamon. *Stem* 1—2 inches high, scarce 1 line thick, fistulose, fibrillose above, subpruinose thickened below and downy, changing colour. The *gills* remain bright.

273. *A. hypnorum*, Schrank, (*moss Agaric*); *pileus* campanulate subpapillate, when moist sulcate subochraceous turning pale, *gills* adnate rather broad distinct, *stem* wavy pruinose. *Pers. Syn.* p. 385. *Fr. Syst. Myc.* v. 1. p. 267. *Grev. Fl. Ed.* p. 389. *Pers. Myc. Eur.* v. 3. p. 277.—*A. Acicula*, *Sow.* t. 282.—*A. campanulatus*, *Schæff.* t. 63.—*A. hypni*, *Batsch*, *Cont.* 1. f. 96.—*A. melinoides*, *Bull.* t. 560. f. 1. C. E.

Amongst moss, especially in woods. July—Nov. Not uncommon.—*Pileus* 2—3 lines broad, conico-campanulate, of a beautiful tawny-brown when moist, or sometimes reddish, the striate margin only when

dry retaining its original hue, the rest pale; flesh thick in the centre turning pale like the pileus. *Gills* ventricose, adnexed or adnate, tawny, rather broad. *Stem* 1 inch high, filiform, minutely fistulose, paler than the pileus, pruinose.—A variable species, of which Fries has five, and Persoon six varieties. The differences of this and the two foregoing species are thus given by Fries in his *Elenchus*, v. 1. p. 35. *A. tener* has the stem straight; pileus conic; gills linear ascending. *A. melinoides* has a subflexuous, unequal, pruinose, paler stem; pileus carnosomembranaceous; gills triquetrous. *A. hypnorum* has the stem yet more flexuous, flexible, pruinose; the pileus campanulate subpillate, and the gills distant and broader.

Subgenus 27. *TAPINIA*; (from *ταπεινωσ*, to depress.) *Veil* marginal, villous, fugacious. *Stem* equal somewhat diffused into the pileus. *Pileus* more or less fleshy, even, naked, when young plano-convex, the margin villous and involute; then depressed, broadly umbilicate. *Gills* adnato-decurrent, rather close.

274. *A. involutus*, Batsch, (*involute* Agaric); compact, pileus depressed dirty-ferruginous, margin involute downy, gills dichotomous pore-shaped at the base, stem blunt.—a. regular, growing on the ground. *Batsch*, *Cont.* 1. f. 61. *Pers. Syn.* p. 448. *Fr. Syst. Myc.* v. 1. p. 271. *Grev. Fl. Ed.* p. 389. *Pers. Myc. Eur.* v. 3. p. 62. *Klotzsch, Fung. Germ. exs.* n. 20.—*A. lateralis*, *Schæff.* t. 72.—*A. contiguus*, *Bull.* t. 240, 576. f. 2. *Sow.* t. 98. *Purt.* v. 2 § 3. n. 911.—*A. adscendens*, *Bolt.* (*Arr.* p. xxxi.) t. 55.—*A. adustus*, *With.* v. 4. p. 167. *var. Purt.* v. 2 § 3. n. 916.—b. subexcentric, growing on stumps. *A. cyathiformis*, *Schæff.* t. 252.—*A. lateralis*, *Schæff.* t. 71.

*Woods.* July—Nov. Common.—*Pileus* 3—5 inches broad, wavy, tawny or yellow-ferruginous, when moist slimy, uneven; margin involute and downy, the extreme edge striate from the pressure of the gills; *flesh* thick firm, at first pale but changing to dirty-umber on exposure to the air as does every part of the plant when bruised. Black when dried. *Gills* pale yellow-ferruginous, wavy, forked, decurrent, poriform behind, easily separating from the pileus. *Stem* 2—3 inches high,  $\frac{1}{2}$ —1 inch or more thick, blunt, but sometimes attenuated below, tomentoso-squamulose, firm, solid. *A. adscendens*, *Bolt.*, is a not very uncommon state of the plant, with an elongated incurved stem from growing out of a steep bank. The gills of this species separate from the pileus like the pores of a *Boletus*, to which it approaches in habit, and consist evidently of one beautifully and most intricately plicate membrane. *A. pratensis* presents a somewhat similar phenomenon, but one indicating rather a relation of analogy than of affinity. Persoon, however, is of opinion that the peculiarity would be sufficient to warrant the proposal of a new genus if more species should be found agreeing in this respect, and suggests the name *Rhymoris*. It must be observed, however, that the habit of *A. pratensis* and *A. involutus* is very different.

Subgenus 28. *CREPIDOTUS*; (from *κρηπίς*, a slipper, and *οὖς*, an ear.) *Veil* very thin, fibrillose. *Pileus* unequal, excentric or

*lateral. Gills unequal, changing colour. Sporules subferruginous, subargillaceous, or reddish.*

275. *A. panuoides*, Fr. (*downy branched-gilled Agaric*); pileus fleshy sessile downy, gills crisped and branched yellow. *Fr. Syst. Myc. v. 1. p. 273.*—*Merulius lamellosus*, Sow. t. 403. —*A. heteroclitus*, Pers. *Myc. Eur. p. 24.*—*A. mollis*, Johnst. *Fl. Brew. v. 2. p. 109. t. 7.*

Fir-trunks, cellars, &c. Charlton, Kent. *Lady Wilson*. Berwick. *Johnston*. Spondon, Derbyshire. *Rev. R. T. Lowe*. Cotterstock, Norths. *Rev. M. J. Berkeley*.—*Pileus* 1—4 inches broad, white, often tinged with violet, very soft to the touch in consequence of the fine matted silky pubescence with which it is clothed: either perfectly sessile, or furnished with a spurious stem which is silky like the pileus and most beautifully tinged with violet. *Gills* variously anastomosing and wrinkled, yellow with abundant oval ferruginous sporules. *Fries'* plant appears to be more regular and obovate, and a specimen from Dr. Johnston before me accords in this particular. *Persoon* agrees with him in supposing it a state of *A. mollis*, its differences being due to its growing in perfect darkness, but then this is not the case with *A. panuoides*, Fr. The same notion struck me upon gathering it, but it differs not merely in the altered state of the gills, but in the beautifully tomentose pileus often tinged with violet, and above all in the minute hairs with which the gills are beset, and upon which the sporules are often seated as upon the spiculæ in *A. prunulus*. To this circumstance the glandular appearance represented in *Sowerby's* figure is owing. When cup-shaped and resupinate it is *Gomphus pezizoides*, Pers.

276. *A. mollis*, Schæff. (*soft stemless Agaric*); pileus subsessile even flaccid pallid, gills watery-umber. *Schæff. t. 213. f. 1. Sow. t. 98. With. v. 4. p. 267. Pers. Syn. p. 480. Purt. v. 2 & 3. n. 978. Fr. Syst. Myc. v. 1. p. 274. Pers. Myc. Eur. v. 3. p. 24.*—*A. canescens*, Batsch, *El. f. 38.*

On timber, stumps, posts, &c. July—Oct. Common.—Solitary or imbricated. *Pileus* 1—2 inches or more broad, at first horizontal, subgelatinous, the base tomentose or substrigose, margin transparent, minutely tomentose; then ascending, subfulvous, pallid when dry, the margin waved, sometimes minutely squamulose, often stained with the elliptic ferruginous sporules. *Gills* rounded behind, thin, watery-umber, at first saturated with moisture, then dry and crisp.

277. *A. haustellaris*, Fr. (*beaked Agaric*); pileus reniform villous pallid-tan, gills rounded ferruginous, stem lateral white attenuated upwards. *Fr. Syst. Myc. v. 1. p. 274. Pers. Myc. Eur. v. 3. p. 27.*—*A. Flurstedtensis*, Batsch, *Cont. 1. p. 171. t. 124.*—*A. resupinatus*, *With. v. 4. p. 267.*

On decayed wood, overgrown with short moss. Autumn. *Packington*, Warw. *Withering*.—"Pileus  $\frac{1}{2}$  an inch or more across, slightly fleshy. Stem 2—4 lines long, villous, when young ascending." *Fr. l. c.*

278. *A. Rûbi*, Berk. (*bramble Agaric*); pileus fleshy clothed with very minute crystalline meal, gills adnato-decurrent



slightly ventricose, stem incurved solid minutely strigose at the base.

On sticks, especially of bramble. Aug. Margate. *Rev. M. J. Berkeley*.—*Pileus*  $\frac{1}{4}$  inch or more broad, at first regular with a short stem, gradually becoming excentric and resupinate, of a yellowish or livid-grey hue, pallid when old. *Gills* rather distant, at first greyish, then umber, edge pulverulent. *Sporules* umber. *Stem* very short, at first straight, then incurved, solid, externally mealy, adhering by a little fine down.—This species seems most nearly allied to *A. byssisedus*, but is certainly distinct.

279. *A. variabilis*, Pers. (*variable sessile Agaric*); pileus membranaceous resupinate then reflexed white clothed with silky down, gills reddish-white. *Pers. Syn. p.* 483. *Fr. Syst. Myc. v. 1. p.* 275. *Grav. Sc. Crypt. Fl.* 235. *Pers. Myc. Eur. v. 3. p.* 28.—*A. niveus*, *Sow. t.* 97. *Purt. v. 2 & 3. n.* 979.—*A. sessilis*, *Bull. t.* 152, 581. *f.* 3. *With. v. 4. p.* 263.

Sticks, stalks and leaves in woods, &c. More or less the whole year. Very common.—*Pileus*  $\frac{1}{2}$ —1 inch broad, membranaceous, at first hemispherical with a short stem, soon resupinate and then again reflexed, the *stem* becoming quite obsolete, white, covered with silky down: sometimes there is no stem at first, but the pileus is resupinate from the earliest stage of growth. *Sporules* elliptic, rusty-pink. The cellular tissue is a beautiful object under a powerful lens.

280. *A. pezizoides*, Nees, (*Peziza-shaped Agaric*); cup-shaped sessile olive-brown granulose externally, gills radiating. *Nees, Act. Nat. Cur. IX. p.* 249. *t.* 6. *f.* 18. (*vide Fries.*) *Fr. Syst. Myc. v. 1. p.* 276.—*A. Epixylon*,  $\beta$ . *pezizoides*, *Pers. Myc. Eur. v. 3. p.* 16.—*A. campanuliformis*, *Purt. v. 3. n.* 1481. (*Purt. MSS.*)

On rotten branches. Feb. Pophills. *Mrs. Rufford*.—"Gregarious, fleshy, subgelatinous, 1 line high and broad, fixed at the base by very delicate white fibres. *Gills* about 12, thick, ventricose. *Fr. l. c.* *Gills* white to stone-colour; margin suberenate, white and somewhat cottony in young specimens." *Purt. l. c.*

Series V. PRATELLA; (from *pratium*, *pasture-ground*.) Veil not arachnoid. *Gills* changing colour, clouded, at length dissolving. *Sporules* brown-purple.\*

Subgenus 29. VOLVARIA; (so called from being furnished with a *volva*.) Veil single universal, distinct; covering the whole plant when young, at length torn and lobed from the protrusion of the stem. *Pileus* fleshy, campanulate, then expanded, silky or slightly viscid, distinct from the stem. *Gills* free, ventricose, broad, close, unequal, changing colour, clouded. *Gills* white then flesh-coloured, more or less deliquescent.—Growing on rotten wood or dung, principally in summer.

\* The sporules are almost rose-coloured in *A. bombycinus*, *A. Lovcianus*, and *medius*; and ferruginous in *A. vitellinus*, *Boltonii*, and *titubans*; almost black in *Coprinarius* and *Coprinus*.

281. *A. bombycinus*, Schœff. (*silky wrapped Agaric*); pileus silky white, gills flesh-coloured, stem solid incurved attenuated, volva dark loose. *Schœff. t. 98. Fr. Syst. Myc. v. 1. p. 277.*—*Fungus magnus*, &c., *Mich. Nov. Gen. p. 188. t. 76. f. 1.*—*Amanita incarnata*, *Pers. Syn. p. 248.*

Inside of trees, stumps, &c., on touchwood. Aug.—Sept. Rare. Near Wimbleton, on elm (lime, *Eng. Fung.*) *Sow. Herb.* Thornhaugh, Morehay Lawn, Norths. (on ash). *Rev. M. J. Berkeley.*—*Pileus* 2 inches or more broad, at first entirely enclosed in a slimy dark volva, at length protruded, campanulate, dirty-white, silky with yellowish-white narrow silky scales, and marked frequently with a few dark blotches the remains of the volva; *flesh* whitish, firm, elastic, margin involute. *Gills* numerous, close, ventricose, quite free, not reaching to the margin, at first white, then rose-coloured with a tinge of yellow, at length deliquescent, tinged with umber. *Sporules* elliptic. *Stem* 2½ inches high, ½ an inch thick in the centre, firm, solid, thickest downwards, the tough volva remaining like a cup at the base.—The above description is taken from a young specimen. When at full maturity the white of the pileus is purer and the pileus itself more expanded. It is considered eatable.

282. *A. volvaceus*, Bull. (*stove Agaric*); pileus streaked with adpressed hairs, gills reddish-flesh-colour, stem solid smooth subequal, volva loose. *Bull. t. 262. Sow. t. 1. With. v. 4. p. 207. Fr. Syst. Myc. v. 1. p. 278. Roques, Hist. des Champ. p. 141. Nov. Act. Phys. &c., v. 16. p. 1. t. 6. 7.*—*Amanita virgata*, *Pers. Syn. p. 249.*—*A. latus*, *var. 2. With. v. 4. p. 211.*

In stoves, on the bark. July—Aug.—“*Pileus* 3 inches broad, obtuse, pallid-cinereous with cinereous and black streaks. *Gills* obtuse behind, almost remote. *Stem* 3—5 inches high, ½ an inch thick, white.” *Fr. l. c.* Accounted poisonous. In the place quoted above, Nees ab Esenbeck gives a complete account and figures of the development of this Agaric. He conceives that *Sclerotium mycelospora*, *Fr. & Nees*, is an imperfectly developed state of it, indurated in consequence of growing at a time when the stove abounds with heat and moisture, but is deficient in light. In summer, from the same byssoid fibres (*Mycelium*, *Tratt.*) *A. volvaceus* is perfectly developed, according to Fries’ observation, “*nisus idem reproductionis in potestate lucis producit hymenium.*” The nearest affinity of this and the neighbouring species is, I think, evidently on the one hand with *A. latus* and its allies, and on the other hand, with the *Coprini*. The gills are of the same form as in *A. latus*, but the processes are those of *Coprini*. Fries, however, if I understand his expression, “*theis prominulis denticulatæ,*” seems to regard them in a different light. Withering perceived the affinity, and accordingly in one place made the present species a variety of *A. latus*, though in another he has it separate under the name of *A. volvaceus*.

283. *A. Loveiánus*, Berk. (*parasitic wrapped Agaric*); parasitic, middle-sized very delicate, pileus white silky, gills pale-rose, stem attenuated upwards, wrapper white lobed loose.

Parasitic on half-decayed, and, in general, distorted specimens of *A. nebularis*. Plantations. Abundant at Wothorpe near Stamford, Norths., Oct. 10, 1833. *Rev. M. J. Berkeley*.—Gregarious, subcæspitose. At first it appears like a small smooth white round *Bovista*, from the size of a pea to  $\frac{1}{2}$  an inch in diameter; it then becomes oblong and the top of the pileus which is at that stage flattish, bursts through, forming a round aperture in the volva, which as the plant is fully developed, is broken into three or four regular laciniaë, with a somewhat wrinkled surface, and the pileus, from subtruncato-globose, becomes convex or slightly expanded,  $2\frac{1}{2}$  inches broad, moderately fleshy and beautifully silky; white with a very slight shade of pink or cinereous; margin involute. *Gills* broad in front, quite free, leaving a space round the stem, not reaching to the margin, subdeliquescent, gradually assuming a pale pink tinge, under a good lens clothed with fine minute transparent processes like the *Coprini*. *Sporules* minute, elliptic, rose-coloured. *Stem* 2 inches high, 2—3 lines thick, white, closely fibrillose with a little matted tomentum, very juicy, solid, bulbous. *Volva* pure white, with a little downy prominence within round the base of the stem. *Taste* exactly like that of *A. campestris*.—A most elegant and curious species, which, as it appears not to have been hitherto noticed, I wish to bear the name of the Reverend R. T. Lowe, not merely on account of our intimate friendship, but of his great and diversified talents.

284. *A. médius*, Schum. (*intermediate wrapped Agaric*); pileus smooth slightly viscid white, gills rose-coloured, stem smooth solid, volva sheathing. *Schum. Scell. 2. p. 227. Fl. Dan. t. 1676. f. 2. Fr. Syst. Myc. v. 1. p. 278.*

In pastures after stormy weather. Aug.—Oct. Abundant in 1834, about King's Cliffe, Norths. *Rev. M. J. Berkeley*.—Varying greatly in size and form, from  $\frac{1}{2}$  an inch to 2 inches or more broad, subcarnose or submembranaceous, plane, subhemispherical or subcampanulate, subumbonate, silky, slightly viscid, white with a brownish or yellowish tinge in the centre. *Gills* rather thick, broad, quite free, projecting in the young state beyond the edge of the pileus, often rugged, when old rose-coloured, covered with minute spiculæ as in the last. *Sporules* minute, rose-coloured, subelliptic. *Stem* nearly equal or slightly thickened below, 1—2 inches high, 2 lines or more thick, nearly smooth, silky under a lens, solid, juicy, furnished at the base with a volva divided into 3 or more lobes, vaginate and close or slightly spreading, nearly smooth and white, or furnished with small flat brownish scales, sometimes entirely dark brown.

Subgenus 30. PSALIOTA; (from  $\psi\alpha\lambda\iota\omega\upsilon$ , a ring, or collar.) *Veil forming a ring, subpersistent, really partial. Stem firm, subequal, distinct from the pileus. Pileus more or less fleshy, convex then campanulate-expanded, viscid or clothed with squamules or fibrillæ. Gills free or fixed, broad, becoming brown.*—In some species there are the rudiments of a universal veil.

285. *A. Geórgii*, With. (*St. George's Agaric, White-Caps*); pileus very fleshy convex at length nearly plane stained with yellow when bruised, gills whitish when the veil bursts, at

length deep purple-brown. *With. v. 4. p. 206. Sow. t. 304. Mush. & Champ. ill. t. 3. Purt. v. 2 & 3. n. 934. Grev. Fl. Ed. p. 390.*—*Fungus esculentus*, &c., *Raii. Syn. ed. 3. p. 2.*—*Fungus totus albus edulis*, *Vaill. Bot. Par. p. 75.*—*A. arvensis*, *Schæff. t. 310, 311.*

Meadows, woods, and near buildings, haystacks, &c. Spring and Autumn. Common.—*Pileus* 4—18 inches broad, white stained with yellow, convex, very thick, firm and tough, quite smooth or clothed with broad tawny more or less concentric adpressed scales; *flesh* yellowish when cut, juice yellow. *Gills* adnate (free, *Grev.*) broad, numerous, white or very pale flesh-colour, at length dark purplish-brown. *Stem* 2—5 inches high, 1—2 inches thick, firm, the centre loose and weblike; when bruised yellow, especially below. Distinguished from *A. campestris* by the almost white gills and the yellow stains when bruised. It is very generally rejected by housekeepers in the country as unwholesome if not poisonous, but in London it is frequently sold under the name of White-Caps. The flavour is far inferior to that of the common mushroom; its smell is strong and unpleasant, and it is little fit for making ketchup, having but a small quantity of juice, and that not of a good colour. It grows to an enormous size. Hopkirk records an instance of one weighing 5 lb. 6 oz. and measuring 43 inches in circumference, and Withering gives the description of one weighing 14 lb. and of another found by Mr. Stackhouse in Cornwall, 18 inches across and the stem as thick as a man's wrist. It is called in France *Boule de neige*. The synonyms of Ray and Vaillant, quoted above, are with much less probability considered by Fries as belonging to his *A. cretaceus*, a species involved in much obscurity, and so nearly resembling some species of *Lepiota*, as to make it difficult to believe that it is rightly placed in the series *Pratella*, or distinct from *A. cepæstipes*. Indeed from what that writer says, under *A. leiocephalus*, I am inclined to think that he judged of the hue of the sporules from the change of colour in the gills and not from actual inspection.\*

286. *A. campéstris*, L. (*Mushroom*); pileus fleshy dry sub-squamose or silky, gills pink free ventricose at length brown, stem stuffed furnished with a ring white. *L. Suec. 1203. Pers. Syn. p. 418. Schæff. t. 33. Sow. t. 305. Bolt. t. 45. With. v. 4. p. 209. Purt. v. 2 & 3. n. 933. Fr. Syst. Myc. v. 1. p. 231. Grev. Fl. Ed. p. 390. Sc. Crypt. Fl. t. 161. Mush. & Champ. ill. t. 1 & 2.*—*A. edulis*, *Roques, Hist. des Champ. p. 14. 96. Bull. t. 134, 514.*

\* On an attentive examination of the synonyms quoted by Linnæus in the *Flora Suecica*, it seems to me almost impossible to determine accurately what the species is to which he has an eye. There is much more reason to believe Withering right, than Fries, who considers *A. Georgii*, L. a yellow variety of *A. emeticus*, which militates altogether against the concurrent testimony of the older writers who describe it as esculent. The figure in *Sterbeech, Theat. Fung. t. 1. G.* appears to be the same figure as that of Clusius and Baubin, and is a tolerable representation of a small specimen of the species now before us. I am not aware, however, that it generally appears in this country sooner than *A. campestris*, so as to answer to the name of St. George's Agaric, though I have gathered it as early as the 18th of May, a few days only after St. George's Day, according to the old style.

Pastures, dunghills, &c. May—Oct. Very common.—*Pileus* 2—5 inches broad, at first convex, then plano-convex, white, silky or clothed with reddish-brown adpressed fibrillæ collected into little fascicles; *epidermis* easily separating from the flesh, projecting beyond the gills and often curled back, fleshy; *flesh* firm, thick, white, more or less stained with reddish-brown especially when bruised. *Gills* very unequal, at first of a beautiful pink, free, obtuse and sometimes forked behind, broad in the middle; at length dark, mottled with the brownish-purple minute subelliptic sporules; the edge white and minutely denticulate. *Stem* 2—3 inches or more high,  $\frac{1}{2}$ — $\frac{3}{4}$  of an inch thick, nearly equal or subbulbous, white, beautifully but minutely silky, furnished with a thick spongy ring generally above the middle, firm, consisting of fibres, those in the centre lower. *Root* consisting of a few branched white fibres, which are often beset with little knobs, which are the infant state of the plant. When quite young, there is a fine silky universal veil.—A most extraordinary and beautiful state of this species occurred at Margate, on a heap of horse-dung covered with soil, close to the angle of a white brick wall with a northern aspect, July 31, 1832. A portion of the pileus was occupied by what at first appeared to be a parasitic *Sistotrema*, but, on closer inspection, proved to be a pulvinate excrescence of the mushroom itself,  $1\frac{3}{4}$  of an inch broad,  $\frac{3}{4}$  of an inch thick, occupied by spurious gills in the guise of subporiform jagged plates about 1 line deep, and producing sporules like those of the perfect gills beneath, but as it appeared to me rather more minute. The margin was yellowish and minutely downy.—The most generally used perhaps of all Agarics and the safest. It is extensively cultivated, on which point M. Roques has some excellent information. The artificial production of this species without the aid of spawn has been frequently brought forward as an argument for the equivocal generation of Fungi. But when it is considered how many millions of the sporules must be devoured together with the herbage by the animals whose dung is a principal material in the compost, much of the force of this argument vanishes. And the circumstance that other species, whose sporules are equally extensively diffused, so seldom occur on mushroom-beds, does not invalidate this, because fairy-rings generally contain one species only and the peculiar conditions necessary for the development of the common mushroom may either not be favourable at all to the growth of other species, or they may affect the sporules of the mushroom much more rapidly and certainly, which therefore take the lead and prevent the growth of other species.

287. *A. præcox*, Pers. (*early Agaric*); pileus fleshy even yellowish-tan, gills adnexed with a subdecurrent tooth pale fuscous, stem subsolid white. *Pers. Syn. p.* 420. *Fr. Syst. Myc. v. 1. p.* 283.—*A. candicans*, Schæff. *t.* 217.—*A. cercolus*, Schæff. *t.* 51.—*A. durus*, Bolt. *t.* 67. *f.* 1.

Hedge-sides, grassy places, gardens, &c. Spring and autumn. Common.—Solitary or gregarious. *Pileus*  $1\frac{1}{2}$ —2 inches across, very fleshy; *flesh* firm, white or pale-buff, watery near the gills; *epidermis* in damp weather moist subviscid, when dry resembling white kid leather, retaining the impression of the fingers, sometimes tessellated, yellowish or pale tawny. *Gills* adnexed or subadnate, moderately broad, not ventricose, slightly hollowed out behind with a subdecurrent tooth, pale brownish-purple; the edge white or yellowish. *Asc* conspicuous;

*sporules* elliptic. *Stem*  $1\frac{1}{2}$ —3 inches high, 2—3 lines thick, subflexuous, equal or subulbous, solid, but sometimes decidedly hollow, juicy, white or faintly shaded with buff, fibrillose, under a lens subpubescent; ring near the top deflexed and striate, or attached in fragments to the edge of the pileus. *Root* strong, white, branched. *Smell* like that of *A. oreades*, but sometimes unpleasant. I find what appears to be only a variety, growing in bogs amongst wet *Hypnum cuspidatum*, at King's Cliffe in May. It accords almost exactly with Bulliard's figure of *A. sphaleromorphus*, *t.* 540. *f.* 2,\* except that the stem is not so decidedly clubshaped.—As Fries in his *Elenchus* supposes that it may prove a new species of his tribe *Phaeotus*, I subjoin a description:—*Pileus* 1—2 inches broad, at first nearly hemispherical, soon expanded and even subdepressed, subviscid, carnose, yellowish-tan, when old watery yellow-olive, the margin amber from its transparency, in consequence of which the colour of the gills is partly seen through the flesh. In very young specimens, there are some slight vestiges of the ring; otherwise it is quite smooth. *Gills* at first nearly of the colour of the pileus, then purplish-umber or pinkish and clouded; the edge fringed with white appendages, rounded behind, subadnate with a tooth; sometimes the tooth appears as though the gills had started from the stem and in so doing had drawn with them a thin glutinous membrane, an appearance exactly represented in *Sow. t.* 408. *f.* 1. In old specimens, when the pileus is depressed, the gills become very ventricose and rounded, but there is still the tooth; they then become much darker, but not so dark as in Bulliard's, *t.* 540. *f.* 1. *Sporules* bistre, with a very slight ferruginous tinge. *Stem* 2—3 inches high, 2 lines thick, nearly 4 at the base, slightly clubshaped, below subflexuous, white, more or less tinged with the colour of the pileus, fibrillose under a lens, minutely downy at the very base; at first stuffed then minutely fistulose. *Ring* perfect, erect or deflexed, striate. Another state or species occurred in Kensington Gardens and at Beeston, Notts., in Oct. and Nov., agreeing exactly with *A. mutabilis*, *Fl. Dan. t.* 1008, *f.* 2, which is quoted by Fries under *A. sagatus*, but as he describes it as having free gills and my plant has them subadnate like those of *A. praeox*, I think it better to consider it merely a state of the present species, than run the risk of a mistake.

288. *A. semiglobátus*, Batsch, (*hemispherical Agaric*); pileus hemispherical even viscid yellow, gills adnate clouded with black, stem fistulose smooth dotted with black above. *Batsch, Cont. 1. f.* 110. *Sow. t.* 248. (*in part*). *With. v.* 4. *p.* 240. *Pers. Syn. p.* 407. *Fr. Syst. Myc. v.* 1. *p.* 284. *Greav. Fl. Ed. p.* 391. *Sc. Crypt. Fl. t.* 344.—*A. lustré*, *Bull. t.* 566. *f.* 4.—*A. glutinosus*, *Curt. Lond. t.* 194.—*A. virosus*, *Sow. t.* 407. *f.* 7, 8, 11—14. *Purt. v.* 2 & 3. *n.* 952.

Rich meadows, especially on horse-dung. May—Nov. Extremely common.—*Pileus*  $\frac{1}{2}$ —1 inch or more broad, hemispherical, yellow or

\* There is some confusion in the citation of this and the next accompanying figure, *Bull. t.* 540. *f.* 2, in consequence of the references at the foot of the plate being transposed. De Candolle's description of *A. sphaleromorphus*, "lamelles atteignant à peine le pédicule," evidently belongs to *A. melanospermus*. Fries following the reference and not the figures themselves, has quoted under *A. melanospermus*, the figure of *A. sphaleromorphus*.

slightly mottled from the shining through of the gills, viscid when moist, shining and smooth when dry, obtuse, fleshy; *flesh* white beneath the epidermis, umber near the gills. *Gills* very broad, adnate with a little tooth, ventricose or plane, mottled with the purple-brown *sporules*, with at length a cinereous, sometimes a yellowish tinge. *Stem* 2—3 inches high, 1—1½ line thick, very viscid, shining when dry with a closely glued silkiness, fistulose; ring more or less perfect, deflexed.—This or some very closely allied species has unfortunately been often gathered for *A. oreades*, which arises not so much from any real similarity, as from complete ignorance what to gather. The true *Champignon* has white gills, a solid tough stem and a dull, not at all viscid, pileus; the present species has dark-coloured gills, a hollow stem and shining glutinous pileus; besides which the whole substance is totally different. The species which Sowerby mentions as proving fatal, though figured in the same plate with this, appears to be another, as do those in *t.* 408. (marked *t.* 407.) Too much caution cannot be used in the eating of dark-gilled Agarics, and the greatest credit is due to Mr. Sowerby for his laudable exertions. The distinctions are again pointed out in the little work entitled the “Mushroom and Champignon Illustrated,” by Mr. J. D. C. Sowerby’s son, a most amiable and promising youth, cut off as his hereditary talents were just being matured. An instance is there recorded of a family at Lambeth, in 1830, suffering from eating the *A. virosus*; but among the figures there is not one which can with absolute certainty be referred to *A. semiglobatus*.

289. *A. versicolor*, With. (*changeable-coloured Agaric*); pileus squamose greenish-buff, gills at first yellowish-white, then dark-brown, stem stuffed white changing to brown. *With. v.* 4. p. 158. *Fr. Syst. Myc. v.* 1. p. 286.

Near the bridge over the stream that feeds the large pool at Edgebaston. Very rare.—“*Pileus* 1—4 inches broad, scurfy especially in the centre; convex, at length flat, but the edge much curled in. *Gills* decurrent. *Stem* 2 inches high, as thick as a swan’s quill, thickest downwards.” *With. l. c.*

290. *A. æruginosus*, Curt. (*verdigris Agaric*); pileus fleshy yellow smeared with a blue more or less persistent gluten which gives it a greenish tint, gills plane adnate purple-brown, stem hollow squamose. *Curt. Lond. t.* 309. *Sow. t.* 264. *With. v.* 4. p. 232. *Part. v.* 2 § 3. n. 946. *Fr. Syst. Myc. v.* 1. p. 286. *Gre. Fl. Ed. p.* 391.—*A. viridulus*, Schæff. *t.* 1.—*A. cyaneus*, Bolt. *t.* 143. *With. v.* 4. p. 192.—*A. politus*, Bolt. *t.* 30.

Near hay-stacks, meadows, woods, amongst grass, sticks, &c. Aug.—Nov. Extremely common.—Gregarious. *Pileus* 1—4 inches broad, convex, thin, expands, fleshy, dull-yellow but covered with blue gluten, above this, but not always, clothed with pure white scales. *Gills* purple-brown, or sometimes umber, plane or very slightly ventricose, adnate with a small tooth; margin white, pulverulent. *Sporules* elliptic. *Stem* 2—3 inches high, 3—6 lines thick, penetrating into the soil by strong branched white fibres, straight or flexuous, sometimes bulbous, scaly; *scales* reflexed, at length more or less smooth, with various tints of blue, green or yellow, at first stuffed then hollow,

various in stature, sometimes very short and thick, mottled longitudinally with blue within, the centre white. *Ring* in general fugacious. *Smell* disagreeable, like that of rancid ointment. Small specimens with the gluten quite washed off by heavy rain are sometimes with difficulty to be distinguished from *A. præcox*.

Subgenus 31. HYPHOLOMA; (from *υπη*, a web, and *λωμα*, a fringe.) *Veil* fugacious, woven, fixed to the margin of the pileus and stem. *Stem* firm, subsolid, distinct from the pileus. *Pileus* fleshy, convex, then plane. *Gills* adnate, close, subdeliquescent. *Asci* conspicuous.—*Cæsпитose*, growing on wood.

291. *A. lachrymabundus*, Bull. (*weeping* 'Agaric); pileus fleshy piloso-squamose whitish-brown, gills umber, stem hollow fibrillose. *Bull. t.* 525. *f.* 3, 194. *Sow. t.* 41. *With. v.* 4. *p.* 255. *Purt. v.* 2 & 3. *n.* 964. *Fr. Syst. Myc. v.* 1. *p.* 287. *Grev. Fl. Ed. p.* 391.

Chiefly about the stumps of felled trees. July—Nov. Common.—*Pileus* 2—4 inches broad, at first somewhat campanulate, at length expanded, fleshy, the margin thin, with a few fragments of the veil attached to it, firm, pale reddish-brown darker in the centre, fibrilloso-squamulose; flesh pale umber. *Gills* at first pale then reddish-brown, subventricose towards the base; slightly attached. *Stem* 2—3 inches high, 3 lines or more thick, pale-umber towards the base, whitish above, subincrassated below, subflexuous, fibrillose or squamuloso-fibrillose from the remains of the floccose ring; above squamuloso-pubescent, truly fistulose, the inside downy with a small bundle of cottony fibres running down from the pileus; firm, elastic, pale-umber within. *Odour* disagreeable.

292. *A. lateritius*, Schæff. (*large fasciculate Agaric*); pileus fleshy obtuse tawny inclining to brick-red, gills at length slightly green, stem stuffed stout. *Schæff. t.* 49. *f.* 6. *Pers. Syn. p.* 421. *Fr. Syst. Myc. v.* 1. *p.* 288. *Grev. Fl. Ed. p.* 392.—*A. amarus*, Bull. *t.* 30. 562.—*A. pomposus*, Bolt. *t.* 5.—*A. fascicularis*, var. 2. *Purt. v.* 3. *p.* 225. var. 3. *With. v.* 4. *p.* 239.

Stumps of trees, &c. May—Oct. Frequent.—Gregarious, cæsпитose; but not in general so much tufted as the next. *Pileus* 2—3 inches or more broad, fleshy, always very obtuse, not conic, at length expanded, ochraceous; tawny in the centre, paler at the margin where it is slightly silky; when young it is silky all over and in proportion as it becomes smooth it is more deeply coloured. *Veil* stained with the sporules, adhering in fragments to the margin. *Gills* rounded behind, adnate with a tooth, scarcely green, clouded with the sporules, the margin uneven. *Sporules* elliptic, brown-purple, but not with a ferruginous tint, as in *A. fascicularis*. *Stem* 3 inches or more high, 2—3 lines thick, often thickest below stuffed, yellow with a more or less rufescent tinge, not green; silky when young, distinctly squamulose or fibrillose, firm, at length fistulose, but the walls are as thick or twice as thick as the diameter of the canal. *Taste* very bitter and nauseous.—When solitary, it is often very handsome: the centre of the brightest brick-red with superficial patches of down. It is very difficult to



distinguish between this and the following, though they seem to be distinct species.

293. *A. fasciculáris*, Huds. (*smaller fasciculate Agaric*); pileus subcarnose umbonate ochraceous, gills at length green, stem hollow slender. *Huds. Fl. Ang. p. 615. Bolt. t. 29. Sow. t. 285. With. v. 4. p. 238. Pers. Syn. p. 421. Fr. Syst. Myc. v. 1. p. 288. Purst. v. 2 & 3. n. 950. Grev. Fl. Ed. p. 392. Sc. Crypt. Fl. t. 329. Klotzsch, Fung. Germ. exs. n. 21.—A. lateritius, Schæff. t. 49. f. 1—5.—A. pulverulentus, Bull. t. 178.*

Roots of trees, gate-posts, &c. Apr.—Nov. Very common.—Gregarious, densely caespitose. *Pileus* 2 inches broad, at first conic then expanded, more or less irregular from the tufted mode of growth, subcarnose, thick in the centre, tawny, the margin thin, yellow, with portions of the veil adhering to it, often stained with the ferruginous-purple *sporules*. *Gills* green, clouded, adnate with a subdecurrent tooth. *Sporules* elliptic. *Stem* 2—9 inches high, 2 lines thick, curved and unequal, hollow, fibrillose or squamulose, yellow, greenish above. *Ring* stained with the sporules, leaving scarcely any trace upon the stem. *Taste* very bitter and nauseous.

Subgenus 32. *PSILOCYBE*; (from  $\psi\acute{\iota}\lambda\omicron\varsigma$ ; *naked*, and  $\rho\epsilon\beta\eta$ , *the head or pileus*.) *Veil* marginal, thin, flocculose, very fugacious. *Stem* hollow, rarely stuffed, when young tough, equal, subfibrillose, often viscid. *Pileus* conic or convex, then expanded, almost distinct from the stem. *Gills* rather broad. *Substance* tough, persistent, never deliquescent.

294. *A. stercorárius*, Schum. (*dung Agaric*); pileus obtuse even viscid livid-yellow, gills broad decurrent brown, stem straight fibrillose. *Fr. Syst. Myc. v. 1. p. 291.—A. adnatus, Huds. Fl. Ang. p. 619.*

On horse-dung, near Cobham, Kent, Aug. 6, 1832. *Rev. M. J. Berkeley.*—*Pileus*  $\frac{1}{2}$ —1 inch broad, subcarnose, subumbonate (livid-yellow, then dull-yellow, *Fr.*) in my specimens umber, almost tawny, slightly viscid, moist, shining, quite smooth, even; in infancy, flat, then hemispherical, when old quite plane, the margin transparent, slightly notched; when dry pale. *Gills* umber, mottled with the brown-purple sporules, broad, plane with a decurrent tooth, or ventricose and emarginate. *Stem*  $1\frac{1}{2}$ —2 inches high, 1 line thick, umber, tough, flexuous, below squamuloso-fibrillose with a little down at the base, above shining but minutely pubescent, striate with the decurrent teeth of the gills, fistulose, but with a few fibrillæ within; *flesh* dark-umber. When young there is a narrow ring. This species resembles *A. semiglobatus*.

295. *A. callósus*, Fr. (*conic dung Agaric*); pileus conic, gills adnate ascending black-purple, stem tough smooth pallid. *Fr. Syst. Myc. v. 1. p. 292.—A. semiglobatus, Sow. t. 240. f. 1—3.*

Rich dungy pastures. Aug.—Nov. Not uncommon.—*Pileus*  $\frac{3}{4}$  of an inch broad,  $\frac{3}{8}$  high, conico-campanulate, apiculato-umbonate, viscid when moist, shining when dry, pale ochraceous, the margin darker from

its transparency; flesh thick in the centre, the margin membranaceous. *Gills* ventricose, adnate, chocolate-coloured; extreme margin white. *Sporules* brown-purple. *Stem* 4 inches high, slender, flexuous, nearly equal, thickened at the very base, subrufescent, fibrillose below, pulverulento-squamulose above, fistulose; the base sometimes clothed with blue down. Sowerby informs us that this species nearly proved fatal to a family in London.

296. *A. fenisécii*, Pers. (*eddish Agaric*); pileus subcarnose smooth dilute-umber, turning pale, gills adnexed umber, stem naked smooth rufescent. *Pers. Ic. et Desc. t. 11. f. 1. Pers. Syn. p. 411. Fr. Syst. Myc. v. 1. p. 295.*

Amongst grass after a week's rain at Spondon, Derbyshire. April.—Gregarious. *Pileus* 1—2 inches broad, hemispherical or campanulate, brown-umber, the margin transparent and minutely rugose, banded with various tints when losing its moisture; in decay it has a burnt appearance, and at length dries up and is black. *Gills* distant, broad, ventricose, attached, umber, mottled, the extreme margin white. *Stem* 2—3 inches high, 1½ line thick, subflexuous, fistulose, at first slightly pulverulent, umber, the apex striate, the base cottony. I am not quite sure whether this is the true plant of Persoon, as the gills in my plant are adnate and the colour more intense, but Fries says that the gills are so ventricose that they appear emarginate and are perhaps after all adnate and not merely adnexed. I hope, however, at some future period to publish figures of this and some other new and doubtful species, by which, if I should describe any species under wrong names, which it is almost impossible to avoid in so intricate and extensive a genus, the errors may at length be corrected by competent judges.

Subgenus 33. PSATHYRA; (from ψαθυρός, brittle.) *Veil marginal, very fugacious. Stem fistulose, equal, brittle, white, subpruinose. Pileus submembranaceous, when young glandiform, then campanulate, at length expanded, nearly plane, obtuse, brittle, dry, soft to the touch, clothed with innate atoms or fibrillæ. Gills fixed, rarely free. Sporules in many of the species arranged in fours.—Growing amongst chips, in moist grassy places, &c., on the ground.*

297. *A. areolátus*, Klotzsch, (*areolated Agaric*); pileus subcarnose clothed with minute fibrillæ, the epidermis cracking into nearly equal square patches, gills fixed umber at length black, stem hollow. *Klotzsch, MSS.*

Gardens. May—Oct. Botanic Garden, Glasgow. *Klotzsch, in Hook. Herb.*—“*Pileus* 1½—3 inches broad, convex, ochre or fuscous; *veil* between fibrous and membranaceous, fugacious. *Gills* 2—3 lines broad, the edge white and beaded with drops of moisture. *Stem* 2—3 inches high, 3 lines thick, generally thickened at the base, fibrillose, dirty-white.” Apparently a very distinct species.

298. *A. stipátus*, Pers. (*crowded Agaric*); pileus subcarnose smooth bright-brown pale when dry, gills close adnate umber, stem smooth. *Pers. Syn. p. 423. Fr. Syst. Myc. v. 1. p. 296.*

—*A. spadiceus*, Schæff. t. 60.—*A. spadiceo-griseus*, Schæff. t. 237.  
—*A. hydrophilus*, Bull. t. 511.

About stumps of trees, &c. July—Nov. Probably not uncommon. King's Cliffe, Norths. Canterbury. *Rev. M. J. Berkeley*.—Densely fasciculate, compressed and irregular from its crowded mode of growth. *Pileus* nearly 3 inches broad, fleshy, obtuse, sometimes umbilicate, at first tawny-brown, fibrillose at the margin from the white veil, at length quite expanded, broadly umbonate, pale when dry but marked here and there with darker shades; the margin generally retaining its colour, corrugate, scarcely striate. *Gills* close, adnate, umber. *Sporules* umber-purple. *Stem* 4—5 inches high, 2 lines thick, confluent, shining, smooth to the naked eye, but under a lens satiny, with here and there a few fibrillæ, wavy, fistulose, white, umber within.—This is the true *A. stipatus*, of which Schæff. t. 60, is a good representation: Bulliard's figure is a slightly different form of this polymorphous species, which occurred at Canterbury. *A. concinnus*, Bolt., is very doubtful.—The following distinct forms, or perhaps species, are worthy of notice:—

a. On wood. Aug. Margate.—Tufted. *Pileus* scarce 1 inch broad, very pale ochraceous scarcely altered when dry, clothed with a few minute adpressed squamulæ; margin fringed with fragments of the veil. *Gills* narrow, shaped exactly like those of *A. Candollianus*, but pale ochraceous with a pale cinnamon tint. *Stem* 1½ inch high, pruinoso-fibrillose and striate above with a few scattered fibrillæ.

b. On the ground, sticks, &c. Beeston, Notts. Oct.—Solitary. *Pileus* 1¼ inch broad, ¾ of an inch high, campanulate, tawny brown, margin transparent. *Gills* pale umber, then umber-cinereous, adnate, ascending. *Stem* 3½ inches high, ⅛ of an inch thick, above, ¼ at the base, attenuated upwards, white, squamulose within the pileus, below slightly fibrillose, strigose at the base. *Flesh* of the pileus and of the centre of the stem umber, the outer coat white.

c. Grassy places, generally near roads. Kirriemuir. March, April, *Klotzsch, MSS.*—“*Pileus* 1½—2 inches broad, subcarnose, convex, nearly plane, smooth, ochraceo-fuscous, plane and rugulose when dry. *Gills* adnate, white, clouded with black-brown. *Stem* 2—3 inches high, 2—3 lines thick, fistulose, white, smooth, striate above and obsoletely mealy. *Veil* white, very fugacious, fringing the pileus.” *Klotzsch, MSS.*

299. *A. Candollianus*, Fr. (*De Candolle's Agaric*); pileus subcarnose even, at length dirty-white, gills fixed pinkish changing colour, stem fibrillose, veil fringing the pileus. *Fr. Syst. Myc. v. 1. p. 297.*—*A. appendiculatus*, Bull. t. 392.—*A. mutabilis*, Fl. Dan. t. 774.

On the ground. Sept. Oct. Probably not uncommon. Botanic Garden, Glasgow. *Klotzsch*. King's Cliffe, Norths. *Rev. M. J. Berkeley*.—*Pileus* 2—4 inches broad, expanded, hemisphærico-campfanulate; margin split and fringed with the woven veil. *Gills* pinkish, at first white, rounded behind, narrow. *Stem* 3 inches high, striate, fibrillose above, strigose at the base. *A. appendiculatus*, of Sow. With. and Purt. belongs either to this or the foregoing species; and not, I think, to *A. præcox*.

300. *A. fibrillosus*, Pers. (*fibrillose Agaric*); pileus submembranaceous dirty-white, gills adnate purple-black, stem elon-

gated fibrilloso-squamose. *Pers. Syn.* p. 424. *Fr. Syst. Myc.* v. 1. p. 297.

On the ground, amongst leaves. Spring and Autumn. Probably not uncommon. Ashton, Norths., &c. *Rev. M. J. Berkeley*.—"Pileus when moist livid, substriate; when dry, white, not striate; often fibrilloso-squamose. Stem 3 inches high, 2—3 lines thick, beset with villous fasciculated scales." *Fr. l. c.*

301. *A. bulláceus*, Bull. (*small dung Agaric*); pileus hemispherical submembranaceous rufous, margin striate, gills plane very broad cinnamon, stem short tomentose. *Bull. t.* 566, *f.* 2. *Fr. Syst. Myc.* v. 1. p. 297.

On dung. Sept.—Oct. King's Cliffe, &c. Norths. *Rev. M. J. Berkeley*.—"Pileus  $\frac{3}{4}$  of an inch broad, at first chocolate, striate; when dry dirty tawny ochre, sparkling with innate atoms; when young, clothed with a few white scales towards the margin, arising from the ring. Gills very broad, nearly horizontal, adnate with a little tooth, brown with a tinge of amber or cinnamon; *sporules* black. Stem about 1 inch high, not 1 line thick, but varying in height according to the depth of the dung from which it takes its rise, often curved, pilose when young, then clothed with minute fibrillæ, hollow, very brittle, dark-umber within. Fries has not met with this species. My specimens accord so nearly with Bulliard's figure that I cannot conceive them distinct, though the gills are not so red as there represented.

302. *A. cérnuus*, Müll. (*nodding Agaric*); pileus submembranaceous livid whitish when dry, gills adnate cinereous-black, stem clothed above with white pulverulent scales. *Fl. Dan.* t. 1008, *f.* 1. *Fr. Syst. Myc.* v. 1. p. 298.—*A. farinulentus*, *Schæff. t.* 205.

Road-sides, on the ground amongst chips, &c. Aug.—Nov. Thornhaugh, King's Cliffe, Norths. *Rev. M. J. Berkeley*.—"Solitary or subcæspitose. Pileus  $1\frac{1}{2}$  inch broad, membranaceous, smooth, shining, at first pale livid-brown, almost white when dry, scarcely striate, when young ovate very obtuse, then subcampanulate. Ring woven, breaking up into little laciniae which fringe the margin, fugacious. Gills not very numerous, cinereous, clouded, the margin white, not ventricose. *Sporules* oblong, quaternate; appearing black when collected in a heap, but, viewed separately, brown-purple. Stem 4 inches high, 2 lines thick, fistulose, attenuated upwards, flexuous often nodding, downy at the base and squamuloso-furfuraceous within the pileus; more or less striate, especially above. Very brittle. Occasionally a few scattered fragments of the veil are attached to the epidermis, and the stem is fibrillose.

303. *A. bifrons*, Berk. (*two-faced Agaric*); pileus submembranaceous campanulate obtuse ochraceous-brown tinged with red, when dry pale-tan, gills pinkish-cinereous, stem naked.

In ditches, amongst sticks. Sept. Bedford Purlieus, Thornhaugh, Norths. *Rev. M. J. Berkeley*.—"Pileus  $\frac{3}{4}$  of an inch broad, furnished at first with a minute fibrillose very evanescent veil, rugulose, ochraceous-brown, more or less tinged with red; margin thin, transparent. Gills adnate, moderately broad, cinereous shaded with pink; margin white, composed of minute wavy teeth; *sporules* brown-purple, quater-

nate, with minute papillæ between the sori. *Stem*  $2\frac{1}{2}$  inches high, 1 line thick, filiform, thickest at the base, beautifully but very minutely satiny, not pulverulent, very brittle.

304. *A. atomatus*, Fr. (*spangled Agaric*); pileus submembranaceous obtuse dirty-white tinged with rose-colour sparkling with innate atoms, gills adnate, stem squamulose. *Fr. Syst. Myc. v. 1. p. 298.*

Amongst grass, road-sides, &c. Aug.—Sept. Probably not uncommon. Margate. Cotterstock, Norths. *Rev. M. J. Berkeley.*—*Pileus*  $1\frac{1}{2}$  inch broad, at first obtusely conic, then subhemispherical, at length plano-expanded with a fine evanescent arachnoid veil, ochraceous inclining to pale rufous; at length cream-coloured or nearly white, sometimes purplish or rose-coloured. Occasionally the pileus is umbonate, and this state seems to have the greatest tendency to assume a purplish tinge. *Gills* broad, ventricose, rather distant, at first pale ochraceous, then brown-purple (cinereous-black, *Fr.*). *Stem* 2—3 inches high, 1—2 lines thick, somewhat rooting, fistulose, brittle, striate above and slightly pulverulent, the base thickest and more or less cottony, never quite smooth; sometimes fibrilloso-squamulose.—Two forms occur of the species described above; the one distinctly covered with sparkling atoms, with always a rosy tint and squamulose stem; the other less distinctly atomate, not so constantly rosy and the stem, though never quite smooth, not scaly. There is not the least difference in the gills.

305. *A. corrúgis*, Pers. (*wrinkled Agaric*); pileus submembranaceous campanulate umbonate rose-coloured, gills adnate violet-black, stem smooth. *Pers. Syn. p. 424. Fr. Syst. Myc. v. 1. p. 298.*—*A. corrugatus*, *With. v. 4. p. 251. Part. MSS.*—*A. carbonarius*, var. *Batsch, Cont. 1. f. 91.*—*A. limbatus*, *Holmsk. v. 2. t. 32.*

Gardens, woods and shady places. Packington Park. *Mr. Stackhouse.* Nov. *Purton.*—“*Pileus* 1 inch or more broad, turning pale, when dry corrugated. *Gills* broad. *Stem* 2—4 inches high, 1—2 lines thick, smooth; hairy at the base.” *Fr. l. c.*

306. *A. grácilis*, Pers. (*rose-edged Agaric*); pileus submembranaceous campanulate obtuse, gills very broad behind cinereous-black, the margin rose-coloured, stem slender smooth. *Pers. Syn. p. 425. Fr. Syst. Myc. v. 1. p. 299.*—*A. Tentaculum*, *Sow. t. 385. f. 1.*

Ditches, woods, gardens, &c., amongst sticks and leaves. Autumn. Not uncommon.—*Pileus*  $\frac{3}{4}$ —1 inch broad, campanulate, obtuse or conico-campanulate, submembranaceous, sometimes umbonate, in which case the centre is fleshy. *Gills* broad, cinereous, clouded, adnate with or without a tooth, ventricose or horizontal. *Sporules* quaternate. *Stem*  $1\frac{1}{2}$ — $2\frac{1}{2}$  inches high, scarce 1 line thick, slender, smooth, downy at the base; occasionally short and thicker.—Easily known by the rose-coloured margin of the gills. The original specimen of Sowerby's *A. Tentaculum* appears to belong to the present species.

Subgenus 34. COPHINARIUS; (from  $\alpha\phi\alpha\iota\sigma\alpha\varsigma$ , *dung*.) *Veil*

rarely forming a ring, generally very fugacious; stem fistulose, slender, rather brittle, distinct from the pileus. Pileus slightly carnose or membranaceous, smooth, subsistent. Gills subdeliquescent. Sporules in general black; ferruginous in *A. vitellinus*, *Boltonii* and *titubans*; quaternate in *A. semiovatus*.

307. *A. semiovatus*, Sow. (*half-ovate Agaric*); pileus sub-carnose campanulate viscid clay-white, gills adnate cinereous-black, stem long whitish, ring entire. *Sow. t.* 131. *With. v.* 4. p. 261. *Pers. Syn. p.* 408. *Purt. Mid. Fl. v.* 2 & 3. n. 968. *Fr. Syst. Myc. v.* 1. p. 300. *Grev. Fl. Ed. p.* 392.—*A. nitens*, *Bull. t.* 84.—*A. ciliaris*, *Bolt. t.* 53.

On dung, near hay-stacks, &c. More or less common the whole year.—Pileus  $1\frac{1}{2}$  inch broad, semioval, very obtuse, at first ochraceous, then dirty-white, shining, smooth, slightly viscid, wrinkled when old, subcarnose but watery. Gills subdeliquescent, broad, ventricose, adnate by a small portion, clouded, cinereous, the margin white. Sporules large, black, elliptic, quaternate, the major axis perpendicular to the gills, with minute papillæ, each of which is surmounted by a little point, between the sori. Stem 5 inches or more high, 2 lines thick, at first fibrillose; beneath the ring squamuloso-pulverulent; above dotted, as is the ring, with the sporules.

308. *A. fimiputris*, Bull. (*rotten-dung Agaric*); pileus sub-carnose campanulate, when moist cinereous turning pale, gills adnate cinereous-black, margin of the same colour, stem long rufescent, ring torn. *Bull. t.* 66. *With. v.* 4. p. 228. *Purt. v.* 2 & 3. n. 1465. *Fr. Syst. Myc. v.* 1. p. 300. *Fl. Dan. t.* 1959.

On horse-dung. May—Oct. Very common.—Pileus 1—2 inches broad and high, at first obtuse, conic, reticulato-rugulose; at length campanulate, dark-cinereous, livid when dry; the ring broken into triangular loops or lacinia, fringing the margin, which is minutely downy and frequently split. Gills adnate, ascending, mottled, cinereous-black, subdeliquescent. Sporules elliptic, subapiculate, brown-black. Stem 2—6 inches high, squamuloso-tomentose, pulverulent, often beaded with little drops, striate above, nearly white at length rufescent; zoned within.

309. *A. papilionaceus*, Bull. (*Butterfly Agaric*); pileus sub-carnose campanulate dry dingy-black turning pale, gills adnate cinereous-black, margin white, stem long rufescent, the apex striate stained with black. *Bull. t.* 58, 561, f. 2. *Pers. Syn. p.* 410. *Fr. Syst. Myc. v.* 1. p. 301.—*A. acuminatus*, *Scheff. t.* 202.—*A. carbonarius*, *Batsch, El. f.* 6. *Purt. v.* 3. p. 428.—*A. semiovatus*, var. 2. *With. v.* 4. p. 262. *Purt. v.* 2. p. 654.

Pastures and dungy places. May—Jan. Probably not uncommon. Glasgow Botanic Garden, *Klotzsch, in Hook. Herb.* Benefield, Norths. *Rev. M. J. Berkeley.*—"Pileus  $\frac{1}{2}$ —1 inch broad, at length convex, when dry subrufescent, even, never viscid. Gills ascending, close, quite entire. Veil very fugacious. Stem 3 inches high, 1—2 lines thick, rufescent." *Fr. l. c.*

310. *A. striátus*, Bull. (*striated Agaric*); pileus campanulate, disc even rufescent, margin pale sulcate, the furrows forked, gills rounded brown, stem white. *Bull. t.* 552. *f.* 2. *Fr. Syst. Myc. v.* 1. *p.* 302.—*A. campanulatus*, *With. v.* 4. *p.* 261 (*vide Purton*). *Purt. v.* 3. *n.* 1472.

Meadows, pastures and woods. Not common. Spring and autumn. *Purt. MSS.*—*Pileus* 1 inch from the edge to the apex. *Stem* 4 inches high, as thick as a goose-quill. Differs from *A. plicatilis* in size, and in not having a fleshy ring at the top of the stem to which the gills adhere.

311. *A. vitellinus*, Pers. (*yolk-of-egg Agaric*); pileus campanulate viscid yellow often split, gills adnexed clay-coloured, stem equal squamuloso-pulverulent. *Pers. Syn. p.* 402. *Fr. Syst. Myc. v.* 1. *p.* 303.

Horse-dung in pastures. May. King's Cliffe, Apethorpe, Norths. *Rev. M. J. Berkeley.*—*Pileus* 1 inch or more broad, at first conic, then expanded or conico-campanulate, subcarnose, or with the margin membranaceous, slimy, of a beautiful lemon-colour, at length rufescent near the margin which is striate and inclined to split. *Gills* moderately broad, clay-coloured, adnexed, subdeliquescent. *Stem* 1½ inch high, 2 lines thick at the base, equal, or slightly attenuated upwards, fistulose, juicy, brittle, splitting sometimes longitudinally, pure white, pulverulent, striate at the apex.

312. *A. Boltónii*, Pers. (*Bolton's Agaric*); pileus convex subumbonate viscid yellow, gills adnexed pale, stem attenuated smooth yellow. *Pers. Syn. p.* 414. *Fr. Syst. Myc. v.* 3. *p.* 303.—*A. flavidus*, *Bolt. t.* 149. *Sow. t.* 96. *Purt. v.* 3. *n.* 1465.—*A. equestris*, *Bolt. t.* 65. *With. v.* 4. *p.* 257. *Purt. v.* 3. *n.* 1467.

In pastures on rotten dung in moist places. June—Sept.—*Pileus* 2 inches broad. *Stem* 3 inches high.

313. *A. titubans*, Bull. (*salmon-gilled Agaric*); pileus thin plicate viscid yellow, gills almost free reddish-brown, stem equal shining. *Bull. t.* 425. *f.* 1. *Sow. t.* 128. *With. v.* 4. *p.* 253. *Pers. Syn. p.* 415. *Fr. Syst. Myc. v.* 1. *p.* 304. *Purt. v.* 2 & 3. *n.* 962. *Grav. Fl. Ed. p.* 393.

Amongst grass on dung. May—Oct. Not uncommon.—*Pileus* 1 inch broad, campanulato-convex, yellow, viscid, shining; *margin* notched, plicate and striate, pale cinnamon, submembranaceous, very delicate and tender, smooth, at length almost deliquescent, shining and subochraceous. *Gills* narrow, slightly ventricose, very minutely adnexed, cinnamon. *Sporules* ferruginous. *Stem* 4—5 inches high, 1—1½ line thick, striate above, pulverulento-squamulose, pale-yellow, fistulose, very tender and delicate.

314. *A. papyrúceus*, Pers. (*paper Agaric*); pileus hemispherical smooth dirty-white, edge tinged with purple very thin nearly transparent, gills pale pinkish-brown, stem white smooth. *Pers. Syn. p.* 425. *Fr. Syst. Myc. v.* 1. *p.* 306.—*A. membranaceus*, *Bolt. t.* 11.—*A. macer*, *With. v.* 4. *p.* 230. *vva.* 3. *Purt. v.* 3. *n.* 1463.

"Shady places in woods, at the bottom of posts. Aug.—Sept. Not common.—*Pileus* 2 inches broad. *Stem* 3 inches high, as thick as a swan's-quill." *Purt. MSS.*

315. *A. disseminatus*, Pers. (*minikin Agaric*); gregarious, small, pileus ovato-campanulate plicate, gills adnate or adnexed whitish-cinereous, stem incurved smooth. *Pers. Syn. p.* 403. *Syst. Myc. v. 1. p.* 305.—*A. minutulus*, Schæff. *t.* 308. *With. v. 4. p.* 212. *Purt. v. 2 & 3. n.* 935.—*A. Tintinnabulum*, Batsch, *El. f.* 3. b.—*A. striatus*, Sow. *t.* 166.—*A. disseminatus*, Grev. *Fl. Éd. p.* 393. c.—*A. digitaliformis*, Bull. *t.* 22. *A. B. t.* 525. *f.* 1.

On the ground, above buried wood or on old stumps. Spring and autumn. Very common.—Gregarious, cæspitose, many thousands growing together. *Pileus* 3 lines broad, campanulato-conic, minutely pubescent, strongly striate, submembranaceous, tender, fragile, ochraceous, at length white with a pearly tint towards the margin. *Gills* broadly adnate, pink inclining to cinereous. *Sporules* brown-purple, elliptic, subquaternate. *Stem* 1 inch high,  $\frac{1}{2}$  line thick, fistulose, curved, white, pubescent, attenuated upwards downy at the base. Sowerby's plant is larger and more highly coloured,  $\frac{1}{3}$ — $\frac{1}{2}$  an inch broad; it agrees in the minute pubescence. It occurs especially on willow trees. Bulliard's plant is represented with the gills free, and De Candolle describes it, as it is figured, *t.* 525. *f.* 1, as clothed with little spherical tubercles. I have seen nothing that accords with this character.

Subgenus 35.\* **COPRINUS.** *Gills free, unequal, thin, simple, changing colour, at length deliquescent. Asci large, segregate; sporules quaternate. Veil universal, more or less concrete, flocculose, fugacious. Stem fistulose, straight, elongated, brittle, subsquamulose, whitish. Pileus membranaceous, rarely subcarnose, when young ovato-conic, then campanulate, at length torn and revolute, deliquescent, distinct from the stem, clothed with the flocculose fragments of the veil. Fugacious fungi, growing in rich dungy places or on rotten wood.*

316. *A. comatus*, Müll. (*cylindric Agaric*); pileus subcarnose scaly white, gills white then rufous-purple, stem subbulbous, ring moveable. *Fl. Dan. t.* 834. *Pers. Syn. p.* 395. *Fr. Syst. Myc. v. 1. p.* 307. *Grev. Fl. Éd. p.* 393. *Scot. Crypt. Fl. t.* 119.—*A. porcellaneus*, Schæff. *t.* 46 & 47.—*A. typhoides*, Bull. *t.* 16, 582, *f.* 2.—*A. fimetarius*, Bolt. *t.* 44. *Curt. Lond. t.* 93.—*A. cylindricus*, Schæff. *t.* 8. *With. v. 4. p.* 253. *Purt. v. 2 & 3. n.* 963.

Meadows, road-sides and waste places. April—Oct. Very common.—*Pileus* 3—4 inches high, 2 inches broad, campanulato-cylindric; *epidermis* white, breaking up into broad fibrillose subfuscous scales; beneath this coating the pileus is finely plicate, often split and of a

\* I consider this division of exactly the same importance as the other subgenera. The sporules being certainly quaternate in many species of the two foregoing subgenera, no dependance can be placed upon this character.



pinky-brown; *flesh* scarcely any on the margin, rather thick in the centre. *Gills* very numerous and close, beautifully varied with pink and brown-black, the margin white or pinkish, minutely downy, slightly undulated, quite free so as to leave a sort of collar round the stem; clothed with very minute obtuse papillæ, surmounted by four points and very difficult to detect; *sporules* rather small. *Stem* 5 inches or more high,  $\frac{3}{4}$  of an inch thick at the base, hollow, filled with arachnoid fibres which are often collected into a thread, bulbous, fibrillose and subadpresso-squamose, sometimes tinged with the pinkish hue of the gills, brittle but tolerably firm; *ring* thick and moveable. I find a variety on dunghills with an ovate pileus, differing in no other point from the common state. The gills are white, not umber in the infant plant, as Fries states to be the case in his  $\beta$ . (*A. ovatus*, Schaff. t. 7.)

317. *A. sterquilinus*, Fr. (*sulcate scaly dung Agaric*); pileus campanulate submembranaceous sulcate sericeo-villous, the disc clothed with imbricate scales, gills purplish (carnation, *Bolt.*), stem attenuated furnished with a ring at the base. *Fr. Syst. Myc. v. 1. p. 308.*—*Fungus sterquilinus*, Sc. *Mich. p. 181. t. 80. f. 3.*—*A. obtectus*, *Bolt. t. 142.* *Pers. Syn. p. 397.*—*A. cylindricus*, var. 2. *With. v. 4. p. 254.*

On new dunghills. Rare. About Halifax. *Bolton*. Edgebaston. *Withering*. July.—*Bolton's* plant appears to be rather smaller and less scaly than *Micheli's*, to which he refers; but on the whole there seems no room for doubt that it is the same. *Fries*, however, considers the plant of *Bolton* as very near to *A. niveus*.

318. *A. picæcus*, Bull. (*Magpie Agaric*); pileus membranaceous dirty-white at length broken into broad scales, gills at length black, stem bulbous naked, ring none. *Bull. t. 206. Sow. t. 170. Pers. Syn. p. 397. Purst. v. 3. n. 1476. Fr. Syst. Myc. v. 1. p. 308.*

Grassy places. Sept.—Dec. Rare. Hainault Forest. Peckham Wood. *Sow*. Alcester and Dunnington. *Purton*. Wansford, Norths. *Rev. M. J. Berkeley*.—*Pileus* 2 inches broad and high, campanulate, glutinous, closely grooved, brown with a tinge of red above; margin cinereous; dimpled at the apex. *Epidermis* cracking into large pale fawn-coloured subconic scales; *flesh* very thin. *Gills* broad, ventricose, narrow in front, black, the extreme margin, except when deliquescent, white; not so close as in the following species, clothed with prominent spiculæ exactly as long as the interstices are broad, quite free. *Sporules* elliptic, black. *Stem* 6 inches high,  $\frac{1}{2}$  an inch thick at the base, beautifully satiny with adpressed fibrillæ, attenuated above where it is subtomentose and stained with the sporules, subbulbous below, hollow with a few stringy fibres attached to the walls.

319. *A. atramentarius*, Bull. (*inky Agaric*); cæspitose, pileus subcarnose brownish, apex scaly, gills ventricose white, then purple-brown, stem equal naked. *Bull. t. 164. Fr. Syst. Myc. v. 1. p. 308. Grev. Fl. Ed. p. 394.*—*Fungus multiplex*, Sc. *Vaill. Bot. Par. p. 73. t. 12. f. 10.*—*A. ovatus*, *Curt. Lond. t. 101. With. v. 4. p. 259. Purst. v. 2 & 3. n. 966.*—*A. luridus*, *Bolt. t. 54.*—*A. fimetarius*, *Sow. t. 188.*

Fields, gardens, waste places, roots of trees, &c. Spring and autumn.

Common.—Gregarious, cæspitose. *Pileus*  $3\frac{1}{2}$  inches or more high, subcarinose, campanulate, obtuse, the edge uneven, dirty-grey, at length brownish, innato-fibrillose, more or less furfuraceous and corrugated, the apex often scaly. *Gills* very broad and close, with numerous pellucid processes, ventricose, umber, the margin white, rounded behind, quite free. *Stem*  $3\frac{1}{2}$  inches high,  $\frac{1}{2}$  an inch thick, fistulose, juicy, fibrillose, attenuated upwards, brittle, the substance banded concentrically. There is generally a prominent mark at the base, caused by the pressure of the edge of the pileus in an early stage of growth, which has somewhat the appearance of a volva.

320. *A. micæus*, Bull. (*Mica Agaric*); cæspitose, pileus membranaceous sulcate squamuloso-furfuraceous, gills pale then black, stem slender equal. *Bull. t.* 246, 565. *With. v.* 4. p. 249. *Fr. Syst. Myc. v.* 1. p. 309. *Grev. Fl. Ed. p.* 394. *Scot. Crypt. Fl. t.* 76.—*A. truncorum*, Schæff. t. 6.—*A. lignorum*, Schæff. t. 66.—*A. congregatus*, *With. v.* 4. p. 248. *Sow. t.* 261. *Purt. v.* 3. n. 960.—*A. striatus*, *Bolt. t.* 54.—*A. turbinatus*, *With. v.* 4. p. 247.

Roots of trees, bottoms of posts, &c. May—Nov. Very common.—Cæspitose. *Pileus*  $\frac{3}{4}$ —1 inch or more broad, half-ovate, often more or less irregular from the dense mode of growth, sprinkled with glittering meal, strongly striate, almost plicate, rufous, the umbo darkest, the margin cinereous, very thin; veil very fugacious. *Gills* attenuated in front, broad behind, ascending, attached above, umber mottled with the sporules, which appear black when viewed in a mass, but are really brown-purple. *Stem* 2—3 inches or more high, 2 lines thick, hollow, brittle, squamuloso-pulverulent, the *epidermis* often cracked into little scales, very faintly tinged with red, attenuated upwards; the base downy and sometimes assuming the appearance of a volva, as in *A. atramentarius*. *A. acetabulosus*, *Sow. t.* 303, is perhaps such a form, if the strongly marked spicules do not indicate a distinct species.

321. *A. cinereus*, Bull. (*cinereous Agaric*); pileus at first cylindrical sulcate squamulose or tomentose cinereous, apex bald even, gills linear, stem scaly subtomentose. *Bull. t.* 88. *Schæff. t.* 100. *With. v.* 4. p. 260. *Purt. v.* 2 & 3. n. 957. *Fr. Syst. Myc. v.* 1. p. 310. *Grev. Fl. Ed. p.* 394.—*A. pullatus*, *Bolt. t.* 20.—*A. congregatus*, var. 2. *Purt. v.* 3. p. 235.—*A. tomentosus*, *Bull. t.* 138. *Bolt. t.* 156.

Gardens, rich meadows, saw-dust, dung, &c. July—Oct. Very common.—*Pileus* 2 inches high before expansion, then 3 inches, but very variable in size, sulcate, at first cylindrical, rather flat at the apex, clothed with fugacious adpressed or slightly recurved feathery scales; then conico-campanulate; at length inverted with the margin split and rolled back. *Gills* black, clothed with pellucid conic processes and elliptic black *sporules*. *Stem* sometimes 5 inches high,  $\frac{1}{2}$ — $\frac{1}{3}$  of an inch thick, clothed near the apex with thick patent down, near the base with small adpressed scales, very fragile, hollow, without any cottony fibres.

322. *A. macrorhizus*, Pers. (*long-rooted Agaric*); pileus ovato-campanulate obtuse clothed with evanescent reflexed scales,

gills brown, stem thickened at the base with a long root. *Pers. Syn. p.* 398.—*Fungus, &c. Micheli, p.* 189. *t.* 80. *f.* 2.

On a hot-bed, penetrating through the superincumbent mould and attached to the dung beneath by the long attenuated root. April 11, 1826. Cotterstock, Norths. *Rev. M. J. Berkeley.*—*Pileus*  $\frac{3}{4}$  of an inch broad, nearly 1 inch high, scaly, the scales sometimes forming a beautiful radiated crown at the apex, pale-brown above, the margin greyish, striate. *Gills* brown, with a slight white border, close, free, very slightly ventricose,  $\frac{1}{8}$  of an inch broad. *Stem* 3 inches high, 3 lines thick at the base,  $\frac{1}{8}$  of an inch at the apex, straight, very downy towards the base, less so upwards, fistulose; *root*  $2\frac{1}{2}$  inches long. My plant exactly accords with Micheli's, even to the curious crown, to which Fries refers a long-rooted variety of *A. cinereus*, from which, however, this is very distinct in the form of the pileus and colour of the gills. Perhaps its nearest affinity is with *A. stercorarius*, Sow. which Fries refers to *A. cphemerus*.

323. *A. niveus*, Pers. (*snow-white Agaric*); pileus campanulate squamuloso-farinose snow-white as well as the tomentose stem, gills narrow. *Pers. Syn. p.* 400. *Fl. Dan. t.* 1671. *Fr. Syst. Myc. v.* 1. *p.* 311. *Gre. Fl. Ed. p.* 394.—*A. conspersus*, *With. v.* 4. *p.* 259. *Purt. v.* 2 & 3. *n.* 956.—*A. stercorarius*, *Bull. t.* 542. *f.* 2. *M. N. Sow. t.* 262 (*small figure*).

On horse-dung in pastures. Aug.—Dec., and occasionally in the spring.—Very common. *Pileus*  $\frac{1}{2}$ —1 inch broad, campanulate, at length expanded and depressed, with the margin rolled back, clothed with dense scaly meal; the margin striate, very thin and delicate. *Gills* narrow, free, subventricose, black. *Stem* 2 inches or more high, 1 line thick, thickest at the base, sericeo-squamulose, hollow, fragile, splitting longitudinally.—I found a very large and most beautiful variety of this at Margate, in a salt-marsh on horse-dung, nearly 3 inches broad and 2 high, umbonate, densely mealy (the meal nearly 1 line deep at the apex) so that the surrounding grass was thickly powdered. The meal consists of round pellucid cells containing a nucleus. *Gills* with a pink hue, at length black, rather distant, attached above. *Stem* 6 inches high, rooting. *Sporules* oval, with a pellucid margin.

324. *A. domesticus*, Bolt. (*House Agaric*); pileus obtuse squamuloso-furfuraceous undulato-sulcate dingy, gills close linear black, stem subsericeous. *Bolt. t.* 26. *Pers. Syn. p.* 404. *Fr. Syst. Myc. v.* 1. *p.* 311. *Purt. v.* 3. *n.* 1474.—*A. cylindricus*, var. 3. *With. v.* 4. *p.* 254.—*A. alternatus*, *Schum. Fl. Dan. t.* 1961. *f.* 1.

In tufts, on moist rotten wood, in cellars and damp kitchens; also in dry vaults, damp walls, and under carpets on ground floors.—“Very brittle, often caespitose. *Pileus* 2 inches broad, membranaceous, campanulate, apex nearly smooth, reddish-brown. *Gills* white when young, then ruddy, at length brown-black. *Stem* 2—3 inches high, 3 lines thick, even, attenuated upwards.” *Fr. l. c.*

325. *A. radians*, Desm. (*radiating Wall Agaric*); pileus at first pea-shaped deep-brown then ovoid campanulate and plane buff deeper and furfuraceous towards the apex striate, gills

violet-grey then black, stem curved with a broad radiating fibrous base. *Desmazières, Ann. des Sciences, v. 13. p. 214. t. 10.*—*Junior. Lycoperdon radiatum, Sow. t. 145.*—*Institale radiatum, Fr. Syst. Myc. v. 3. p. 210.*

On a plastered wall. Holt. Norfolk.—“*Pileus* 2 inches broad. *Gills* free, numerous, at first white. *Stem*  $1\frac{1}{2}$  inch high, 2 lines thick, cylindrical, fistulose, almost equal; curved in consequence of its vertical place of growth, naked, smooth, furnished with a radiating base, 2 inches broad.” *Desm. l. c.* The very curious *Lycoperdon radiatum*, Sow. has been determined by Desmazières to be the infant state of the present *Agaric*, which is very nearly allied to *A. micaceus*. The same species evidently, is figured in *Pers. Myc. Eur. v. 3. t. 29. f. 4.* On carefully inspecting Sowerby’s figure, the proper stem will be seen to be very clearly marked out. His observation of its containing a small quantity of fine dust or seed, may perhaps be accounted for by its having sustained some check in an early stage of growth, and in consequence existing in a somewhat altered form, analogous to the abortive plants of *A. volva-ceus*, which occur under the form of a *Sclerotium*.

326. *A. macrocephalus*, Berk. (*long-headed Agaric*); small, pileus elongated at length elongato-campaulate slate-coloured adorned with beautiful pointed scales, gills linear, at length black, stem attenuated upwards fibrillose, fibrillæ deflexed.

On putrid dung. March. Cotterstock, Norths. *Rev. M. J. Berkeley.*—*Pileus*  $\frac{5}{8}$  of an inch broad,  $\frac{6}{8}$  high, linear when young, then cylindrico-campaulate, the margin slightly spread out, adorned with elegant adpressed or patent scales, the remains of the veil; apex brown, shaded off into slate-colour on the margin, scarcely at all pubescent. *Gills* linear, perfectly free, at length black, clothed with pellucid spiculæ. *Stem* 1—2 inches high, 2 lines thick, ascending, dirty-white, fistulose, clothed with short cottony down and with longer, sometimes deflexed, loose fibres, strigose at the base, somewhat attenuated upwards and stained with the black elliptic *sporules*. A very distinct species, apparently near *A. Lagopus*.

327. *A. plicátilis*, Sow. (*small-plaited Agaric*); tender, pileus umbilicate sulcato-plicate, gills fixed to a ring round the stem, at length black, stem nearly smooth. *Sow. t. 364. With. v. 4. p. 262. Curt. Lond. t. 200. Fr. Syst. Myc. v. 1. p. 312. Purt. v. 2 § 3. n. 967. Grev. Fl. Ed. p. 395.—A. pulcher, Pers. Syn. p. 405.*

Amongst grass. Very common. Spring and autumn.—“Extremely fugacious. *Pileus*  $\frac{1}{2}$ —1 inch broad, cylindrical, furfuraceous, at length plane, nearly naked, umbilicated, grey, yellowish-brown in the centre, beautifully plicate, membranaceous, pellucid. *Gills* free, dark-grey, subdistant, very narrow, tender. *Stem* 1—3 inches high, very slender, fragile, smooth, grey tinged with brown sometimes white, hollow.” *Grev. l. c.*

328. *A. Hendersóni*, Berk. (*delicate-ringed Agaric*); minute, pileus at first subcylindric at length plano-convex, gills black subdistant, stem furnished with a regular erect subdistant ring. Hot-beds. Feb. 21, 1823. Milton, Northamptonshire. *Rev. M. J.*

*Berkeley*.—Extremely tender. *Pileus* 4—6 lines broad, at first sub-cylindric, granulose, under a lens, apex brownish shaded into cinereous towards the margin, at length plano-convex; margin folded. *Gills* rather distant, free, powdered with the black sporules, the extreme margin white, narrow; at length appearing like mere wrinkles. *Stem*  $1\frac{1}{2}$  inch high, not 1 line thick, white, nearly or quite smooth, hollow, attenuated upwards, furnished with a cup-shaped more or less distant permanent ring. A most distinct and elegant species. There is a figure in *Pers. Myc. Eur. v. 3. t. 26. f. 1*, of an Agaric possibly identical with this, but darker and of a different form, but the text is not yet published, nor is there even a name assigned to it, so that I am unable to form any decided opinion. As I found it in company with my friend Mr. J. Henderson of Milton, than whom there are few more active and intelligent practical botanists, I am desirous that this most beautiful though minute plant should bear his name.

329. *A. stercorarius*, Bull. (*whitish dung Agaric*); pileus ovate more or less scaly, gills broad close, stem attenuated upwards, ring none. *Bull. t. 542. f. 2. M. N. P. (not t. 68). Sow. t. 262. fig. sin.*—*A. pseudo-extinctorius*, Bull. t. 437. f. 1.—*A. cinereus*, Sommerfelt, Lapp. (*secundum Syn. "Sow. icon perbona."*)

Dunghills. Common.—*Pileus* above 1 inch high, when fully expanded  $1\frac{1}{2}$  inch broad. *Stem* 3—5 inches high, 2 lines thick.

330. *A. ephemerus*, Bull. (*short-lived Agaric*); thin, soon smooth, pileus campanulate expanded striate subcinereous, gills distant, stem naked. *Bull. t. 5, 542. f. 1. D. Fr. Syst. Myc. v. 1. p. 313. Grev. Fl. Ed. p. 395. Fl. Dan. t. 1960. f. 1.*—*A. momentaneus*, Bull. t. 128. *With. v. 4. p. 289.*

Dunghills. May—Autumn. Very common.—Extremely fugacious. *Pileus*  $\frac{1}{4}$ — $\frac{3}{4}$  of an inch broad, ovate or campanulate, at length deflexed, the margin finally splitting and curling back; apex umber, shaded gradually into a delicate bluish-grey; striate, scaly when young. *Gills* at length black, linear; edge downy, white. *Stem* 1—2 inches high, 1 line thick, dirty-white, with a few fibrillæ, at length naked.

331. *A. radiatus*, Bolt. (*rayed Agaric*); very tender fugacious, pileus clothed with cinereous down, at length smooth splitting in a radiated manner, disc ochraceous, stem filiform. *Bolt. t. 39. f. C. Pers. Syn. p. 407. Fr. Syst. Myc. v. 1. p. 312. Grev. Fl. Ed. p. 395.*—*A. stercorarius*, Bull. t. 542. f. 1. *G. H. f. 2. L.*

On horse-dung, often on the under-side, in grassy woods, &c. May—Nov. Not uncommon.—Very tender, so that a breath destroys it. *Pileus* 1—2 lines broad, at first digitaliform, yellowish, the apex obtuse, darker, striate and downy, when full-grown pale-brown, or nearly colourless, the centre sometimes dimpled, strongly furrowed, edge notched and often split in a radiated manner so as to appear like the spokes of a wheel. *Gills* about 10, with minute smaller ones in the interstices. *Stem* 1—3 inches high, very slender, quite filiform, smooth, but sometimes fibrillose and tomentose, dusky or colourless, a little thickened at the base where it is slightly downy. Fries does not seem to have been

sufficiently careful in his selection of the synonyms of this species. *Bull. t.* 68, is surely very different, being above an inch across; as also some of the figures in *t.* 542; whereas he describes it as only 2 lines broad.

Appendix. GOMPHUS; (from *γομφος*, a wedge.) *Gills strongly decurrent, branched, distant, distinct, changing colour, persistent, quite entire. Veil subuniversal, glutinous, concrete. Stem firm, solid. Pileus fleshy, turbinate, viscid, smooth; margin inflexed. Asci large; sporules dark, fusiform. Analogous to Limacium. Large solitary persistent fungi, growing on the ground.*

332. *A. glutinosus*, Schæff. (*glutinous Agaric*); pileus obtuse glutinous purple-brown, gills whitish cinereous. *Schæff. t.* 36. *Sow. t.* 7.—*A. velatus*, *With. v.* 4. *p.* 156. *Purt. v.* 3. *n.* 1433.—*A. viscidus*, *Pers. Syn. p.* 291.  $\beta$ . rose-coloured, smaller, stem attenuated downwards dilute flesh-colour. *Nees, Syst. f.* 197.

Pine-groves. July—Nov. Not common. Earsham. Broom and Kirby, Norfolk. *Mr. Woodward.* Packington, Warwickshire.—“*Pileus* 2—5 inches broad. *Gills* truly branched. *Stem* 2—3 inches or more high,  $\frac{1}{2}$  an inch thick, dirty-white, the base thickened and yellow, sometimes adorned with black scales.” *Fr. l. c.*

$\beta$ . East Morden, Dorset. Sept. *Rev. M. J. Berkeley.*—*Pileus* 2 inches broad, plano-convex, very slimy, of a beautiful strawberry colour, shining, when dry, with a satiny lustre. *Gills* albido-cinereous, very decurrent, forked, distant; veil thick, filamentous and coloured within by the sporules, which are fusiform, but paler than in *A. rutilus*. *Asci* large. *Stem* attenuated downwards, solid but spongy, silky with a pale tinge of rose.

333. *A. rutilus*, Schæff. (*purplish-red Agaric*); pileus umbonate subviscous brown-red, gills purple-umber. *Schæff. t.* 55. *Sow. t.* 105. *With. v.* 4. *p.* 170. *Purt. v.* 2 & 3. *n.* 914. *Fr. Syst. Myc. v.* 1. *p.* 315. *Klotzsch, Fung. Germ. exs. n.* 22.—*A. jecorinus*, *With. v.* 4. *p.* 162.—*A. Gomphus*, *Pers. Ic. et Desc. t.* 13. *f.* 1. 3.

Amongst Scotch Firs. Aug.—Oct. Common.—*Pileus* 2—3 inches broad, top-shaped, umbonate, yellow in the centre, the margin liver-coloured, shining. *Gills* decurrent, somewhat branched, firm, elastic, thick, entire, purple-brown, the shorter connected with the longer. *Asci* large. *Sporules* dark, fusiform. *Stem* 2—3 inches high,  $\frac{1}{2}$ — $\frac{3}{4}$  of an inch thick, rhubarb-coloured without and within, fibrillose, attenuated below, firm, solid, slimy from the remains of the veil which form an obsolete filamentous ring.

## 2. CANTHARÉLLUS. *Adans.* Chantarelle.

*Pileus* furnished below with dichotomous radiating branched subparallel folds, not separable from the flesh, sometimes anastomosing or obsolete.—Name, *κανθαρος*, a vase or cup: the pileus being often so formed.

1. *C. aurantiacus*, Wulf. (*orange Chantarelle*); pileus fleshy subdepressed tomentose orange-ochre as well as the stuffed

stem, folds straight orange. *Wulf. in Jacq. Coll. v. 2. t. 14. f. 3. Fr. Syst. Myc. v. 1. p. 318. Roques, Hist. des Champ. p. 75.—Merulius aurantiacus, Pers. Syn. p. 488. Nees, Syst. f. 233. Agar. subcantharellus, Sow. t. 413. Purt. v. 3. p. 183.—Stem black at the base. Ag. Cantharelloides, Bull, t. 505. f. 2.—Merulius nigripes, Pers. Syn. p. 489.— $\beta$ . lacteus; cream-coloured. *Fr. l. c.**

Fir-woods, Pastures, &c. Aug.—Nov. Common.—Gregarious. *Pileus*  $1\frac{1}{2}$ —2 inches broad, often irregular, slightly depressed, tomentose, though sometimes quite smooth, as in Scotch specimens gathered by *Klotzsch*, of a beautiful orange; margin paler and involute; sometimes there are slight traces of an umbo. Folds bright-orange, narrow, straight, repeatedly dichotomous. *Sporules* elliptic. *Stem* 1 inch high,  $\frac{1}{4}$ — $\frac{1}{3}$  of an inch thick, often excentric and curved, attenuated below, subequal, or incrassated at the base, in general of the same colour as the pileus; often black at the base when old; much smoother than the pileus.

$\beta$ . On the roots of grass. Sept. Weymouth, in a salt-marsh. Dry pasture, King's Cliffe, Norths. *Rev. M. J. Berkeley.—Pileus*  $1\frac{1}{2}$  inch broad, depressed and sometimes umbonate, nearly white or shaded with rich yellow-brown. Folds white or brownish cream-colour. *Sporules* elliptic. *Stem* 1— $1\frac{1}{2}$  inch high,  $\frac{1}{4}$ — $\frac{1}{3}$  of an inch thick, of the same colour as the pileus. *Smell* strong.

2. *C. cibarius*, *Fr.* (*common Chantarelle*); buff-yellow, pileus fleshy subrepand smooth, folds tumid, stem solid attenuated downwards. *Fr. Syst. Myc. v. 1. p. 318. Grev. Fl. Ed. p. 396. Sc. Crypt. Fl. t. 258. Roques, Hist. des Champ. p. 76. t. 10. f. 1. 2.—Fungus angulosus, &c. Vaill. Par. t. 11. f. 14, 15.—A. cantharellus, L. Succ. 1207. Schreff. t. 82. Bull. t. 62. 505. f. 1. Bolt. t. 62. Sow. t. 46.—Merulius Cantharellus. With. v. 4. p. 145. Purt. v. 2 § 3. n. 897, t. 10.*

Woods. Summer and Autumn. Common.—Subgregarious. *Pileus* 1—4 inches broad, fleshy, firm, variously lobed, depressed, the margin vaulted, smooth, shining, of a rich yolk of egg yellow, paler when dry; flesh white or yellowish. Folds much sinuated, but evidently forked, thick, fleshy, decurrent. *Sporules* elliptic. *Stem* 1—2 inches high,  $\frac{1}{3}$ — $\frac{1}{2}$  an inch thick, attenuated downwards, smooth, tough, yellow, diffused into the pileus. *Smell* very agreeable, like that of ripe apricots; taste agreeable, but pungent. Much firmer than *C. aurantiacus*. This species forms, according to Bulliard, a main article of food in some districts of Europe, though dangerous when eaten raw. It must not, when sought for that purpose, be confounded with the foregoing species which is reckoned unwholesome, if not poisonous.

3. *C. tubæformis*, *Bull.* (*trumpet-shaped Chantarelle*); pileus submembranaceous umbilicate ruguloso-squamose, folds straight cinereous-yellow, stem hollow yellow. *Fr. Syst. Myc. v. 1. p. 319.—Fungus, &c. Vaill. Par. t. 11. f. 9, 10.—Helvella tubæformis, Bull. t. 461.—Peziza undulata, Bolt. t. 105. f. 2.—Agar. cantharelloides, Sow. t. 47.—Merulius villosus, Pers. ic. & desc. t. 6. f. 1.—Merulius tubæformis, Pers. Syn. p. 489.*

Dry woods. Aug.—Oct. Not very common. Ramsden wood near Halifax, Bolton. Inverary, &c. *Klotzsch, in Hook. Herb.* Thornhaugh, Norths. on the roots of a *Carex*. *Rev. M. J. Berkeley*.—Gregarious. *Pileus* 2 inches broad, thin, at first convex, at length much undulated, depressed and very deeply umbilicate, occasionally pervious, scrobiculato-squamose, brownish-yellow. *Folds* straight, forked, slightly anastomosing, cinereous-yellow, frosted with a white bloom. *Asci* linear. *Sporules* white, round. *Stem* 2 inches high,  $\frac{1}{3}$  of an inch thick, hollow, compressed, thickest downwards, smooth, slightly downy at the base, saffron-coloured, brownish-yellow above. Notwithstanding the narrowness of the folds, Sowerby's plant agrees better with this species than the following.

4. *C. lutescens*, Pers. (*yellowish Chantarelle*); pileus submembranaceous infundibuliform undulated subfloccose, veins interwoven, stem hollow yellow. *Fr. Syst. Myc. v. 1. p. 320. Grev. Fl. Ed. p. 397. Purt. MSS.*—*Elvella tubæformis*, Schæff. t. 157.—*Helvella cantharelloides*, Bull. t. 473. f. 3.—*Merulius lutescens*, Pers. *Syn. p. 489. Fl. Dan. t. 1617.*—*Merulius cantharelloides*, *Purt. v. 2 & 3. n. 898.*—*Cantharellus villosus*, *Ditm. in Sturm. t. 30.*—*Merulius xanthopus*, *Pers. Myc. Eur. v. 2. p. 19. t. 13. f. 1.*

Moist woods. Summer and Autumn. Rare. Balmuto near Edinburgh. *Dr. Greville*.—Single or gregarious. *Pileus* 1—3 inches broad, depressed, at length infundibuliform, yellowish livid-brown. *Veins* decurrent, anastomosing, flexuous, yellow or flesh-colour. *Stem* 2—3 inches high, 2—3 lines thick, yellow, hollow, unequal.—*Grev. l. c.*

5. *C. cinereus*, Pers. (*cinereous Chantarelle*); pileus infundibuliform pervious squamulose blackish as well as the hollow stem, folds distant cinereous. *Fr. Syst. Myc. v. 1. p. 320.*—*Helvella hydrolips*, Bull. t. 465. f. 2.—*Merulius cinereus*, *Pers. ic. & descr. t. 3. f. 3, 4. Pers. Syn. p. 490.*—*Agar. infundibuliformis*, *Bolt. t. 34.*—*Merulius infundibuliformis*, *With. v. 4. p. 147.*

Woods. Oct. Near Halifax. Bolton.—Intermediate between *C. lutescens* and *C. cornucopioides*.

6. *C. cornucopioides*, L. (*Cornucopia Chantarelle*); subcæspitose, pileus pervious trumpet-shaped squamulose umber-black, wrinkles obsolete. *Fr. Syst. Myc. v. 1. p. 321.*—*Peziza cornucopioides*, *L. Sp. Pl. 1650. Lightf. p. 1050. Bolt. t. 103. Sow. t. 74. Purt. v. 2 & 3. n. 1047.*—*Elvella cornucopiæ*, Schæff. t. 165.—*E. punctata*, Schæff. t. 166.—*Helvella cornucopioides*, Bull. t. 150. 498. f. 3.—*Merulius purpureus*, *With. v. 4. p. 147.*—*Merulius infundibuliformis*, *Hook. Fl. Scot. v. 2. p. 25.*

Woods. Autumn.—More or less tufted. *Pileus* 3 inches or more broad, dark brown-black, perforated, trumpet-shaped, somewhat lobed and split, tough, elastic, rugoso-squamulose, confluent with the subobsolete black stem. *Hymenium* decurrent, cinereous (bluish rose-coloured or purple. *With. and Fr.*) either very slightly rugulose or distinctly wrinkled. *Sporules* elliptic.



7. *C. sinuósus*, Fr. (*sinuated Chantarelle*); pileus infundibuliform submembranaceous undulated floccoso-villous brown-grey, hymenium subplicate or nearly smooth, pale as well as the stuffed stem. *Fr. El. v. 1. p. 52.*—*Elvella floriformis*, Schuff. t. 278. *Sow. t. 75.*—*Helvella crispa*, Bull. t. 465. f. 1.—*Merulius tubaformis*, var. *sinuosus*. *Pers. Myc. Eur. v. 2. p. 58.*

Woods. Autumn. Rare. About London. *Sowerby.*—Distinguishable from every state of the preceding by the colour and the different nature of the stem.

8. *C. muscigenus*, Bull. (*Moss Chantarelle*); horizontal pale-brown folds branched, stem short lateral. *Fr. Syst. Myc. v. 1. p. 323.*—*Agar. muscigenus*, Bull. t. 288.—*Helvella dimidiata*, Bull. t. 498. f. 2.—*Merulius muscigenus*, *Pers. Syn. p. 493.* *Nees, Syst. f. 236.* *With. v. 4. p. 147.*

On moss, straw-roofs, &c. Autumn.—“*Pileus* membranaceous, tough, nearly semicircular, somewhat zoned, slightly undulated, dirty-white, cinereous or dingy. *Folds* somewhat tumid, divergent, scarcely anastomosing, confluent behind. *Stem* villous at the base; sometimes obsolete.”—*Fr. l. c.* The present species is introduced on the authority of Withering’s citation of Bulliard; it does not appear very plain whether he had in view any thing more than a stemless variety found in Packington Park.

9. *C. lobátus*, Pers. (*lobed stemless Chantarelle*); sessile lobed more or less brown, veins branched anastomosing. *Fr. Syst. Myc. v. 1. p. 323.* *Greav. Fl. Ed. p. 397.*—*Helvella membranacea*, *Dicks. Crypt. 1. p. 21.* *Bolt. t. 177.* *Sow. t. 348.* *Holmsk. v. 2. t. 28.*—*Merulius lobatus*, *Pers. Syn. p. 494.*—*Merulius membranaceus*, *With. v. 4. p. 148.* *Purt. v. 3. n. 1427.*—*Helvella retiruga*, Bull. t. 498. f. 1.

Wet boggy places, on moss, as *Hypnum cuspidatum* and *revolvens*. April—Autumn.—*Pileus* 2 lines—1½ inch broad, membranaceous, horizontal, often at length vertical, attached laterally by a few byssoid fibres which sometimes run down the moss for some distance, pale cinereous-umber; margin nearly white, under a lens most minutely scabrous, as if it were innato-fibrillose; occasionally there are two or three faint zones. *Hymenium* paler, consisting of radiating more or less anastomosing wrinkles, with many connecting reticulate veins. *Sporules* round, rather large. When old it is often very much lobed and crisped and then the wrinkles, especially at the base, are reticulate, though towards the margin they continue distinct. At first sight it appears like a pale minute specimen of *Peltidea canina*, much sodden with moisture. On mature consideration, I do not hesitate to unite *C. lobatus* and *retiruga*. There is every gradation from distinct prominent folds to mere reticulations, and from a horizontal to a vertical pileus. Greville’s plant is, like mine, of a dilute pale-brown; but I have found some specimens much darker than the general state, though never so dark as in Bolton’s figure. *Sowerby*’s plate exactly resembles some states of my plant.

10. *C. lávis*, Fr. (*Peziza-like Chantarelle*); sessile plane white or dirty white, veins obsolete. *Fr. Syst. Myc. v. 1.*

p. 324.—*Thelephora muscigena*, Pers. Syn. p. 572.—*Thelephora vulgaris*, Pers. Myc. Eur. v. 1. p. 116. t. 7. f. 5.

On moss. Stibbington, Hunts. Rev. M. J. Berkeley. Dec. On *Hypnum splendens*, Devonshire. Miss Simcoe. On *Hypnum purum*, near Bungay, Mr. Stock.—Pileus 2 lines or more broad, at first subglobose, then expanded, minutely tomentose, somewhat lobed, very thin, dirty-white. *Hymenium* rather uneven, but not distinctly veiny. A vertical section shows it to be composed of three distinct layers, first the hymenium, then a vesiculose, and lastly a vesiculosoflocculose stratum, and beyond this is the fine pubescence by which it adheres to the moss. I have received much larger specimens from Devonshire than those gathered by myself, and more clearly showing that its true affinity is with *Cantharellus*, rather than *Peziza*. My specimens are not of a pure white, and are more decidedly downy than is implied by the expression "obsolete sericeus."

### 3. MERULIUS. Hal. Merulius.

*Hymenium* veiny or sinuoso-plicate. Folds not distinct from the flesh of the pileus, forming unequal angular or flexuous pores.—Named from *Merula*, a blackbird, some of the species being of a black colour.

1. *M. corium*, Gr. (*coriaceous Merulius*); at first resupinate, at length more or less perfectly reflexed white and villous above often zoned, hymenium pale minutely reticulato-porous. Fr. *El. v. 1. p. 58*.—*Thelephora corium*, Pers. Syn. p. 574. *Grev. Sc. Crypt. Fl. t. 147. Fl. Ed. p. 409*.—*Auricularia papyrina*, Bull. t. 402. Sow. t. 349. *With. v. 4. p. 300. Pert. Midl. Fl. v. 2. n. 1021. (not Th. ochroleuca, Fr. v. 1. p. 440.)*

Timber, sticks, &c. Winter. Very common.—Plant 2—3 inches broad; sometimes completely effused with a white byssoid margin, but not unfrequently the margin or even the whole pileus is regularly reflexed; often imbricated; white, pubescent and zoned above, below pale-buff or lilac, variously sinuato-rugose or reticulato-porous; very various in thickness, being sometimes a mere pellicle, while, on the contrary, individuals occur as thick as *Thelephora hirsuta*. The specimens figured by Sowerby as *Aur. papyrina*, which I have examined, are certainly the same with the species figured by Greville, which is very common in the midland counties of England, and often occurs much more perfectly developed than represented in their plates. I have seen it covering the stump of a felled tree in the greatest profusion, imbricated and completely reflexed, with the hymenium beautifully tinged with lilac. The distinguishing character of the present genus, as compared with the foregoing, resides in the irregular, not radiating nature of the folds. It approaches more nearly in structure to *Dædalea* than *Agaricus*.

2. *M. aurantiacus*, Kl. (*orange Merulius*); pileus tough carnosocoriaceous effuso-reflexed tomentose zoned, between yellow and dirty-white, here and there cinereous, folds minute subporiform indistinct-orange. Kl. MSS. in Hook. Herb.

On dead beech-trees. May. Duglestone. Klotzsch in Hook.

*Herb.*—*Pileus* 1 inch broad; zones obsolete, hirsuto-tomentose. Nearly allied to the foregoing species.

3. *M. lachrymans*, Wulf. (*dry-rot*); effused large yellow-ferruginous or deep orange, margin white tomentose, folds large poroso-sinuate. *Fr. Syst. Myc. v. 1. p. 328. Grev. Fl. Ed. p. 397. Fl. Dan. t. 2026.*—*Boletus lachrymans*, Wulf. in *Jacq. Misc. v. 2. p. 111. t. 8. f. 2. Bolt. t. 167. f. 1. Sow. t. 113. With. v. 4. p. 286. Purt. Midl. Fl. v. 3. n. 1488.*—*B. arboreus*, Sow. t. 346.—*Mer. destruens*, Pers. *Syn. p. 496.*

On the inside of wainscotting, where there is not a free circulation of air, in hollow trunks, beams, ship-timber, &c. all the year. Too common.—“Whole plant generally resupinate, soft, tender, at first very light, cottony and white. When the veins appear, they are of a fine yellow-orange or reddish-brown, forming irregular folds, most frequently so arranged as to have the appearance of pores, but never any thing like tubes, and distilling, when perfect, drops of water. Sometimes the pileus or substance of the plant, from its situation, produces pendent processes like inverted cones.” *Grev. l. c.*—1—8 inches broad. *Sporules* ferruginous. The only certain preventives of this dreadful pest seem to be free circulation of air and impregnation of the wood with a strong solution of corrosive sublimate. It is not improbable that white of egg may in some cases answer the same purpose. See a very curious article in the new series of *Annales des Sciences Naturelles*, v. 1. p. 30, by Dutrochet on the origin of Moulds.

4. *M. pulverulentus*, Sow. (*pulverulent Merulius*); very broad soon separating at the margin, above velvety gradually perishing in the centre, hymenium zoned, folds marginal subreticulate. *Fr. El. v. 1. p. 60. Purt. MSS.*—*Auricularia pulverulenta*, Sow. t. 214.—*Coniophora membranacea*,  $\beta$ . *leiophæa*, Pers. *Myc. Eur. v. 1. p. 153.*—*Byssus septica*, var. 3. *pulverulenta*, *Purt. Midl. Fl. v. 2. p. 608.*

On moist walls; all the year. Ashhill, Norfolk, on Fir-Beams in a wall; the original specimens show that they were white-washed.—Forming membranaceous, orbicular, often confluent patches, a foot or more broad, soon separating all round from the substance on which they grow, equal, even, soft, dry, composed of tender mucedinous down; velvety and pale above. *Hymenium* zoned, variegated, various in colour, but towards the circumference ferruginous from the sporules. The greater part of the surface is smooth and barren, but here and there, especially towards the margin, reticulato-poriform folds are discernible, showing its proper place to be in the present genus. The older folds collapse and at length decay. The above admirable description is taken from the *Elenchus* of Fries, by whom first the species appears to have been rightly understood. In imperfect or ill-developed specimens, the true nature of the plant is scarcely discernible. Sowerby's plant, of which a portion is now before me, seems to have been gathered in an unfavourable state, but he appears, from the short but accurate account which accompanies his figure, to have had some suspicion of its affinity with *Merulius lachrymans*, though this is barely expressed. Specimens marked by Klotzsch in Dr. Hooker's Herbarium, appear to be in even a more highly developed state than those

described by Fries. They are much thicker, and while one specimen accords exactly with the above description as to the nature of its pores, another approaches very nearly to some states of *Merulius lachrymans*, and the centre is copiously and distinctly reticulated.

5. *M. Carmichaelianus*, Grev. (*Carmichael's Merulius*); very thin, forming effused entirely resupinate irregular interrupted confluent patches, folds forming regular angular reticulations. — *Polyporus Carmichaelianus*, Grev. *Sc. Crypt. Fl. t.* 224. — *Polyporus reticulatus*, and *sanguinolentus*, Carm. *MSS.* — *Merulius reticulatus*, Kl. in Hook. *Herb.*

On bark, at Appin, *Captain Carmichael*. — The present minute but very curious species forms a mere pellicle, in its dry state of an uniform dull-brown, scarcely distinguishable from the bark on which it grows; but when examined with a moderate magnifying power, the regular often hexagonal reticulations exhibit a very elegant appearance, like the cells of a honeycomb, but quite superficial.

#### 4. SCHIZOPHYLLUM. *Fr.* Schizophyllum.

*Gills* radiating from the base, composed of a folded membrane which is ruptured along their edge, the two portions of the fold becoming revolute, bearing *asci* only on the outer surface. — Name, *σχιζω*, to cut, and *φυλλον*, a leaf, in allusion to the apparently divided gills.

1. *S. commune*, Fr. (*common Schizophyllum*). *Fr. Syst. Myc. v.* 1. p. 330. Grev. *Sc. Crypt. Fl. t.* 61. — *Agaricus alneus*, Linn. *Succ.* 1242. Schæff. *t.* 246. *f.* 1. Bull. *t.* 346, 581. *f.* 1. Sow. *t.* 183. *With. v.* 4. p. 269.

On wood: occasionally in various places both in England and Scotland, but not common. — *Pileus* 1—1½ inch broad, sessile or with a short lateral stem, sometimes resupinate and supported by a stem-like process arising from the centre of the pileus; white or greyish, zoned, tomentose; *margin* even or variously lobed and split. *Gills* reddish-brown or whitish, flabelliform, apparently but not truly forked; the inner barren face villous with the flocci, of which the substance of the pileus is composed; the outer surface alone bearing *asci*. This beautiful *Fungus* is found in almost every part of the world. I have now before me individuals from New Orleans, Demerara, St. Vincents, India, Mauritius, and Madeira, besides European specimens. The outline of the pileus is very variable, as also the depth of the zones and the degree of pubescence.

#### 5. DÆDÁLEA. *Pers.* Dædalea.

*Hymenium* composed of anastomosing gills or flexuous elongated pores, formed out of the corky substance of the pileus. — Named from *dædalus*, ingenious, cunning, from the pretty sculptured-like pores and sinuosities of the *Hymenium*.

1. *D. biennis*, Bull. (*biennial Dædalca*); pileus somewhat corky depressed rather velvety subferruginous or rufous, pores whitish or flesh-coloured, stem blunt or obsolete. *Fr. Syst. Myc. v.* 1. p. 332. Grev. *Fl. Ed. p.* 398. — *Boletus biennis*,

*Bull. t.* 449. *f.* 1. *Sow. t.* 191. *Purt. Midl. Fl. v.* 2 § 3. *n.* 995.—*B. albidus*, *With. v.* 4. *p.* 281.—*Dædalea albida*, *Purt. Midl. Fl. v.* 3. *n.* 1494. *t.* 38. *Bol. frondosus*, *Purt! v.* 2 § 3. *n.* 992.

Stumps of trees near the ground, especially where trees have been felled. Summer, Autumn, and Winter.—*Pileus* 1—3 inches broad, velvety, sometimes marked with concentric zones, often perforated by grass, leaves and small sticks, corky but watery, hard when dry, furnished beneath with rather large, irregular wavy pores, more or less flesh-coloured, especially when bruised. *Stem*, when present, lateral, 1—2 inches high, velvety like the pileus, sometimes quite obsolete. Dimidiate stemless specimens often grow in an imbricated manner, and sometimes constitute a compact solid mass consisting of numerous alternate layers of pores and pileus. When gathered and laid in a fresh state with the surface of the pileus downwards, a new hymenium is quickly formed upon it.

2. *D. quercina*, L. (*oak-wood Dædalea*); sessile pale wood-colour, pileus corky smooth somewhat zoned rugulose, gills contorted sinuous anastomosing. *Pers. Syn. p.* 500. *Fr. Syst. Myc. v.* 1. *p.* 333. *Purt. Midl. Fl. v.* 3. *p.* 247. *Greav. Fl. Ed. p.* 398. *Sc. Crypt. Fl. t.* 238. *Klotzsch, Fung. Germ. cas. n.* 26.—*Agaricus quercinus*, *Linn. Succ.* 1241. *Bolt. t.* 73. *f. ε.* *Sow. t.* 181. *With. v.* 4. *p.* 269.—*A. labyrinthiformis*, *Bull. t.* 352, 442. *f.* 1.—*A. dubius*, *Schæff. t.* 231.—*Dæd. gibbosa*, *Purt. v.* 3. *p.* 248. *t.* 14.

On posts, stumps of trees, &c., principally of oak. Perennial, common.—*Pileus* 5—6 inches broad, sessile, dimidiate, of a pale woody appearance, smooth, marked with concentric raised or depressed zones and little radiating wrinkles, the margin in well-grown specimens thin, but in ill-developed individuals swollen and blunt, in which state it is *D. gibbosa*, *Purt.* Gills of the same colour as the pileus, with sometimes a slight shade of pink, woody, thick, sinuous, branched and anastomosing, so as to form long wavy pores a line or more broad. Sometimes the whole plant is resupinate or decurrent, in which case the partitions are often elongated into tooth-like processes.

3. *D. betulina*, L. (*pale straight-gilled Dædalea*); sessile pale, pileus coriaceous zoned tomentose or villous, gills straight but little branched. *Fr. Syst. Myc. v.* 1. *p.* 333. *Purt. Midl. Fl. v.* 3. *p.* 247. *Fl. Dan. t.* 1555. *Kl. Fung. Germ. cas. n.* 27.—*Agaricus betulinus*, *Linn. Succ.* 1244. *Sow. t.* 182. *With. v.* 4. *p.* 268.—*A. coriaceus*, *Bull. t.* 537. *f. C. G. P. M.* 394. *Bolt. t.* 73. *f. c. d.* 158. *Pers. Syn. p.* 486.

On trunks of various trees, but especially birch, posts, &c. Perennial; not uncommon.—Smaller and thinner than the last. *Pileus* 2—4 inches broad, coriaceous, sessile, dimidiate, deeply grooved concentrically and clothed with dense pubescence or coarse velvety down, greyish or pale; often green from various minute *Algæ*. Gills straight, much thinner than in the last, tan-coloured, not much branched or anastomosing, their margin at length torn.

4. *D. sepiária*, Wulf. (*cuttle-fish Dædalea*); sessile, pileus coriaceous zoned strigoso-tomentose chocolate, the margin and branched slightly anastomosing gills yellowish. *Fr. Syst. Myc. v. 1. p. 333.*—*Agaricus sepiarius*, Wulf. in *Jacq. Coll. v. 1. p. 347.*—*Agar. hirsutus*, Schæff. t. 76. *Pers. Syn. p. 487.* *Nees, Syst. f. 182.*—*A. boletiformis*, Sow! t. 418.

On unsquared deals in a Thames Dock. Nov. Sowerby.—*Pileus* 2—3 inches broad, dimidiate, elongated, often confluent, deeply zoned, strigoso-lacunose, of a rich deep-chocolate, margin paler, sometimes white, substance coriaceous, fibrous, of a fine ochre or rhubarb colour; occasionally entirely resupinate. *Hymenium* composed of brownish plates, tolerably regular, but here and there slightly branched or interrupted so as to form pores. A fine species, of which I possess native specimens through the kindness of Mr. J. D. C. Sowerby. *D. medullaris*, *Purt.* seems to be the present species, according to his description, taken in connexion with his quotation of *D. asserculorum*, Mougeot. *D. sepiaria*, (*Purt. MSS.*) proves, on examination of authentic specimens, to be only a state of *D. betulina*. The plant published by Mougeot, when examined accurately, appears, however, to be the following.

5. *D. abietina*, Bull. (*fir Dædalea*); sessile, pileus between corky and coriaceous zoned brownish-umber at length smooth, gills straight somewhat branched glaucous. *Fr. Syst. Myc. v. 1. p. 334.*—*Agar. abietinus*, Bull. t. 442. f. 2. 541. f. 1. *Pers. Syn. p. 486.*

On deals. Perennial. Glasgow. *Klotzsch in Hook. Herb.*—When young much like the last, but the pileus is umber and in age becomes quite smooth and the gills nearly simple, of a pruinose cinereous hue. *Pileus* 1½—4 inches broad, thinner. This species has been gathered in Demerara by Mr. Parker. Possibly both this and the foregoing may have been imported into our Dock-Yards, as is certainly the case sometimes with *Schizophyllum commune*.

6. *D. Bulliardi*, Fr. (*corky Dædalea*); sessile rufescent, pileus soft then coriaceous smooth, pores broad irregular. *Fr. Syst. Myc. v. 1. p. 335.*—*Bol. suberosus*, Bull. t. 482. *Purt. Midl. Fl. v. 2 & 3. n. 997.*

Generally on the ash; not common. *Purton.*—This appears to be what Purton intends by *Bol. suberosus*; for in addition to his assertion that the figure of Bulliard is a good representation of his plant, in a MS. now before me he observes, "I think this would more properly rank with the *Dædaleas*." *B. suberosus* of Sowerby is quite different, having minute pores, which are tolerably regular, and not at all like those of the genus *Dædalea*.

7. *D. confragosa*, Bolt. (*rugged Dædalea*); sessile, pileus between corky and coriaceous zoned and scabrous brick-red inclining to brown, pores cinereous labyrinthoid. *Pers. Syn. p. 501.* *Fr. Syst. Myc. v. 3. p. 336.* *Purt. Midl. Fl. v. 3. n. 1491.*—*Bol. labyrinthiformis*, Bull. t. 491. f. 1. *A.D. With. v. 4. p. 288.*—b. pores rufous-brown. *Bolt. t. 160.*

Old trees, especially Crab or Service. Perennial, rare. Fixby Hall near Darlington. *Polton*. Near Bridgenorth, Salop. *Purton*.

8. *D. unicolor*, Bull. (*self-coloured Dædalea*); sessile, cinereous, pileus coriaceous villous zoned, pores unequal subflexuous at length torn. *Fr. Syst. Myc. v. 1. p. 336.* *Purt. Midl. Fl. v. 3. p. 247.* *Kl. Fung. Germ. exs. n. 28.*—*Bol. unicolor, Bull. t. 408, 501. f. 3.* *Bolt. t. 163.* *Sow. t. 325.* *With. v. 4. p. 288.*—*Sistotrema cinereum, Pers. Syn. p. 551.*

Trunks of trees, stumps, &c. Autumn and early spring, very common.—Imbricated. *Pileus* 2—4 inches broad, coriaceous, zoned, densely villous, often green from minute *Algæ*. Pores narrow, small, irregular, unequal, subflexuous. Specimens occur occasionally, very similar to some states of *Polyporus versicolor*, but when once known it will not be confounded either with that or *Dæd. betulina*.

9. *D. suaveolens*, Bull. (*sweet-scented Dædalea*); sessile, pileus between coriaceous and corky smooth, from snow-white becoming somewhat tawny, pores elongated irregular rufescent. *Pers. Syn. p. 502.* *Fr. Syst. Myc. v. 1. p. 337.* *Purt. MSS.*—*Bol. suaveolens, Bull. t. 310.* *Purt. v. 2 & 3. n. 999.* (excluding most of the synonyms).

On trunks of willows. Autumn, not common. Cambridge. *Rev. M. J. Berkeley*.—"Easily distinguished by its odour (when young), which resembles aniseed. White at first, then rufescent, zoned and scabrous; within dingy straw-colour." *Fr. l. c.*

10. *D. gibbosa*, Pers. (*gibbous Dædalea*); sessile dirty-white, pileus corky villous, the base projecting and gibbous, pores linear nearly straight. *Pers. Syn. p. 501.* *Fr. Syst. Myc. v. 1. p. 338.* *Kl. Fung. Germ. exs. n. 29.* *Fl. Dan. t. 1564.* (*not of Purton*).—*Boletus sinuosus, Sow. ! t. 194.*

On the root of a poplar at Lambeth: Sept.; black and decaying in Dec. *Sowerby*.—Sessile, dimidiate, zoned, corky, hard, elastic, zones convex and tuberculated, dirty-white, beautifully velvety, when old cinereous and green from minute *Algæ*, the edge obtuse or subacute, often projecting at the base and very gibbous, but not invariably so; substance white; pores linear, mostly straight, except at the base where they are roundish or irregular, very narrow, pale-tan.

11. *D. angustata*, Sow. (*narrow-pored Dædalea*); sessile, pileus corky zoned stained with crimson, the margin silvery brown pubescent, pores dark long narrow. *Pers. Syn. p. 502.* *Fr. Syst. Myc. v. 1. p. 338.*—*Boletus angustatus, Sow ! t. 193.*

At the foot of a Poplar, Lambeth: *Sowerby*, who also received it from *Mr. Robson* of Darlington.—Much like the last, but the zones are much narrower, the dissepiments dark and more like gills. The specimen of *D. gibbosa* in Klotzsch's dried Fungi is quite as thin. *Bol. albus, Bolt. t. 78*, which Fries considers nearly related, I am disposed to think a state of *Dæd. bicinnis*.

12. *D. latissima*, Fr. (*broad effused Dædalea*); effused corky thick undulated of a pale woody appearance, pores flexuous

subrotund and much elongated. *Fr. Syst. Myc. v. 1. p. 340.*  
 —*Boletus resupinatus*, *Sow. t. 424. (sec. Fr. Ind. Alph. p. 62.)*

On the ground, under an open shed at Battersea. Aug.—*Sowerby*.  
 —*Sowerby's* plant is referred by *Fries* to *D. latissima*; it is, however, of a pink hue and apparently much thinner, though, perhaps, *Fries* uses the term "*crassa*" merely by way of contrast with the neighbouring species.

#### 6. POLYPORUS. *Mich.* Polyporus.

*Hymenium* concrete with the substance of the pileus, consisting of subrotund pores with thin simple dissepiments.—Name; *πορος*, many, and *πορος*, a pore, in allusion to the numerous pores of the *Hymenium*.

\* *Pores large, angular.*

1. *P. lentus*, *Berk. (Furze Polyporus)*; pileus of a tough elastic fleshy substance convex or subdepressed, at first slightly scaly, margin fibrilloso-squamose, pores large roundish or subquadrate decurrent, stem central pilose or furfuraceous.

On living *Ulex Europæus*. Sept. 1832. *Beeston, Notts. Rev. M. J. Berkeley.*—*Pileus*  $1\frac{1}{2}$  inch broad, convex or slightly depressed, at first furfuraceous-squamulose, reddish-brown, at length nearly smooth ochraceous, the margin fibrilloso-squamose, of a tough fleshy substance. *Pores* large, rather deep, decurrent, roundish or subquadrate, at first white, the edges slightly toothed and powdered with the white oblong sporules. *Stem*  $\frac{1}{2}$ —1 inch high,  $\frac{3}{8}$  of an inch thick, central, covered with pores to the very base, only the lower ones are abortive and their interstices pilose or distinctly furfuraceous, nearly of the colour of the pileus.—A very elegant and distinct fungus, and quite unlike any with which I am acquainted, resembling somewhat in habit certain species of *Fries's* subgenus *Lentinus*.

2. *P. squamosus*, *Huds. (large scaly Polyporus)*; broad, pileus of a tough elastic fleshy substance, clothed with darker scales, pores pale, stem blunt sublateral. *Fr. Syst. Myc. v. 1. p. 343. Græv. Fl. Ed. p. 399. Sc. Crypt. Fl. t. 207. Rostkovius in Sturm's Deutsch. Fl. Mon. d. Pol. t. 2. Klotzsch, Fung. Germ. cas. n. 30.—Boletus squamosus, Huds. p. 626. With. v. 4. p. 283. Sow. t. 266. Pert. Midl. Fl. v. 2 & 3. n. 993. Hook. Fl. Lond. N. S. cum. ic.—Bol. juglandis, Schæff. t. 101, 102. Bull. t. 19.—B. polymorphus, Bull. t. 114.*

Decayed trunks of trees, stumps, &c., especially on Ash. Summer and early autumn, very common.—Solitary or imbricated. From a subglobose or turgid scaly blackish knob arise one or more stems, which are at first slightly compressed, flat, and hollowed out above where they are furfuraceous; gradually the depressed surface expands but more rapidly in the direction of the light and the hymenium is formed beneath the small scales of the upper part of the stem, consisting when fully developed of large angular pores becoming mere reticulations towards the base. *Pileus* when fully expanded pallid-ochraceous with scattered brown adpressed scales. *Sporules* oblong, white. If a portion



of the hymenium be torn off, a new stratum of pores is rapidly developed. This common but handsome species attains sometimes an enormous size. An instance is recorded in Hooker's Fl. Scot. of its measuring 7 feet 5 inches in circumference and weighing 34 lbs. avoirdupois, and it was only three weeks in attaining these vast dimensions. In vaults and hollow trees it sometimes assumes the form of a *Clavaria*, but in this case seldom produces a pileus. *Boletus rangiferinus*, Bolt. t. 138 is a good representation of this state, and an intermediate one is figured by Sowerby. There is also a good figure given by John Martyn, *Phil. Tr. v. 43. p. 263. t. 2. f. 1.* It is eaten in some districts of France, but is very tough and indigestible. See Reques, *Hist. des Champ. p. 56.*

3. *P. heteroclitus*, Bolt. (*yellow villous Polyporus*); sessile, pileus thin villous irregularly lobed yellow changing to orange brown, pores irregular pale yellow changing to brown. *Fr. Syst. Myc. v. 1. p. 344.*—*Boletus heteroclitus*, Bolt. t. 164. *Purt. v. 3. n. 1487. Sow. t. 367.*

On the ground, growing from stumps partly covered with soil, rare. Fixby Hall near Darlington. Bolton. King's Houghton. Purton.—“Pileus 2½ inches broad. It shoots out several flat pieces from a hard and coriaceous root, which is white within, lying on the surface of the earth in a horizontal direction. Pores very variable in size and form.” *Purt. MSS.* Sowerby's plant, growing on willow, seems somewhat different; but in the absence of all description, and there being no specimen remaining in his collection, it is best to take his own authority for its identity. I have omitted entirely *Bol. pelucidus*, With., which Fries conceives near to *P. subsquamosus*, because it appears highly probable, from his observation that it is subject to be infested by the yellow *Reticularia* of Bulliard (*Sepedonium mycophilum*) that it is some species of *Boletus*, perhaps *B. scaber* which sometimes has the tubes very short and the epidermis cracked, as in the figure of Schæffer referred to, so as to resemble scales.

\*\* *Pores minute subrotund.*

† *Stem central or lateral.*

4. *P. brumalis*, Pers. (*winter Polyporus*); pileus of a tough elastic fleshy substance subumbilicate villous fuliginous at length pale, pores subangular white, stem pale. *Fr. Syst. Myc. v. 1. p. 348. Rostk. l. c. t. 5.*—*Bol. brumalis*, Pers. *Syn. p. 517.*—*Elvella pileus*, Schæff. t. 281.—*B. lacteus*, Batsch, *El. f. 42.*

On Beech. Autumn and Winter, reviving in the Spring. Scotland. *Klotzsch in Hook. Herb.*—Pileus 1—4 inches broad, nearly plane, depressed in the centre, dingy, clothed with minute scales, at length fawn-coloured and nearly smooth. Pores very slightly angular, white, the dissepiments rather thick. Stem ¾—2 inches high, 2—4 lines thick, central, velvety, hirsute or squamulose.

5. *P. leptocéphalus*, Jacq. (*small round Polyporus*); pileus between fleshy and coriaceous thin smooth fawn-coloured, pores very minute subrotund white, stem short pale. *Fr. Syst. Myc. v. 1. p. 349.*—*Bol. leptoccephalus*, Jacq. *Misc. 1. p. 142. t. 12. Dicks. fusc. 3. p. 21. With. v. 4. p. 273.*

On decayed sticks. *Dickson.*—“Pileus 1 inch broad, tawny-bay,

flat, thin, leather-like. Pores white, very short. Stem pale or reddish-brown, thick as a crowquill and about half an inch high." *With. l. c.*

6. *P. perennis*, L. (*perennial cinnamon Polyporus*); pileus coriaceous velvety zoned cinnamon as well as the stem, pores minute of the same colour, at length torn. *Fr. Syst. Myc. v. 1. p. 350. Grev. Fl. Ed. p. 398. Rostk. l. c. t. 6.—Bol. perennis, Linn. Suec. 1245. Sow. t. 192. With. v. 4. p. 275. Pers. Syn. p. 518. Purt. Midl. Fl. v. 2 & 3. n. 1171.—B. coriaceus, Schæff. t. 125. Bull. t. 28, 449. f. 2.—B. subtomentosus, Bolt. t. 87.—B. fimbriatus, Bull. t. 254.*

On the ground in sandy places, woods, ("old charcoal pits," *Stack-house*) &c. Autumn and Winter, remaining through the following summer in a growing state.—*Pileus*  $1\frac{1}{2}$ —2 inches broad, varying in depth of colour, cup-shaped when young, nearly plane when old; often confluent, zoned, soft and velvety and marked with little raised radiating lines giving it a striated appearance; margin fimbriate or lacinated. Pores small, roundish or angular, at length torn, decurrent. Stem 1 inch high, varying greatly in thickness, very tough, velvety, bulbous at the base.

7. *P. varius*, Pers. (*variable Polyporus*); pileus rigid smooth even, pores minute subrotund pale, stem short even pale the base almost always abruptly black. *Fr. Syst. Myc. v. 1. p. 532. Grev. Fl. Ed. p. 399. Sc. Crypt. Fl. t. 202. Rostk. l. c. t. 11.—P. nummularius, t. 12.—Bol. aurantius, Schæff. t. 109, 110.—Bol. varius, Pers. Syn. p. 523.—Bol. badius, p. 523.—Bol. lateralis, Bolt. t. 83. With. v. 4. p. 284.—B. nigripes, With. v. 4. p. 277. Purt. Midl. Fl. v. 2. p. 663.—B. elegans, Bull. t. 46.—B. calceolus, t. 360, 445. f. 2. Bolt. t. 168. With. v. 4. p. 284. Purt. l. c. n. 994.—B. nummularius, Bull. t. 124. Sow. t. 89. Purt. v. 2 & 3. n. 986.—B. betulinus, With. v. 4. p. 282, and *B. polyporus, p. 272.**

Trunks of trees and branches lying on the ground: all the year; common.—Very variable in size,  $\frac{1}{2}$ —4 inches broad. *Pileus* hard, lateral, excentric or regular, infundibuliform or convex, deep red-brown or dirty-white, smooth and even. Pores decurrent, very minute and shallow. Stem, when present, generally either altogether or abruptly jet-black at the base. Occasionally the stem is altogether pale, from which state *B. substrictus, Bolt. t. 170*, appears to differ in its angular, and if the figure may be trusted, larger pores. The curious var.  $\gamma$ . *convolutus, (Pers. Myc. Eur. v. 2. p. 52.)* has been found at Clunie by Mr. Arnott.

8. *P. lucidus*, Leyss. (*lacquered Polyporus*); pileus corky smooth shining as if lacquered as well as the stem, pores minute round pale. *Fr. Syst. Myc. v. 1. p. 353. Grev. Sc. Crypt. Fl. t. 245. Rostk. l. c. t. 13. Roques, Hist. des Champ. p. 56. t. 2. f. 1.—Bol. lucidus, Hooker in Curt. Fl. Lond. t. 224. Sow. t. 134. Purt. Midl. Fl. v. 2 & 3. n. 991.—B. rugosus, With. v. 4. p. 281.—B. variegatus, Schæff. t. 263.—B. obliquatus, Bull. t. 7. 459.*

On the stumps of old trees : summer. In all parts of Great Britain occasionally, but seldom in abundance.—*Pileus* 2—6 inches broad, generally more or less oblique, very variable in thickness, rugose, often marked with concentric grooves or ridges, chocolate-brown, the edge often tawny or bright-chestnut, shining as if varnished, with occasionally a vitreous appearance. *Pores* very minute, subrotund, pale, equal, at length cinnamon. *Stem* 6—10 inches high, 1 inch or more thick, rugose, marked occasionally with transverse lines of growth, shining like the pileus; sometimes obsolete. Both the pileus and stem are occasionally marked with minute wavy wrinkles. A most beautiful and highly curious species, occurring in most parts of the world.

†† *Stem branched.*

9. *P. frondósus*, Schrank. (*small-headed branched Polyporus*) ; very much branched, pilei dimidiate rugose dingy-grey, pores white. *Fr. Syst. Myc. v. 1. p. 355.* *Roques, Hist. des Champ. p. 57.* *Rostk. l. c. t. 18.*—*B. frondosus*, Schrank, *Fl. Dan. t. 952.* *Dicks. fasc. 1. p. 18.* *Sow. t. 87.* *With. v. 4. p. 284.* *Tratt. Essb. Schw. t. U.*—*B. ramosissimus*, Schaff. *t. 127, 128, 129.*—*Agaricus intybaceus*, Ray, *Syn. p. 23.* *Deering, Nott. p. 7.*

On the roots of Oaks. Sept.—Oct. Not common. In England it has been found by *Dickson*, *Woodward*, and *Sowerby*, and in Scotland by the *Rev. Colin Smith*, at Inverary.—“*Pilei* very numerous, dimidiate, condensed into a convex tuft,  $\frac{1}{2}$ —1 foot broad, imbricated, variously confluent, irregular, at first downy, dusky, then smooth, livid-grey; disc depressed dilated above,  $\frac{1}{2}$ —1 inch broad, convex, the base confluent with the compound stem. *Smell* like that of mice.” *Fr. l. c.* Esculent. I do not understand *Fries*' remark “*pori vix fusciscentes ut Sow. t. 87.*” since in the figure the pores are white, and in the text it is expressly said “*pores and inner substance very white.*” This species, which is reported as excellent for food, sometimes attains a weight of thirty lbs. or more. Indeed *Clusius* states that he had seen in Hungary masses three feet high. *Woodward* found a mass two feet broad, and the tiled lobes near the tree more than six inches deep.

10. *P. gigánteus*, Pers. (*giant Polyporus*) ; “*imbricated and branched, pilei very broad somewhat zoned rivulose ash-coloured to brownish-yellow or dusky-brown, pores unequal greyish-white.*” *Purt. MSS. Fr. Syst. Myc. v. 1. p. 356.*—*P. imbricatus*, *Hook. Fl. Lond. N. S. cum ic. Fl. Dan. t. 1793.*—*Bol. giganteus*, Pers. *Syn. p. 521.*—*B. mesentericus*, Schaff. *t. 267.*—*B. elegans*, *Bolt. t. 76.*—*B. acanthoides*, *Bull. t. 486.*—*B. imbricatus*, *Sow. t. 86.*—*Dædalea imbricata*, *Purt. Midl. Fl. v. 3. n. 1493.*

On stumps of felled trees, hedge-banks, &c. Oct.—Jan. : rare. Near *Halifax*, *Bolton*. *Kensington Gardens*. *Sowerby*. *Wixford*; *Binton*; *Oversley*. *Purton.*—Forming large tufts, 1—2 feet or more broad, branched in an imbricated manner. “*Pilei* sublateral, flaccid, various in form, the surface granulated with minute brown flocci, rigid, when dry squamoso-fibrillose; at first pale, then brownish-yellow; disc depressed at length black. *Pores* minute, dirty-brown when bruised at length torn.” *Fr. l. c.* A description of this species, with which I

am not acquainted, in Purton's MS. exactly accords with the above characters given by Fries.

11. *P. cristatus*, Schæff. (*crested Polyporus*); imbricated and branched, pilei deformed subtomentose greenish, pores snow-white at length torn and sulphur-coloured. *Fr. Syst. Myc. v. 1. p. 356. Rostk. l. c. t. 16.—Bol. cristatus, Schæff. t. 316, 317. Dicks. fasc. 3. p. 21. With. v. 4. p. 282. Pers. Syn. p. 522. Nees, Syst. f. 217.*

Beech-woods. Autumn. Very rare. *Dickson*.—"Stem lateral, irregular, pruinose, white at length brown. Pilei subcarnose, irregular, confluent in an involute manner, villosopulverulent, about 3 inches broad, yellow-green (golden-yellow, *With.*). Pores unequal, dirty-white; when torn more or less of a green hue." *Fr. l. c.*

12. *P. sulphureus*, Bull. (*sulphur-coloured Polyporus*); shapeless polymorphous sessile irregularly imbricated nearly smooth yellowish or orange-red, pores minute sulphur-coloured. *Fr. Syst. Myc. v. 1. p. 357. Hook. Fl. Lond. t. 132. Grev. Sc. Crypt. Fl. t. 113. Rostk. l. c. t. 20.—Bol. sulphureus, Bull. t. 429. Sow. t. 135. With. v. 4. p. 289. Purt. Midl. Fl. v. 2 & 3. n. 1005.—B. caudicinus, Schæff. t. 131, 132.—B. tenax, Bolt. t. 75.*

Trunks of trees. Summer. Not uncommon.—Pilei imbricated, forming a large, compact, somewhat branched mass; sometimes 2—3 feet broad. Pores minute, often formed of inflexed or incurved portions of the mass. Sporules white, according to Bulliard. Dry specimens are often incrustated with crystals of binoxalate of potash. *Vide Grev. l. c.*

††† *Dimidiate, stemless.*

→ *Autumnal.*

13. *P. hispidus*, Bull. (*ferruginous hispid Polyporus*); pileus thick ferruginous of a fibrous fleshy substance, pores pale-yellowish fringed. *Fr. Syst. Myc. v. 1. p. 362. Grev. Sc. Crypt. Fl. t. 14. Fl. Ed. p. 400. Rostk. l. c. t. 31.—B. hispidus, Bull. t. 210, 493. Bolt. t. 161. Pers. Syn. p. 526.—B. villosus, Huds. Fl. Ang. p. 626.—B. velutinus, Sow. t. 345. Purt. Midl. Fl. v. 2 & 3. n. 1006.—B. spongiosus, Light. Fl. Scot. p. 1033. With. v. 4. p. 286.*

On trunks of living trees, as ash, elm, apple, &c. Summer. Annual; frequent.—Pileus a foot or more across, 4 inches thick, dimidiate, with occasionally an obsolete knob-like stem; generally very hispid, but sometimes almost smooth and cracked; substance fleshy but fibrous, marked with concentric lines which seem to indicate different intervals in which vegetation has been more or less dormant, brown, blackish, yellowish or reddish-brown; below pale yellow, or rich sienna-brown with the margin paler. Sporules pure yellow, often hanging upon spider's threads in elegant festoons beneath the hymenium. Close to the bark of the tree the pubescence often resembles *Ozonium auricomum*.

14. *P. spumeus*, Sow. (*frothy Polyporus*); pileus fleshy furnished with a short obsolete stem, at first very soft, at length between fleshy and spongy obtuse gibbous and wrinkled hispid, margin incurved, pores short close subrotund. *Fr. Syst. Myc. v. 1. p. 358. El. 1. p. 84. Fl. Dan. t. 1794.*—*Bol. spumeus*, Sow. t. 211.—(*B. suberosus*, *Wahl. Ups. n. 1054.*—*B. pulvinatus*, *Wahl. Succ. n. 2001*) fide Fries.

On decaying elms; annual. Kensington Gardens, &c. *Sowerby.*—Plant 3—4 inches across, thick, oozing out from the tree in a very soft mass which hardens in a day, and if it dries favourably the pileus becomes hispid. According to Fries, the figure of Sowerby represents the species in an imperfect state, and then it is scarcely distinguishable from *P. hispidus* except in colour. The plant figured in *Fl. Dan.* grew upon beech.

→ → Annual.

15. *P. cæsius*, Schrad. (*blue-stained Polyporus*); pileus fleshy somewhat silky dirty-white blue when bruised, pores minute white lacerated. *Fr. Syst. Myc. v. 1. p. 360. Grev. Fl. Ed. p. 401. Fl. Dan. t. 1863. f. 2. Sup.*—*Bol. casius*, Schrad. *Spic. p. 167. Pers. Syn. p. 526.*—*Bol. albidus*, *Schaff. t. 124. Sow. t. 226.*

On trunks of Fir-trees; annual. Near Newmarket. *Mr. Hemstead.* Croydon Road and Hainault Forest. *Sowerby.* Balmuto, near Edinburgh. *Dr. Greville.* Common in the Highlands, *Klotzsch.*—A small species,  $\frac{1}{2}$ —3 inches broad, variously imbricated and lacinated, sometimes stipitate, very delicate, changing when touched to blueish. *Flesh* thin. *Pores* of various lengths, sometimes oblique and deeper than the flesh of the pileus.

16. *P. adustus*, Willd. (*scorched Polyporus*); pileus of a tough fleshy substance villous pale, margin at length black, pores minute round cinereous. *Fr. Syst. Myc. v. 1. p. 363. Fl. Dan. t. 1850. f. 1.*—*Bol. adustus*, Willd. *Ber. p. 392.*—*B. pelleporus*, *Bull. t. 501. f. 2.*—*b. pileus* yellowish. *B. carpinens*, *Sow. t. 231. Part. v. 3. n. 1600.*

Trunks of trees. Clifton, Notts. *Rev. M. J. Berkeley.*—*b.* On Hornbeam. Not unfrequent. *Sowerby.* On an old willow at Claverly near Bridgenorth. *Parton.*—“Pores very small and grey, even in younger specimens always leaving a whitish margin on the under side which will readily distinguish it.” *Sow. l. c.* Sowerby’s original specimens are now of a dull reddish-brown, with the tubes darker and not extending to the margin; their substance hard and corky; they have scarcely any of the scorched appearance which is very remarkable in the specimens from Nottinghamshire. These are of a softer substance when dry, and the pores are not quite so minute.

17. *P. amorphus*, Fr. (*yellow-pored silky Polyporus*); pilei of a tough fleshy substance effuso-reflexed silky white, pores minute yellow. *Fr. Syst. Myc. v. 1. p. 364. El. v. 1. p. 88.*—*P. aurcolus*, *Pers. Myc. Eur. v. 2. p. 60.*

On trunks of fir. Not uncommon in the Highlands of Scotland.

*Klotzsch, in Hook. Herb.*—About Edinburgh. *Dr. Greville.*—Resupinate, with the upper margin reflexed or dimidiate, imbricated somewhat zoned, white and silky. *Pores* minute, short, yellowish or rich-tawny, pruinose when young.

18. *P. irregularis*, Sow. (*multiform Polyporus*); small, pilei thin imbricated and confluent smooth but opaque, pores minute dirty-white very shallow.—*Bol. irregularis*, Sow. t. 423.

On pine-leaves and old trunks. Highlands of Scotland. *Klotzsch, in Hook. Herb.*—Sowerby's plant, to which Klotzsch refers his specimens, agrees in every respect, except that he describes the pileus as downy in parts, no appearance of which is exhibited in the specimens before me.

19. *P. betulinus*, Bull. (*Birch-tree Polyporus*); pileus fleshy smooth pale reddish-brown furnished with a very short obliquely vertical obsolete stem, pores unequal white. *Fr. Syst. Myc. v. 1. p. 358. Grev. Fl. Ed. p. 400. Sc. Crypt. Fl. t. 229. Rostk. l. c. t. 22. Klotzsch, Fung. Germ. exs. n. 32.—Bol. betulinus, Bull. t. 312. Bolt. t. 159. Sow. t. 112.*

On trunks of dead birch-trees. Summer and autumn: annual.—“*Pileus* 4—6 inches across, smooth, pale reddish-brown when mature, often mottled, roundish or somewhat reniform. *Flesh* white, very thick. *Pores* white or tinged with brown, narrow, the orifices toothed, separable from the pileus when fresh, but really concrete with it. *Sporules* white.” *Grev. l. c.* Taste and smell acid. Withering's *B. betulinus*, found on the ash, appears to be a different species. The epidermis is very thin and delicate and easily peels off; when dry the whole plant is very light; its texture between coriaceous and corky.

20. *P. suaveolens*, L. (*sweet-scented Polyporus*); pileus of a fleshy somewhat corky substance zoneless villous white, pores rather large brownish. *Fr. Syst. Myc. v. 1. p. 366. Fl. Dan. t. 1849. Klotzsch, Fung. Germ. exs. n. 34.—Bol. suaveolens, Linn. Sp. Pl. p. 1646.—B. salicinus, Sow. t. 227.—B. suberosus, Bolt. t. 162.*

On Willows: not common.—On a fallen tree, apparently a Poplar, at King's Cliffe, Norths.; *Rev. M. J. Berkeley.*—Generally solitary. When dry, very light and soft, whereas the following becomes hard and has the pores more irregular. Sowerby says that this species generally occurs on the upper part of old willow-stumps, while the next grows on the lower part. An inspection of Sowerby's original specimen enables me to correct the references of Fries. Sowerby's *B. salicinus* is undoubtedly the same with the species published by Klotzsch as *P. suaveolens*.

21. *P. salicinus*, Grev. (*subimbricated Willow Polyporus*); sessile or dimidiate, between corky and coriaceous nearly smooth slightly rugged white at length brownish, pores white short irregular. *Grev. Fl. Ed. p. 400.—P. suaveolens, var. salicinus, Fr. Syst. Myc. v. 1. p. 366. Klotzsch, in Hook. Herb.—Bol. suaveolens, Sow. t. 228.*

On Willows, &c., very common. Autumn.—When dry, the present

species is hard and altogether different from the foregoing. It is by no means confined to willows. The scent is very strong, like that of aniseed in the fresh plant; Greville, however, describes it as almost scentless. I have not here attempted to assign accurately the synonyms of the earlier English writers on Fungi. Purton's *B. salicinus* appears to be the present species.

22. *P. velutinus*, Pers. (*velvety Polyporus*); imbricated whitish or brownish-grey, pileus between corky and coriaceous thin velvety obscurely zoned, pores exceedingly short minute round whitish. *Fr. Syst. Myc. v. 1. p. 368. Grev. Fl. Ed. p. 401.*—*B. velutinus*, Pers. *Syn. p. 539.*

On trunks and stumps of trees generally close to the ground. Spring to autumn. Not rare about Edinburgh. *Dr. Greville.*—More or less imbricated. *Pileus* 2—3 inches broad, velvety, undulated, obscurely zoned, between corky and leathery, margin thinner than in the following species, shrinking and curling inwards when dried; colour various, whitish with a cottony margin, yellowish-fuscous, or brownish-grey; the latter is most common. *Pores* whitish or yellowish, minute, round, very short, often disappearing towards the margin. The whole of the above account is taken from Dr. Greville, who is the only authority for the species.

23. *P. versicolor*, L. (*party-coloured Polyporus*); pilei coriaceous villous adorned with various coloured zones more or less shaded with blue, pores round white. *Fr. Syst. Myc. v. 1. p. 368. Grev. Fl. Ed. p. 402.*—*Bol. versicolor*, Linn. *Suec. 1254. Bull. t. 86. Bolt. t. 81. Sow. t. 229, 387. f. 7. With. v. 4. p. 287. Purt. Midl. Fl. v. 2 & 3. n. 1001.*

On trunks of trees, posts, sticks, &c. : extremely common.—Variable; sometimes quite resupinate, or with the margin reflexed; more generally dimidiate and densely imbricated, occasionally spuriously stipitate, more or less lobed, villous, marked with regular concentric smooth shining zones of various colours, sometimes entirely white, and not unfrequently the whole surface is villous and the zones mere depressions.

24. *P. pallescens*, Fr. (*pale Polyporus*); pilei subcoriaceous subpulverulent zoneless pale-ochre, pores unequal. *Fr. Syst. Myc. v. 1. p. 369.*—*B. pellicporus*, Sow. *t. 230.*

On old stumps: not common. Clifton, Notts. *Rev. M. J. Berkeley.*—Thin imbricated, 2—3 inches or more broad, with scarcely any trace of zones, more or less tuberculated, pores minute, many quite superficial, but towards the base a line or more deep. Both the original specimens of Sowerby and those collected by myself have a pulverulent appearance arising from a very minute down.

25. *P. abietinus*, Pers. (*violet Polyporus*); effuso-reflexed pileus coriaceous dirty-white villous, pores toothed more or less tinged with violet. *Fr. Syst. Myc. v. 1. p. 370. Hook. Fl. Lond. N. S. cum ic. Grev. Fl. Ed. p. 402. Sc. Crypt. Fl. t. 226.*—*Bol. abietinus*, Dicks. *Crypt. fasc. 3. t. 9. f. 9. Pers. Syn. p. 541. With. v. 4. p. 289. Purt. Midl. Fl. v. 3. p. 242. t. 13.*—*Sistotrema violaceum*, Pers. *Syn. p. 551.*

On dead fir-trees; common.—*Pileus* 1—2 inches across, sometimes entirely resupinate with the exception of the extreme margin and spreading over several inches; more generally effuso-reflexed, thin, coriaceous, zoned, whitish, often stained with minute green *Algæ*, more or less villous. *Pores* very irregular, lacinated, sometimes resembling hydroid teeth, more or less of a violet hue, which fades when the plant is past maturity.

→ → → *Biennial or Perennial.*

26. *P. ulmarius*, Sow. (*Elm-tree Polyporus*); pileus between fleshy and corky zoneless smooth whitish, pores small at first bright tawny. *Fr. Syst. Myc. v. 1. p. 365.*—*Bol. ulmarius*, *Sow. t. 88.*

In hollow elms; not common. Madingley, Cambridgesh.; Chiswick, Middlesex. *Rev. M. J. Berkeley.*—Effused, with an obtuse occasionally free margin, forming a new stratum every year, so that a section gives several distinct layers of pores and flesh alternating with each other. *Flesh* white. *Pores* minutely tawny. *Substance*, when dry, hard and corky. A very distinct species.

27. *P. Scoticus*, Klotzsch, (*brown stratified Polyporus*); effused or effuso-reflexed margined brownish zoned, pores white. *Klotzsch MSS. in Hook. Herb.*

About the roots of trees: not uncommon in England and Scotland.—Forming masses 3—18 inches wide, of imbricated, rugged or radiostriate brown *piles*, occasionally tawny towards the margin, marked with strong, vaulted zones which arise from each annual layer projecting beyond that of the preceding year. *Substance* white, hard and woody. *Pores* middle-sized, white, or with a pale reddish-brown tint, margined above as well as below, so that each layer appears resupinate—This species, which seems to have almost every point in common with *P. resinosus*, and is distinguished from it chiefly by its longer duration, is named by Klotzsch in *Hook. Herb.*, *P. Scoticus*. A more appropriate name might certainly be found, but as it is possible that he may have published this, as well as many other new species, from Dr. Hooker's Herbarium, I consider it proper to retain it.

28. *P. cytisimus*, Berk. (*Laburnum Polyporus*); large imbricated, pileus coarsely tuberculated, margin subacute, substance very close but composed of velvety fibres nearly white as well as the minute pores.—*Bol. suberosus*, *Sow. t. 288.*

At the foot of a Laburnum near London, where another specimen is now growing on the same portion of the trunk from whence my specimen was gathered. *Mr. C. Sowerby.*—Imbricated, above a foot across, dimidiate, quite smooth (at least when dry) but coarsely tuberculated. *Substance* slightly zoned, very thick and close, pale, evidently composed of two or three successive layers. This is certainly the same as *B. suberosus*, *Sow.*, though the texture of that seems a little more woody and the dried specimen now before me is reddish, which, however, may arise from its having been impregnated with oil, which appears sometimes to have been Mr. Sowerby's practice for the preservation of specimens. The only species at all according with it is *P. marginatus*, but that appears to be of quite a different colour. I can find no notice of Sowerby's figure in the *Syst. Myc.*

29. *P. fraxineus*, Bull. (*Ash-tree Polyporus*); hard, pileus



thick smooth dirty-white at length somewhat of a brick-red, pores minute pale. *Fr. Syst. Myc. v. 1. p. 374.*—*B. fraxineus, Bull. t. 433. f. 2.*

On ash and elm. Madingley, Camb. Apethorpe, Norths. *Rev. M. J. Berkeley.*—Solitary or imbricated, thick, rugged, somewhat zoned, dark red-brown; substance corky, pale. Pores minute, pale, of the same colour as the pileus within. *Smell* strong and penetrating. The specimens described above were gathered on the rotten stump of an elm; but another occurred on ash, apparently belonging to the same species, of an enormous size, nearly 42 inches across, and had evidently been growing a great number of years, making very slow progress. The upper surface is very rugged and somewhat cracked, whitish only at the margin, the rest dirty-brown; the orifices of the tubes are pale, and their interior not red but nearly of the same colour. *Substance* of a pale woody colour and very hard, resembling cork. The smell was very strong, and is still perceptible in a dry fragment now before me. If I am mistaken in referring this gigantic specimen to *P. fraxineus*, the error may easily be corrected by any competent person, as it is deposited in the Botanical Museum at Cambridge.

30. *P. radiatus*, Sow. (*radiated Polyporus*); pilei coriaceous radiato-striate slightly velvety brownish-yellow, pores small. *Fr. Syst. Myc. v. 1. p. 369. El. 1. p. 102.*—*B. radiatus, Sow. t. 196.*

On stumps. Stone Park, Withiham; Sussex.—Tawny specimens of *P. versicolor* sometimes occur, very much resembling this species; but it appears from Sowerby's own specimens, which are however in a very decayed state, as well as the opinion of Fries, to be altogether distinct.

31. *P. pinicola*, Sw. (*Pine-tree Polyporus*); hard, pileus dilated pulvinate unequal blackish, margin vermilion, pores round pale-ochre. *Fr. Syst. Myc. v. 1. p. 372.*—*Bol. pinicola, Swartz, Obs. Bot. p. 88.*—*B. semioroides, Schaff. t. 270.*—*B. igniarius, Pers. Syn. p. 534.*—b, margin yellow-brown.\* *Klotzsch MSS.*

On pine-trunks, *var. b.* Scotland. *Arnott.*—*Pileus* imbricated, very hard, 6 inches broad, 4 inches thick at the base, gibbous, rugged, scabrous, zoned and sulcate, much cracked, margin subacute, as well as the rather large irregular sinuous pores. *Substance* spongy, tawny, soft, excellent for tinder. The above account is taken from Klotzsch's MSS., on whose authority the specimen now before me, which is very handsome and appears to have grown very slowly, is considered a variety of *P. pinicola*. If this be correct, it is difficult to believe, as Fries positively asserts, that is a persistent state of *P. marginatus*, as the pores in that are described as "minimi, rotundi."

32. *P. dryadæus*, Pers. (*false Amadou*); rather soft tuberculated more or less of a cinnamon hue whitish in age, margin swollen whitish as well as the minute pores, at length brownish. *Fr. Syst. Myc. v. 1. p. 274. El. 1. p. 108.*—*Bol. dryadæus, Pers. Syn. p. 537.*—*B. pseudo-igniarius, Bull. t. 458. Part. Mill. Fl. v. 3. n. 1486.*

\* Klotzsch's term is "spadiceus," but that does not accord with the specimen.

On old oaks: not common. Ragley Park. Himley Park near Dudley. *Purton*. Morehay Lawn in Rockingham Forest, Norths. *Rev. M. J. Berkeley*.—*Pileus* 7 inches or more broad,  $2\frac{1}{2}$  thick, obtuse, pulvinate, grossly tuberculated, minutely pitted towards the edge and when fresh distilling drops of moisture, which is sometimes glutinous, according to *Purton*. When young it is described by *Fries* as cinnamon, when old it is cinereous or whitish as if overrun with some *Thelephora*, and the white surface when bruised changes to red-brown. *Mass of pores* nearly plane; pores minute, red-brown within, their orifices whitish or subcinereous. *Substance* silky. *Smell* strong, subacid. The margin was evidently gnawed by Rabbits, causing the appearance of a honeycomb divided vertically, which was probably the case also in *Mr. Purton's* specimens. Duration probably not more than two years.

33. *P. fomentarius*, L. (*real Amadou*); pileus subtriangular smooth brownish-grey soft within, margin pale, glaucous-whitish or yellowish as well as the very minute pores, at length ferruginous. *Fr. Syst. Myc. v. 1. p. 374. Grev. Fl. Ed. p. 400.—Bol. fomentarius, Linn. Succ. 1252. Sow! t. 133. With. v. 4. p. 292. Pers. Syn. p. 536. Purton. Midl. Fl. v. 2 & 3. n. 1008.—B. unguatus, Bull. t. 491. f. 2.—b. flat, thin. B. Lipsiensis, Batsch, Cont. 1. f. 130.—B. applanatus, Pers. Obs. Myc. 2. p. 2.—B. fomentarius,  $\beta$ . applanatus, Pers. Syn. p. 536.*

On oak, birch, &c. More or less diffused over the whole of Great Britain, but seldom abundant anywhere. *b. Hamilton. Dr. Davidson.*—*Pileus* 4—5 inches broad, subtriangular, obsoletely zoned, nodulose, brownish-grey, resembling coffee slightly tinged with milk; sometimes in age, especially when growing on birch, nearly white, occasionally tinged with bright-yellow; margin in general subacute, but sometimes very obtuse, the substance reddish-brown, always much softer than in the following species, but varying in density. *Pores* very minute, stratified, whitish, glaucous, or yellowish-grey, at length ferruginous, the mass of them in general concave. The best species for making Amadou, and very widely distributed over the globe. I have before me specimens of the plane variety from St. Vincents and Mauritius, and of the more common state from Madeira. *Thunberg* appears to have met with it in Japan. The plane variety differs only in being much thinner and in the zones being narrower and more frequent.

34. *P. nigricans*, Fr. (*black Amadou Polyporus*); very hard, pileus thick black pulvinate grooved concentrically, the margin and minute pores ferruginous. *Fr. Syst. Myc. v. 1. p. 375.*

Trunks of Birch trees, Inverary. *Klotzsch in Hook. Herb.*—A very distinct species; not at all fit for making tinder. The specimen before me exactly resembles the figure marked A., *Bull. t. 401*, except that it is of a bright shining black. The mass of tubes in this is quite plane. But in specimens collected at Isle à la Crosse, N. America, by *Dr. Richardson*, and published as belonging to this species in a paper on exotic Fungi in the *Linnaea*, by *M. Klotzsch*, the pileus is much cracked and not at all shining, and either black or in parts of a pale opaque cinereous hue, as represented by *Bulliard* in the plate above cited, and the tubes form a convex mass and are of a much redder brown.

35. *P. igniarius*, L. (*hard Amadou Polyporus*); hard, pileus

thick obtuse nearly even ferruginous at length cinereous, margin and the minute convex pores cinnamon. *Fr. Syst. Myc. v. 1. p. 375. Grev. Fl. Ed. p. 401. Klotzsch! Fung. Germ. exs. n. 36.—Bol. igniarius, Linn. Succ. 1256. Bull. t. 454. (in part). Bolt. t. 80. Sow. t. 132. With. v. 4. p. 291. Purt. Midl. Fl. v. 2 & 3. n. 1007.—B. unguilatus, Tratt. Œst. Schw. t. 3. n. 6.*

On willow, cherry, plum-trees, &c.: very common.—Much harder and of slower growth than the preceding and much less fit for making tinder. The *pileus* is also narrower and very much thicker, resembling a horse's hoof; the margin obtuse and the mass of tubes, in general, either plane or very convex. Occasionally, when growing on the under side of a branch, the *pileus* is very imperfectly developed.

36. *P. Ribis*, Schum. (*Currant-bush Polyporus*); tawny-ferruginous, *pileus* rather thin flattened and somewhat velvety, pores short minute equal. *Fr. Syst. Myc. v. 1. p. 375. Purt. MSS. Fl. Dan. t. 1794. f. 2.—P. ribesius, Pers. Myc. Eur. v. 2. p. 80 —Bol. Ribis, Schum. Stell. 2. p. 386.*

On the root of the red Currant and Gooseberry: very common.—Imbricated, 3 inches or more broad, thin, zoned and velvety, of a rather rich tawny-brown, the margin paler and brighter. *Substance* soft, silky, fit for making tinder. *Pores* short, larger than in the foregoing species, brownish-grey.

37. *P. conchatus*, Pers. (*Shell-like Polyporus*); hard, *pileus* rather thin effuso-reflexed imbricato-sulcate yellowish-brown, pores small cinnamon. *Fr. Syst. Myc. v. 1. p. 376.—Bol. conchatus, Pers. Syn. p. 638.—B. impuber, Sow! t. 195.*

On Sallow and *Salix alba*; not uncommon.—This appears to be the *B. impuber*, Sow., original specimens of which are now before me; most certainly they are not referable to *P. cuticularis*. The specimens from which the smaller figures were drawn, are not distinguishable from *P. Ribis*; and it is probable that *P. ferruginosus* was also in view, abundant specimens of which remain in Mr. Sowerby's collection, though he has given no express figure of it. The specimen, from which the larger figure was taken, seems to be the same with *P. conchatus*, which occurs not infrequently on pollard sallows. The principal distinction between this and the foregoing species appears to reside in the harder substance and smoother *pileus*. It varies in the degree in which its surface is grooved. Sowerby's larger specimen is very little grooved and coarsely nodulose.

38. *P. undatus*, Pers. (*wavy Polyporus*); broadly effused pale cinnamon broken up into wave-like elongated dependent tubercles, pores minute. *Pers. Myc. Eur. v. 2. p. 90. t. 16. f. 3. Fr. El. v. 1. p. 111.*

On fir stumps. Clifton, Notts. *Rev. M. J. Berkeley.*—The peculiar stalactitic form of the present species certainly arises from its growing in a particular position. The whole effused or more properly decurrent mass is broken up, as it were, into minute elongated unguilate dependent pilei, the surface of which is slightly zoned and striated by an effort of nature to form tubes upon it. The substance is rather hard

and consists almost entirely of tubes which are larger than those of *P. igniarius*, and form either a plane or obtuse mass. Whatever the perfect form of this species may be, it is certainly very different from any other known British species.

\*\*\*\* *Resupinate*.

39. *P. ferruginósus*, Schrad. (*small ferruginous Polyporus*); effused rather thick tawny-cinnamon, browner when old, pores subrotund unequal. *Fr. Syst. Myc. v. 1. p. 378. Hook. Fl. Lond. N. S. t. 163. Grev. Fl. Ed. p. 402. Sc. Crypt. Fl. t. 155.—Bol. ferruginosus, Schrad. Spic. p. 172. Pers. Syn. p. 544.*

On rotten branches lying on the ground; not uncommon.—At first appearing under the form of a confervoid stratum which gradually thickens and acquires pores in the centre; generally wholly resupinate, but occasionally slightly reflexed, in which case it is roughish and tomentose. Pores minute, roundish, unequal. Specimens sometimes occur many inches in length and, in parts,  $\frac{1}{2}$  of an inch thick, from several individuals having become confluent.

40. *P. incarnátus*, Pers. (*orange-flesh Polyporus*); effused coriaceous very thin submarginate, pores orange-flesh colour minute round suboblique. *Fr. Syst. Myc. v. 1. p. 379. El. v. 1. p. 119. Grev. Fl. Ed. p. 403.—Bol. incarnatus, Pers. Syn. p. 546.*

On trunks of fir-trees, especially when in a state of decay. Drumshoreland Muir, near Edinburgh; *Greville*.—"Effused, irregular, thin, coriaceous, marginate or immarginate; margin white, cottony, rather thick as if there was a tendency to become reflexed. Pores minute, very short, round, subequal, straight or oblique, of a fine flesh colour approaching in some cases to orange. Sometimes small cottony protuberances occur amongst the pores, which have the appearance of small pilei with tubes underneath." *Grev. l. c.*

41. *P. medulla pánis*, Jacq. (*crumb of Bread Polyporus*); effused somewhat wavy hard smooth dry white, pores not minute. *Fr. Syst. Myc. v. 1. p. 380. Grev. Fl. Ed. p. 402. Fl. Dan. t. 2028. f. 1.—Bol. medulla panis, Jacq. Misc. 1. p. 141. t. 11. Pers! Syn. p. 544.*

On decaying branches and trunks of trees: not common. Dundas Hill, near Edinburgh, *Dr. Greville*.—"Effused, white, becoming yellowish in age, roundish, tolerably defined, dry, thickish, following in some degree the inequalities of the wood. Pores elongated, roundish, straight or oblique, according to situation. *Flesh almost none.*" *Grev. l. c.* I forbear quoting the synonyms of the earlier English authors, as scarcely any species is involved in so much confusion as the present, though it is very distinct, and if Jacquin's figure had been attended to, need not have been misunderstood.

42. *P. vulgáris*, P. (*common resupinate Polyporus*); broadly effused thin dry smooth white, pores minute subequal. *Fr. Syst. Myc. v. 1. p. 331. Grev. Fl. Ed. p. 403.—B. Proteus, Bolt. t. 166. a. b. c.*

On decaying wood at the bottom of posts; sometimes spreading over leaves.—Effused sometimes to the breadth of a foot, smooth, not a line thick, nor to be separated from the wood without destroying it, margin when young very slightly pubescent. Pores straight or oblique, roundish. The figures at the bottom of Bolton's plate appear to belong to *Thelephora Avellana*.

43. *P. Vaillantii*, DC. (*Vaillant's Polyporus*); effused byssoid costate whitish, pores rather large irregularly disposed in heaps often oblong and irregular. *Vaill. Bot. Par. p. 41. t. 8. f. 1.*—*P. Vaillantii*, *Fr. Syst. Myc. v. 1. p. 383. El. v. 1. p. 122.*—*Bol. Vaillantii*, *Dec. Fl. Fr. t. 6. p. 38.*—*B. medulla panis*, *Sow. t. 326.*

On fallen trunks and on the ground: *Sowerby*. Glasgow Botanic Garden, *Klotzsch in Hook. Herb.*—"Forming a thin, white or slightly rufescent, byssoid, broadly effused close, membrane, here and there traversed by rooting ribs." *Fr. l. c.*

44. *P. molluscus*, Pers. (*soft prostrate Polyporus*); effused thin soft white, the circumference fibrillose, pores slender unequal. *Fr. Syst. Myc. v. 1. p. 384.*—*Bol. latus*, *Sow. t. 387. f. 9.*

On stumps, branches, rotten leaves, &c.—At first forming a mere fringed byssoid membrane, which gradually acquires moderate rigid subrotund and angular pores, the partitions of which are so thin that they very generally become lacerated.

45. *P. Armeniacus*, Berk. (*buff and white Polyporus*); sub-orbicular confluent extremely thin, circumference minutely downy, pores at first white then deep-buff.

On the bark of fir-trees; *Captain Carmichael*.—Forming broadly effused patches, composed evidently of many confluent orbicular individuals; circumference minutely downy. Pores shallow, minute, nearly round, at first white then bright buff, often confined to the centre, the marginal portion being of a byssoid structure under a lens. This most elegant and apparently distinct species was marked by Captain Carmichael as *Polyporus Radula*, *b. Virgineus*; but as it does not accord with that species, and the specimens are remarkably perfect, I feel myself justified in proposing it as new. Another species occurs in the same collection, marked *Polyporus vulgaris*, and apparently altogether distinct; but as there is only a single specimen and there are no very prominent characters, it is perhaps better to omit it.

## 7. BOLÉTUS. Dill. Boletus.

*Hymenium* distinct from the substance of the pileus, consisting of cylindrical separable tubes. *Sporules* oblong.—Name; from  $\beta\omega\lambda\lambda\acute{o}\varsigma$ , a ball; from the rounded form of many of them.

1. *B. luteus*, L. (*dingy yellow Boletus*); pileus dingy-yellow clothed with brown slime which gradually disappears, tubes adnate dull-yellow, stem furnished with a ring, dotted above. *Linn. Succ. 1247. Schaff. t. 114. Fr. Syst. Myc. v. 1. p. 386.*

*With. v. 4. p. 278. Sow. t. 265.*—*B. annulatus*, *Nees, Syst. f. 204* (copied from Schœff.).

Fir plantations, &c. Extremely common.—*Pileus* 3—4 inches broad, dingy yellow, convex, covered at first with thick brown gluten, which is soon washed off, but the pileus remains slightly viscid and clothed with very minute matted silkiness. *Flesh* at first firm, whitish not changing. *Tubes* adnate, dull yellow, nearly simple, their orifices round or slightly wavy; *sporules* ochraceo-ferruginous. *Stem* 4 inches or more high,  $\frac{1}{2}$  an inch thick, straight or flexuous, at first white, but soon sordid; hoary beneath the white persistent ring, glandular above; sometimes the whole surface is glandular. I have not quoted Bulliard's figures, as they do not agree with any specimens I have met with. Schœffer seems to have had both this and the following species in view, the section apparently belonging to *B. Grevillei*.

2. *B. Grevillei*, Kl. (*bright yellow Boletus*); pileus compact bright yellow clothed with brown gluten which gradually disappears, tubes decurrent of a golden sulphur, stem firm furnished with a ring reticulated above. *Klotzsch MSS. & Linnœa*, vii. 198. *Fr. Ind. Alph. p. 59.*—*B. annularius*, *Bolt. t. 169 & 84* (smaller fig.).—*B. flavus*, *With. v. 4. p. 280.*—*B. luteus*, *Grev. Sc. Crypt. Fl. t. 183.*

Woods, heaths, &c. May—Oct. Common.—“*Pileus* 2—5 inches broad, compact, in moist shady places glutinous and bright yellow, in exposed situations dry and brown. (Flesh pale yellow, not changing.) *Tubes* unequal, of a golden sulphur, wavy; sometimes with their orifices ruddy. *Ring* dirty-yellow, membranaceous. *Stem* 2—3 inches high, 6—9 lines thick, yellow spotted with purple, thickened at the base, reticulated above the ring.” *Kl. MSS.* I copy the above description from a MS. of M. Klotzsch, in preference to my own notes or Dr. Greville's description, as he appears to be the first who of late has rightly understood the species, though it is certainly Withering's *B. flavus*, which name it ought properly to have borne. It is easily known by its firm bright yellow *pileus*, whose flesh is also yellow, by its golden sulphur-coloured decurrent tubes, and by the portion of the stem above the ring being reticulated and not glandular. By these notes I had myself purposed to distinguish it, and, if I mistake not, by the much paler almost clay coloured sporules; but on this point I speak cautiously, as I have only the sporules of *B. Grevillei* before me, and it is always hazardous to trust to descriptions of colour. It does not appear to be *B. cortinatus*, Pers. as Klotzsch supposes, since he states the flesh of that to be white.

3. *B. larinus*, Berk. (*Larch Boletus*); pileus dirty-white with livid stains clothed with dirty yellow slime which gradually disappears subsquamose, tubes adnate subdecurrent compound, at first nearly white, stem furnished with a ring, reticulated above.

Under or near Larches. Sept. Stibbington, Hunts. Laxton, Norths. *Rev. M. J. Berkeley.*—*Pileus* 2—3 inches broad, dirty-white with livid stains and sometimes adpressed dirty-yellow fascicles of filaments, the remains of the slimy ring; often deeply scrobiculate; covered with

dirty-yellow or brownish slime which gradually disappears. *Flesh* white, very slightly tinged with yellow, not changeable. *Tubes* adnate or subdecurent, compound, each consisting of two or three cells; their orifices angular, at first nearly white with a tinge of yellow, at length brownish from the sporules. *Stem* 2 inches or more high,  $\frac{1}{2}$ — $\frac{2}{3}$  of an inch thick, nearly equal, reticulated above the ring and frequently much scrobiculated below, dirty-white like the pileus, stained with the sporules, somewhat downy at the base. *Sporules* oblong, brownish clay-coloured.

4. *B. granulatus*, L. (*milky Boletus*); pileus covered with brown slime which gradually disappears, tubes adnate rather large subsimple yellow, stem scabrous. *Linn. Sp. v. 2. p. 1647. Fr. Syst. Myc. v. 1. p. 387.*—*B. flavo-rufus, aureus, ferrugineus*, Schæff. t. 123, 115, 126.—*B. lactifluus*, With. v. 4. p. 280. *Sow. t. 420.*—*B. circinans*, Pers. *Syn. p. 505. Nees, Syst. f. 205 (copied from Schæff. t. 123).*

Fir plantations. Aug—Sept. Edgbaston, *Withering*. Almer, Dorset.; *Rev. M. J. Berkeley.*—Gregarious, caespitose. *Pileus* 2 inches or more broad, hemispherical, at first covered with a thick rufous brown slime; afterwards dirty rufous or yellowish; *flesh* thick, white or yellowish, not changeable; margin at first inflexed and downy. *Pores* at first whitish, then lemon-coloured, compound, the margin distilling a pale watery milk, which when dried, gives them a granulated appearance, at length dirty-yellow, adnate. *Sporules* ochraceo-ferruginous. *Stem* 1 inch or more high,  $\frac{1}{2}$  an inch thick, generally short, but variable in this respect, obtuse at the base, sending many roots into the soil, more watery than the pileus, pale yellow above, white below, minutely tomentose and granulated, at first covered with milky drops. Eatable, according to Persoon. *Withering* says that its flavour is like that of *Agaricus campestris*. *B. circinans* of Roques is certainly a different species, consequently his account does not invalidate the report of Persoon.

5. *B. bovinus*, L. (*Cow Boletus*); pileus glutinous reddish-buff, tubes adnate compound at first greyish-yellow then ferruginous, stem even. *Linn. Succ. 1246. Fr. Syst. Myc. v. 1. p. 388. Grev. Fl. Ed. p. 403. Klotzsch, Fung. Germ. exs. n. 37.*—*B. gregarius*, *Fl. Dan. t. 1018. With. v. 4. p. 278.*

Heathy fir-woods. Sept. Pendarvis, Cornwall. *Mr. Stackhouse*. East Morden, Dorset. *Rev. M. J. Berkeley.* Very common in subalpine parts of Scotland. *Dr. Greville.*—Gregarious, fasciculate. *Pileus* 1—2 $\frac{1}{2}$  inches broad, when young hemispherical, the margin white and tomentose, the disc and top of the stem purplish, the base rhubarb coloured; when full grown, convex, expanded, the margin still turned in, very glutinous, dull orange yellow or deep buff, flesh tinged with the colour of the pileus, not changeable. *Tubes* resembling the pores of *Merulius lachrymans*, very shallow ( $\frac{1}{2}$  of an inch) compound, dirty yellow, not easily separating from the pileus. *Stem* 2—3 inches high,  $\frac{3}{4}$ — $\frac{1}{2}$  of an inch thick, subtomentose, not diffused gradually but rather abruptly, into the pileus of the same colour with it, but streaked with watery lines, attenuated below or subequal. In very young specimens the stem is bulbous. *Sporules* elliptic, yellow (pale ochre, *Fr.*). Smell resembling that of *Agaricus Oreades*, but strong. A very elegant and

distinct species. *B. bovinus*, With. appears to be in part *B. edulis*. Fries remarks that the coat of gluten is thin and not coloured as in the last, to which he appears to allude in the term "*subviscoso*."

6. *B. piperátus*, Bull. (*pepper Boletus*); pileus smooth reddish or brownish yellow, tubes rather large subdecurrent ferruginous, stem even, the base and flesh intense yellow. *Bull. t.* 451. *f.* 2. *Sow. t.* 34. *Pers. Syn. p.* 507. *With. v.* 4. *p.* 277. *Fr. Syst. Myc. v.* 1. *p.* 388. *Gre. Fl. Ed. p.* 404. *Nees, Syst. f.* 207. (*copied from Batsch.*)—*B. ferruginatus*, *Batsch, Cont. 1. f.* 128.

Woods and thickets. Autumn. Hainault Forest, *Sowerby*. Dundas Hill near Edinburgh; *Dr. Greville*. Kinnordy. Sept. *Klotzsch in Hook. Herb.* "*Pileus* 1—3 inches, broad, at length plane, moist or even glutinous, reddish-yellow or brownish. *Flesh* yellow, not changing colour. *Tubes* large, subdecurrent, angular, reddish-yellow or ferruginous. *Stem* 1—2 inches high, 3—4 lines thick, more or less deep yellow. *Taste* remarkably acid and pungent." *Gre. l. c.*

7. *B. variegátus*, Swartz, (*variegated Boletus*); pileus fasciculato-pilose dull yellow, tubes adnate round minute ferruginous, stem even firm. *Swartz, in V. A. H.* 1810. *p.* 8. (*vide Fries*). *Fr. Syst. Myc. v.* 1. *p.* 388. *Klotzsch! Fung. Germ. exs. n.* 38.

Fir woods. Aug. Sept. Helensburgh, *Klotzsch in Hook. Herb.* East Morden, Dorset. *Rev. M. J. Berkeley*.—*Pileus* 3 inches or more broad, convex, fasciculato-squamosa, scales small, tawny-yellow; flesh changing to blue when cut, margin tomentose, subinvolute. *Tubes* very narrow, dull-yellow, blue when bruised, adnate, resembling somewhat those of *B. bovinus*. *Stem* 3 inches high,  $\frac{3}{4}$  of an inch thick, granulato-pulverulent, very neat, firm, yellow, obtuse. Smell unpleasant, taste not so. In *Dr. Hooker's Herbarium* there is a variety gathered at Inverary, with the pileus nearly smooth.

8. *B. subtómentosus*, L. (*subtomentose Boletus*); pileus pulvinate dry subtomentose, tubes adnate large angular yellow stem firm even. *Linn. Suec. p.* 506. *Pers. Syn. p.* 506. *With. v.* 4. *p.* 276. *Purt. Midl. Fl. v.* 3. *n.* 1483. *Fr. Syst. Myc. v.* 1. *p.* 389. *Gre. Fl. Ed. p.* 404. *Tratt. Essb. Schw. t. Q. Klotzsch! Fung. Germ. exs. n.* 39.—*B. cupreus and crasipes*, *Schaeff. t.* 133, 112.—*B. communis*, *Bull. t.* 393.—*B. chrysensteron*, *Bull. t.* 4. 490. *f.* 3. *With. v.* 4. *p.* 280.—*B. luteus*, *Bolt. t.* 84. *middle figure.*

*b.* pileus blood-red smooth. *B. sanguineus*, *With. v.* 4. *p.* 279. *Purt. Midl. Fl. v.* 2. *n.* 989.—*B. communis*, *Sow. t.* 225.

Woods, Summer and Autumn. Extremely common in subalpine situations, more rare in flat districts.—*Pileus* 2—3 inches or more broad, of various colours, but chiefly some shade of red, olive or yellow, pulvinate, minutely downy; epidermis often cracked in polygons, the interstices reddish; *flesh* white or yellowish, changing slightly to blue. *Tubes* adnate or ascending and then subdecurrent, large, dull-yellow, simple, blue when bruised. *Sporules* pale. *Stem* 3 inches high,  $\frac{1}{4}$ — $\frac{1}{2}$



of an inch thick, nearly smooth, very firm, yellow streaked more or less with red, generally crooked particularly at the base which is often suddenly attenuated, though sometimes that part is thickest, changing slightly to blue when cut. *Taste* not unpleasant. Part of the above description is taken from Dr. Greville's excellent account of this species in the *Flora Edinensis*. It is eaten in Germany, according to Trattinick, but he does not give a very favourable account and recommends only young specimens, old ones having frequently proved injurious. M. Roques considers the use of it as hazardous. Great caution would be required in distinguishing some states from *B. luridus*.

9. *B. calopus*, Pers. (*scarlet-stemmed Boletus*); pileus pulvinate more or less olive, tubes adnate angular yellow, stem nearly equal reticulated scarlet. *Pers. Syn. p.* 513. *Fr. Syst. Myc. v. 1. p.* 390. *Nees, Syst. f.* 208 (*copied from Schaff.*).—*B. terreus*, *Schaff. t.* 315.

Heathy woods. Aug. Loch Laggan, *Klotzsch in Hook Herb.*—"Differs from *B. subtomentosus* in the red, thicker, reticulated stem and narrower tubes. *Flesh* more or less changing to blue."—*Fr. l. c.*

10. *B. pachypus*, Fr. (*thick-stemmed Boletus*); pileus pulvinate subtomentose tan-coloured, tubes free round yellow, stem thick reticulated yellowish-red. *Fr. Syst. Myc. v. 1. p.* 390.—*Suillus, &c. Mich. t.* 69. *f.* 2.

*b.* pileus olive. *B. olivaceus*, *Schaff. t.* 105. *With. v. 4. p.* 279. *Purt. Midl. Fl. v. 2 & 3. n.* 988.—*B. elatus*, *Pers. Myc. Eur. v. 2. p.* 134.

Fir woods. July—Sept. Helensburgh, Dumbartonshire, *Klotzsch in Hook Herb.* Lytchett, East Morden, Dorset. *Rev. M. J. Berkeley*—*Pileus* 6—7 inches broad, dry, pulvinate, subtomentose, pale reddish-brown, very thick and fleshy, when young firm, when full-grown very soft; *flesh* white, not changeable. *Tubes* free, at first lemon-coloured, afterwards dirty-yellow, simple. *Stem* 3—4 inches high, 2½ inches thick, bulbous, often swollen from the top, rarely equal, reticulated, yellowish when young, subrufescent when old. Sometimes two or three specimens spring from the same root. This, as far as I can judge from Fries' description, is his *B. pachypus*. The tubes, however, do not become blue when touched. Whatever may be thought of the above description, the species must still be considered British, on the authority of M. Klotzsch. The form *b.* which I have met with I am inclined to think distinct.

Another large *Boletus* occurs in pastures, under oaks, in Aug. and Sept., apparently distinct, though nearly allied. I shall therefore give its characters at length, leaving the establishment of it as a species for further consideration. *Pileus* 10 inches or more across, pulvinate, 2 inches thick, pale ochraceous amber, smooth but with a satiny appearance from the minute matted silk with which it is clothed, visible only under a lens; sometimes much cracked. *Flesh* instantly changing from yellow to a beautiful blue, which, however, is very evanescent; towards the edge the flesh scarcely changes at all. *Tubes* free, but pressed close to the stem, forming an irregular spongy mass an inch thick, pale yellow, blue when bruised. *Sporules* pale olivaceous ochre. *Stem* 3 inches high, nearly 3 inches thick, bulbous at the base, generally reticu-

lated only at the very top, but sometimes half-way down, minutely pulverulent-squamulose, of the same colour with the pileus, with a few minute dark flecks, and just where the tubes end a few minute red spots; mottled with blue when cut. *Taste* like that of a growing walnut. The growth of the tubes is sometimes partially checked, so that while on one side they are 1 inch thick, on the opposite side they are not above  $\frac{1}{4}$  or  $\frac{1}{8}$ . I have found the same plant more than a foot broad, more decidedly tomentose and of a delicate mouse-grey, and the sides of the pileus remarkably compressed, so as to be parallel with the stem; the flesh not changing uniformly to blue,\* but becoming beautifully mottled and the stem bright-red near the tubes.

Still another form, with the tubes at first bright yellow, the stem extremely thick and not in the least reticulated, but rough like that of *B. scaber*, and neither flesh nor tubes changeable, occurred in May at King's Cliffe, Norths. *Sporules* pale olivaceous ochre. *Taste* and smell like that of *Ag. Georgii*; the yellow expressed juice distinctly acid.

11. *B. lúridus*, Schœff. (*poisonous Boletus*); pileus pulvinate subtomentose olive, tubes nearly free round yellow, their orifices crimson-red, stem thick generally more or less marked or reticulated with crimson-red. *Schœff. t.* 107. *Tratt. Œst. Schw. t.* 9. *n.* 17. *Fr. Syst. Myc. v.* 1. *p.* 391. *Grev. Fl. Ed. p.* 404. *Sc. Crypt. Fl. t.* 121.—*B. rubeolarius*, *Bull. t.* 490. *f.* 1. *With. v.* 4. *p.* 276. *Sow. t.* 250. *Purt. Midl. Fl. v.* 2 & 3. *n.* 985.—*B. bovinus*, *Bolt. t.* 85.—*B. perniciosus*, *Roques, Hist. des Champ. t.* 7. *f.* 1—3.—*B. marmoreus*, *t.* 6.

Woods. Summer and Autumn. Common.—*Pileus* 2—6 inches broad, convex, expanded, minutely tomentose, olive, brick-red, pinkish, cream-coloured, or ferruginous brown; flesh more or less yellow, changing to blue. *Tubes* free, yellow, or greenish, their orifices of a beautiful red or bright orange, quite simple, round. *Sporules* olivaceous-ochre. *Stem* very variable in length, bulbous, tomentose, sometimes quite smooth, red with ferruginous or the brightest yellow shades, solid, generally more or less marked or reticulated with crimson-red. Very deleterious. M. Roques mentions a case which came under his own observation of its bad effects, which happily yielded to opium. The var.  $\beta$ . *erythropus*, Pers. has been found in Scotland by Klotzsch. It differs in its more slender, punctato-squamulose and not reticulate stem.

12. *B. castáneus*, *Bull.* (*Chestnut Boletus*); pileus subvillous chestnut inclining to brick-red, tubes half-free white, then bright yellow, stem even mealy. *Bull. t.* 328. *Pers. Syn. p.* 509. *Fr. Syst. Myc. v.* 1. *p.* 392.

Woods. Oct. Not common. King's Cliffe, Norths.; *Rev. M. J. Berkeley*.—*Pileus* 3 inches broad, depressed when old but broadly pulvinate in the centre, subtomentose, the down raised up into little flat scales, beautiful dark-rufous tan; *flesh* thick mottled, stained

\* The blue colour certainly arises from a change which takes place in the juice. When squeezed out, it is at first quite pellucid, but almost instantly changes from yellow to a bright blue, and at length to brown, leaving behind a rich brown stain upon white paper.

beneath the epidermis with the colour of the pileus, not changing colour, viscid, insipid or subacid. *Tubes* vivid yellow, half-free, not reaching to the extreme margin. *Sporules* yellow. *Stem* sometimes short, swelling in the centre, attenuated below, and, as figured by Bulliard, hollow, but sometimes long and equal, beautifully tinged with yellow and rufous. Occasionally spiders' threads hang beneath the tubes, beautifully powdered with the yellow sporules, exactly as in *Polyporus hispidus*.

13. *B. edulis*, Bull. (*esculent Boletus*); pileus pulvinate smooth, tubes half-free subrotund minute, white soon becoming yellow, stem thick reticulated. *Bull. t.* 60, 494. *Pers. Syn. p.* 510. *Sow. t.* 111. *With. v.* 4. *p.* 278. *Tratt. Essb. Scwh. t. R. Fr. Syst. Myc. v.* 1. *p.* 391. *Purt. Midl. Fl. v.* 2 & 3. *n.* 987 & *v.* 3. *p.* 574. *Grev. Fl. Ed. p.* 404. *Roques, Hist. des Champ. t.* 4. *f.* 2. *t.* 5.—*B. bulbosus*, *Schæff. t.* 134, 135.—*B. elephantinus*, *t.* 277.—*B. solidus*, *Sow. t.* 419.—*B. bovinus*, *With. v.* 4. *p.* 273.

Woods and pastures, under Oaks. Summer and Autumn.—*Pileus* 6 inches or more broad, pulvinate, at length convexo-expanded, smooth, shining, often rugose and much cracked, dark-umber, pale towards the margin, slightly viscid; extreme margin white, but scarcely downy. *Flesh* turning a little reddish near the epidermis. *Tubes* nearly free, at first white, then lemon-coloured, at length dull-yellow, simple, their orifices angular. *Sporules* large, greenish ochre, much paler than in *B. luridus*. *Stem* 4 inches or more high, 2 inches thick, fawn-coloured, incrassated above and below, reticulated. Though neglected in this country, it appears to be a most valuable article of food. It resembles very much in taste the common mushroom and is quite as delicate, and might be used with much advantage, as it abounds in seasons when a mushroom is scarcely to be found. Like that, it can be cultivated, but by a much more simple process, as it is merely necessary to moisten the ground under oak-trees with water in which a quantity has been allowed to ferment. The only precaution requisite is to fence in the portion of ground destined for its production, as deer and pigs are very fond of it. This method is said to be infallible and is practised in France in the Departement des Landes. See *Roques, Hist. des Champ. p.* 16.

14. *B. scaber*, Bull. (*scurfy Boletus*); pileus pulvinate, tubes free round white, stem firm attenuated rough with scurfy scales. *Bull. t.* 132, 489. *f.* 1. *Sow. t.* 175. *Pers. Syn. p.* 505. *Fr. Syst. Myc. v.* 1. *p.* 394. *Grev. Fl. Ed. p.* 405.—*B. procerus*, *Bolt. t.* 86.—*B. rufus*, *Schæff. t.* 103.—*B. bovinus*, *Schæff. t.* 104. *Purt. v.* 2 & 3. *n.* 984. *With. v.* 4. *p.* 275. *var.* 3, 4.—*B. aurantiacus*, *Bull. t.* 236, 489. *f.* 2. *Sow. t.* 110. *With. v.* 4. *p.* 273. *Purt. Midl. Fl. v.* 2 & 3. *n.* 983. *Pers. Myc. Eur. v.* 2. *p.* 147.—*B. fusco-albus*, *Sow. t.* 421.—*B. leucophaeus*, *Pers. Myc. Eur. v.* 2. *p.* 140.

Woods; summer and autumn. Extremely common. *Pileus* 3—7 inches or more broad, pulvinate, viscid when moist, very variable in colour, white, cinereous, brown, olive, deep orange or vermilion, smooth or minutely downy, the down sometimes collected into minute fasciculate scales; *flesh* very thick, but soft, not changeable in young

specimens, in older ones reddish-grey when bruised, and sometimes black. *Tubes* white, pulvinate, stained with the yellow-brown sporules, their orifices often ferruginous before the expansion of the pileus, minute, round. *Stem* 6 inches or more high, attenuated upwards, squarrose with black or orange scales, sometimes marked with coarse raised lines. At first the stem is ovate and the pileus very narrow, even in specimens with the stem 2 inches high and 1 thick. There are frequently traces of a floccose veil. No species can be more variable than the present, some of its forms being amongst the coarsest and most unsightly fungi, while some states of the orange variety are equal in beauty to *Agaricus muscarius*.

15. *B. strobiláceus*, Scop. (*fir-cone Boletus*); blackish-umber, pileus densely scaly, scales thick squarrose erect, pores rather large angular white. Scop. in *Ann. Hist. Nat. IV. p. 148* (*fide Fries*). *Fr. El. v. 1. p. 127*.—*B. squarrosus*, Pers. *Myc. Eur. v. 1. n. 145. t. XIX*.—*B. strobiliformis*, Dicks. *fasc. 1. p. 17. t. 2. f. 2*.—*B. bovinus*, var. 5, *With. v. 4. p. 275*.

Woods. August. Bullstrode, Buckinghamshire; *Lightfoot*.—*Pileus* 2 inches broad, tessellated or cracked, like the cone of the Scotch Fir. *Pores* very white. *Stem* 3—4 inches high, thick, solid. The stem is stated by Fries in his specific character to be nearly smooth. Persoon describes his species as sulcate, especially above, and furnished with a downy veil. The stem in Dickson's figure is rough with narrow erect scales. This curious and rare species has been sent to Dr. Hooker from Canada.

16. *B. cyanéscens*, Bull. (*white-seeded Boletus*); pileus compact submentose, tubes free round equal, stem stuffed even ventricose. Bull. t. 369. *Sibth. Fl. Ox. p. 376*. *With. v. 4. p. 272*. *Roques, Hist. des Champ. pl. 8. f. 1, 2*.

Woody places. Sept. Magdalen College Walks, Oxford. *Sibthorpe*.—"Pileus 2—5 inches broad, rigid, pale, straw coloured, subfuliginous, the margin acute. *Flesh* white, when broken changing instantly to the most beautiful azure blue and when squeezed distilling a blue juice. *Tubes* short, when young scarce a line long, white or lemon-coloured. *Stem* distinct from the pileus, the apex contracted, brittle, never reticulated, but villosopruinose. *Sporules* white." *Fr. l. c.*

### 8. FISTULÍNA. Bull. *Fistulina*.

*Hymenium* formed of a distinct substance, but concrete with the fibres of the pileus. *Tubes* at first wart-like, somewhat remote, closed, radiato-fimbriate, at length approximate, elongated, open.—Named from the *fistulous* nature of the *Hymenium*.

1. *F. hepática*, With. (*juicy Fistulina*); fleshy but juicy rootless, pileus undivided. *With. v. 4. p. 270*. *Fr. Syst. Myc. v. 1. p. 395*. *Greav. Scot. Crypt. Fl. t. 270*. *Fr. El. v. 1. p. 128*.—*Fistulina buglossoides*, Bull. t. 74, 464, 497.—*Boletus hepaticus*, Schæff. t. 116—120. *Bolt. t. 79*. *Sow. t. 58*. *Pers. Syn. p. 549*. *Purt. Mill. Fl. v. 2 & 3. n. 1002*. *Tratt. Essb. Schw. t. V. Æst. Schw. t. 12. n. 23*.—*Hypodryas hepaticus*, Pers.

*Myc. Eur. v. 2. p. 148. Roques, Hist. des Champ. t. 2. f. 4.—Agaricum, &c. Mich. p. 117. t. 60.*

On oak, ash, walnut, beech and chestnut. Aug.—Oct. Not uncommon on ancient oaks.—*Pileus* roundish, dimidiate or subspathulate, in general more or less concave, studded with minute stellate furfuraceous tufts the rudiments of tubes, rich red-brown, tinged with vermilion; sometimes substipitate; margin obtuse; substance thick and juicy, marbled like beet-root, consisting of fibres which spring from the base, distilling a red pellucid juice which oozes out from different parts of the plant. *Hymenium* convex, elegantly tinged with shades of red or vermilion, dotted with rose-like somewhat remote radiated warts, which form a veil to the young tubes; as the pileus expands the tubes elongate and become approximate, and are jagged at their orifices. The most complete account of this curious fungus is to be found in the place quoted above, in Dr. Greville's Scottish Cryptogamic Flora, than which nothing can be more correct and excellent. It is much esteemed in Austria as an article of food. The taste is rather acid, but resembling somewhat that of *A. campestris*, but it is rather tough. It attains sometimes an enormous size. Mr. Graves found a specimen on an ash pollard, that weighed nearly thirty pounds.

#### 9. HÝDNUM. *Linn.* Hydnum.

*Hymenium* of the same substance as the pileus, composed of free spine-like processes.—Name, derived from ἵδνoν, the *Truffle*, some of the species having a somewhat analagous mode of growth.

\* *Stem perpendicular.*

1. *H. imbricatum*, L. (*scaly Hydnum*); pileus fleshy plane tessellato-squamose zoneless brown, spines greyish-white, stem short. *Linn. Succ.* 1257. *Schaff. t. 40. With. v. 4. 294. Sow. t. 73. Pers. Syn. p. 554. Tratt. Essb. Schw. t. X. Grev. Scot. Crypt. Fl. t. 71.—H. squarrosum, Nees, Syst. f. 240.—H. squamosum, Roques, Hist. des Champ. p. 46.*

Fir-woods; October. Rare. Near Maidstone and Bungay, *Woodward.* Bedfordshire; *Abbot. Glen-More, Messrs. Greville & Hooker.*—"Pileus 2—5 inches broad, thick and fleshy, plane or slightly convex and rounded at the margin, at length somewhat hollowed in the centre, varying from reddish to mouse-brown, scaly; scales imbricated, numerous, the central ones being often mere cracked portions of the pileus which render that part tessellated. *Flesh* pale-buffish or reddish. *Spines* entire, numerous, very short, of nearly equal length, greyish-white. *Stem* 1—2 inches thick, firm, irregular, whitish." *Grev. l. c.* Esculent.

2. *H. repandum*, L. (*common Hydnum*); pileus fleshy subrepand smooth zoneless, spines unequal pale as well as the irregular stem. *Linn. Succ.* 1258. *Bull. t. 172. With. v. 4. p. 294. Sow. t. 176. Pers. Syn. p. 555. Est. Schw. t. 12. n. 24. Part. Midl. Fl. v. 2 & 3. n. 1012. Fr. Syst. Myc. v. 1. p. 400. Grev. Scot. Crypt. Fl. t. 44. Fl. Ed. p. 405. Roques,*

*Hist. des Champ. p. 2. f. 2.*—*H. flavidum*, Schæff. t. 318.—*H. rufescens*, t. 141.

*b. subtomentose.* *H. repandum*, Bolt. t. 88.—*H. rufescens*, Pers. Syn. p. 555. *Fr. Syst. Myc. v. 1. p. 401.*

Woods; Autumn. Common; the subtomentose variety especially so.—Subgregarious. *Pileus* 2—4 inches broad, the margin more or less arched, very irregular in form, often excentric or even laterally stipitate, more or less lobed or undulated, buffish or subrufescent, smooth, or frequently decidedly tomentose. *Spines* unequal, conical, entire or sometimes bifid, or laciniated, and even compressed and lamelated and sometimes forming spurious pores as figured by Sowerby. *Stem* 1½—3 inches high, 1 inch thick, solid, paler than the pileus, sometimes clothed with white down, and at the apex with abortive spines.—*Hydnum rufescens*, Pers. § *Fr.* appears clearly nothing more than a variety or mere state of *H. repandum*. Some of the spines are generally laciniated; I do not find the stem more slender than in the smooth plant, though this is certainly the case in specimens from Persoon in Dr. Hooker's Herbarium. I have never found the smooth state in England; but it is not uncommon in Scotland. There seems to be a strong analogy between *Cantharellus aurantiacus* and *Hydnum rufescens*; so that I have been sometimes inclined to unite *C. aurantiacus* with *C. cibarius*, though so far as I know, no intermediate states occur. The common *Hydnum* is much used for food on the continent, especially in Austria. The taste of the fresh plant is at first sufficiently agreeable, but it leaves an acrid pungent sensation. The acrid qualities, however, seem to be entirely dissipated by heat.

3. *H. compactum*, Pers. (*thick-fleshed Hydnum*); pileus corky undulated tomentose olivaceo-cinereous variegated within with brown and blue, stem very short. Pers. Syn. p. 556. *Fr. Syst. Myc. v. 1. p. 402.* Pers. Myc. Eur. v. 2. p. 166.—*H. floriforme*, Schæff. t. 146. Dicks. fasc. 1. p. 19. With. v. 4. p. 293.

On the ground, in heaths, and fir woods, &c. Aug. Earsham Wood, Bungay. Mr. Woodward. Aviemore, Klotzsch, in Hook. Herb.—“Irregular, confluent, inodorous, resembling a thick shapeless crust. *Pileus* 1—6 inches broad, thick, readily imbibing moisture, clotted with down of the same colour or dirty-white. *Spines* equal, chestnut. *Stem* corky, obsolete, or very thick.” *Fr. l. c.* I am only acquainted with this species from Schæffer's figure and specimens gathered near Aviemore. It has a peculiar obconic form, the upper surface being nearly flat. The stem is much more developed than is described above by Fries, being in one specimen 2 inches high. The plant of Woodward, cited above from Withering, appears the same on an attentive examination of the description, which seems to be original; but it is described as at length concave. Bull. t. 453. f. 2. (*H. ferrugineum*, Fr.) is quoted as well as Schæffer's *H. floriforme*.

4. *H. auriscalpium*, L. (*hairy-stalked Hydnum*); pileus coriaceous horizontal downy notched at the point of insertion of the lateral tomentose stem. Linn. Suec. 1260. Schæff. t. 143. Bull. t. 481. f. 3. With. v. 4. p. 293. Sow. t. 267. Purt.

*Müll. Fl. v. 2 & 3. n. 1010. Fr. Syst. Myc. v. 1. p. 406. Grev. Fl. Ed. p. 406. Scot. Crypt. Fl. t. 196.*

On cones of the Scotch Fir; all the year: common.—*Pileus*  $\frac{1}{2}$ —1 inch broad, subrotund, thin, coriaceous, often somewhat lobed, the margin of the lobes entire, more or less zoned, tomentose, purplish or reddish-brown, sometimes pale. *Spines* subcinereous or a dilute shade of the pileus, the tips often darker, but not always so, more or less hoary from the sporules, which under a powerful lens give them the appearance of being rough with pellucid points. *Stem* buried to some depth amongst fir-leaves, 2—3 inches high, often confluent, slender, dark-brown, tomentose, attached by a shaggy or spongy base.

\*\* *Stem more or less horizontal and lateral or much branched.*

5. *H. erinaceus*, Bull. (*Hedgehog Hydnum*); very large heart-shaped white at length yellowish, pileus sessile torn in a fibrillose manner, within somewhat chequered, spines very long. *Bull. t. 34. Dick. Fasc. 2. p. 24. With. v. 4. p. 295. Pers. Syn. p. 360. Tratt. Essb. Schw. t. Y. Fr. Syst. Myc. v. 1. p. 407.—Heridium erinaceum, Pers. Myc. Eur. v. 2. p. 153.—Her. commune, Roques, Hist. des Champ. p. 47.*

On trees, especially oak: very rare.—“*Pileus* a span or more broad, the base projecting, soft, torn into subfasciculate fibrillæ (abortive spines), margin obtuse, gradually giving out true spines, often imbricated with smaller pilei. *Spines*  $1\frac{1}{2}$ — $2\frac{1}{2}$  inches long, pendulous, thick set, very regular, soft, equally attenuated, connected two or three together at their bases, fastigiata. *Substance* thick, tough, fleshy, very soft, elastic, white not changing colour.” *Fr. l. c.* States occur, depending probably on situation, with densely anastomosing branches, stemless, or with a horizontal stem. Esulent, according to Trattinnick and Roques.

6. *H. coralloïdes*, Scop. (*Coral Hydnum*); very much branched white at length yellowish, branches intricate attenuated, spines unilateral subulate. *Scop. Fl. Carn. n. 1062. Dick. fasc. 1. p. 19. Schæff. t. 142. With. v. 4. p. 293. Sow. t. 252. Pers. Syn. p. 563. Purt. Müll. Fl. v. 2 & 3. n. 1011. Fr. Syst. Myc. v. 1. p. 408.—H. ramosum, Bull. t. 390.—Heridium coralloïdes, Pers. Myc. Eur. v. 2. p. 150. Roques, Hist. des Champ. p. 48.*

On fir, beech, ash, &c. Very rare. Hollow trunks of trees near Uxbridge, *Lightfoot*. Wereham, Norfolk. Sept. *Rev. Mr. Forby*. Oversley, on ash trees many years successively. *Purton*.—Young plant, according to Persoon, resembling a cauliflower. When old it forms tufts, a foot or more in length, with flexuous angular branches, beset with incurved ramuli bearing spines on the under side. This and the foregoing are said to be as good for food as the common mushroom.

\*\*\* *Pileus dimidiata, sessile; stem none.*

7. *H. crispum*, Schæff. (*crisp Hydnum*); pilei coriaceous imbricated squamose lobed plicate rufous-brown projecting somewhat behind, spines imbricated pale rufous. *Schæff. v. 4. p. 97. t. 147. f. 1. Sibth. Ox. p. 382. With. v. 4. p. 295.*

Trunks of trees and dry wood. Oct. Very rare. In a Clover-field at Cogges, half a mile from Whitney, *Sibthorp*.

8. *H. ochraceum*, Pers. (*Mr. Davies' Hydnum*); effuso-reflexed, pileus thin coriaceous zoned ochraceous, spines minute thick-set ochraceous inclining to flesh-colour. *Pers. Syn.* p. 559. *Fr. Syst. Myc.* v. 1. p. 414.—*H. Daviesii*, *Sow.* t. 15. *With.* v. 4. p. 295.

On a decayed apple-tree, Llysdulas Garden, Anglesea, *Rev. H. Davies*. In a fir-plantation at Beeston, Notts., *Rev. M. J. Berkeley*.—"Small, at first entirely resupinate, gradually reflexed, and somewhat repand, at first sparingly clothed with dirty-white down, at length rugose, 1—3 inches broad. Spines short, acute, entire, becoming pale." *Fr. l. c.* The spines in my specimens are rather longer than they are represented in Sowerby's figure. Persoon describes it as growing on the trunks of pines.

9. *H. fuscum*, Pers. (*shining-toothed Hydnum*); effused rufous-brown, margin paler coarsely byssoid, spines long quite entire close very acute shining as if varnished. *Pers. Myc. Eur.* v. 2. p. 189. t. 17. f. 3.

On wood, Wrabness, Essex; *Rev. R. T. Lowe*.—The present species, with which I am acquainted only from specimens communicated by my friend Mr. Lowe, appears to be the plant of Persoon noted above. In its dry state it is rather thicker than other effused species and is remarkable for the long dark rufous-brown spines, which shine as if varnished. These are represented in the figure as rather broader than they are in my specimens.

\*\*\*\* *Resupinate.*

10. *H. membranaceum*, Bull. (*membranaceous Hydnum*); effused thin smooth tawny-ferruginous, spines middle-sized straight. *Bull. t.* 481. f. 1. *Sow.* 327. *Fr. Syst. Myc.* v. 1. p. 415.

On the under-side of rotten branches, lying on the ground.—A glandular appearance on the upper part of the spines is figured by Bulliard and Sowerby. The specimen represented by Sowerby is cracked into little areolæ, each of which bears a fascicle of spines.

11. *H. ferrugineum*, Pers. (*ferruginous Hydnum*); effused tomentose ferruginous, spines acute nearly entire. *Pers. Syn.* p. 562. *Nees, Syst. f.* 248. *Fr. Syst. Myc.* v. 1. p. 416.—*H. membranaceum*, *Purt. Midl. Fl.* v. 2. n. 1013 & v. 3. p. 451. t. 15.

On decayed trunks of trees, stumps, &c. Coleshill, *Mr. Bree*. Edinburgh, *Dr. Greville*. Cotterstock, Norths. *Rev. M. J. Berkeley*.—The whole plant consists of densely-woven down, forming an effused indeterminate mass, the hymenium composed of erect or oblique spines which are villous and frequently abortive, so as easily to be taken for some species of the suborder *Hyphomycetes*. The colour varies from ferruginous to brownish.

12. *H. farinaceum*, Pers. (*mealy Hydnum*); effused crust-



like pale, the margin subbyssoid, spines very slender rather distant acute. *Pers. Syn. p.* 562. *Fr. Syst. Myc. v.* 1. *p.* 419.

On decayed trunks, &c. Devonshire, *Miss Simcoe*. Appin, *Capt. Carmichael*.—Forming thin effused patches resembling scattered meal, beset with distant acute spines. Captain Carmichael's specimens appear to be scarcely developed, the spines being obtuse and almost rudimental. The Scottish specimens, which agree very well with the figure given by Nees, *f.* 247, seem to prove the correctness of a suspicion apparently entertained by Fries, that *H. farinaceum* and *H. crustosum* are but the same species in different states.—A fungus seemingly distinct from this and from every species described by Fries, though differing principally in the more complete development of all its parts, occurred at Clifton, Notts, broadly effused on pine wood. I am not, however, sufficiently satisfied as to its characters to propose it as new. The reason for mentioning it here is to note a very curious change which took place in specimens wrapped up in paper and laid by for some weeks in a damp state. Most of the teeth which were at first simple became split, or compressed and confluent in little fascicles, the apices only being free, so as to present a totally different appearance, while in one specimen they assumed the character of the genus *Irpez*.

A form, evidently of this species, with a most beautifully branched byssoid margin, occurred at Beeston, in 1834, spreading several inches, on fallen decaying branches. *Subiculum* effused, consisting of a very delicate inseparable byssoid membrane, closely applied to the wood and following all its irregularities, the *margin* most beautifully radiated and barren; the fertile parts sprinkled with a thin farinaceous stratum, from which spring acute white *teeth*, which are sometimes nearly straight. There is scarcely any difference between this and a specimen, on the smooth bark of Beech, gathered by *Capt. Carmichael*, (marked by *Klotzsch H. fagineum*, apparently a totally different species) which I had at first referred to *H. niveum*, *v.* *fimbriatum*, except that the aculei are shorter and rather more scattered. Perhaps *Ehrenberg* may be right in uniting *H. crustosum*, *H. farinaceum* and *H. niveum*, for *Fries* himself allows that many intermediate forms occur.

13. *H. Barba Jovis*, *Bull.* (*orange-tipped Hydnum*); effused tomentose pallid white, spines round pubescent their tips bearded orange. *Bull. t.* 481. *f.* 2. *With. v.* 4. *p.* 296. *Sow. t.* 328.

On the under side of wood lying on the ground.—Sometimes a foot or more broad; white when young, then yellowish-rufous; membranaceous, composed of the finest down, margin byssoid, pure white. *Spines* simple, almost 2 lines long, their tips somewhat penciled. *Fr. l. c.* A subterraneous fungus, resembling somewhat in form *H. squalinum*, *Fr.*, though much larger in all its parts, is represented in *Dillenius'* edition of *Ray's Synopsis*, *t.* 1. *f.* 5. My object in noticing it here is simply to call the attention of British Mycologists to what appears to be a very fine fungus, whether truly or not belonging to the present genus.

14. *H. fimbriatum*, *Pers.* (*fringed Hydnum*); effused membranaceous somewhat ribbed incarnato-rufous, margin fringed, spines granular at length multifid. *Fr. Syst. Myc. v.* 1. *p.* 421. *Pers. Myc. Eur. t.* 6. *f.* 5, 6.—*Sistotrema fimbriatum*, *Pers. Syn. p.* 553.

On fallen branches of beech. Appin, *Captain Carmichael*.—In young perfect specimens the membrane is furnished with branched ribs, which, according to Fries, adhere less firmly to the matrix; *margin* most elegantly radiato-fibrillose, white. Dry specimens are of an uniform fawn-colour. Sometimes the fimbriated margin is entirely absent. *Spines* at first granular, minute, at length elongated.

15. *H. údum*, Fr. (*moist Hydnum*); effused thin subgelatinous smooth pale watery yellow, spines close unequal simple forked or fimbriated. *Fr. Syst. Myc. v. 1. p. 422.*

On fallen sticks of *Ulmus suberosa* and Hawthorn. Early autumn. Margate and at Lambley, Notts, *Rev. M. J. Berkeley*.—Forming elongated patches, 4—5 inches long. My specimens agree with Fries' character in every respect, except that most of the spines are simple. When dry, it is yellowish towards the margin, the more central parts being of a pale fawn-colour.

### 10. SISTOTRÉMA. Pers. Sistotrema.

*Hymenium* somewhat distinct from the pileus, composed of irregularly disposed, curved and gyrose, lamellate teeth.—Name; from *sísto*, to place, and *τρύμα*, a pore, from the arrangement of the pores.

1. *S. confluens*, Pers. (*confluent Sistotrema*). *Pers. Syn. p. 551. Fr. Syst. Myc. v. 1. p. 426. Grev. Fl. Ed. p. 405. Scot. Crypt. Fl. t. 248.—Hydnum sublamellosum, Bull. t. 453. f. 1. Sow. t. 112.*

In woods, on the ground and on sticks, &c. Rare. Clapham wood, *Mr. Abbott*. Foxhall near Edinburgh, *Captain Wauch*.—"Gregarious, often anastomosing or two or three growing into each other, scentless, brittle, whitish at length yellowish or tinged with brown. *Stem* attenuated below, central or lateral, about an inch high. *Pileus* about 1 inch broad, somewhat depressed. Tooth-like plates of the hymenium entire, or jagged." *Grev. l. c.* This genus is to *Hydnum*, what *Dædalea* is to *Polyporus*. There is but one certain species.

### 11. IRPEX. Fr. Irpex.

*Hymenium* concrete with the substance of the pileus, torn into distinct spines disposed in rows or in a reticulate manner, their bases connected together by lamellate, sinuous or porous folds. *Asci* slender situated only on the toothed processes.—Name, *irpex*, a rake or harrow, which the spines of the *hymenium* somewhat resemble.

1. *I. pendulus*, Fr. (*pendulous Irpex*); pilei membranaceous plicate yellow, their bases produced, the margin and the compressed torn teeth which are disposed in rows white. *Fr. El. v. 1. p. 143.—Hydnum pendulum, Fr. Syst. Myc. v. 1. p. 413. A. S. p. 261. t. 6. f. 7. (fide Fries).*

On pine-wood. Scotland, *Klotzsch, in Hook. Herb.* March, 1831.—*Pilei* 1 inch or more broad, very thin, somewhat resembling paper, capable of being folded up or stretched, concrete or infundibuliform,

from a stem-like base, clothed with long even pilose scales, so closely pressed that the whole surface appears slightly rugulose. *Spines* distant, chiefly seated on the produced base which is at length brownish, various in form, generally disposed in rows." *Fr. l. c.* I have seen this plant only in a dried state, but it appears from an inspection of Klotzsch's specimens and from the above description, that there is a strong analogy between it and *Agaricus cochleatus*. The strongly adpressed scales of the pileus and the gill-like folds lacerated into teeth, call to mind the dentato-rugose pileus and the toothed gills of *A. cochleatus*. The peculiar character of the genus is very well marked in this species, which consists in the teeth not being free at the base, but seated upon folds, &c., so as to present some particular order of arrangement.

2. *I. lacteus*, *Fr. (milk-white Irpex)*; white, pilei coriaceous reflexed zoneless villous, teeth close disposed in rows acute rarely divided. *Fr. El. l. p. 145.*—*Hydnum lacteum*, *Fr. Syst. Myc. v. 1. p. 412.*

On trunks and branches of beech, *Dr. Johnston.*—The specimens in *Dr. Hooker's Herbarium* are about 2 inches long, effused, with the margin reflexed all round and the teeth exactly resembling those of many true species of *Hydnum*; but on minute inspection they will be found to be seated upon fine folds and disposed in rows. It is a most elegant fungus.

## 12. RÁDULUM. *Fr. Radulum.*

*Hymenium* tuberculated. *Tubercles* shapeless, resembling papillæ or rude somewhat angular spines, more or less obtuse, distant, distinct or irregularly fasciculate, the inner substance homogeneous with the receptacle. *Asci* occupying indifferently all parts of the hymenium.—Named from the root-like appearance of the processes of the hymenium.

1. *R. orbiculare*, *Fr. (circular Radulum)*; effused orbicular, margin byssoid yellowish-white, tubercles shapeless somewhat elongated and fasciculate. *Fr. El. v. 1. p. 149. Græv. Scot. Crypt. Fl. t. 278.*—*Hydnum Radula*, *Fr. Syst. Myc. v. 1. p. 423.*—*H. spathulatum*, *Græv. Fl. Ed. p. 406. (not of Fr.)*

On the trunks of dead birch-trees. Autumn, winter and spring. *Appin. Capt. Carmichael.* Auchindenny woods, near Edinburgh, *Dr. Greville.*—Very variable; generally originating beneath the epidermis; 2—3 inches broad, quite membranaceous or above 2 lines thick, margin byssoid, occasionally showing a disposition to become reflexed; hymenium consisting of irregularly disposed, oblique or erect, tooth-like, obtuse, entire or lacinated, often fasciculate tubercles; the apices sometimes somewhat tomentose. Occasionally they are much scattered and almost resemble spines.

## 13. PHILÉBIA. *Fr. Phlebia.*

*Hymenium* homogeneous and concrete with the pileus, smooth, venoso-rugose; wrinkles interrupted, disposed irregularly, straight or flexuous, bearing *asci* all over.—Name, φλεβία, a vein, from the veiny appearance of the hymenium.

1. *P. mesenterica*, Dicks. (*subgelatinous Phlebia*); resupinate, then reflexed villous, grey-brown yellow or olive fasciated gelatinous within, hymenium quite even or wrinkled and minutely pruinose. *Fr. El. v. 1. p. 154.*—*Auricularia tremelloides*, Bull. t. 290. *With. v. 4. p. 302.* *Purt. Midl. Fl. v. 2. 1019 & v. 3. p. 453.*—*A. mesenterica*, Pers. *Myc. Eur. v. 1. p. 97.*—*A. corrugata*, Sow. t. 290.—*Helvella mesenterica*, Dicks. *Fasc. 1. p. 20. Bolt. t. 172.*—*Thelephora mesenterica*, Pers. *Syn. p. 571.*

Old trunks, rails, &c. Very common.—At first effused and quite resupinate, at length more or less reflexed, often dimidiate, occasionally infundibuliform, 2—3 inches broad, gelatinous in wet weather, hard and cartilaginous when dry; the upper surface tomentose, more or less zoned or fasciated; hymenium purplish-violet or light-brown, quite smooth or wrinkled, especially when dry, powdered with a beautiful bloom. *Asci* none.—Undoubtedly much more nearly allied to the *Pileati* than to the *Tremellini*. I have never been able to detect any other fructification than the bloom with which the hymenium is sprinkled. The wrinkles are by no means always present, and perhaps are in general due to partial desiccation. It is certainly best associated with the true species of *Phlebia*, if it be not deemed advisable to form a distinct genus for its reception. Klotzsch has indeed published it in his *Fung. Germ. Exs. n. 45*, under the name of *Oncomyces mesentericus*, but has given no characters. The upper surface is frequently quite as much wrinkled when dried without pressure, as the hymenium.

2. *P. merismoïdes*, Fr. (*Merisma-like Phlebia*); effused flesh-coloured villous and white beneath, margin orange pilose, folds straight. *Fr. Syst. Myc. v. 1. p. 427.* *Grev! Scot. Crypt. Fl. t. 280.*

Trunks of trees, frequently intermixed with and incrusting mosses; Autumn and Winter. Swanston wood, near Edinburgh, *Dr. Greville*.—"Plant 2—3 inches across; folds nearly straight when growing on a smooth surface, passing into prominent papillæ in individuals incrusting mosses."

3. *P. radiata*, Fr. (*rayed Phlebia*); orbicular, smooth on both sides, dull flesh-colour, folds close disposed in rows vanishing towards the radiated circumference. *Fr. Syst. Myc. v. 1. p. 427.*

On Birch. Appin, *Captain Carmichael*.—"Between fleshy and membranaceous, tough; at first orbicular, then dilated, confluent, 1—3 inches broad, margin free, smooth, but beautifully fibroso-radiated. *Folds* radiating from the centre, short, interwoven, very close." *Fr. l. c.* One of the specimens gathered by *Captain Carmichael* is four inches long and appears to have been originally still larger. In this, the character of the radiated margin is entirely lost and the folds are very short, so as to resemble blunt compressed teeth; but there is still something like order visible in their disposition.

#### 14. THELÉPHORA. *Ehrh.* *Thelephora*.

*Hymenium* homogeneous and concrete with the pileus, even or papillate, the whole surface bearing *asci*.—Named from  $\Theta\eta\lambda\eta$ ,

a *nipple*, and  $\varphi$   $\xi$   $\omega$ , to *bear*, from the papillose appearance of the hymenium in many species.

\**Pileus stipitate, more or less entire.*

1. *T. elegans*, Mey. (*banded Thelephora*); between fleshy and coriaceous, pileus smooth (subplicate) banded with brown, beneath flesh-coloured pruinose. (*Mey. Ess. p. 305.*) *vide Fr. Fr. Syst. Myc. v. 1. p. 430.*

Woods, about the roots of trees. Oct. Very rare. Cotterstock, Norths., for two successive years; *Rev. M. J. Berkeley.*—Gregarious, often confluent, 2 inches high, sometimes much torn, the margin especially subplicate, crenate, subinfundibuliform, substipitate, the upper surface bright reddish-brown, with brown bands, lower surface dirty flesh-coloured, pulverulent, not the least pilose under a powerful lens. *Flesh* reddish-brown; the brown bands often proliferous. This fine species has not, that I am aware of, been found in any other spot in Great Britain than that mentioned above. The description given in *Fries, Syst. Myc.* so exactly agrees with my specimens, that there can be no doubt that it is the species of Meyer, though as Dr. Greville, to whom I sent specimens, remarks in a letter, it is singular that a Fungus, hitherto known alone as belonging to Guiana, should be discovered in this country.

2. *T. pannosa*, Sow. (*cloth-like Thelephora*); corky pallid, pileus depressed squamose even, beneath subpilose. *Fr. Syst. Myc. v. 1. p. 430.*—a. stem long. *Helvella pannosa*, Sow. *t. 155.*—b. stem short. *Craterella pallida*, *Pers. Ic. et Descr. t. 1. f. 3.*—*Thelephora pallida*, *Pers. Syn. p. 565.*

On the ground. Hampstead, *Sowerby.*—"Gregarious, subcaespitose, woody but thin, 2 inches high. *Stem* distinct, subvillous. *Pileus* infundibuliform, torn, fimbriated; *hymenium* hispid under a lens." *Fr. l. c.*

The above account is taken entirely from Fries; but I have vainly endeavoured to detect any traces of hairiness on the *hymenium* in Sowerby's original specimens, even under very high magnifiers. In other respects, there is a perfect agreement.

\*\* *Stipitate, branched and laciniated, compressed.*

3. *T. coralloides*, Fr. (*petal-like Thelephora*); erect dark in age, branches striate dilated, tips fimbriated white. *Fr. Syst. Myc. v. 1. p. 432.*—*Clavaria coriacea*, *Bull. t. 452. f. 2.*—*Clavaria anthocephala*, *Purt. n. 1063* (in part).—*Merisma fimbriatum*, *Chev. Fl. Par. 1. p. 104.*

Woods, on the ground. King's Cliffe, Norths. *Rev. M. J. Berkeley.*—From the same point spring many erect often confluent pale *stems*, spreading upwards into greyish or purplish-brown, strongly streaked *branches*, disposed frequently like the petals of a pink, their apices dilated, pale and generally fimbriated. *Smell* scarcely any, either before or after gathering. Purton's plant, from specimens now before me, agrees exactly with my own, and differs from every state that I have ever seen of *Thelephora palmata*.

4. *T. palmata*, Scop. (*palmate Thelephora*); erect purple-

brown, branches flat dilated palmate pubescent, the tips white. *Fr. Syst. Myc. v. 1. p. 432.*—*Clavaria palmata*, Scop. *Fl. Carn. p. 483.*—*Merisma fetidum*, Grev. *Scot. Crypt. Fl. t. 46. Fl. Ed. p. 411.*— $\beta$ . *subferruginous*; branches smooth fastigate obtusely laciniated. *Clavaria anthocephala*, Bull. *t. 452. f. 1. Sow. t. 156. With. v. 4. p. 338.*

Woods. In various places, but not very common.—“Smell very bad a few minutes after gathering. Varying from  $\frac{1}{2}$  an inch to more than 4 inches in height, and from a single stem to a dense mass 2 or 3 inches in thickness.” *Grev. l. c.* If all the forms mentioned by Fries are rightly assigned to this species, it is very variable. A peculiar form, or species, appears to be represented by Purton, *Midl. Fl. v. 3. n. 1506. t. 18*, under the name of *Clavaria miniata*. This is referred by Dr. Greville in Loudon’s *Hortus Britannicus*, p. 462, to *Anthina*, but its habit as far as I can form any judgment from the figure alone is scarcely that of the genus. The following is Purton’s description. “Leathery, bright orange to vermilion-red. The upper part is faintly bordered with undulated bands of orange and white, alternately arranged. The whole plant emits copiously from every part of its surface, but principally from the top, a powder of the colour of gamboge, which mixed with water tinges the whole fluid of a bright vermilion-red.” *Purt. l. c.* Fries appears to be quite right in abolishing the genus *Merisma*. The character of being furnished on all sides with an *Hymenium*, appears, at first sight, very strong, but a comparison of the species with the stipitate *Thelephora* shows very clearly that they are both constructed on the same principle. Highly laciniated and proliferous specimens of *T. elegans* display a tendency to assume this form, which appears to arise from the upper hollowed surface of the several portions of the pileus becoming obliterated and reduced to a mere point, so as to present the appearance of branches uniformly surrounded by the hymenium. Many reasons and examples are given by *Fries, El. v. 1. p. 157*, which amply bear him out; what takes place accidentally in some species, being in others the normal formation.

5. *T. tuberósa*, Grev. (*tuberous-rooted Thelephora*); erect distinct stipitate reddish-grey, pileus composed of laciniated branches, stem bulbous at the base. *Fr. El. v. 1. p. 167.*—*Merisma tuberosum*, Grev. *Scot. Crypt. Fl. t. 178.*

On the ground, in bare places; autumn. Very rare. Foxhall near Edinburgh, *Capt. Waugh.*—“Scattered. Subcoriaceous, about 1 inch high. Pileus about  $\frac{2}{3}$  of the height of the entire plant, variously divided into compressed acute or obtuse branches. The main branches are given off from the same point and are disposed in a circular manner, leaving the centre free and somewhat infundibuliform. Stem nearly cylindrical, obscurely furrowed or lacunose, bulbous at the base. *Hymenium* covering the whole plant, except the stem. *Sporules* oval, very numerous.” *Grev. l. c.*

6. *T. cristáta*, Pers. (*crested Thelephora*); pale, at first resupinate, at length branched, the branches formed by incrusting various substances, their extremities plane fimbriate. *Fr. Syst. Myc. v. 1. p. 434.*—*Clavaria laciniata*, Bull. *t. 415. f. 1. Sow. t. 158. With. v. 4. p. 338. Purt. Midl. Fl. v. 2 & 3. n. 1062.*

On the ground in beech woods, spreading over mosses, grass, &c.—Whitish, greyish, or purplish-brown. At first quite resupinate; gradually extending over neighbouring substances and thus acquiring a branched appearance; the apices compressed, expanded and beautifully fringed or lacinated. The mode of growth of this fungus clearly shows that its nearest affinity can scarcely be with the species with which it is associated, however strong the analogy may be, and it affords an additional proof that the genus *Merisma* is not founded in nature, there being at least two different ways in which *Thelephora* may undergo a transformation so as to exhibit the circumambient *hymenium* of *Merisma*.

\*\*\* *Pileus sessile.*

7. *T. terréstris*, Ehrh. (*ground Thelephora*); dusky-brown, pilei dimidiate fibroso-strigose, stem very short. *Ehrh. Crypt. n.* 178. (*vide Fr.*) *Pers. Syn. p.* 566. *Nees, Syst. f.* 251. *Fr. Syst. Myc. v. 1. p.* 431. *Grev. Fl. Ed. p.* 407.—*Auricularia caryophyllea*, *Bull. t.* 278.

Fir woods: autumn. Swanston Wood near Edinburgh, *Dr. Greville*.—*Pileus* 1—2 inches across, somewhat zoned; papillæ scattered.

8. *T. laciniáta*, *Pers.* (*fringed Thelephora*); ferruginous-brown, pilei fibroso-squamosæ (rugose), margin crisped and lacinated. *Pers. Syn. p.* 567. *Fr. Syst. Myc. v. 1. p.* 431. *Grev. Fl. Ed. p.* 406. *Scot. Crypt. Fl. t.* 264.—*Helvella caryophyllea*, *Bolt. t.* 173.—*Auricularia caryophyllea*, *Bull. t.* 483. *f. 6, 7. Sow. t.* 213.

On the ground, especially in fir woods: common.—Very nearly allied to the last but larger, paler and not so strigose the fibres being adnate, forming little ridges rather than scales; margin fringed and lacinated, papillæ closer. I have not quoted the synonyms of Withering and Purton, as the two species are confounded by them and the synonym and description of Schæffer belong to a different species.

\*\*\*\* *Pileus more or less reflexed.*

9. *T. rubiginósa*, *Schrad.* (*rusty Thelephora*); imbricated rigid somewhat banded or grooved rusty reddish-brown, beneath velvety papillose. *Schrad. Spic. p.* 185. (*vide Fr.*) *Pers. Syn. p.* 567. *Grev. Fl. Ed. p.* 408.—*Auricularia ferruginea*, *Bull. t.* 378. *Sow. t.* 26. *With. v. 4. p.* 300. *Purt. Midl. Fl. v. 2 & 3. n.* 1023.

On oak-rails, trunks, &c. Common. Perennial.—At first resupinate, at length reflexed, the lower margin generally adhering firmly, very rigid and brittle, often so deeply grooved as to cause corresponding ridges in the hymenium, which is velvety and coarsely but sparingly papillose. *Margin* paler and minutely tomentose.

10. *T. tabacína*, *Sow.* (*Tobacco Thelephora*); effuso-reflexed thin and flexible silky ferruginous pubescent beneath. *Fr. Syst. Myc. v. 1. p.* 437.—*Auricularia Nicotiana*, *Bolt. t.* 174. *With. 4. p.* 300.—*A. tabacina*, *Sow. t.* 28. *Purt. Midl. Fl. v. 3. n.* 1498.

On hazel: not very common.—Differs from the foregoing in not

being rigid and in consequence shrivelling when dry and losing all its beauty, whereas *T. rubiginosa* is scarcely altered at all. *Margin* in general reflexed all round.

11. *T. rugósa*, Pers. (*coarse Thelephora*); broadly effused, pileus coriaceous thick at length rigid the extreme margin only reflexed, at length smooth brownish, hymenium yellowish changing slightly to blood-colour when bruised. *Pers. Syn.* p. 569. *Fr. Syst. Myc.* v. 1. p. 439. *El.* v. 1. p. 177.—*T. corylea*, *Grev. Fl. Ed.* p. 408.

On trees, especially hazel: probably not uncommon. Auchindenny woods near Edinburgh, *Dr. Greville*. Cotterstock, &c., Norths. *Rev. M. J. Berkeley*. It has been found also in Scotland by M. Klotzsch.—Differing from every state of the following species, in assuming a blood-coloured stain when scratched. The inner substance in some of my specimens is zoned, and it is quite evident that in these a new layer has been formed every year, each projecting beyond that of the foregoing year, so that the margin of the pileus has a zoned appearance.

12. *T. hirsúta*, Willd. (*common Thelephora*); effuso-reflexed coriaceous strigose, smooth beneath, even buff. *Willd. Ber.* p. 397. (*vide Fr.*) *Pers. Syn.* p. 570. *Fr. Syst. Myc.* v. 1. p. 439. *Grev. Fl. Ed.* p. 407.—*Auricularia reflexa*, *Bull. t.* 274. *Sow. t.* 27. *With. v.* 4. p. 301. *Purt. Midl. Fl. v.* 2 & 3. n. 1020. *Grev. Scot. Crypt. Fl. t.* 256.—*Th. intybacea*, *Grev.!* *Fl. Ed.* p. 407 (*old*).—*Peziza cellularia*, *Sow. t.* 91.

On sticks, pales, fallen trees, &c.: very common. Perennial.—Extremely variable. At first resupinate, at length generally reflexed, often imbricated, more or less zoned, strigose, tough and leathery, but not rigid, buff, yellowish or greyish, often acquiring a greenish tinge from the presence of minute *Algæ*. *Hymenium* smooth, even, buff, sometimes cinereous; margin entire, more or less lobed. *Th. intybacea*, *Grev.* is certainly only an old permanently resupinate state, the margin being sometimes very much lobed.

13. *T. purpúrea*, Pers. (*lilac Thelephora*); imbricated sub-coriaceous zoned strigose, smooth beneath purple. *Pers. Syn.* p. 571. *Grev. Fl. Ed.* p. 407. *Fr. Syst. Myc.* v. 1. p. 440.—*Auricularia reflexa*, *Bull. t.* 483. *f.* 1—5.—*A. persistens*, *Sow. t.* 388. *f.* 1. *Purt. Midl. Fl. v.* 2. n. 1025.—*T. elegans*, *Purt. l. c. v.* 2. n. 1024. *t.* 6. & *v.* 3. p. 455. *Sow! t.* 412. *f.* 1.

Stumps, fallen trees, &c. Very common. Perennial.—In general densely imbricated, soft but coriaceous, very rigid when dry, deeply zoned, strigose, but not so much as in the foregoing species, the margin much waved and almost plicate, varying greatly in colour, whitish, yellowish, pallid-lilac, &c., with frequently a black zone near the margin. *Hymenium* smooth, in general of a fine purple or lilac, at length cinereous, sometimes dark-brown. Certainly distinct from *Th. hirsuta*, though some states are difficult to discriminate. An authentic specimen from Mr. Sowerby's collection proves that his *A. elegans* is only a state of this, as may also be inferred from Mr. Purton's account. I have, however, specimens gathered on the bark of a willow, about which I am not so certain, as they are extremely thin, the hy-



menium quite smooth, dark-brown and shining, sometimes not extending to the margin, so that the white of the upper surface is seen through. This I had supposed to be the true *T. elegans*, on account of its exactly resembling Purton's figure in colour, until I saw an authentic specimen.

I entirely omit *Thelephora hepatica* of Fries, (*Auricularia levis*, Sow.) since an inspection of the original specimen has convinced me that it is nothing more than a washed state of this or the following species.

14. *T. sanguinolenta*, A. & S. (*silky blood-stained Thelephora*); dimidiate or reflexed blood-coloured when bruised silky pale, beneath smooth greyish brown. *Alb. & Schw. p. 274. Fr. Syst. Myc. v. 1. p. 440. Græv. Fl. Ed. p. 409. Sc. Crypt. Fl. t. 225.*—*T. sericea*,  $\beta$ . *sanguinolenta*, *Pers. Myc. Eur. v. 1. p. 117.*

On fir-stumps, not uncommon. Perennial.—Densely gregarious; at first resupinate and circular, at length dimidiate or with the margin more or less reflexed, all round, silky or almost strigose, zoned, the zones darker. *Hymenium* rough, from the inequalities of the matrix, otherwise smooth, pale greyish-brown, when scratched or bruised becoming instantly blood-red.

15. *T. amorpha*, *Pers.* (*shapeless Thelephora*); at first tuberculiform then cup-shaped, at length expanded, confluent subcoriaceous margined tomentose dirty-white, hymenium pallid rufous (pale flesh colour, *Purt.*). *Fr. El. v. 1. p. 183. Purton, MSS.—Peziza amorpha, Pers. Syn. p. 657. Pers. Myc. Eur. v. 1. p. 269.*

On dead fir branches, rare. *Purton.*—*Pileus* 2—3 lines broad. The present obscure plant is introduced on the authority of Mr. Purton. Many *Thelephoræ* in an early stage of growth assume a form like that described above; but as Mr. Purton appears to have been acquainted with the species of Mougéot and Nestler, which Fries keeps distinct, it is but justice to consider him as having the same plant in view.

16. *T. quercina*, *Pers.* (*Oak Thelephora*); resupinate rigid nearly black beneath, margin involute, hymenium flesh-coloured. *Pers. Syn. p. 573. Fr. Syst. Myc. v. 1. p. 442. Græv. Fl. Ed. p. 409. Sc. Crypt. Fl. t. 142.*—*Auricularia corticalis, Bull. t. 436. f. 1. With. v. 4. p. 300. Purton, Mull. Fl. v. 2 & 3. n. 1022.*

On fallen branches of oak, beech, &c., especially in woods: the whole year. Extremely common.—Roundish, resupinate, the margin reflexed all round and involute; *pileus* smooth, black. *Hymenium* flesh-coloured, generally cracked, more or less tuberculated and wrinkled.

17. *T. rufu*, *Pers.* (*reddish-brown Thelephora*); cartilaginous roundish peltate reddish-brown smooth, hymenium tuberculated sprinkled with a grey bloom. *Pers. Myc. Eur. v. 1. p. 124. Fr. El. v. 1. p. 187.*—*Auricularia cinerea, Sow. t. 388. f. 3.*

Fallen branches; late in Autumn. *Sowerby.*—"Thicker than the foregoing, margin smooth." *Fr. l. c.*

18. *T. avellana*, *Fr.* (*hasel-nut Thelephora*); effused hard

pallid blood-coloured when bruised, margin obtuse free, hymenium even at first velvety at length smooth. *Fr. Syst. Myc. v. 1. p. 442. El. v. 1. p. 188.*

On bark and wood, especially hazel. Appin, *Captain Carmichael*.—Forming large broadly effused patches, of a thick firm corky substance, and of the colour of a ripe hazel-nut. Much resembling *T. rugosa*, but that, according to Fries, is always smooth in a growing state.

\*\*\*\*\* *Entirely resupinate.*

19. *T. byssoïdes*, Pers. (*byssoïd dark-seeded Thelephora*); irregularly effused byssoid pale ochraceous at length yellowish-brown in the centre from the sporules. *Pers. Syn. p. 577. Fr. Syst. Myc. v. 1. p. 452. El. v. 1. p. 196.*

Spreading in broad patches over Spruce fir leaves, on the ground at Apethorpe, Norths., but probably common in all fir-woods. *Rev. M. J. Berkeley*.—1 foot or more broad, at first white, very thin, soft and cottony, but not radiating, with a slight ochraceous tinge in the centre, gradually thickening and becoming more or less tuberculated, at length of a more or less intense yellow-brown from the ejection of the *sporules*. *Asci* obtuse, projecting beyond the surface of the *hymenium*. *Sporules* oval, obtuse, yellowish-brown.

20. *T. carúlea*, Schrad. (*bright-blue Thelephora*); effused confluent adnate subtomentose bright blue, beset with minute bristles of the same colour. *Pers. Myc. Eur. v. 1. p. 147. Fr. El. v. 1. p. 202.*—*Auricularia phosphorea*, *Sow. t. 350. Pert. Midl. Fl. n. 1026.*—*Byssus phosphorea*, *With. v. 4. p. 141.*—*Conferva phosphorea*, *Dillw. t. 88.*—*Dematium violaceum*, *Hook. Fl. Scot. 2. p. 34.*

On decaying rails, sticks, &c., very common.—At first byssoid, but when fully developed forming a close membrane, following the undulations of the wood on which it grows, of a beautiful dark satiny blue, the margin whitish. According to Fries, the hymenium is beset with bristles, perceptible only under a high magnifier. This I have not verified.

21. *T. rósea*, Pers. (*rose-coloured Thelephora*); effused adnate pruinose rose-coloured when dry beautifully rivulose, circumference fringed white. *Pers. Syn. p. 375. Fr. Syst. Myc. v. 1. p. 451. El. v. 1. p. 203.*

On rose-branches, &c., King's Cliffe, Norths., *Rev. M. J. Berkeley*.—At first forming small scattered patches, which at length become more or less confluent; the cobweb-like *fringe* gradually obsolete.

22. *T. miniáta*, Berk. (*scarlet Thelephora*); broadly effused bright-scarlet, at first thin membranaceous, then thicker of a soft cottony substance, margin fibrillose.

On birch. Appin, *Captain Carmichael*. Near Glasgow, *Klotzsch*.—This most elegant species differs so much from *T. sanguinea*, Fr., in being most highly coloured where exposed to light, while in the portions to which the light has not free access it is nearly white, and in not tinging the wood whereon it grows with its own bright hue, that an inspection of specimens renders it almost impossible to consider it the same.

Neither does it agree with *Auricularia aurantiaca*, Sow. (*T. bolaris*, Pers. Myc. Eur.) to which it is referred by Klotzsch in Hook. Herb., that species being described as of a woody texture and becoming horny when well dried, characters wholly at variance with the present plant.

23. *T. aurantiaca*, Sow. (orange *Thelephora*); orbicular bright orange somewhat woody, horny when dry, the circumference finely fibrous and satiny.—*Auricularia aurantiaca*, Sow. t. 291.—*T. bolaris*, Pers. Myc. Eur. v. 1. p. 138.

On wood, Sowerby.—This is referred by Fries to *T. sanguinea*, as a variety, but there is scarcely information enough given by Sowerby to justify such a conclusion.

24. *T. sulphurea*, Pers. (sulphur-coloured *Thelephora*); effused, fibrillose bright sulphur, hymenium somewhat tawny beset with minute white bristles, circumference byssoid. Pers. Syn. p. 579. Fr. Syst. Myc. v. 1. p. 452. El. v. 1. p. 204.—*Himantia sulphurea*, Pers. Syn. p. 703.—*Mesenterica lutea*, Nces, Syst. f. 238. B.

On bark and wood. Appin, Captain Carmichael. King's Cliffe, Norths., Rev. M. J. Berkeley.—At first consisting of loose distinct byssoid fibres, in which state it frequently remains without producing a true hymenium; next forming a thin resupinate silky subpulverulent stratum with a beautiful byssoid margin; at length, according to Fries, furnished with the true hymenium of a *Thelephora* and beset with minute white bristles. In Captain Carmichael's specimens the loose fibrillæ are of a beautiful saffron yellow; the more advanced stage paler, with a yellowish or cinereous tinge in the centre, the byssoid margin nearly white.

25. *T. carbonaria*, Bert. (Charcoal *Thelephora*); at first punctiform waxy bright orange, at length confluent, circumference abrupt delicate white byssoid.

On charred ground in wet weather. July. Rockingham Forest, Norths., Rev. M. J. Berkeley.—At first sight appearing like a small flat punctiform orange *Peziza*, with a delicate white subiculum; but a minute inspection shows that it does not belong to that genus; these points soon increase in diameter and at length become confluent, the subiculum forming a border to the whole mass, and filling up the interstices with its bright silvery threads. The *asci* are clavate and contain several elliptical *sporules*. It is curious that in Dr. Hooker's Herbarium there are specimens of this undescribed species from Juan Fernandez, transmitted by Bertero, and named by him, growing in precisely the same sort of situation, and differing in nothing but colour, which in his dried specimens is pale tawny.

26. *T. lactescens*, Berk. (milky *Thelephora*); effused even, following the inequalities of the matrix, circumference slightly byssoid pale salmon colour, when broken distilling a white milky juice.

On the bark of pine stumps. Clifton, Notts., Rev. M. J. Berkeley.—Thin, spreading for a considerable distance over the bark and following all its inequalities, with a scarcely byssoid border, inner substance

variegated with bands of different shades running parallel with the surface. When broken it gives out a milky juice which in taste and smell resembles exactly that of *Agaricus quietus*. Specimens which had been placed in a tin box, when taken out after some months had a broad byssoid margin, very different from their original state. A most singular and distinct species, and undoubtedly a true *Thelephora*.

27. *T. gigantea*, Pers. (*large white Thelephora*); subcartilaginous very broad hyaline, when dry resembling paper, milk-white, circumference at first strigoso-radiate. Pers. *Myc. Eur.* v. 1. p. 150.—*T. pergamenea*, Pers! l. c. Fr. *El.* v. 1. p. 213.

On fir-wood. Appin, *Captain Carmichael*. Rae Hill Woods, Dumfries, *Professor Hooker*.—The specimens noted above and similar ones, gathered by myself in Scotland, differ from an authentic specimen of Persoon now before me in having a less milky appearance, but the hymenium seems to be less perfectly developed and the most advanced individual differs very little. The circumference is very broad and almost byssoid and shows only here and there a tendency to become spinuloso-radiate. There is no doubt, however, that *T. gigantea* is the correct name. Persoon makes several species of its different states.

28. *T. incrustans*, Pers. (*creeping Thelephora*); effused subcarinose rugose tuberculated pale, circumference somewhat fibrous. Pers. *Syn.* p. 577. Fr. *Syst. Myc.* v. 1. p. 448.—*T. sebacea*, Pers. *Myc. Eur.* v. 1. p. 135.

On the ground and mossy trunks of trees; not unfrequent, after much rain. Braid Hermitage; Autumn. Dr. *Greville*. King's Cliffe, Norths., running up tufts of *Aira cæspitosa*. Rev. M. J. *Berkeley*.—"1—4 inches broad, soft, fibrous at the margin spreading over mosses and culms of grass, small twigs or any thing that lies in its way, and often so completely enveloping them as to make them resemble minute stalactites. Hymenium smooth, very irregular and uneven, tuberculose and papillose." *Grev. l. c.* *Asci* rather large, obovate, containing one or two oblong *sporules*.

29. *T. calcea*, Pers. (*chalk-white Thelephora*); effused wax-like closely aduate quite smooth even cracked when dry dirty-white, circumference like the rest of the hymenium. Pers. *Syn.* p. 581. Fr. *Syst. Myc.* v. 1. p. 453. *Grev. Fl. Ed.* p. 411. Fr. *El.* v. 1. p. 215.

"On decaying wood and trees. Frequent. Braid Hermitage, on a dying elm. Autumn.—Unequal in thickness, effused, hard, extending over several inches. Hymenium white, discoloured in age, much cracked, papillose, sometimes quite plane and smooth." *Grev. l. c.*

30. *T. Sambúci*, Pers. (*Elder-wood Thelephora*); effused membranaceous thin, margin entire, hymenium white smooth subpapillose. Pers. *Myc. Eur.* v. 1. p. 152. *Grev. Fl. Ed.* p. 411. *Scot. Crypt. Fl.* t. 242.

On elder and birch: very common.—The *papillæ* arise apparently from the inequalities of the bark or wood on which it grows.

31. *T. ochracea*, Fr. (*ochraceous Thelephora*); effused very broad thin, hymenium of an ochrey pale yellow, circumference

somewhat radiated evanescent. *Fr. Syst. Myc. v. 1. p. 446.*  
*Pers. Myc. Eur. v. 1. p. 137.* *Fr. El. v. 1. p. 216.*

“On rotten trunks and branches of trees, frequent. Woods about Edinburgh. Autumn.—Covering a large surface, being often a foot or more broad, mostly resupinate, but sometimes slightly reflexed or rather detached at the margin, adhering close to the wood. Margin entire in old plants, but villous when young. *Hymenium* smooth, ochraceous, sometimes with a faint purplish tinge; *papillæ* rather large, irregular and spurious, being produced by the asperities of the wood. It resembles some states of *T. corylea*.” *Grav. l. c.*

32. *T. livida*, *Fr. (livid Thelephora)*; effused quite smooth subviscid livid or blueish. *Fr. Syst. Myc. v. 1. p. 447.* *El. v. 1. p. 218.*

On birch (and decorticated pine-wood, *Fr.*). Appin, *Captain Carmichael*.—Captain Carmichael’s specimens are not fully developed and appear like a thin scattered greyish wash upon the bark. When full grown, according to Fries, it becomes thicker, subgelatinous and cracked when dry. The colour varies.

33. *T. viscosa*, *Pers. (viscid Thelephora)*; effused subgelatinous quite smooth blueish or subcinereous. *Pers. Syn. p. 580.*  
*Fr. Syst. Myc. v. 1. p. 448.* *El. v. 1. p. 218.* *Fl. Dan. 1851. f. 1.*—*T. livida*,  $\beta$ . *viscosa*, *Pers. Myc. Eur. v. 1. p. 149.*

On fallen branches. Appin, *Captain Carmichael*.

34. *T. epidermea*, *Pers. (Bark Thelephora)*; effused thin smooth, margin delicate and byssoid, hymenium whitish at first, at length very pale buff, papillæ scattered or none. *Pers. Myc. Eur. v. 1. p. 136.* *Grav. Fl. Ed. p. 410.*

“On dead and decayed branches of trees: Braid Hermitage.—In drying, the substance is inclined to crack and the fracture is byssoid.” *Grav. l. c.* Fries refers *T. epidermea* to his *T. confluens*, but as he distinctly says of that, that the circumference is not byssoid, I think it right to leave Dr. Greville’s plant distinct.

35. *T. granulosa*, *Pers. (hydroid Thelephora)*; effused thin smooth granulated with white prominent papillæ. *Pers. Syn. p. 576.* *Fr. Syst. Myc. v. 1. p. 446.*

On Wood. Appin, *Captain Carmichael*.—Forming a thin, adnate, whitish, or sub-ochraceous stratum, following the irregularities of the wood, with scarcely any definite circumference, beset with crowded rather sharp granules.

36. *T. comédens*, *Nees, (immersed Thelephora)*; effused, growing beneath the bark of trees, at length bursting forth thin smooth yellowish flesh-colour even at length cracked. *Nees, Syst. f. 255.* *Fr. Syst. Myc. v. 1. p. 447.*

On dry decayed branches; especially of oak, sloe, red currant, &c., very common.—Distinguishable at once by its peculiar mode of growth. It originates beneath the bark which peels off and leaves it naked, forming a margin round it.

37. *T. incarnata*, *Pers. (bright-coloured Thelephora)*; wax-

like adnate confluent, hymenium of a bright colour sprinkled with a very thin somewhat flesh-coloured bloom. *Pers. Myc. Eur. v. 1. p. 130. Fr. El. v. 1. p. 219.*

On fallen branches, oak-timber, rose, bramble, &c. Very common.—Extremely variable, forming a thin, variously but brightly coloured stratum.

38. *T. núda*, Fr. (*pale Thelephora*); wax-like adnate confluent yellowish flesh-colour not bright, circumference smooth, hymenium sprinkled with a white fugacious bloom. *Fr. Syst. Myc. v. 1. p. 447. El. v. 1. p. 221.*

On dry sticks. Margate, *Rev. M. J. Berkeley*. Probably not uncommon.—Distinguishable from the last by its dull colour when dry. I have seen this and a state of the following species upon the same stick, running so intimately the one into the other, that it was difficult to believe them distinct. Both frequently spring at first from the orifices of different species of *Sphæria*, forming little round patches which at length become confluent.

39. *T. cinérea*, Pers. (*dusky Thelephora*); somewhat waxy adnate confluent rather dingy, circumference slightly radiant, hymenium sprinkled with very thin cinereous bloom. *Pers. Syn. p. 579. Fr. Syst. Myc. v. 1. p. 453. El. v. 1. p. 221.*—*T. fraxinea*, Pers. *Myc. Eur. v. 1. p. 145. Grev. Fl. Ed. p. 410.*—*T. Tiliæ*, Pers. *Myc. Eur. v. 1. p. 147. Grev. Fl. Ed. p. 410.*

On fallen branches of ash, lime, currant, &c. Extremely common.—The principal distinctive mark of this species is its dingy colour, which varies from brown to cinereous or almost black. A state of it often invests the whole cavity of decaying pollard ash-trees, with a thin blackish coat. On small ash-twigs, it is generally of a brownish hue.

40. *T. acerína*, Pers. (*Maple Thelephora*); thin interrupted dry subfarinaceous milk-white. *Pers. Syn. p. 581. Fr. Syst. Myc. v. 1. p. 453. Moug. & Nest! n. 991.*

On the bark of maple, spreading in small detached patches over the whole trunk and resembling the barren white crust of a Lichen. Very common. Distinguishable from *Thelephora Sambuci* by its thicker substance, scattered habit, and its not changing colour at all when dry. The substance is of a somewhat farinaceous texture and cracks very slightly in drying.

41. *T. corrugáta*, Fr. (*reddish bristly Thelephora*); effused closely adnate immarginate thin much cracked pale cinnamon, beset with ferruginous bristles. *Fr. Obs. Myc. v. 1. p. 134. Pers! Myc. Eur. v. 1. p. 134.*—*T. Padi*, Pers. *l. c. p. 142. Grev. Sc. Crypt. Fl. t. 234.*

Trunks of dead oak, hazel and bird cherry. Appin, *Captain Carmichael*. Edinburgh, *Dr. Greville*.—"Ferruginous-brown, with sometimes a slight purplish tinge and a grey bloom as if covered with a thin coat of white body-colour. *Bristles*, under the microscope, jointed." *Grev. l. c.* The term "rugoso-plicate" introduced by Persoon and

Fries into the specific character, is certainly, as Dr. Greville hints, inadmissible. An inspection of specimens clearly shows that it depends entirely upon the nature of the bark on which it grows. Part of one of Dr. Greville's specimens is very rugged and the rest nearly even: Captain Carmichael's appear to have arisen from several smaller confluent nearly orbicular individuals, each of which is very rugged with concentric ridges and minutely cracked in a radiating manner. The margin is in these distinct, of a beautiful golden-brown, minutely waved and apparently recurved.

42. *T. Lauro-cerasi*, Berk. (*Cherry-laurel Thelephora*); at first orbicular, the circumference subtomentose and pale, at length confluent of a uniform pale cinnamon smooth.

On *Prunus Lauro-cerasus*, Wollaston, Notts.: *Rev. M. J. Berkeley*.—At first appearing under the form of orbicular, gregarious patches, brownish or somewhat rufous in the centre, pale towards the circumference which is very thin and subtomentose; when full grown it is equally thick all over, the circumference well defined, the extreme edge only very minutely pubescent, of a pleasant pale cinnamon, following the inequalities of the wood, otherwise even and quite free from bristles; slightly cracked when dry. I can find nothing at all agreeing with the present species, which is placed here because of its stronger resemblance to *T. corrugata*, than to any other species with which I am acquainted; though, perhaps, it is more nearly allied to some of the foregoing section; but I have never found any tendency in the margin to become reflexed.

TRIBE II. CLAVATI. (from *clava*, a club). *Receptacle vertical, simple or branched, tending to a cylindrical form, immarginate. Hymenium superior. Asci fixed.*

15. CLAVÁRIA. *Vaill.* Clavaria.

*Receptacle* erect, more or less cylindrical, homogeneous, confluent with the stem. *Hymenium* occupying the whole surface.—Name derived from *clava*, a club, on account of the peculiar form.

\* *Branched.*

1. *C. coralloïdes*, L. (*Coral Clavaria*); erect white, stem rather thick, branches unequal elongated mostly acute. *Linn. Succ.* 1268. *Sow. t.* 278. (*upper figure*). *Purt. Midl. Fl. v.* 2 & 3. *n.* 1064. *Fr. Syst. Myc. v.* 1. *p.* 467. *Grev. Fl. Ed. p.* 412.—*Ramaria coralloïdes, alb. Holmsk. Ot.* 1. *p.* 113, *cum fig.*—*b. grisea. Cl. cinerea, Grev. Scot. Crypt. Fl. t.* 64, 321.

On the ground in shady places after much rain: not common.—Pure white, sometimes violet at the base. In accordance with the views of M. Fries, *A. cinerea, Grev.* is introduced here as a variety, though it must be confessed there is little similarity in form.

2. *C. grisea*, Pers. (*grey dark-seeded Clavaria*); cinereous, stem thick, branches somewhat rugose, branchlets obtuse unequal. *Pers. Syn. p.* 586. *Fr. Syst. Myc. v.* 1. *p.* 468.

On the ground, *Captain Carmichael*.—Differs from the foregoing in the subferruginous *sporules*.

3. *C. stricta*, Pers. (*straight-branched Clavaria*); much branched pale at length brownish, branches and branchlets straight adpressed acute. *Pers. Syn.* p. 588. *Fr. Syst. Myc.* v. 1. p. 468. *El.* v. 1. p. 229.—*C. muscoides*, *Sow. t.* 156.

Woods and gardens, on wood; not common. *Sowerby*.—"Stem rather slender, ascending, furnished at the base with rooting fibrille, firm, above 3 lines high and thick. Branches divided in an arcuate manner, then converging, opaque, generally pale-yellow, brownish when bruised. *Sporules* cinnamon." *Fr. l. c.*

4. *C. abietina*, Pers. (*fir-grove Clavaria*); very much branched dull ochre, stem clothed with white down, branches straight close sulcato-rugose, branchlets forked acute. *Pers. Syn.* p. 588. *Fr. Syst. Myc.* v. 1. p. 469. *Grev. Fl. Ed.* p. 412. *Scot. Crypt. Fl. t.* 107. *Kl. Fung. Germ. exs. n.* 43.

Fir woods, on the ground. Not uncommon. Aug.—Sept.—Easily known by its changing to green when bruised. "*Sporules* ochraceous." *Grev.*

5. *C. pratensis*, Pers. (*Meadow Clavaria*); tufted yellow, stem slender, branches short geniculate divaricate, branchlets obtuse subfastigiata. *Pers. Com. t.* 4. f. 5. *Syn.* p. 590. *Fr. Syst. Myc.* v. 1. p. 471. *Grev. Fl. Ed.* p. 412.—*C. muscoides*, *Bolt. t.* 114.—*C. fastigiata*, *Bull. t.* 358. *D. E. With. v.* 4. p. 339. *Purt. Midl. Fl. v.* 3. n. 1508.—*Ramaria fastigiata*, *Holmsk. Ot. t.* 1. p. 90, *cum fig.*—*Corallo-fungus*, *Vaill. t.* 8. f. 4.

Meadows and woods: Common. Oct. Nov.—Readily distinguished by its tufted fastigiata mode of growth. The apices are often incrassated.

6. *C. corniculata*, Schæff. (*yellow-horned Clavaria*); yellow erect branched, branches slender much divided in a dichotomous manner, branchlets slender acute the axils lunulate. *Schæff. t.* 173. *Pers. Syn.* p. 589. *Fr. Syst. Myc.* v. 1. p. 471. *Grev. Fl. Ed.* p. 412.—*Ramaria muscoides*, *Holmsk. Ot. t.* 1. p. 87. *cum fig.*

Meadow, grassy woods, &c. Oct. Common.—"Taller than the last, solitary, less branched, dry; very smooth, except the base which is tomentose; bright yellow, resembling somewhat the yolk of an egg; branchlets elongated, attenuated, subcompressed, acute or obtuse." *Fr. l. c.*

7. *C. amethystina*, Bull. (*Amethyst Clavaria*); very much branched, branches elongated subcylindric obtuse. *Bull. t.* 496. f. 2. *Pers. Syn.* p. 590. *Fr. Syst. Myc.* v. 1. p. 472. *Purt. MSS. Roques, Hist. des Champ. t.* 1. f. 2.—*C. purpurea*, *Schæff. t.* 172.—*Ramaria amethystina*, *Holmsk. Ot. t.* 1. p. 110. *cum fig.*—*C. coralloides* (*purple var.*), *With. v.* 4. p. 339. *Purt. Midl. Fl. v.* 2. p. 697.

Amongst leaves under trees. Rare. Aug. Sept. *Stackhouse. Purton.*—Esculent.

8. *C. cristata*, *Holmsk.* (*crested Clavaria*); tufted smooth even



snow-white or dirty-white at length dingy, branches dilated above crested, the laciniae acute. *Pers. Syn.* p. 591. *Fr. Syst. Myc.* v. 1. p. 473. *Greav. Fl. Ed.* p. 413. *Scot. Crypt. Fl.* t. 190.—*Ramaria cristata*, *Holmsk. Ot.* 1. p. 92. *cum fig.*—*C. albida*, *Schaff.* t. 170.

On the ground in woods and shady places; not uncommon.—Distinguished by its dilated, more or less crested or fimbriated apices. In *var. γ. fimbriata* (apparently *Ramaria ornithopiodoides*, *Holmsk. Ot.* p. 84.), which has been found in Scotland by Captain Carmichael, the general appearance is very different, the stem being solitary, the divisions extremely slender and acute, and the laciniae very deep.

9. *C. rugosa*, *Bull.* (*wrinkled Clavaria*); simple or slightly branched tough incrassated above obtuse wrinkled longitudinally whitish. *Bull.* t. 448. f. 2. *Pers. Syn.* p. 594. *Fr. Syst. Myc.* v. 1. p. 473. *Greav. Fl. Ed.* p. 413. *Scot. Crypt. Fl.* t. 328.—*C. coralloides*, *Sow.* t. 278, *lower figures.* *Purt. Midl. Fl.* v. 3. p. 269.—*C. elegans*, *Bolt.* 115. *With.* v. 4. p. 338.—*Corallo-fungus candidissimus*, *Vaill. Par.* t. 8. f. 2.

Grassy places and woods. Common. Aug.—Nov.—Generally simple, but occasionally furnished with a few short branchlets, which are incrassated, longitudinally rugose and very obtuse.

\*\* *Simple.*

10. *C. pistillaris*, *L.* (*large brown Clavaria*); solitary large smooth yellowish-rufescent obtuse incrassated upwards. *Linn. Suec.* 1266. *Schaff.* t. 169, 270. *Bull.* t. 244. *Pers. Syn.* p. 597. *Fr. Syst. Myc.* v. 1. p. 477.—*C. Herculeana*, *Sow.* t. 277. *With.* v. 4. p. 319. *Purt. Midl. Fl.* v. 3. n. 1509.

Shady woods. Rare. Oct.—Nov. Copland Wood, Hereford; *Stackhouse.* Windsor Forest, *Sowerby.* Wethely wood, Moreton wood, *Rev. W. S. Rufford.*—Plant 6—12 inches high, varying somewhat in form, dull orange, dingy brown in decay.

11. *C. Ardenia*, *Sow.* (*Lady Arden's Clavaria*); very tall hollow incrassated above, reddish-brown tomentose at the base. *Sow.* t. 215. *Pers. Syn.* p. 599. *Fr. Syst. Myc.* v. 1. p. 478.

On branches of Hasel, springing from the under side. Rare. Nov. Nork Park near Epsom; *Lady Arden.*—"Above a span high, flexuous below, gradually incrassated upwards, smooth, opaque, apex acute in the young plant, then obtuse and bursting." *Fr. l. c.*

12. *C. rosca*, *Dalm.* (*red Clavaria*); gregarious subcylindrical quite simple, rose-coloured the tip at length yellow narrow and dirty white at the base. *Dalman in V. A. II.* 1811. p. 157. (*fide Fr.*) *Fr. Obs. Myc.* v. 2. p. 290. t. 5. f. 2.

Pastures near Kelso, communicated to Dr. Greville by *Mr. Douglas.*

13. *C. fusiformis*, *Sow.* (*spindle-shaped Clavaria*); densely fasciculate yellow nearly equal incurved smooth. *Sow.* t. 244. *Pers. Syn.* p. 601. *Fr. Syst. Myc.* v. 1. p. 480.—*C. pistillaris*, *Bolt.* t. 110. *Purt. Midl. Fl.* v. 2 & 3. n. 1066.

Amongst grass : Autumn. Hampstead Heath. Hornsey, *Sowerby*. Balmuto near Edinburgh, *Dr. Greville*. Appin, *Captain Carmichael*.—"Yellow, smooth, about 3 inches high, many individuals collected into a fasciculate tuft; nearly erect, rather brittle, attenuated at either end, apex darker." *Fr. l. c.* Fries in his *Elenchus* appears to consider this as a variety of *C. inæqualis*.

14. *C. ceranoïdes*, Pers. (*yellow wrinkled Clavaria*); fasciculate unequal slightly divided yellowish, apex brown. *Pers. Syn. p.* 594. *Fr. Syst. Myc. v. 1. p.* 481.—*C. rugosa*, *Sow. t.* 235.

Sent to *Mr. Sowerby* by *Mr. E. Forster* in September.—This species resembles in form some states of *C. rugosa*, but it appears to be very distinct.

15. *C. inæqualis*, Müll. (*irregular yellow Clavaria*); fasciculate unequal brittle yellow or yellow-white acute irregular. *Fl. Dan. t.* 873. *f. 1.* *Fr. Syst. Myc. v. 1. p.* 481. *Grev. Fl. Ed. p.* 414.—*C. bifurca*, *Bull. t.* 264.—*C. vermiculata*, *Sow. t.* 253.

Meadows and pastures; common.—Somewhat tufted or gregarious, 1—3 inches high, of various sizes and forms, fragile, compressed, angular or channelled, often bifid and variously cut and jagged at the apex, more or less ventricose in the centre, smooth and mostly yellow, though occasionally whitish. *Grev. l. c.*

16. *C. hélvola*, Pers. (*opaque yellow Clavaria*); gregarious round equal even dirty yellow, apex frequently cinnamon. *Pers. Syn. p.* 595.

Meadows and pastures. Not uncommon. Sept.—Linear, subgregarious, 1—2 inches high.

17. *C. fragilis*, Holmsk. (*brittle Clavaria*); tufted fistulose white or yellowish variable in form. *Holmsk. Ot. 1. p.* 7. *cum fig.* *Fr. Syst. Myc. v. 1. p.* 484.—a. *gracilis*; attenuated upwards. *C. fragilis*, *Pers. Comm. p.* 77.—*C. gracilis*, *Bolt. t.* 111. *f. 1.* *Sow. t.* 232.—b. *cylindrica*; stem slender receptacle swollen obtuse. *Vaill. t. 7. f. 5.*—*C. cylindrica*, *Bull. t.* 463. *f. 1.* *Pers. Com. p.* 76. *Sow. t.* 90. *Purt. Midl. Fl. v. 2 & 3. n.* 1067.

On the ground, woods and heaths; not common.—a. Nork Park, *Lady Arden*. b. Between Newington and Hornsey, *Sowerby*.—"Gregarious, subcæspitose, 1—3 inches high, sometimes forked, stuffed when young, round, straight, at length hollow, compressed, twisted, often rugose, attenuated, paler below, without a distinct stem; apex at length yellowish." *Fr. l. c.* *C. fragilis*, *Grev. Scot. Crypt. Fl. t.* 37, is referred by Fries as a variety to *C. inæqualis*; it certainly appears to differ very much from the figures quoted above, though much resembling *C. fragilis*, b., *Holmsk.*, to which figure I can find no reference made by Fries, except it be included in the general citation of *C. fragilis*, *Holmsk.*

18. *C. vermicularis*, Sw. (*worm-like Clavaria*); pure white

tufted crowded subulate flexuous solid but with a small perforation mostly somewhat connected at the base. *Fr. Syst. Myc. v. 1. p. 484. Grev. Fl. Ed. p. 414.*—*C. vermiculata, Purt. Midl. Fl. v. 2 & 3. n. 1057.*—*C. Herculeana, var. 4. With. v. 4. p. 319.*—*Clavaria vermiculata, &c., Mich. p. 209. t. 87. f. 12.*

Lawns, pastures, &c. Autumn. Extremely common after heavy rain.

19. *C. unciális, Grev. (minute obtuse Clavaria)*; gregarious not fragile even obtuse white smooth attenuated downwards. *Grev. Scot. Crypt. Fl. t. 98. Fl. Ed. p. 415. Fr. El. v. 1. p. 232.*

On the dead stems of large herbaceous plants, rotten twigs, &c., in woods. Autumn. Foxhall, near Edinburgh, *Captain Wauch.*—This very distinct species, which occurs occasionally in England, approaches in size and form some species of the genus *Pistillaria*, but differs in being furnished with distinct *asci*. *C. obtusa, Moug. & Nest! n. 683.* appears to be the same but I can find no *asci*.

20. *C. acúta, Sow. (minute acute Clavaria)*; straight white, the receptacle distinct equalling the stem in length acuminate. *Sow. t. 333. Fr. Syst. Myc. v. 1. p. 485.*

On the ground, earth in garden-pots, &c. In many places, but seldom more than two or three scattered plants.—Solitary. Very variable in size, from a few lines to an inch or more in length.

#### 16. CALÓCERA. *Fr. Calocera.*

Between horny and gelatinous, tough, slimy, rooting without any distinct stem. *Asci* slender.—Name, *καλός, beautiful*, and *κερῶς, a horn*.

1. *C. viscosa, Pers. (slimy Calocera)*; bright yellow, branches and branchlets forked slender at the base. *Fr. Syst. Myc. v. 1. p. 486. El. v. 1. p. 233. Cl. viscosa, Pers. Comm. t. 1. f. 5. Syn. p. 594.*—*Cl. flammea, Schoff. t. 174.*—*Cl. cornuta, t. 289.*—*Cl. gelatinosa, Holmsk. Ot. p. 81. cum fig.*

On old pine trunks; rare. Kinnordy, *Klotzsch, in Hook. Herb.*—“Generally caespitose, 1 inch or more high; root long, pale; branches round or compressed, equal, but little divided. Known by its most beautiful golden hue.” *Fr. l. c.* As I have no means of access to *Fr. Syst. Orb. Veg.*, in which he proposes the genus *Calocera* as distinct and not merely as a subgenus, I am compelled to take the characters given in the *Syst. Myc.* without the advantage of an acquaintance with his later views on the subject, and consequently the characters assigned above appear by themselves scarcely sufficient to warrant its separation from *Clavaria*. There are, however, so many concurrent authorities as to the propriety of such separation, that it would be unpardonable without a more complete knowledge of the subject to reject the genus, and I have therefore thought right to adopt it, though necessarily with imperfect characters.

2. *C. tuberósa, Sow. (tuberous Calocera)*; tough yellowish nearly simple the base tuberous. *Fr. Syst. Myc. v. 1. p. 486.*—*Cl. tuberosa, Sow. t. 199. Pers. Syn. p. 594.*

On sticks, bursting through the bark. Stone Park, Sussex, *Sowerby*.—*Root* a thick strigose, subglobose tuber, giving out two or three simple linear subacute receptacles from the same base.

3. *C. córnea*, Batsch. (*horny Calocera*); tufted small simple and branched yellow connate at the base. *Fr. Syst. Myc. v. 1. p. 486.*—*Cl. cornea*, Batsch, *Cont. 1. f. 161.* *Pers. Syn. p. 596.* *Sow. t. 40.* *With. v. 4. p. 337.* *Purt. Midl. Fl. v. 2 & 3. n. 1060.*—*Cl. aculeiformis*, *Bull. t. 463. f. 4.*—*Cl. medullaris*, *Holmsk. Ot. p. 80. cum fig.*

On trunks of trees, squared timber, &c. Common. Autumn.—Springing from cracks: when fresh soft, when dry hard and horny.

### 17. GEOGLÓSSUM. *Pers.* *Geoglossum*.

*Receptacle* erect, club-shaped, subcompressed, produced downwards into a distinct stem. *Hymenium* concrete, covering the incrassated receptacle. *Asci* elongated.—Name from  $\gamma\eta$ , the earth, and  $\gamma\lambda\omega\sigma\sigma\alpha$ , a tongue.

1. *G. hirsútum*, P. (*hairy Geoglossum*); hairy black. *Pers. Comm. p. 37. Syn. p. 608. Fr. Syst. Myc. v. 1. p. 488. Grev. Fl. Ed. p. 416. Scot. Crypt. Fl. t. 185. Klotzsch, Fung. Germ. exs. n. 44.*—*Clavaria ophioglossoides*, *Holmsk. Ot. 1. p. 18. cum fig. Sow. t. 83. Schæff. t. 327. Purt. Midl. Fl. v. 2 & 3. n. 1059.*

Lawns, pastures, &c. \* Not uncommon. Autumn.

2. *G. glábrum*, *Pers.* (*smooth Geoglossum*); smooth dry blackish, stem subsquamulose. *Pers. Syn. p. 608. Fr. Syst. Myc. v. 1. p. 488.*—*Cl. ophioglossoides*, *Bull. t. 372. Bull. t. 111. f. 2. With. v. 4. p. 337.*

Grassy places; not common. Autumn.—Near Halifax, *Bolton*. Scotland; *Klotzsch, in Hook. Herb.* Near Bungay, *Mr Stock*.

3. *G. diffôrme*, *Fr.* (*twisted Geoglossum*); smooth even slightly viscid black, receptacle compressed distinct. *Fr. Syst. Myc. v. 1. p. 489.*

Amongst *Hypnum squarrosum* on the grass plot before the steward's house at Boughton House, Norths. Oct. 5, 1827.—*Receptacle* compressed, lanceolate, hollowed out on either side, distorted, distinct, smooth, very slightly viscid, dark-brown black, 1 inch or more long. *Sporules* exactly as in *G. viscosum*. *Stem* equal, cylindrical, but little compressed,  $1\frac{1}{2}$  inch high, 2 lines thick.

4. *G. glutinósum*, *Pers.* (*shining-stemmed Geoglossum*); smooth black, receptacle compressed distinct, stem viscid. *Pers. Comm. p. 38. Syn. p. 609. Fr. Syst. Myc. v. 1. p. 489.*

Grassy places, especially in marshes. Appin, *Captain Carmichael*.—“*Stem* nearly equal, 1 inch or more high, clothed with tenacious gluten, reddish-brown inclining to black. *Receptacle* somewhat lanceolate, absoletely viscid, blacker than the stem.” *Fr. l. c.*

5. *G. viscosum*, *Pers.* (*slimy Geoglossum*); smooth viscid

black, receptacle round confluent with the stem. *Pers. Comm.* p. 39. *Syn.* p. 609. *Fr. Syst. Myc.* v. 1. p. 489. *Greav. Scot. Crypt. Fl.* t. 55. *Fl. Ed.* p. 416.

Moist meadows, pastures, &c. Autumn. Foxhall near Edinburgh, *Captain Wauch.*

6. *G. viride*, Schrad. (*green Geoglossum*); subfasciculate green, receptacle distinct, stem squamulose. *Pers. Comm.* p. 46. *cum analysi*, t. 3. f. 3. *Syn.* p. 610. *Ditm. in St. Deutsch. Fl.* t. 48. *Fr. Syst. Myc.* v. 1. p. 489. *Greav. Scot. Crypt. Fl.* t. 211.—*Cl. viridis*, *Fl. Dan.* t. 1258. f. 1.—*C. mitrata*, var. b. *Holmsk. Ot.* 1. p. 24. *cum fig.*

Moist grassy or shady places, in autumn; rare. Banks of Tweed near Melrose, *Mr. Walker Arnott.* Appin, *Captain Carmichael.* It has also been found in Scotland by *Mr. J. D. Hooker.*—The *sporules* of this species are white and elliptic, not dark, elongated and wrapping one over the other as in *G. hirsutum*, *difforme* and *viscosum*.

7. *G. cucullatum*, Batsch. (*fir-leaf Geoglossum*); subferruginous, receptacle ovate, stem capillary. *Fr. Fl.* v. 1. p. 233.—*Elvella cucullata*, Batsch, *Cont.* 1. f. 132.—*Clavaria ferruginea*, *Sow.* t. 84.—*Mitruia Heyderi*, *Pers. disp.* p. 36. t. 3. f. 12. *Fl. Dan.* t. 1670. f. 2.—*Leotia Mitruia*, *Pers. Syn.* p. 611. *Greav. Scot. Crypt. Fl.* t. 81. *Fl. Ed.* p. 416.—*Mitruia (Heyderia abietis)*. *Fr. Syst. Myc.* v. 1. p. 492.

In fir woods. Rare in England, more common in Scotland.—This curious little fungus is now considered by Fries a true species of *Geoglossum*. As I have never met with it in a recent state, I am unable to give any decided opinion as to the correctness of these views, the question entirely depending upon a correct knowledge of the nature of the edge of the receptacle, which cannot be derived from dried specimens, and therefore I follow Fries, who has certainly had the most abundant opportunities of obtaining accurate notions on the subject.

## 18. SPATHULARIA. *Pers.* Spathularia.

Receptacle vertical compressed, running down on either side into the distinct stem.—Name from *spathula*, a little spoon.

1. *S. flavida*, *Pers.* (*common Spathularia*). *Pers. Comm.* p. 34. *Syn.* p. 610. *Fr. Syst. Myc.* v. 1. p. 491. *Greav. Scot. Crypt. Fl.* t. 165.—*Elvella clavata*, *Schaff.* t. 149.—*Helvella spathulata*, *Sow.* t. 35. *Purt. Müll. Fl.* v. 2 § 3. n. 1016.—*H. scitatoria*, *Bolt.* t. 97.—*Clavaria Spathula*, *Fl. Dan.* t. 658. *Dicks. Fasc.* 1. p. 21. *With.* v. 4. p. 317.

Pine-groves. July—Oct.—“Mostly gregarious, 3—5 inches high. *Pileus* hollow, yellow, rarely reddish, much compressed, more or less of an erect obovate form, slightly inflated, undulated or even lacumose, sometimes bifid or inclining to be lobed. It is in general placed in some degree obliquely on the stem; in other words the stem appears to pass along and eventually penetrate the *pileus* half-way or near the summit. *Sporules* discharged elastically.” *Greav. l. c.*

19. MITRULA. *Fr.* Mitrula.

*Receptacle* ovate, inflated, closely surrounding with its base the distinct stem.—Name; from the receptacle resembling a little mitre.

1. *M. paludosa*, *Fr.* (*marsh Mitrula*); somewhat gregarious, pileus yellow more or less ovate obtuse stem pale. *Fr. Syst. Myc. v. 1. p. 491.*—*Clavaria phalloides*, *Bull. t. 463. f. 3.*—*Cl. epiphylla*, *Dicks. Fasc. 3. p. 22. t. 9. f. 10. With. v. 4. p. 317. Sow. t. 293.*—*Leotia Ludwigii*, *Pers. Syn. t. 3. f. 13.*—*L. uliginosa*. *Grev. Fl. Ed. p. 416. Scot. Crypt. Fl. t. 312.*

Amongst dead leaves and moss, in damp and watery places; summer and autumn.—“*Pileus* very variable in form, hollow of a delicate bright orange yellow. *Asci* linear, containing about four linear truncate sporida.” *Grev. l. c.* This fungus appears to be much more nearly allied to *Spathularia* than *Leotia*, which belongs to the order *Mitrati*.

2. *M. minuta*, *Sow.* (*small orange Mitrula*); very minute, receptacle lanceolate orange, stem equal pallid. *Fr. Syst. Myc. v. 1. p. 492.*—*Clavaria minuta*, *Sow. t. 391.*

On the bractæ of *Dipsacus pilosus*. *Raleigh, Essex; Rev. R. B. Francis.*—I have not been able to find specimens in Mr. Sowerby's collection: possibly it may be a state of *Pistillaria micans*.

20. TYPHULA. *Fr.* Typhula.

*Receptacle* somewhat cylindrical, distinct from the capillary stem, bearing sporules on every side; *asci* obsolete.—Named from *Typha*, the *Reed-mace*, which it somewhat resembles in miniature.

1. *T. gyrans*, *Batsch*, (*white-stemmed Typhula*); simple white, stem pubescent. *Fr. Syst. Myc. v. 1. p. 494.*—*Clav. gyrans*, *Batsch, Cont. 1. t. 164. Pers. Syn. p. 606.*—*C. trichopus*, *Grev. Scot. Crypt. Fl. t. 49.*—*C. setipes*, *Grev. Fl. Ed. p. 414.*—*Cnazonaria setipes*, *Corda in St. Deutsch. Fl. Heft. 2. t. 25.*

Upon dead leaves, grass, &c.; not uncommon.—The state, figured by Greville, and which I have frequently met with in England, is that in which it grows immediately from the dead leaf or culm, whereas on the continent it appears more frequently to spring from some species of *Sclerotium*.

2. *T. phacorrhiza*, *Reichard.* (*elongated Typhula*); simple pale smooth, stem brownish. *Fr. Syst. Myc. v. 1. p. 495.*—*Clavaria phacorrhiza*, *Reich. in Schrift. Naturf. Fr. Berl. t. 9. f. 4. (fide Fr.) With. v. 4. p. 317. Sow. t. 233. Pers. Syn. p. 607. Purt. Midl. Fl. v. 3. p. 269.*—*Phacorrhiza filiformis*, *Grev. Fl. Ed. p. 415. Scot. Crypt. Fl. t. 93.*

On fallen leaves; not uncommon.—Distinguished from the following species by its elongated *receptacle* exceeding the stem in length. In general, but not always, growing on some *Sclerotium*. Often hairy at

the base, drawn out and distorted from peculiar circumstances of situation.

3. *T. erythropus*, Pers. (*red-stemmed Typhula*); simple, receptacle smooth white stem dark red. *Fr. Syst. Myc. v. 1. p. 495.*—*Clav. gyrans*, t. 112. *With. v. 4. p. 316.* *Purt. Midl. Fl. v. 2. p. 694. v. 3. p. 471.*—*C. erythropus*, Pers. *Comm. p. 84. Syn. p. 696. t. 2. f. 14.*—*Phacorhiza erythropus*, Grev. *Scot. Crypt. Fl. t. 43. Fl. Ed. p. 415.*

On various decaying vegetable substances. Not uncommon. Often growing on some species of *Sclerotium*—3 lines—1 inch high. Stem often flexuous. A variety of this, if not a distinct species, occurs now and then on fallen leaves, 1—3 lines high, without any tuber, the stem either white, like the receptacle, or brownish, but not red. In other respects I can perceive no difference.

4. *T. tenuis*, Sow. (*slender black Typhula*); gregarious simple smooth black very slender incrassated above. *Fr. Syst. Myc. v. 1. p. 495.*—*Clav. tenuis*, Sow. t. 386. f. 5.

Rotten wood. Mead Place, Lambeth, in a coal cellar in damp weather.—“It resembles a little black hair thickening upwards.” *Sow. l. c.*

5. *T. filiformis*, Bull. (*thread-like Typhula*); somewhat branched reddish-brown, receptacles clavate whitish. *Fr. Syst. Myc. v. 1. p. 496.*—*Clav. filiformis*, Bull. t. 448. f. 1. *Sow. t. 387.*—*Himantia lateritia*, Pers. *Syn. p. 704.*

On fallen leaves.—“Decumbent, creeping, free, subflexuous, brown, cinereous brown or (generally) brick-red.” *Fr. l. c.* According to Sowerby it resembles *Byssus barbata*, E. B. (*Ozonium auricomum*).

## 21. PISTILLÁRIA. *Fr.* Pistillaria.

*Receptacle* slender, cylindrical, without any distinct stem. *Hymenium* even, occupying the whole surface, but producing sporules only in the upper part. *Asci* obsolete.—Name, from the column or pistil-like form of the plant.

1. *P. micans*, Pers. (*glittering red Pistillaria*); obovate or clavate rose-coloured glittering with the sporules, stem very short white. *Fr. Syst. Myc. v. 1. p. 497.*—*Clavaria acrospermum*, Hoffm. *Fl. Germ. t. 7. f. 2.*—*Clavaria micans*, Pers. *Syn. p. 604.*

On dead Thistles, Cambridge: *Rev. M. J. Berkeley.*—Very minute, not a line high. The *P. rubicunda* of Carin. in *Hook. Herb.*, appears to be a state of this species, which evidently, from the account of Albertini and Schweintz, varies from obovate to subclavate. The head, in the dry plant, nods, as described by those authors. The figure in Sturm's *Deutschl. Fl.*, by Corda (*Scleromytra coccinea*) is very much exaggerated.

2. *P. pubérula*, Berk. (*smaller Fern Pistillaria*); white, receptacle obovate, stem subdistinct more or less pubescent. *Clavaria obtusa*, Sow. t. 334. f. 2.

On *Pteris aquilina*, Sowerby. King's Cliffe, Norths., *Rev. M. J. Berkeley*.—Very minute, scarce one line high. *Stem* attenuated upwards, composed of many confluent fibres. *Receptacle* obovate, but not broadly so; *sporules* apparently breaking off from the thickened end of the filaments, which resemble true *asci*.

3. *P. quisquiliáris*, Fr. (*obtuse Pistillaria*); incrassated above white. *Fr. Syst. Myc. v. 1. p. 497*.—*Clavaria obtusa*, Sow. t. 334. f. 1.

On stems and leaves of *Pteris aquilina*; Sowerby.—Gregarious, 3—4 lines high, apex incrassated, sometimes flattened or bifid, quite even and smooth." *Fr. l. c.*

4. *P. muscicola*, Pers. (*moss Pistillaria*); minute subfiliform slightly incrassated above, the base dilated. *Fr. Syst. Myc. v. 1. p. 498*.—*Cl. muscicola*, Pers. *Syn. p. 606*. *Nees, Syst. f. 154*.—*Clavaria uliginosa*, Wallr. *Ann. Bot. p. 141*.

On *Hypnum triquetrum* at Stibbington, Hunts: *Rev. M. J. Berkeley*. Killarney, *Mr. W. Wilson*.—Very minute, attached to the leaves of *H. triquetrum* by a few fibrillæ.

5. *P. pusilla*, Pers. (*dwarf Pistillaria*); nearly linear smooth white. *Fr. Syst. Myc. v. 1. p. 498*.—*Clavaria pusilla*, Pers. *Comm. t. 3. f. 6*.

On dead stems of *Equisetum*, at Weymouth; *Rev. M. J. Berkeley*.—Slightly thickened upwards, not 1 line high, nodding when dry. My specimens, which were gathered some years ago, have now a greenish tinge.

TRIBE III. MITRATI (from *mitra*, a *bonnet*). *Receptacle* *bullate*, *pileiform*, *margined*. *Hymenium superior*, *never closed*.

## 22. MORCHÉLLA. *Dill. Morell.*

*Receptacle* *pileate*. *Hymenium* *costate*, *lacunose*.—Name latinized from the German *morchel*.

1. *M. esculénta*, L. (*common Morell*); *pileus* *conic ovate* or *globose*, its base *adnate*, *ribs* *firm anastomosing* into *distinct cells*. *Pers. Syn. p. 618*. *Tratt. Essb. Schw. t. EE. Fr. Syst. Myc. v. 2. p. 6*. *Grev. Scot. Crypt. Fl. t. 68. Fl. Ed. p. 417*. *Roques, t. 1. f. 4, 5*.—*Phallus esculentus*, *Linn. Suec. 1262. Bolt. t. 91. With. v. 4. p. 315*.—*Helvella esculenta*, *Sow. t. 51, right and left-hand fig. Purt. v. 2 § 3. n. 1017*.—*Morchella continua*, *Tratt. Fung. Aust. t. 6. n. 11*.

Woods, orchards, cinder-walks, &c. Spring and early summer.—*Stem* *hollow*, 1—3 inches high. *Pileus* 2—3 inches high, *yellowish*, *olivaceous*, *cinereous*, &c., the *ribs* sometimes tinged with a different colour from the cells. Varying much in form, occasionally nodding and almost lobed, as in *M. tremelloides*, but easily distinguishable from the other species hitherto observed in Great Britain by the contracted base of the *pileus* being confluent with the stem. Esteemed everywhere as a valuable article of food.



2. *M. pátula*, Pers. (*obtuse free-bordered Morell*); pileus obtuse its base free half-way up, cells rhomboidal. Pers. Syn. p. 619. Tratt. Fung. Aust. t. 6. n. 12. Fr. Syst. Myc. v. 2. p. 10.—*Helvella esculenta*, Sow. t. 51, middle fig.

On banks: very rare. Kent, Mr. Jacob Rayer.—Obtusely and broadly conic. "Stem 2 inches high. Cells even within." Fr. l. c.

3. *M. scmilibera*, Dec. (*long-stemmed Morell*); pileus conic its base free half-way up, ribs longitudinal forming oblong veiny cells. Dec. Fr. v. 2. p. 212.—Fr. Syst. Myc. v. 2. p. 11.—*Helvella hybrida*, Sow. t. 238. Purt. v. 2 & 3. n. 1018.—*Morchella hybrida*, Pers. Syn. p. 620. Grev. Sc. Crypt. Fl. t. 89. Fl. Ed. p. 418.—*Phallus esculentus*, var. 2. With. v. 4. p. 315.

Hedge-banks and woods; spring and early summer, rare. Darlington, Mr. Robson. Badsey.—Worc, Mr. Rufford. Sambourne, Warw. Purt. MSS. Foxhall near Edinburgh, Capt. Wauch. King's Cliffe, Apethorpe, Norths., Rev. M. J. Berkeley.—Pileus when young conic or subglobose-conic, yellowish olive, the reticulations formed by ribs running down with tolerable regularity from the apex, oblong with a few wrinkles within; stem short, thickest at the base, slightly furfuraceous. Pileus (in the full-grown plant)  $1\frac{1}{2}$  inch high, nearly as much broad, darker, free for rather more than half its height; the reticulations still oblong, but occasionally some are rhomboidal; sporidia\* large, oval, yellowish. Stem 5 inches or more high, 1 inch thick at the base, hollow, pitted and wrinkled below, more or less grooved through its whole length, flexuous, slightly tinged with reddish-brown, decidedly furfuraceous, the powdery scurf consisting of branched threads, with irregular, globose or oblong obtuse articulations: inner walls furfuraceous, as also the under side of the pileus. Crisp; its taste pleasant.

\* In the foregoing tribes I have used the word "sporules" to denote the seed-like bodies which are generally regarded as the reproductive organs of fungi. In this I followed the practice of Dr. Greville in the *Flora Edinensis*, and the earlier portion of the *Scottish Cryptogamic Flora*. But as considerable inconvenience arises in certain Fungi from the use of this term, the bodies in question being compound bodies, whose parts it is desirable to distinguish by name, I shall in the remainder of the volume adopt the nomenclature used by Fries and by Greville in the latter parts of the *Cryptogamic Flora*, only by way of caution, stating here that wherever "sporules" are mentioned in the former portion of the volume, the same thing is meant as by "sporidia" in the present. The term *sporidia* then will denote generally the reproductive bodies analogous to seeds in perfect plants. These are often placed end to end, so as to form an elongated separate body, as in many *Sphæria*, *Sporidesmium*, &c., or even side by side as well as longitudinally, as in *Macrosporium Chivanthi*, but these compound *sporidia*, where there is not an evident disjunction of the component parts, will still be termed *Sporidia*. When the granular mass with which the vesicles are filled is collected into one or more distinct bodies, as in some *Peziza*, the bodies will be called *sporidiola*, the name of *Sporules* being reserved for the individual grains analogous to embryos of which the nucleus is composed. In saying that these bodies are analogous to seeds and embryos, some latitude must be allowed, as the mode of reproduction in perfect plants and Fungi is so different; it having been ascertained that multitudes of sporidia conspire to produce an individual Fungus. Great care is requisite to distinguish elongated *sporidia*, containing a row of *sporidiola* from septate, or, correctly speaking, concatenated *sporidia*. Without a good microscope and favourable light, when they are very transparent, it is sometimes almost impossible to arrive at a satisfactory conclusion.

23. HELVÉLLA. *Linn.* *Helvella*.

*Receptacle* pileate, deflexed, lobed. *Hymenium* even.—Named from *Helvella*, the Latin name of some fungus.

1. *H. crispa*, Scop. (*pallid Helvella*); pileus deflexed lobed free crisped pallid, stem fistulose costato-lacunose. *Fr. Syst. Myc. v. 2. p. 14.*—*Phallus crispus*, Scop. n. 1606.—*El. albidu*, Schaff. t. 282.—*H. mitra*, Sow. t. 39. *With. v. 4. p. 297. in part.* *Purt. n. 1015. t. 16. (exc. middle fig.)* *Roques, t. 1. f. 3.*—*H. leucophaea*, Pers. *Syn. p. 616.* *Tratt. Essb. Schw. t. DD. Fung. Aust. t. 18. n. 36.* *Greav. Fl. Ed. p. 417.* *Scot. Crypt. Fl. t. 143.*

Woods, &c.; autumn. Not uncommon.—*Pileus* whitish, flesh-coloured or yellowish. *Stem* 3—5 inches high, snowy-white, deeply lacunose and ribbed, the ribs hollow. *Esulent.*

2. *H. lacunosa*, Afz. (*cinereous Helvella*); pileus inflated lobed cinereous, lobes deflexed aduate, stem fistulose costato-lacunose. *Fr. Syst. Myc. v. 2. p. 15.*—*El. Mitra*, Schaff. t. 154.—*Hel. Mitra*, Pers. *Syn. p. 615.* *With. v. 4. p. 297. in part.* *Purt. t. 16. central fig.* *Greav. Scot. Crypt. Fl. t. 36. Fl. Ed. p. 417.*

Woods, on the ground and in hollow stumps. Less common than the last.—*Stem* white or dusky.

3. *H. clástica*, Bull. (*Peziza-like Helvella*); pileus free even inflated at length acutely lobed, stem nearly even slender elongated attenuated pruinose. *Bull. t. 242.* *Fr. Syst. Myc. v. 2. p. 21.*—*H. mitra*, Bolt. t. 95.—*H. albidu*, Pers. *Syn. p. 616.*—*H. fuliginosa*, Dicks. 2. p. 25. *Sow. t. 154.* *With. v. 4. p. 299.* *Relh. n. 1297.* *Purt. n. 1495.*

Woods and shady places; rare. Near Halifax, *Bolton*. Scotland, *Dickson*. Birdbrooke, *Essex*, *T. Walford, Esq.* Madingley. *Relhan*. Ragley woods near Pophills, Alcester. *Purton*.—Much resembling in some of its forms *Peziza macropus*.

24. VÉRPA. *Swartz.* *Verpa*.

*Receptacle* conico-deflexed, equal. *Hymenium* even or wrinkled.—Name from *Verpa*, a Latin word synonymous with *φαλλος*.

1. *V. digitaliformis*, Pers. (*fox-glove Verpa*); pileus campanulate digitaliform slightly wrinkled umber, stem equal transversely squamulose. *Pers. Myc. Eur. v. 1. p. 202. t. 7. f. 1—3.* *Fr. Syst. Myc. v. 2. p. 24.* *El. 2. p. 2.* *Corda in Sturm's Deutsch. Fl. v. 2. t. 7.*—*V. Krombholtzii*, l. c. t. 6.

Hedge-rows, with *Morchella semilibera*, King's Cliffe, Norths., May 3, 1833, abundantly. *Rev. M. J. Berkeley*.—*Pileus* at first nearly even, olivaceous-umber, dark at the apex. *Stem* obese, furnished at the base with a few subrufous radicles, white with a slight rufous tinge, marked with transverse rufous spots; smooth to the naked eye, but under a

lens clothed with fine adpressed flocci the rupture of which gives rise to the spots which are, in point of fact, minute scales. In the full-grown plant the pileus is  $\frac{3}{4}$  of an inch high, campanulate, digitaliform or subglobose, more or less closely pressed to the stem, but always free, the edge sometimes inflexed so as to form a white border, wrinkled, but not reticulated, sometimes however so much so, as to assume the aspect of a *Morchella*, attached only at the very apex, and, occasionally, when eaten off at the point of union by woodlice, falling down to the base of the stem and surrounding it like a ring; under-side slightly pubescent; *sporidia* yellowish, elliptic. Stem 3 inches high,  $\frac{1}{2}$  an inch or more thick, slightly attenuated downwards, loosely stuffed, by no means hollow as in *Morchella semilibera*. This is certainly the true *Verpa digitaliformis*, of which Persoon has given a very characteristic figure, though criticized by M. Corda. The plant of the latter author appears to be a variety with a smooth white stem and dark pileus. *Verpa Krombholzii* differs in no respect from this, except in the absence of scales.

2. *V. cónica*, Sw. (*yellow-stemmed Verpa*); pileus campanulate nearly even brown, margin somewhat wavy, yellow beneath as well as the equal stem. *Fr. Syst. Myc. v. 2. p. 24.*—*Phallus conicus*, *Fl. Dan. t. 654.*—*Leotia conica*, *Pers. Syn. p. 613. Corda, l. c. t. 11.*—b. "Pileus yellow-rufous, striate, conic; stem hollow cylindrical, yellow." *Helvella Relhani*, *Relh. Ed. 3. p. 551. With. v. 4. p. 298. Sow. t. 11.*

Heaths; Gogmagog Hills, Camb. *Relhan.*

## 25. ΛΕΟΤΙΑ. *Hill. Leotia.*

*Receptacle* capitato-pileate; margin revolute, bearing *asci* beneath as well as above.—The origin of the name is uncertain, perhaps from λεοτης, *smoothness*.

1. *L. infundibuliformis*, Schæff. (*large Leotia*); pileus depressed livid-cinereous even above and below, stem stuffed smooth. *Fr. Obs. 2. p. 299. Syst. Myc. v. 2. p. 26.*—*Helv. infundibuliformis*, *Schæff. t. 277. Sow. t. 153.*

On the ground, amongst grass. Kensington gardens, Oct. *Sowerby.*—"Stem 2—3 inches high,  $\frac{1}{2}$  an inch or more thick, round, nearly equal, sometimes incrassated upwards, cinereous, white within. Pileus nearly regular, convex when young, then depressed,  $1\frac{1}{2}$ —2 inches broad, even, smooth, subfuliginous; margin inflexed." *Fr. l. c.* A very doubtful *Leotia*. From Sowerby's figure I should judge that the *hymenium* was entirely confined to the underside of the pileus, and if so, it must be more nearly allied to *Cantharellus*. I can find no specimen in his collection.

2. *L. nana*, With. (*dwarf Leotia*); small, pileus lobed rugose white even beneath and brown, stem stuffed cylindrical white. *Fr. Syst. Myc. v. 2. p. 28. With. v. 4. p. 296.*

Amongst moss, on a shady bank. Pendarvis, Cornw. *Mr. Stackhouse.*—"Pileus snowy-white, leathery, hard, crumpled and deflected in various forms; smooth and brown underneath, about  $\frac{1}{10}$  of an inch

over. *Stem* white, solid, smooth, not at all wrinkled,  $\frac{1}{4}$  of a inch high, thick as a crow-quill." *With. l. c.*

3. *L. lúbrica*, Scop. (*slimy Leotia*); subgelatinous, pileus tumid repand yellow olivaceous-green, stem at length hollow equal yellow. *Pers. Syn. p. 613. Myc. Eur. 1. p. 201. t. 9. f. 4—7. Moug. & Nest! n. 583. Fr. Syst. Myc. v. 2. p. 29. Grev. Scot. Crypt. Fl. t. 56. El. Ed. p. 417.—Helv. lúbrica, Scop. n. 1619.—Helv. gelatinosa, Sow. t. 70. With. v. 4. p. 298. Pert. n. 1497.*

Woods, on the moist soil and amongst leaves; not very common.—Varying greatly in size and form. *Stem* at first pulpy within, sometimes squamulose, as in specimens gathered at Appin in company with Captain Carmichael. *Helvella clavata*, *With.*, is undoubtedly *Spathularia flavida*.

## 26. VIBRÍSSEA. *Fr. Vibrissea.*

*Receptacle* capitato-pileate; margin at first adnate, soon free; *asci* emerging from the hymenium.—Name from *vibro*, to vibrate.

1. *V. truncórum*, A. & S. (*golden Vibrissea*); simple, receptacle orbicular, golden yellow stem round glaucous at length dusky. *Fr. Syst. Myc. v. 2. p. 31.—Leotia truncorum, A. & S. consp. t. 3. f. 2. Pers. Myc. Eur. v. 1. p. 199.—Leotia Clavus, Pers. l. c. t. 11. f. 9. Moug. & Nest! n. 781.*

On branches and trunks of trees, lying in the water. Summer. Appin, Captain Carmichael. Scottish Highlands, Klotzsch, in Hook. *Herb.*—*Receptacle* 1—2 lines broad, barren beneath. *Stem* 2 lines—1 inch or more high. According to Fries, when taken from the water and exposed to the rays of the sun though at first smooth, it is soon covered with white geniculated filaments, which start from the hymenium and have an oscillating motion; while this takes place a strong scent of garlic is emitted.

TRIBE IV. CUPULATI. *Receptacle* patelliform, margined. *Hymenium* superior, more or less closed when young and concave.

## 27. PEZÍZA. *Dill. Peziza.*

*Cup* more or less concave, soon expanded, the disc naked. *Asci* fixed, accompanied by *paraphyses* (abortive *asci*).—Named from *Peziza*, a word used by Pliny to denote some Fungus.

SERIES I. ALEURIA. (from *ἀλευροῦ*, meal.) *Fleshy* or *carinoso-membranaceous*, *pruinose* or *floccoso-furfuraceous* from the concrete veil.

Subgenus I. MEGALOPYXIS (from *μεγας*, great, and *pyxis*, a cup). *Cup* open when young or connivent. *Veil* superficial. *Sporidia* containing two *sporidiola*.

1. *P. acetábulum*, L. (*socket Peziza*); deeply cup-shaped dirty-brown traversed externally by branched veins given off by the fistulose costato-lacunose stem. *Linn. Syst. Veg.* p. 979. *Bull. t.* 485. *f.* 4. *Sow. t.* 59. *With. v.* 4. *p.* 303. *Fr. Syst. Myc. v.* 2. *p.* 44.—*Fungoides fuscum*, &c. *Vaill. Par. t.* 13. *f.* 1.

On the naked soil in thickets, &c., rare. Spring and early summer. Sand-Hutton, Yorks. *Rev. Mr. Bulstone*. King's Cliffe, Norths. *Rev. M. J. Berkeley*.—Cup 2 inches broad,  $1\frac{1}{2}$  inch high; externally floccoso-furfuraceous, light-umber, darker within; mouth contracted; firm, tough; flesh not very thick. *Stem*  $\frac{1}{2}$  an inch high, smooth, deeply but regularly costato-lacunose, the ribs, which, in my specimens though apparently full-grown are solid, branching at the top and forming reticulations on the outside of the cup, so as to present the appearance of a cluster of pillars supporting a font or roof with fret work between them.

2. *P. reticulata*, Grev. (*reticulated Peziza*); reddish-brown within strongly plicate and reticulated, without whitish and pruinose, margin involute at length variously split the segments repand, stem short thick costate sometimes obsolete. *Grev. Scot. Crypt. Fl. t.* 156.

On the ground; Spring. Foxhall, *Capt. Wauch.* Cotterstock, King's Cliffe, Norths. *Rev. M. J. Berkeley*.—Many inches broad. *Odour* strong, like that of nitric acid. Dr. Greville observes very truly that its affinity is not with the cochleate *Pezizas*, as the tendency of its lobes is rather to fold back than to curl in. Fries supposes it to be near to *Peziza venosa*, but in that species the veins are external. The figure by Wulfen, from which, I think, nothing can be decided, is quoted by Withering under *P. cochleata*.

3. *P. bádia*, Pers. (*large brown Peziza*); nearly sessile entire flexuous brown, margin at first involute, without pruinose paler and inclining to olive. *Pers. Syn. p.* 639. *Fr. Syst. Myc. v.* 2. *p.* 46.—*Helv. cochleata*, *Bolt. t.* 99.

On the ground. About Halifax, *Bolton*, who seems however to have more than one species in view.—“1—2 inches broad, subæspitose, irregular, slightly pruinose externally, villous at the base and often lacunose. *Disc* occasionally porous; extremely changeable in colour, often, in the same individual, changing from rufous to a beautiful olive, brownish, &c.” *Fr. l. c.*

4. *P. onólica*, Pers. (*ear-shaped Peziza*); substipitate elongated on one side ear-shaped mealy without, yellowish rose-coloured within, the base of the disk at length rugose. *Pers. Syn. p.* 637. *Fr. Syst. Myc. v.* 2. *p.* 48. *Ditm. in St. Deutsch. Fl. v.* 1. *t.* 16.—*P. leporina*, *Sow. t.* 79.

In beech-woods amongst fallen leaves: Summer and Autumn. Very rare. Clopthill. Bedf., *Rev. C. Abbott*. Norwich, *Sowerby*.—Cup 3—4 inches high.

5. *P. aurántia*, Pers. (*orange Peziza*); nearly sessile irregular oblique clear orange, externally whitish slightly pruinose. *Pers. Syn. p.* 637. *Fr. Syst. Myc. v.* 2. *p.* 49. *Grev.*

*Fl. Ed.* p. 418.—*P. coccinea*, *Sow. t.* 78. *Purt. v.* 2 & 3. n. 1030.—*Helv. coccinea*, *Bolt. t.* 100.—*P. coccinea*, var. 2. *With. v.* 4. p. 305.

About the stumps of felled oaks. Autumn and early winter. Common.—At first hemispherical, with a short stem; margin almost involute; at length split, curled and flexuous, of the clearest orange within. Externally pale, mealy with minute sparkling granules. *Sporidia* elliptic,  $\frac{1}{12}$  of an inch long, certainly containing two *Sporidiola* seated at the foci of the ellipse.

6. *P. concinna*, Pers. (*elegant Peziza*); caespitose large very brittle externally lemon-coloured at length rugulose, pallid flesh-colour within. *Pers. Myc. Eur.* 1. p. 221. *Fr. Syst. Myc. v.* 2. p. 49.—*Helv. vesiculosa*, *Bolt. t.* 175.

Persoon's plant is said to grow among fallen leaves: Bolton states nothing with respect to the locality of the species figured by him.

7. *P. cochleata*, Bull. (*whorled Peziza*); sessile tufted large twisted umber, externally pruinose. *Bull. t.* 154. *Sow. t.* 5. *With. v.* 4. p. 308. *Purt. v.* 2 & 3. n. 1040. *Fr. Syst. Myc. v.* 2. p. 50.—*P. umbrina*, *Pers. Syn. p.* 6. 38. *Grev. Fl. Ed.* p. 419.

In woods, &c. Summer and autumn: sometimes in great abundance. I have seen a large basketful offered for sale under the name of *Morells*.—A variety occurs smaller and of a pallid hue, but there is no account of its having been found in this country. Hudson's *P. cochleata* evidently includes many species.

8. *P. repanda*, Fr. (*spreading Peziza*); large inciso-repand dilute brown and slightly wrinkled within, externally mealy dirty-white, the base often plicate rooting. *Fr. Syst. Myc. v.* 2. p. 51. *Grev. Sc. Crypt. Fl. t.* 59. *Fl. Ed.* p. 419.

On the ground and upon rotten branches and sticks in beech woods: rare. Foxhall near Edinburgh, *Messrs. Wauch and Greville*.—"Pileus when splitting never convolute." *Grev. l. c.*

9. *P. cérea*, Sow. (*wax-like Peziza*); large infundibuliform repand yellowish, externally whitish as well as the villous stem-like base. *Sow. t.* 3. *Fr. Syst. Myc. v.* 2. p. 52.

In hot houses and on dung-hills: not common.—Very brittle. Purton's *P. cerea*, found on ground upon which tan had been laid, appears, from his quoting *Bull. t.* 44, with two notes of admiration, to be *P. catinus*.

10. *P. vesiculosa*, Bull. (*bladder-like Peziza*); large nearly entire sessile, at first subglobose connivent, at length campanulate somewhat crenate dirty-brown, externally more or less scurfy. *Bull. t.* 457. *Sow. t.* 4. *With. v.* 4. p. 310. *Purt. v.* 2 & 3. n. 1038. *Fr. Syst. Myc. v.* 2. p. 52. *Grev. Fl. Ed.* p. 419. *Sc. Crypt. Fl. t.* 107.

On dung-hills, thatch, &c. Spring and autumn; common.—The *hymenium* is generally separable from the substance of the cup. *Sporidia*

elliptic,  $\frac{1}{12}$  to  $\frac{1}{10}$  of an inch long, certainly simple as represented by Dr. Greville.

Subgenus 2. GEOPÝXIS (from  $\gamma\eta$ , earth and *pyxis*, a cup).  
Cup at first closed. Veil innate. Sporidia simple.\*

11. *P. macropus*, Pers. (long-stemmed *Peziza*); cup hemispherical cinereous clothed with little hairy or villous warts, disc mouse-coloured turning pale, stem very long attenuated. *Pers. Syn. p.* 645. *Fr. Syst. Myc. v. 2. p.* 57. *Grev. Sc. Crypt. Fl. t.* 70. *Fl. Ed. p.* 419.—*P. stipitata*, *Huds. p.* 636. *Sow! t.* 38. *With. v. 4. p.* 303.—*Helv. hispida (hemispherica)*, *Bolt. t.* 96.—*Helv. fuliginosa, var. 2. campanulata, Purt. v. 3. p.* 257.—*P. sublicia, Holmsk. 2. t.* 11.—*Helv. sublicia, 2. t.* 27.

On the bare ground or amongst leaves; summer and autumn. Not common.—Varying greatly in the degree of pubescence, occasionally the border of the pileus is reflexed, as in Sowerby's figure and that of Holmskiöld, *t.* 27, and there is then no small degree of resemblance to *Helvella elastica*. I have met with a variety occurring abundantly with the stem not above 1 inch high.

12. *P. tuberósa*, Bull. (tuberous *Peziza*); thin cup infundibuliform bright brown at length pallid, stem elongated springing from a shapeless black tuber. *Bull. t.* 485. *f.* 3. *Dicks. 2. p.* 25. *With. v. 4. p.* 303. *Sow! t.* 63. *Moug. & Nest. n.* 397. *Purt. v. 3. n.* 1591.

Woods. Spring: not uncommon.—Stem running deep into the earth, 1—3 inches high. The root was supposed by Hedwig to be a dried *Anemone* root, but it is most certainly as Dickson and Sowerby long ago noticed, of a fungous nature, and probably *Sclerotium fungorum, β. lucinosum*.

13. *P. rapulum*, Bull. (radish *Peziza*); thin yellowish brown, cup infundibuliform nearly smooth, stem twisted, root elongated fibrillose. *Bull. t.* 485. *f.* 2. *Fr. Syst. Myc. v. 2. p.* 59.—*P. rapula, Pers. Syn. p.* 658.—*P. radicata, Holmsk. 2. t.* 9. *Dicks. 1. p.* 21. *With. v. 4. p.* 304.

Woods. Oct. Very rare.—Observed hitherto only by Dickson.

14. *P. cupuláris*, L. (scalloped *Peziza*); nearly sessile thin globoso-campanulate fawn-coloured or pallid, externally mealy, margin crenate. *Lin. Succ. n.* 1273. *Huds. p.* 635. *With. v. 4. p.* 304. *Fr. Syst. Myc. v. 2. p.* 62.—*P. crenata, Bull. t.* 396. *f.* 3.—*Fungoides glandis, &c. Vail. Par. t.* 11. *f.* 3.

On the ground in woods, especially where the soil has been burnt; very rare. Shrubby, in mossy turf, Edgbaston, *Withering*.—The plant observed in a hothouse by the editor of the 7th edition is evidently only a state of *P. vesiculosu*. *Stem*  $\frac{1}{4}$  of an inch high,  $\frac{1}{8}$  thick, sometimes obsolete. *Pileus* pale-buff, thin, transparent, scalloped at the edge, shaped like the cup of an acorn, about 1 inch in diameter." *With. l. c.*

\* In *P. macropus* the sporidia are represented by Dr. Greville as containing one sporidiotum.

15. *P. argillácea*, Sow. (*modelling-clay Peziza*); rather fleshy sessile yellowish even, at first depresso-globose, at length split and torn furnished at the base with rooting hairs. *Sow. t.* 148. *Fr. Syst. Myc. v. 2. p.* 66.

On common black modelling-clay. "*Pileus* 2 lines broad, held to the clay by very fine attenuated cobweb-like fibres from the sides, as it were to assist the little knobby root." *Sow. l. c.* Nothing is said as to the nature of its surface; consequently its real affinities are doubtful.

16. *P. granuláta*, Bull. (*granulated dung Peziza*); sessile minute nearly plane orange red, externally rough with warty granules. *Bull. t.* 438. *f.* 3. *Fr. Syst. Myc. v. 2. p.* 67.—*P. fulva*, *Huds. p.* 636. *With. Ed. 2.*—*P. scutellata*, *var. 2. With. v. 4. p.* 310. (in part). *Purt. n.* 1036.—*Peziza lenticularis*, &c. *Raii Syn. p.* 18. 6.—*Fungoides scutellata*, &c. *Vaill. Par. t.* 13. *f.* 14.

On dung of swine, cows, &c. Summer and autumn: everywhere.—Gregarious, at first globose, at length flat; orifice crenate, varying somewhat in colour, but generally of a clear orange-red, externally granulated from the projection of the cellular tissue, furfuraceous. *Asci* clavate, obtuse. *Sporidia* broadly elliptic; the granular mass of the same shape, with an evident pellucid border. *Apophyses* orange-red, their apices capitate, like those of *Octospora hirta*, *Hedw. Ad. v. 2. t.* 3. *B.*

Subgenus 3. HUMARIA (from *humus*, *ground*.) *Veil thin, confined principally to the margin, flocculose, fugacious. Sporidia with a single sporidiolum.*

17. *P. rútilans*, Fr. (*splendid Peziza*); nearly sessile middle-sized at first campanulate, then expanded, externally finely pubescent pallid, disc orange-red. *Fr. Syst. Myc. v. 2. p.* 68.—*δ. alpestris*, minute tawny nearly naked.

On the ground, amongst moss, *δ.* Highlands of Scotland. *Klotzsch, in Hook. Herb.*—*Cup*  $\frac{1}{8}$  of an inch broad. The plant of Ray, to which Fries refers, is most probably *P. aurantia*.

18. *P. melalóma*, A. & S. (*black-edged Peziza*); sessile, densely gregarious, at first concave then nearly plane dirty orange, margin beset with most minute black hairs. *Alb. & Schw. Cons. t. 2. f.* 5. *Fr. Syst. Myc. v. 2. p.* 68.

On the ground in a fir plantation, Cambridge; *Rev. M. J. Berkeley*.—The usual habitat of this species is charcoal grounds: but my specimens answer so exactly to the character, in all essential points, that I do not hesitate to consider them the same.

19. *P. araneósa*, Bull. (*spider-web Peziza*); cup expanded repand orange-scarlet on both sides, clothed beneath with intricate fibrillæ, stem short firm. *Bull. t.* 280. *Fr. Syst. Myc. v. 2. p.* 69.—*β. salicina*; tawny, margin swollen inflexed, externally subfloccose. *P. araneosa?* *Sow. t.* 369. *f.* 5.

*Var. β.* in damp places on old stumps of willows. *Sowerby*.—Such is the view of M. Fries from an inspection of the figure only; the ori-



ginal specimens now before me resemble so much *P. bolaris* that I am almost convinced of their identity with that species. For the present, however, I prefer resting upon the authority of M. Fries.

20. *P. leucoloma*, Hedw. (*white-bordered Peziza*); sessile scattered concave then plane, margin minutely jagged white. *Fr. Syst. Myc. v. 2. p. 71.*—*Octospora leucoloma*, Hedw. *Ad. v. 2. t. 4. f. A.*

On wall-tops, amongst *Gymnostomum ovatum*, *Weissia lanceolata*, &c. Common. Appin, Captain Carmichael.\*

21. *P. humosa*, Fr. (*ground Peziza*); sessile, fleshy, plano-concave smooth blood-red margin quite entire. *Fr. Obs. Myc. 2. p. 308. Syst. Myc. v. 2. p. 71.*—*Helv. cartilaginea*, Bolt. *t. 101. f. 1. With. v. 4. p. 298.* *P. cartilaginea*, Sow. *t. 369. f. 2.*—*P. punicea*, With. *v. 4. p. 310. Part. n. 1500. t. 25.*

On the ground amongst *Polytricha*, &c. Probably not uncommon. Amongst *Polytrichum piliferum*. Blackheath, Rev. M. J. Berkeley. —Cup nearly  $\frac{1}{2}$  an inch broad, at first round, even, disciform, at length somewhat lobed and crisped, thick and fleshy, a vertical section being obconic, the margin pale, but not involute; disc of a full orange; externally paler, very minutely pulverulent. *Asci* obtuse; *sporidia* elliptic, with one large or two small *sporidiola*. *Apophyses* equal, orange. My plant exactly agrees with Bolton's, which is referred by Fries to *P. humosa*, though, as he observes, the colour is somewhat different, not blood-red or verging decidedly to red. Purton's figure however, represents the plant of a dull blood-red. Were it not that the veil is only very minutely pulverulent, not at all pubescent, and the cup disciform, not campanulate, I should at once have considered it as a variety of *P. rutilans*, bordering closely on  $\delta$ . *alpestris*.

Subgenus 4. ENCÆLIA (from  $\epsilon\gamma\kappa\alpha\iota\omicron\varsigma$ , hollow inwardly.) Veil universal, fugacious, furfuraceous; cup very hollow, subcoriaceous.

22. *P. fascicularis*, A. & S. (*crisped Peziza*); caespitose sessile between coriaceous and membranaceous shapeless rugged, at length nearly black, externally somewhat mealy. *A. & S. Cons. t. 12. f. 2. Fr. Syst. Myc. v. 2. p. 75. P. crispa, Sow. ! t. 425. f. 1, 2. Part. ! v. 2 § 3. n. 1051. t. 7. P. populnea, Pers. Syn. p. 671.*

On the aspen, ash, &c., common: Purton. King's Cliffe, Norths., on *Thelephora condeus*; Rev. M. J. Berkeley.—Cup 2—4 lines broad. Generally in tufts resembling in form the convolutions of the human brain, but sometimes scattered and solitary, growing upon the bark, not upon the wood, beneath the epidermis. Much resembling some *Cenangia*.

\* As the plant I have in view myself as common differs somewhat both from the description and specimens from Schweinitz, I subjoin the following description. Absolutely sessile. Cup flat, not concave even at first, 1—1½ line broad, minutely furfuraceous, resembling exactly in colour *P. aurantia*, paler externally; the edge ragged, forming a white border to the orange shield-like cup. *Hymenium* under a lens rough and glittering with the projecting obtuse *asci*. *Sporidia* elliptic, containing a single subglobose *Sporidiolum* exactly as in Hedwig's figure; *paraphyses* nearly equal.

23. *P. furfurácea*, Roth. (*branny Peziza*); sessile, of a fleshy coriaceous consistence, externally pallid furfuraceous, margin entire involute, disc cinnamon-black. *Roth. Cat. Bot.* 2. p. 257. t. 9. f. 3. *Fr. Syst. Myc.* v. 2. p. 76. *Scler. Suec.* ! n. 457. *Pers. Syn.* p. 672.

On twigs of hazel, maple, &c. Glaphorn, Norths. *Rev. M. J. Berkeley*.—Varying greatly in size. My specimens belong to the smaller variety, which is about  $1\frac{1}{2}$  line broad, but in the larger state the hymenium is sometimes  $\frac{1}{2}$  an inch broad.

Series 2. LACHNEA (from *λαχνη*, down). *Waxy, rarely fleshy, externally hairy or villous from the persistent distinct veil. Cup closed when young.*

Subgenus 5. SARCOSCYPHA (from *σαρξ*, flesh, and *συφοζ*, a cup). *Fleshy or carnosomembranaceous. Crust none.*

24. *P. coccínea*, Jacq. (*carmine Peziza*); cup infundibuliform, externally as well as the stem whitish tomentose with short adpressed down, disc carmine. *Bolt. t.* 104. *With. v.* 4. p. 305. *Fr. Syst. Myc.* v. 2. p. 79. *Grev. Fl. Ed.* p. 421. *Sc. Crypt. Fl. t.* 171. *Johnst. Fl. Berw.* 2. p. 152.—*P. epidendra*, *Sow. t.* 13 (marked 12.). *Purt. v.* 2 & 3. n. 1035.

On sticks, often penetrating through the soil in woods, &c. Spring. Not uncommon.—*Cup* 1 inch or more broad, deep carmine within. *Stem*  $\frac{1}{2}$ —1 inch high. This and the two next species are allied to *P. macropus*, but are placed here on account of their distinct veil.

25. *P. melástoma*, Sow. (*black and red Peziza*); cup fleshy, sprinkled externally with a brick-red bloom, disc urceolate black, stem rooting by means of thick black strigose down. *Sow. ! t.* 149. *Fr. Syst. Myc.* v. 2. p. 80.—*P. rhizopus*, *A. & S. t.* 1. f. 4.—*P. atro-rufa*, *Grev. Sc. Crypt. Fl. t.* 315.

On branches of *Calluna vulgaris*, &c., lying on the ground. Autumn and spring. Hexham, *Mr. Francis Scott*. Auchindenny wood, near Edinburgh, *Dr. Bainbridge*.—A comparison of Sowerby's specimens, one of which consists of a close tuft of seven individuals, with some from Mougéot in *Dr. Hooker's Herbarium*, and of the figures of Sowerby, Alb. and Schw., and Greville, together with the whole account given by Fries, has convinced me that they all intend one and the same species, the striking characteristic of which is the brick-red bloom, very visible in Sowerby's specimens, though noticed neither in the plate nor description. The species evidently varies greatly as to degree of pubescence, being sometimes almost naked, sometimes beset with down or even bristly hairs; the base, however, is always furnished with long, black, rooting, strigose filaments.

26. *P. radiculáta*, Sow. (*rooting white and yellow Peziza*); somewhat tufted fleshy sessile at first hemispherical then expanded, disc sulphur-yellow, externally as well as the thick root white villous. *Sow. ! t.* 114. *Fr. Syst. Myc.* v. 2. p. 81.—*P. Sowerbea*, *Pers. Myc. Eur.* 1. p. 232.

On litter, and earth in a garden, rooted up to the cup. *Wanstead.*

Oct.—Somewhat reticulated externally, with irregular prominent veins; 1 inch or more broad. The plant of Ray, which Sowerby supposes may be the same, is clearly something of a very different nature.

27. *P. hemisphérica*, Wigg. (*hemispherical Peziza*); sessile hemispherical waxy externally brownish, clothed with dense fasciculate hairs, disc white with a glaucous tinge. *Pers. Syn.* p. 647. *Fr. Syst. Myc.* v. 2. p. 82.—*P. languinosa*, *Bull. t.* 396. f. 2. *Purt. v.* 2. n. 1042.—*P. hispida*, *With. v.* 4. p. 311. *Sow. t.* 148. *Purt. v.* 2. n. 1043. v. 3. p. 462.—*P. Labellum*, *Bull. t.* 204.—*P. hirsuta*, *Holmsk. 2. t.* 19.—*Elvellia albida*, *Schæff. t.* 151.

On the bare earth, in woods, &c., especially on a clay soil. Not uncommon.—*Cup* 2 lines—1 inch broad, varying much in colour. *Sporidia* represented by *Hedwig. Ad. v.* 2. t. 4. B., as containing two *sporidiola*. Two of Holmskiöld's figures represent the orifice of the cup as closed more or less with a thin bluish-white membrane. *P. minuta*, *Dicks.*, quoted by Purton, seems to differ altogether.

28. *P. brúnnea*, A. & S. (*brown hemispherical Peziza*); sessile hemispherico-depressed somewhat flexuous brown hairy externally with short fasciculate hairs. *Alb. Schw. Consp. t.* 9. f. 8. *Fr. Syst. Myc.* v. 2. p. 83. *El. v.* 2. p. 8. *Cord. in St. Deutsch. Fl. v.* 2. t. 28. ?—*P. hybrida*, *Sow. t.* 369. f. 1.

On the ground. Lambeth, *Sowerby*.—"Smaller than the foregoing, 1—3 lines broad, often flexuous by reason of its dense mode of growth, when young subglobose, but soon more expanded and depressed; hairs less distinct, scarcely ciliating." *Fr. l. c.* The plant of Sowerby appears much more properly referred to this species than to *P. hirta*.

29. *P. vitellina*, *Pers.* (*egg-yellow Peziza*); somewhat tufted rather large flexuous bright yellow, margin beset with bristles. *Pers. Myc. Eur.* 1. p. 257. *Fr. Syst. Myc.* v. 2. p. 84.

On the ground. Autumn. Appin, *Capt. Carmichael*.—No specimens appear to have been preserved, but I have a distinct recollection of Captain Carmichael finding this species in company with myself and the Rev. R. T. Lowe.

30. *P. scutellata*, *L.* (*shield-like Peziza*); flat vermilion-red, paler externally, hispid towards the margin with black straight hairs. *L. Succ. p.* 458. *Sow. t.* 24. *Bull. t.* 10. *With. v.* 4. p. 310 (*in part*). *Purt. v.* 2 & 3. n. 1036. (*exc. syn.*) *Fr. Syst. Myc.* v. 2. p. 85. *Grev. Fl. Ed. p.* 420 (*in part*). *Johnst. Fl. Berw. (in part)*.

Rotten wood, mill-wheels, &c. Not uncommon.—Often confounded with *P. stercorea*. Under *Peziza sculleata*, *Withering* includes *P. granulata*, *leucoloma*, *stercorea*, &c. Possibly both Dr. Johnstone and Dr. Greville have met with *P. umbrosa*, as they evidently include some very nearly allied species growing on the bare soil. *Cup* 3 lines broad.

31. *P. cœrulea*, *Bolt.* (*blue Peziza*); plane ciliated black and smooth externally, hairs soft pallid, disc bright blue. *Bolt. t.*

108. *f.* 2. *Pers. Myc. Eur.* 1. *p.* 257. *Fr. Syst. Myc.* v. 2. *p.* 86.

On putrid wood, in moist places under fir-trees : very rare. Burk's Hall near Halifax. Oct. Bolton.—About 2 lines broad.

32. *P. stercórea*, *Pers.* (*dull-scarlet dung Peziza*) ; gregarious concave dingy scarlet beset near the margin with brown hairs, orifice ciliated. *Pers. Myc. Eur.* 1. *p.* 246. *Fr. Syst. Myc.* v. 2. *p.* 87.—*P. scutellata*, *Bolt. t.* 108. *f.* 1. *Grev. Fl. Ed.* *p.* 420 (*in part*). *Johnst. Fl. Berw. (in part)*.—*P. ciliata*, *Bull. t.* 438. *f.* 2.—*P. equina*, *Sow. t.* 352.

On cow-dung, &c., extremely common.—*Paraphyses* simple, not capitate as in *P. granulata*, which frequently accompanies it. *Setæ* jointed. Yellowish or greenish in decay ; 1—2 lines broad.

33. *P. albo-spadicea*, *Grev.* (*white and brown Peziza*) ; “sessile gregarious globose at length quite plane, external surface and margin strigose with reddish-brown hairs, hymenium white.” *Grev. Fl. Ed.* *p.* 420.

“On the bare soil, in moist woods, autumn. Foxhall near Edinburgh, *Messrs. Wauch & Greville*.—A fine species, about 2 lines broad globose when young, gradually becoming plane. *Hymenium* white, smooth, with a slight tinge of grey in moist weather. Externally covered with reddish brown hairs, which form also a border to the hymenium.” *Grev. l. c.* Nearly allied apparently to *P. livida*, *Fr.* (*P. scutellata*, *Batsch. Cont.* 1. *f.* 154.)

34. *P. erecta*, *Sow.* (*cylindrical Peziza*) ; sessile densely gregarious subcylindrical varying from deep-red to yellow more or less pubescent and ciliated. *Sow. t.* 369. *f.* 10, 11. *Fr. Syst. Myc.* v. 2. *p.* 69.—*P. variabilis*, *Pers. Myc. Eur.* v. 1. *p.* 248.

“On very wet moss in damp places.—*Cup* 2 lines high, oblong and upright, but sometimes short and clumsy, often spreading ; sometimes destitute of hairs, sometimes ciliated, sometimes furnished with both hairs and ciliæ ; varying from deep red to greenish yellow and pale yellow.” *Sow. l. c.* This species is placed by Fries in the series *Aleuria* and subgenus *Humaria* ; but its affinity seems to be much nearer to the species of the present subgenus, if indeed it be not a form of *P. theleboloides*, A. & S. The smooth state on moss may possibly be *P. axillaris*. Unfortunately no specimens appear to have been preserved.

Subgenus 6. **DASYSCYPHA** (from *δασυς*, *villous*, and *στυφος*, *a cup*). *Cup* waxy, dry, villous. *Crust* none.

35. *P. virginica*, *Batsch*, (*virgin-white Peziza*) ; stipitate pure white, cup hemispherical clothed externally with thick-set patent hairs. *Batsch. El.* *p.* 125. *Holmsk. 2. t.* 14. *Fr. Syst. Myc.* v. 2. *p.* 90. *Grev. Fl. Ed.* *p.* 421.—*P. nivea*, *Sow. t.* 65. *With. v.* 4. *p.* 302. *Purt. v.* 2 & 3. *n.* 1029.—*P. lactea*, *Bull. t.* 376. *f.* 3.

In the hollow of rotten stumps, sticks, mast leaves, &c. Abundant

everywhere.—Gregarious. *Cup* 1 line high, externally pilose, the margin ciliated and often studded with dew-drops.

36. *P. nivea*, Hedw. fil. (*snowy Peziza*); stipitate pure white, cup top-shaped, externally villosa-tomentose. *Fr. Syst. Myc.* v. 2. p. 90.—*P. clandestina*, Bull. t. 416. f. 5.

Sticks, &c. Probably not uncommon. Apethorpe, Norths., *Rev. M. J. Berkeley*.—"Differs from the foregoing in the nature of the down; stem less distinct, incrassated upwards, villous; cup less expanded." *Fr. l. c.*

37. *P. calycina*, Schum. (*white and orange Peziza*); stipitate bursting forth infundibuliform, externally clothed with whitish wool, disc flattish more or less orange. *Schum. Swell.* p. 424. *Fr. Syst. Myc.* v. 2. p. 91.—*P. calyciformis*, Butsch. *Cont.* 1. f. 135.—*Oct. calyciformis*, Hedw. *Ad. t. 22. B.* With. v. 4. p. 303.—*P. pulchella*, Grev. *Fl. Ed.* p. 421. *Fr. Scler. Suec.!* n. 456.— $\beta$ . *abietis*; when fresh of a golden egg-yellow, stem blackish at the base. *P. crysothralma*, Pers. *Myc. Eur.* v. 1. p. 259.—*P. pulchella*,  $\beta$ . *flavo-coccinea*, A. & S. p. 323. *Pers. Myc. Eur.* v. 1. p. 260.— $\gamma$ . *Laricis*. *Chaill. Fr. El.* 2. p. 8.—*P. pulchella*, *Johnst. Fl. Berw.* 2. p. 149.

$\alpha$ . On the bark of fallen Scotch firs. Scotland, *Capt. Carmichael. Klotzsch in Hook Herb.*— $\beta$ . Appin, *Capt. Carmichael*.— $\gamma$ . on fallen larch boughs. Abundant everywhere in Scotland.—*Cup* 1—2 lines broad varying greatly in colour and in the length of the stem, often fasciculate. The specimens referred to *var. \beta*. are sulphur-coloured, densely villous, subpulverulent; the disc also appears to have been yellow. *P. bicolor*, *Sow.!* t. 369, f. 7., is, I have no doubt, on an inspection of specimens, a state of this species with the disc more hollow than usual. At any rate, it is not *P. Aspegrenii*, Fr., as it belongs clearly to the present subgenus.

38. *P. bicolor*, Bull. (*two-coloured Peziza*); nearly sessile globose tomentose white, disc inclining to orange. *Bull. t.* 410. f. 3. *Sow.!* t. 17. *Purt.!* v. 2. n. 1050.

On fallen branches, especially of oak. Sowerby.—Purton's plant appears perfectly identical with Sowerby's. It is, however, considered by Klotzsch as the variety of *P. virginica*, with a coloured disc.

39. *P. cerinea*, Pers. (*wax-coloured Peziza*): hemispherical furfuraceo-villous yellowish-olive, disc concave yellow. *Pers. Syn.* p. 651. *Moug. & Nest. crs.* n. 687. *Fr. Syst. Myc.* v. 2. p. 92. *Grev.!* *Fl. Ed.* p. 422.—*A. hydnoidea*, *Johnst.!* *Fl. Berw.* v. 2. p. 150.

On wood, especially on the cut surface of stumps. Common.—Scattered or gregarious. *Cup* closed when dry, clothed with yellow branny pubescence. *Stem* short or obsolete. Purton's *P. cerinea*, is, according to specimens in Dr. Hooker's Herbarium, *P. anomala*.

40. *P. clandestina*, Bull. (*brownish Peziza*); stipitate top-shaped fawn-coloured, externally furfuraceo-villous, disc pallid.

*Fr. Syst. Myc.* v. 2. p. 94. *Dub. Bot. Gall.* 2. 746. *Johnst. Fl. Berw.* v. 2. p. 150.

On decayed and decorticated branches of a willow, in Longridge Dean; *Johnstone*. Kensington gardens on grass, Feb. *Sowerby*.—I have gathered a form of the same species on grass, with the stem black at the base.

41. *P. albovioláscens*, A. & S. (*proliferous Peziza*); nearly sessile depressed firm clothed with villous hairs generally closed, disc pallid. *A. & S. t.* 8. *f.* 4. *Fr. Syst. Myc.* v. 2. p. 96. *Johnst. Fl. Berw.* v. 2. p. 149.—*P. fallax*, *Pers. Myc. Eur.* 1. p. 266.

On branches of trees, rotten wood, &c. Near Berwick, on Furze, *Dr. Johnston*. Northamptonshire, *Rev. M. J. Berkeley*.—Remarkable for the deep-black flesh beneath the generally proliferous *hymenium*; occasionally when the villosity has vanished, the *cup* is also black externally. Wallroth has observed the *asci* crumpled, which confirms the notion of its not being a true *Peziza*, and brings it within the genus *Patellaria*; but repeated observations only can justify the removal. Besides the state figured by *Alb. & Schw.*, I have met with what I consider a form of this species, not above half the size, and the flesh not so decidedly black, on branches of lilac, vine, &c., and even on the stem of an *Aster*, answering exactly to *P. fallax*, *Pers.*, to which specimens gathered at Appin were referred by Captain Carmichael. This is marked in *Dr. Hooker's Herbarium* by *Klotzsch*, *P. nivea*, but it is quite sessile and the villosity quite of a different nature, not to mention the discoloured *hymenium*. This generally springs from some *Didymosporium* or other minute subcortical fungus.

42. *P. melaxántha*, *Fr.* (*black and yellow Peziza*); sessile minute, externally farinaceo-villous greyish-yellow, disc rather concave black. *Fr. Syst. Myc.* v. 2. p. 97.

On fallen decorticated branches of beech. Appin, *Capt. Carmichael*.—Gregarious; very minute. At first globose, greyish-yellow, at length quite flat; border sometimes flexuous in crowded specimens. A very elegant species.

43. *P. hispidula*, *Schrad.* (*minute black hispid Peziza*); sessile subcarnose slightly hispid black, disc concave dirty-white. *Schrad. Journ. Bot.* 1779. 2. p. 64. (*vide Fr.*) *Fr. Syst. Myc.* v. 2. p. 98.

On wood. Appin, *Capt. Carmichael*.—"Cup subcarnose, 1—1½ line broad, beset with black shining hairs." *Fr. l. c.*

44. *P. Schumachéri*, *Fr.* (*Schumacher's Peziza*); sessile small hemispherical tomentose brown, disc nearly plane brown-purple. *Fr. Syst. Myc.* v. 2. p. 98. *El.* 2. p. 9.—*P. fusca*, *Schum. Scell.* p. 434.—*b.* disc lead-coloured. *P. cærulescens*, *Schum. l. c.*—*P. plumbea*, *Grev. Sc. Crypt. Fl. t.* 11. *Johnst. Fl. Berw.* p. 150.—*P. Schumacheri*, *β. cærulescens*, *Fl. Dan. t.* 1786. 1.

On wood, chips, &c. *b.* Common in England and Scotland:—Often much resembling *P. cinerea*.

45. *P. rufo-olivacea*, A. & S. (*brown and olive Peziza*); sessile plane externally villosopulverulent of a dirty rufous inclining to ferruginous, disc greenish-olive at length black. *A. & S. t. XI. f. 4. Fr. Syst. Myc. v. 2. p. 99. Mart. Erl. p. 464.*

On dead branches of bramble, rare. Appin, *Capt. Carmichael*.—Martius has found it on *Viburnum*, and *Ribes*.

46. *P. rhabarbarina*, Berk. (*minute Rose Peziza*); minute sessile disseminated plane or slightly convex ochraceo-ferruginous, externally clothed with tawny mealy pubescence, flesh bright rhubarb-coloured.

On dry but not fallen branches of roses, in woods. Frequent in Northamptonshire.—The whole branch is sprinkled with minute scattered dots, resembling the shield of a *Lichen*, fixed by a single point into the bark, so that where they have been rubbed off a little hole is seen in the bark with raised edges, filled with the bright rhubarb-coloured flesh of the base of the cup which can scarcely be called a stem. The disc is darker when dry and quite flat with a very narrow border, but when moistened it often becomes convex and is then of an ochraceous hue, bordering on ferruginous. *Asci* clavate. *Sporidia* oblong. I have in vain searched for any record of this species, though it is so common that I can hardly persuade myself that it is undescribed.

47. *P. variegata*, Fr. (*various coloured Peziza*); sessile hemispherical orbicular rather firm flocculoso-villous, disc white at length pallid. *Fr. Syst. Myc. v. 2. p. 100.—P. sulphurea, Pers. Ic. et. Descr. p. 31. t. 8. f. 5, 6.—P. hydnoidea, Sow. t. 178.*

On rotten wood. *Sowerby*.—"Gregarious, sessile but not adnate; when young or dry, closed, granuliform; when moistened, soon expanded; disc concave, of a peculiar pallid hue; margin often granulated with *floci*." *Fr. l. c.*

48. *P. episphæria*, Mart. (*parasitic Peziza*); sessile plane white, externally beset with long hairs like ciliae, disc dilute yellow. *Mart. Erl. p. 465. Fr. Syst. Myc. v. 2. p. 100.*

On *Sphaeria multiformis* and *undulata*. Appin, *Capt. Carmichael*.

49. *P. pineti*, Batsch, (*white and brown fir-cone Peziza*); sessile adnate nearly plane firm subvillous whitish-brown, disc white with a pallid tinge. *Batsch, Cont. 1. f. 140. Fr. Syst. Myc. v. 2. p. 101. Relh. Cant. p. 557. With. v. 4. p. 309.*

On fir-cones. Autumn. Maddingley Plantations, *Relhan*.

50. *P. papillaris*, Bull. (*papillose Peziza*); sessile concave clothed with hairy down milk-white, margin granulated. *Bull. t. 467. f. 1. Sow. ! t. 177. Fr. Syst. Myc. v. 2. p. 102.*

On wood, *Sowerby*.—"Gregarious, thickset, not adnate, waxy, rather firm, scarce 1 line broad, regular, margin entire, denticulated; closed when dry, granuliform, persistent, so slightly tinged with yellow that it can scarcely be called straw-coloured." *Fr. l. c.*

51. *P. hyalina*, Pers. (*transparent Peziza*); sessile punctiform subglobose, when moist pellucid, externally slightly pilose. *Pers. Syn. p.* 655. *Fr. Syst. Myc. v. 2. p.* 132.

On stumps, especially on the inside of the bark. Winter. Very common in Northamptonshire, *Rev. M. J. Berkeley*.—Gregarious, extremely minute, very thin, soft, often irregular, white at length turning yellowish in patches. When dry it resembles minute grains of white sand scattered over the brown bark.

52. *P. sulphúrea*, Pers. (*sulphur-coloured Peziza*); sessile subglobose strigoso-tomentose sulphur-coloured, disc pallid. *Pers. disp. p.* 33. *Fr. Syst. Myc. v. 2. p.* 104. *Scler. Suec. ! n.* 453. *Grev. Sc. Crypt. Fl. t.* 83. *Fl. Ed. p.* 420.—*P. hydnoidea*, *Purt. v. 2 & 3. n.* 1049.

On stems of herbaceous plants, especially nettle. Spring. Common.—Often brown when dry.

53. *P. plano-umbilicáta*, Grev. (*white umbilicated Peziza*); small sessile gregarious, whole plant white globoso-concave at length quite plane ciliated with horizontal white hairs at the margin, hymenium gently umbilicated. *Grev. Fl. Ed. p.* 420.

On the decayed stems of *Urtica dioica*. Summer and autumn. *Capt. Wauch.*—Of the same size as the preceding, wholly white, remarkably plane with a small dimple in the centre of the hymenium, which in old age assumes a yellowish tinge. The external surface is covered with white hairs which form a beautiful ciliated margin, not in the least raised. The margin is so regular, that, if there had been fewer ciliæ, it might have been called pectinate." *Grev. l. c.*

54. *P. villósa*, Pers. (*villous granuliform Peziza*); sessile minute persistent globose villous white orifice subconnivent. *Pers. Syn. p.* 655. *Fr. Syst. Myc. v. 2. p.* 104.—*P. granuliformis*, *Pers. Syn. p.* 651. *Grev. Fl. Ed. p.* 421. *Johnst. Fl. Berw. v. 2. p.* 140.—*P. sessilis*, *Sow. t.* 389. *f. 1. Purt. v. 2 & 3. n.* 1048.

On twigs, stems of herbaceous plants, &c. Common.—Open only in wet weather; cups  $\frac{1}{4}$ — $\frac{1}{2}$  a line broad scattered or much crowded.

55. *P. Grévilii*, Berk. (*Dr. Greville's Peziza*); sessile gregarious very minute, cups farinoso-subtomentose (subhirsute, *Grev.*) pale umber. *P. nidulas*, *Grev. Fl. Ed. p.* 420. *Johnst. Fl. Berw. v. 2. p.* 149.

On the stems of larger herbaceous plants. Autumn. Near Edinburgh, *Dr. Greville*. Near Berwick on the cow-parsnip, *Dr. Johnstone*.—*Dr. Greville's* plant is certainly, from a comparison of authentic specimens with those published by Mougéot and Nestler, not the plant of those authors, as *Dr. Johnston* rightly suspected. It differs in colour, in the nature of the external coat, and above all in its being nearly free, while that is almost immersed. It appears to approach near to *P. micacea*, *Pers.*, but is of a firmer consistence, insomuch that *Dr. Greville* describes it as coriaceous. Several species undoubtedly belonging to this subgenus, collected by *Captain Carmichael*, appear



in Dr. Hooker's Herbarium, probably quite new, but it is not advisable to publish new species of *Peziza* from dried specimens only.

Subgenus 7. TAPESIA (from *ταπη*; a carpet). *Cups waxy or coriaceous, seated upon a subtomentose crust.*

56. *P. anomala*, Pers. (*anomalous Peziza*); more or less stipitate densely compacted incrusting, cups turbinate villous fawn-coloured, disc urceolate dirty-white. *Pers. ! Syn. p. 656. Fr. Syst. Myc. v. 2. p. 106.*—*P. rugosa*, Sow. ! *t. 369. f. 3.*—*Trichia faginea*, Johnst. *Fl. Berw. v. 2. p. 191.*—*P. barbata*, Klotzsch in Hook. *Herb.*—*P. cerinea*, Purt. *MSS.*

On fallen trunks, branches, &c., both on the bark and wood, sometimes covering a whole tree in patches.—*Subiculum* often obsolete. *Cups* more or less crisped when dry. The first appearance is not at all that of a *Peziza*, but rather of a resupinate *Polyporus*, the structure of which it and its allied species most admirably illustrate. I am enabled to determine Dr. Johnstone's plant cited above by the help of an authentic specimen marked "*Trichia fallax?*"

57. *P. aurélia*, Mong. (*woolly Peziza*); sessile subventricose golden-yellow, subiculum thin paler. *Pers. Myc. Eur. v. 1. p. 270. Mong. & Nest. exs. n. 783. Grev. Syn. Spec. p. 28.*—*P. Wauchii*, Grev. *Scot. Crypt. Fl. t. 139.*

On the bare ground, on leaves, mast, &c. Rare. Foxhall, near Edinburgh. *Capt. Wauch.*—*Cup* 1—2 lines broad, woolly. *Subiculum* radiating. A most beautiful species.

58. *P. doméstica*, Sow. (*plaster Peziza*); sessile gregarious obovate villous salmon-coloured, subiculum thin white. *Sow. ! t. 351. Fr. Syst. Myc. v. 2. p. 107.*

On newly plastered ceilings and walls which admit the rain.—"It first clothes the places that have been wetted with a fine cottony or membranaceous film nearly as white as the plaster, which is in a short time partly covered with salmon-coloured knobs. These at length form a kind of upright *Peziza*, externally villous." *Sow. l. c.* The dried specimens do not retain any of their villosity, which, consequently, though represented as erect must be extremely delicate. I have thought proper, therefore, to retain it, for the present, in the place originally assigned by Fries, notwithstanding the fresh observations in the *Eleo-chus* as to its identity with *P. diversicolor*.

59. *P. casia*, Pers. (*blue-eyed Peziza*); sessile depressed villous dirty-white, the base immersed in a subiculum of long interwoven hairs, disc subgelatinous bluish. *Pers. Syn. p. 657. Ditm. in St. Deutsch. Fl. t. 31. Fr. Syst. Myc. v. 2. p. 108.*—*P. lichnoides*, Pers. *l. c. et Descr. t. 8. f. 1, 2. Purt. ! MSS.*

On fallen oak-branches. Rare. Appin, *Captain Curmichael*. It has been found in England by *Mr. Baxter*.

60. *P. errática*, Fr. (*brown-eyed Peziza*); sessile granuliform villous white, surrounded at the base with long lax hairs, disc wax-like black. *Fr. Syst. Myc. v. 2. p. 108.*

On Beech chips. Feb. Apethorpe, Norths. *Rev. M. J. Berkeley.*

—Spreading for two or three inches over beach chips. *Cups*  $\frac{1}{2}$  of a line broad, sometimes irregular proliferous, moderately close depressed, sessile, but occasionally elongated at the base, villous, border white subconnivent, beneath pale dirty-yellow, at length moderately expanded; disc brown black not at all blue; *hymenium* very thin, much paler than the black flesh; *subiculum* loosely interwoven at first dirty-white, then in patches pale yellow, the border of the cups however is permanently snow-white. *Asci* short, obtuse, thick. When dry the younger individuals have much the appearance of *Sphaeria ovina*.

61. *P. Róscæ*, Pers. (*rose-branch Peziza*); sessile subcoriaceous concave subtomentose, bright-brown as well as the tomentose subiculum. *Pers. Ob. 2. p. 82. Fr. Syst. Myc. v. 2. p. 109. Scler. Suec.! n. 252.—Myrothecium hispidum, Tod. Meck. 1. f. 41.*

On dry branches of *Rosa canina*. Appin, *Captain Carmichael*.—Forming small roundish patches on the branches, sometimes surrounding them.

62. *P. fúscæ*, Pers. (*brown crowded Peziza*); sessile cups concave smooth towards the margin brown, at length depressed cinereous fixed by hairs to a broad tomentose dark-brown subiculum. *Pers. Syn. p. 657. Myc. Eur. v. 2. p. 272. Fr. Syst. Myc. v. 2. p. 109. Scler. Suec.! n. 292. Grev.! Scot. Crypt. Fl. t. 192.—P. pruni avium, Pers. Myc. Eur. v. 2. p. 273.*

On fallen branches in moist situations. Spring. Appin, *Captain Carmichael*. Lasswade, *Dr. Greville*.—Spreading in patches 2 inches or more wide.

Subgenus 8. FIBRINA (from *fibra*, a *fibre*). *Waxy or coriaceous, fibrillose or striated with scattered adpressed fibres.*

63. *P. boláris*, Batsch, (*red-ochre Peziza*); infundibuliform, cup hemispherical fibrilloso-venous subochraceous; disc brown, stem at length blackish. *Batsch, Cont. 1. f. 155. Fr. Syst. Myc. v. 2. p. 112.*

On dry fallen branches. Autumn. Appin, *Captain Carmichael*.—*Stem* very variable in length; in the same groupe 1—2 lines or more high. *Cup* 1—2 lines broad, when young villous, soon however losing its villosity.

Series III. PHIALEA (from *φιάλη*, a *broad shallow cup*). *Waxy or membranaceous, rarely gelatinous, smooth, naked.*

Subgenus 9. HYMENOSCYPHA (from *μυνη*, a *membrane*, and *συνφως*, a *cup*). *Cup submembranaceous, distinctly stipitate. Hymenium distinct, thicker than the receptacle.*

64. *P. firma*, Pers. (*ochrey-brown Peziza*); cup infundibuliform at length dilated repand ochrey-brown, stem long attenuated downwards at length blackish. *Pers. Syn. p. 658. Fr. Syst. Myc. v. 2. p. 117. P. ochroleuca, Bolt. t. 105. f. 1. Sow. t. 115. With. v. 4. p. 306. Purt. v. 2 & 3. n. 1032. Grev. Fl. Ed. p. 422.*

On sticks in woods. Autumn. Common.—Gregarious, leathery when fresh, hard when dry. *Cup*  $\frac{1}{4}$ — $\frac{1}{2}$  an inch broad. *Stem*  $\frac{1}{2}$ —2 inches high. Varying in colour from whitish-ochre to brown.

65. *P. fructigena*, Bull. (*mast Peziza*); tough smooth pallid, at length yellowish, cup patelliform, stem long thin flexuous. *Bull. t.* 228. *Sow. t.* 117. *With. v.* 4. *p.* 307. *Purt. v.* 2 & 3. *n.* 1034. *Fr. Syst. Myc. v.* 2. *p.* 18. *Greav. Fl. Ed. p.* 422.

On nuts, acorns, beech-mast, &c. Woods. Common.—*Cup* 1—2 lines broad; *pileus*  $\frac{1}{4}$ —1 inch high, shallow from the thickness of the flesh.

66. *P. serótina*, Pers. (*amphibious Peziza*); bright yellow, cup plano-convex rather thin, stem short firm thickish. *Pers. Syn. p.* 661. *Alb. & Schw. Consp. p.* 331. *Fr. Syst. Myc. v.* 2. *p.* 119.—*Helv. aurea*, *Bolt. t.* 98.

On sticks, stalks of plants, &c., in moist and watery places; *Bolton*.—*Cup*  $\frac{1}{4}$  of an inch broad. According to *Alb. & Schw.*, who describe a variety occurring in spring and early summer, it sometimes grows almost in the water itself.

67. *P. infléva*, Bolt. (*triangular-toothed Peziza*); stipitate dirty-white, cup subhemispherical, margin fringed with long flat subtriangular teeth of the same colour as the cup. *Bolt. t.* 106. *f.* 2. *Sow. t.* 306. *With. v.* 4. *p.* 306. *Purt. v.* 2 & 3. *n.* 1031. *Fr. Syst. Myc. v.* 2. *p.* 120. *Greav. Fl. Ed. p.* 422.—*P. coronilla*, *Pers. Myc. Eur. v.* 1. *p.* 287.

On the stems of nettles, *Helianthus tuberosus*, chestnut-petioles, &c. Autumn and early winter. Not uncommon.—All the specimens I have seen agree exactly with Sowerby's plant, which has the teeth shaped like those of the outer peristome of an *Hypnum*. Bulliard describes the ciliæ in his plant as black. I have seen no specimens of *P. coronata*, but cannot help suspecting that there is not sufficient ground for separating the present species.

68. *P. Persoonii*, Mong. (*mare's-tail Peziza*); cup urceolate orange with a prominent membranaceous pale orifice, stem cylindrical pink. *Mong. in Pers. Myc. Eur.* 1. *p.* 288. *t.* 12. *f.* 1—4. *Fr. Syst. Myc. v.* 2. *p.* 121. *Greav. Scot. Crypt. Fl. t.* 162.—*Lycoperdon Equiseti*, *Hoffm. Veg. Cr. II. t.* 5. *f.* 1.—*P. Equiseti*, *With. v.* 4. *p.* 305.

Bogs and moist places, on various species of *Equisetum*. Rare. Duddingston Loch near Edinburgh, *Dr. Greville*.

69. *P. Campanula*, Nees, (*bell-shaped Peziza*); tender delicate, cup even membranaceous campanulate unequal white or yellowish, stem short filiform. *Nees, Syst. f.* 295. *Fr. Syst. Myc. v.* 1. *p.* 123. *Greav. Fl. Ed. p.* 423.

On small twigs and stems of dead herbaceous plants, in moist woods. Foxhall near Edinburgh, *Captain Wauch.* Newliston woods, *Dr. Greville*. Margate, in a chalk pit, *Rev. M. J. Berkeley*.—Extremely delicate, membranaceous, white or slightly yellowish; *mouth* widely

open without being expanded, unequal. It varies greatly in size on the same twig, the larger being 2 lines in diameter, the smaller not one.

70. *P. cyathœidea*, Bull. (*cup-like Peziza*); thin dirty-white pallid, cup globoso-cyathiform at length expanded quite entire, stem rather long filiform. *Bull. t.* 316. *f.* 2. *Fr. Syst. Myc. v. 2. p.* 124. *Scler. Succ.!* n. 454.—*P. cyathoides*, *Purt. v. 3. n.* 1503.—*P. pedicellata*, *Sow.!* *t.* 369. *f.* 4.

On stems of herbaceous plants, &c. Aug.—April. Everywhere. *P. cyathoides*, With., in the earlier editions, is *P. citrina*, in the last edition it is the present species, so far as the citation of *P. pedicellata* is concerned.

Subgenus. 10. CALYCINA (from *calyx*, a cup).—*Cup between waxy and fleshy, firm, obconic, substipitate. Hymenium distinct, thinner than the receptacle.*

71. *P. Tuba*, Bolt. (*Trumpet Peziza*); yellow, cup top-shaped, disc plane margin swollen, stem long slender. *Bolt. t.* 106. *f.* 1. *Fr. Syst. Myc. v. 2. p.* 128.—*Merulius tubæformis*, *With. v. 4. p.* 146.

On fallen branches and stems of plants in moist places. Near Halifax, *Bolton*. Appin, *Captain Carmichael*.—*Plant*  $\frac{1}{2}$  an inch or more high.

72. *P. Buccina*, Pers. (*grooved-stemmed Peziza*); rather large infundibuliform dull-yellow, stem incrassated striated somewhat incurved. *Pers. Syn. p.* 659. *Fr. Syst. Myc. v. 2. p.* 129.

On wood and pine branches. Rare. Appin, *Captain Carmichael*.

73. *P. calyculus*, Sw. (*yellow-brown Peziza*); yellowish-brown, cup concave with an elevated margin, stem short thick clothed with dirty-white down. *Sow.!* *t.* 116. *With. v. 4. p.* 307. *Purt. v. 2 § 3. n.* 1033. *Fr. Syst. Myc. v. 2. p.* 129.—*P. infundibulum*, *Grev. Fl. Ed. p.* 423.

On decorticated branches, twigs, acorn-cups, &c. Woods. Not uncommon.—About 2 lines high.

74. *P. æruginosa*, Pers. (*verdigris Peziza*); verdigris-green, cup turbinate, at length expanded and more or less flexuous, stem short. *Pers. Obs. 1. p.* 27. *Syn. p.* 663. *Fr. Syst. Myc. v. 2. p.* 130. *Grev. Sc. Crypt. Fl. t.* 241.—*Helv. æruginosa*, *Dicks. Crypt. fasc. 2. p.* 24. *Sow. t.* 347. *With. v. 4. p.* 299. *Pers. Syn. p.* 617. *Purt. v. 3. n.* 1496.

On rotten branches, stumps, &c. Not uncommon.—Staining the wood on which it grows for a considerable depth of a deep verdigris-green (*Chromosporium viride*, Cord.); in thickish branches the whole substance is frequently impregnated, so that a section presents a very curious appearance.

75. *P. citrina*, Hedw. (*lemon-coloured Peziza*); gregarious, cups plano-convex forming together with the short paler stem

an inverted cone. *Batsch, Cont. 2. f. 218. Sow. t. 151. Fr. Syst. Myc. v. 2. p. 131. Grev. Fl. Ed. p. 424.*—*Octosp. citrina, Hedw. Ad. t. 8. f. B.*

On trunks and branches. Autumn and early winter. Common.—I am by no means certain that the plant I have in view is identical with that of Fries though undoubtedly it is that of Sowerby and answering perfectly to the character given above, and apparently different from *P. aurea*, *Sow. t. 150*, referred by Fries to *P. lenticularis*, specimens of which appear not to differ at all from *P. citrina*, *Mouy. and Nest. n. 784*. My plant does not change colour when dry, nor when crowded become confluent, as is the case in the specimens published by Mougeot and Nestler, which accord with the observations of Persoon. Specimens from Purton are marked by Klotzsch, *P. pallescens*, but this is at variance with the whole account of Hoffman, Persoon and Alb. and Schw.

76. *P. pallescens*, Pers. (*pallid Peziza*); gregarious smooth pale yellow or whitish changing to pallid, cup concave, stem short rather thick pallid. *Pers. Syn. p. 664. Fr. Syst. Myc. v. 2. f. 132.*—*P. lenticularis, Hoffm. Fl. Germ. Crypt. t. 13.*

On sawn wood, chips, &c., generally accompanying a small species of *Torula*. Autumn.—White at first, then of a beautiful apricot-colour, which is retained by the dried plant; rather crisp,  $\frac{1}{2}$  a line broad; margin distinct, sometimes flexuous. Stem and cup, which together form an inverse cone, sometimes marked externally with transverse ridges. Persoon remarks the circumstance of its growing on a black crust, which accords with my observation of its being accompanied by a *TORULA*, which is figured by Hoffman and is usually referred to *T. antennata*, though in reality quite different and very much smaller.

77. *P. cribrósa*, Grev. (*sieve-like Peziza*); black solitary rather large very concave, hymenium cribriform or full of lacerated irregular pores and sinuses. *Grev. Fl. Ed. p. 423. Lond. Hort. Brit. p. 455.*

On the ground, in sandy or gravelly places, amongst short grass. Autumn. North-west of Scotland. *Messrs. Hooker & Greville. Balmuto, Dr. Greville.*—“Large,  $\frac{1}{2}$ —1 inch broad, hemispherical, at length partly spreading, but always deeply concave, wholly black, but deeper within, somewhat rugose at the base externally; margin entire, even.” *Grev. l. c.*

78. *P. clavo-fláva*, Grev. (*clear yellow Peziza*); “yellow gregarious minute obconical, at length somewhat plane, margin raised obtuse externally somewhat paler.” *Grev. Fl. Ed. p. 424.*

On decayed wood and branches of trees. Autumn. Braid Hermitage, near Edinburgh.—Very minute, the largest not half a line broad, always concave. Whole plant very bright yellow. *Hymenium* darker.” *Grev. l. c.*

79. *P. lenticuláris*, Bull. (*Lentil Peziza*); convex adpressed firm yellow, stem papilliform at length blackish. *Bull. t. 300. f. a. c. Fr. Syst. Myc. v. 2. p. 133.*—*P. aurea, Sow. t. 150. (according to Fr. Fl. 2. p. 11.)*

On old trunks, *Sowerby*.—I shall only add here to the observations made under *P. citrina*, that if the plant of Moug. & Nest. be the true *P. citrina* the synonym of Sowerby must be again restored to the place first assigned by Fries, and it must be left to future observation to determine whether the plant called *P. citrina* by Sowerby be really different or no.

80. *P. ochracea*, Grev. (*obconic ochrey-brown Peziza*); “ochrey-brown minute gregarious thick carnose obconic, hymenium minutely granular, at length plane or subconvex.” *Grev. Sc. Crypt. Fl. t. 5. Fr. El. p. 425.*

“On fallen trunks and branches of trees. Autumn. Braid Hermitage, near Edinburgh. *Dr. Greville*.—Not 1 line broad, thick, puckered or rugose at the base, margin equal or subirregular, rounded and depressed. *Hymenium* sprinkled with minute shining particles resembling grains of brown sugar. In drying it does not change.” *Grev. l. c.* Very near *P. salicella*, Fr.

81. *P. tricolor*, Sow. (*three-coloured Peziza*); hemispherical marginate, disc yellowish, externally greyish, stem very short nearly white. *Sow. t. 369. f. 6. Fr. Syst. Myc. v. 2. p. 134.*

On wood. Ripon, *Mr. W. Brunton*.—From the figure I should imagine that the outer surface is pubescent; if so the species cannot be rightly placed here.

82. *P. herbárum*, Pers. (*flat whitish Peziza*); gregarious fleshy adpressed convex, sometimes depressed, stem extremely short. *Pers. Syn. p. 664. Fr. Syst. Myc. v. 2. p. 136. Grev. Fl. Ed. p. 424. Moug. & Nest. exs. n. 785.*

On the stems of herbaceous plants, especially the nettle. Autumn. Everywhere.

83. *P. fagínea*, Pers. (*beech-mast Peziza*); minute, cup flattish dirty-white, stem short thick. *Pers. Syn. p. 6. 64. Fr. Syst. Myc. v. 2. p. 136. Johnst. Fl. Berw. v. 2. p. 150.*

On beech-mast and “decayed twigs and straws in damp woods.” *Johnst. l. c.* Autumn.

84. *P. Marchántiæ*, Berk. (*pale brown Peziza*); rather thick obconic pale yellowish-brown marginate flexuous, disc flat.

On fading *Marchantia hemispherica*. May. Whittlesea Mere, Hunts. *Rev. M. J. Berkeley*.—Smooth,  $1\frac{1}{2}$  line broad, cup quite confluent with the thick stem so as to be irregularly and obtusely obconic; flesh white. *Hymenium* thin. *Asci* clavate; *sporules* in a single row, elliptic. A very distinct species.

Subgenus 11. MOLLISIA. (from *mollis*, soft). *Cup waxy but tender, watery, sessile or obconic.*

85. *P. phascoídes*, Fr. (*pallid moss Peziza*); minute pallid with a brick-red tinge, cup plain turbinate, stem short nearly equal. *Fr. Syst. Myc. v. 2. p. 138.*

On small mosses. *Mr. W. Wilson*, apparently on half-grown *Splachnum ampullaceum*. *Mr. Wilson's* specimens are subgregarious and

perhaps of a less red tinge, as far as may be judged from the dry plant, but there is no doubt that they are what Fries intends.

86. *P. conigena*, Pers. (*pallid fir-cone Peziza*); of a waxy-watery consistence minute at length pallid, cup nearly plane immarginate, stem short thick at length obliterated. *Pers. Syn. p. 634. Fr. Syst. Myc. v. 2. p. 139. Grev. Fl. Ed. p. 425.*

On cones of the Scotch-Fir. Foxhall, near Edinburgh, *Captain Wauch.*

87. *P. chrysócoma*, Bull. (*minute tawny Peziza*); sessile subgelatinous smooth yellow-tawny at length turning pale, spherical when young, gradually becoming depressed in the centre. *Bull. t. 376. f. 2. Sow. t. 152. Fr. Syst. Myc. v. 2. p. 140. Scler. Succ. ! n. 331.*

On fir wood, common.—The plant of Purton is the young state of *P. citrina*.

88. *P. vinósa*, A. & S. (*vinous red Peziza*); minute sessile subtremellose nearly plane smooth quite entire pale vinous-red. *Alb. & Schw. Consp. p. 308. Pers. Syn. p. 685. Fr. Syst. Myc. v. 2. p. 141.*

On fallen, decorticated branches, especially of Oak. Aut.—Spring. Appin, *Captain Carmichael*. Oundle, Norths. *Rev. M. J. Berkeley.*—When dry it is much more concave and appears to be held down by gelatinous filaments, which vanish as the plant swells on the application of moisture and assumes a much paler tint.

89. *P. atrovirens*, Pers. (*dark-green Peziza*); sessile minute crowded subtremellose, when young globose green, when full-grown hemispherical, disc plane of the same colour with a flesh-coloured tinge. *Pers. Syn. p. 635. Fr. Syst. Myc. v. 2. p. 141. Grev. Fl. Ed. p. 425.*

On decaying wood, &c. Appin, *Captain Carmichael*. Foxhall, near Edinburgh; *Captain Wauch*. Swanston wood, *Dr. Greville.*—A state has been found at Appin on wood, forming tolerably regular lines owing to the texture of the wood, but scattered on the smoother portions, in this respect agreeing with *P. seriata*, Pers, but even more convex than the usual form and not at all of a darker green.

90. *P. cinérea*, Batsch, (*cinereous Peziza*); sessile soft minute shield-like cinereous, margin quite entire white. *Batsch, Cont. 1. f. 137. Sow. t. 64. With. v. 4. p. 312. Purton. v. 2 § 3. n. 1044. Fr. Syst. Myc. v. 2. p. 142. Grev. Fl. Ed. p. 425.*—*P. callosa*, Bull. t. 416. f. 1.

On wood, branches, &c. Autumn—Spring. Everywhere.—“Crowded, 1—2 lines broad, either equal or lobed and waved at the margin. *Hymenium* pale or dark-grey, watery, paler towards the circumference. *Substance* soft and sometimes almost gelatinous.” *Grev. l. c. P. rimosa*, Sow. ! t. 369. f. 12. is not a true *Peziza*.

91. *P. axilláris*, Nees, (*moss-stem Peziza*); sessile vasculiform orange paler at the base, margin obtuse. *Nees, Syst. f. 267. Pers. Myc. Eur. p. 314. Fr. Syst. Myc. v. 2. p. 145.*

In the axillæ of Moss-leaves, rare. Scottish Alps. Aug. 1831.

On *Splachnum mnioides*, Mr. Arnott.—Plant  $\frac{1}{4}$ — $\frac{3}{4}$  of a line high. “Cup at first ovate, closed, then urceolate, of a soft waxy consistence, margin quite entire; when dry scarlet, persistent.” *Kl. MSS.* In the two last points the present plant differs from the description of Fries, who says that when dry it acquires a brownish tinge and is subevanescent.

92. *P. xanthostigma*, Fr. (*golden-dot Peziza*); sessile minute submembranaceous smooth concave orbicular golden yellow. *Fr. Obs.* 1. p. 166. *Syst. Myc.* v. 2. p. 146.

On rotting fir-wood. Captain Carmichael.—Distinguished from *P. chrysocoma* by its more hollow thinner cup, and less tender consistence. I have however gathered, on soft decorticated oak-branches, a species equally minute, but of a more tawny yellow and less excavated, almost exactly intermediate. *P. vinosa*, *Purt. MSS.*, as far I can judge from very imperfect specimens, appears to be a form of the present species.

93. *P. leucostigma*, Fr. (*white-dot Peziza*); sessile minute submembranaceous smooth nearly plane white, disc with a slight cinereous tinge. *Fr. Obs.* 1. p. 165. *Syst. Myc.* v. 2. p. 146.

On soft rotten wood; common.—Very minute, dirty-yellow when dry. Scattered, at first appearing under the form of an urceolate dot, in which state it appears under a powerful lens most minutely rugulose and fixed down by a few delicate white threads, then quite flat with a narrow border, white with the slightest possible cinereous tinge in the centre; in decay dirty-yellow or even grey. Not more than  $\frac{1}{2}$  a line broad. Possibly the plant I have in view may be only a state of the next species, as the cinereous tinge is so slight; but it appears to differ in several points.

94. *P. vulgaris*, Fr. (*common Peziza*); sessile subcæspitose membranaceous soft smooth dirty-white, at length pallid. *Fr. Syst. Myc.* v. 2. p. 146.— $\beta$ . *diaphana*; scattered, urceolate, then flat of a semi-transparent dirty-white or brownish. *Sow. t.* 389. f. 7.

$\beta$ . On the under-side of rotten sticks. *Sowerby*.

95. *P. erumpens*, Grev. (*sycamore-petiole Peziza*); minute of a waxy-watery consistence smooth sessile grey erumpent. *Grev. Sc. Crypt. Fl.* t. 99.

“On sycamore petioles. Late in autumn. Auchindenny woods, near Edinburgh.—Resembling to the naked eye an *Hysterium*, when dry; in moist weather distending the small slit in the back of the petiole, till it attains its round form, when the margin projects over the edge of the fissure.” *Grev. l.c.* Surely distinct from *P. vulgaris* by its peculiar habit.

96. *P. punctata*, Grev. (*yellow-dot Peziza*); bright yellow very minute gregarious punctiform globular, at length plane or subconvex, margin minutely crenate. *Grev. Fl. Ed.* p. 424.—*P. punctiformis*, *Grev. Sc. Crypt. Fl.* t. 63.

On dead oak and beech leaves. Balmuto, near Edinburgh.



97. *P. atráta*, Pers. (*small blackish Peziza*); sessile subglobose smooth, orifice connivent whitish. Pers. *Syn.* p. 669. Nees, *Syst. f.* 266. Fr. *Syst. Myc.* v. 2. p. 148. Scler. *Succ.* n. 452. Johnst. *Fl. Berw.* p. 148.

On wood and stems of herbaceous plants. Berwick, Johnston. Apthorpe. Norths. Rev. M. J. Berkeley.—Scattered or gregarious 1 line or more broad, blackish with a livid subolivaceous tinge, the border nearly white; globose at first, but when crowded often irregular; rugulose under a lens. My specimens approach  $\beta$ . *Ebuli*.

Subgenus 12. PATELLEA. (from *patella*, a saucer). Cup of a dry waxy consistence, sessile, flattened at the base or innate, marginate.

98. *P. Abbottiána*, Sow. (*Mr. Abbott's Peziza*); sessile dry saucer-shaped, externally blue, disc yellow.

Bedfordshire, Mr. Abbot.—A very doubtful species; probably a *Lichen*. Fries however has received a real *Peziza* from Weinmann, according with the above character.

99. *P. meluxántha*, Fr. (*smooth black and yellow Peziza*); sessile of a dry waxy consistence saucer-shaped, externally blackish, margin quite entire, disc yellowish. Fr. *Syst. Myc.* v. 2. p. 150.—*P. xanthomela*,  $\beta$ . *epiáyla*. Alb. & Schw. *Consp.* p. 338.

On dry dead wood. Appin, Captain Carmichael.—Scattered or gregarious, 1 line or more broad, sometimes flexuous.

100. *P. compréssa*, A. & S. (*compressed Peziza*); sessile innate thin blackish, disc black, when dry compressed shell-like. Alb. & Schw. *Consp.* p. 340. Fr. *Syst. Myc.* v. 2. p. 152.

On hard wood. Perennial. Appin, Captain Carmichael.—Cup often brownish.

101. *P. flexélla*, Fr. (*black flexuous Peziza*); immersed compressed very minute concave variously flexuous, black. Fr. *Syst. Myc.* v. 2. p. 152.

On rotting pine-wood. Perennial. Appin, Captain Carmichael.—Smaller than the foregoing, purer black.

Subgenus 13. HELOTIUM. (from *ἡλός*, a nail.) Hymenium always open, naked, plano-convex, receptacle at length hollow beneath.

102. *P. fibuliformis*, Bolt. (*button-shaped Peziza*); firm, head convex yellow black-brown beneath as well as the short thick stem. Fr. *Syst. Myc.* v. 2. p. 155.—*Helv. fibuliformis*, Bolt. t. 176. With. v. 4. p. 299.—*Pez. fibula*, Pers. *Syn.* p. 660.—*Helotium fibula*, Pers. *Myc. Eur.* v. 1. p. 345.

103. *P. agaricína*, Carm. (*green button-shaped Peziza*); firm dark green convex rather uneven, margin revolute, stem rather thick obconic. Carm. MSS.

On wood. Appin. *Captain Carmichael*.—Plant  $1\frac{1}{2}$ —2 lines broad, very much resembling at first sight *Helotium virens* (Pers. in litt.) but on closer inspection quite different, being a true *Peziza* with long flexuous obtuse asci, whereas the plant of Persoon certainly belongs to the Order *Lichenes*, and is probably only a state of *Biatora vernalis*. The specimens I have seen are however very different from the figure given by Alb. & Schwein. of *Pez. virens*, the shields being large and very irregular.

104. *P. sclerotioïdes*, Berk. (*Sclerotium-like Peziza*); convex umbilicate clear red-brown concave beneath and confluent with the short obconic stem.

On wood. Appin. *Captain Carmichael*.—At first sight resembling *Sclerotium quercigenum*, but on dissection proving a true *Peziza*, with slender *asci*. About 1 line broad.

105. *P. aciculáris*, Bull. (*pin Peziza*); white smooth head convex, stem equal elongated. *Fr. Syst. Myc. v. 2. p. 156.*—*Helv. acicularis*, Bull. t. 473. f. 1.—*Helv. agariciformis*, Bolt. t. 98. f. 1. *With. v. 4. p. 296.* *Sow. t. 57.* *Purt. v. 2 & 3. n. 1014.*—*Helotium aciculare*, Pers. *Syn. p. 677.*

On roots and in hollow stumps. Aug.—Dec. Not common. Sowerby however pronounces it very common. Near Halifax, *Bolton*. Pophills, *Mrs. Rufford*. Appin, *Captain Carmichael*.—Care must be taken not to confound with it gill-less forms of *Agaricus epiphyllus*.

106. *P. subtilis*, Fr. (*minute button Peziza*); white minute rather firm, head plano-convex, stem short slender. *Fr. Syst. Myc. v. 2. p. 157.*—*Helotium subtile*, Fr. *Obs. Myc. v. 2. p. 311.*

On fir-leaves. Appin, *Captain Carmichael*.—Stem not 1 line high, somewhat attenuated. *Head* 1 line broad, at length slightly convex." *Fr. l. c.*

## 28. PATELLÁRIA. *Fr.* Patellaria.

*Cup* open, margined, disc somewhat pulverulent, destitute of a veil. *Asci* connate, without paraphyses. Substance tough.—Named from *patella*, a saucer.

1. *P. atráta*, Hedw. (*black Patellaria*); subcoriaceous shield-like sessile flat black, margin tumid, disc subpruinose. *Fr. Syst. Myc. v. 2. p. 160.* *Scler. Succ.!* n. 336.—*Lichen atratus*, Hedw. *Ad. 2. t. 21. A.*—*Pez. pattellaria*, Pers. *Syn. p. 670.* *Nees, p. 257. t. 265. B.*

On wood. Appin, *Captain Carmichael*.—*Asci* large, obtuse "bursting forth when the plant is immersed in water," filled with a mass of minute granules (naked spores). I have not been able to discover any rings as figured by Nees von Esenbeck.

## 29. ASCÓBOLUS. *Pers.* Ascobolus.

*Cup* nearly plane. *Asci* projecting beyond the surface of the *hymenium*, at length bursting forth elastically.—Named from *ασκος*, a vessel, and *βαλλω*, to project.

1. *A. urfuráceus*, Pers. (*common Ascobolus*); sessile slightly concave brown or greenish externally furfuraceous. *Pers. Obs. 1. t. 4. f. 3—6. Fr. Syst. Myc. v. 2. p. 163. Grev. Fl. Ed. p. 426. Scot. Crypt. Fl. t. 307.—Pez. stercoraria, Bull. t. 376, 433. f. 4. Sow. t. 18, 389. f. 3—6. With. v. 4. p. 309.—P. fusca, Bolt. t. 109. f. 2. With. v. 4. p. 309.—P. violacea, Relh. 558.—P. atra, Huds. 637. With. v. 4. p. 313.*

On cow-dung; all the year. Very common.—*Sporidia* black. I have found, however, a plant, apparently the same, 1—2 lines broad, with a plane thick cup, externally dirty-green and furfuraceous, within brownish with a purplish tinge, having sporidia of the most beautiful amethyst-purple, when seen by transmitted light.

2. *A. vinosus*, Berk. (*vinous Ascobolus*); sessile at first globose then depressed smooth dull purple; orifice laciniate.

On a mole-hill overgrown with moss, and covered with rabbits' and sheeps' dung.—*Cup* 1 line broad adhering by branched threads, at first globose, then nearly plane opening with about 5 laciniae, which as it expands are again divided. *Asci* nearly linear, thickest at their tips.

3. *A. ciliátus*, Schmidt, (*fringed Ascobolus*); sessile subhemispherical smooth orange, disc plane, margin swollen white fringed with white hairs. *Schmidt, in Myc. Hest. 1. p. 90. Pers. Myc. Eur. v. 1. p. 340. Fr. Syst. Myc. v. 2. p. 164.*

On cow-dung. Autumn. Appin, in company with *Asc. furfuraceus. Captain Carmichael.*—Extremely like *Peziza stercorca*, but the hairs are white. The *asci* are very large for the size of the plant, and are not altered by drying. *Sporidia* broadly elliptic.

4. *A. gláber*, Pers. (*smooth Ascobolus*); sessile minute smooth shining somewhat convex marginate. *Pers. Obs. 1. t. 4. f. 7. Syn. p. 667. Fr. Syst. Myc. v. 2. p. 164.*

On cow-dung. Autumn. Norths., *Rev. M. J. Berkeley.*—My specimens are rather larger than common, of a vinous hue, like that in Nees' figure, and the *asci* are nearly equal, with evident paraphyses. The colour appears to be very variable; *Bernhardi* describes it as orange or white.

5. *A. Trifolii*, Bernh. (*clover Ascobolus*); sessile epiphyllous minute rather plane smooth pale yellow. *Biv. Bernh. St. Rar. t. 6. f. 3. Fr. Syst. Myc. v. 2. p. 165. Desm! Pl. Cr. n. 520.*

On living clover leaves. Appin, *Capt. Carmichael. Berwick. Dr. Johnston.*

### 30. BULGÁRIA. *Fr. Bulgaria.*

*Cup* at first closed. *Asci* immersed, accompanied by *paraphyses*, at length free, and bursting forth. Gelatinous.—Named from *bulga*, a *leathern bag*.

1. *B. inquinans*, Pers. (*pitch-black Bulgaria*); top-shaped firm externally rugulose furfuraceous umber, disc nearly plane pitch-black. *Fr. Syst. Myc. v. 2. p. 167.—Pez. inquinans, Pers.*

*Syn.* p. 631. *Hook. Fl. Scot.* 2. p. 32.—*P. nigra*, *Bull.* t. 460. f. 1, 116. *Moug. & Nest. exs. n.* 197.—*P. polymorpha*, *With.* v. 4. p. 312. *Sow.* t. 428. *Purt.* v. 2 & 3. n. 1046.

On old stumps and pollard trees, as ash, oak, beech, &c. Autumn and winter. Not uncommon.—Tough, elastic, gelatinous, dark-brown or chocolate, almost black, wrinkled and rough externally, disc sometimes lacunose; *stem*, in general blunt, almost obsolete. Sometimes fasciculate and confluent. *Asci* long, obtuse, containing large elliptic brown *sporidia*, each containing a *sporidiolum*.

2. *B. sarcoides*, *Jacq.* (*flesh-like Bulgaria*); *cæspitose* polymorphous rather firm reddish-purple, externally somewhat veiny, disc hollowed out. *Fr. Syst. Myc.* v. 2. p. 168.—*Lichen sarcoides*, *Jacq. Misc.* 2. t. 22.—*Helv. sarcoides*, *Bolt.* t. 101. f. 2.—*Pez. sarcoides*, *Pers. Syn.* p. 633. *Grev. Fl. Ed.* p. 423.—*P. tremelloides*, *Bull.* t. 410. f. 1. *Fr. amethystea*, *With.* v. 4. p. 72.

On old stumps; autumn and winter. Common.—This is confounded by most of the earlier English writers on Fungi with *Tremella sarcoides*, which some of its forms very strongly resemble, but it may be known by its firmer substance, and the presence of *asci*, which produce elliptic *sporidia*, each containing two globose *sporidiola*.

### 31. DITÍOLA. *Fr.* Ditiola.

*Hymenium* at length plicate, deliquescent. *Cup* open. *Veil* universal. Corky.—Name from *δίτρος*, double, and *ισυλός*, down.

1. *D. radicata*, A. & S. (*rooting Ditiola*); disc nearly plane golden-yellow, stem thick white villous rooting. *Fr. Syst. Myc.* v. 2. p. 170. *Scler. Succ.!* n. 295. *Loud. Hort. Brit.* p. 455.—*Helotium radicatum*, *Alb. & Schw. Cons.* t. 8. f. 6.

On barked pine-trees.—Inserted in Loudon's *Hortus Britannicus*, but whether on any other authority than the synonym of Fries (" *P. fibule*, var. *ex. Angl.*") and the doubtful reference to *Clavaria coccinea*, Sow. (which is nothing more than *Tubercularia vulgaris*), I am unable to say.

### 32. TÝMPANIS. *Tode.* Tympanis.

*Hymenium* not persistent, but at length cracking and breaking up. *Cup* open. *Veil* partial. Between horny and coriaceous.—Named from *τυμπαλον*, a drum.

1. *T. álnea*, *Pers.* (*alder Tympanis*); somewhat stipitate opaque umber-black, cup subflexuous margined. *Fr. Syst. Myc.* v. 2. p. 174.—*Pez. álnea*, *Pers. Syn.* p. 673.

On Alder. Appin, *Captain Carmichael*.—Minute, at first resembling a *cæspitose Sphæria*; externally brownish.

2. *T. fráxini*, *Schwein.* (*ash-tree Tympanis*); nearly sessile turbinato-truncate shining black, disc plane rugose margined. *Fr. Syst. Myc.* v. 2. p. 174.

On dry ash-branches. Winter and spring. Appin, *Captain Car-*

*michael*.—"Breaking through the bark in small fascicles, consisting of a few individuals only, which increase in breadth from the base; margin prominent, obtuse, flexuous; disc opaque rather solid, punctato-rugose." *Fr. l. c.*

3. *T. conspersa*, Fr. (*common Tympanis*); tufted; cups at first closed subglobose naked black soon open whitish and pulverulent from the fragments of the broken veil. *Fr. Syst. Myc. v. 2. p. 175. Scler. Succ. ! n. 12, 171. Grev. Scot. Crypt. Fl. t. 335. Purt. ! MSS. Pez. aucupariæ, Pers. Myc. Eur. v. 1. p. 327. Grev. Fl. Ed. p. 426. P. Pyri, Pers. Syn. p. 671. P. spheroides, Roth. in Ust. Ann. Hef. 1. t. 1. f. 6.*

On branches of *Rosaceæ*. Perennial. Common in Scotland. Bagley wood, Oxford. On crab trees destroyed by the sedge having taken fire, *Mr. Baxter*.—*Peziza populnea*, Pers., quoted by Dr. Greville under this species, belongs to *Peziza fascicularis*. The generic character, as given in the Scottish *Crypt. Fl.*, scarcely embraces the distinguishing feature of the genus, which is that the *hymenium* at length breaks up and becomes deintegrated.

### 33. CENÁNGIUM. Fr. Cenangium.

*Hymenium* even, persistent, rarely deliquescent. Cup closed, at length open, more or less coriaceous, consisting of two distinct coats, the outer coriaceous or membranaceous, the inner subgrumous.—Named from *zevos*, empty, and *αγγιον*, a vessel.

1. *C. Cerasi*, Pers. (*Cherry-tree Cenangium*); subcæspitose, of no determinate form, at first tuberculate rugose argillaceous-rufous, at length unfolding into blackish cups which are plane above. *Fr. Syst. Myc. v. 2. p. 179. Purt. ! MSS. Pez. Cerasi. Pers. Syn. p. 673. Moug. & Nest. exs. n. 494. Purt. v. 3. n. 1502. Grev. ! Fl. Ed. p. 426.—junior, Sphæria dubia, Pers. Ic. pict. t. 20. f. 1.—Dermea Cerasi, Fr. Scler. Succ. ! n. 430.*

On dead branches of the wild cherry-tree. Common. I find a form very much resembling  $\beta$ . *Padi* on the common Laurel.

2. *C. Prunastri*, Pers. (*Plum-tree Cenangium*); subcæspitose, of a somewhat horny consistence naked blackish, cup at first awl-shaped, at length open concave substipitate. *Fr. Syst. Myc. v. 2. p. 180.—Pez. Prunastri, Pers. Syn. p. 673. Grev. ! Fl. Ed. p. 425.—Sphæria Prunastri, Purt. ! v. 3. n. 1588.*

On branches of *Prunus spinosa*, &c. Autumn and winter.—Bursting through the bark, in the guise of awl-shaped bodies, which gradually become depressed in the centre and at length expanded into a cup. This is not however peculiar to the present species, as *Cenangium Cerasi* sometimes puts on the same form. Indeed, some true *Peziza*, as *P. Buccina*, *P. tuberosa*, &c., when young have a somewhat similar aspect. *Cenangium Ribis*, another species allied to this and the foregoing, has been admitted into the list of British Fungi by Mr. Purten; but his specimens, on dissection, prove to belong to *Sphæriu Strumella*.

3. *C. Aucupáriae*, Pers. (*Mountain-ash Cenangium*); tufted black clothed with dirty-white meal, cup at first closed elongated subcylindric, at length open. *Fr. Syst. Myc. v. 2. p. 181.*—*Sphæria Aucupariæ*, Pers. *Syn. p. 51.*—*Pez. Aucupariæ*, *Grev. Fl. Ed. p. 426.*

On branches of the mountain-ash. Autumn—Spring. Craiglockhart, *Dr. Greville*. Appin, *Captain Carmichael*.—This and the two foregoing species in some states resemble so closely certain *Sphæria*, that they cannot always be safely determined without analysis, though nothing can be more clear than their real nature.

4. *C. pulveráceum*, A. & S. (*powdered Cenangium*); gregarious blackish covered with dense cinereous powder, cup subglobose but together with the stem top-shaped. *Fr. Syst. Myc. v. 2. p. 181.*—*Pez. pulveracca*, *Alb. & Schwein. Consp. t. 8. f. 2.*—b. stem branched. *P. ramosa*, *Ehrenberg.*

b. On wood. Appin, *Captain Carmichael*.

5. *C. fuliginósum*, Fr. (*dingy brown Cenangium*); cups irregular dingy brown crowded into broad patches, disc pale, growing in a widely effused more or less ambient subiculum. *Fr. El. 2. p. 23.*

On branches of Sallows. Rockingham Forest, *Rev. M. J. Berkeley*. There is also an unnamed specimen in Sowerby's Herbarium received many years since from *Mr. Purton*.

6. *C. ferruginósum*, Fr. (*ferruginous Cenangium*); gregarious coriaceo-membranaceous nearly sessile rugose subpruinose reddish-black, orifice compressed inflexed spreading when moist, disc yellow. *Fr. Syst. Myc. v. 2. p. 187.* *Scler. Suec. ! n. 292, 429.* *Grev. Sc. Crypt. Fl. t. 197.*—*Pez. abietis*, *Pers. Syn. p. 671.* *Moug. & Nest. exs. n. 399.* (but not the specimens first published.) *C. pinastri*, *Klotzsch ! exs. n. 46.*

On the smaller branches of the Scotch Fir. Common in Scotland.—*Cups* covered with ferruginous powder.

7. *C. quercinum*, Pers. (*oak-twig Cenangium*); simple gregarious elongated flexuous at first closed, pruinose subcinereous, at length open, disc broad pallid. *Fr. Syst. Myc. v. 2. p. 189.* *Purt. ! MSS.*—*Hysterium quercinum*, *Pers. Syn. p. 110.* *Moug. & Nest. exs. n. 367.* *Fr. Scler. Suec. ! n. 130.* *Grev. Fl. Ed. p. 366.*—*Sphæria collapsa*, *Sow. ! t. 373. f. 3.*

On small dead or half-dead branches of the oak, still attached to the tree. Extremely common.—When young it bears, as has been well remarked, a close resemblance to some worm burrowing beneath the smooth bark. *Asci* very long, clavate, exceedingly attenuated below like soldering-irons.

### 34. STICTIS. Pers. Stictis.

*Hymenium* even, immersed. *Cup* more or less obliterated. *Asci* slender, without paraphyses. *Sporidia* minute.—Named from *στικτός*, dotted.

1. *S. sphæralis*, Fr. (*sphæroid Stictis*); bursting forth hemispherical brown-black urceolate, orifice entire contracted, disc plane black. *Fr. Syst. Myc. v. 2. p. 194. Purton MSS.*

On dead decorticated branches of the ash. Winter. *Mr. Baxter.*—Introduced entirely on the authority of Mr. Purton: I have seen no specimen.

2. *S. radiata*, Linn. (*eyelet-hole Stictis*); immersed orbicular, border entire or variously notched and lacinated snow-white pulverulent. *Pers. Syn. p. 674. Fr. Syst. Myc. v. 2. p. 194. Grev. Scot. Crypt. Fl. t. 227. Baet. ! exs. n. 80.—Pez. marginata, With. v. 4. p. 308. Sow. t. 16.—Melanostroma fusarioides, Corda in St. Deutsch. Fl. t. 61.—Lycoperdon radiatum, Linn. Sp. Plant. v. 4. p. 624.*

On wood, branches, twigs, stems of herbaceous plants, &c. Aut.—Spring. Common.

3. *S. pallida*, Pers. (*pallid Stictis*); gregarious immersed punctiform pallid, orifice subconnivent subelliptic. *Pers. Obs. 2. p. 74. t. 6. f. 7. (fide Fr.) Fr. Syst. Myc. v. 2. p. 196. Scler. Succ. ! n. 275.—Pez. punctiformis, Pers. Syn. p. 674.*

On wood. Appin, *Captain Carmichael.*—Scattered, minute, elliptic or subrotund; two individuals sometimes growing close together and having a common partition; yellowish, surrounded by a narrow spurious border of the same colour. The wood on which it grows is white, but I do not perceive any peculiar discoloration round the orifice.

4. *S. Sieróstoma*, Carm. (*dot-mouthed Stictis*); very minute punctiform prominent blackish, opening with a minute round or subelliptic orifice. *Carm. MSS.*

On wood. Appin, *Captain Carmichael.*—Scattered; at first nearly white, with a minute orifice, round which it gradually assumes a darker hue, and at length, under a high magnifier, appears when moist of a subolivaceous black. Resembling a minute *Sphaeria*, and apparently distinct from *S. hemispharica*, Fr.

5. *S. paralléla*, Fr. (*parallel Stictis*); erumpent linear at first closed, then open, disc reddish-brown obliterating the margin black when dry. *Fr. Syst. Myc. v. 2. p. 197. Scler. Succ. ! n. 95. Grev. in Loud. Hort. Brit. p. 455.—Hyst. abietinum, Pers. Syn. p. 101.*

On dead fir-wood. Probably very common, though apparently hitherto only observed by *Dr. Greville.* The habit is that of *Hysterium*, but if attention be paid to the character given above, there will be little danger of mistaking the plant intended.

6. *S. longa*, Fr. (*elongated Stictis*); scattered immersed surrounded by the prominent wood very long, attenuated at either end, open through its whole length. *Fr. Ind. Alph. p. 105. Syst. Myc. v. 2. p. 594. Hysterium longum, Pers. Syn. p. 99.*

On wood. Scotland, *Hook. Herb.*—"Very long, about 1½ line. Black, livid within, half immersed in the wood. Sometimes 2—3 specimens are confluent." *Pers. l. c.*

35. CRYPTÓMYCES. *Grev.* Cryptomyces.

*Hymenium* even, irregular, at length exposed. *Cup* obliterated. *Asci* large, accompanied by *paraphyses*. *Sporidia* large, containing *sporidiola*.—Named from κρυπτω, to conceal, and μυκης, a fungus.

1. *C. Wauchii*, *Grev.* (*willow Cryptomyces*); broad suborbicular olivaceous, at length nearly black. *Grev.!* *Sc. Crypt. Fl. t. 206. Fr. El. v. 2. p. 27.*

On willow-branches. Foxhall near Edinburgh, *Capt. Wauch.*—Bursting forth in patches, from a few lines to near an inch in breadth, and surrounded by the torn bark. Reviving perfectly on application of moisture, so that the large *asci* with their elliptic *sporidia* may be easily observed. This plant resembles greatly *Rhytisma maximum*, *Fr.* The epidermis, however, is here thrown off by the growing parasite, not to mention the great difference of structure. Still it is curious that there are decided traces of the white stratum which is so remarkable in *R. salicinum*, a state of which is figured by Sowerby under the name of *Sphæria aurea*, whose figure as far as it goes is excellent, though necessarily imperfect; it has no similarity to *Sphæria flavo-virens*, to which Fries has, though doubtfully, referred it.

2. *C. versicolor*, *Fr.* (*various-coloured Cryptomyces*); immersed oblong or angular furnished with a lacinated spurious margin, disc at length farinaceous.—*Stictis versicolor*, *Fr. Syst. Myc. v. 2. p. 198. Scler. Succ.!* n. 276.—*a.* disc white, at length blackish. *Hysterium fagineum*, *Pers. Syn. p. XXVIII.*—*Tremella saligna*, *Alb. & Schw. Consp. t. 9. f. 7.*—*c.* disc green. *Hyst. viride*, *Fr. Obs. 1. p. 195.*—*Stictis versicolor*,  $\beta$ . *viridis*, *Scler. Succ.!* n. 435. *Stictis nigrita*, *Carm. MSS.*

On wood. *a.* Very common. *c.* Appin, *Capt. Carmichael.*—The *hymenium* resembles a small portion of a transverse slice of the albumen of a cocoa-nut, when it has been exposed a short time to the air. The *asci* are large, the *sporidia* rather large, oblong, containing two or more *sporidiola*, and there are evident slender *paraphyses* when the plant is perfect. If *Cryptomyces Wauchii* is to be considered as belonging to a genus distinct from *Stictis*, for which there are very good grounds, by parity of reasoning the present species must be removed, and as it appears to me, it may very properly find a place in Dr. Greville's genus *Cryptomyces*, the difference being only such as arises from the different nature of the matrix: in the one case, the parasite insinuating itself as it were between the distinct strata, the border is formed by the mere epidermis; in the other case, when the plant originates in a comparatively homogeneous substance, the portion of wood which covers the incipient fungus, acquires a sort of spurious organization, and hence, when it bursts, forms around the *hymenium* a border, which can be considered neither as a mere pellicle of wood, nor as a true *excipulum*.

36. CYPHÉLLA. *Fr.* Cyphella.

*Cup* concave, pendulous; *sporidia* separating like dust. *Asci* none.—Named from κυφελλον, a cup.



1. *C. cuticulosa*, Dicks. (*skinny Cyphella*); minute sessile diaphanous white at first oblong, then cup-shaped. *Fr. Syst. Myc. v. 2. p. 201.*—*Pez. cuticulosa*, Dicks. *Crypt. Fasc. 3. p. 22. t. 9. f. 11.* *With. v. 4. p. 307.* *Purt. v. 3. n. 1501.*

On decayed grass. Oct.—Feb. Rare. First found by *Mr. Forster*.—Another species exists in the Appin collection, but it is not in a sufficiently good condition to determine it accurately.

V. TREMELLINI. *Receptacle various in form, of a more or less gelatinous substance. Sporidia free,\* at length bursting forth.*

### 37. TRÉMELLA. Dill. Tremella.

*Receptacle* gelatinous, homogeneous, bearing fruit all round, destitute of papillæ. *Sporidia* subemergent.—Named from *tremo*, to shake.

1. *T. fimbriata*, Pers. (*fringed Tremella*); clustered erect wrinkled at length black, lobes flaccid their margins incised and undulato-fimbriate. *Pers. Syn. p. 626.* *Myc. Eur. 1. p. 103.* *Fr. Syst. Myc. v. 2. p. 212.*—*Tr. tinctoria*, Pers. *Myc. Eur. 1. p. 101.* *Chev. Par. v. 1. p. 95.*—*T. verticalis*, Bull. t. 272.

On trunks of trees, branches, &c. Autumn. *Sowerby*.—Specimens of this species are contained in Mr. Sowerby's Herbarium, without any label attached. On the authority of these, it is admitted as British; there being no reason to believe that they are of foreign growth. On being placed in water, they almost immediately give out a fine yellowish-brown tinge.

2. *T. foliacea*, Pers. (*leaf-like Tremella*); clustered even pellucid undulated, of a flesh colour strongly tinged with cinnamon, plicate at the base. *Pers. Syn. p. 626.* *Fr. Syst. Myc. v. 2. p. 212.* *Bull. t. 406. f. A. a.*— $\beta$ . *violascens*; smaller purple, at length violet. *Alb. & Schw. Consp. p. 303.*

On stumps of trees.  $\beta$ . Southwick, Norths., *Rev. M. J. Berkeley*.—Of a soft gelatinous consistence, almost watery within.

3. *T. ferruginea*, Smith, (*plaited rusty Tremella*); sessile gyroso-plicate deep red-brown. *Eng. Bot. t. 1452.* *With. v. 4. p. 69.* *Hook. Fl. Scot. 2. p. 32.*—*T. badia*, *Chev. Par. v. 1. p. 95. t. 7. f. 8.*

On dead wood. Lakenham, Norfolk, *Mr. Crowe*. Helensburgh, Dumbartonshire, *Hopkirk*.—"Pliable and tender, becoming thin, shrivelled and shapeless when dry; reviving, though imperfectly on the reapplication of moisture. *Segments* obtuse, lobed and waved, surface finely pubescent or granulated, the granulations pale, giving the plant a velvet-like gloss, with brown irregular specks, perhaps of fructification among them." *Sm. l. c.* Notwithstanding the apparent discrepancy as to one

\* In *Tremella albidia*, however, I have observed distinct subglobose *asci*, and I have reason to believe that they exist in at least one other species.

point, in the accounts of Smith and Chevallier, I cannot help regarding them as having the same production in view. Chevallier describes his plant as "*lisse*," while Smith's is finely pubescent or granulated. In every other respect they agree, especially in not communicating any colour to water in which they are macerated. Fries has taken no notice of either, so far as I can discover, even in his latest publication.

4. *T. mesentérica*, Retz. (*orange Tremella*); rather tough twisted lobed and plicate orange-yellow. Retz, in *Vet. Act. Hand.* 1769. p. 249. (*vide Fr.*). *Eng. Bot.* t. 709. *With.* v. 4. p. 69. *Purt.* v. 2 & 3. n. 882. *Fr. Syst. Myc.* v. 2. p. 214. *Grev. Fl. Ed.* p. 426.—*T. chrysocoma*, Bull. t. 174.

On branches, sticks, &c.; all the year. Frequent.—Varying considerably in size and form; sometimes quite flat and thin, but generally ascending and strongly lobed and plicate; when full grown, consisting of branched easily discernible filaments, towards the apices of which is a dense stratum of roundish very minute *sporules*.—A small round discoid *Tremella* occurs not unfrequently in the hollow stumps of felled trees, which has the same curved *sporidia* as are figured in *Tr. albida*, *Eng. Bot.*, with a few smaller round ones interspersed; but whether contained within the larger ones at first or not, I am unable to say. I have found the same production on Furze, a plant on which *T. mesenterica* abounds. This I suppose must prove the *var. disciformis*, Fr. If not an early stage of *T. mesenterica*, which, however, it can scarcely be, it must be considered as distinct. I have not at present an opportunity of sufficient investigation of the subject, and in no division of Fungi is it less desirable to publish new species with vague characters, than in that of *Tremellini*.

5. *T. cerebrina*, Bull. (*brain-like Tremella*); tough undulated somewhat gyrose dirty-white. Bull. t. 386. *Fr. Syst. Myc.* v. 2. p. 215.

On dead wood, branches, &c. Winter and spring. Much more uncommon than the following species.—I feel certain that the plant figured by Bulliard is quite distinct from that of Smith in *Eng. Bot.* It is much more compact in its mode of growth, exactly resembling the brain of some animal, of a tougher substance, and, if I mistake not, though I do not lay particular stress at present upon the circumstance, the *sporidia* instead of being curved like those of *Tr. albida*, are broadly elliptic or subglobose, with a distinct narrow border. It has generally a more or less decided red tinge. *T. albida*, Smith, which is probably the plant intended by Hudson, is far less complicated in its mode of growth and is of a tender consistence; its *sporidia*, which are strongly curved, exactly resemble those of *Exidia glandulosa*, and I have once observed distinct obovate or subglobose *asci*.

6. *T. albida*, Smith, (*dirty-white Tremella*); tender sessile dilated slightly lobed and waved the edges obtuse, *sporidia* oblong curved. *Eng. Bot.* t. 2117. *Huds.* p. 565?

On fallen trees, branches, &c. Winter and Spring; very common.—"It bursts through cracks in the bark and then spreads itself in horizontal or clustered, rounded, obtuse, scalloped masses, white, semi-pellucid, extremely gelatinous and tender when young; afterwards turning yellowish." *Sm. l. c.* The above description exactly accords

with my plant, as does the figure of the *sporidia*. I have once seen specimens of a small white opaque nucleus at the base, exactly as in *Næmatelia nucleata*. All the specimens, however, on the stick had not the nucleus, and similar bodies are sometimes found immersed in other parts of the frond. I do not find these to consist of masses of sporidia, as figured, possibly by some mistake, by Sowerby.

7. *T. intumescens*, Smith. (*brown tumid Tremella*); "sessile clustered twisted tumid brown shining and gelatinous, when dry thin and membranous." *Eng. Bot. t.* 1870. *With. v.* 4. p. 71. *Fr. Syst. Myc. v.* 2. p. 215. *Hook. Fl. Scot. 2. p.* 32.

On beech-wood. St. Leonard's forest, Sussex, Mr. Borrer. Carmyle, Hopkirk.—"In perfection in very wet weather only, when it forms numerous soft and pulpy clusters, twisted and tumid like the intestines of some animal, of a darkish dull brown, but with a shining surface, obscurely dotted. Inside paler and almost white, except that when cut longitudinally brown vertical streaks are discernible near the surface." *Sm. l. c.* I am inclined to think that this is one of the various forms of *Exidia glandulosa*. At least I have found on a felled decorated oak, a production so similar, that I cannot but think it identical, which I am pretty certain is a barren or immature form of that plant. It differs only from the figure and description in *Eng. Bot.* in being of a deep cinereous tinge, verging upon black.

8. *T. sarcoïdes*, With. (*flesh-like Tremella*); clustered soft viscid of a purplish flesh-colour at first clavate, at length compressed lobed and plicate. *With. v.* 4. p. 68. *Eng. Bot. t.* 2450. *Purt. v.* 2. n. 885 (*in part*). *Fr. Syst. Myc. v.* 2. p. 217. *Greav. Fl. Ed. p.* 427.—*Helv. sarcoïdes*, *Bolt. t.* 101. f. 2.—*T. amethystea*, *Bull. t.* 499. f. 5.

On stumps of trees, &c. Winter; frequent—Distinguishable at once on analysis from *Bulgaria sarcoïdes*, by its minute oblong and sometimes curved, free *sporidia*. *T. amethystea*, With., though some of the synonyms belong to the present species, is apparently *B. sarcoïdes*.

9. *T. clavata*, Pers. (*club-shaped Tremella*); solitary simple, apex incrassated flesh-coloured inclining to red, base blackish. *Pers. Ic. pict. t.* 10. f. 2. *Fr. Syst. Myc. v.* 2. p. 218.

On rotten wood. Appin, Capt. Carmichael.—About 1 inch high, 2 lines broad, blackish below and slightly twisted. Capt. Carmichael's specimens exactly correspond with Persoon's figure, but I am doubtful whether his plant is entitled to rank as a species.

### 38. EXÍDIA. *Fr.* Exidia.

*Receptacle* gelatinous, homogeneous, covered above only with the papillate\* *hymenium*. *Sporidia* at length bursting forth elastically.—Named from *exudo*, to *exude*.

1. *E. Aurícula Judæ*, Linn. (*Jew's Ears*); sessile concave flexuous venoso-plicate without and within, beneath subtomentose olive-cinereous. *Fr. Syst. Myc. v.* 2. p. 221. *Moug. & Nest. ! exs. n.* 993. *Tremella Aur. Jud. Linn. Sp. Plant.* 1625.

\* In some species, however, the papillæ are very obscure.

*Pers. Syn. p. 624. Fr. Syst. Myc. v. 2. p. 221.*—*Peziza Auricula, Linn. Syst. Veg. 15. p. 1018. Lightf. Fl. Scot. p. 1054. With. v. 4. p. 308.*—b. reddish-brown. *Bull. t. 427. f. 2. Eng. Bot. t. 2447.*

On living trees, especially elder. Early autumn and winter; not uncommon.—Plant 1—3 inches or more broad. Upper substance corrugated, the plaits branching from the middle part where they are strongest and somewhat convoluted, so as to give an idea of a human ear. When the plant grows on a perpendicular stump or tree, it turns upwards.” *Sm. l. c.* The last circumstance shows the essential difference between the present plant and *Phlebia mesenterica*, which otherwise would seem to claim a place in this genus, for the absence of papillæ could scarcely be supposed of sufficient importance to exclude it. The tendency in the lower *Pileati* is always to turn the hymenium away from the light, thus approaching a step nearer to the normal form. This, or some very nearly allied species, occurs also in tropical climates.

2. *E. recisa*, Ditm. (*reddish-brown Exidia*); very soft truncate plane or somewhat repand reddish-brown punctato-scarabrous beneath, stem very short excentric oblique. *Fr. Syst. Myc. v. 2. p. 223. T. recisa, Ditm. in St. Deutschs. Fl. t. 13.*—*T. boletiformis, Eng. Bot. t. 1819. Purt. v. 2 & 3. n. 887.*—*Pez. gelatinosa, Bull. t. 460. f. 2. Pers. Syn. p. 633.*

On dry dead branches of Sallows, often while yet attached to the tree. Autumn and winter; common.—About 1 inch broad. *Sporidia* oblong, obtuse, curved, exactly resembling those of *T. albida*.

3. *P. glandulosa*, Bull. (*Witches' Butter*); effused more or less plane thick undulated, at length black, hymenium beset with conical spicules, beneath cinereous subtomentose. *Fr. Syst. Myc. v. 2. p. 224.*—*Tr. glandulosa, Bull. t. 420. f. 1.*—*T. arborea, Eng. Bot. t. 2448. With. v. 4. p. 67. Purt. v. 2. & 3. n. 884. Hook. Fl. Scot. 2. p. 31. Grev. Fl. Ed. p. 427.*—*T. spiculosa, Pers. Syn. p. 624. Moug. & Nest. exs. n. 395.*—*T. flaccida, Eng. Bot. t. 2452.*

On trunks and branches of trees, especially ash. Autumn and winter; frequent.—Varying in colour from whitish to brown and deep cinereous, at length black. Generally somewhat turbinate, slightly plicate below, much wrinkled above; sometimes thin. Substance tender within, firmer towards the hymenium, composed of gelatine interlaced with very slender branched *filaments*, indistinctly moniliform under a high magnifier, covered with oblong obtuse curved *sporidia* between the conical spicules, which are frequently surmounted with a glandular white globule. Beneath, rough like crape, with minute parallel papillæ. Brown specimens, which now and then occur, may be distinguished from the foregoing species, by the more highly developed spicules. *T. flaccida, Eng. Bot.* is a very curious drooping variety.

### 39. NÆMATELIA. *Fr. Næmatelia.*

*Receptacle* gelatinous, surrounding an heterogenous compact nucleus. *Sporidia* bursting forth.—Named from *νημα*, *gelatine*, and *εἰλεω*, to *involve*.

1. *N. encéphala*, Willd. (common *Næmatelia*); nearly sessile pulvinate plicato-rugose pallid flesh-colour, at length brownish. *Fr. Syst. Myc. v. 2. p. 227. Loud. Hort. Brit. p. 456.—T. encéphala*, Willd. in *Bot. Mag. 1. t. 4. f. 14. (fide Fr.) Alb. & Schw. Consp. p. 301.*

On pine wood. Appin, *Capt. Carmichael*.—"Solitary or clustered more or less pulvinate, 4—6 lines broad and thick, firm. When fresh of a dead flesh colour, when dry reddish-brown: *nucleus* large, hard, white, base stem-like." *Fr. l. c.* The specimens referred to the present species were undetermined, and I am not therefore able to assert positively that it is what is intended by authors: the *nucleus* is more than twice as large as in *N. nucleata*, *Schwein.* Besides this authority for its admission into the *British Flora*, there is that of the editor of the *Fungi* in\* *Loudon's Hortus Britannicus.*

#### 40. DACRYMYCES. *Nes.* Dacrymyces.

*Receptacle* gelatinous, homogeneous, filled within with sub-erect *flocci*, and interspersed *sporidia*. Named from *δακρυ*, a tear, and *μυκη*, a fungus.

1. *D. moriformis*, Smith, (*Mulberry Dacrymyces*); clustered into a globular form, sinuated black opaque fleshy, within deep purple. *Fr. Syst. Myc. v. 2. p. 229.—Tr. moriformis, Eng. Bot. t. 2446. With. v. 4. p. 67. Pursh. v. 2. n. 888.*

On exposed wrought wood and sticks. Summer and early autumn. Between Hoodly gate and Measham, Surrey, *Mr. C. E. Sowerby*. *Gorcot Hall, Purton*.—"Sessile, in roundish or oblong tumid sinuous masses of various size, not unlike mulberries in appearance, except being coal-black. Internally of a rich deep purple. *Substance* fleshy, attached by strong central roots. When dried between paper, a violet stain is communicated to whatever the plant touches." *Sm. l. c.* Placed by Fries in the genus *Dacrymyces* and consequently retained in that genus here; but in the absence of all information as to its structure, it appears to me to be much more probably a true *Tremella*.

2. *D. violaceus*, Relh. (*violet Dacrymyces*); small compact somewhat compressed gyrose violet. *Fr. Syst. Myc. v. 2. p. 259.—Hv. violacea, Relh. ed. 3. p. 552.—Tr. violacea, With. v. 4. p. 72. Pers. Syn. p. 623.*

\* I take the present opportunity of stating that it is from no insufficient appreciation of the value of the list of *Fungi* contained in *Loudon's excellent Hortus Britannicus*, that I have not uniformly entered in their places species which rest upon its authority alone. But as there is no ostensible person answerable for its individual correctness, though its general correctness is beyond all doubt, and as I am aware that in the list there are several species which were entered by Dr. Greville, through whose hands it passed, on my own authority, some of which a fuller knowledge of the subject has convinced me were wrongly determined, and the same thing may have taken place in other cases, I have thought it on the whole not desirable to insert species unsupported by any express authority. The number, however, omitted is very small. Where genera appear, of which I have either gathered no species myself, or possess no specimens collected by others, I have deviated from my rule. In its own province, *Mr. Loudon's list* must always be valuable, as giving a fair, though necessarily imperfect, sketch, of *British Mycology*.

On trunks of "pear and apple trees." *Fr.* Cambridgeshire, *Relhan*.—"Erumpent, gregarious, 3—4 lines long, 1 line thick, black when dry." *Fr. l. c.* "Very much like the tartar of port-wine." *Relh. l. c.*

3. *D. stillátus*, Nees, (*common Dacrymyces*); roundish convex at length plicate yellow then orange. *Fr. Syst. Myc. v. 2. p. 230. Scler. Succ.! n. 296. Grev. Sc. Crypt. Fl. t. 159. —Tr. deliquescens, Bull. t. 455. f. 3. With. v. 5. p. 69. Part. v. 3. n. 1423. Grev. Fl. Ed. p. 427.—T. lacrymalis, Pers. Syn. p. 628.*

On wood, especially of fir. Frequent.—Consisting of suberect, rather thick, irregular, branched *filaments*, articulated above; among which, everywhere the *sporidia* are dispersed. It appears from the account of Fries in the *Elenchus, v. 2*, that Nees, *f. 90*, had principally in view *Dacr. tortus, Willd.*; his figure consequently differs somewhat from the very accurate one of Dr. Greville. The comparatively large, obtuse, jointed threads, will at once distinguish this from small specimens of *Tr. mesenterica*, not to mention the soft and pulpy consistence.

#### 41. AGÝRIUM. *Fr.* Agyrium.

*Receptacle* convex or spherical, even, compact, wax-like, when moist gelatinous, at length breaking up into *sporidia*.—Named from  $\alpha$ , *without*, and  $\gamma\upsilon\rho\omicron\varsigma$ , a *wrinkle*.

1. *A. rúfum*, Pers. (*red Agyrium*); gregarious convex or spherical compact, when moist flesh-coloured, when dry red-brown. *Fr. Syst. Myc. v. 2. p. 232. Scler. Succ.! n. 280. Grev. Sc. Crypt. Fl. t. 232.—Stictis rufa, Pers. Obs. 2. t. 6. f. 6. (fide Fr.).—Tremella stictis, Pers. Syn. p. 628.*

On old dry wood, especially of fir. Appin, *Capt. Carmichael*.—About  $\frac{1}{3}$  of a line broad, often seated on a whitish spot.

#### 42. HÝMÉNULA. *Fr.* Hymenula.

*Receptacle* scarcely distinguishable from the *hymenium*, flat, adnate, even, of a soft coriaceous consistence very thin persistent.—Name,  $\upsilon\mu\eta\eta$ , a *membrane*.

1. *H. vulgáris*, Fr. (*common Hymenula*); elongated variable even pallid brown when dry, circumference adnate. *Fr. Syst. Myc. v. 2. p. 234. Loud. Hort. Brit. p. 486.*

On nettle stems. Introduced on the authority of Hort. Brit.

VI. SCLEROTIACEI.\* (*From Sclerotium*.) *Receptacle various more or less compactly fleshy. Sporidia free, subemergent.*

#### 43. PYRÉNIUM. *Toðe.* Pyrenium.

More or less globose, rootless; outer coat even of a fila-

\* I am inclined to think that the correct "ideal notion" (see *Fr. Syst. Myc. v. 2. p. 269.*) of *Sclerotiacei* is not that of concrete *Coniomycetes*, but rather of *Hyphomycetes*. Several species of *Sclerotium*, not to mention *Pyrenium*, have beyond all doubt a distinctly filamentous structure, and *Sclerotium varium*

mentous structure; filled with a softer substance, at length more or less hollow.—Named from  $\pi\upsilon\sigma\eta\eta$ , a fruit-stone.

1. *P. lignatile*, Fr. (*reddish-white Pyrenium*); subglobose always hollow, mostly somewhat lobed pallid yellowish or reddish-white. Fr. *Él.* 2. p. 39. Grev. *Scot. Crypt. Fl.* t. 276.

On rotten wood, trunks of dead trees, &c. Appin, Capt. Carmichael. Scotland, Dr. Greville. I have not had an opportunity of examining any individual of this genus, but it appears a true member of the *Sclerotiaci*, connecting them admirably with *Tremellini*.

#### 44. ACROSPÉRMUM. Tode. Acrospermum.

Elongate, subclavate, subcartilaginous, within subhomogeneous; apex at length somewhat tumid and pruinose from the sporidia.—Named from  $\alpha\lambda\tau\omicron\varsigma$ , the top, and  $\sigma\pi\epsilon\gamma\mu\alpha$ , seed.

1. *A. compréssum*, Tode, (*little black Acrospermum*); lanceolate or clavate somewhat compressed of an olivaceous black. Tode, *Fung. Meck.* t. 2. f. 13. Fr. *Syst. Myc.* v. 2. p. 245. Scler. *Succ.*! n. 427. Grev. *Sc. Crypt. Fl.* t. 182.—*Clav. herbarum*, Pers. *Comm.* t. 3. f. 4. Sow. t. 253.—*Scleroglossum lanceolatum*, Moug. & Nest.! *exs.* n. 671.—*Clav. compressa*, Purst. v. 3. n. 1587. t. 19. f. 3.

On dry stalks of herbaceous plants; not common. Lasswade, Dr. Greville. Devonshire, Mr. Gibbs. Shotover Hill, Mr. Baxter.—Plant  $1\frac{1}{2}$ —2 lines high, at length concentrically grooved at the apex; when dry longitudinally sulcate and sometimes twisted.

2. *A. cornútum*, Fr. (*horn-shaped Acrospermum*); horn-shaped even sulcate when dry red-brown, at length paler at the tip. Fr. *Syst. Myc.* v. 2. p. 246.—*Scl. cornutum*, Fr. *Obs. Myc.* v. 1. p. 205.—*Radix Ag. tuberosi*, Bull. Bolt. Grev. l. c.

On the gills of blackened *Agarics*; not uncommon.—Often serving as a matrix to *Agaricus tuberosus*, which also grows on other *Sclerotiaci*. “Gregarious between awl-shaped and conic; curved, 3—5 lines long, obtuse below, acute above.” Fr. l. c.

#### 45. SCLERÓTIUM. Tode. Sclerotium.

More or less round, rootless, covered with a thin bark-like epidermis, bearing fruit (but rarely), all round.—Named from  $\sigma\lambda\eta\tau\omicron\varsigma$ , hard.

1. *S. complanatum*, Tode, (*compressed Sclerotium*); erect, stipitate or almost stemless obovate compressed, at first whitish then pale-brown, white within. Tode, *Fung. Meck.* t. 1. f. 9.

when young, is altogether a condensed *Sporotrichum*, and when abortive from a sudden deficiency of moisture, assumes the usual appearance of that genus. The epiphytal *Sclerotia*, which almost appear to be abortive *Urcinæ*s, may consequently, if my notion be correct, be but little allied to the more highly developed species.

*Pers. Syn. p. 121. Nees, Syst. f. 140. Fr. Syst. Myc. v. 2. p. 248. Desm. ! exs. n. 536—Clavaria polymorpha, Sow. t. 276.*

On fallen leaves, especially those of elm. Autumn and winter; very common.—Erect, attached at the base only in a single point, compressed, obovate, sometimes lobed, at first white, then yellowish-brown very smooth; substance within loose, externally compact, consisting of branched intricate filaments with intermixed minute round *sporidia*. *Epidermis* under a high magnifier, and viewed by transmitted light, marked with curious gyrose lines, resembling somewhat the outlines of the concenterations in some *Ammonites*, when dry slightly pruinose from the *sporidia*. I do not find it stipitate, but only tapering at the base, by which it is very loosely attached. I am quite certain that my plant is the same as Sowerby's though his figure is quoted by Fries under *Pistillaria obovata*.

2. *S. scutellatum*, A. & S. (*shield-like Sclerotium*); horizontal slightly stipitate orbicular depressed brown, white within. *Alb. & Schw. Consp. t. 3. f. 6. Fr. Syst. Myc. v. 2. p. 249. Grev. Sc. Crypt. Fl. t. 144. f. 1.*

On the veins and petioles of leaves. Spring. Foxhall, *Capt. Wauch.*—There is apparently the same species growing on paper in Mr. Sowerby's Herbarium. "Gregarious, orbicular, much depressed, attached by a central point or minute tuft of filaments beneath. Pale when young, at length deep brown, and eventually nearly black, white within. *Surface* smooth. *Substance* extremely tough. It has a remarkably strong smell for so small a plant, resembling that of the larger Fungi." *Grev. l. c.* This must not be confounded with certain galls of very similar form, which sometimes occur on oak-leaves.

3. *S. Sémen*, Tode, (*Cabbage-seed Sclerotium*); free at length quite spherical dirty white, then yellowish-brown, then dark-brown, at length black and corrugated, white within. *Tode, Fung. Meck. t. f. 7. Pers. Syn. p. 123. Fr. Syst. Myc. v. 2. p. 249. Grev. Scot. Crypt. Fl. t. 144. f. 2.—Sphaeria Brassicae, Bolt. t. 114. f. 2. Sow. t. 393. f. 3.*

On leaves, stems of herbaceous plants, damp cord, &c., common. Winter and spring.—I can find no difference at all between the plant when growing on cabbages, and when growing on various other substances. The flesh is equally free white in either case; and sometimes immersed, sometimes quite free. When produced in a contracted furrow, it is occasionally obovate and compressed, and with difficulty distinguishable from *Sclerotium Complanatum*, were it not for the absence of the minute wavy lines on the epidermis. The plant published by Fries, *Scler. Succ. ! n. 68*, differs from any British specimens I have seen, in being subdiaphanous, so that when a strong light shines upon it, a luminous yellowish spot is formed on any substance upon which it is placed. Authentic specimens of *Sph. Brassicae*, Dicks., prove *Scl. varium*.

4. *S. quercigenum*, Berk. (*Oak-trunk Sclerotium*); globoso-depressed umbilicated beneath, attached by a few obsolete short fibres so as to be almost loose, white, then bright red-brown at length black, white within, corrugated when dry.

On decorticated felled oaks, blackened with *Cladosporium herbarum*.



Jan. Apethorpe, Norths., *Rev. M. J. Berkeley*.—Quite free, never covered with the fibres of the matrix. Much resembling the last, but differing in being almost constantly depressed and umbilicated beneath; occasionally there is a dimple above, when it resembles *Scl. scutellatum*. The epidermis is very thin, quite smooth and even in the growing plant, of a bright red-brown just before maturity, which viewed by transmitted light is almost brick-red. I can find no described species according with this. *S. emergens* appears to resemble it most, but then this is expressly described as never depressed or pezizoid. The trees on which it grew were lying under a north wall, so that there was a deficiency of light, while the moisture was not readily dried up, and the blackened surface retained all reflected heat, thus calling to mind the circumstances under which *Agaricus volvaceus* assumes the form of a *Sclerotium*.\* (*Sclerotium Mycetospora*).

5. *S. fungorum*, Pers. (*irregular Sclerotium*); of no determinate form lobed smooth pallid, at length tawny, dirty-white within. *Pers. Syn. p. 120. Fr. Syst. Myc. v. 2. p. 252.*

On the gills of blackened Agarics, often serving as a matrix to *Ag. tuberosus*. Autumn; common.—“At length deep-brown and blackish, very various in form, sometimes subrotund, even or lacunose.” *Fr. l. c.*— $\beta$ . *lacunosum*; hard, lacunose, black, subterraneous. *Pers. Syn. p. 121.*—*Ag. racemosus*, Sow. t. 287, was gathered hastily, and is therefore figured without its matrix, which is doubtless referrible to this variety. Perhaps the *Sclerotium* upon which *Pez. tuberosa* grows, is, as Sowerby supposes, the same species. *Scl. subterraneum*, *Tode, t. 1. f. 5. e.* appears also referrible here.

6. *S. muscorum*, Pers. (*orange Sclerotium*); of no determinate form lobed smooth, tuberculated orange without and within. *Pers. Syn. p. 120. Fr. Syst. Myc. v. 2. p. 252. Grev. Fl. Ed. p. 461. Sc. Crypt. Fl. t. 101.*—*S. subterraneum*, *Tode, t. f. 5. a. b.*

On the decayed stems of mosses, principally confined to the lower parts, and according to Greville, on the trunks of trees beneath the surface of the soil when it is pale and whitish within. Aut.—Spring. Frequent in alpine and subalpine districts.—I find the whole substance composed of interlacing, almost reticulated filaments, without any vestige of *Sporidia*. When dry, it is of a bright saffron, the inner substance being opaque, but this on being moistened loses its opacity. *Rhizoctonia muscorum*, which in its dry state is scarcely distinguishable from the present species, appears to differ principally in the presence of more persistent mucedinous filaments.

7. *S. varium*, Pers. (*variable Sclerotium*); subrotund or oblong variable in form subaduate rugose white then brownish, at length black. *Pers. Syn. p. 122. Nees, Syst. f. 138. Fr. Syst. Myc. v. 2. p. 258. Mong. & Nest. ! exs. n. 889.*—*Elv. Brassicæ*, *Hoffm. Veg. Crypt. 2. t. 5. f. 2.*—*Sphaeria Brassicæ*, *Dicks. ! Crypt. 1. p. 23.*—*Scl. Dauci*, *Purt. MSS.*

\* The structure of the receptacle in *Hymenomyces* being certainly filamentous, (concrete *Hymenomyces*) an additional argument is here presented in favour of the view taken in the preceding note.

On carrots, parsneps, cabbages, &c., pitted for winter use, but also on still living stems of herbaceous plants, as *Helianthus tuberosus*; not uncommon.—From 2—3 lines to 1 inch broad, 2—3 lines thick, at first white and tomentose, gradually becoming smooth, though often retaining some traces of downiness, and changing to brown and black, rugose when old; white within, consisting of branched filaments, which towards their apices anastomose and form 4—5-sided reticulations, the interstices of which are filled up with the black epidermis. I cannot distinguish from this a *Sclerotium*, which grows on apples, though more innate. The present species when young approaches very near to *Periola tomentosa*, Fr., which occurs not only on Potatoes, but also on stems of herbaceous plants. In like manner also the variety on apples appears to approach very nearly when young to *Periola furfuracea*, except that it is not black within.

8. *S. pyrinum*, Fr. (*fruit Sclerotium*); rounded or oblong sometimes confluent white at length brown or black, corneous externally, within somewhat hollow and carnose. *Fr. Syst. Myc. v. 2. p. 258.*—*S. fructuum*, Grev. *Fl. Ed. p. 462.*—*Sc. varium*,  $\beta\beta$ . *Alb. & Schw. Consp. p. 75.*—*Sr. ustulata*, Bull. t. 420. f. 2.

On various fruits, as apples, pears, peaches, &c. Balmuto, Dr. Greville.—“Plant 1—2 lines broad, corneous on the external surface only; within soft, juicy, and partly hollow, which in drying causes a collapse of the plant, and somewhat of a tremelloid character.” *Grev. l. c.* See also *Fr. El. 2. p. 44.*

9. *S. Rûbi*, Carm. (*Bramble Sclerotium*); rather thin, adnate, apparently globoso-depressed from the inflation of the leaf beneath, white, then brown, at length black punctato-rugose white within. *Carm. MSS.*

On bramble leaves. Appin, Captain Carnichael.—This very singular and undoubted *Sclerotium* grows indifferently on the under and upper side of bramble leaves, adnate, covered at first with the epidermis, so that when on the under side, it is woolly with the pubescence of the leaf. At first sight it much resembles a gall, the portion of the leaf on which it vegetates being inflated, as in *Erineum Juglandis*, DC.

10. *S. bullatum*, DC. (*bullate Sclerotium*); orbicular or ovate confluent convex granulated, flesh within whitish. *Dec. Mem. Mus. v. 2. t. 14. f. 5.* *Fr. Syst. Myc. v. 1. p. 259.* *Grev. Fl. Ed. p. 462.*

On decaying gourds and cucumbers. Autumn. Foxhall, Captain Waugh.—I believe however that it is not uncommon. My specimens are blackish within both when growing and dry.

11. *S. durum*, Pers. (*common black Sclerotium*); adnate or shapeless depressed somewhat striate black dirty-white within. *Pers. Syn. p. 121.* *Fr. Syst. Myc. v. 2. p. 259.* *Scler. Suec. ! n. 218.* *Moug. & Nest. ! exs. n. 489.* *Grev. Scot. Crypt. Fl. t. 1. Fl. Ed. p. 462.* *Baxter ! exs. n. 98.*—*Sphæria solida*, Sow. ! t. 314. *Purt. ! v. 2 & 3. n. 1100.*—*Sp. tuberosa*, Sow. t. 393. f. 2.

On decaying stems of herbaceous plants. Autumn—Spring. Extremely common.—Varying much in form. In var.  $\beta$ . *Hyacinthi* (*S. minutum*, Desm.) on the capsules of the Harebell, there are no striæ, evidently from the peculiar situation, for, when it occurs on the stem, I can see no difference. A species, apparently distinct, has been gathered on the leaves of *Iris Pseudacorus* by Captain Carmichael, subelliptic, irregular, 2—3 lines or more long, nearly 1 line thick, not striate, but rugulose, as indeed is the plant on the Harebell just mentioned, frequently abortive, and then shining and bordered by a black line, portions of the matrix within the circumscribing line being unoccupied and pale. I do not propose it, as distinct, as I have never gathered it. It is altogether different from *Sclerotium Iridis*, Schweinitz.

12. *S. Pústula*; D.C. (*oak-leaf Sclerotium*); hypophyllous hemispherical prominent rugulose at length black, within horny white. *Dec. l. c. f. 7. Fr. Syst. Myc. v. 2. p. 260.*—*Scler. quercinum*, Pers. *Syn. p. 124. Ic. Pict. t. 18. f. 2. Grev. Scot. Crypt. Fl. t. 77. Fl. Ed. p. 462. Hook. Scot. 2. p. 10.*

On various leaves, but especially those of oak. Spring and summer; not uncommon, particularly in Scotland.—*Plant* 1—2 lines broad, at first pale, occasionally two or more individuals become confluent.

13. *S. popúlneum*, Pers. (*poplar-leaf Sclerotium*); innate subrotund or angular from several individuals becoming confluent variable convexo-plane greyish-red at length black. *Pers. ! Syn. p. 125. Moug. & Nest. ! ex. n. 385.—Scler. Succ. ! n. 139. Grev. Fl. Ed. p. 463. Purt. ! MSS.—S. populinum, Fr. Syst. Myc. v. 2. p. 262.*

On Aspen leaves; very frequent.—Seldom so perfect as the specimens published by Fries. In Dr. Hooker's Herbarium, there are specimens from Dr. Greville of an unnamed *Sclerotium*, on leaves of *Populus balsamifera*, which approach very near to *S. arcolutum*, Fr. It is however probably nothing more than a form of the present species, of a more gummy appearance from the peculiar nature of the matrix.

14. *S. salicinum*, D.C. (*sallow-leaf Sclerotium*); *Dec. l. c. f. 8. Moug. & Nest. ! ex. n. 386. Fr. Syst. Myc. v. 2. p. 263. Scler. Succ. ! n. 140. Grev. Fl. Ed. p. 462. Purt. ! MSS.*

On willow-leaves. Autumn and winter, common.—“Rarely more than half a line broad, but often covering a great part of the leaf, very depressed, when young appearing like a mere stain.” *Grev. l. c.*

15. *S. herbárum*, Fr. (*herb Sclerotium*); innate subrotund or oblong confluent convex reddish-brown, then brown-black. *Fr. Syst. Myc. v. 2. p. 263. Moug. & Nest. ! n. 990.*

Arlary, near Kinross, Dr. Greville.—Fries remarks that the forms of this species are innumerable and that a species of *Uredo* answers to each. Dr. Greville's specimens are mixed with an *Uredo*, and in some cases the *Uredo* bursts through the centre of the *Sclerotium*.

45. PERÍOLA. *Fr.* Periola.

Rootless, fleshy, furnished with a persistent villous bark.—Named from περι, *around*, and ιωλος, *down*.

1. *P. tomentósa*, *Fr.* (*tomentose Periola*); rounded irregular tomentose white. *Fr. Obs.* 1. p. 205. *Syst. Myc.* v. 2. p. 267.

On Potatoes.—Apethorpe and King's Cliffe, Norths., *Rev. M. J. Berkeley*.

46. SPERMOÉDIA. *Fr.* Ergot.

*Substance* subfarinaceous; *epidermis* connate, squamulose or subpruinose.—Named from σπέρμα, *seed*, and εἶδω, *to resemble*.

1. *S. Clávus*, D. C. (*common Ergot*); horn-shaped cylindrical externally subpruinose purple-black, white or sometimes purplish within. *Fr. Syst. Myc.* v. 2. p. 268.—*Scl. clavus*, *Dec. l. c. f.* 8.—*Sphacelia segetum*, *Kl. Fung. Germ.!* exs. n. 56. *Farinaria Poæ*, *Sow. t.* 396. f. 6.

Produced within the seeds of various *Gramina*, as *Secale*, *Agrostis*, *Dactylis*, *Festuca*, *Elymus*, &c. Not very common, but diffused in greater or less abundance throughout the whole of Great Britain.—Not less celebrated on account of the dreadful diseases which it produces when abounding amongst corn, than for its invaluable uses as a medicine, arising from its extraordinary specific action on the uterus. It appears to be only a diseased state of the grain, and has scarcely a sufficient claim to be admitted amongst *Fungi* as a distinct genus. The only way of deciding the point would be to institute inquiries as to the manner in which it commences its growth, as Brongniart has done respecting *Uredo Segetum*, *Ann. des Sciences*, v. 20. p. 171. The external coat is subfarinaceous, and very different from any thing I have seen in *Sclerotium*.

Suborder II. GASTEROMYCETES. (from γαστήρ, *the belly*, and μύκης, *a fungus*). *Hymenium* included within the uteriform excipulum.

Tribe I. ANGIOGASTRES (from ἀγγεῖον, *a receptacle*, and γαστήρ, *the belly*). *Uterus* distinct from the included proper receptacle, on which the *Sporidia* are spread.

\* PHALLOIDÆ (from *Phallus*). *Receptacle* distinct, at length bursting through the excipulum. *Sporidia* forming a mucous stratum.

47. PHALLUS. *Mich.* Stinkhorn.

*Receptacle* stipitate, pileiform; border entire.—Named from φάλλος.

1. *P. impudicus*, L. (*common Stinkhorn*); pileus free conical pervious reticulated, borders of the reticulations nearly entire. *Linn. Suec. n.* 1261. *Bolt. t.* 92. *Fr. Syst. Myc.* v. 2. p. 283. *P. fetidus*, *Sow. t.* 329. *With. v.* 4. p. 315. *Purt. v.* 2 & 3.

n. 1054. *Hook. Fl. Lond. cum Ic.—Grev. Fl. Ed. p. 418. Sc. Crypt. Fl. t. 213, 214.*

In woods, thickets, &c. Summer and autumn. Not uncommon: but frequently, when, from its peculiar odour, it is quite certain that it is near at hand, it escapes observation from being covered with leaves and loose sticks.—*Uterus* about as large as a hen's egg, consisting of two coats distended with jelly, besides which there is another delicate membrane immediately surrounding the pileus. *Stem* rapidly elongated, when full grown 4—6 inches high, 1 inch thick hollow, at first closed at the apex, at length pierced with one or two perforations.

2. *P. iósmos*, Berk. (*violet scented Stinkhorn*); pale reddish-grey, pileus free conical reticulated, borders of the reticulations strongly toothed. *Phallus*, *Curt. Brit. Ent. v. 10. t. 469.*

Sand hills. Lowestoffe. *Mr. Curtis*.—"Scent somewhat like violets at a distance when growing, but very offensive when dried." *Curt. l. c.* The above is all the information respecting this apparently well marked species, which is afforded by Mr. Curtis in the beautiful and truly scientific work quoted above. I am unable to find any account of it, though possibly some of the Herbalists may have noticed it.

3. *P. caninus*, Huds. (*red-headed Stinkhorn*); pileus pressed close to the stem ovate tuberculated impervious red but clothed at first with greenish mucus. *Huds. p. 630. Curt. Lond. t. 235. Fr. Syst. Myc. v. 2. p. 284. Ph. inodorus, Sow. t. 330. Part. v. 2 § 3. n. 1055. With. v. 4. p. 316.*

Woods and hedges. Autumn. Common in the south of England, more rare in the midland and northern counties.—*Uterus* about the size of a hazel-nut. *Stem* hollow, very pale orange. *Pileus* covered with green, scentless mucus, beneath which it is red and wrinkled. This, like *P. impudicus*, when placed in the egg state in a box overnight, if sufficiently advanced, will be found perfectly developed in the morning.

(Of this groupe, PHALLODEÆ, is that most extraordinary Genus *Aseröe*, of which, a plant having sprung up in the soil from N. Holland at the Royal Gardens of Kew, it will be proper to characterize briefly the Genus and Species in a note below.\*)

\*\* TUBERACEÆ. *Sporangia membranaceous scattered on the serpentine vein-like hymenium, included in the concrete uterus. Sporidia at first pulpy.*

#### 48. TUBER. *Mich.* Truffle.

*Uterus* closed, marbled with veins internally. *Sporangia*

\* ASERÖE. *La Bill. Aseröe.*

*Receptacle* stipitate, the border radiate; *Rays* bifid.

1. *A. rubra*, *La Bill.* (*red Aseröe*); *Labillardière Voy. Atl. n. 12. Aseröe rubra, Fr. Syst. Myc. v. 2. p. 285.*

"In soil from New Holland at Kew." *Hook.*—*Stem* pervious, pink; *rays* bright red, bifid, the apices attenuated and somewhat cirrhose; *hymenium* confined to a ring just above the origin of the rays. *Sporidia* very minute, oblong-elliptic, subfusiform in the dry plant; the mass, when moistened, greenish. In *Clathrus cancellatus* the *sporidia* are even smaller, but scarcely so much inclined to be fusiform. In *Simblum periphragmoides*, *Klotzsch, in Hook. Bot. Misc. v. 3. p. 165*, the *sporidia*, of which no account is there given, are larger and truly elliptic.

pedicellate, confined to the veins.—Name, the Latin name for some *fungus*.

1. *T. cibarium*, Sibth. (*common Truffle*); warty black. *Sibth. Ox. p.* 398. *With. v. 4. p.* 340. *Bull. t.* 356. *Sow. t.* 309. *Tratt. Essb. Schw. t. A. Nees, Syst. f.* 148. *Fr. Syst. Myc. v. 2. p.* 290. *Roques, t.* 24.

Buried in the soil of woods, especially beech woods. Very abundant in some parts of England, rare in Scotland.—Rough, irregular, rounded *nodules*, 1—2 inches or more in diameter, cracked into small subpyramidal *warts*, smooth, but here and there furnished with a little brown down; white within and marbled with darker veins. The white portions are of a distinctly filamentous structure, and, as it appears to me, constituting a sort of *mycelium* to the veins, which are indistinctly cellular, and contain many subovate, shortly pedicellated *sporangia*, at first filled with a granular mass, which is ultimately collected into one or two globular, yellowish, echinulate *sporidia*.—The real affinities of this genus are very doubtful, and it is no easy matter to decide between the view of Nees, who considers it allied to the *Hymenomyces*, and that of Fries who looks upon it as a true member of the *Gasteromyces*. In the first case we must regard the whole mass as an intricately sinuous *Tremella* or *Thelephora*, the interstices being filled up with white, mucedinous filaments in consequence of its subterraneous mode of growth, and portions having become obliterated by pressure, in consequence of which the veins are visceriform; and there seems much reason in favour of this opinion, if I am correct as to the structure; analogous forms of asci occurring in *Thelephora incrustans* and *byssoides*; and, as I believe, in *Tremella albida*: or in the other case the veins may be either considered as analogous to the cancellated network of *Clathrus*, the interstices being as before mucedinous; or the interstices must be considered, which appears to be the view of Fries, as the branched receptacle, and the veins as *hymenium* spreading over it; this, however, appears to me scarcely as tenable as the converse; for if a portion of the substance of the fungus be gently pulled out, the veins will separate from the interstices, with a villous aspect, as though they were the principal component part. The affinity is, however, so strong between this and the following genus, which can scarcely belong to the suborder *Hymenomyces*, that I am convinced Fries has shown a sound judgment in placing it here. *Truffles* are much sought for, as a luxury, and are hunted by dogs trained for the purpose, or by swine. Nees von Essenbeck relates an instance of a poor crippled boy who could detect truffles with a certainty superior even to that of the best dogs, and so earned a livelihood. They have been successfully cultivated by Bornholz. See *Roques, Hist. des Champ. p.* 17. Truffles are often preyed upon by a species of *Leiodes*, abundant specimens of which have been collected by Professor Henslow at Audley End, Essex.

2. *T. moschatum*, Bull. (*musk-scented Truffle*); roundish even blackish. *Bull. t.* 479. *Sow. t.* 426. *Fr. Syst. Myc. v. 2. p.* 291.

Growing beneath the soil. Very rare. Nork Park near Epsom. *Miss Fanshaw*.—This appears from the analysis of Bulliard to belong certainly to the same genus with the foregoing.

49. RHIZOPÓGON. *Fr.* Rhizopogon.

*Uterus* sessile, bursting irregularly, marbled internally with anastomosing veins. *Sporangia* sessile.—Name from  $\rho\iota\zeta\alpha$ , a root, and  $\pi\omega\gamma\omega\nu$ , a beard.

1. *R. álbus*, Bull. (*white Truffle*); round, rather rugged, whitish then reddish-brown slightly fibrillose at the base. *Fr. Syst. Myc. v. 2. p. 293. Lycop. gibbosum, Dicks. Crypt. 2. p. 26. Tuber album, Bull. t. 404. Sow. t. 310. With. v. 4. p. 341.*

On sandy ground in woods. Rare. Acton Burnell, *Stackhouse*. Botanic Garden, Glasgow, *Mr. Joseph Hooker*.—*Sporidia* ochraceous, reddish-brown, exactly resembling in shape a lemon, as Klotzsch also remarks in *Hook. Herb.*

\*\*\* NIDULARIACEÆ (from the Genus *Nidularia*). *Uterus* replete with free or elastically pedicellated *Sporangia*.

## 50. NIDULÁRIA. Bull. Bird's-nest Peziza.

*Common peridium* simple: *sporangia* at first floating in jelly, furnished with a highly elastic pedicle, lentiform, fleshy, filled with a compact mass of *sporidia*.—Name, from *nidulus*, a little nest.

1. *N. striáta*, Bull. (*striate bird's-nest Peziza*); obconic hirsute bright red-brown striate within. *Bull. t. 40, f. 1. With. v. 4. p. 313. Sow. t. 29. Purt. v. 2 & 3. n. 1053. t. 17. f. 1. Fr. Syst. Myc. v. 2. p. 298. Moug. & Nest.! exs. n. 283. Pez. striata, Bolt. t. 102. f. 2. Cyathus striatus, Pers. Syn. p. 237. Grev. Fl. Ed. p. 459.*

On the ground and on sticks, &c., in damp woods. Abundant in some parts of England; but very rare in most of the midland counties.

2. *N. campanuláta*, With. (*bell-shaped bird's-nest Peziza*); campanulate villous cinereous-brown even, within lead-coloured and shining from the remains of the dried up gelatine. *With. ed. 2. v. 3. p. 445. Sibth. Ox. p. 393. Sow. t. 28. Purt. v. 2. & 3. n. 1052. t. 17. f. 3. Fr. Syst. Myc. v. 2. p. 298. N. vernicosa, Bull. t. 488. f. 1. Moug. & Nest.! exs. n. 182. Pez. lentifera, Linn. Sp. Plant. 1649. Bolt. t. 102. f. 1. Cyathus Olla, Pers. Syn. p. 237. Grev. Fl. Ed. p. 459.*

On the ground, and on nearly exhausted dung, sticks, &c. Common.—Easily distinguished from the following, from the cup being within of a shining but dull lead colour. *Sporidia* elliptic.

3. *N. crucibulum*, Pers. (*cylindrical bird's-nest Peziza*); campanulato-cylindrical truncate above and below subtomentose, at first ochraceous then ferruginous, even within of a pallid yellow-brown. *Fr. Syst. Myc. v. 2. p. 299. Moug. & Nest.! exs. n. 776. N. lævis, Sow. t. 30. With. v. 4. p. 314, Bull. 488. f. 2. Purt. v. 3. n. 1505. t. 17. f. 2. Cyathus crucibulum,*

*Pers. Syn.* p. 238. *Grev. Fl. Ed.* p. 459. *Sc. Crypt. Fl. t.* 34. *Cyathus crucibuliformis*, *Hoffm. Veg. Crypt.* 2. t. 8. f. 1.

On pieces of fir-wood, but also on straws, sticks, &c. Less common than the last.—*Sporidia* elliptic.

#### 51. MYRIOCÓCCUM. *Fr.* Myriococcum.

*Peridium* simple, floccoso-furfuraceous, evanescent. *Sporangia* globose, sporidia conglobate.—Name from *μυριοξ*, numberless, and *κοκκος*, a grain.

1. *M. præcox*, *Fr.* (*spring Myriococcum*);—*Fr. Syst. Myc.* v. 2. p. 304. *Loud. Hort. Brit.* p. 459.

On wood, moss leaves, &c. Introduced on the authority of Loudon's *Hortus Britannicus*.

#### 52. POLYÁNGIUM. *Link.* Polyangium.

*Peridium* simple, membranaceous. *Sporangia* oblong, filled with a grumous mass.—Name from *πολυξ*, many, and *αγγιον*, a receptacle.

1. *P. vitellinum*, *Lk.* (*egg-yellow Polangium*).—*Ditm. in St. Deutsch, Fl. t.* 27. *Fr. Syst. Myc.* v. 2. p. 305. *Loud. Hort. Brit.* p. 459.

On fallen wood in moist places. Admitted on the same authority as the foregoing.

\*\*\*\* CARPOBOLI. (*Καρποξ*, fruit, and *βαλλω*, to project.) *Uterus protruding a solitary distinct sporangium.*

#### 53. ATRACTOBOLUS. *Tode.* Atractobolus.

*Peridium* cup shaped, operculate. *Sporangium* fusiform, sporidia mucous.—Name from *ατρακτος*, a spindle, and *βαλλω*, to project.

1. *A. ubiquitarius*, *Tode.* (*common Atractobolus*);—*Tode. Fung. Meck. f.* 59. *Fr. Syst. Myc.* v. 2. p. 306.

On wood, stones, &c., after rain appearing like scattered meal.—Specimens of this curious production, which I am convinced is of insect origin, are contained in Hook. Herb. from Captain Carmichael and Dr. Greville, marked by both *Diderma*.

#### 54. THELÉBOLUS. *Tode.* Thelebolus.

*Peridium* sessile urceolato-ventricose, mouth entire. *Sporangium* papillæform; sporidia mucous.—Name from *θηλη*, a nipple, and *βαλλω*, to project.

1. *T. stercóreus*, *Tode.* (*dung Thelebolus*); subglobose saffron yellow-gregarious, subiculum none. *Tode. l. c. f.* 56. *Fr. Syst. Myc.* v. 2. p. 307. *Loud. Hort. Brit.* p. 459.

On cow dung.—Introduced on the authority of *Loud. Hort. Brit.*



## 55. PILÓBOLUS. Tode. Pilobolus.

*Peridium* membranaceous produced into a stem, shooting forth a globose *sporangium* replete with *sporidia*.—Name from *πίλος*, a cap, and *βάλλω*, to project.

1. *P. crystallinus*, Tode. (*crystalline Pilobolus*); uterus obovate stem-shaped below, *sporangium* hemispherical black. Tode, in *Schrift. Ber. Nat. Fr.* 3. p. 46. t. 1. (*vide Fr.*) Pers. *Obs.* 1. t. 4. f. 9, 10. *Fr. Syst. Myc.* v. 2. p. 308. Grev. *Fl. Ed.* p. 448. *Mucor urceolatus*, Bull. t. 480. f. 1. Dicks. *Crypt.* 1. t. 3. f. 6. Bolt. t. 133. f. 1. Sow. t. 300. With. v. 4. p. 369. *Purt.* v. 2. n. 1123. *Pilobolus urceolatus*, *Purt.* v. 3. p. 323. t. 31.

On horse dung. Common.—At first appearing, as Fries observes, under the form of a small yellow *Sclerotium*, which gradually acquires a stem, becomes inflated above, and loses its yellow hue; often densely tufted. Very fugacious.

2. *P. roridus*, Bolt. (*globular-headed Pilobolus*); uterus globose, stem elongated filiform, *sporangium* dot-like black. *Fr. Syst. Myc.* v. 2. p. 309. *Mucor roridus*, Bolt. t. 132. f. 4.

On horse dung. Not common.—Smaller and slenderer than the last. Purton and Greville consider this a variety only of the foregoing, but possibly incorrectly.

## 56. SPHÆRÓBOLUS. Tode. Sphærobolus.

Subimmersed. *Peridium* double, each bursting in a stellate manner; internal membrane at length inverted and elastically shooting forth the globular *sporangium* which contains the *sporidia* in its centre.—Name, from *σφαῖρα*, a sphere, and *βάλλω*, to project.

1. *S. stellátus*, Tode. (*star-like Sphærobolus*); star-like globose yellow at length pallid orifice regularly toothed. Tode, *Fung. Meck.* 1. p. 43. *Purt.* v. 3. n. 1580. t. 30. *Fr. Syst. Myc.* v. 2. p. 310. *Lyc. carpobolus*, Linn. *Sp. Plant.* 2. p. 1654. *Sow.* t. 22.

On rotten wood, sticks, &c. Autumn.—Possibly more common than usually supposed, for it is easily overlooked. *Plants* at first connected by a web, at length smooth, subglobose, yellowish; outer *peridium* consisting of two substances, lined by the inner *peridium* which is quite distinct and separated by some moisture, white pellucid and shining; at length both split together in a stellate manner, and the inner becomes suddenly inverted while in general it still remains attached by the apices of the stellate margin, and the *sporangium* is shot forth to a considerable distance. *Sporidia*  $\frac{1}{30}$  of an inch long elliptic or curved and irregular. The rays of the outer *peridium* are orange within; I do not find that the orange colour extends lower into the cup.

Tribe II. PYRENOMYCETES. (from *πυρήν*, a capsule, and *μυκήξ*,

a fungus). *Uterus confluent with the receptacle (Perithecium). Sporidia generally contained in asci and arranged in one or more rows.*

### 57. SPHÆRIA. Hall. Sphæria.

*Perithecia* rounded, entire, furnished at the apex with a minute orifice. *Asci* converging, at length dissolving.—Name, from σφαῖρα, a sphere.

#### A. COMPOUND.

\* **PERIPHERICÆ.** *Perithecia more or less divergent, generally almost superficial and simply papillated, very rarely piercing the stroma by an attenuated neck.*

**DIV. I. CORDYCEPS.** (from κορδολή a club, and caput, a head). *Club shaped, simple or branched, stipitate.*

#### \* *Perithecia pale.*

1. *S. militaris*, L. (*military Sphæria*); carnose orange-red, head-clavate tuberculated, stem equal. *Bolt. t.* 128. *Sow. t.* 60. *Purt. v.* 3. *p.* 276. *t.* 23. *Fr. Syst. Myc. v.* 2. *p.* 323. *Kl. ! Fung. Germ. exs. n.* 47. *Clav. militaris, Lin. Sp. Pl.* 1562. *With. v.* 4. *p.* 318. *Cl. granulosa, Bull. t.* 496. *b.*

In wood amongst moss, arising from dead pupæ of insects, spiders' eggs, &c. Summer. Not common, but sparingly diffused through the whole of England and Scotland.—A very curious *Cladonia*-like form occurred to Messrs. Klotzsch and Hooker at Kirriemuir, in turf spots.

2. *S. entomorrhiza*, Dicks. (*round headed Insect Sphæria*); carnose, head subglobose brown, stem slender, sporidia oblong. *Dicks. Crypt. 1. p.* 22. *t.* 3. *f.* 3. *With. v.* 4. *p.* 356. *Pers. Syn. p.* 4. *Fr. Syst. Myc. v.* 2. *p.* 324.

On dead larvæ and pupæ of insects. Very rare. Bulstrode, *Light-foot*. Autumn. Edgefield, Norfolk. *Rev. R. B. Francis*. Apethorpe, Norths., May 17th, 1835, *Rev. M. J. Berkeley*.—As the single specimen with which I have been so fortunate as to meet according precisely with one in Dr. Hooker's Herbarium, gathered by Mr. Francis, differs from the figure of Dickson in having a larger elliptic head, immersed perithecia, and a stouter stem, the following description will not be superfluous. *Head*  $\frac{1}{3}$  of an inch long broadly elliptic quite distinct from the stem, changing from chesnut to bright red brown, minutely dotted with the *ostiola*, of a tough fleshy consistence nearly white within. *Stem* 2 inches high, 1 line thick nearly equal pale above, darker below, of the same colour as the head, but slightly mottled, almost smooth, giving out at the base numerous root-like filaments in my specimen attached to a chrysalis, in Dr. Hooker's to a caterpillar. *Perithecia* completely sunk in the flesh, much elongated, gradually tapering to the orifice brown; their contents of the same colour consisting of very long flexuous *asci*, containing a double moniliform row of very minute oblong but not truncate *sporidia*, which when the *asci* are broken still partially

adhere together; accompanied by more slender *paraphyses*. There is little doubt, notwithstanding the differences mentioned above, that the plant of Dickson is the same with that now before me, as the figure evidently represents an anomalous form arising from the larva having been deeply buried in the ground. The *asci* and *sporidia* are quite different from those of other *Sphæria*, except the few allied species which compose the first section of the present division. Nothing can be more close than the resemblance between the *asci* and their *sporidia* to the filaments of some *Monema* or *Schizonema*; indeed both in this species and *S. ophioglossoides* I have sometimes seen more than two rows of *sporidia*, and the *asci*, when squeezed, split, like the frond in the last mentioned genus, into as many threads as there are rows of *sporidia*. This, however, requires confirmation, as I may possibly have been deceived. The analysis given in Kunz. *Myc. Hefte*, of *S. ophioglossoides*, is quite correct, except that the *sporidia* are more elliptic than there represented. This alone is sufficient to show that *Sp. gracilis*, Grev. is not, as Fries supposes, that species; the *sporidia* in Dr. Greville's plant being cylindrical and truncate, as appears by his analysis which, though imperfect, is confirmed by the very similar *sporidia* of *S. capitata* and *S. militaris*, in both of which they form within the *asci* two moniliform threads.

3. *S. capitata*, Holmsk. (*yellow-stemmed Sphæria*); carnose, head ovato-globose bay brown, stem yellow at length blackish. *Pers. Myc. Eur.* 1. t. 10. f. 1—4. *Moug. & Nest. ! cæs. n.* 763. *Fr. Syst. Myc.* v. 2. p. 324. *Sph. agariciformis*, Bolt. t. 130. *Sow. ! t.* 354. *Cl. capitata*, Holmsk. *Ot.* 1. with a *fig.* *With.* v. 4. p. 317.

In pine woods, parasitic on *Elaphomyces granulatus*. Very rare. Ramsden wood about Highfield near Halifax. Bolton. Holt. Norfolk, *Rev. Robert Francis*—"Often tufted. Stem 1—4 inches high, 2—4 lines thick, equal, smooth, lemon-coloured, at length fibroso-strigose and blackish. The colour of the head borders on yellow, red-brown and black." *Fr. l. c.*

4. *S. ophioglossoides*, Ehr. (*adder's tongue Sphæria*); carnose head clavate brownish-black, stem olive black rooting. *Pers. Syn.* p. 4. *Myc. Eur.* t. 10. f. 5, 6. *Moug. & Nest. ! n.* 565. *Fr. Syst. Myc.* v. 2. p. 324. *Scler. Succ.* n. 301. *Cl. parasitica*, *With.* v. 4. p. 318.

In woods, parasitic on *Elaphomyces muricatus*. Very rare. Near Norwich, *Mr. Pitchford*.—Head  $\frac{1}{2}$ —1 inch or more long, yellow within as well as the stem which at the base divides into long roots. Sometimes tufted.

5. *S. gracilis*, Grev. (*Mr. Trevelyan's Sphæria*); carnose head smooth roundish ovate brown, stem rooting elongated cylindrical equal somewhat flexuous, *sporidia* cylindrical. *Grev. Sc. Crypt. Fl.* t. 86.

On the ground in moist mossy places. Shetland, *W. C. Trevelyan, Esq.*—Fries in the *Eleucus* conceives that this is synonymous with the foregoing species, but it appears to differ entirely in form and in

being destitute of any yellow tinge. The *sporidia* also as mentioned above are very different.

6. *S. Hookéri*, Kl. (*Dr. Hooker's Sphæria*); carnose, head globose lilac tuberculated, stem slender shining black. *Klotzsch!* in *Hook. Herb. with a figure*.

In grassy spots amongst moss. June. Inverary, *Messrs. Hooker and Klotzsch*.—"Solitary. *Stem* coriaceous, simple, 2 inches high,  $\frac{1}{2}$ — $\frac{3}{4}$  of a line thick, the apex of the same colour as the head. *Head* globose, 2 lines thick; *perithecia* prominent, filled with a gelatinous filamentous mass." *Kl. MSS.*—This species appears to resemble *S. purpurea*, *Schum.*, and to differ principally in its less tuberculated head and long stem. Fries, however, says that Schumacher's plant when living was carmine, which alters the point materially.

7. *S. alutacea*, Pers. (*pale tan-coloured Sphæria*); carnose soft, head clavate, pallid tan or white confluent with the stem. *Pers. Comm. Clav. p. 12. Nees, Syst. f. 304. Fr. Syst. Myc. v. 2. p. 325. Sph. clavata, Sow. ! t. 159.*

In fir plantations on the ground amongst leaves. Autumn. Rare. Newmarket Heath, *Rev. J. Hemsted. Costesy, Norf., Sowerby*.—"Simple, 2—3 inches high very even and brittle, at first dirty-white, slightly villous, then quite smooth and even, tan-coloured; sometimes entirely white, at length tuberculated with the prominent *perithecia*. *Head* obtuse." *Fr. l. c.*

\*\* *Perithecia black.*

8. *S. digitata*, Linn. (*fingered Sphæria*); between fleshy and corky tufted, clavulæ round reddish brown then black, tips barren acute, stem smooth. *Pers. Syn. p. 6. Nees, Syst. f. 307. Fr. Syst. Myc. v. 2. p. 326. Purton. MSS. Clav. digitata, Linn. Sp. Pl. 1652. Bull. t. 220. Xylaria digitata, Grev. Fl. Ed. p. 356.*

On worked wood and stumps of trees. Frequent according to *Dr. Greville* and *Mr. Purton*.—"Stems connate at the base, whence the plant is ramoso-digitate. Substance with a simple central pith. *Perithecia* immersed, when young whitish from the innate veil, scarcely pulverulent, soon changing to brown." *Fr. l. c.*

9. *S. polymórpha*, Pers. (*variable fingered Sphæria*); subcar-nose gregarious turgid irregular, dirty white then black, clavulæ bearing *perithecia* on every part. *Pers. Comm. p. 17. Nees, Syst. f. 307, B. Fr. Syst. Myc. v. 2. p. 326. Scler. Succ. ! n. 221: Grev. Sc. Crypt. Fl. t. 237. S. digitata, Sow. t. 69. Clav. digitata, With. v. 4. p. 357. Xylaria polymorpha, Grev. Fl. Ed. p. 355.*

On stumps of trees. Common.—The central substance is disposed in diverging rays and in consequence, as observed by *Sowerby* the fracture is conical.

10. *S. Hypóxylon*, Linn. (*flat-horned Sphæria*); corky sim-

ple or branched compressed at first pulverulent with white meal then naked, stem villous. *Sow. t. 55. With. v. 4. p. 357. Moug. & Nest. ! n. 272. Purst. v. 2 & 3. n. 1109. Fr. Syst. Myc. v. 2. p. 327. Scler. Succ. ! n. 181. S. digitata, Bolt. t. 129. Clav. Hypoxylon, Linn. Sp. Plant, 1652. Xylaria Hypoxylon, Græc. Fl. Ed. p. 355. Baxt. ! Ox. n. 74. Sph. ramosa, Dicks. Fasc. 4. t. 12. f. 7. Sow. ! t. 395. f. 2. (in text f. 1.). S. pedunculata, Dicks. l. c. f. 8. Sow. ! t. 437.*

On sticks, stumps, &c. Very common.—*Sporidia* elliptic, septate, or containing two *sporidiola*. Nothing can be more sportive than the present species, being sometimes exceedingly branched, sometimes palmate, sometimes quite simple with the head ovate and acuminate, linear, or even globose as in *S. pedunculata*, *Dicks.* Occasionally the apices are not barren.—*Sph. ramosa*, *Dicks.* and *Sow.*, I am quite sure is a variety. The lower part of the specimens is covered with a dense purple mucedinous substance, consisting of branched filaments very much resembling to the naked eye, *Ceramium Rothii*. The same substance sometimes occurs on *S. digitata*, when imperfectly developed, and occasionally on the more common forms of *S. Hypoxylon*, when much elongated. I have also seen it on *S. polymorpha*. There is some confusion in the citation of *S. ramosa* by Fries in consequence of the figures being wrongly numbered in the plate. The plant rightly referred by Fries to *S. bombardæ* under the name of *S. ramosa* is *S. reptans*, *Sow. ! t. 395, f. 1. (in text f. 2.). S. fusca*, *Sow.* figured on the same plate belongs probably to the division *Pertusæ*, but the specimens in the herbarium are not sufficiently good to determine the species accurately, there being little remaining except the persistent bases of the perithecia. Abortive states of this plant pass under the name of *Rhizomorpha subcorticalis*, though, as Fries observes, every production so named is not to be referred to it. Withering long ago perceived the connexion: the editor of the last edition is, however, most probably wrong in referring to *Rh. imperialis*. I perfectly agree with that most judicious author, M. Fries, as to the desirableness of excluding from the list of fungi all such doubtful productions. Nothing, however, can be more interesting, and, as regards the physiology of these plants, more instructive than the correct reference of such abortive forms to the perfect species.

11. *S. carpophila*, Pers. (mast *Sphæria*); corky slender simple, clavula subulate albedo-pulverulent at length black, stem very long root-like. *Pers. Obs. 2. t. 1. f. 3. (fide Fr.). Fr. Syst. Myc. v. 2. p. 328. Scler. Succ. ! n. 302. Fl. Dan. t. 1858. f. 1.*

On beech mast. Very common in Northamptonshire. *Rev. M. J. Berkeley.*—Communicated by *Mr. Baxter* to *Purton.*—Often gregarious. The plant intended by *Ray* as quoted by *Fries* is surely not this.

DIV. II. PORONIA (from  $\pi\omicron\rho\omicron\varsigma$ , a pore). Cup-shaped, marginate, stipitate or sessile.

12. *S. punctata*, L. (dotted cup-shaped *Sphæria*); stipitate turbinate, disc truncate dotted with the black ostiola, ex-

ternally blackish. *Sow.!* t. 54. *Fr. Syst. Myc. v. 2. p. 330.* *Grev. Sc. Crypt. Fl. t. 327.* *With. v. 4. p. 356.* *Moug. & Nest.!* exs. n. 958. *Sp. Poronia, Fr. Scler. Suec. n. 182.* *Hook. Fl. Scot. 2. p. 5.* *Peziza punctata, Linn. Sp. Plant. 1652.* *With. early editions.*

On hot beds, horse dung, &c. Occasionally in various parts of Great Britain.—Gregarious;  $\frac{1}{2}$ —1 inch high, at first covered with a powdery veil, which at length vanishes and leaves the outer portion of the plant blackish, the disc being still white, but dotted with the orifices of the perithecia, which, from the depression of the cup are often rather convergent than divergent.

DIV. 3. PULVINATÆ. (from *pulvinatus*, cushion-shaped.) *Sub-hemispherical, immarginate, sessile.*

\* *Veil pulverulent. Perithecia black.\**

13. *S. concéntrica*, Bolt. (*zoned Sphæria*); large subglobose brownish at length in general black concentrically zoned within, perithecia oblong immersed. *Bolt. t. 180.* *Fr. Syst. Myc. v. 2. p. 331.* *Scler. Suec. n. 141.* *Sp. fraxinea, Sow. t. 160.* *With. v. 4. p. 361.* *Stromatosphæria concentrica, Grev. Fl. Ed. p. 355.* *Hypoxylon concentricum, Sc. Crypt. Fl. t. 324.*

On trunks of dead or decaying trees, especially on ash. In perfection in spring or early summer. Common.—Often 2—3 inches broad; easily known by its beautifully zoned *stroma*. I have specimens from Madeira on *Erica arborea*. A curious stipitate form is figured by *Person, Syn. t. 1. f. 3, 4.*

14. *S. fragifórmis*, Pers. (*Strawberry Sphæria*): globose vermilion-brown bright black within, perithecia ovate, ostiola at length prominent. *Pers. Syn. p. 9. t. 1.* *Moug. & Nest.!* exs. n. 273. *Fr. Syst. Myc. v. 2. p. 332.* *Scler. Suec.!* n. 41. *Sp. bicolor, Bull. t. 495. f. 2.* *Sp. tuberculosa, Sow.!* t. 374. f. 8. *Sp. lycoperdoides, With. v. 4. p. 360.* *Purt.!* v. 2. & 3. n. 1084. *Stromatosphæria fragiformis, Grev. Sc. Crypt. Fl. t. 136.* *Lycop. variolosum, Sow. t. 271.*

On beech bark, seldom on that of other trees. Very common.—Generally round and about the size of a pea, but when growing on the trunk of a tree, in consequence of plentiful nourishment, sometimes of a considerable size and thickness from many individuals becoming confluent, so as to lose in great measure its usual habit; at first pale pruinose, then bright rust-coloured bordering on vermilion, and gradually becoming tuberculated; when old of a ferruginous black. *Lycoperdon acariforme, Sow.!* t. 146, is certainly the present *Sphæria* with a species of *Isaria* springing from its base.†

\* Analogous to the second subdivision of *CORYCERS*, but placed here that *S. rufa* and *gelatinosa* may stand next to the species of the following division with coloured perithecia.

† It will be observed that in the genus *Sphæria* especially, I have differed from M. Fries in the adjustment of Sowerby's species. This I have not done in any case without the fullest examination, and, when possible, comparison of the original specimens with those published by Fries in the *Scleromyces*

15. *S. fúsca*, Pers. (*brown pulvinate Sphæria*); convex pulvinate purple-brown at length black brown within, perithecia globose, ostiola umbilicate. *Pers. Syn. p. 12. Moug. & Nest. ! n. 178. Hook. Scot. 2. p. 5. Fr. Syst. Myc. v. 2. p. 332. Scler. Succ. ! n. 42. Sph. fuliginosa, Sow. ! t. 373. f. 9. Sp. tuberculosa, Purt. ! v. 2 & 3. n. 1088. S. rugosa, Purt. ! v. 2. n. 1086. Stromatosphæria fusca, Grev. Fl. Éd. p. 356.*

On dead branches of hawthorn, hazel, &c. At first clothed with a rusty or purple-brown meal but not at all vermilion, and then often resembling an incipient *Thelephora*, gradually increasing in thickness; at length naked, black and, according to Fries, to whose correctness I can bear witness, pierced like a sieve.—*Sph. tuberculosa*, Bolt., cannot be this species, as it is expressly stated to burst through the bark. I am quite certain about the synonym of Sowerby, however strange it may appear, but the plant represented is clearly a very thin confluent form.

16. *S. cohærens*, Pers. (*gregarious pulvinate Sphæria*); confluent convexo-plain, at first even dirty-brown then black, black within, perithecia at length rather prominent papillate. *Pers. Syn. p. 11. Nees, Syst. f. 310. B. Fr. Syst. Myc. v. 2. p. 333. Scler. Succ. ! n. 43. Moug. & Nest. ! n. 764.*

On branches, &c.—Specimens of this species are contained in Sowerby's Herbarium, mounted on the same sheet with five figured *Sphærias*, but the label having unfortunately become unglued, it is impossible to determine accurately what species it was considered by him. I am inclined to think it is his *S. picea*, t. 374. f. 5, of which I can otherwise find no specimen, if indeed he did not confound it with *Sphæria fusca*.

17. *S. multifórmis*, Fr. (*variable pulvinate Sphæria*); irregular, at first rugose rusty-brown, at length naked black, within cinereous-black, perithecia subglobose at length prominent papillate. *Fr. Syst. Myc. v. 2. p. 334. Scler. Succ. ! n. 44.—a. young. Fr. Obs. 1. t. 1. f. 2, 3. S. argillacea, Pers. Ic. Pict. t. 3. f. 1—3. Stromatosphæria elliptica, Grev. ! Sc. Crypt. Fl. t. 114. Str. rubiginosa, l. c. t. 110. Sph. labrata, Pers. in litt. Moug. ! ces.—b. adult. Hypox. granulorum, Bull. t. 487. f. 2. Sph. granulosa, Sow. ! t. 355. Purt. ! v. 2 & 3. n. 1096.*

On branches and trunks of trees, especially birch. Common.—Nothing can be more different than the spongy-looking rubiginous young plant and the same when fully grown. But besides this change from the young to the perfect plant, it assumes many forms, being sometimes elliptic, or strongly raised and cristiform, and, on the other hand, sometimes quite flat and depressed. In this latter case the perithecia

*Succia*, and the valuable work of Mongeot and Nestler. For the advantage of a leisurely examination of the species contained in Mr. Sowerby's Herbarium I am indebted to the joint kindness and liberality of Mr. J. D. C. Sowerby and his brother Mr. C. E. Sowerby. It is but right to observe that at the time the *Systema Mycologicum* was published, M. Fries had to trust, as far as Sowerby's species were concerned, to notes made eight years previously, and necessarily imperfect recollections. See *Syst. Myc. v. 2. p. 527.*

are frequently less prominent and smaller, so that it resembles *Sp. rubiginosa*. In every case it is attached firmly to the wood, and hence in branches covered with bark erumpent. *Sp. atro-purpurea*, Johnst. ! Fl. Berw., appears to be the same plant with that figured by Greville. If I mistake not, *Sp. Vogesiaca*, Moug. & Nest., belongs to a different division.—There is a difference between the specimens published by Fries (at least in my copy) which deserves notice. In one the *perithecia* have a simply papilliform *ostiolum*, while in the other there is a distinct neat depression all round the *papilla*.

\*\* *Veil none.*

18. *S. rufa*, Pers. (*red-brown Sphæria*); carnose convex irregular red-brown dirty-white within, ostiola slightly prominent. Pers. Syn. p. 13. Fr. Syst. Myc. v. 2. p. 335. Scler. Succ. n. 303. Fl. Dan. t. 1781. f. 2.

On wood. Abundant specimens are contained in Dr. Hooker's Herbarium, found in Scotland, by Mr. Klotzsch. Collapsing when dry, and, in consequence, wrinkled.

19. *S. gelatinosa*, Tode, (*gelatinous Sphæria*); fleshy convex equal opaque dirty-white within, perithecia prominent darker than the stroma. Tode, Fung. Meck. 2. p. 48. f. 123, 124. Fr. Syst. Myc. v. 2. p. 336. Scler. Succ. n. 303. Fl. Dan. t. 1782. f. 1, 2. Johnst. ! Fl. Berw. v. 2. p. 121.

On branches of fir, &c. Rare. Appin, Captain Carmichael. Murton Craigs, Dr. Johnston.—Varying greatly in colour, pallid, yellowish, green or umber; dotted with the darker *ostiola*.

DIV. 4. CONNATÆ. *Effused, indeterminate, plain.*

\* *Perithecia coloured.*

20. *S. citrina*, Pers. (*lemon-yellow Sphæria*); carnose effused nearly plain lemon-yellow, ostiola rather prominent brownish. Pers. Syn. p. 18. Alb. & Schw. ! Consp. p. 7. Fr. Syst. Myc. v. 2. p. 337. Scler. Succ. ! n. 31. Grev. Scot. Crypt. Fl. t. 215.

On the ground, or creeping over wood, &c. Rare. Appin, Captain Carmichael.—“Web-like *stratum* 2—5 inches broad, byssoid at the margin especially in young plants, attaching itself to everything lying in its way, plain but undulated by the subjacent substances yellow, or tawny-yellow. Captain Carmichael's specimens were tawny above and very bright yellow beneath.” Grev. l. c. There are no specimens in the Appin collection; it should seem then that none were found except those sent to Dr. Greville.

21. *S. lateritia*, Fr. (*pallid brick-red Sphæria*); broadly effused carnose smooth pallid brick-red, perithecia globose, ostiola dot-like. Fr. in Kunz. Myc. Heft. 2. p. 42. Syst. Myc. v. 2. p. 338. El. 2. p. 86. *Merulius helvelloides*, Sow. t. 402. *Hypolyssus ventricosus*, Pers. Myc. Eur. 2. p. 7.

On Fungi in fir woods. Nov. Spetisbury, Dors., Miss Rachett.—“Plant of a rather thick substance rendering the *hymenium* of the



*Agaric* on which it grows, and indeed the whole plant, juicy, so that it soon becomes putrid. *Perithecia* irregularly immersed, at length emergent minute. Surface even, frosted with a thin whitish meal." *Fr. l. c.* I am obliged to rest entirely on the authority of Fries for the right determination of the plant of Sowerby, of which no specimens were preserved, probably on account of the rapid decomposition above-mentioned.

22. *S. lutco-virens*, Fr. (*yellowish Sphæria*); effused thin dirty-yellow with occasionally a greenish tinge, perithecia emergent, ostiola close brownish. *Fr. Syst. Myc. v. 2. p. 339. S. aurantia*, Græv. Scot. *Crypt. Fl. t. 78.*

On Agarics of the *Subgenus* RUSSULA. Not common. Newliston woods, Messrs. Waich & Greville. Oban, Rev. M. J. Berkeley.—The true *St. aurantia* of Persoon will be found in the division *Confluentes*.

23. *S. rubiginosa*, Pers. (*rusty-red Sphæria*); widely effused thin pulverulent bright rust-coloured, perithecia slightly prominent. *Pers. Syn. p. 11. Fr. Syst. Myc. v. 2. p. 340. Scler. Succ. ! n. 142.*

On wood. Appin, Captain Carmichael.—Amongst numerous specimens marked *S. rubiginosa*, from Appin, which are a form of *S. multiformis*, one appears to be the true plant. "Forming longitudinally effused spots, 2—4 inches long, at first pulverulent and dirty yellow. When full-grown densely covered with rust-coloured powder, at length naked and black; perithecia small umbilicate at the apex, almost free. Sometimes the perithecia are solitary larger distant and papillary. Margin barren." *Fr. l. c.*

24. *S. atropurpurea*, Fr. (*purplish-black Sphæria*); effused thin flattened purplish-black, perithecia connate rather prominent, apex plane papillate. *Fr. Obs. 1. p. 174. Scler. Succ. ! n. 75. Syst. Myc. v. 2. p. 340.*

On rotten wood. Appin, Captain Carmichael.—*Perithecia* larger and more prominent than in the following species, with scarcely any stroma. Sometimes the perithecia are scattered, or arranged in lines.

\*\* *Perithecia black.*

25. *S. sérpens*, Pers. (*creeping Sphæria*); effused thin flattened at length black, perithecia subglobose rather prominent papillated. *Pers. Syn. p. 20. Nees, Syst. f. 317. Fr. Syst. Myc. v. 2. p. 341. Scler. Succ. ! Fl. Dan. t. 2037. f. 1. Sp. diffusa*, Sow. ! t. 374. f. 10. *S. uda*, Nees, f. 318. *S. crustacea*, Sow. t. 372. f. 11.

On wood, branches, &c. Appin, Captain Carmichael. Northamptonshire, Rev. M. J. Berkeley.—At first clothed with thin, cinereous, mealy down, at length naked, 2—3 inches or more long. Of the two figures in Sowerby, the first certainly is this plant; as regards the second I follow the judgment of Fries, there being no specimen in Mr. Sowerby's collection.

26. *S. botryosa*, Fr. (*grape-bunch Sphæria*); caespitoso-conglomerate rounded, perithecia globose connate spiculato-rugose

depressed at the apex. *Fr. Syst. Myc. v. 2. p. 342. Scler. Suec.!* n. 112.

On hard oakwood. Rockingham Forest, Norths. *Rev. M. J. Berkeley.*—A very puzzling species in consequence of the asperities of the surface at first sight closely resembling the papillæ of numerous minute aggregate *perithecia*; these at length wear off and expose the true *perithecia* with their depressed apices.

\*\* **HYPOPHERICÆ.** *Perithecia vertical, immersed, covered with the stroma and piercing it by an attenuated neck.*

**DIV. 5. GLEBOSÆ.** *Slightly effused, but not indeterminate, distinct from the matrix. Perithecia large immersed.*

27. *S. deusta*, Hoffm. (*scorched Sphæria*); effused thick undulated rugose, when young pulverulent whitish cinereous in the centre, at length rigid, perithecia ovate furnished with a short neck. *Hoffm. Crypt. 1. t. 1. f. 2. Fr. Syst. Myc. v. 2. p. 345. Scler. Suec.!* n. 261. *Moug. & Nest.!* n. 276. *Kl.!* *Fung. Germ. exs. n. 36. Sp. maxima, Bolt. t. 181. Sow. t. 338. With. v. 4. p. 360. Hypoxylon deustum, Grev. Sc. Crypt. Fl. t. 324. f. 2. Stromatosphæria deusta, Grev. Fl. Ed. p. 356.*

On rotten trunks of trees. Spring—Autumn. At first fleshy and pulverulent, at length naked very brittle, 2—3 inches broad. *Sporidia* fusiform, biseptate. I have not referred to Purton, as authentic specimens are clearly *S. multiformis*. It is scarcely possible, however, that he should not have been acquainted with the true plant. I have never seen the *perithecia* so small as in Dr. Greville's figure.

28. *S. nummulária*, Bull. (*pomfret-cake Sphæria*, Sow.); determinate quite plain, externally and internally black, perithecia immersed ovate, ostiola globose slightly prominent. *Moug. & Nest.!* n. 374. *Fr. Syst. Myc. v. 2. p. 348. Hypoxylon nummularium, Bull. t. 468. f. 4. S. depressa, Sow. Herb.*

On wood and bark.—Sowerby, who confounded it with *S. disciformis*. "Hard, orbicular, elliptic or longitudinally effused from the confluence of one or more individuals  $\frac{1}{2}$ —2 inches broad, 1 line thick, separable from the matrix, even, very slightly papillated under a lens; ostiola distant, *Perithecia* large immersed." *Fr. l. c. S. diffusa, Sow.*, is *S. serpens*. This species has been gathered at Juan Fernandez by Bertero, of which specimens are in Dr. Hooker's Herbarium.

**DIV. 6. LIGNOSÆ.** *Determinate, connate with the matrix; base circumscribed with a black line arising from the outer coat of the stroma. Perithecia sunk down to the bottom of the stroma. Bursting through either the bark or cuticle.*

29. *S. bulláta*, Ehr. (*convex disc-like Sphæria*); erumpent convexo-plain oval or reniform black, white within papillated with the ostiola. *Hoffm. Veg. Crypt. t. 2. f. 1. Pers. Ic. Pict.*

t. 3. f. 6, 7. *Fr. Syst. Myc. v. 2. p. 349. Scler. Suec. ! n. 342. Moug. & Nest. ! n. 866. Sp. depressa, Bolt. t. 122. f. 1.*

On willow branches. Not uncommon.—*Plant* 2—3 lines broad, gently convex, brownish, then black. *Perithecia* in a single row, globose; but often altered in form by mutual pressure, resting upon the matrix. *Ostiola* projecting slightly, often stellate. When cut off horizontally beneath the *stroma* a distinct black line is seen upon the wood, which is proved by a vertical section to arise from a thin black stratum continued from the outer coat of the *stroma* and running between the bark and the wood.

30. *S. undulata*, Pers. (*interrupted Sphæria*); effused interrupted waved black white within, ostiola rather prominent subrotund. *Pers. Syn. p. 21. Moug. & Nest. ! n. 371. Hook. Scot. 2. p. 5. Fr. Syst. Myc. v. 2. p. 350. Grev. Sc. Crypt. Fl. t. 223. f. 1.*

On dead branches of trees. By no means so common as the following species, of which Fries judges it a mere variety.—It is liable to be confounded with some states of *Sp. lata*. At least I have seen specimens of that species marked for the present on high authority. It may be easily distinguished by being erumpent.

31. *S. stigma*, Hoffm. (*black dotted Sphæria*); effused often nearly surrounding the branch flat even, at length black, ostiola nearly plain subimmersed. *Hoffm. Veg. Crypt. 1. t. 2. f. 2. Moug. & Nest. ! n. 372. Fr. Syst. Myc. v. 2. p. 350. Scler. Suec. ! n. 46. Stromatosphæria stigma, Grev. Sc. Crypt. Fl. t. 223. f. 2.—γ. S. decorticans, Sow. t. 137. S. decorticata, Purt. v. 2 § 3. n. 1093. Moug. & Nest. ! n. 373.*

On sticks. Extremely common.—Many inches long, throwing off the cuticle exactly in the manner of *Thelephora comedens*, varying with the *ostiola* sunk in a little pit and prominent. At first brownish, at length black, generally cracked transversely. Sowerby had both states in view, but the magnified figure at least belongs to the variety. His *S. cinerea ! t. 373. f. 11*, appears to me an altogether abortive state; there are no distinct perithecia in it.

32. *S. disciformis*, Hoffm. (*disc-like Sphæria*); orbicular plain even black white within, perithecia attenuated into a slender neck, ostiola punctiform. *Hoffm. Veg. Crypt. 1. t. 4. f. 1. Moug. & Nest. ! n. 80. Fr. Syst. Myc. v. 2. p. 353. Scler. Suec. ! n. 71. Stromatosphæria disciformis, Grev. Sc. Crypt. Fl. t. 314.*

On dry branches of beech, &c. Very common.—About two lines broad, at first reddish, more constantly round than *S. bullata*, flat or depressed and sometimes waved, not at all convex. *Perithecia* more oblong; *ostiola* prominent or immersed. This has been generally confounded with *S. bullata* and *nummularia*, so that I have not given the older English synonyms. The figure of Sowerby, t. 216, was, I am inclined to think, made from the present species, but it is evidently slightly modified in consequence of his having *S. bullata* also in view. In his herbarium both the species are pasted on the same paper with a common label. Even Dr. Greville appears at first to have confounded

the two, judging from specimens sent to Dr. Hooker: and, consequently, I should feel inclined to refer the *S. disciformis* of *Fl. Ed.* to *S. bullata*, though the plant figured in the *Sc. Crypt. Fl.* is unquestionably the true species. *Variolaria punctata*, *Bull. t.* 432. *f.* 2. appears to me to represent *S. bullata*.

33. *S. áspera*, Fr. (*rough Sphæria*); orbicular or angular convex black, perithecia attenuated into a slender neck covered with a dirty-white stroma, ostiola conico-cylindrical. *Fr. Syst. Myc. v.* 2. *p.* 354. *S. erecta*, *Purt. ! v.* 3. *n.* 1529.

On branches of oak, &c. Common.—Very much resembling *S. verrucæformis*, but the stroma is dirty-white, the ostiola more prominent, and the neck, instead of being short, attenuated.

34. *S. favácea*, Fr. (*honey-comb Sphæria*); irregular black, perithecia oblong-ovate with a short neck covered with the thin dirty-white stroma, ostiola rather prominent convexo-subrotund. *Fr. Obs. Myc. 2. t.* 8. *f.* 5. *Syst. Myc. v.* 2. *p.* 354. *Scler. Succ. ! n.* 306.

On birch yet covered with bark. Dumfries-shire. *Dr. Greville*.—“Sometimes orbicular, sometimes irregular from several individuals being confluent, prominent, 2—4 lines or more broad, at first pale wood-colour. *Perithecia* disposed indistinctly in two layers, larger than in the neighbouring species, their bases subconnate, apices distinct, covered with a thin stroma, which is in the old state obliterated. Base circumscribed by a fine black line.” *Fr. l. c.*

35. *S. verrucæformis*, Ehr. (*wart-like Sphæria*); angular convex rugose black nearly of the same colour within, circumscribed below, perithecia ovate with a short neck. *Pers. Syn. p.* 26. *Fr. Syst. Myc. v.* 2. *p.* 355. *Scler. Succ. ! n.* 74. *Moug. & Nest. ! n.* 867. *S. parallela*, *Sow. t.* 394. *f.* 4.

On branches of hazel, beech, &c. Very common.—Bursting through the bark by the laciniae of which it is surrounded, 1—1½ line broad black, brownish within, the orifices of the *perithecia* more or less distinct, in the specimens published in *Scler. Succ.* distinctly visible to the naked eye, sometimes, however, very indistinct.

36. *S. flavo-virens*, Hoffm. (*yellow-green-fleshed Sphæria*); unequal rugose black within pulverulent yellow-green, perithecia globose, ostiola rather prominent punctiform. *Pers. Syn. p.* 22. *Moug. & Nest. ! n.* 375. *Fr. Syst. Myc. v.* 2. *p.* 357. *Scler. Succ. ! n.* 222. *S. flavo-virescens*, Hoffm. *Veg. Crypt. 1. t.* 2. *f.* 4. *S. multiceps*, *Sow. ! t.* 394. *f.* 8. *Purt. v.* 2 & 3. *n.* 1102. *Stromatosphæria multiceps*, *Grev. Fl. Ed. p.* 356. *Strom. flavo-virens*, *Sc. Crypt. Fl. t.* 320.— $\beta$ . *multiceps*. *Scler. Succ. ! n.* 45.

On branches of trees either covered with the bark or decorticated.—A most variable species, but always easily distinguished by the peculiar colour of the stroma.— $\beta$ . appears at first sight very different, being covered by the wood which is raised up. *Sp. multiceps*, *Sow.*, regards the more common form of the species, as appears from the figured specimen, but he was well acquainted also with the variety.

37. *S. úda*, Pers. (*parallel Sphæria*); short determinate emergent black, perithecia subovate, ostiola obtuse unequal. *Pers. Syn. t. 1. f. 11—13. Fr. Syst. Myc. v. 2. p. 358. Scler. Succ. ! n. 324.*

On oak-wood in moist places. Cotterstock, Norths., *Rev. M. J. Berkeley*.—Subelliptic, parallel, 2—3 lines long, always furnished with a circumscribing black line. *Sporidia* oblong-elliptic containing two *Sporidiola*. Very much resembling small scattered specimens of *S. serpens*. I am quite certain that *S. parallela*, Sow., is not the present species, and have little doubt that it is *S. verruciformis*. No specimens indeed are named, but there are one or two loose samples of that plant in which the pustules are disposed in parallel rows, and are most probably what he had in view. Indeed his account, “the *spherules* are imbedded in a blackish substance which rises above the *burst cuticle*, standing in little patches above it,” is quite conclusive as regards its non-identity with *S. uda*, but agreeing sufficiently exactly with *S. verruciformis*. *S. immersa*, Sow. ! *t. 374. f. 1.* is *S. leioplaca*, Fr.

**DIV. 7. VERSATILES.** (*Named from their intimate relation to the species of the foregoing and succeeding divisions.*) *Determinate, connate, not circumscribed. Perithecia scattered through the stroma.*

38. *S. irregularis*, Sow. (*brown-fleshed Sphæria*); erumpent prominent irregular changing from brown to black, light reddish-brown within, ostiola latent. *Sow. t. 374. f. 9. Part. ! v. 2 § 3. n. 1098. Fr. Syst. Myc. v. 2. p. 361.*

On dead branches of Elm. May—Nov. Not rare, according to *Purton*.—“From the size of a pea to that of the largest hazel nut. Firmly attached by a broad base, or free round the edge with a thick stem, the whole resembling a stud or clumsy button, irregular, semiglobate flattened, circular or oblong.” *Part. MISS.* Certainly not circumscribed at the base.

39. *S. quercina*, Pers. (*oak-bark Sphæria*); erumpent sub-orbicular convex reddish-brown, at length black, nearly of the same colour within, ostiola rather prominent four-sided. *Pers. Syn. p. 24. t. 1. f. 7. b. Fr. Syst. Myc. v. 2. p. 362. Part. v. 3. n. 1590. Stromatosphæria quercina, Græv. Fl. Ed. p. 358.*

On oak branches. About Edinburgh, occasionally. *Dr. Greville*. It has also been found by *Mr. Baxter*. I have seen no English specimens.—This requires to be carefully distinguished from *S. verruciformis*, from which it is known in every stage of growth by the absence of the circumscribing black line. I suspect from *Dr. Johnston's* description and from the transmission of specimens to *Dr. Hooker*, that his *S. quercina* is *S. leiphæmia*.

40. *S. lanceiformis*, Fr. (*lanccolate Sphæria*); bursting forth transversely lanceolate convex black, at first cinereous within, then blackish, ostiola at length slightly prominent. *Fr. Obs. 2. p. 324. Syst. Myc. v. 2. p. 362. Scler. Succ. ! n. 73. S. betulina, Sow. ! t. 371. f. 6.*

On birch bark. *Sowerby*.

41. *S. ferruginea*, Pers. (*ferruginous Sphæria*); bursting forth transversely subrotund unequal black, stroma pulverulent ferruginous, ostiola aggregate round spinulose. *Pers. Syn. p. 35. Obs. Myc. 1. t. 5. f. 1, 2. Moug. & Nest. ! n. 377. Hook. Fl. Scot. 2. p. 6. Fr. Syst. Myc. v. 2. p. 363. Scler. Suec. ! n. 305. Purt. MSS. Stromatosphæria ferruginea, Grev. Fl. Ed. p. 358.*

On hazel branches, &c. Common.—“*Ostiola* even, very variable, sometimes almost obsolete, sometimes very long, slender, flexuous equal. Obsoleteley circumscribed.” *Fr. l. c.*

42. *S. ceratospërma*, Tode, (*horned Sphæria*); erumpent subrotund convex black, within dirty-white at length brownish, ostiola spinulose close straight scabrous. *Tod. Fung. Meck. f. 131. Pers. Syn. p. 23. Moug. & Nest. ! n. 567.*

On branches of Roses, Oak, &c. Appin, *Captain Carmichael*.

43. *S. Hýstrix*, Tode, (*hedge-hog Sphæria*); bursting forth transversely depressed oval rather plain black, brownish within, rostellata distinct somewhat incrassated above. *Tod. Fung. Meck. f. 127. Fr. Syst. Myc. v. 2. p. 364. Moug. & Nest. exs. n. 959, not 569.*

On sycamore branches. Appin, *Captain Carmichael*.—The *pustule* is brown within but covered with a distinct black *stroma*, which will at once, when accurately observed, distinguish it from *S. stilbostoma*, var. *conferta*.

44. *S. Strumèlla*, Fr. (*black currant-branch Sphæria*); bursting forth transversely depressed elliptic, nearly plain black, stroma cortical, ostiola cylindrical even. *Fr. Syst. Myc. v. 2. p. 365. Scler. Suec. ! n. 115. Moug. & Nest. n. 9, 60. Cenangium ribis. Purt. MSS.*

On dry currant branches. Common.—*Sporidia* bipartite, constricted in the centre, in dry specimens. Sometimes it bursts through the bark longitudinally. See *Fr. El. 2. p. 74.*

Div. 8. CONCRESCENTES. (*Named from the crowded subsimple perithecia.*) *Stroma* effused, indeterminate, innate not erumpent, connate, without any circumscribing line. *Perithecia* more or less emergent.

45. *S. spinósa*, Pers. (*spinous Sphæria*); very widely effused emergent jet black, perithecia at length connate, ostiola spinous thick four-sided sulcate. *Pers. Syn. p. 34. t. 2. f. 9—12. Moug. & Nest. ! n. 376. Fr. Syst. Myc. v. 2. p. 368. Scler. Suec. ! n. 11. Fl. Dan. t. 2038. f. 2.*

On wood. “*Botanic Garden. Oxford, Mr. Baxter.*” *Purt. MSS.* —“*Spreading over the wood for a great space and staining it black; when young immersed, scabrous, villous, rugose; perithecia almost free covered with a thin crust, when old subemergent remarkable for its large prominent pyramidal or irregular always rugged ostiola. Perithecia ovato-globose, rather large, joined by a thin crust.*” *Fr. l. c.*

46. *S. spiculosa*, Pers. (*spiculate Sphæria*); effused immersed black, perithecia globose, ostiola very slender long round erumpent. *Pers. Syn. p. 33. Fr. Syst. Myc. v. 2. p. 369. Scler. Succ.! n. 307. S. curvirostra, Sow.! t. 373. f. 5.*

On branches of willows or even on the more woody portions of herbaceous plants. Appin, *Captain Carmichael*. Northamptonshire, *Rev. M. J. Berkeley*.—Fries informs us that he has received it from *Dr. Greville*. Staining the branches on which it grows of a bright shining black. *Perithecia* immersed in the wood, irregularly scattered, sometimes grouped.

47. *S. discutiens*, Berk. (*veiled spiculate Sphæria*); broadly effused, perithecia sunk in the inner bark at length throwing off the epidermis by means of their long cylindrical rather scabrous ostiola, covered with a dull black stroma.

On branches apparently of Elm. Near Edinburgh. *Dr. Greville in Hook. Herb.* Northamptonshire. *Rev. M. J. Berkeley*.—Bearing exactly the same relation to *S. spiculosa* that *S. velata* bears to *S. lata*. Evidently distinct from its coarser *ostiola*. The specimens from *Dr. Greville* in *Dr. Hooker's Herbarium* are unnamed.

48. *S. lata*, Pers. (*broad Sphæria*); broadly effused emergent unequal, perithecia close sunk in the wood, covered with a thin black stroma, ostiola slightly prominent conical. *Pers. Syn. p. 29. Hook. Scot. 2. p. 6. Fr. Syst. Myc. v. 2. p. 369. Scler. Succ.! n. 112. Moug. & Nest.! n. 568. S. papillata, Hoffm. Veg. Crypt. 1. t. 4. f. 3. Stromatesphæria lata, Grev. Fl. Ed. p. 357.*

On wood, dry branches, &c. Common.—Often confounded with the following species. Generally effused for some inches but sometimes interrupted, in which state it is marked as *Dr. Greville's S. undulata* in *Dr. Hooker's Herbarium*, but probably by a slip of the pen, as the figure appears to have been taken from the true plant. Staining the wood on which it grows dull black, rough with the slightly prominent shining ostiola. *S. fuliginosa*, Sow., as stated above, is *S. fusca*.

49. *S. leioplaca*, Fr. (*patchy Sphæria*); emergent interrupted even black, of the same colour within, perithecia close, ostiola very small at length umbilicate. *Fr. Syst. Myc. v. 2. p. 370. Scler. Succ.! em. n. 112. B. S. immersa, Sow.! t. 374. f. 1.*

On wood and dry branches; equally common, I believe, with the last.—Distinguishable by its interrupted mode of growth, more even surface and far more minute *ostiola*. I am quite certain that I am correct as to the synonym of Sowerby, whose figured specimen is now before me, and the black line penetrating the wood is much exaggerated. In other specimens it runs nearly parallel with the surface of the branch from patch to patch, exactly as in the specimens of Fries also before me. Indeed this ought not to be matter of surprise, as *S. spiculosa* sends occasionally into the wood black creeping lines. See *Fr. El. 2. p. 75. S. picca*, Sow., I believe to be *S. coharens*.

50. *S. decipiens*, Dec. (*flower-like Sphæria*); effused perithecia ovate-oblong immersed covered with the grey-black bark,

ostiola hemispherical rugose hollowed out. *Dec. Fl. Fran.* 2. p. 285. *S. floriformis*, *Sow.!* t. 297.

On bark of the Hornbeam. Hainault Forest. *Sowerby*.—The plant of *Sowerby* is referred by *Fries* in his *Index Alphabeticus* to *S. millaria*, but an inspection of original specimens compared with the figure which is very characteristic, shows clearly that it is the plant of *De Candolle* cited above, with which it agrees even to the peculiar matrix. *Perithecia* ovate-oblong, with a rather long neck, surmounted by the beautifully radiato-rugose more or less deeply umbilicate *ostiola*.

51. *S. fiméti*, *Pers.* (compound dung *Sphæria*); crust-like immersed black, perithecia oblong at length connate, ostiola elongated, conical, emergent. *Pers. Syn.* p. 64. *Fr. Syst. Myc.* v. 2. p. 373. *Scler. Succ.!* n. 269.

On horse and cow-dung. *Appin. Captain Carmichael*, who appears to have found it abundantly.

52. *S. veláta*, *Pers.* (veiled *Sphæria*); broadly effused thin, perithecia scattered immersed, covered with a black membranaceous crust, ostiola erumpent. *Pers. Syn.* p. 32. *Fr. Syst. Myc.* v. 2. p. 375. *Scler. Succ.!* n. 225.—b. *emersa*, *Sow.* t. 372. f. 10.

On fallen branches of lime.—b. *Sowerby*. “Surrounding the branches, and growing in the inner bark, perforating the epidermis with the *ostiola* and at length throwing it off. *Perithecia* minute, erect, ovato-globose, sometimes solitary, sometimes irregularly aggregate, scarcely disposed in circles, by no means stipate, nestling in the bark itself, covered with a thin patchy *stroma*, which is tuberculated with the *perithecia*: *ostiola* erumpent, irregular, opaque.” *Fr. l. c.*

\*\*\* AMPHIPHERICÆ. Compound, perithecia attenuated and elongated above, disposed in circles, convergent, surrounded by a spurious persistent *stroma*.

Div. 9. CIRCUMSCRIPTÆ. (Named from the *stroma* being included in a proper conceptaculum.) *Stroma* formed from the bark contained in an entire (not dimidiate) black conceptaculum which covers it on all sides and is adnate at the base. *Perithecia* irregularly disposed in circles piercing the conceptaculum by their rather long converging necks. *Ostiola* rather long.

53. *S. Prunástri*, *Pers.* (sloe-tree *Sphæria*); lentiform, *stroma* formed of the bark, ostiola elongated crowded 4—6-angled sulcate subdivergent. *Pers. Syn.* p. 37. *Moug. & Nest.!* n. 378. *Hook. Scot.* 2. p. 6. *Fr. Syst. Myc.* v. 2. p. 380. *Scler. Succ.!* n. 226. *Stromatosphæria prunastri*, *Grev. Fl. Ed.* p. 358.

On branches of the Sloe. Common.—Bursting forth transversely.

54. *S. stelluláta*, *Fr.* (star-mouthed *Sphæria*); subrotund immersed, *stroma* white or dirty-white circumscribed, ostiola short ovato-globose radiato-stellate. *Fr. Syst. Myc.* v. 2. p. 381. *Scler. Succ.!* n. 442. *Johnst. Fl. Berw.* 2. p. 122.



On dry elm branches. Berwick. *Dr. Johnston*. Scotland. *Klotzsch in Hook. Herb.* Northamptonshire, not uncommon. *Rev. M. J. Berkeley*.—This species appears to vary greatly as to the size of the patches, their manner of bursting through the bark, the colour of the stroma and the length of the ostiola. Sometimes the ostiola are crowded and pierce the epidermis in a fascicle, but occasionally they are irregularly scattered, the patches somewhat confluent, and the whole surface of the branch pierced by single ostiola, which, though varying in length, are always curiously sulcate.

55. *S. enteroleuca*, Fr. (*white-fleshed Sphæria*); orbicular convex free, stroma white, perithecia small, ostiola crowded free globose or beaked somewhat wrinkled. *Fr. Syst. Myc. v. 2. p. 381.* *Variolaria ceratosperma*, *Bull. t. 432. f. 1.*

On dried branches. Apethorpe, Norths., *Rev. M. J. Berkeley*.—*Pustules* 2—3 lines broad at length by the decay of the bark free. *Stroma* white below, darker above being almost obliterated by the crowded necks of the small perithecia. *Ostiola* rather rugged globose or beaked on the same stick.

56. *S. extensa*, Fr. (*broad-crusted Sphæria*); convex, connected by an effused ambient crust, stroma fibrous, perithecia ovate, ostiola crowded free oblong even. *Fr. Obs. 1. p. 175. t. 3. f. 2.* *Syst. Myc. v. 2. p. 381.*—*b. Rharni*; slightly adnate above with the epidermis, contents of the perithecia blackish.

*b.* On *Rhamnus catharticus*. Rockingham Forest. April. *Rev. M. J. Berkeley*.—Bursting forth transversely, the short crowded oblong shining ostiola being alone visible; when the epidermis is removed a pale mark is seen round the ostiola from a portion of the cuticle being adherent. *Pustules* connected by a brownish-black fibrous ambient crust. *Stroma* fibrous. I propose this as a form of *S. extensa* rather than as a new species, as it agrees in so many characters.

57. *S. corniculata*, Ehr. (*spurred Sphæria*); innate, stroma dirty-white covered with a black conceptaculum, perithecia decumbent, ostiola clouded subcylindric distinct, even. *Pers. Syn. p. 40. Necess. f. 330.* *Hook. Scot. 2. p. 6.* *Fr. Syst. Myc. v. 2. p. 358.* *Stromatosphæria corniculata*, *Grev. Fl. Ed. p. 357.*

On dead branches of various trees. Not unfrequent according to *Dr. Greville*.—"Concealed beneath the bark (epidermis) except the orifices, which are considerably exerted. *Ostiola* pretty constantly umbilicated." *Grev. l. c.*

58. *S. fibrôsa*, Pers. (*fibrous Sphæria*); innate conico-depressed connected by an effused ambient fibrous crust, stroma fibrous, ostiola crowded subrotund even shining. *Pers. Syn. p. 40. t. 2. f. 3, 4.* *Fr. Syst. Myc. v. 2. p. 384.* *Scler. Succ. ! n. 381.*

On Blackthorn. Cotterstock, Norths. *Rev. M. J. Berkeley*.—*Pustules* roundish slightly raising the epidermis and rendering it pale; when the epidermis is stripped off a pale ring is seen round the ostiola arising from the adherence of the cuticle; connected by a brownish-black

fibrous crust. *Stroma* fibrous. Contents of the *perithecia* blackish. There is very little difference except in habit between this and the supposed form of *S. extensa* described above; the latter splitting the cuticle transversely, whereas this merely raises it into little subelliptic inequalities.

**DIV. 10. INCUSÆ.** (Named from the stroma being, as it were, set in the conceptaculum.) *Stroma* formed from the bark contained in a dimidiate patelliform conceptaculum, and covered above by the subconnate epidermis, through which it at length bursts by a wax-like disc. *Perithecia* irregularly disposed in circles, more or less crowded in the centre of the stroma and piercing it by the rather short ostiola.

59. *S. nivea*, Hoffm. (snow-white *Sphæria*); conic, stroma white contained in a close dimidiate conceptaculum, which easily separates from the bark, disc truncate mealy almost snow-white, ostiola slightly prominent globose even. Hoffm. *Veg. Crypt. t. 6. f. 3. With. v. 4. p. 358. Moug. & Nest. ! n. 278. Pert. ! v. 3. n. 1526. Hook. Scot. 2. p. 6. Fr. Syst. Myc. v. 2. p. 386. Scler. Succ. ! n. 76. S. marginata, Sow. ! t. 372. f. 7. Stromatosphæria nivea, Grev. Fl. Ed. p. 358. S. leucostoma, Johnst. Fl. Berw. 2. p. 122.*

On branches of various trees, but especially poplar and hawthorn. Common.—*Sp. nivea*, Sow. ! is clearly *S. ovina*; a false reference being made to Hoffmann. It can only be by a slip of the pen that Fries has referred to it, as the figure alone is quite decisive. The plant is however figured by Sowerby under the name given above from specimens on *Populus Tremula* communicated by Mr. Templeton. According to specimens, *S. nivea*, Grev. l. c., is *S. leiphæmia*, but possibly there may be some mistake in the labelling.

60. *S. leucostoma*, Pers. (white-mouthed *Sphæria*); somewhat conic, stroma cortical contained in a close dimidiate conceptaculum, disc truncate white, perforated by the black poriform ostiola. Pers. *Syn. p. 39. Nees, f. 332. Fr. Syst. Myc. v. 2. p. 387. Scler. Succ. ! n. 258. Pert. MSS. S. pustulata, Moug. & Nest. ! n. 659. S. talus,  $\gamma$ . pileata, Tode, *Fung. Mæck. f. 96.**

On the branches of different species of *Prunus*. Very common.—“At first altogether resembling a *Cytispora* with 1—2 black included ostiola, but when perfect bearing many minute exerted now and then slightly prominent ostiola. It differs from the foregoing in the nature of the disc, the obliterated stroma, and the more adnate conceptaculum.” *Fr. l. c.*

61. *S. angulata*, Fr. (ringed *Sphæria*); loosely circumscribed, stroma cortical, perithecia few crowded in the centre, disc plain black, ostiola exceedingly small. *Fr. Syst. Myc. v. 2. p. 390. Scler. Succ. ! n. 72. El. 2. p. 76. Stromatosphæria nigroannulata, Grev. Fl. Ed. p. 358.*

On branches of beech, birch and lime. Edinburgh, Dr. Greville.

*Sowerby, Herb.* King's Cliffe, Norths., *Rev. M. J. Berkeley.*—In the early stage the *stroma* is white, which accords with Greville's plant now before me. His specimens, however, have not a distinct *conceptaculum*, but they are evidently young, and I presume Fries has received the perfect plant, and I therefore follow him.

62. *S. taleôla*, Fr. (*graft Sphæria*); loosely circumscribed, stroma cortical, perithecia crowded in the centre, disc white, ostiola even immersed punctiform. *Fr. Syst. Myc. v. 2. p. 390.*

On oak branches. King's Cliffe, Norths. *Rev. M. J. Berkeley.*

63. *S. profûsa*, Fr. (*sooty Sphæria*); perithecia globose circumscribed with a variable black line, immersed in a broadly-expanded subiculum, ostiola slightly prominent seated in a minute dirty-white disc. *Fr. Syst. Myc. v. 2. p. 392. Scler. Succ. ! n. 11. Moug. & Nest. ! n. 871. in part.*

On branches of *Robinia Pseudacacia*. Apethorpe, Norths. *Rev. M. J. Berkeley.*—The groups of *perithecia* are connected in the same manner as in *S. extensa* & *fibrosa*.

64. *S. dissépta*, Fr. (*chambered Sphæria*); loosely circumscribed, perithecia scattered large saucer-shaped, ostiola erumpent somewhat united. *Fr. Syst. Myc. v. 2. p. 392. Scler. Succ. ! n. 224. S. Saturnus, Sow. ! t. 216.*

On branches of trees. *Sowerby.*—The plant of Sowerby, on apricot grafts, which is referred doubtfully by Fries to *S. leiphæmia*, most certainly belongs to the present division, and so greatly resembles the polymorphous *S. dissépta*, that I have no doubt it is one of its forms. The scutelliform *conceptaculum* which is  $1\frac{1}{2}$ —2 lines broad is most distinct elliptic or slightly flexuous from the confluence of two individuals; in the centre is a single *perithecium*, rarely two, covered with a dingy substance with a darker slightly prominent *ostiolum* in the centre, and a slender neck, separated from the *conceptaculum* by the loose wood-coloured cortical stroma.

**DIV. 11. OBVALLATE.** (*Named from the covered pustules.*)  
*Stroma formed of the bark without any proper conceptaculum, pustuliform; ostioli collected into a disc.*

65. *S. coronûta*, Hoffm. (*crown-like Sphæria*); perithecia rather irregular disposed in a circle, ostiola even obtuse, at first globose crowded, at length beaked. *Hoffm. Veg. Crypt. 1. t. 5. f. 4, 5. Relh. n. 1357. With. v. 4. p. 362. Schmidt. Myc. Hof. 2. t. 1. f. 14. Purt. v. 2 & 3. n. 1090. Fr. Syst. Myc. v. 2. p. 395.*

On dry branches of oak, dog rose and hawthorn. Appin, *Captain Carmichael.* King's Cliffe, Norths., *Rev. M. J. Berkeley.* It has been found also by *Relhan* & *Purton*.

66. *S. abicêtis*, Fr. (*fir-branch Sphæria*); immersed, stroma thin dirty-white, perithecia ovate aggregate, ostiola oblong even thick collected into a disc. *Fr. Syst. Myc. v. 2. p. 398. Scler. Succ. ! n. 77. Cucurbitaria Pinastri, Grev. Scot. Crypt. Fl. t. 50. excepting the red perithecia which are S. episphæria. See Fr. El. 2. p. 79.)*

On the smaller branches of *Pinus abies*. About Edinburgh. *Dr. Greville*.

67. *S. leiphæmia*, Fr. (*wood-coloured Sphæria*); pustulate, stroma cortical pallid as well as the erumpent disc, ostiola exserted ovate or beaked. *Fr. Syst. Myc. v. 2. p. 399. Scler. Succ. ! n. 73. S. ceratosperma, Purt. MSS.*

On dead oak branches. Durham. *Hook. Herb.* Neighbourhood of Berwick. *Johnston*, sent to *Dr. Hooker* under the name of *S. verrucæformis*. *Purton*.—When the epidermis is stripped off, the bark appears raised into round even pustules with a distinct pallid yellowish disc, entirely destitute of any *conceptaculum* by which it is distinguishable from species of the foregoing division and especially from *S. taleola*. The pustules at length acquire a blackish tinge.

68. *S. turgida*, Pers. (*tumid beech Sphæria*); pustulate, perithecia globose nearly erect close, ostiola obtuse convex at length exserted from a minute narrow disc. *Pers. Obs. Myc. v. 1. p. 17. Fr. Syst. Myc. v. 2. p. 400.*—*b. S. faginea, Pers. Syn. p. 44. Fr. ! Scler. Succ. n. 262. Cryptosphæria faginea, Grev. Fl. Ed. p. 359.*

On branches of beech. Common.—The branches on which it grows and which it generally surrounds are of a bright red-brown. The perithecia vary in size, and in the number grouped together, which is from 3—8, their ostiola collected in an erumpent brown disc. Most of the British specimens I have seen marked as the present species are *S. quaternata*. Indeed, *Moug. & Nest. n. 179*, appears to me to be that species.

69. *S. salicina*, Pers. (*Willow Sphæria*); pustulate, perithecia globose disposed in circles, disc at length white pierced with one or two pores, ostiola globose very minute at length exserted. *Pers. ! Syn. p. 47. Fr. Syst. Myc. v. 2. p. 401. Scler. Succ. ! n. 10. S. cancellata, Tod. Fung. Mech. f. 107.*

On willow twigs. Common.—“*Perithecia* distinct, thin, minute, about eight in every circle, their necks united into a minute waxy slightly prominent disc, which is at first dingy, then white pierced with a black pore, when it is very like *S. leucostoma*, but when perfect, the disc is obliterated by the shining globose ostiola.” *Fr. l. c.—S. salicina, Purt. Midl. Fl.*, according to specimens before me, is *Phacidium carbonaceum*.

70. *S. ambiens*, Pers. (*ambient Sphæria*); perithecia immersed disposed in circles, ostiola even subglobose surrounding a dirty-white waxy disc. *Pers. Syn. p. 44. Fr. Syst. Myc. v. 2. p. 403. Scler. Succ. ! n. 8. Moug. & Nest. ! n. 872. Fl. Dan. t. 2039. f. 1.*

On branches of various trees, but especially *Rosaceæ*. Very common.—*Sporidia* oblong curved. Varying much in size, in the degree of elevation above the general surface, and the colour of the disc, which is sometimes jet-black. *S. ambiens, Johnst. ! Fl. Berw., is Cytispora carposperma.*

71. *S. stilbostoma*, Fr. (*black-sprinkled Sphæria*); perithecia

disposed in circles, covered with a waxy dirty-white disc, ostiola prominent scattered bursting forth and at length obliterating the disc. *Fr. Syst. Myc. v. 2. p. 403. Scler. Succ. ! n. 145.*—*γ. conferta*; disc irregular obliterated by the crowded ostiola, *S. Talus, var. conferta, Tod. Fung. Meck. f. 94. S. platanoides, Pers. Syn. p. 45. Fr. ! Scler. Succ. n. 186. S. Hystrix, Moug. & Nest. ! n. 569. (corrected under n. 959.)*

On branches of various trees. Apethorpe, Norths., *Rev. M. J. Berkeley.* On beech, laurel, &c.—On sycamore. *Purton.*—A very variable species distinguished from the foregoing by the scattered ostiola.

**DIV. 12. CIRCINATÆ.** (Named from the circular arrangement of the perithecia.) *Perithecia disposed in a circle free without any heterogeneous disc or conceptaculum.*

72. *S. pulchella, Pers. (beautiful Sphæria)*; perithecia globose decumbent circinating, ostiola very long flexuous obtuse. *Pers. Syn. p. 43. Nees, f. 333. Moug. & Nest. ! exs. n. 279. Fr. Syst. Myc. v. 2. p. 406. Scler. Succ. ! n. 146. Cryptosphaeria pulchella, Grev. Sc. Crypt. Fl. t. 67. Fl. Ed. p. 360.*

On branches of birch and cherry. Chiefly in subalpine districts.—There are two forms of this elegant species, the one smaller on the birch, to which Fries' published specimens belong; the other larger, given by *Mougeot & Nestler.* Both appear to be figured by Dr. Greville.

73. *S. hypodermia, Fr. (circinating elm Sphæria)*; circinating, perithecia globose covered with a thin black crust, ostiola subglobose crowded shining. *Fr. Syst. Myc. v. 2. p. 407. Scler. Succ. ! n. 32.*

On dead branches of Elm. *Sowerby.*—Introduced on the authority of specimens in the Herbarium of Mr. Sowerby, resembling exactly those of Fries. Externally there are scarcely any traces of the presence of the perithecia, except the small black spots in which the ostiola are seated.

74. *S. quaternata, Pers. (quaternate Sphæria)*; perithecia generally grouped four together naked decumbent, ostiola short obtuse even pierced. *Pers. Syn. p. 45. t. 2. f. 1, 2. Fr. Syst. Myc. v. 2. p. 409. Scler. Succ. ! n. 9. Fl. Dan. t. 2039. f. 2. S. faginea, Moug. & Nest. ! n. 179. (at least in the copy before me.) Part. MSS.*

On beech branches. Very common.—*Perithecia* generally but not constantly quaternate, decumbent, sometimes when the epidermis is stripped off adhering to it, but occasionally left behind in the inner bark. *Ostiola* collected together and perforating the bark by a little black rugged convex tubercle.

75. *S. furfuracea, Fr. (yellow-frosted Sphæria)*; irregularly circinating, perithecia globose mixed with yellow branny dust, ostiola very short joined obsoletely prominent. *Fr. Syst. Myc. v. 2. p. 409.*

On branches. Fineshade. Norths., *Rev. M. J. Berkeley*.—*Perithecia* about 12 together their *ostiola* minute, black in a small flat disc, which is not raised above the bark. *Pustules* on the same branch, bursting the branch transversely or longitudinally; sometimes three or four are confluent giving the plant altogether a different habit like that of *S. strumella*.

76. *S. convérgens*, Tod. (*convergent Sphæria*); *perithecia* about six together minute ovate circinating converging, as well as the round somewhat attenuated erumpent *ostiola*. *Tod. Fung. Meck. f.* 111. *Sow. t.* 374. *f.* 6. *Fr. Syst. Myc. v.* 2. *p.* 410. *Johnst. Fl. Berw. 2. p.* 122.

On smooth bark.—I am very doubtful whether the species intended by Sowerby was the true plant of Tode. There is no named specimen, but I rather suspect that the plant he had in view was *S. leiphæmia*. I have, however, no certain ground to go upon, and, therefore, leave the matter as it at present stands. *S. oblonga*, Sow., which is quoted doubtfully under *S. vasculosa* by Fries, with the remark, however, that supposing the *conceptaculum* to have been overlooked, it agrees better with *S. melasperma*, I believe to be *S. prunastri*; though of this again there are no named specimens. There is yet another species figured by Sowerby of which I have had the privilege of examining specimens, *S. perforata*, which appears to me to approach very near to *S. hypodermia*, Fr., agreeing with it in having a thin black crust, which in the present instance is quite even and concave. It does not, however, grow on the elm, but apparently on ash; and as it seems not to have attained its most perfect form, I judge it expedient to leave it to future investigation.

\*\*\*\* EPIPHERICÆ. *Not strictly compound. Perithecia naked, destitute of a neck, seated upon a stroma which is frequently spurious, but at first covered with the matrix.*

DIV. 13. CÆSPITOSÆ. *Perithecia cæspitose, superficial, free seated upon a subinnate erumpent stroma.*

77. *S. cinnabárina*, Tod. (*vermilion Sphæria*); *cæspitose*, *perithecia* globose corrugated vermilion at length brownish, *ostiola* papillæform. *Tod. Fung. Meck. f.* 68. *Fr. Syst. Myc. v.* 2. *p.* 412. *S. fragiformis*, *With. v.* 4. *p.* 359. *Sow. ! t.* 256. *Purt. ! v.* 2 § 3. *n.* 1083. *S. decolorans*, *Pers. ! Syn. p.* 49. *Moug. & Nest. ! n.* 570. *Fr. Scler. Succ. ! n.* 184. *Cucurbitaria decolorans*, *Grev. Fl. Ed. p.* 359. *C. cinnabarina*, *Sc. Crypt. Fl. t.* 135. *Baxt. ! n.* 26.

On dead or dying trunks and branches of various trees. Winter and Spring. Extremely common.—Easily known by its rugged *perithecia*. The *stroma* appears to me most certainly *Tubercularia vulgaris*. See *Fr. El. p.* 79. The *ostiola* are frequently very indistinctly papillæform.

78. *S. ochrácea*, *Grev.* (*yellow-ochre Sphæria*); *cæspitose*, *perithecia* globose furfuraceous bright yellow-ochre, *ostiola* impressed papillæform. *Grev. ! MSS. Fr. El. 2. p.* 79.

On twigs. Very rare. Durham, *Dr. Greville*.—This most beautiful and curious species resembles very much the foregoing, but is distinct in the colour both of the *perithecia* and *stroma*, which latter is at length black. Fries informs us that he has received the *stroma* quite naked and a true *Tubercularia*, as he believes, *Tubercularia lutescens*, Link.

79. *S. coccinea*, Pers. (*carmine Sphæria*); cæspitose, perithecia ovate even bright-red, ostiola papillæform. *Pers. Syn.* p. 49.  *Ic. et Desc. t. 12. f. 2. Moug. & Nest. ! n. 180. Fr. Syst. Myc. v. 2. p. 412. Scler. Succ. ! n. 183. S. Mori, With. v. 4. p. 359. Sow. ! t. 255. Purt. v. 3. n. 1520. Cucurbitaria coccinea, Grev. Fl. Ed. p. 359. Baat. ! n. 25.*

On branches of various trees. Common.—Sometimes very much scattered and then frequently confounded with *S. sanguinea*.

80. *S. aquifolia*, Mong. (*cæspitose Holly Sphæria*); cæspitose, stroma yellowish within, perithecia globose rugulose umbilicate from collapsion, at first brick-red, then pale, at length black. *Moug. ! MSS. Fr. El. 2. p. 82.*

On branches of Holly. Apethorpe. Norths. *Rev. M. J. Berkeley*.—My specimens are in rather an advanced state, but I am quite convinced that they belong to the plant of Mougeot. The *stroma* still retains some of the yellowish tinge, and the *perithecia* which are collapsed and rugulose are of an olivaceous black, in smaller tufts than in Mougeot's specimens as they grew on very thin twigs.

81. *S. Laburni*, Pers. (*Laburnum Sphæria*); cæspitose, stroma subcompact, perithecia globose rugulose black, ostiola papillæform. *Pers. ! Syn. p. 50. Nces, f. 325. Fr. Syst. Myc. v. 2. p. 413. Scler. Succ. ! n. 34. Moug. & Nest. ! n. 873. Purt. ! v. 3. n. 1522? Johnst. ! Fl. Berw. 2. p. 123.*

On dead branches of *Cytisus Laburnum*.—The only British specimens I have seen are from *Dr. Johnston* found near Berwick, but, though certainly the true plant, they are not in a very perfect state. Purton's plant perhaps is doubtful, as he describes it when young as red, smooth, and transparent. Possibly he may have had in view *S. rudis*, which in some states resembles somewhat the present species.

82. *S. dioica*, Mong. (*two-ranked Sphæria*); cæspitose, stroma cortical, perithecia placed one over the other unequal not collapsing black at length pierced. *Moug. ! ex. in Hook. Herb. Fr. El. 2. p. 82.*

On branches of trees. Appin. *Captain Carmichael*.—Scattered or forming round prominent tufts, even on the same branch. Captain Carmichael's specimens are referred in *Hook. Herb.*, by Klotzsch, to *S. conglobata*, but they differ so much from the characters given by Fries, and agree so nearly with specimens from Mougeot of *S. dioica*, that I cannot but consider them as that species. In one point indeed Mougeot's, as also the British specimens, differ from the account of Fries, viz., that the perithecia have generally when old one or two strong cracks at the apex, which produce a sulcate appearance.

83. *S. Berberidis*, Pers. (*Barberry Sphæria*); cæspitose

perithecia globose mouthless at first red, then red-brown, at length rimoso-rugose black. *Pers. Syn. p. 52. Syst. Myc. v. 2. p. 415. Scler. Succ. ! n. 35. Moug. & Nest. exs. ! n. 874. S. rufo-fusca, Fr. Obs. 1. t. 4. f. 3. Cucurbitaria Berberidis, Grev. Fl. Ed. p. 359. Sc. Crypt. Fl. t. 84.*

On dead branches of the Barberry. About Edinburgh. *Dr. Greville.* Tufts mostly elongated.

84. *S. cupuláris*, *Pers.* (*cup-like Sphæria*); cæspitose, perithecia globose rugulose mouthless black collapsing and then cup-shaped. *Pers. Syn. t. 1. f. 9, 10. Fr. Syst. Myc. v. 2. p. 416. Scler. Succ. ! n. 231. Moug. & Nest. ! n. 771. S. corticalis, Purt. v. 3. n. 1523.*

On branches of various trees, as plum, elm, &c. *Purton.*—Oundle. Norths. *Rev. M. J. Berkeley.*—*Perithecia*, as *Fries* remarks, very much resembling those of *S. tristis*.

85. *S. Vaccínii*, *Sow.* (*Cow-berry Sphæria*); cæspitose, superficially innate, perithecia subglobose mouthless jet-black, at first villous then naked. *Sow. ! t. 373. f. 1. Fr. Syst. Myc. v. 2. p. 409. Scler. Succ. ! n. 51. S. accumulata, Moug. & Nest. ! n. 665.*

On living branches of *Vaccinium Vitis Idæa.*—*Sowerby*, whose specimens exactly accord with those of *Fries* and *Mougeot*, though his figure does not represent correctly the form of the perithecia.—Disposed in roundish tufts which generally become confluent and form longitudinal, irregular masses immediately beneath the bunch of leaves.

86. *S. nidula*, *Sow.* (*nest-like Sphæria*); cæspitose, superficially innate, perithecia crowded globose papillate black very minute punctato-rugose. *Sow. ! t. 394. f. 2. Fr. Syst. Myc. v. 2. p. 418.*

In little hollows of bean roots. *Sowerby.*—This scarcely appears to be the right situation for *Sowerby's* plant, as there is no *stroma*; but as the specimens preserved by *Sowerby* are very imperfect, I do not think it expedient to remove it to the CAULICOLÆ, which is perhaps the more proper place. The species itself appears to be distinct; at least I know of none to which it can be referred.

**DIV. 14. CONFLUENTES.** *Perithecia at first immerso-innate, at length bursting forth and nearly free, confluent.*

87. *S. gyrósa*, *Schwein.* (*gyrose Sphæria*); subrotund confluent orange-vermilion, stroma yellowish, perithecia gyrose pulverulent at length slightly prominent. *Schw. ! Syn. Car. n. 24. S. fluens, Sow. ! t. 438. (420 lower figures.)*

On thickish bark. New Forest. *C. Lyell, Esq.*—There is a slight difference in the manner of disposition of the *perithecia* in the original specimens figured by *Sowerby*, compared with authentic specimens of *Schweinitz*, but not the slightest doubt remains on my mind that the two plants are identical, the difference arising probably from age or some other accidental circumstance. In both the *stroma* in the dry plant is of a bright rhubarb-colour.



88. *S. melogramma*, Bull. (*brownish confluent Sphæria*); roundish obconic blackish-brown, perithecia confluent slightly prominent. *Pers.*! *Syn.* p. 13. *Moug. & Nest.*! n. 274. *Fr. Syst. Myc.* v. 2. p. 420. *Scler. Succ.*! n. 332, 441. *S. rugosa*, var. 2. *Purt.* v. 3. p. 289. *Variolaria melogramma*, Bull. t. 492. f. 1.

On dead branches of the beech spreading in regular series for many inches. *Sowerby!* *Herb. Purton.* Oundle, Norths., *Rev. M. J. Berkeley.*

89. *S. elongata*, Fr. (*elongated confluent Sphæria*); black, stroma very long ambient effused, perithecia at first immersed, then erumpent subcæspitose globose marked with a depressed ring round the papillæform ostiola. *Fr. Obs.* 1. p. 175. *Syst. Myc.* v. 2. p. 422. *Scler. Succ.*! n. 33. *Moug. & Nest.*! n. 875. *Cucurbitaria elongata*, *Greav. Sc. Crypt. Fl.* t. 195.

On branches of various trees and shrubs of the Order *Leguminosæ*. Not unfrequent about Edinburgh on Furze. *Messrs. Waugh & Greville*, who also find var.  $\beta$ . *simplex*, *Scler. Succ.*! n. 231.—“*Sporidia* oblong yellow compressed, marked with 3—4 transverse striae and one which is longitudinal.” *Greav. l. c.*

90. *S. fuliginosa*, *Pers.* (*dirty brown Sphæria*); somewhat effused erumpenti-innate perithecia confluent globose stuffed mouthless dingy-brown-black. *Pers. Syn.* p. 52. *Fr. Syst. Myc.* v. 2. p. 423.

On Willow branches. Sent by *Purton* to *Sowerby*. *Apethorpe*, Norths., *Rev. M. J. Berkeley*.—“Remarkable on account of the interior bark swelling under the black, very thin, true stroma, into a thick waxy olive-yellow subiculum. Perithecia unequal, sometimes free, sometimes confluent, nearly even, opaque at length pierced with a simple pore.” *Fr. l. c.*—Specimens marked by *Persoon* prove to be *S. elongata* on the bark of a *Robinia*. *S. fuliginosa*, *Moug. & Nest.*, is *S. quercuum*. *Schwein.* *Fries* doubts whether it may not be the young state of *Cenangium fuliginosum*, and there is great reason to believe that his surmise is correct.

91. *S. Dothidea*, *Moug.* (*Dothidea-like Sphæria*); subrotund erumpenti-innate, stroma pale brown, perithecia globose somewhat immersed stuffed with white jelly. *Fr. Syst. Myc.* v. 2. p. 424.—b. *Rosæ.* *Scler. Succ.*! n. 308. *Fr. El.* 2. p. 86. *Moug. & Nest.*! n. 971. *Xyloma Rosæ*, *Johnst. Fl. Berw.* 2. p. 140.

b. On living rose stems. Extremely common.—Forming irregular tubercles covered with the epidermis which is cracked with irregular flexuous fissures.

**DIV. 15. SERIATÆ.** *Perithecia disposed in parallel rows.*

92. *S. filicina*, Fr. (*bracken Sphæria*); subinnate parallel confluent shining black, bursting forth by parallel cracks, stroma black, perithecia connate disposed in rows. *Fr. Syst. Myc.* v. 2. p. 427. *Scler. Succ.*! n. 48. *Johnst. Fl. Berw.* 2. p. 119.

On stems of *Pteris aquilina*.—Common; but every black spot occurring on the stems of ferns is not to be presumed to be this species. At first even, at length dotted with the perithecia. *S. pteridis*, Sow. ! is *Leptostroma filicinum*.

93. *S. Junci*, Fr. (*Rush Sphæria*); covered, at length bursting forth by longitudinal chinks between the fibres, tuberculated, perithecia in rows black within, at first immersed in the black stroma. *Fr. Syst. Myc. v. 2. p. 428. Scler. Succ. ! n. 5. Johnst. ! Fl. Berw. 2. p. 119. Moug. & Nest. ! n. 964.*

On stems of *Juncus conglomeratus*, &c. Common.

94. *S. striæformis*, Fr. (*striæform Sphæria*); covered with the innate blackened epidermis, at length bursting in the midst, lanceolate short acute, perithecia in rows mouthless filled with white jelly. *Fr. Syst. Myc. v. 2. p. 428. Scler. Succ. ! n. 195.*

On the dead stems of larger herbaceous plants. Apethorpe. Norths., *Rev. M. J. Berkeley*.—Fries remarks that various species are called by this name, and in consequence he has quoted no synonyms. My specimens are the same with those published by Fries and like them grew on the stem of some umbelliferous plant. Dr. Greville's species appears different, and I therefore subjoin his character. "Black gregarious forming linear or oblong striæ smooth; spherules very minute without obvious mouths." *Fl. Ed. p. 357.* "Striæ half a line to above a line long parallel. Spherules globose apparently without orifices and quite concealed within the receptacle."

95. *S. arundinæcea*, Sow. (*compound reed Sphæria*); erumpent linear with scarcely any stroma, perithecia in 1—2 rows connate with a very obsolete ostiolum, black within. *Sow. ! t. 336. Fr. Syst. Myc. v. 2. p. 429. Purt. v. 3. p. 287. !*

On stems of reeds which have lost the sheathing bases of the leaves. Common.—In my specimens the contents of the *perithecia* are white.

96. *S. nebulósa*, Pers. (*cloud-like Sphæria*); covered, perithecia very minute gregarious forming interrupted grey cloud-like sublongitudinal spots, ostiola rather prominent acute. *Pers. Syn. p. 31. Nees, Syst. f. 341. Fr. Syst. Myc. v. 2. p. 430. Scler. Succ. ! n. 197. Johnst. Fl. Berw. v. 2. p. 127. Cryptosphæria nebulosa, Grev. Fl. Ed. p. 362.*

On the smooth stems of herbaceous plants. Common.—Easily known by its long grey patches dotted with the *ostiola*. *S. maculans*, Sow., at first sight resembles this species, but the blackish patches certainly do not belong to the *perithecia*, which are indifferently scattered all over the matrix, which is the leaf, I believe, of a *Sparganium*.

97. *S. longíssima*, Pers. (*linear Sphæria*); covered black, perithecia minute running together into extremely long parallel rows; ostiola obsolete. *Pers. Syn. p. 31. Fr. Syst. Myc. v. 2. p. 431. Scler. Succ. ! n. 194. Johnst. Fl. Berw. v. 2. p. 127.*

On stems of umbelliferous plants. Near Berwick, *Dr. Johnston*.—Known by the narrow linear, black patches, extending from joint to joint. I have never met with the perfect plant, but have found what

appears to be an abortive state on the common wild parsnip, resembling altogether the true plant, except in the total absence of *perithecia*.

**DIV. 16. CONFERTÆ.** *Perithecia aggregate, innate, nestling under the epidermis of leaves.*

98. *S. graminis*, Pers. (*grass Sphæria*); covered unequal rugulose rather prominent black, perithecia disposed indistinctly in rows latent as well as the ostiola. *Pers. Syn. p. 30. Nees, Syst. f. 314. Fr. Syst. Myc. v. 2. p. 434. Scler. Succ. ! n. 282. Johnst. ! Fl. Berw. v. 2. p. 119. Moug. & Nest. n. 876.*

On the yet living leaves of grass. Extremely common.

99. *S. Trifólii*, Pers. (*clover Sphæria*); covered subrotund rather prominent tuberculoso-rugulose black, perithecia immersed in a pulverulent stroma. *Pers. Syn. p. 30. Fr. Syst. Myc. v. 2. p. 435.*

On the leaves of several species of clover. Appin, *Captain Carmichael*. About Oxford on the same leaves with *Polythrincium Trifólii*, *Baxt. ! exs. n. 84.*

100. *S. fimbriata*, Pers. (*hornbeam-leaf Sphæria*); covered perithecia crowded running together into a black tubercle, ostiola erumpent spinulose surrounded at the base with a white fringe-like collar. *Pers. ! Syn. p. 36. Moug. & Nest. ! n. 277. Fr. Syst. Myc. v. 2. p. 436. Scler. Succ. ! n. 242. Klotzsch. ! Fung. Germ. exs. ! n. 53. S. spiculosa, Batsch. Cont. 1. f. 182. S. Carpinii, Hoffm. Veg. Crypt. 1. t. 1. f. 1.*

On leaves of hornbeam. Local in consequence of the hornbeam itself being confined to particular districts. Abundant in Suffolk, *Mr. Stock*.—It is curious that Sowerby never appears to have met with this species though accustomed to woods abounding with hornbeam.

101. *S. Córýli*, Batsch. (*hazel-leaf Sphæria*); covered, perithecia distinct disposed in a circle, ostiola erumpent spinulose surrounded with a white fringe-like collar. *Batsch. Cont. 2. f. 231. Fr. Syst. Myc. v. 2. p. 436. Scler. Succ. ! n. 201. Moug. & Nest. ! n. 877. Grev. Sc. Crypt. Fl. t. 330. Johnst. Fl. Berw. v. 2. p. 128. Sph. fimbriata,  $\beta$ . Coryli, Pers. Syn. p. 36.*

On living leaves of hazel. Apparently not uncommon.—Resembling the foregoing species, but easily distinguished by the distinct *perithecia* which are generally disposed in a circle. The fringe arises from a small circular portion of the epidermis which is raised up and broken off by the protruding perithecium.

102. *S. malórum*, Berk. (*apple Sphæria*); globose or subglobose covered with the blackened cuticle, stroma blackish, ostiola erumpent more or less strongly papilliform.

On apples lying upon the ground. Winter. King's Cliffe, Norths., *Rev. M. J. Berkeley*.—*Asci* broadly elliptic, septate, filled with yellowish green granules. This species comes very near to *I. gigantea*, *Mont.*

*Ann. des Sc. N. S. v. 1. t. 11. f. 2.*, and perhaps is only a state of it modified by the more juicy matrix; differing principally in being smaller, and, as far as I have observed, not having the *ostiola* disposed concentrically. I have not found it in sufficient abundance to ascertain whether the *stroma* penetrates entirely through the apple as is the case in *S. gigantea* which grows on leaves of *Agave Americana*. When dry the *ostiolum* is frequently crowned with a short minute golden green irregular tendril oozing out from the perithecium. The *perithecia* vary considerably in size and in the degree of exertion of the *ostiolum*. *S. malina*, Fr. Obs. Myc., which is not noticed at all in the *Index Alphabeticus*, and consequently, I presume, discarded by Fries himself, is evidently quite different.

103. *S. Yuccæ*, Schwein. (*Yucca-leaf Sphæria*); innate at first covered with the grey seceding epidermis, perithecia globose immersed, *ostiola* minute dot-like. Schwein. ! *Syn. Car. n. 88. Fr. Syst. Myc. v. 2. p. 437. Part. MSS.*

On decaying leaves of *Yucca gloriosa*. Alcester, Mr. Purton.—“In roundish unequal spots irregularly scattered, 1 line broad, not prominent, penetrating the substance of the leaf, veiled at first by the epidermis.” *Part. MSS.* adopted from *Fr. l. c.*

104. *S. bifrons*, Schm. & Kun. (*two-faced Sphæria*); minute disposed in circles penetrating the leaf flattened black at length splitting all round, perithecia slightly prominent convex at length umbilicate. *Fr. Syst. Myc. v. 2. p. 438. S. circumvallata*, Sow. ! *t. 373. f. 4. Xyloma bifrons*, Dec. *Mem. Mus. v. 2. p. 322. t. 3. f. 11. X. circinans*, Moug. & Nest. ! *n. 480.*

On dry oak leaves. Sowerby.—Patches angular, not 1 line broad, their shape being dependant on the meshes of the veins, seated on a white spot; *perithecia* one or more, at length naked from the upper portion of the patch breaking off. This must not be confounded with *Phacidium dentatum*.

105. *S. ceuthocârpa*, Fr. (*poplar-leaf Sphæria*); innate flat angular opaque black scattered upon a pale spot, perithecia latent generally solitary. *Fr. Syst. Myc. v. 2. p. 439. Xyloma populinum*, Pers. *Syn. p. 107. Dec. Mem. Mus. v. 2. p. 325. Moug. & Nest. ! n. 269. Grev. Fl. Ed. p. 368.*

On dry poplar leaves. About Edinburgh. Dr. Greville.—It appears to me that the principal difference of this species arises from the looser reticulations of the under side of the leaves. It is more scattered than the last, rather larger and not shining.

106. *S. ceuthosporoides*, Berk. (*Ceuthospora-like Sphæria*); *stroma* formed of the parenchyme of the matrix suborbicular reddish-brown circumscribed by a narrow distinct black line penetrating the leaf, perithecia 6—10 scattered covered projecting on either surface, their apices seated on the upper side of the leaf which is at length pierced with minute round orifices. *Ceuthospora circumscripta*, Klotzsch in Hook. *Herb.*

On leaves of *Prunus Lauro-cerasus*. Near Edinburgh, Dr. Greville. Aug.—Spots  $1\frac{1}{2}$ — $2\frac{1}{2}$  lines broad, completely penetrating the leaf, so as

to present nearly the same appearance on either side. *Perithecia* apparently epiphyllous, but projecting almost equally on both surfaces of the stroma. *Asci* oblong, distinct, containing several oblong septate *sporidia*. The present species was marked as a *Phacidium* by Dr. Greville, but evidently merely from its external appearance. It has the habit of the species in the division *Depazæa*, but is, I think, fitly placed in the present division. I have seen dried specimens only, and cannot therefore say, whether it is found on dead or living leaves.

#### B. SIMPLE.

\*\*\*\*\* SUPERFICIALES. *Simple. Perithecia free bicorticate, seated on an effused villous subiculum or altogether superficial.*

**DIV. 17. BYSSISEDÆ.** *Perithecia glabrous, seated on a tomentose subiculum.*

107. *S. aurántia*, Pers. (orange *Sphæria*); perithecia gregarious subrotund papillate orange-red emerging from the effused subiculum. *Pers. Syn. p. 68. Ic. & Desc. t. 11. f. 4, 5. Fr. Syst. Myc. v. 2. p. 440. El. 2. p. 91. S. aurea, Grev. Sc. Crypt. Fl. t. 47. Fl. Ed. p. 364.*

On rotten wood and decaying *Polypori*, as *P. versicolor*, *scoticus*, *squamosus*. Not common. Appin, *Capt. Carmichael*. Newliston woods. *Messrs. Wauch and Greville*. Duglesham, *Klotzsch in Hook. Herb. Bungay, Mr. Stock*.—I have no doubt that Fries is quite right in his suspicion that Dr. Greville's *S. aurea*, is the *S. aurántia*, Pers., for though I have no authentic specimens, Mr. Stock's plant (like that of Greville on *P. squamosus*) now before me so completely agrees with the figure in the *Sc. Crypt. Fl.*, that I feel myself at liberty to assume it as the same. The *perithecia* are mostly scattered and in this case entirely destitute of subiculum, but here and there a few are collected together upon a pale very thin *subiculum* which might most easily be overlooked unless attention were especially directed to the point. Captain Carmichael's specimens exactly accord with the figure of Persoon. Those of Klotzsch are apparently scarcely mature and in consequence have the *perithecia* immersed.

108. *S. rosélla*, A. & S. (rose-coloured *Sphæria*); perithecia gregarious globoso-ovate papillate deep rose-red seated on a paler tomentose subiculum. *Alb. & Schw. Consp. t. 7. f. 3. Grev. Sc. Crypt. Fl. t. 138. Fr. Syst. Myc. v. 2. p. 441.*

On wood, *Thelephora*, &c. Not common. Appin, *Capt. Carmichael*. About Edinburgh, *Dr. Greville*. Northamptonshire, but always barren, *Rev. M. J. Berkeley*.—The *subiculum* in specimens before me varies from pale to deep rose-red.

109. *S. áquila*, Fr. (sun-burnt *Sphæria*); perithecia gregarious globose firm papillate brown-black emerging from a persistent brown tomentose subiculum. *Fr. Syst. Myc. v. 2. p. 442. Moug. & Nest. n. 965. S. byssiseda,  $\beta$ . Tode, Fung. Mæck. f. 70. S. byssiseda, Pers. Syn. p. 67.*

On rotten sticks. Appin, *Capt. Carmichael*.

110. *S. byssiséda*, Tode, (*greyish byssoid Sphæria*); perithecia scattered depresso-globose firm papillate cinereous seated on a grey-brown interrupted fibrous subiculum. *Tode, l. c. f.* 69. *Fr. Syst. Myc. v. 2. p. 442.* *Grev. Fl. Ed. p. 363.* *S. mammosa, With. v. 4. p. 360.* *Purt. ! v. 2. & 3. n. 1085. t. 22.* *S. papillosa, Sow. t. 236.* *S. aquila, Johnst. Fl. Berw. v. 2. p. 124.*

On wood, sticks, &c. Apparently not uncommon.—This and the foregoing species are pronounced by Fries to be “bene distinctæ.” They appear to me to run very much into one another; the present being frequently entirely enveloped in the *subiculum* and not merely insident, nor is it by any means always scattered: while *S. aquila*, if Klotzsch be right in referring Carmichael’s specimens to that species, has them sometimes seated on a thin *subiculum*. Specimens of *S. aquila* from Mougeot, exactly accord with the common state of the present species; his published specimens have the *perithecia* very much smaller. The degree of obtuseness or acuteness of the *papille* also appears to me to vary. There is an allied species in Carmichael’s collection marked *S. ossea, n. s.* There are but three perithecia, and consequently I have not thought it advisable to draw up a character; they appear to be entirely destitute of an ostiolum and one of the three, which is more than a line broad, has a decided umbilicus at the apex; the subiculum is looser and coarser than that of *S. aquila* or *S. byssiséda*.

111. *S. tristis*, Tode, (*jet-black byssoid Sphæria*); perithecia crowded globose punctato-rugulose collapsed mouthless black seated on a strigose subiculum. *Tode, Fung. Meck. f.* 67. *Pers. Ic. et Descr. t. 12. f. 5, 6.* *Fr. Syst. Myc. v. 2. p. 444.* *Scler. Suec. ! n. 336.* *Purt. MSS. β. fusca, Alb. & Schwein, p. 44.*

β. On sticks. Moreton Hall, Worc., Purton. Southwick, Norths., *Rev. M. J. Berkeley*.—My specimens and those of Purton differ from the common form in not collapsing; and are doubtless β. *fusca, Alb. and Schw.* The whole at first sight resembling one of the larger *Helminthosporia*. *Perithecia* minute. *Sporidia* oblong, sometimes slightly curved, consisting of four articulations, the two terminal ones small and pellucid, the two central ones many times longer, opaque.

**DIV. 18. VILLOSÆ.** *Perithecia clothed with persistent down.\**

112. *S. ovina*, Pers. (*fleecy Sphæria*); perithecia subglobose clothed with dirty white mucedinous down naked at the base, ostiolum papillate at length black. *Pers. Syn. p. 71.* *Fr. Syst. Myc. v. 2. p. 446.* *Scler. Suec. ! n. 149.* *Purt. MSS. S. nivea, Sow. ! t. 219.*

On rotten stumps, &c. Not uncommon. Easily known by the

\* Care must be taken not to refer to this division species which are downy only in an early stage, as *S. serpens*, &c.

above characters. *S. lichenoides*, Sow! t. 372. f. 12. is *Verrucaria leucocephala*, Ach. (*E. B. t.* 2642, f. 2).

113. *S. Brassicæ*, Klotzsch, (*cabbage-stalk Sphæria*); perithecia conic, their bases innate, clothed with dirty white arachnoid down, ostiola naked simple jet-black. *Kl. MSS.*

On dead cabbage stalks. Appin, *Capt. Carmichael*.—This appears to be a perfectly distinct species, having, to the naked eye, a very different appearance from the foregoing in consequence of the more naked jet-black *ostiola*.

114. *S. canescens*, Pers. (*hoary Sphæria*); perithecia aggregate globose and ovate hairy papillate hoary. *Pers. Syn. p.* 72. *Fr. Syst. Myc. v. 2. p.* 448. *Scler. Succ.!* n. 50.

On wood. Appin, *Captain Carmichael*.—*Perithecia* forming a dense stratum of a cinereous brownish or greenish hue, very hairy, brittle.

115. *S. strigosa*, A. & S. (*hoary strigose Sphæria*); perithecia aggregate globose and ovate papillary beset all round with long rigid hoary hairs. *Alb. & Schw. t. 5. f. 7. Fr. Syst. Myc. v. 2. p.* 448.

On fir wood. Appin, *Captain Carmichael*.—Distinguished from the foregoing by its closer habit and tough not brittle substance. Authentic specimens, however, in Dr. Hooker's Herbarium, from Schweinitz, appear to me to belong to *S. canescens*. The hairs in both though giving the *perithecia* a hoary appearance are not always white, but frequently of a brownish or yellowish hue exactly as represented in the figure quoted above.

116. *S. biförmis*, Pers. (*two-shaped Sphæria*); perithecia subovate slightly tuberculate black clothed with strigose hairs of the same colour, ostiola somewhat elongated. *Pers. Syn. t. 2. f. 14. Ic. Pict. t. 24. f. 4. Kunz. Myc. Hest. 1. p.* 108. *Fr. Syst. Myc. v. 2. p.* 448.— $\beta$ . *terrestris*; perithecia crowded seated upon a crust-like strigoso villous subiculum. *Sow.!* t. 373. f. 7. *S. biförmis. \beta. byssiseda, Kunz. l. c.* 109.

On wood and on the naked earth.  $\alpha$ . King's Cliffe, Norths. *Rev. M. J. Berkeley*.— $\beta$ . Kensington Gardens, *Sowerby*.—Varying with a short and long *ostiolum*. My specimens on earth have a short *ostiolum*, and a subolivaceous brown tinge. The *sporidia* form a double row within the slightly incrassated *asci*, and are very long slightly flexuous yellowish-olive, divided by many septa.

117. *S. Racodium*, Pers. (*Racodium-like Sphæria*); perithecia subglobose rugulose hairy black papillary emerging from a broad black tomentose subiculum. *Pers. Syn. p.* 74. *Fr. Syst. Myc. v. 2. p.* 449. *Scler. Succ.!* n. 310. *S. hirsuta, Grev.!* *Fl. Ed. p.* 364.

On decaying beech wood. Common.—Scattered or densely gregarious, brittle, the base immersed in the matrix; *subiculum* sometimes present on one part of the wood, and entirely wanting on another.

*Sporidia* cylindric, curved consisting of eight articulations, each containing a *sporidiolum*.

118. *S. hirsúta*, Fr. (*shaggy Sphæria*); perithecia subglobose and ovate tuberculate black, covered with scattered hairs of the same colour, ostiolum obsolete. *Fr. Syst. Myc. v. 2. p. 449.*— $\beta$ . *acinosa*; perithecia globose and subdepressed black-brown. *Batsch, Cont. 1. f. 179. Sow. t. 386. f. 3.*

On dry wood. On Walnut, Stibington, Hunts. *Rev. M. J. Berkeley.*—Mr. Sowerby's specimens were found on plaster, as appears from the remains still adhering to the paper on which they were glued, though the plant itself has fallen off. This makes it very doubtful whether his plant is the same with that of Fries.

119. *S. pilósa*, Pers. (*small hairy Sphæria*); black, perithecia minute roundish-ovate nearly even beset with short hairs, ostiola simple. *Pers. Ic. & Descr. t. 10. f. 9, 10. Fr. Syst. Myc. v. 2. p. 450.*

On wood. Very common.—*S. scopula*, Sow. proves, on microscopical examination, *Chatomium elatum*.

120. *S. hispída*, Tode, (*hispid Sphæria*); black, perithecia ovato-conic confluent with the ostiola clothed with short scattered hairs. *Tode. l. c. f. 84. Fr. Syst. Myc. v. 2. p. 450. El. 2. p. 92. S. lignaria*, Grev. *Scot. Crypt. Fl. t. 82.*

On wood. Appin, *Capt. Carmichael*.

121. *S. calva*, Tode, (*bald Sphæria*); perithecia scattered depresso-globose papillary even black beset below with short hispid hairs above smooth and shining. *Tode, Fung. Meck. f. 83. Fr. Syst. Myc. v. 2. p. 451. Grev. Fl. Ed. p. 364.*

On wood and branches. Auchindenny woods, *Dr. Greville*. Apherpe, Norths. *Rev. M. J. Berkeley.*—My specimens are hispid all over when young and gradually become smooth above. *Sporidia* broadly elliptic. *S. calva*, Johnst.! *Fl. Berw.* appears to me a form of *S. comata*: it certainly does not belong to the present division. *S. sphinctrina*, Sow! t. 386, f. 1., is *Calicium turbinatum*.

DIV. 19. DENUDATE. *Subiculum none. Perithecia soon smooth, rounded at the base nearly free; ostiola persistent.*

122. *S. Peziza*, Tode, (*Peziza-like Sphæria*); gregarious soft, perithecia globose even subpapillary orange-pink, concave when collapsed. *Tode, Fung. Meck. f. 122. Moug. & Nest. ! n. 483. Fr. Syst. Myc. v. 2. p. 452. Scler. Suec. ! n. 235. Grev. Sc. Crypt. Fl. t. 186. f. 2.—a. villifera. Hoffm. Bot. Tasch. 2. t. 12. f. 2. Nees, Syst. f. 361.—b. globifera. Peziza hydrophora, Bull. t. 410. f. 2. Sow. t. 23. Lycoperdon hydrophorum, With. v. 4. p. 347.*

On very rotten wood. Not common.—The *sporidia* are represented by Greville as contained in very slender *asci* so as to give them a moniliform appearance; in Mougeot and Nestler's specimens I find them



containing two *sporidiola* and conclude that when fresh or in an early stage of growth they are septate.

123. *S. platæsea*, Berk. (*orange-lead Sphæria*); scattered, perithecia orange globose confluent with the subobtusate ostiolum, base immersed.

On the soft wet decayed stump of a maple which had been broken off. Winter. Rockingham Forest, Norths. Rev. M. J. Berkeley.—*Perithecia* globose, but tapering above into the *ostiolum*, which varies somewhat in length, so as to have a slightly ovate appearance, immersed in the soft white wood almost to the base of the *ostiolum*, of the same colour as *Peziza aurantia*, with now and then a few indistinct filaments. *Asci* broad above, like those of the following species. *Sporidia* oblong, divided into four articulations each containing a *nucleus*. I cannot but conceive this a distinct species, though, as a general rule, too much stress ought not to be laid on microscopic characters; but, added to difference in habit, they ought certainly to have their weight.

124. *S. affinis*, Grev. (*red mouthless Sphæria*); scattered globose persistent even orange mouthless base filamentous whitish. Grev.! *Sc. Crypt. Fl. t.* 186. *f.* 1. *Fr. El.* 2. *p.* 93.

On *Stigonema atrovirens* (*Cornicularia pubescens*, Ach.). Appin, Captain Carmichael.—A very interesting species which with great probability was presumed by its discoverer to be what is figured as the fructification of its matrix in *Eng. Bot.* I see no reason for doubting with Fries that this is a *Sphæria*. Septate *sporidia* do not, I believe, occur in true *Peziza*, and the *asci* are broader in *S. tubæformis*.

125. *S. sanguinea*, With. (*blood-coloured Sphæria*); scattered soft very small perithecia ovate papillary blood-red. With. *ed.* 3, *v.* 3. *p.* 473. (*from Sibth.*) *Sibth. Fl. Ox.* *p.* 404. *Bolt. t.* 121. *Sow.!* *t.* 254. *Part.!* *v.* 2 § 3. *n.* 1519. *Fr. Syst. Myc.* *v.* 2. *p.* 453. *Scler. Succ.!* *n.* 264. Grev. *Sc. Crypt. Fl. t.* 175. *f.* 1. *Bast.!* *Ox. cas.* *n.* 75.

On wood and sticks, very common.—Fries' specimens are far more strongly papillary than any of British growth that I have seen. I have found, but sparingly, on branches of elm, a nearly white variety; and Fries informs us that he has received extremely pale specimens from Weinmann. "*Sporidia* globose."

125. *S. episphæria*, Tode, (*red parasitic Sphæria*); gregarious soft very small blood-red, perithecia somewhat compressed collapsing, papilla convexo-oblong. Tode, *Fung. Meck. f.* 89. *Fr. Syst. Myc.* *v.* 2. *p.* 454. *Scler. Succ.!* *n.* 265. *El.* 2. *p.* 93. Grev. *Sc. Crypt. Fl. t.* 175. *f.* 2.— $\beta$ . *media*; aggregate, perithecia subglobose flaccid subpapillary. *S. sanguinea*.  $\beta$ . *media*, *Fr. Syst. Myc.* *v.* 2. *p.* 453. *Cucurbitaria pinastri*, Grev. *Sc. Crypt. Fl. t.* 50. (*in part*). *S. Purtoni*, Grev. *!* *Syn. Gen. & Spec.* *p.* 23.

On various *Sphærias*, but especially *S. Stigma*. Common.—"*Sporidia* oval-oblong." In this case again I have seen no British specimens of the typical form exactly according either with the figure of Tode, or the specimens of Fries, as regards the *papilla*. His  $\beta$ . *media* exactly

agrees with Scotch specimens gathered by Klotzsch and Greville. The state figured by Greville, *t.* 175. *f.* 2, which is not, as Fries supposes, the same as his *β. media*, is the form in which it occurs abundantly throughout the midland and southern counties of England.

127. *S. umbrina*, Berk. (*umber Sphæria*); gregarious ovate obtuse minutely papillary umber often pruinose at the apex.

On decaying bean-stalks. Dec. Apethorpe, Norths. *Rev. M. J. Berkeley*.—A very distinct species, allied to *S. sanguinea*.

128. *S. pomiförmis*, Pers. (*apple-shaped Sphæria*); rather small black, perithecia apple-shaped even with an impressed ring round the papillæform ostiolum. *Pers. Syn. p.* 65.  *Ic. Pict. t.* 5. *f.* 4, 5.  *Moug. & Nest. ! n.* 482.  *Fr. Syst. Myc. v.* 2.  *p.* 455.  *Scler. Suec. ! n.* 236.  *S. papillosa*,  *Purton. ! v.* 2 & 3.  *n.* 1099.  *excl. syn.*— *b. S. corona*; scattered.  *Sow. ! 393. f.* 7.

On wood. Not common. Sambourne,  *Purton*.—Sowerby's plant is upon young decorticated pithy elder shoots, and I have no doubt is correctly considered a form of this elegant species. " *Perithecia* globose, rather thin, but slightly rigid, and in consequence collapsed only at the apex."  *Fr. l. c.*

129. *S. mammæförmis*, Pers. (*nipple-shaped Sphæria*); large black perithecia thin globose even, ostiolum papillæform.  *Pers. Syn. p.* 64.  *Ic. Pict. t.* 5. *f.* 6, 7.  *Moug. & Nest. n. ! 380. Fr. Syst. Myc. v.* 2.  *p.* 455.  *Scler. Suec. ! n.* 387.  *Hypoxylon globulare*,  *Bull. t.* 444.  *f.* 2.

On wood. Appin,  *Captain Carmichael*.—Much larger than the last, and, though sometimes slightly depressed, by no means collapsing.  *S. papillosa*,  *Sow.* is certainly  *S. byssiseda*.

130. *S. stercoraria*,  *Sow.* (*simple dung Sphæria*); black shining, perithecia globose rigid even, ostiolum papillæform.  *Sow. ! t.* 357.  *f.* 1.  *Fr. Syst. Myc. v.* 2.  *p.* 455.

On dung. Not common. Near Yarmouth,  *Mr. Dawson Turner*.—Rather large, firm, thick, not collapsing in the least.—Another  *Sphæria* of a similar form, but far more minute, is extremely common on dung of rabbits, cows, horses, &c., which according to specimens from Mougeot labelled " *S. stercoraria*,  *Fr. Syst. Myc.*, and  *Fr. in litt.*" is referred by Fries to this species. I can, however, find no notice of it.  *Sphæria solitaria*,  *Sow. ! t.* 367,  *f.* 2., likewise unnoticed by Fries, growing upon earth appears intermediate between the two.

131. *S. Bombárda*,  *Batsch.* (*bomb Sphæria*); fasciculate black-brown, perithecia elongated soft ventricose, ostiolum papillæform.  *Batsch. Cont. 1. f.* 181.  *Hedw. Crypt. Theor. t.* 38.  *Fr. Syst. Myc. v.* 2.  *p.* 456.  *Scler. Suec. ! n.* 266.  *S. reptans*,  *Sow. ! t.* 395.  *f.* 1. ( *in text, f.* 2.)

On rotten stumps. Not common. Kensington Gardens,  *Sowerby*. Cambridge,  *Rev. M. J. Berkeley*.—When dry, sometimes compressed laterally and rugose; sometimes not the least collapsed.

132. *S. spermoides*,  *Hoffm.* (*seed-like Sphæria*); densely

crowded black perithecia rigid globose minutely rugulose, ostiola obsoletely papillæform. *Hoffm. Veg. Crypt.* 2. t. 3. f. 3. *Moug. & Nest.! n.* 486. *Fr. Syst. Myc. v.* 2. p. 457. *Scler. Succ.! n.* 237. *Greav. Sc. Crypt. Fl. t.* 6. *Fl. Ed. p.* 363. *S. aggregata*, *With. v.* 4. p. 363. *S. bombardica*, *Bolt. t.* 122. f. 2. *Sow.! t.* 372. f. 4. *Purt. v.* 2 & 3. n. 1094. *Lycoperdon nigrum*, *Light. Fl. Scot. v.* 2. p. 1069. t. 31.

On rotten stumps. Very common.—Spreading for several inches in a continuous crust, rarely scattered.

133. *S. sordária*, *Fr.* (*scurf-like Sphæria*); subemergent gregarious black, perithecia globose soft collapsing rugulose confluent with the obsolete ostiolum. *Scler. Succ.! n.* 270. *Fr. Syst. Myc. v.* 2. p. 458.

On moist pine-wood. *Appin, Captain Carmichael.*—Gregarious, minute, often disposed in rows. To the naked eye presenting little more than a black scurfy stain.

134. *S. moriformis*, *Tode*, (*mulberry Sphæria*); crowded black, perithecia obovate corrugato-tuberculate, ostiolum simple. *Tode, Fung. Meck. f.* 90. *Moug. & Nest.! n.* 382. *Fr. Syst. Myc. v.* 2. p. 458. *Scler. Succ.! n.* 125. *Greav. Fl. Ed. p.* 364. *S. claviformis*, *Sow.! t.* 337. *Purt. v.* 3. p. 279. *S. rugosa*, *Greav.! Sc. Crypt. Fl. t.* 39. *Fl. Ed. p.* 364.—*γ. globosa*. *S. rubiformis*, *Sow. t.* 373. f. 2.

On wood, branches, *Polypori*, &c. Not common.—I do not see any sufficient difference in *S. rugosa*, *Greav.* The species is extremely variable in form.

135. *S. pulvis pyrius*, *Pers.* (*gunpowder Sphæria*); crowded black perithecia ovato-globose rugose, sulcate in the middle. *Pers. Syn. p.* 86. *Fr. Syst. Myc. v.* 2. p. 458. *Scler. Succ.! n.* 120. *Greav. Fl. Ed. p.* 365. *Sc. Crypt. Fl. t.* 152.—*h. minor*, *Moug. & Nest.! n.* 381. *S. spermoides*, *Purt. v.* 3. n. 1524.

On wood and branches. Very common; but the smaller form most frequent.—This, like most of the neighbouring species varies with the perithecia crowded or scattered. Distinguished from the foregoing without difficulty by its much smaller size less tuberculate surface, and subrimose ostiolum. I believe *S. insidens*, *Sow.* is a state of this species.

136. *S. pulveracea*, *Ehr.* (*dust-like Sphæria*); crowded small black, perithecia subovate rugulose rigid, ostiolum distinct pierced. *Pers. Syn. p.* 83. *Fr. Syst. Myc. v.* 2. p. 459. *Scler. Succ.! n.* 121. *Moug. & Nest.! n.* 773.

On dry wood. *Braemar, Dr. Hooker.*—The Scottish specimens on pine wood agree exactly with some from *Mougeot*, but not exactly with those of *Fries*, or the published ones of *Mougeot* and *Nestler* being so close set as to be almost confluent and very small. “Smaller than the last, surface unequal but not tuberculate, easily distinguished by

the ostiolum. *Perithecia* rigid, rather shining crustaceo-aggregate." *Fr. l. c.*

137. *S. myriocarpa*, Fr. (*sand-like Sphæria*); crowded black shining, perithecia very minute ovato-globose even slightly mammillæform. *Fr. Syst. Myc. v. 2. p. 459. Scler. Suec. n. 313. Grev. Scot. Crypt. Fl. t. 152. f. 1.*

On wood and decorticated branches. Common.

DIV. 20. PERTUSÆ. *Perithecia* smooth flattened at the base, subinnate, pierced by the falling off of the ostiolum.

138. *S. pertusa*, Pers. (*pierced Sphæria*); scattered black, perithecia emergent conic subrugose pierced by the falling off of the conic ostiolum. *Pers. Syn. p. 83. Fr. Syst. Myc. v. 2. p. 464. Scler. Suec. n. 389.*

On hardened wood. Appin, *Capt. Carmichael*.

139. *S. núcula*, Fr. (*little nut-like Sphæria*); subgregarious black, perithecia minute innate superficial ovate even at first papillary then pierced. *Fr. Syst. Myc. v. 2. p. 466. Scler. Suec. n. 230.*

On oak bark. Laswade, *Dr. Greville*.—The ostiolum is sometimes of exactly the same nature as in the following division.

\*\*\*\*\* SUBIMMERSÆ. *Simple. Perithecia* immersed furnished with a dilated or elongated ostiolum.

DIV. 21. PLATYSTOMÆ. (from *πλατυς*, broad, and *στομα*, a mouth). Ostiolum extremely broad, compressed, opening by a longitudinal fissure.

140. *S. excipuliformis*, Fr. (*wide-mouthed Sphæria*); scattered, perithecia emergent ovate black rugulose, lips of the ostiolum longer than the short neck. *Fr. Obs. 1. t. 4. f. 5. Scler. Suec. n. 88. Syst. Myc. v. 2. p. 469.*

On bark, &c. Rockingham Forest, Norths. On Furze, *Rev. M. J. Berkeley*.—Distinguished from the other wide-mouthed species by its short cylindric neck. *Sporidia* elongated, curved, containing several *sporidiola*. In this as in other species the true form is frequently accompanied by individuals in other respects altogether the same, but with a merely obtuse ostiolum; having completely the appearance of some species of the division *Pertusæ*.

DIV. 22. CERATOSTOMÆ. (from *κερας*, a horn, and *στομα*, a mouth). Ostiolum elongated cylindrical free, longer than the perithecium.

141. *S. pilifera*, Fr. (*hair-like Sphæria*); gregarious naked black, perithecia very small globose even, ostiola capillary very long acuminate. *Fr. Syst. Myc. v. 2. p. 472. Scler. Suec. n. 25. S. pinastri, Nees, f. 354.*

On pine wood. Appin, *Captain Carmichael*, whose notice, however,

it appears to have escaped, the specimens before me occurring in company with a *Physarum* preserved in his Herbarium.

142. *S. cirrhósa*, Pers. (*tendrill-like Sphæria*); scattered black, perithecia immersed subglobose fibrillous, ostiola rugged subfalcate spinulose. *Pers. Syn. p.* 59.  *Ic. Piet. t.* 24. *f.* 3. *Fr. Syst. Myc. v.* 2. *p.* 475. *Scler. Succ. ! n.* 346.—*b. fusca*, *Alb. & Schwein, p.* 29.

On soft rotten wood. Appin, *Captain Carmichael*. Cotterstock. Apethorpe, Norths. *Rev. M. J. Berkeley*.—This appears to be a very variable species, sometimes scattered, with the *perithecia* curiously fibrillous, the fibrillæ occasionally brown; sometimes, in harder wood, collected in rows or into little fascicles, and almost destitute of fibrillæ.

143. *S. rostelláta*, Fr. (*minute beaked Sphæria*); gregarious black, perithecia covered subrotund at length depressed above, ostiola erumpent cylindric or slightly attenuated. *Fr. Obs.* 1. *t.* 3. *f.* 3. *Syst. Myc. v.* 2. *p.* 476. *S. Rubi, Mart. Erl. p.* 487.

On branches of roses and brambles. Appin, *Captain Carmichael*.—Minute-growing beneath the epidermis and having much the habit of *S. acuta*.

DIV. 23. OBTECTÆ. *Perithecia elongated into a short neck permanently immersed in the perennial parts of plants.*

144. *S. eutýpa*, Fr. (*well-marked Sphæria*); scattered, perithecia immersed globose, ostiola proceeding from a black spot minute convex slightly prominent at length umbilicate. *Fr. Syst. Myc. v.* 2. *p.* 478. *Scler. Succ. ! n.* 15. 348. *S. decomponens, Sow. ! t.* 217.

On dead branches. Very common.—Very much resembling *S. lata* and *S. milliaría*. *S. tentaculata, Sow.* appears to be the present species with an umber-brown mucedinous production springing from the *ostiola*.

145. *S. lívida*, Fr. (*livid Sphæria*); scattered, perithecia subglobose nestling in a prominent elliptic grey tubercle formed from the wood, ostiola pierced. *Fr. Syst. Myc. v.* 2. *p.* 479. *Scler. Succ. ! n.* 316.

On dried branches. Appin, *Captain Carmichael*.—The specimens referred to this species occur on small dead branches of Ivy, still covered with the cuticle. The spots are not so regular as in Fries' specimens, rounded, when there is but one perithecium, subelliptic when there are two together, and not distinctly defined at the base; perithecia immersed in the wood depresso-globose not stuffed, furnished with a short neck; *ostiola* rather prominent at length (apparently) pierced. The whole plant closely resembles the figure of Sowerby referred to by Fries, *S. subimmersa, Sow. ! t.* 372. *f.* 8. I find on dead decorticated ivy branches apparently the same species, only there are several perithecia beneath each black elliptic spot, and the spots are 2—3 lines long.

146. *S. anserína*, Pers. (*goose-shin Sphæria*); perithecia

ovate immersed raising the wood into minute papillæ, ostiola obtuse erumpent. *Pers. Ic. et Descr. t. 1. f. 8. Fr. Syst. Myc. v. 2. p. 480.*

On dry wood. Apethorpe, Norths. *Rev. M. J. Berkeley* on the trunk of a felled tree.—My plant appears to be the same as what is figured by Persoon, and is quite different from *S. milliaria*. The outer surface of the wood, covering the *perithecia*, is discoloured and of a brownish black, but the stain penetrates only very slightly and is by no means crust-like. The contents of the *perithecia*, in the dry state at least, are white.

147. *S. ocellata*, Fr. (*eylet Sphæria*); scattered, *perithecia* immersed globose persistent black, ostiola solitary umbilicate exerted from a truncate white disc. *Fr. Syst. Myc. v. 2. p. 480. S. brevis, Sow. ! t. 394. f. 4.*

On branches of ash, willow, &c. *Sowerby*, apparently on ash.—I have no doubt that the plant of *Sowerby* is the same as that of *Fries*. Externally it at first sight exactly resembles the state of *Stictis radiata* with an entire border, but on more minute examination it might be taken for *S. leucostoma* or *S. nivea*, but the *perithecia* are solitary without any *conceptaculum*.

148. *S. salicella*, Fr. (*minute willow Sphæria*); covered, *perithecia* distinct minute seated beneath elongated pale patches of the epidermis, ostiola cylindrical erumpent. *Fr. Syst. Myc. v. 2. p. 377. Scler. Suec. ! n. 188.*

On willow branches; common.—This is placed in the *Systema Mycologicum* in the division CONCRESCENTES, but in the new issue of *Scleromyces Sueciæ* in the present division with which it seems to me to accord best. This species is marked in *Sowerby's Herbarium* as *S. subcorticalis*, *Sow. t. 296*, but the *perithecia* in the figure are much larger, and therefore very possibly he may have had *S. ditopa* in view. I have in vain looked for that species on *Rhamnus catharticus*.

149. *S. corticis*, *Sow. (thousand-dot Sphæria)*; scattered *perithecia* globose persistent black ostiola slightly prominent, very minute punctiform flattened. *Sow. t. 372. f. 5. Fr. Syst. Myc. v. 2. p. 481. El. 2. p. 98. Cryptosphæria Sillepunctata, Grev. Fl. Ed. p. 360. Sc. Crypt. Fl. t. 201. S. populina, Pers. Ic. Pict. t. 21. f. 5, 6.*

On small branches of ash. Very common.—At first sight from the smoothness of the branches on which it grows resembling a *Verrucaria*.

150. *S. vibratilis*, Fr. (*simple sloe-branch Sphæria*); scattered, *perithecia* entire covered globoso-depressed even black, ostiolum very minute latent. *Fr. ! Scler. Suec. n. 315. Syst. Myc. v. 2. p. 482.*

On dead branches of the sloe and other species of *Prunus*. *Glaphthorn, Norths. Rev. M. J. Berkeley*.—When the epidermis is stripped off, and held to the light, it is found to be perforated by the minute ostiola, though externally there is but a very slight indication of the presence of the *perithecia*. *Asci* linear, appearing moniliform from the *sporidia*, being arranged in a single row.

151. *S. Púpula*, Fr. (*eye-pupil Sphæria*); scattered, perithecia covered orbicular concentrically striate black, orifice when stripped of the epidermis whitish, papilla yellowish. *Fr. Syst. Myc. v. 2. p. 484. Scler. Succ. ! n. 16.*— $\beta$ . *Philadelphii*, Fr. ! *Scler. Succ. n. 317.*

$\beta$ . On dead shoots of *Philadelphus coronarius*. Apethorpe, Norths., abundantly. *Rev. M. J. Berkeley.*—My specimens accord altogether with those of Fries, who at present appears not to have described the form on the mock-orange. The *papilla* is blackish, bursting the epidermis longitudinally and frequently itself longitudinal, somewhat approaching, in this respect, *MACROSTOMEÆ*.

152. *S. Tiliæ*, Pers. (*Linden Sphæria*); scattered, perithecia covered smooth black somewhat pitcher-shaped dimidiate, neck erumpent unequal black. *Pers. Syn. p. 84. Nees, Syst. f. 339. Moug. & Nest. n. ! 660. Fr. Syst. Myc. v. 2. p. 485. Scler. Succ. ! n. 80. Johnst. ! Fl. Berw. 2. p. 124.*—*b.* compound, somewhat cellular within. *S. ampullacea*, Pers. *Syn. p. 41. S. subsecrata*, Sow. ! *t. 373. f. 8.*

On branches of lime, *Sowerby*. King's Cliffe, *Rev. M. J. Berkeley*. Near Water Haugh, Berwickshire, *Dr. Johnston*, who says that it grows on sycamore; the specimen, however, which I have seen from him is certainly on lime.

153. *S. pruinósa*, Fr. (*frosted Sphæria*); gregarious, perithecia covered depressed aduate with the epidermis frosted with grey meal, ostiola bursting forth in a bullate manner. *Fr. Obs. v. 2. p. 328. Syst. Myc. v. 2. p. 486. Scler. Succ. ! n. 82. Moug. & Nest. ! n. 968.*

On ash twigs. Spring. King's Cliffe, Norths. *Rev. M. J. Berkeley*. On sticks used for marking seeds.—Easily known when perfect by the grey-frosted *perithecia*, which are deeply umbilicate beneath, by collapse, and separate, together with the epidermis, from the inner bark. Sometimes, however, they are retained by the bark and in that case the mealiness is seen only with great difficulty. *Ostiola* bursting through the cuticle and making the matrix rough like a nutmeg-grater, pierced with a round, depressed orifice.

154. *S. inqúinans*, Tode, (*smutty Sphæria*); gregarious staining black, perithecia immersed globose even smooth covered above with the epidermis, papilla erumpent black. *Tode, Fung. Meck. f. 85. Fr. Syst. Myc. v. 2. p. 456. Scler. Succ. ! n. 394. Purt. v. 3. n. 1589. S. ellipsosperma*, Sow. *t. 372. f. 3. Variolarium ellipsosperma*, Bull. *t. 492. f. 3.*

On branches of sycamore and maple, *Sowerby*. Botanic Garden Oxford, *Mr. Baxter*, according to *Purt. MSS.*—"Perithecia immersed in the inner bark, rather large, taken together with the erumpent ostiolum, almost ovate, above connate with the epidermis, in consequence, when that is removed, half exposed. Jelly black, sometimes protruding like a thread, making a black stain round the *ostiolum* like a *Stilbospora*." *Fr. l. c.*

155. *S. rúdis*, Moug. (*dingy-black Sphæria*); crowded or scattered furnished with a black effused ambient crust, perithecia covered villosio-furfuraceous dingy-black at length dimidiate from the peeling off of the epidermis, nucleus pale whitish rose-colour. *Fr. El.* 2. p. 98. *Scler. Succ.*! n. 396.

On dead branches of *Laburnum*. Appin, *Captain Carmichael*. Oundle, &c., Norths. *Rev. M. J. Berkeley*. Probably very general.—A very variable species, remarkable for the manner in which the epidermis is pushed off by it. Very crowded specimens must not be confounded with *S. Laburni*.

156. *S. Xylóstei*, Pers. (*fly-honeysuckle Sphæria*); gregarious staining black, perithecia covered emergent entire globose, ostiola slightly prominent seated on a black spot at length pierced. *Pers. disp.* p. 4. *Fr. Syst. Myc.* v. 2. p. 487. *Scler. Succ.* n. 189.—*b. Periclymeni. S. semimmersa*, Pers. in *Grev. Fl. Ed.* p. 361.

*b.* On branches of woodbine. About Edinburgh, *Dr. Greville*. King's Cliffe. *Rev. M. J. Berkeley*.

157. *S. clypeáta*, Nees, (*shield-like Sphæria*); gregarious, perithecia depressed covered with the innate blackened epidermis, ostiolum emergent conico-truncate. *Nees, Syst. f.* 355. *Fr. Syst. Myc.* v. 2. p. 487. *Scler. Succ.* n. 398.

On dried branches of brambles. Appin, *Captain Carmichael*. Scotland, *Dr. Greville*, according to *Fr. El.* 2. p. 100. Northamptonshire, *Rev. M. J. Berkeley*.—Easily known by the shining black spots of the epidermis, which cover the *perithecia*, and by its neat appearance.

158. *S. Tamariscinis*, Grev. (*Tamarisk Sphæria*); "scattered under the epidermis which is very convex and ruptured in the centre, mouth very short obtuse not exerted." *Grev. Scot. Crypt. Fl. t.* 45. *Fl. Ed.* p. 361. (under *Cryptosphæria*). *S. Tamariscinis*, *Fr. Ind. Alph.* p. 175.

On dead branches of *Tamarix Germanica*. Carlowrie, *Dr. Greville*.—*Perithecia* globose, slightly depressed, their black colour appearing through the epidermis.

159. *S. pinástri*, Dec. (*pine-leaf Sphæria*); globose depressed immersed produced into a short neck piercing the epidermis, ostiolum not prominent. *Dec. Fl. Fran.* v. 6. p. 133. *Fr. Syst. Myc.* v. 2. p. 488. *Scler. Succ.* n. 190.

On leaves of firs and pines. Appin, *Capt. Carmichael*. Edinburgh, *Dr. Greville*.

\*\*\*\*\* SUBINNATÆ. *Simple. Perithecia more or less innate in the epidermis of the matrix; veil none. Gelatinous contents of the perithecia more or less persistent.*

DIV. 24. OBTURATÆ. (*Named from obturatus, dammed up, the contents of the spherules being persistent.*) *Perithecia soon erumpent, free, ostiolum simple.*



160. *S. Lonicææ*, Sow. (*honeysuckle Sphæria*); gregarious erumpent, perithecia globose nearly free thin black soon torn and cup-shaped, ostiolum simple. *Sow. t. 393. f. 6. Fr. Syst. Myc. v. 2. p. 492. Scler. Succ.! n. 349.*

On Honeysuckle.—On an inspection of Sowerby's herbarium I am very doubtful whether he had the same production in view as Fries, but the only specimen is either in so young or so imperfect a state, and so little agreeing with the figure, that I abide entirely by Fries' judgment.

161. *S. strobilina*, Holl. & Schm. (*fir-cone Sphæria*); gregarious erumpent perithecia rather irregular rounded at first soft dirty-brown then black opening by a longitudinal fissure. *Fr. Syst. Myc. v. 2. p. 495. Scler. Succ.! n. 318.*

On cones of *Pinus Abies*. Appin, *Captain Carmichael*. Edinburgh, *Dr. Greville*.

162. *S. Juglandis*, Fr. (*walnut Sphæria*); gregarious, perithecia globose at first depressed and immersed then erumpent even black pierced with a simple ostiolum grey within. *Fr. Syst. Myc. v. 2. p. 493. Scler.! n. 239.*

On Walnut twigs. Apethorpe, Norths. *Rev. M. J. Berkeley*.—Probably extremely common. *S. Frazini*, Fr., of which the present species is declared by Fries to be scarcely a variety, is now considered a true species of *Tympanis*. Such appears to me to be also the case with *S. Juglandis*, which, if I mistake not, in age, acquires a brownish tinge, becomes rugged and opens with a distinct fissure. I do not, however, refer the species to *Tympanis*, as I have not at present had an opportunity of tracing it through its whole growth. My specimens were gathered in the middle of April.

163. *S. obturata*, Fr. (*heath Sphæria*); erumpent nearly free even regular black bursting by many fissures at length collapsing. *Fr. Syst. Myc. v. 2. p. 495.—a. Virgarum. oval.—b. cypiphylla*; globose. *Scler. Succ.! n. 128.*

On branches and leaves of *Ericæ*.—b. Appin, *Captain Carmichael*.—On leaves of *Calluna vulgaris*; much smaller than the published specimens of Fries on *Vaccinium Oxycoccus*.

Div. 25. SUBTECTÆ. *Perithecia at first innate concrete with the matrix, at length exposed above; ostiolum simple.*

164. *S. sepincola*, Fr. (*cluster-seeded Sphæria*); gregarious, perithecia covered globose opaque subrugose white within with a central nucleus, pierced with a simple ostiolum. *Fr. Obs. Myc. v. 1. p. 181. Syst. Myc. v. 2. p. 498. S. Corni, Montagne, Ann. d. Sc. N. S. v. 1. p. 340. p. 13. f. 6.*

On dead branches of Cornel, &c. King's Cliffe, Norths. *Rev. M. J. Berkeley*. On *Cornus Masculæ*.—The plant figured by Sowerby under the name of *S. Corni* is what Fries has published specimens of by the name of *S. Corni Succicæ*; the specimen, however, preserved in the Herbarium, is probably an immature state of the present species, which differs from other *Sphæriæ* in having the *Asci* collected in a mass,

immersed amongst numerous paraphyses, and, according to Montagne, in the forthcoming work of Fries on the Species of Fungi is to form a new genus *Sacothecium*.—*S. Arbuti*, Sow. t. 370. f. 6, referred by Fries to his *S. arbuticola*, is *Phacidium Vaccinii*.

165. *Kérriæ*, Berk. (*Japan-Corchorus Sphæria*); perithecia scattered numerous black opaque very minute globose mouthless, within white at length grey. *S. Corchori*, Desm.! *Pl. Crypt. n.* 712.

On dead shoots of *Kerria Japonica*. Winter—Summer. Apothecia. Cotterstock, Norths., *Rev. M. J. Berkeley*.—This, like the last, in a revision of the genus, must be separated from *Sphæria*, and probably may enter into the at present scarcely adopted genus *Diplodia*. The *sporidia*, which are not contained in *asci*, are septate and resemble very strongly those of *Trichothecium roscum*, but are, as it appears to me, rather broader. My specimens were gathered in the middle of May, and though still filled with a grumous mass, have no distinct *sporidia*. On the same branch I found the *perithecia* of some minute individuals which I could not otherwise distinguish, filled with minute oblong *sporidia*, with about three *septa*, exactly like those of *Vermiculariæ*. The plant deserves investigation in its several stages of growth.

166. *S. Taxi*, Sow. (*yew-leaf Sphæria*); gregarious, covered with the epidermis which becomes grey, perithecia subimmersed convex black at length piercing the epidermis by a pore. Sow.! t. 394. f. 6. *Fr. Obs. v.* 1. p. 183. *Syst. Myc. v.* 2. p. 500. *Scler. Suec.!* n. 22. *Cryptosphæria Taxi*, Grev. *Sc. Crypt. Fl. t.* 13.

On branchlets and leaves of Yew. Common.

167. *S. atrovirens*, A. & S. (*greenish-black Sphæria*); scattered, at first greenish then blackish, perithecia somewhat immersed globose and ovate, disc erumpent rugulose at length torn.—*a. Visci*, Alb. & Schw. *Consp. t.* 2. f. 1. *Sch. in Kunz. Myc. Hest. 2. t.* 1. f. 2. *Moug. & Nest.!* n. 486. *Fr. Syst. Myc. v.* 2. p. 501.—*β. Buxi*; scattered in quincunxes greyish-black, perithecia globose slightly prominent, disc covered depressed white at length erumpent naked. *Fr. Syst. Myc. v.* 2. p. 501. *S. Buxi*, Dec. *Fl. Franc. t.* 6. p. 146.—*γ. Rusci*; perithecia very numerous punctiform glaucous or bluish-black rendering the matrix pale. *Fr. El. 2. p.* 103. *Cryptosphæria glauco-punctato*, Grev. *Fl. Ed. p.* 362.

*a.* On Mistletoe which has perished in the winter, sometimes covering the whole plant. Rockingham Forest. *Rev. M. J. Berkeley*.—*β.* On box leaves. Common. Splitting the epidermis by its protrusion into stellate laciniae.—*γ.* On dead leaves of *Ruscus aculeatus*. Slateford. *Dr. Greville*. Sent by *Mr. Baxter* to *Mr. Purton*. There are also specimens in Sowerby's Herbarium.—Two distinct forms of *β.* occur. The one with a white disc when the epidermis is burst, and elliptic *sporidia*, the other to which specimens from *Dr. Greville* gathered at Durham are referrible, with a blackish disc and minute oblong *sporidia*

like those of *Cytispora*. I presume that the first is the plant of Fries; but I am not certain of this, as there are no specimens of it in my copy of *Scleromyces Sueciæ*. *Sph. Mirbelii*, Moug. & Nest.! resembles this very closely, but the specimens published have a curious reddish-yellow tinge. I doubt, however, whether they are in a perfect state, as I cannot detect any mature sporidia, and *Sph. Craterium* is coloured when young.

168. *S. Ílicis*, Schleich. (*Holly-leaf Sphæria*); gregarious black, perithecia globose slightly prominent covered, at length erumpent bursting by fissures. *Fr. Syst. Myc. v. 3. p. 501.*—*Phac. Aquifolii*, Moug. & Nest.! n. 562.

On Holly leaves. Apethorpe, Norths. *Rev. M. J. Berkeley.* Probably very common.

DIV. 26. CAULICOLÆ. *Perithecia at first covered, at length naked from the separation of the non-adherent annual epidermis. Named from their growing on the stems of plants.*

169. *S. Lirélla*, Moug. & Nest. (*Meadow-sweet Sphæria*); perithecia free distinct seriate, when collapsed umbilicate beneath, nestling under a blackish lanceolate even slightly swollen spot of the epidermis. *Moug. & Nest.! n. 668. Fr. El. 2. p. 105.*

On dry stems of *Spiræa Ulmaria*. Winter and Spring. Rockingham Forest, Norths., *Rev. M. J. Berkeley.*—Having scarcely the appearance of a *Sphæria* when viewed externally; but when the epidermis is removed, the free distinct perithecia hollowed out at the base immediately become visible. It is doubtless to be found everywhere, as, after seeing the plant of Mongeot and Nestler, I had only to gather the first dead stem of the *Spiræa*, and there it was in abundance, and on every other stem in the neighbourhood.

170. *S. pellita*, Fr. (*black fleecy Sphæria*); gregarious, perithecia conico-rotund black, surrounded with hairs of the same colour, ostiolum papillæform. *Fr. Syst. Myc. v. 2. p. 503.*

On stems of the larger herbaceous plants. Appin, *Captain Carmichael.* Glasgow, *Klotzsch in Hook. Herb.*—“*Perithecia* somewhat flattened at the base, clothed more or less with soft hairs, but especially at the base.” *Fr. l. c.*

171. *S. comata*, Tode, (*comose Sphæria*); scattered, perithecia rounded obtuse very brittle black mouthless, apex comose with very long somewhat fastigiate hairs. *Tode, Fung. Meck. f. 81. Fr. Syst. Myc. v. 2. p. 504.*

On stems of herbs.—Dr. Greville's *S. capillata*, of which I have seen specimens, is clearly *S. phæcomes* and in his Synopsis is considered a species of *Ceuthospora*. The present species is, however, introduced to receive as a form, intermediate as it should seem between *S. comata*, Tode, and *S. capillata*, Nees, *S. calva*, Johnst. Fl. Berw., gathered on the stem of *Senecio Jacobææ*, being distinguished by its long flexuous greyish-brown hairs and black perithecia. The plant of Nees is described as having greenish-white hairs. This and certain other hairy

*Sphæria* belong to the genus *Vermicularia*, being characterized by their septate *asci*. I do not adopt it here, as from a remark of Fries that he has seen the septate bodies contained in tubes, its distinction is doubtful.

172. *S. relicina*, Fr. (*hairy-grass Sphæria*); perithecia globose rather firm mouthless black, beset all round with short erect black hairs. *Fr. Syst. Myc. v. 2. p. 505.*

On culms of grass. Stibbington, Hunts. *Rev. M. J. Berkeley.*—Easily distinguished from *S. phæcomes* by the hairs not being confined to the apex.

173. *S. Dematium*, Pers. (*Dematium-like Sphæria*); gregarious, perithecia plano-depressed mouthless black, strigose in the centre with somewhat divergent hairs of the same colour. *Pers. ! Syn. p. 88. Fr. Syst. Myc. v. 2. p. 505. Scler. Suec. ! n. 53, 202.*

On stems of herbaceous plants. Elton, Hunts. King's Cliffe, Norths., *Rev. M. J. Berkeley.*—At first covered by the epidermis, through which the hairs penetrate like a little brush, at length naked, the hairs frequently falling off. Generally subelliptic.

174. *S. rubella*, Pers. (*black and red Sphæria*); scattered, perithecia erumpent subdepressed at length black surrounded by a red stain, ostiolum conic. *Pers. Syn. p. 63. Nees, f. 353. Fr. Syst. Myc. v. 2. p. 503. Scler. Suec. ! n. 240. Purt. MSS.—S. porphyrogona, Tode, Fung. Meck. f. 72.*

On the stems of herbaceous plants. Common.—Easily known by the reddish or purple spot which covers the portion of the stem on which the *Sphæria* is produced, and which sometimes dyes the *perithecia*.

175. *S. acuta*, Hoffm. (*sharp-beaked Sphæria*); subgregarious, perithecia subglobose even black shining, ostiolum beaked straight cylindrical obtuse. *Hoff. Veg. Cr. 1. t. 5. f. 2. Sow. ! t. 119. Pers. Syn. p. 62. With. v. 4. p. 362. Moug. & Nest. ! n. 181. Purt. ! v. 2 & 3. n. 1089. Fr. Syst. Myc. v. 2. p. 507. Scler. Suec. ! n. 118.—Cryptosphæria acuta, Grev. Fl. Ed. p. 360. Sc. Crypt. Fl. t. 239. Baet. ! Oxf. n. 27.—S. acuminata, Sow. ! t. 394. f. 3.*

On stems of herbaceous plants, especially of the common Nettle. Extremely common.—Casting off the epidermis by means of the *ostiola*, and, in consequence, at length naked. There is a curious state in Captain Carmichael's collection with the *perithecia* extremely compressed, from being produced between the rigid fibres of some hard stem, apparently of some Mallow. *S. acuminata*, Sow., according to the preserved specimens, is nothing more than the early stage of the plant before the epidermis becomes loose. I have found the present species on the scales of *Dipsacus*. Fries, however, seems to have received something different from Persoon, for *S. Dipsaci*. *S. curvirostra*, Sow., as stated above, is, I believe, a state of *S. spiculosa*.

176. *S. complanata*, Tode, (*flattened Sphæria*); scattered, perithecia subglobose even black soon collapsed and then plano-

depressed, ostiolum papillæform persistent. *Tode, Fung. Mæck. f. 88. Fr. Syst. Myc. v. 2. p. 508. Scler. Succ. ! n. 36, 408. (minor.)*

On stems of herbaceous plants. Extremely common.—*Sporidia* very minute, oblong-elliptic. Varying considerably, like many other of the simple *Sphæriæ*, in size, so as to make it difficult to believe the extremes referrible to the same species.

177. *S. Doliolum*, Pers. (*Cask-like Sphæria*); scattered, perithecia conico-rotund papillary black shining folded concentrically. *Pers. Ic. et Desc. t. 10. f. 5, 6. Syn. ! p. 78. Moug. & Nest. ! n. 571. Hook. Scot. 2. p. 7. Purst. v. 3. n. 1525. Fr. Syst. Myc. v. 2. p. 509. Scler. Succ. ! n. 321. (in my copy var. γ.). Grev. Fl. Ed. p. 363.—*Cryptosphæria Doliolum*, Grev. Sc. Crypt. Fl. t. 239. f. 2. Baxt. ! Ox. n. 31.*

On the dead stems of larger herbaceous plants. Not so common as the two foregoing species.—Originating beneath the epidermis. *Sporidia*, according to Dr. Greville, in the present species linear-oblong with 3—4 septa, in *S. acuta* linear-acuminate with 4—5 septa.

178. *S. Pisi*, Sow. (*Pea-stalk Sphæria*); scattered, perithecia elliptico-subrotund depressed opaque black plicate above in the direction of the stem, ostiola latent subcompressed. *Sow. ! t. 393. f. 8. (junior).—Fr. Syst. Myc. v. 2. p. 509. Scler. Succ. ! n. 322.*

On the stalks and withered legumes of the Pea. *Rev. W. Kirby. Woodnewton, &c., Norths. Rev. M. J. Berkeley.*—I have no doubt that Sowerby's species is the same with that of Fries, only in a younger state. My specimens which are more advanced are nearly intermediate between them and the specimens in *Scler. Succ.* The folds, which are from 1—4, arise from the collapsion of the perithecia.

179. *S. culmifraga*, Fr. (*stalk-splitting Sphæria*); scattered, perithecia covered erumpent somewhat compressed black, ostiolum short naked conical. *Fr. Syst. Myc. v. 2. p. 510. Scler. Succ. ! n. 373. Johnst. Fl. Berw. v. 2. p. 127. S. longa, Sow. ! t. 393. f. 4.*

On culms of various grasses, wheat, rye, &c. Common.—Besides specimens undoubtedly belonging to this species, others have been communicated by Dr. Johnston for *S. culmicola*, but I fear that they are only a state of the present plant, a portion of the stem having become blackened.

180. *S. scirpicola*, Dec. (*chair-rush Sphæria*); scattered minute black, perithecia immersed globose neck very short, ostiolum naked punctiform subglobose. *Dec. Fl. Fr. 2. p. 809. Fr. Syst. Myc. v. 2. p. 511. Scler. Succ. ! n. 150.*

On stems of *Scirpus lacustris*. Common.—*S. maculans*, Sow. ! t. 394. f. 9, appears to me a mere variety, the black spots being extraneous and the *perithecia* not confined to them.

181. *S. herbárum*, Pers. (*common stalk Sphæria*); subgregarious minute black, perithecia generally covered globoso-depressed even, ostiolum slightly prominent punctiform. *Pers.*

*Syn.* p. 79. (*var. tecta*). *Fr. Syst. Myc. v. 2. p. 511. Scler. Suec. n. 38.*

On stems of herbaceous plants.—Extremely common, but difficult to distinguish from the smaller state of *S. complanata* and neighbouring species. I have not referred to Mongeot and Nestler, as their specimens approach so near to *S. complanata* that I know not how they are to be distinguished. *S. minutissima*, *Sow. ! t. 370. f. 1*, appears to me to be *Verrucaria epidermidis*. *S. Kirbii*, *Sow. ! t. 371. f. 3*, is probably a form of the present species.

182. *S. Scrophularia*, *Desm. (Figwort Sphæria)*; perithecia scattered black shining globose at length depressed, ostiolum short obtuse. *Desm. ! n. 718.*

On capsules of *Scrophularia aquatica*. Spring. Fineshade, Norths. *Rev. M. J. Berkeley.*—Very remarkable for its large asci and oblong-elliptic, 7—8-septate *sporidia*.

183. *S. inquilina*, *Wallr. (black-coated Sphæria)*; perithecia immersed covered with the blackened epidermis latent very thin pallid, nucleus black, ostiola punctiform black prominent. *Fr. El. 2. p. 100. Scler. Suec. ! n. 402.*

On stems of *Umbelliferae*. Rockingham Forest, Norths., *Rev. M. J. Berkeley.*—This species is placed in the *Elenchus* in the division *Obtectæ*; but in my copy of *Scler. Suec.* it is arranged in the division *Caulicolæ*. The perithecia frequently drop out, leaving a white hollow in the matrix; I believe that there is a distinct covering to the nucleus; indeed I am almost convinced that the species itself is a state of *S. spiculosa*, for the *ostiola* frequently are much elongated and altogether resemble those of that species; and undoubted *S. spiculosa*, when growing on *Arctium Lappa*, is in its early stage so exactly the same, that I cannot find a distinguishing point. In this latter plant I find the *sporidia* oblong-elliptic, containing three or four round *sporidiola*.

184. *S. Corni*, *Sow. (Cornel Sphæria)*; scattered shining jet-black depressed, ostiolum obsolete. *Sow. t. 370. f. 5.—S. Corni-Suecica, Fr. ! Scler. Suec. n. 409.*

On stems of *Cornus Suecica*.—The portion of the stem on which it grows is whitened and the *perithecia* which are of a very bright jet-black are almost effused at the base and often sulcate in the direction of the stem.

**DIV. 27. FOLICOLÆ.** *Perithecia concrete with the matrix, covered, not surrounded by a definite white spot.*

185. *S. phæcomes*, *Reb. (hairy grass-leaf Sphæria)*; scattered jet-black, perithecia globoso-hemispherical almost mouthless beset with erecto-divergent hairs. *Rebent. Neom. p. 338. t. 1. f. 4. Fr. Syst. Myc. v. 2. p. 515. Johnst. Fl. Berw. 2. p. 138.—S. capillata, Grev. Sc. Crypt. Fl. t. 69. Fl. Ed. p. 362.—Ceuthospora phæcomes, Grev. Syn. Gen. & Sp. p. 17.*

On dead leaves of grasses. About Edinburgh, *Dr. Greville*. Stibington, Hunts. *Rev. M. J. Berkeley*. Berwick, *Dr. Johnston*.—Not always confined to the leaves or their sheaths, but sometimes running down from the sheath below the joint.

186. *S. trichélla*, Fr. (*hairy Ivy-leaf Sphæria*); scattered, perithecia ovate very minute mouthless black clothed at the top with very long divergent hairs. *Fr. Obs.* 2. p. 332. *Syst. Myc.* v. 2. p. 515. *Scler. Succ.*! n. 203.—*Vermicularia trichella*, Grev. *Sc. Crypt. Fl.* t. 345.

On dead leaves of Ivy, &c. Foxhall, near Edinburgh, Dr. Greville.—*Sporidia* linear-oblong, septate. When young it resembles a *Cladosporium*.

187. *S. Cratérium*, Dec. (*cup-like Ivy-leaf Sphæria*); hypophyllous scattered blackish at length deeply collapsed. *Dec. Fl. Fr.* v. 2. p. 298. *Fr.*! *Scler. Succ.* n. 458.—*Phacidium*? *Craterium*, Moug. & Nest.! n. 986. *S. punctiformis*,  $\beta$ . *Hederæ*, Grev. *Fl. Ed.* p. 362. *Buxt.*! *Ox.* n. 29.

On dead Ivy-leaves. Common.—De Candolle, as also Greville, refer this species to *S. punctiformis*,  $\beta$ . Pers. It is the *Sphæria Hederæ*, Purton. It appears to me that Mougeot and Nestler are nearer the right genus than Fries, and indeed that the plant is congeneric with *Eustegia Ilicis*. Fungi of precisely the same structure occur on the leaves of Box and Laurel. Mass of *Asci*, for I believe there is no true perithecium, at first yellowish then greenish, at length nearly black. Fries suspects that it is a state of *S. trichella*, but I think without reason. See *Scler. Succ.* l. c.

188. *S. tubæformis*, Tode, (*trumpet-shaped Sphæria*); perithecia subglobose covered smooth, ostiolum straight beaked nearly equal earthy-tawny. *Tode, Fung. Mech.* f. 128. *Moug. & Nest.*! n. 280. *Hook. Scot.* 2. p. 7. *Fr. Syst. Myc.* v. 2. p. 516. *Scler. Succ.*! n. 26. *Grev. Sc. Crypt. Fl.* t. 335. f. 1.

On dead leaves of various trees. Apparently not uncommon.—At first sight much resembling *Phoma Pustula*, which often occurs on oak-leaves, but immediately distinguishable, when submitted to the lens, by the curious, reddish-brown, intestine-like *ostiola*.

189. *S. Gnómon*, Tode, (*Dial-style Sphæria*); perithecia black bursting forth often collapsed, ostiolum elongated clavate straight black. *Tod. l. c.* f. 125. *Sow.*! t. 373. f. 6. *Purt.* v. 3. n. 1521. *Fr. Syst. Myc.* v. 2. p. 517. *Scler. Succ.*! n. 285. *Grev. Sc. Crypt. Fl.* t. 335. f. 2.—*Cryptosphæria Gnomon*, Grev. *Fl. Ed.* p. 360.

On Hazel leaves. Winter and early Spring. Not uncommon.

190. *S. setácea*, Pers. (*bristle-like Sphæria*); perithecia covered globose, ostiola bristle-like attenuated black. *Pers. Syn.* p. 62. *Fr. Syst. Myc.* v. 2. p. 518. *Scler. Succ.*! n. 286. *Purt. MSS.*

Leaves of various trees. Appin, Captain Carmichael. It has been also found by Purton.—This is easily known from the foregoing by its longer rather irregular bristle-like *ostiolum*, which bursts forth on the under-side of the leaf, and its coloured *perithecia* which are often situated on a nerve.

191. *S. dúplex*, Sow. (*twofold Sphæria*); scattered, perithecia

immersed globose latent black, ostiola naked dilated hemispherical. *Fr. Syst. Myc. v. 2. p. 520.*—a. *Sow. t. 375. f. 4. Fr. Obs. 2. p. 334.*—b. *S. erecta, Sow. t. 394. f. 7.*

a. On the stems of *Umbelliferae*.—b. On petioles of *Sparanium, Sagittaria, &c.*—Of the two plants of Sowerby, quoted above, the first is described as growing on the stems of *Umbelliferae*: of this no specimens remain. Of the latter a sample is preserved on the petiole of a *Sparanium*; but I doubt very much, judging from his specimens on *Nardus* in *Scler. Succ.*, whether it is what Fries intends, and indeed if it be any thing more than *S. scirpicola*, Dec.

192. *S. Héderæ, Sow. (Ivy-leaf Sphæria)*; scattered, perithecia together with the innate epidermis rather prominent convex even black, ostiolum pierced white. *Sow. t. 371. f. 5. Fr. Obs. 1. t. 4. f. 6. Scler. Succ. ! n. 21. Syst. Myc. v. 2. p. 521.*

On Ivy-leaves. Appin, *Captain Carmichael. Durham, W. C. Trevelyan, Esq.*—Known from other minute *Sphæriæ* on Ivy-leaves, by its shining immersed perithecia and white ostiola. In Dr. Johnston's *Fl. Berw.* a minute *Sphæria* is inserted under the name of *S. Empetri*, and the same plant has been found near Edinburgh by Dr. Greville. It is clearly not the plant of Fries, being very much smaller and not collapsed.

193. *S. artócreas, Tod. (raised-pie Sphæria)*; gregarious innate orbicular black shining, at first convex even, soon depressed round the dot-like ostiolum, at length collapsed and rugoso-plicate. *Tode, Fung. Meck. 2. p. 20. f. 73. Fr. Syst. Myc. v. 2. p. 523. Scler. Succ. ! n. 151.—Xyloma fagineum, Grev. Fl. Ed. p. 268.*

On dry leaves of various trees, especially Beech. Common.—Having when old completely the appearance of an obscure *Sclerotium* or *Dothidea*, so as to require an accurate and minute examination to refer it to its proper place.

194. *S. recutita, Fr. (half-naked Sphæria)*; aggregate hypophyllous innate but slightly prominent very minute mouthless black, appearing under the form of very long parallel striæ. *Fr. Syst. Myc. v. 2. p. 524.*

On leaves of Grass. Near Berwick, *Dr. Johnston.*—The perithecia grow in rows, but are quite distinct.

195. *S. maculæfórmis, Pers. (spot-like leaf Sphæria)*; hypophyllous, perithecia innate but slightly prominent punctiform globose black crowded together into an unequal spot. *Pers. Syn. p. 90. Moug. & Nest. ! n. 661. Fr. Syst. Myc. v. 2. p. 524. Scler. Succ. ! n. 20.—S. subconfluens, Sow. ! t. 370. f. 7. middle figure.*

On fallen leaves of various trees. Extremely common.—Forming irregular patches bounded by the decussating veins. *S. sentina, Johnst. !* is certainly this species.

196. *S. punctifórmis, Pers. (dot-like leaf Sphæria)*; scattered,



perithecia innate punctiform even rather shining black slightly prominent, umbilicate by collapsion. *Pers. Syn.* p. 90. *Hook. Sc.* 2. p. 8. *Moug. & Nest!* n. 662. *Fr. Syst. Myc.* v. 2. p. 525. *Scler. Succ!* n. 58, 86. *Fl. Dan.* t. 2036. f. 1.—*Cryptosphæria punctiformis*, *Grev. Fl. Ed.* p. 362. (excluding variety on Ivy).—*S. subconfluens*, *Sow!* l. c. left hand fig.

On fallen leaves. Extremely common.

197. *S. brunnéola*, *Fr.* (*Lily of the valley Sphæria*); gregarious, perithecia globose very minute mouthless black emerging from a determinate brown oblong spot which at length becomes black. *Fr. Syst. Myc.* v. 2. p. 526. *Scler. Succ!* n. 248.

On dead leaves of *Convallaria maialis*. King's Cliffe, Norths. abundantly, *Rev. M. J. Berkeley*.—The plant published by Mougeot and Nestler under this name is certainly quite different, and I conceive more properly belongs to the genus *Dothidea*.

198. *S. Ægopódii*, *Pers.* (*Gout-weed Sphæria*); scattered, perithecia innate slightly prominent mouthless black seated on a crust-like white spot. *Pers. Syn.* p. 90. *Hook. Scot.* 2. p. 8. *Fr. Syst. Myc.* v. 2. p. 526.—*Cryptosphæria Ægopodii*, *Grev. Fl. Ed.* p. 362.

On green leaves of *Ægopodium Podagaria*. Common.—The spot on which the perithecia are seated is not defined, as in the next division.

**DIV. 28. DEPAZEA.** (Δεπαζα, a cup, from the collapsed or depressed perithecia.) *Perithecia seated on an arid spot, on leaves which are still green.*

199. *S. hederácola*, *Fr.* (*white-spot Ivy-leaf Sphæria*); spots dirty-white surrounded by a broad brown border—perithecia gregarious globose naked opaque at length black. *Fr. Syst. Myc.* v. 2. p. 528.—*S. lichenoides*, var. *e. hederacola*, *Moug. & Nest!* n. 663.—*S. lichenoides*, var. *a*, *Johnst. Fl. Berw.* 2. p. 131.

On green Ivy-leaves, all the year. Common.—Other similar forms are pointed out by Dr. Johnston which do not appear to have been noticed by authors. That on leaves of the Ash differs in having brownish spots with a narrower border and the perithecia more scattered. There is one on *Epilobium angustifolium*, with angular spots and the perithecia becoming visible from beneath in consequence of the shelling off of the epidermis on the under-side of the leaf. The spots on Maple leaves, to which he alludes, appear only a discoloration of the leaf from the agency of insects. Of those on common Docks and on *Geum rivale*, I cannot speak, having no specimens before me.—*S. unedonicola*, *Klotzsch, MSS.*, which is extremely common on the Strawberry-tree, has small spots with a few rather more pointed perithecia. An allied form or species is common on the leaves of the Red Currant. One on elm leaves is preserved in Dr. Hooker's Herbarium, marked by *Klotzsch Depazea Ulmi*. I do not think it advisable to multiply species in this and similar obscure departments of fungi, without more correct notions of their individual structure and more careful microscopical investigation than seems at present to have been bestowed upon them.

200. *S. frondicola*, Fr. (common spot-like *Sphæria*); spots white or greyish with a brown border, perithecia hypophyllous scattered depressed soon splitting all round. *Fr. Obs. Myc.* 2. t. 5. f. 6, 7. (*Depazea*). *Syst. Myc.* v. 2. p. 529.—*Xyloma concentricum*, Pers. *Syn.* p. 107. *Purt.* v. 3. p. 316. *Moug. & Nest.* ! n. 369.

On living Aspen leaves. *Purton*, who states that he has likewise found it on Maple leaves.

201. *S. Diánthi*, Alb. & Schw. (*Chickweed-tribe Sphæria*); spots indeterminate yellow, perithecia scattered globoso-depressed black, disc pallid collapsed. *Alb. & Schw.* t. 6. f. 2. *Fr. Syst. Myc.* v. 2. p. 531.—b. *S. Saponariæ*, Dec. *Fr.* 6. p. 146.—*Næmaspora Cerastii*, *Carm. MSS.*

b. On various *Caryophylleæ*. *Appin*, *Captain Carmichael*. On *Cerastium vulgatum*.

### 56. EUSTÉGIA. Fr. Eustegia.

*Perithecia* orbicular, splitting in the middle; *operculum* deciduous. *Asci* melting away.—Name from *ευ*, well, and *στέγω*, to cover.

1. *E. Ílicis*, Fr. (*Holly-leaf Eustegia*); innate, *operculum* nearly plane falling off surrounded by a ring-like whitish margin. *Fr. El.* 2. p. 112. *Scler. Succ.* ! n. 417.—*S. complanata*,\* *Moug. & Nest.* ! n. 82.—*S. concava*, *Sow.* ! t. 307.—*Xyloma concava*, *Grev. Fl. Ed.* p. 368. *Baxt.* ! *Ox.* n. 77.

On Holly leaves. Very common.—The ring appears to arise from the small portion of the cuticle which projects all round beyond that portion of the connate perithecium which splits off. *Asci* linear, *sporidia* oblong.

### 57. LÓPHIUM. Fr. Lophium.

*Perithecia* vertical, compressed, opening by a longitudinal fissure. *Asci* breaking up into dust and escaping.—Name from *λοφος*, a crest.

1. *L. mytilinum*, Pers. (*muscle-like Lophium*); shortly pedicellate much dilated upwards transversely striate black shining. *Fr. Syst. Myc.* v. 2. p. 533. *Scler. Succ.* ! n. 60. *Grev.* ! *Sc. Crypt. Fl.* t. 177. f. 1.—*Hysterium mytilinum*, Pers. *Syn.* p. 97. *Nees, Syst.* f. 301.

On the bark or naked wood of Fir trees. *Appin*, *Capt. Carmichael*.

\* On one of the specimens of this plant in Dr. Hooker's copy of *Mougeot and Nestler's Stirpes Cryptogamicæ*, there is a minute sample of *Agaricus Hudsoni*, Pers., which is most certainly a very distinct and highly curious species; the stem is nearly if not quite smooth, pale above, dark-brown below, and the pileus is beset with scattered long yellow-brown setæ, quite different from any thing that I have seen in the genus and resembling those of *Peziza scutellata*. Since the above was written I have received excellent specimens in *Desmazière's Plant. Crypt.* The stem, as in *Sowerby's* figure, is pilose like the pileus.

—A most curious and elegant fungus, exactly resembling a minute bivalve shell, placed with its edge upwards. The production figured by Bulliard, *t.* 444. *f.* 4. and Sow. ! *t.* 375. *f.* 9, is clearly not referrible to this species, judging from the figures alone, but rather to the genus *Eustegia*. On an inspection of specimens however I am quite convinced that Sowerby was right in his conjecture that they are the nidus of some insect.

2. *L. elátum*, Carm. (*elongated Lophium*); stipitate compressed black transversely striate dilated gradually upwards into an elongated wedge-shaped perithecium. *Gre. Sc. Crypt. Fl. t.* 177. *f.* 2. *Fr. El. 2. p.* 113.—*Hysterium elatum*, Carm. *MSS.*

On Fir wood. Appin, *Captain Carmichael*.—Apparently extremely rare, as no species remain in the Appin collection.

### 58. SPHÆRONÆMA. *Fr.* Sphæronæma.

*Perithecium* opening by a pore including mucous *sporidia* in a very delicate sac, which at length ooze forth and harden into a globule.—Name *σφαῖρα*, a sphere, and *γαῖμα*, gelatine.

1. *S. subulátum*, Tode, (*awl-shaped Sphæronæma*); perithecia grumous between conical and awl-shaped acute yellowish, globule paler. *Fr. Obs. Myc. 1. p.* 187. *Scler. Succ. ! n.* 325. *Gre. ! Sc. Crypt. Fl. t.* 189.—*Sph. subulata*, Tode, *Fung. Meck. f.* 117. *Pers. Syn. p.* 94.

On hard blackened Agarics. Not common. Near Edinburgh. Taret, *Dr. Greville*. Appin, *Captain Carmichael*. Cambridge, *Rev. M. J. Berkeley*.—At first sight resembling a *Stilbum*. It varies considerably in form, being sometimes almost linear. It should seem, from *Dr. Greville's* figure and observations, that in an early stage there are either *asci* or *paraphyses*. I have myself seen threads mixed with the *sporidia* after their ejection. It is singular that this is the only species which has hitherto fallen under the notice of British mycologists.

### 59. CYTÍSPORA. *Ekrenb.* Cytispora.

*Perithecia* celluloso-multilocular; cells irregular, membranaceous, united above. *Nucleus* gelatinous, at length oozing out in the form of a globule or tendril.—Name from *κύτος*, a sinuous cavity, and *σπoros*, a seed.

1. *C. rubéscens*, *Fr.* (*ruddy-seeded Cytispora*); cells set in a depressed conceptaculum, disc erumpent dirty-brown, tendrils reddish. *Fr. Syst. Myc. v. 2. p.* 542.—*Bostrychium rubescens*, *Scler. Succ. ! n.* 109.

On the bark of various *Rosaceæ*. Abundantly on the Mountain-ash. King's Cliffe, Norths. *Rev. M. J. Berkeley*.—At first resembling small air-bladders bursting through the cuticle; then furnished with a white and at length dingy-brown disk, with a single orifice in the centre. The cells are contained in a flattish black conceptaculum, exactly as in the *Sphæriæ* of the division *Incusæ*. *Sporidia* reddish, very minute, oblong, as is the case in every *Cytispora* I have examined.

2. *C. chryso-sperma*, Pers. (*golden-seeded Cytispora*); cells set in a conceptaculum, disc erumpent at length black, tendrils yellow. *Fr. Syst. Myc. v. 2. p. 542. Scler. Succ. ! n. 154. Moug. & Nest. ! n. 881.*—*Nemaspora chryso-sperma*, Pers. *Syn. p. 108. Obs. 1. t. 5. f. 8.*—*S. profusa*, var. *populina*, *Purt. v. 3. p. 278.*

On the bark of Poplars, Glasgow, *Klotzsch, in Hook. Herb. Botanic Garden, Oxford, on Populus dilatata, Baxter.*—Mr. Purton appears to me quite right in considering *Hypoxylon cirrhatum*, *Bull.* and *S. cirrhata*, *Sow.*, as synonymous with *C. leucosperma*, for there is no sufficient reason, as far as the figures are concerned, to believe that they have a conceptaculum.

3. *C. carphosperma*, Fr. (*straw-coloured Cytispora*); conceptaculum none, cells black circinating, disc dingy, tendrils straw-coloured. *Fr. ! Scler. Succ. n. 155. Syst. Myc. v. 2. p. 543.*—*Sphaeria ambiens*, *Johnst. Fl. Berw. 2. p. 122.*

On Hawthorn and other *Rosaceæ*. *Berwick, Dr. Johnston.*

4. *C. leucosperma*, Pers. (*white-seeded Cytispora*); conceptaculum none, cells black circinating, disc plane dirty-white, tendrils white. *Fr. Syst. Myc. v. 2. p. 543. Scler. Succ. ! n. 156.*—*Nemaspora leucosperma*, Pers. *Syn. p. 108.*—*N. Rosarum*, *Grev. ! Sc. Crypt. Fl. t. 20. Fl. Ed. 2. p. 365.*—*S. cirrhata*, *Sow. t. 138. Hoffm. Veg. Crypt. 1. t. 5. f. 1.*—*S. dubia*, *Sow. t. 138.*—*Hypoxylon cirrhatum*, *Bull. t. 487. f. 4.*—*b. brunneola*, *Scler. Succ. ! n. 245.* -

On branches of various trees. Very common.—*b.* On Willows. *Woodnewton, Norths., Rev. M. J. Berkeley.*

5. *C. fugax*, Bull. (*fugacious Cytispora*); conceptaculum none, cells black circinating, disc plain dirty-brown, tendrils delicate pale. *Fr. Syst. Myc. v. 2. p. 544. Scler. Succ. ! n. 211.*—*Variolaria fugax*, *Bull. t. 432. f. 5.*—*S. pustulata*, *Hoffm. Veg. Crypt. 1. t. 5. f. 5. Pers. Syn. p. 41.*

On Willow branches. Extremely common.—This is so exactly analogous to *Sphaeria salicina*, that the two plants may most easily be confounded on a superficial examination; the same similarity exists between *C. carphosperma* and *S. ambiens*. Indeed with equal reason they might be considered different states of the same plant as *Sphaeria leucostoma* and *C. leucostoma*. The latter is most abundant and has, I believe, the same *sporidia* as true *Cytispora*; but Fries assures us that he has seen the one pass into the other. This point is of great interest and deserves a careful investigation.—The genus *Septoria* is placed by Fries, in his *Elenchus*, next to *Cytispora*, on the ground of its possessing true *perithecia*. Such indeed are figured by Dr. Greville; and Fries confirms his observations, evidently drawing up his description after the analysis in the *Scottish Cryptogamic Flora*. There is, however, reason to believe that both are in error. It has long been matter of surprise to me that I could never detect in *Septoria Ulmi* any thing at all approaching to the figure above cited, and, in consequence suspected some accidental error. This suspicion is completely confirmed by the account given by Desmazière in his *Pl. Crypt. n. 534*,

who has paid particular attention to the genus, and made it appear all but certain that the specimens figured by Dr. Greville were mixed with *Sph. maculiformis* (*S. œdema*, Moug. & Nest. ! n. 880.) and that the analysis, as far as the section and *peritheciu* are concerned, belongs to that species.

6. *C. pulveracea*, Berk. (*mealy Cytispora*); growing on either side of the leaf, disc pulverulent, cells subtriangular circinating, sporidia white.

On leaves of *Viburnum Tinus*. May. Apethorpe, Norths., *Rev. M. J. Berkeley*.—A very distinct and singular species, and though growing on leaves, a true *Cytispora*. The cells are disposed like the carpella of an orange; I have not seen their contents discharged, but they are white and consist of minute oblong *sporidia* as in other *Cytisporæ*.

#### 60. CEUTHÓSPORA. Fr. Centhospora.

*Stroma* innate, containing one or more *nuclei*; *Sporidia* minute, escaping from the dissolving nucleus.—Name from κρυθω, to conceal and σποροζ, a seed.

1. *C. phacidioides*, Grev. (*Phacidium-like Centhospora*); stroma containing 3—5 cells orbicular plane black shining penetrating the matrix splitting into 3—5 plane short lacinie. *Grev. ! Sc. Crypt. Fl. t. 253*.—*Phacidium multivalve*, Fr. *Syst. Myc. v. 2. p. 576*. *Moug. & Nest. ! n. 560*.—*Xyloma multivalve*, *Dec. Mem. du Mus. v. 2. p. 324. t. 3. f. 8*.—*S. bifrons*, *Sow. ! t. 326. Part. v. 2 & 3. n. 1103*.—*Cryptosphaeria? bifrons*, *Grev. Fl. Ed. p. 361*.

On the leaves and young shoots of Holly. Common.—It seems to me scarcely correct to consider the black spots as *perithecia*; they appear rather to be a common *stroma* or *receptacle* to the cells. Indeed there seems no sufficient ground for considering the genus distinct from *Phoma*.

2. *C. Láuri*, Sow. (*Cherry-laurel Centhospora*); unilocular brownish-black obtusely conic splitting into 3—4 acute erect lacinie. *Grev. ! Sc. Crypt. Fl. t. 254*.—*Sph. Lauri*, *Sow. ! t. 371. f. 4*.—*S. Hederæ*, β. *Lauri*, Fr. *Syst. Myc. v. 2. p. 521*.

On dead leaves of *Prunus Lauro-cerasus* (not *Laurus nobilis* as is stated by Dr. Greville). Not so common as the foregoing species; like that growing sometimes on the shoots of the foregoing summer.—*Stroma* as in the last, opening occasionally on either side. This must not be confounded with *Phacidium Lauro-cerasi*.

#### 61. ΠΗΌΜΑ. Fr. Phoma.

*Perithecium* obsolete; *nucleus* grumous, included in a tubercle formed from the matrix; *sporidia* thrown out irregularly from the simple *ostiolum*.—"Named from φος, a pustule."

1. *P. salignum*, Ehr. (*Willow-leaf Phoma*); uni-multilocular convex brown-black subumbonate in the centre. Fr. *Syst. Myc. v. 2. p. 546*. *Scler. Succ. ! n. 283*.—*Sph. salicina*, *Sow. ! t. 372*.

f. 1.—*Xyloma salignum*, Pers. *Syn.* p. 106. *Dec. Mem. du Mus.* 2. p. 325. *Moug. & Nest.!* n. 268. *Greav. Fl. Ed.* p. 368. *Johnst. Fl. Berw.* 2. p. 139.

On fallen Sallow leaves. Winter and spring. *Sowerby, Greville, Johnston.*—*Sph. Populi*, Sow. ! t. 372. f. 2., is certainly nothing more than *Sclerotium populneum*. There is not in the original specimens the slightest trace of *nuclei*.

2. *P. Dáhlia*, Berk. (*Dahlia-stem Phoma*); scattered rufescent subpellucid subhemispherical covered by the epidermis which at length bursts in the centre, sporidia oozing out and forming a subglobose mass.

On decaying stems of *Dahlia*s. Winter. Apethorpe, Norths. *Rev. M. J. Berkeley.*—*Perithecium* none. *Sporidia* turgid, pellucid, elliptic.

3. *P. Pústula*, Pers. (*Oak-leaf Phoma*); unilocular convex even reddish-brown white within, nucleus black. *Fr. Syst. Myc.* v. 2. p. 547. *Scler. Suec.!* n. 205.—*S. pustula*, Pers. *Ann. d. Bot.* 11. t. 2. f. 7. b. *Syn.* p. 91.

On fallen oak leaves. Very common.—This species does not answer to the character of *Phoma*, as it has certainly true *asci*. I find the structure of the plant, in Fries' published specimens, precisely the same as in my own. The *nucleus* appears to me surrounded by a very thin delicate, dark sac, whence perhaps arises its black colour when the tubercle is cut across, and within this exist distinct clavate *asci* containing oblong *sporidia*. Can it be an immature or sub-abortive state of *Sphaeria tubæformis*? In that the *asci* are extremely broad, and the *sporidia* rather elliptic than oblong.

4. *P. Hédera*, Desm. (*Ivy Phoma*); covered black, sporidia hyaline subglobose. *Desm. Pl. Crypt.* n. 350. (*vide Moug. & Nest.!* n. 979.) *Fr. El.* 2. p. 119.

On small dead shoots of Ivy. Cambridge, 1823. Woodnewton, Norths. *Rev. M. J. Berkeley.*—Covered with the blackened epidermis, which is pierced with a ragged round or linear orifice. *Sporidia* black, not truly globose.

## 62. THAMNOMÝCES. *Ehrb.* Thamnomycetes.

*Pseudoperithecia* subrotund, formed from and supported by the shrubby *stroma*, furnished in the centre with a mass of free *sporidia*.—Name from θαμνος, a shrub, and μυκης, a fungus.

1. *T. hippotrichóides*, Sow. (*horse-hair Thamnomycetes*); stroma erect branched black externally, minutely verrucose, white within, pale at the apices, pseudoperithecia lateral subovate. *Ehrb. Hor. Phys. Ber.* p. 82.—*Sph. hypotrichoides*, Sow. ! t. 200.—*Hy-poxylon oculiferum*, Bull. t. 195. f. 1.

On an old sack of sawdust in a wine cellar. Wisbeach, Mr. Jonathan Peckover. On matting made of *Scirpus lacustris*, May 1815, in a damp pew at Cobham Church, Kent, Dr. Leach.—Ehrenberg gives as part of his generic character "caudices medio cavi," but as this does

not accord with a species described by Montagne in the new series of the *Annales des Sciences Naturelles*, nor as it appears to me with the present species, so far as I can judge from specimens gathered from twenty to forty years ago, the substance being merely more loose internally, I have omitted it in the generic character. The *perithecia* are either sessile or very shortly pedicellate, clothed with a close indistinct tomentum varying in shape from globose to ovate, and in one very perfect individual I have observed a distinct very obtuse papillæform *ostiolum*. They appear at first to consist of an uniform grumous mass, in the centre of which a round cavity is at length formed, with a rather broad, white border, confluent with and continued from the stroma, which gradually decreases until little more is left than the black bark. The cavity is traversed by a few mucedinous threads which are probably extraneous, and contains numerous elliptic chocolate-brown *sporidia* with a pellucid border and other colourless, minute, elliptic bodies, which are probably the *sporules*. The above description, though necessarily imperfect, shows very clearly that this highly curious plant is not to be rejected with the mass of *Rhizomorphæ* as a mere barren *Mycelium*. It is, however, highly desirable that its fructification should be observed in fresh individuals; in which, if the above account should be confirmed, there can be no doubt that it is an European representative of the South American genus *Thamnomycetes*.

### 63. DOTHIDEA. Fr. Dothidea.

*Nuclei* contained in the cells of a common stroma; *perithecia* obsolete. *Asci* erect, subsistent.—Name from *δοθηρ*, a *tumour*, and *ειδος*, *resemblance*.

1. *D. ribésia*, Pers. (*Currant-branch Dothidea*); erumpent subelliptic depressed black, of the same colour within, cells very small white seated near the surface. *Fr. Syst. Myc. v. 2. p. 550. Scler. Succ. n. 100.*—*Sph. ribesia*, Pers. *Syn. p. 14. Mong. & Nest. n. 275. Nees, Syst. f. 312. Johnst. Fl. Berw. 2. p. 123.*—*Stromatosphæria ribesia*, Grev. *Fl. Ed. p. 357.*

On dry branches of the Red Currant. Very common.

2. *D. typhina*, Pers. (*reed-mace Dothidea*); elongated innate in the sheaths of grasses surrounding the stem dirty-white, soon orange-yellow, at length granulated from the projecting ostiola. *Fr. Syst. Myc. v. 2. p. 553.*—*Sph. typhina*, Pers.! *Syn. p. 29. Ic. et Descr. t. 7. f. 1. Mong. & Nest. n. 79. Fr.! Scler. Succ. cm. n. 37.*—*S. spiculifera*, Sow.! *t. 274. Part. v. 2. & 3. n. 1106.*—*Stromatosphæria typhina*, Grev. *Sc. Crypt. Fl. t. 204.*—*Polystigma typhinum*, Dec. l. c. p. 338. *Grev. Fl. Ed. p. 365.*

On living grasses. Summer. Very common.—The curious spiculate appearance in Sowerby's plant arises from the protrusion of the extremely elongated *asci*. In the present and two following species, true, though delicate, *perithecia* are present, and in consequence they would be much better considered as *Sphæria*. Fries, it should seem, inclines now to this opinion, as in his new issue of dried Fungi it is arranged amongst the *Sphæriæ*, in the division *Obtectæ*. At least so it is in my copy. As regards the two following species, true

*asci* are figured by Kunze in *S. Padi* (*Dothidea fulva*), Myc. Heft. 2. t. 1. f. 18; and, though Dr. Greville finds the nuclei consisting of various sized globules, there is every reason to believe that the perfect plant on fallen leaves will be found furnished with *asci* like the nearly allied species *D. fulva*. Fully developed fructification in *Gasteromyces* is not to be expected on still living leaves. The stroma is innate in the sheath and consequently surrounds the stem, but it is not superficial as Dr. Greville supposes.

3. *D. rubra*, Pers. (*Sloe-leaf Dothidea*); hypophyllous orbicular bright red, at length red-brown, cells immersed red, ostiola subimmersed. *Fr. Syst. Myc. v. 2. p. 553. Scler. Suec. n. 191.*—*Xyloma rubrum*, Pers. *Syn. p. 103. Purp. v. 3. n. 1571. t. 33.*—*Polystigma rubrum*, Dec. l. c. t. 6. f. 7. *Moug. & Nest. ! n. 270. Grev. ! Fl. Ed. p. 365. Sc. Crypt. Fl. t. 120. Baxt. ! Ox. n. 32.*

On leaves of *Prunus spinosa*, &c. Summer and Autumn. Common.—Resembling at first sight a young *Æcidium*.

4. *D. fulva*, Holl. & Schm. (*tawny Dothidea*); hypophyllous, somewhat angular tawny, cells immersed of the same colour, ostiola immersed. *Fr. Syst. Myc. v. 2. p. 554. Scler. Suec. n. 241.*—*Polystigma fulvum*, Dec. l. c. t. 6. f. 8. *Moug. & Nest. n. 271.*

On leaves of *Prunus Padus*. Not uncommon in Scotland.—Larger and of quite a different colour from the last.

5. *D. colliculosa*, Berk. (*Pear-leaf Dothidea*); epiphyllous, spots yellow, orange in the centre, cells aggregate minute yellow distinctly pierced, sporidia oozing out. *Sow. t. 409, without a name.*

On Pear leaves. Southcote, June 17, 1807. *John Walker, Esq.*—Scarcely thickening the leaf. *Sporidia* not very minute, nor to be confounded with the tubercles on the reverse of *Æ. cancellatum*, which are evidently abortive pseudoperidia. *Sphæ. rubens*, Johnst. ! is the abortive pseudoperidia of *Æ. cornutum*.

6. *D. betulina*, Fr. (*Birch-leaf Dothidea*); epiphyllous angular but irregular tuberculated shining black, black within, cells white. *Fr. Syst. Myc. v. 2. p. 554. Scler. Suec. ! n. 144. Grev. Sc. Crypt. Fl. t. 200. f. 2.*—*Xyloma betulinum*, Fr. *Obs. 1. p. 198. Dec. l. c. t. 3. f. 1. Moug. & Nest. ! n. 370.—b. Betulæ nanæ, Wahl. Fl. Lapp. t. 30. f. 3. Un. Itin. !*

On leaves of *Betula alba*. Common.—b. on *Betula nana*, Mr. Walker Arnott.

7. *D. Ulmi*, Duval, (*Elm-leaf Dothidea*); epiphyllous, roundish confluent convex greyish-black, black within, cells white, ostiola granulæform. *Fr. Syst. Myc. v. 2. p. 555. Grev. ! Sc. Crypt. Fl. t. 200. f. 1.*—*Sph. ulmaria*, Sow. ! t. 374. f. 3.—*Stromatosphæria ulmaria*, Grev. *Fl. Ed. p. 359.*

On Elm leaves. Autumn. Extremely common.—Larger, more convex and duller than the last, which it otherwise much resembles.



8. *D. Heraclei*, Wormsk. (*Cou-parsnep Dothidea*); growing on either side of the leaf, confluent angular rugoso-tuberculate opaque black, blackish within, cells white. *Fr. Syst. Myc.* v. 2. p. 556. *Johnst. Fl. Berw.* 2. p. 133.

On leaves of *Heracleum Sphondylium*. If the specimens sent to Dr. Hooker by Dr. Johnston and Mr. Purton (from Mr. Baxter) are the true plant, they are certainly in an early stage of growth. I cannot find the least trace of cells; but the substance is homogeneous and brownish, like that of *Sclerotium herbarum*.

9. *D. Geranii*, Fr. (*compound Geranium Dothidea*); hypophyllous, cells minute slightly prominent mouthless somewhat connate and forming a spot-like orbicular tuft. *Fr. Syst. Myc.* v. 2. p. 558. *Xyloma Geranii*, Grev. ! *Fl. Ed.* p. 368.

On leaves of *Geranium sylvaticum*. Auchindenny woods. Dr. Greville.—“Forming black spots, 1—2 lines broad, dotted with the slightly prominent cells which are white within.” *Fr. l. c.*

10. *D. astroidea*, Berk. (*star-like Elm Dothidea*); epiphyllous black, perithecia slightly prominent connate forming small irregularly stellato-aggregate tubercles.—*Asteroma Ulmi*, Grev. ! *Fl. Ed.* p. 368. *Fr. El.* 2. p. 152.

On green leaves of Elms. About Edinburgh. Dr. Greville.—This is not a true *Asteroma*, according to the definition of De Candolle, having no real filaments, and is perhaps only an early stage of *Dothidea Ulmi*. I have removed it to *Dothidea*, as keeping it in *Asteroma* could only mislead, and as there is a true species of that genus found likewise on elm leaves. Fries in his specific character says “spots none:” in Dr. Greville’s specimens, however, the starry tubercles are generally seated on a small round pale spot.

11. *D. Fumágo*, Fr. (*Speedwell Dothidea*); epiphyllous, cells very minute black shining distinct scattered or crowded into a roundish spot. *Fr. Scler. Succ.* ! n. 422.

On leaves of *Veronica officinalis*. Spring. Mr. W. Wilson.—Easily distinguished by its smutty appearance, so that at first sight it may be taken for some *Torula*. A very pretty nondescript species on the leaves of some *Polygonum*, has been communicated by Mr. Stock to Dr. Hooker forming round spots of crowded cells. I do not, however, propose it as new, as I think nothing is gained by multiplying species distinguished after all chiefly by their matrix.

12. *D. Ranunculi*, Fr. (*Crowfoot Dothidea*); hypophyllous, spots indeterminate uniform black, tubercles subgregarious depressed unequal. *Fr. Syst. Myc.* v. 2. p. 562.

On leaves of *Ranunculi*. Berwick, Dr. Johnston.—I have seen no authentic specimens, but imagine that the plant before me is the same with that of Fries, as it is evidently variable. In one specimen, however, the spots are determinate, though in the same individual sometimes shaded off into a pallid border, which, like the black part, bears tubercles.

13. *D. Potentillæ*, Fr. (*Potentilla Dothidea*); epiphyllous

seriato-confluent following the direction of the nerves, slightly hairy opaque black. *Fr. Syst. Myc. v. 2. p. 563.*—*b. Potentillæ reptantis*; shining collapsed rugose. *Purt. MSS.*—*c. Potentillæ vernæ*; shining, even. *Sp. Potentillæ, Sow. t. 370. f. 2.*

On living leaves of *Potentillæ*.—*b.* sent by *Mr. Baxter* to *Mr. Purton*.—*c. Sowerby*.—The slight hairiness of *Fries'* plant depends probably on the silvery down of the matrix.

14. *D. Alchemillæ*, *Grev. (Lady's-Mantle Dothidea)*; epiphyllous black seated on a pallid spot, perithecia slightly prominent connate disposed in rows which radiate from a common centre. *Johnst. Fl. Berw. 2. p. 133.*—*Asteroma Alchemillæ, Grev. Fl. Ed. p. 369. Fr. El. 2. p. 152.*

On living leaves of *Lady's-mantle*. Common in Scotland.—“When mature consisting of black minute raised points or very short lines clustered on pale circular spots of the leaf. The points are irregularly arranged, but they are most closely set in the centre and assume altogether an obscure star-like form.” *Johnst. l. c.* This species again, which is described as an *Asteroma* by *Dr. Greville*, appears to me much more conveniently placed in *Dothidea*, as there is nothing like the filaments of *Asteroma*, though the perithecia are disposed in rows.

15. *D. Robertiáni*, *Fr. (Herb Robert Dothidea)*; epiphyllous, scattered hemispherical even shining black, white within. *Fr. Syst. Myc. v. 2. p. 564. Grev. Sc. Crypt. Fl. t. 146. f. 1.*—*Cryptosphaeria nitida, Grev. Fl. Ed. p. 363. Baxt. Ox. n. 78.*

On green leaves of *Geranium Robertianum*. Very common. Also on *Geranium rotundifolium*. “*Dothidea Geranii.*” *Purt. MSS.*

16. *D. alnea*, *Pers. (Alder leaf Dothidea)*; growing on either side of the leaf scattered subrotund black shining, rugoso-plicate when collapsed. *Fr. Syst. Myc. v. 2. p. 564. Scler. Suec. S. n. 288. Grev. Sc. Crypt. Fl. t. 146. f. 2.*—*Xyloma alneum, Pers. Syn. p. 108. Moug. & Nest. n. 78. Purt. v. 3. p. 318. Grev. Fl. Ed. p. 368.*

On green Alder leaves. Common.—*Fries* remarks the great similarity between this species and *Sph. artocreas*. I find the fructification of that plant, when growing on Oak leaves, precisely the same as what is figured by *Dr. Greville* in *D. alnea*.

#### 64. ASTEROMA. *Dec. Asteroma.*

*Cells* very small, slightly prominent, close, subconfluent, seated on more or less distinctly radiating *fibrillæ*.—Name from *astrum*, a star.

1. *A. reticulatum*, *Dec. (reticulated Asteroma)*; epiphyllous, black subseriate, the cells joined by free longitudinal creeping somewhat branched *fibrillæ*.—*Dothidea reticulata, Fr. Syst.*

*Myc. v. 2. p. 560. Corda in St. Deutsch, Fl. t. 3. t. 13. Moug. & Nest. ! n. 982.—Sph. reticulata, Dec. Fl. Fr. 2. p. 138.—Asteroma Polygonati, Dec. Mem. Mus. v. 2. p. 336. t. 4. f. 5.*

On decaying leaves of *Convallaria maiialis*. King's Cliffe, Norths. *Rev. M. J. Berkeley.*—On the continent it is usually found on *Convallaria Polygonatum*, accompanied by *Sph. cruenta*: I believe they are also associated in my specimens; but as the leaves were quite dry, I could not satisfy myself on this point.

2. *A. Úlmi*, Klotzsch, (*Elm-leaf Asteroma*); fibrillæ very delicate much branched radiating subdichotomous flexuous seated on a brownish spot. *Kl. in Hook. Herb.*

On Elm leaves. Scotland. *Klotzsch.*—This is extremely different from the plant published under the same name by Dr. Greville and is a true *Asteroma*. A species scarcely distinguishable occurs on Apples; this is, I suppose, *A. Pyri*, Grev. in *Lond. Hort. Brit.* In the same place a species is recorded by the name of *A. Fraxini*, Grev. This is most probably the plant of De Candolle: I have not seen specimens, and no specific characters have been published.

3. *A. Prunellæ*, Purt. (*Prunella Asteroma*); epiphyllous, fibrillæ pitch-black straight radiating in fascicles from a central tubercle, cells very minute subcentral. *Bart. ! Ox. n. 79. Purt. ! MSS.*

On green leaves of *Prunella vulgaris*.—A most distinct and curious species, resembling *Asteroma Phyteumæ*, Dec. It has the appearance of a minute *Hutchinsia*, spread out upon the leaf, with its knob-like root in the centre.

4. *A. Pádi*, Grev. (*Bird-cherry Asteroma*); radiating much branched, the branches arcuate brown with a central silvery line. *Grev. ! in Loud. Hort. Brit. p. 459.—Dothidea? Padi, Dub. Syn. p. 716.*

On leaves of *Prunus Padus*. Scotland. *Dr. Greville.*—A most beautiful species, of which I have seen but a single specimen which takes its origin from the midrib on the upper side of a leaf, whence three main subdichotomous branches of this parasite are given off; their branchlets, except towards the apices, strongly arcuate.

## 65. RHYTISMA. Fr. Rhytisma.

*Perithecium* of no regular form, bursting with a more or less flexuous fissure into transverse fragments. *Asci* erect.—Name  $\rho\omega\tau\iota\varsigma$ , a wrinkle.

1. *R. corrugatum*, Ach. (*wrinkled Rhytisma*); minute innato-superficial, bursting with many flexuous fissures. *Fr. Syst. Myc. v. 2. p. 565. Scler. Succ. ! n. 135.—Lecidea corrugata, Ach. Syn. p. 18.—Limboria corrugata, Ach. in V. A. II. 1815. t. 6. f. 5. (file Fr.)—Lichen graniformis, E. B. t. 1464. (parasitic on Lecidea Ehrhartiana mixed with some species of Calicium.)*

On the crust of *Lecidea Ehrhartiana*. On old barn-doors, &c.

Suffolk. *D. Turner, Esq.* Stibbington, Hunts, *Rev. M. J. Berkeley*. Appearing at first like the old wrinkled shields of the *Lichen* on which it is parasitic.—Fries is now of opinion that the crust on which the black bodies are produced is not heterogeneous, and that, consequently, they are true shields. He has, therefore, proposed for it the genus *Cliostomum*, *Fr. S. O. V. 1. p. 116. Lich. Eur. p. 455.*—As this opinion is founded on the notion that *Lecidea Ehrhartiana* is merely the apothecia of *Lecidea varia* upon a foreign crust, it is scarcely advisable at present, in a local Flora, to make any alteration until such is generally acknowledged to be a correct view. I have the same plant from Madeira.

2. *R. maximum*, *Fr.* (*large Willow-branch Rhytisma*); subinnate broad even, the circumference obtusely lobed, bursting in minute fragments, furnished with a pure white stratum beneath the disc. *Fr. Syst. Myc. v. 2. p. 566. Scler. Suec.! n. 250.—Sph. aurea, Sow. ! t. 356.—Relh. Cant. ed. 3. p. 574.*

On Willow branches. Cambridgeshire. *Rev. R. Relhan* and *Rev. Mr. Holmes*.—Forming bullate black patches on the young branches, adnate with the epidermis, shining in the centre, dull towards the margin, which is lobed; the lobes rounded, with or without a golden yellow border, especially remarkable in the Cambridgeshire specimens, in which the patches are frequently confluent, extending for several inches, so as to give the branches on which they grow a very beautiful checkered appearance, like the skin of an adder. Substance immediately below the epidermis subcinereous, then jet-black, beneath which again is a pure white stratum from which the upper portion easily chips off.

3. *R. Andrómedæ*, *Pers.* (*Andromeda-leaf Rhytisma*); innate oblong costato-rugose shining, disc of a cinereous dingy-brown hue. *Fr. Syst. Myc. v. 2. p. 567. Scler. Suec.! n. 133. Corda in St. Deutsch. Fl. v. 3. t. 46.—Xyloma Andrómedæ, Pers. Syn. p. 104. Moug. & Nest.! n. 176. Dec. Mem. du Mus. p. 320. t. 3. f. 13.*

On living leaves of *Andromeda polifolia*. *Mr. W. Wilson*.—Resembling pitch poured upon the leaves.

4. *R. salicinum*, *Pers.* (*Willow-leaf Rhytisma*); innate thick tuberculate somewhat shining bursting in little scales, disc slightly yellow, flesh white. *Fr. Syst. Myc. v. 2. p. 568. Scler. Suec.! n. 134, 208.—Xyloma salicinum, Pers. ! Syn. p. 103. Pert. v. 3. n. 1576. Grev. Fl. Ed. p. 368. Sc. Crypt. Fl. t. 118. f. 2.—X. leucochreas, Dec. l. c. f. 5. Moug. & Nest. n. 175.*

On leaves of Willows. Very common, occurring even on the summits of the highest Scottish Alps, growing on *Salix herbacea*.—The plant it should seem, does not appear with an open disc till the spring, when, of course, the leaves are fallen and dead. In its early stage it is, as *Dr. Johnston* remarks, altogether a *Sclerotium*, but the perfect plant is furnished with *asci* which is altogether at variance with that genus. It is in point of fact a case of analogy rather than of affinity, a distinction which can scarcely be too constantly kept in view. On some willows it is surrounded by a yellow border.

5. *R. Acerinum*, *Pers.* (*Sycamore Rhytisma*); innate, spots

confluent rugose bursting by flexuous labiate fissures, disc pale. *Fr. Syst. Myc. v. 2. p. 569. Scler. Succ. ! n. 207.*—*Xyloma acerinum*, *Pers. Syn. p. 104. Moug. & Nest. ! n. 77. Dec. l. c. f. 9. Grev. Fl. Ed. p. 367. Sc. Crypt. Fl. t. 118. f. 1.*—*Mucor granulosus*, *Bull. t. 504. f. 13. With. v. 4. p. 371.*—*b. X. Pseudo-platani*, *Dec. l. c. f. 4. a.*, thin, seated on a yellowish spot.

On leaves of the common Sycamore and Maple. Extremely common, perfecting its fructification in Spring. *b. Roslin. Dr. Greville.*

6. *R. punctatum*, *Pers. (dot-like Rhytisma)*; innate crowded of a roundish but angular form shining black, bursting in little fragments brown-black within. *Fr. Syst. Myc. v. 2. p. 569.*—*Xyl. punctatum*, *Pers. Syn. p. 104. Dec. l. c. f. 4. Moug. & Nest. ! n. 477.*—*Sphaeria subconfluens*, *Purt. v. 3. p. 284.*

On Sycamore leaves.—Not so common as the last, of which *Dr. Greville* and *Mr. Purton* consider it merely a variety; but so far as I can judge, from dry specimens, for I have never met with it, I believe it to be distinct.

7. *R. Urticæ*, *Fr. (Nettle-stem Rhytisma)*; innate forming an elongated ambient crust, tubercles slightly prominent even bursting by a slightly flexuous fissure. *Fr. Syst. Myc. v. 2. p. 570. Scler. Succ. ! n. 9. Moug. & Nest. ! n. 865. Purt. ! MSS.*

On dead Nettle-stems. Winter and spring.—Care must be taken not to confound true *Sphaeria* with this species which is very distinct.

#### 66. PHACIDIUM. *Fr. Phacidium.*

*Perithecium orbicular*, bursting from the centre towards the circumference in many laciniae.—Name, φασι, a lentil, and εἶδος, resemblance.

\* *Perithecium entire (not dimidiate), at length free.*

1. *P. caliciiforme*, *Reb. (Calicium-like Phacidium)*; naked sessile globoso-depressed rugoso-verrucose from minute cracks opaque black bursting with obtuse laciniae, disc pale. *Fl. El. 2. p. 131.*—*Cenangium caliciiforme*, *Fr. Syst. Myc. v. 2. p. 183. Pers. Myc. Eur. 1. p. 333. t. 2. f. 3, 4.*—*Triblidium caliciiforme*, *Cher. Par. t. 8. f. 9.*

“On branches of Lime. *Hamilton. Dr. Davidson & M. Klotzsch.*”—It appears to me, however, very doubtful whether their plant is correctly named, and unfortunately, in my copy of *Scleromyces Succie*, there is no specimen.

2. *P. Patella*, *Tode, (saucer-like Phacidium)*; erumpent sessile free at first more or less olivaceous, at length black even, disc depressed rarely open, dirty-white and then crowned with a toothed border. *Fr. El. 2. p. 133. Scler. Succ. ! n. 369.*—*Sph. Patella*, *Pers. Syn. p. 76. Moug. & Nest. ! n. 485. Grev. Fl. Ed. p. 353. Fr. Syst. Myc. v. 2. p. 511. Purt. v. 3.*

p. 490.—*Heterosphaeria Patella*, Grev. *Sc. Crypt. Fl.* t. 103. *Buxt. Ox.* n. 30.—*Sph. penetrans*, a. *Patella*, Tode, *Fung. Meck. f.* 121.—*Pez. Chailletii*, Pers. *Myc. Eur.* 1. p. 288. *Fr. Syst. Myc.* v. 2. p. 144.

On dead stems of herbaceous plants. Not uncommon in the unexpanded state, but only perfectly developed in alpine and subalpine districts in consequence of their more constant moist atmosphere, as at Appin where it is abundant.—It is curious, however, that even in the imperfect plant, there is a sort of fructification, the contents of the *asci* oozing out and forming a very fugacious globule.

\*\* *Perithecia innata, subdimidiata.*

3. *P. Pini*, A. & S. (*Scotch-fir Phacidium*); erumpent subrotund truncato-disciform black, laciniae of the perithecium obtuse, disc dirty-brown, flesh white. *Schmidt, Myc. Hefst.* 2. t. 2. f. 11. *Fr. Syst. Myc.* v. 2. p. 573. *Scler. Succ.!* n. 163.—*Xyloma Pini*, Alb. & Schw. *Consp.* t. 5. f. 8.

On the bark of *Pinus sylvestris*. Appin, Captain Carmichael. Milton, Southwick. Norths., *Rev. M. J. Berkeley*.

4. *P. carbonaceum*, Fr. (*black-powdered Phacidium*); erumpent subrotund unequal black splitting into obtuse laciniae, disc dry at length black. *Fr. Syst. Myc.* v. 2. p. 574. *Scler. Succ.!* n. 210.—*Xyl. carbonaceum*, *Fr. Obs.* 2. p. 359.

On twigs of willows. Spring. Southwick, Norths. *Rev. M. J. Berkeley*. It has also been found by Mr. Purton, being his *Sph. salicina*, MSS.—At first closely covered with the epidermis, orbicular, flat; disc black as if powdered with charcoal.

5. *P. Vaccinii*, Pers. (*Vitis-Idæa Phacidium*); erumpent minute convex shining rugose splitting into four laciniae, disc brownish-black. *Fr. Syst. Myc.* v. 2. p. 575. *Scler. Succ.!* n. 289. *Johnst. Fl. Berw.* v. 2. p. 134.—*Xyl. erumpens*, *Fr. Obs.* 1. p. 202.—*Sph. Arbuti*, *Sow.!* t. 370. f. 6.

On leaves of *Vaccinium Vitis Idæa* and (if Sowerby be correct as to the matrix, which is doubtful) *Arbutus Uva Ursi*. It is found also by Dr. Johnston near Berwick on *Vaccinium Myrtillus*: I have not, however, seen specimens.

6. *P. coronatum*, Fr. (*crowned Phacidium*); innate orbicular hemispherico-depressed black splitting into many acute laciniae, disc yellowish. *Fr. Obs.* 1. p. 167. *Fr. Syst. Myc.* v. 2. p. 577. *Scler. Succ.!* n. 163. *Moug. & Nest.!* n. 559. *Grev. Sc. Crypt. Fl.* t. 52. *Fl. Ed.* p. 366.—*Pez. comitalis*, *Sow.!* t. 118.—*Pez. viridis*, *Bolt.* t. 109. f. 1.

On fallen leaves of Oak, Beech, &c. Common.—Disc varying in colour: sometimes circumscribed with a black line.

7. *P. dentatum*, Schmidt, (*quadrangular Phacidium*); quadrangular seated on a pale spot black splitting into 4—5 acute laciniae, disc dirty-yellow. *Schmidt, in Myc. Hefst.* 1. p. 41. *Fr. Syst. Myc.* v. 2. p. 577. *Grev. Fl. Ed.* p. 366. *Moug. &*

*Nest.!* n. 561.—*Xyl. angulare*, *Purt.!* v. 3. n. 1573. *Sph. punctiformis*, *γ. ambigua*, *Pers. Syn.* p. 91.

On fallen oak-leaves. Common.—On almost every dry oak-leaf pale spots occur, studded with minute shining black points, which are, I presume, either the young state or perhaps premature individuals of the present species; amongst these the perfect quadrangular plant is frequently mixed, splitting into about 4 laciniae from the centre to the angles. The imperfect state mentioned above is the *Sph. punctiformis* of Purton. *P. Delta*, *Kunze!* ap. *Holl. Bot. Zeit.* 1830. v. 1. p. 369, appears to me merely a variety, with generally triangular perithecia.

8. *P. Lauro-Cerasi*, *Desm.* (*Cherry-laurel Phacidium*); hypophyllous orbicular punctiform hollow when collapsed at length black splitting into three acute laciniae. *Desm. exs.* n. 188. *Fr. El.* 2. p. 136. *Moug. & Nest.!* n. 985.—*Sph. cyathoides*, *Pers.!* in *Hook. Herb.*

On fallen leaves of the common Laurel. Very frequent.—Disc yellowish when moist. *Asci* linear; *sporidia* oblong, in a single row. The finest and most perfect specimens I have seen were gathered by *Captain Carmichael* and marked *Peziza Lauri*; they have quite the air of a true *Peziza*, the margin projecting greatly above the epidermis and quite entire. I doubt whether the laciniae do not arise entirely from the rupture of the epidermis. *Sphaeria Craterium* and, if I mistake not, *Sph. Ilcis* have nearly the same structure.

9. *P. repandum*, *Fr.* (*repand Phacidium*); innate subrotund pallid-green at length black bursting with unequal obtuse laciniae, disc dingy-brown. *Fr. Syst. Myc.* v. 2. p. 578. *Johnst.!* *Fl. Berw.* 2. p. 134.—*Xyloma herbarum*, *Alb. & Schw. Consp.* t. 4. f. 6.

On the stems and leaves of various plants. On *Sherardia arvensis*, *Berwick*, but rarely, *Dr. Johnston.*

#### 67. HYSTÉRIUM. *Tode.* Hysterium.

*Perithecium* elliptic or elongated, bursting by a simple longitudinal fissure.—Name from *ὄστρενον*, pointing to the peculiar form of the species.

\* *Naked.*

1. *H. pulicære*, *Pers.* (*common Hysterium*); superficial elliptic or oblong longitudinally striate black, lips obtuse, disc linear. *Pers. Syn.* p. 98. *Nees, Syst. f.* 302 (*except the analysis*). *Fr. Syst. Myc.* v. 2. p. 579. *Scler. Succ.!* n. 61, 91. *Moug. & Nest.!* n. 266. *Greav. Sc. Crypt. Fl. t.* 167. f. 1. *Fl. Éd.* p. 366.

On trunks of trees. Common.—*Captain Carmichael's* specimens have not the annulated *sporidia* figured by *Dr. Greville* and which I have verified in *Fries' specimens*, *Scler. Succ.* n. 61; though I do not find them so decidedly clavate. They are probably the true *Hyst. varium*, *Fr.*, but as I have seen no authentic specimens, I will not, in this puzzling genus, run the risk of committing an error.

2. *H. elongatum*, *Wahl.* (*elongated Hysterium*); superficial

oblong straight nearly even opaque black, lips swollen, disc linear. *Fr. Syst. Myc. v. 2. p. 581. Scler. Suec. ! n. 62.*—*β. curvatum*, close flexuous somewhat interwoven. *H. lineare, Johnst. Fl. Berw. 2. p. 135.*

ℓ. On the stems of Roses. Berwick, *Dr. Johnston*. It has also been found by *Mr. Purton*.

3. *H. lineaire, Fr. (linear Hysterium)*; subimmersed crowded parallel linear black, lips slightly swollen even, disc linear. *Fr. Syst. Myc. v. 2. p. 583. Scler. Suec. ! n. 90. Grev. Sc. Crypt. Fl. t. 167. f. 2.*—*H. angustatum, Moug. & Nest. ! n. 563. Purt. v. 3. n. 1578.*

On wood; not uncommon.

4. *H. Carmichaelianum, Berk. (Carmichael's Hysterium)*; superficial substipitate short linear or subelliptic black opaque not even, lips obtuse inflexed.—*Hyst. varium, Grev. Sc. Crypt. Fl. t. 233.*

On smooth oak bark. Appin, *Captain Carmichael*.—This species is pronounced by Fries, in his *Elenchus*, to be not his *H. varium*; and, consequently, as it is very well marked, I have drawn up a specific character from the only specimen preserved in the Appin collection.

\*\* *Erumpent.*

5. *H. Fraxini, Pers. (Ash-twig Hysterium)*; erumpent elliptic hard black, lips tumid even, disc linear. *Pers. Syn. p. 100. t. 2. f. 5—8. Moug. & Nest. ! n. 267. Purt. v. 3. p. 319. t. 32. Fr. Syst. Myc. v. 2. p. 585. Grev. Sc. Crypt. Fl. t. 72. Fl. Ed. p. 367. Baxt. ! Ox. n. 33.*—*Sph. sulcata, Bolt. t. 124. Sow. t. 315. Purt. v. 2. p. 711.*

On the smaller fallen branches of the Ash. Winter and spring. Extremely common.

6. *H. rugosum, Fr. (rugged Hysterium)*; stroma crust-like innate brown-black, perithecia elliptic bursting through the living bark at length running together into irregular spots. *Fr. El. 2. p. 140.*—*Opegrapha macularis, Ach. Syn. p. 72.*—*z. fagineum*; perithecia larger slightly prominent oblong at length running together into effused rugged spots. *Fr. ! Scler. Suec. n. 353.*—*Schizoderma fagineum, Chev. Fl. Par. t. 11. f. u. p. 438.*—*Opegr. epiphega, E. B. t. 2282.*—*β. quercinum*; perithecia smaller subimmersed ovate at length running together into subdeterminate nearly even spots. *Chev. l. c. f. 21. t.*

On the smooth branches of beech and oak. Extremely common.—Usually referred to the order *Lichenes*, from which, however, Messrs. Borrer and Hooker, in accordance with the views of Chevallier, Wallroth and Fries, consider it extraneous. See *Eng. Fl. v. 5. P. 1. p. 148.* Indeed Sir James Smith, long since, had expressed the same opinion, perceiving its affinity with *Hysterium*. It differs from other *Hysteria* in the presence of a stroma and in its being produced on living bark.

7. *H. conigenum, Moug. & Nest. (Scotch-fir cone Hysterium)*;



erumpent small punctiform shining bursting by a longitudinal fissure. *Moug. & Nest. n.!* 475. *Fr. Syst. Myc. v. 2. p.* 586. *Johnst. Fl. Berw. 2. p.* 136.

On fallen cones of the Scotch fir. Common.—Confined to the upper and exposed part of the scales.

8. *H. Vaccinii*, Carm. (*Bilberry-stem Hysterium*); subinnate oblong-elliptic at first brownish from the almost adnate cuticle at length naked black, lips acute not inflexed, disc linear. *Carm. MSS.*

On stems of *Vaccinium Myrtillus*. Appin, *Captain Carmichael*.—This is a very distinct species, a true *Hysterium* and quite different from *H. degeeraus*, a species included in Loudon's list. In its early stage of growth it appears like a brown spot; as it swells, the cuticle is raised up and at length splits longitudinally and for a long time closely covers the two lobes of the *perithecium*. *H. pulicare*, *Johnst. Fl. Berw. v. 2. p.* 136, is probably this species.

\*\*\* *Subinnate.*

9. *H. Rábi*, Pers. (*Bramble Hysterium*); subinnate placed longitudinally elongated acute even shining black at length gaping, grey within. *Pers. Syn. p.* 101. *Moug. & Nest.!* n. 564. *Greav. Sc. Crypt. Fl. t.* 24. *Fr. Syst. Myc. v. 2. p.* 587.

On dead stems of various species of Bramble. Not uncommon.—At length naked.

10. *H. Pinástri*, Schrad. (*Pine-leaf Hysterium*); epiphyllous innato-immersed oval-oblong even at length black opening with an elliptic orifice, disc livid. *Pers. Syn. p.* 28. *Moug. & Nest.!* n. 76. *Greav. Sc. Crypt. Fl. t.* 60. *Fl. Ed. p.* 367. *Fr. Syst. Myc. v. 2. p.* 587. *Scler. Succ.!* n. 30. *Johnst.!* *Fl. Berw. 2. p.* 136.— $\beta$ . *Juniperi*; prominent elliptic, lips convex swollen. *Greav. Sc. Crypt. Fl. t.* 26. *Fl. Ed. p.* 367. *Johnst. l. c.*

$\alpha$ . On pine leaves. Very common. Covered with the epidermis, which gives it a greyish tinge. Several individuals are frequently circumscribed by a distinct shining narrow black line.— $\beta$ . On leaves of the common *Juniper*; not uncommon.

11. *H. melaleúcum*, Fr. (*white and black Hysterium*); hypophyllous minute elliptic even black, lips subconnivent white. *Fr.!* *Obs. 1. t. 2. f.* 1. *Scler. Succ. n.* 29. *Syst. Myc. v. 2. p.* 589. *Moug. & Nest.!* n. 654. *Greav. Sc. Crypt. Fl. t.* 88.

On dead leaves of *Vaccinium Vitis Idæa*. Not uncommon in Scotland, in alpine and subalpine districts.—The portion of the leaf on which it grows is pallid; *perithecia* elliptic, depressed, very obtuse, aperture rather short.

12. *H. arundináceum*, Schrad. (*Reed Hysterium*); innate oval depressed rugulose opaque brown-black, at length gaping with a longitudinal fissure. *Moug. & Nest.!* n. 655. *Fr. Scler. Succ. n.* 328. *Syst. Myc. v. 2. p.* 591.

On the sheaths of dry reeds. Early summer. Cotterstock, King's Cliffe, Norths., *Rev. M. J. Berkeley*.—Elliptic, obtuse, tinged with brown, especially towards the circumference.

13. *H. culmigenum*, Fr. (*Grass Hysterium*); innate elliptic-oblong prominent even black, at length opening with a pale elliptic disc. *Fr. Obs.* 2. t. 7. f. 3. *Scler. Suec.* n. 97. *Syst. Myc.* v. 2. p. 591.—*H. gramineum*, *Grev. Sc. Crypt. Fl.* t. 87. *Fl. Ed.* p. 367. *Johnst. Fl. Berw.* 2. p. 136.

On culms and leaves of grasses. Very common.—It is quite clear that though Dr. Greville refers to *Moug. & Nest.*, his plant is the same with that of *Fr. Scler. Suec.* n. 97. Mougéot and Nestler's *H. gramineum* is very much smaller and has not, that I am aware, been found in Great Britain.

14. *H. foliolum*, Fr. (*Leaf Hysterium*); innate scattered elliptic obtuse slightly tumid even naked black with a depressed longitudinal fissure. *Fr. Syst. Myc.* v. 2. p. 592. *Xyloma hysterioides*, *Pers. Ic. & Descr.* t. 10. f. 3, 4.— $\beta$ . *Hederæ*; apices of the perithecia rather acute gaping with acute lips. *Mart. Erl.* p. 472. *Grev. Sc. Crypt. Fl.* t. 129. f. 1.— $\gamma$ . *maculare*; seated on a white spot, apices obtuse. *Grev. l. c.* f. 2.

$\alpha$ . On dry leaves of trees, especially of the order *Rosaceæ*, as *Crategus Oxyacanthus*.— $\beta$ . On dry ivy leaves.— $\gamma$ . On oak leaves.—All the three forms appear to be generally diffused.

#### 68. EXCÍPULA. Fr. Excipula.

*Perithecia* horny, at length opening with an entire orbicular aperture; disc soft subdeliquescent.—Name *excipulus*, a vessel.

1. *E. Rúbi*, Fr. (*Raspberry Excipula*); innato-erumpent, perithecia somewhat horny nearly plane black, disc at length open pale. *Fr. Syst. Myc.* v. 2. p. 190. *Scler. Suec.* n. 101. *Grev. Sc. Crypt. Fl.* t. 334.

On dead stems of the Raspberry. Common about Edinburgh. *Dr. Greville*.

2. *E. strigósa*, Fr. (*strigose Excipula*); innate sessile flattened concave strigose black, disc pale. *Fr. Ind. Alph. Scler. Suec.* n. 136.—*Peziza strigosa*, *Syst. Myc.* v. 2. p. 103.

On culms and leaves of grasses. Appin, *Captain Carmichael*, whose specimens are on straw and belong to the oblong form. Stibington, Hunts, *Rev. M. J. Berkeley*.

#### 69. ACTINOTHÝRIUM. Kunze. Actinothyrium.

*Perithecium* innate, scutiform, radiato-fibrous, covering the fusiform *sporidia*.—Name *ακτιν*, a ray, and *εγχιον*, a door.

1. *A. gráminis*, Kunz. (*common Actinothyrium*).—*Myc. Hefst.* 2. t. 2. f. 3. *Fr. Syst. Myc.* v. 2. p. 597. *Moug. & Nest.* n. 657. *Grev. Sc. Crypt. Fl.* t. 218.

On leaves and culms of grasses. Spring.—Forming little, round, very flat black spots, with a central umbo of a close radiating fibrous structure, like that of *Pyrenula nigrescens*, Ach.

### 70. PROSTHÉMIUM. Kunze. Prosthemium.

*Perithecium* innate, orbicular, very much depressed, containing an entangled mass of cylindrical, articulated *filaments*; to which are attached, two or three together, in radiating fascicles, the fusiform septate *sporidia*.—Named from *προσθημα*, the *sporidia* being as it were *applied* to the *filaments*.

1. *P. betulinum*, Kunz. (*Birch-tree Prosthemium*).—Kunze *Myc. Hef.* 1. p. 17. t. 1. f. 10. *Fr. Syst. Myc.* v. 3. p. 484.

On branches of *Betula alba*. Milton, Norths. Messrs. Henderson & Berkeley.—This genus is to *Stilbospora* what *Cytispora* is to *Namaspora*. I find the *perithécia* presenting, in a vertical section, an elliptic outline, not merely covering the *sporidia* and filaments, but surrounding them on all sides, and the *sporidia* longer than in the figure quoted above. Nothing can be more striking than their exact resemblance to those of some *Coniomycetes*. I possess a fungus of a somewhat similar structure, on Lime branches, but differing in having the stratum to which the *sporidia* are attached scarcely filamentous, and the *sporidia* uniseptate. As I have only found this once, and very sparingly, I leave it for future investigation.

### 71. LEPTOSTRÓMA. Fr. Leptostroma.

*Perithecium* innate, subumbonate in the centre, dimidiate, at length falling off and leaving a very thin disc.—Name, *λεπτύς*, thin, and *στρώμα*, a layer.

1. *L. caricinum*, Fr. (*Sedge Leptostroma*); subrotund unequal thin opaque, entirely falling off and leaving a brown spot. *Fr. Obs.* 2. t. 7. f. 4. *Scler. Succ.* n. 176. *Syst. Myc.* v. 2. p. 598.

On leaves of various *Carices*. About Edinburgh, Dr. Greville.—The *perithecium* is extremely thin, and it leaves, when fallen off, a pale brown spot surrounded by a little raised line. Other less perfectly defined spots, but of the same size, accompany the perfect plant, which are either old worn individuals, or an imperfectly developed state; occasionally in the centre of these there is a white pale spot.

2. *L. filicinum*, Fr. (*Fern-stem Leptostroma*); elongated irregular even black marked when perfect with an elevated longitudinal rib, at length separating entirely at the base. *Fr. Obs.* 1. p. 197. *Scler. Succ.!* n. 65.—*Xyloma striaformis*, Moug. & Nest. ! n. 476.—*Sph. Pteridis*, Sow. ! t. 394. f. 10.

On dead stems of *Pteris aquilina*. Not uncommon.—It requires care to distinguish this plant accurately. *Sclerotium Pteridis*, Moug. & Nest. n. 673, which occurs on almost every fern-stem, generally accompanies it, but whether it is the young or imperfectly developed plant or a distinct species is very doubtful. *L. filicinum* often assumes the form of an *Hysterium* and may almost always be distinguished by the rib which runs down the centre. I have found it in winter dis-

charging a white jelly from the base, just as the *perithecium* was separating, consisting of very minute oblong *sporidia*. There is a very curious form in the Appin collection, apparently on the stem of some *Aspidium*, with very minute stellate *perithecia*, or elongated with stellate apices, like some *Opegraphæ*.

3. *L. Spirææ*, Kunz. (*Meadow-sweet Leptostroma*); conglomerato-connate irregular rugose shining grey within, at length separating entirely at the base.

On dead stems of *Spiræa Ulnaria*. Extremely common.—After *Leptostroma* follow, in the *Systema Mycologicum*, the doubtful genus *Ectostroma*, which is characterized as “Epiphytous, effused spots, without any proper (distinct from the matrix) substance or vegetation.” Of the forms enumerated, Dr. Greville has found that on *Iris Pseudacorus* about Edinburgh, which consists of oblong jet-black opaque spots with the habit of a *Rhytisma*.

TRIBE 3. TRICHOSPERMI. ( $\theta\zeta\iota\zeta$ , a hair, and  $\sigma\pi\epsilon\rho\mu\acute{\alpha}$ , a seed.)—*Peridium* simple or double, bursting when full grown and pouring forth abundant naked dust-like *sporidia*. *Sporidia* rather large, subglobose, collected more or less in the centre of the *peridium*, loose, or interwoven more or less with flocci. Texture vesiculose.

\* TRICHOGASTRES. ( $\theta\zeta\iota\zeta$ , a hair, and  $\gamma\alpha\sigma\tau\eta\zeta$ ) At first fleshy.

## 72. BATÁRREA. Pers. Batarrea.

*Receptacle* bursting forth from a *volva*, stipitate, pileate, the upper surface villosopulverulent.—Named in honour of the Mycologist *Batarra*.

1. *B. Phalloides*, Woodw. (*Phallus-like Batarrea*); stem equal, sporidia brown. Pers. *Syn.* p. 129. t. 3. f. 1. Nees, *Syst.* f. 257. Fr. *Syst. Myc.* v. 3. p. 7.—*Lycoperdon Phalloides*, Woodw. *Phil. Tr.* v. 74. p. 423. t. 16, 1784. Dicks. 1. p. 24. Smith. *Spic. Bot.* t. 12. Sow. t. 390.

On sand hills. Aug.—March. Very rare. Norwich, Mr. W. Humphrey. Stoke, Norfolk, W. J. Hooker. Bungay, Thomas Jenkinson Woodward, Esq. Suffolk, D. E. Davy, Esq.—“Whole plant more or less of a brown hue. Exterior *volva* ovate, fleshy, dirty-white inclining to brown, buried 6–8 inches in the sand, with a few dirty-white, floccose, rooting hairs at the base; middle *volva* much thinner and almost membranaceous connected with the outer by mucilage, smooth within; inner *volva* internally villous covered with very abundant, yellow-brown dust-like seed; externally concave and smooth. Stem formed within the cavity of the interior *volva*, cylindric, straight, short, fleshy, filled with mucilage, but afterwards elongated upwards with wonderful force and quickness and protruded through the soil, carrying with it almost the whole inner *volva*, adnate with its apex and covered with a portion of the outer coat torn off in the same manner. Immediately after maturity it becomes dry, as also the *volva*, tubular within, and externally fibrous; and remains a long time bleached and tossed about by wind and rain.” Sm. l. c. To the above description, which, though scarcely sufficiently exact, is the best and fullest hitherto

published, I have only to add that in the dry state the interior of the lower portion of the *volva* is rough like the stem, and that the stem itself is almost woody and has a filamentous cord running down from the apex exactly as in *Bat. Gaudichaudii*, *Ann. des. Sc. N. S. v. 2. p. 76. t. 4. f. 1.* The *flocci*, at least those immediately next to the receptacle, for the specimen I have had an opportunity of examining is much bleached, are as in that species branched and anastomosing; *sporidia* globose or subglobose, slightly angular with a rather broad pellucid border. The stem at the apex is of a perfectly distinct substance from the *pileus* and enters into it in a slightly different way from that represented by Sowerby, being rounded above, while half the rounded portion is adnate with it, its component filaments turning abruptly back and passing into the coat of the *pileus*. So that in fact the difference of structure between this species and *B. Gaudichaudii* is not so great as might at first be supposed. Sowerby represents the stem as slightly attenuated at the base but this does not accord with the only specimen in his Herbarium in which it is slightly incrassated. The squarrose appearance of the stem, when dry, arises from the outer layers being broken up and detached from below, the inner layers running down for a greater length than those which are more external. The consequence of which structure taking place in any eminent degree would certainly be the attenuation of the base of the stem as in *B. Gaudichaudii*. Mr. Dickson remarked that the *sporidia* just before the plant bursts through the sand are darker than when they have emerged from darkness into light. This strikingly corroborates the general remark of Fries that the colour of the *sporidia* in the present groupe is intimately connected with the mode of vegetation; the truly subterraneous species having black *sporidia*; those which are at first subterraneous, then emerged, brown *sporidia*; while those which are free have them of some brighter hue. The structure of this very curious fungus as compared with *Geaster*, and especially *Geaster Bryantii* which has a very distinct channel round the top of the stem, appears to me as far as I can judge from expanded specimens only, to be as follows:—The outer coat with its gelatinous stratum answers to the *volva* of *Geastrum*, the second and third coat (the middle and inner *volva* of Smith) which are connate with the outer one, just above the point where the stem is given off answering to the inner peridium. The truth of this would probably appear more evident before the development of the stem and the consequent rupture of the membranes.

### 73. GEÁSTER. *Mich.* Starry Puffball.

*Peridium* double, outer distinct persistent, splitting into star-like expanding rays.—Name,  $\gamma\pi$ , the *earth*, and  $\alpha\sigma\tau\eta\zeta$ , a *star*.

\* *Orifices numerous.*

1. *G. coliformis*, Dicks. (*Cullender Starry Puffball*); outer peridium multifid patent, interior supported by many stems, pierced with numerous ciliated orifices. *Pers. Syn. p. 131. Fr. Syst. Myc. v. 3. p. 12.*—*Lycop. coliforme*, Dicks. 1. p. 24. t. 3. f. 4. *With. v. 4. p. 342. Woodw. Linn. Fr. v. 2. p. 59. Sow. t. 313. Part. n. 1075.*—*Fungus Coli instar perforatus*, &c. *Dill. in Raii Syn. p. 27.*

On the ground. Rare. In the lane from Crayford to Bexley common. *Doody* in *Rai Syn.* Hampton Court, *Merret*. Sandy banks at Mettingham, Suffolk. Gillingham and Earsham, Norf. *Messrs. Stone and Woodward*. Hanley Castle, Worc. *Messrs. Ballard and Rufford*.—There is no difficulty in distinguishing this fine and curious species, which is remarkable for its numerous peduncles and orifices. The peduncles are compressed, somewhat branched, and appear to bear a definite relation to the number of orifices, which, as far as I can judge from imperfect dry specimens, resemble those of *Geaster rufescens* more than of any other species. The lining of the outer peridium is said to resemble curd and to be fœtid; a portion of this in the dry plant remains sometimes entangled among the peduncles when it has completely vanished elsewhere.

\*\* *Mouth plicato-sulcate, conical.*

2. *G. fornicatus*, Huds. (*turreted Starry Puffball*); outer peridium mostly quadrifid with its inner coat separable and at length inverted and fixed to its apices, inner peridium pedunculate somewhat pyriform, mouth conical striated. *Fr. Syst. Myc.* v. 3. p. 12.—*Lycop. fornicatum*, Huds. *Fl. Ang.* 2. p. 644. *With.* v. 4. p. 344. *Bryant, Hist. f.* 14, 15, 16, 17, 20. *Woodw. l. c.* p. 61. *Sow. t.* 198. *Purt. v.* 2 § 3. n. 1074.—*Lyc. coronatum*, *Schæff. t.* 183.—*Geaster, &c.*, *Wats. Phil. Tr.* v. 43. p. 234. t. 2. f. 9, 10.—*Lyc. volvam reflectens ore pectinato*. *Schmid. t.* 37. f. 1—4.— $\beta$ . *multifidus*. *Schmid. Ic. t.* 37. f. 13, 14. *Bryant, Hist. f.* 14. 17.

In meadows and pastures, also on the bare ground amongst leaves. Not uncommon in Suffolk and Norfolk. This species, though easy enough to determine in the perfect state, is sometimes puzzling when young. It is distinguished from *G. Bryantii* by the absence of a groove round the top of the stem, which in that species is always visible, even in the unexpanded plant, on making a vertical section, and from *G. limbatus* by the different structure of the mouth. The outer coat of the volva remains so firmly attached to the ground during the expansion of the plant, that the inner separates and is inverted and fixed by the tips of its stellate lobes, to those of the outer coat.

3. *G. striatus*, Dec. (*grooved Starry Puffball*); outer peridium simple spreading, inner subpedicellate, mouth prominent connate sulcate striate. *Dec. Fr.* 2. p. 267. *Fr. Syst. Myc.* v. 3. p. 13.— $\beta$ . *minor*. *Fr. l. c.* p. 14. *Hook. Fl. Lond. N. S. cum Ic.*

$\beta$ . Sandy Denes near Yarmouth, abundant. *Bungay, Mr. Stock*.—I do not know exactly what is the original *G. striatus* of M. De Candolle: but our plant entirely accords with the  $\beta$ . of Fries. It differs from *G. limbatus* in the different nature of the orifice, and from *G. Bryantii* by the want of the channel round the top of the stem, which I am inclined to consider as of great importance. In its younger state, before the inner coat of the volva is dried up, it would probably appear quite sessile.

4. *G. Bryantii*, Berk. (*Mr. Bryant's Starry Puffball*); outer

peridium simple, inner pedicellate with a strong groove round the apex of the stem, mouth prominent sulcato-striate.—*Lycoperdon stellatum*,  $\beta$ . *minor*. *Woodw. l. c.* p. 58.—*Bryant, Hist. f.* 19.—*Lyc. volvam reflectens ore pectinato*, *Schmid. Ic. t.* 37. f. 11, 12.

Under hedges, amongst leaves, &c., on mounds of sand and earth. Thorney, Camb. Apethorpe, Norths. *Rev. M. J. Berkeley*. Bungay, *Mr. Stock*.—Distinguished by the groove round the top of the peduncle, a character well marked in the figures of Bryant and Schmidel quoted above, and by the elongated conical plicate mouth. I have observed in the present species when fresh, that a small portion of the orifice is always broken off by the expanding rays of the outer peridium, in consequence of a slight adhesion and carried away with them, and thus an aperture is produced for the dispersion of the sporidia.

\*\*\* *Mouth ciliato-fimbriate (not plicato-sulcate), depressed (plain or broadly conical), at length whitish.*

5. *G. limbatus*, Fr. (*multifid starry Puffball*); outer peridium coriaceous multifid expanded, inner subpyriform pedunculate, mouth fimbriato-pilose depressed subacute. *Fr. Syst. Myc. v.* 3. p. 15.—*G. multifidum*, *Greav. Sc. Crypt. Fl. t.* 306.—*Lyc. stellatum*, *Huds. Fl. Angl. p.* 643. *Woodw. l. c. p.* 54. *Sow. t.* 312. *With. v. 4. p.* 343. *Purt. v. 2 & 3. n.* 1073. *t.* 20.—*Lyc. fornicatum*, *Br. l. c. f.* 12, 13.—*Lyc. volvam explanans*, *Schmid. t.* 46.

Woods and hedge-banks. Not common.—The inner peridium is slightly constricted and then swollen at the base, without any groove round the top of the peduncle, into which it passes gradually.

6. *G. mammosus*, Chev. (*mammillary Starry Puffball*); outer peridium multifid rigid hygrometric, laciniae equal, inner peridium sessile, mouth ciliated acutely conic seated in a circular disc. *Chev. Par. 1. p.* 359. *Fr. Syst. Myc. v. 3. p.* 17.—*Lyc. recolligens*, *Woodw. l. c. p.* 58. *With. v. 4. p.* 345.—*G. hygrometricum*,  $\beta$ . *Anglicum*, *Pers. Syn. p.* 135.

Woods and heaths. Norfolk. *Messrs. Bryant and Woodward*.—Of this I have seen no specimens and therefore copy Fries. Sowerby's *Lyc. recolligens*, *t.* 401, if his figure be correct as to the orifice, cannot be the true *G. hygrometricus*, yet it is so similar to some small individuals gathered in North America by Dr. Richardson, that it is a difficult matter to be content with the evidence afforded by the figure, without having recourse to conjecture, especially as from the close pressure of the rays when dry, it is frequently very difficult to ascertain the real structure of the orifice. There is, however, a marked difference in the present plant as described by Fries, viz., that the rays when dry are expanded, and close when moistened, exactly the reverse being the case with the plant of Sowerby.

\*\*\*\* *Mouth toothed (ciliae not distinct), determinate.*

7. *G. rufescens*, Pers. (*reddish-brown Starry Puffball*); outer peridium multifid at length revolute, inner sessile naked, mouth

toothed. *Pers.!* *Syn.* p. 134. *Fr. Syst. Myc. v. 3. p. 18.*—*Lyc. stellatum*, *Schæff. t. 182.*—*Lyc. sessile*, (by error *L. recolligens*), *Sow.!* t. 80.—*Lyc. volvam reflectens ore dentato*, *Schmid. Ic. t. 43. 50. f. II. 1. 3.*—*Lyc. stellatum*, *Br. l. c. f. 1—9.*

On the ground in woods. Norfolk. *Bryant and Rev. R. B. Francis.* Trowse near Norwich, *Sowerby.*—Very variable in size, the inner coat of the outer *peridium* often separating and becoming vaulted, though in a less eminent degree than *G. fornicatus*. Of the figures given by Bryant which I believe belong to the present species, fig. 3 represents an individual with the inner *peridium* surrounded by a membranous cup separating from the lining of the outer *peridium*. This accords with the distinguishing character of *G. duplicatus*, *Chev.*, which is, I should conceive, not a distinct species.

\*\*\*\*\* *Mouth torn, substellate, smooth, not prominent, sometimes obsolete.*

8. *G. hygrometricus*, *Pers.* (*hygrometric Starry Puffball*); outer *peridium* multipartite thick rigid inflexed when dry, inner sessile subreticulate (sometimes nearly smooth) bursting irregularly. *Pers. Syn. p. 135. Fr. Syst. Myc. v. 3. p. 19.*—*Lyc. stellatum*, *Bolt. t. 179. Bull. t. 238, 471.*—*Lyc. volvam recolligens*, *Schmid. t. 27.*

In sandy woods. Swain's moor, near Halifax. *Bolton.*—*Bolton's* plant is just the same as that of *Schmidel*, except that the inner *peridium* is shortly pedunculate, on which account it is considered by *Nees* and *Sprengel* as distinct under the name of *G. Boltonii*. I have received abundant specimens of this fungus from Madeira from the *Rev. R. T. Lowe*. *Bryant's* f. 1—9 cannot be this species, as supposed by *Fries*, who judged merely from his specific character without having seen the figures. *Sowerby's Lyc. recolligens* is probably the true plant, but the representation of the orifice forbids its being cited as synonymous. The species varies greatly in size, colour, and the surface of the inner *peridium*, which is sometimes reticulated, sometimes nearly smooth.

#### 74. BOVISTA. *Dill.* Puffball.

*Peridium* papyraceous, furnished with a distinct bark, which at length peels off, altogether fertile within. *Capillitium* equal.—Name, latinized from the German *bofist*.

1. *B. nigræscens*, *Pers.* (*blackish Puffball*); subglobose (transversely oblong), *peridium* papyraceous tough at length blackish-umber, bark even entirely evanescent, *capillitium* dense purple-brown as well as the sporidia. *Pers. Syn. p. 136. Grev. Fl. Ed. p. 458. Fr. Syst. Myc. v. 3. p. 23. Desm.!* ex. n. 527.—*Lyc. globosum*, *Bolt. t. 118. With. v. 4. p. 350.*—*Lyc. Bovista*, *Sow. t. 331. Purt. v. 2 & 3. n. 1070.*

Heaths and dry pastures. Common. About 1½ inch broad.

2. *B. plúmbea*, *Pers.* (*lead-coloured Puffball*); globose *peridium* of a flexible papyraceous texture lead-coloured, bark per-



sistent at the base, mouth narrowed, capillitium and sporidia brown. *Pers. Syn. p. 137. t. 3. f. 1. Klotzsch! Fung. Germ. exs. n. 57. Fr. Syst. Myc. v. 3. p. 24.—Lyc. ardosiaceum, Bull. t. 192. A. B. With. v. 4. p. 351.—Lyc. Bovista, var. 2. ardosiaceum, Purst. v. 3. p. 273.*

On the ground, heaths and dry pastures. Not rare. Autumn.—Generally smaller than the foregoing.

#### 75. LYCOPÉRDON. *Tourn.* Puffball.

*Peridium* membranaceous, with an adnate subsistent bark, within furnished at the base with a spongy sterile stratum. *Capillitium* unequal.—Name of the same import as the “*crepitis Lupi*” of the old Herbalists.

1. *L. giganteum*, Batsch, (*giant Puffball*); peridium very brittle above very obtuse bursting in areolæ evanescent, at length broadly open, bark floccose subdistinct, flocci few evanescent together with the olive dingy-brown sporidia. *Batsch, Cont. 1. f. 165. Pers. Syn. p. 140. Fr. Syst. Myc. v. 3. p. 29.—Lyc. maximum, Schaff. t. 332 (two upper fig.).—L. Proteus, var. 1. With. v. 4. p. 348. Purst. v. 3. p. 477 (in part).—Bovista gigantea, Nees, f. 124. Grev. Fl. Ed. p. 458. Scot. Crypt. Fl. t. 336.*

In fields and plantations. Not very common.—Attaining a very large size, often many feet in circumference, and filled with a loathsome pulpy mass. It is placed in the genus *Lycoperdon*, because of the spongy base, in consequence of which, when the sporidia are entirely dispersed, it resembles in form a large *Peziza*. A long and very instructive account of this species is given by Fries in his *Syst. Myc.* Among other points of interest he relates, that in individuals injured when young by the reapers' sickles, a pale membranaceous web is formed from the *capillitium* which fills up the wounds, forming septa, which, if the wounds are numerous, divide the cavity into chambers, and from this he infers the mode in which the septa in *Scleroderma* are formed, from the contraction of the inner mass, and in consequence the insinuation of delicate white webs in the interstices formed arising from the *capillitium*. The white floccose veins in the *Truffle* may be considered as somewhat analogous; though in this case I believe the interstices are not accidental, whereas in *Scleroderma*, if I may use the phrase, they are normally accidental. The *capillitium* with the sporidia is used for staunching blood, and the spongy base for tinder. The upper stratum of the sporidia, which is exposed to light and air, is sometimes yellow, while all beneath is dingy-olive.

2. *L. calatum*, Bull. (*embossed Puffball*); peridium above flaccid collapsing obtuse, apex deliscent at length open and cup-shaped, barren stratum cellular, internal peridium distinct from the sparing nearly free collapsing capillitium, sporidia dingy yellow-brown. *Bull. t. 430. Fr. Syst. Myc. v. 2. p. 32.—Lyc. gemmatum, arcolatum and papillatum, Schaff. t. 189, 190, 186.—L. Bovista, Pers. Syn. p. 141. Nees, f. 125.—Lyc.*

*Proteus*, var. 5. *With.* v. 4. p. 350.—*Fungus*, &c., in *summitate solum pulverulentus*, *Raii Syn. ed.* 3. p. 26. n. 3.—*Lyc. pyriforme verrucosum*, *Vaill. t.* 16. f. 4.

Meadows and pastures. Not very common. Near Aviemore, *Klotzsch*, in *Hook. Herb.*—Remarkable for its spongy, blunt, obconic base. Cavity above sublenticular. In consequence of the simple orifice, the mass of *flocci* and *sporidia* does not fall out but collapses, until by decay the upper part of the fungus is ruptured.

3. *L. pusillum*, Batsch, (*dwarf Puffball*); peridium altogether flaccid persistent obtuse, mouth always narrowed deliscent, bark even, at length rimose adpresso-squamose, sterile stratum obsolete contiguous with the capillitium, sporidia olive. *Batsch, Cont.* 2. f. 228. *Fr. Syst. Myc.* v. 3. p. 33.—*Lyc. furfuraceum*, *Schæff. t.* 294.—*L. cepæforme*, *Bull. t.* 435. f. 2. *L. Bovista*, *Bolt. t.* 117. f. c.—*L. globosum album cortice primario in stellas elegantissimas abeunte*, *Mich. t.* 67. f. 3.—*Lyc. Proteus*, var. 2. *onion-shaped.* *With.* v. 4. p. 349 (*in part*).

In pastures.

4. *L. gemmatum*, Batsch, (*studded Puffball*); peridium membranaceous persistent narrowed at the base, covered with the mealy adnate bark and subspinulose warts, flocci persistent, forming in the centre a columella, sporidia yellowish-green. *Batsch. El.* p. 147. *Fr. Syst. Myc.* v. 3. p. 36.—*L. Bovista*, *Bolt. exc. a*, &c.—*z. excipuliforme*; peridium subrotund, warts scattered subspinulose, stem elongated somewhat plicate at the base. *Pers. Syn.* p. 143.—*Lyc. Proteus*, *Sow. t.* 332. *right hand fig.*—*Lyc. excipuli chymici formâ*, *Vaill. Bot. Par. t.* 12. f. 15.—*β. perlutum*; peridium rounded depressed, warts deciduous compact with a firm mucro, stem round somewhat scabrous. *Kl. ! Fung. Germ. exs. n.* 58.—*Lyc. perlutum*, *Pers. Syn.* p. 148. *Mouj. & Nest. ! n.* 579.—*L. hirtum*, *Bull. t.* 340. 475. f. B—E. (old. *L. lucunosum*, *Bull. t.* 52).—*γ. echinatum*; peridium turbinate substipitate, rough with stout spinous rather distant warts. *Pers. Syn.* p. 147.—*L. candidum*, *IC. & Desc. t.* 13. f. 4.—*δ. hirtum*; turbinate sessile hairy with thin soft at length generally blackish warts. *Mart. Erl. p.* 386. *Lyc. umbrinum*, *α. & β. quercinum*, *Pers. Syn.* p. 147, 148.—*ε. furfuraceum*; turbinate seldom spinulose furfuraceous with more or less dust-like warts. *Lyc. molle*, *Pers. Syn.* p. 150. *Chev. Par. 1. t.* 10. f. 2.—*ξ. papillatum*; subrotund sessile papillary furfuraceo-pulverulent. *Schæff. t.* 184. *Lyc. Proteus*, var. 2. *With.* (*in part*).

Fields, &c. Extremely common.—All the above mentioned forms occur more or less frequently. Mouth prominent, umbonate from the conical columella. I find it impossible to determine all the varieties of *Withering's Lyc. Proteus*, as his references are often contradictory.

5. *Lyc. pyriforme*, Schæff. (*pear-shaped Puffball*); peridium

membranaceous persistent subpyriform opening by the umbonate apex, covered with the innate bark and very slender fugacious scales, columella conic, sporidia greenish-yellow. *Schæff. t.* 189. *Bull. t.* 32. *Grev. Fl. Ed. p.* 457. *Sc. Crypt. Fl. t.* 304. *Fr. Syst. Myc. v. 3. p.* 38.—*Lyc. Proteus*, pear-shaped var. *With. v. 4. p.* 349. *Purt. 3. p.* 478.—*Lyc. ovoideum*, *Bull. t.* 435. *f.* 3.

On rotten stumps, in woods, &c., and in sandy plains. Common.—Generally much tufted.

#### 76. TULÓSTOMA. *Pers.* Tulostoma.

*Peridium* papyraceous, with a deciduous bark, distinct from the stem. *Capillitium* unequal.—Name, *τὺλος*, a wart, and *στόμα*, the mouth.

1. *T. mammósum*, *Fr.* (mamillary *Tulostoma*); stem equal subsquamose, mouth prominent mamillary entire. *Fr. Syst. Myc. v. 3. p.* 42.—*Tul. brumale*, *Pers. Syn. p.* 139. *Dec. Fl. Fr. 2. p.* 269. *Moug. & Nest. n.* 387. *Grev. Sc. Crypt. Fl. t.* 340.—*Lyc. mammosum*, *Sc. Mich. p.* 217. *n.* 10.—*L. pedunculatum*, *Linn. Succ. n.* 1276. *Bull. t.* 294, 471. *f.* 2. *With. v. 4. p.* 347. *Sow. t.* 406.

Old walls and sandy pastures. Common about London.—It varies with a smooth and nearly solid stem, or subsquamose with a central pith. A vertical section of the plant shows a groove round the top of the stem, exactly as in *Geaster Bryantii* (a character scarcely sufficiently indicated in the figures of Greville and Sowerby and more strongly marked in *Tul. fimbriatum*) and a cavity towards the top of the peridium, in consequence of the flocci being shorter above. The stem is nearly of the same texture as that of *Battarrea phalloides*, and though the volva is so very imperfect even in the most highly developed species, I cannot but think there is a strong affinity. *Sporidia* bright ferruginous.

#### 77. SCLERODÉRMA. *Pers.* Scleroderma.

*Peridium* hard, clothed with an innate bark, bursting irregularly. Heaps of *sporidia* minute, not contained in proper *peridiola*.—Name, *σκληρός*, hard, and *δέρμα*, the skin.

1. *S. vulgáre*, *Fr.* (common *Scleroderma*); subsessile irregular, peridium corky hard bursting indefinitely filled with blue-black pulp, sporidia at length brown. *Fr. Syst. Myc. v. 3. p.* 46.—*S. citrinum*, *Pers. Syn. p.* 153.—*Lyc. cervinum*, *Bolt. t.* 116.—*L. aurantiacum*, *Bull. t.* 270. *Sow. t.* 268.—*L. majus globosum squamosum*, *Vaill. Par. t.* 16. *f.* 8.—b. Smaller, kidney-shaped, of a more or less deep bright-brown. *Vaill. l. c. f.* 5, 6.—*Tuber solidum*, *With. v. 4. p.* 342.—*Scleroderma Cepa*, *Pers. Syn. p.* 155. *Grev. Sc. Crypt. Fl. t.* 66.—*Lyc. ? cervinum*, *Purt. v. 3. n.* 1513.

On the ground in gardens, woods, &c.—Not uncommon, especially the

variety *b*. The larger form is generally of a yellowish hue, with the surface warty, or covered with squarrose scales: the smaller quite sessile, minutely warty and of a bright-brown. Though the extremes are very different, there appear to be all intermediate states. The *sporidia* are collected into little heaps separated by a few greyish *flocci*, but not contained in distinct *peridiola* as in the following genus.

2. *S. Bovista*, Fr. (*Bovista-like Scleroderma*); subsessile irregular, peridium thin soft bursting irregularly, bark subdeciduous, flocci yellow, sporidia olivaceous dingy-brown. Fr. *Syst. Myc.* v. 3. p. 48.—*Lyc. defossum*, Batsch, *Cont.* 2. f. 229.—*Lycoperdastrum autumnale flavescens*, &c. Mich. t. 99. f. 2.—*b. cepæforme*; smaller.

In open and, especially, sandy plains.—*b*. Scotland. Klotzsch, in *Hook. Herb.*—There appears to me some difficulty about this species, as the *Lyc. aurantiacum*, Sow., now before me, though scaly and furnished with a thick rigid *peridium*, has abundant yellow *flocci*, and, as far as I can judge from very old specimens, subolivaceous *sporidia*. Klotzsch's specimens exactly resemble the smaller form of the foregoing species, except in the colour of the sporidia and flocci.

3. *S. verrucosum*, Bull. (*warty Scleroderma*); substipitate, peridium rounded subverrucose thin and brittle above, pulp black-purple, flocci and sporidia brown. Pers. *Syn.* p. 154. *Græv. Sc. Crypt. Fl.* t. 48. *Fl. Ed.* p. 457. Fr. *Syst. Myc.* v. 3. p. 49.—*L. verrucosum*, Bull. t. 24. *With.* v. 4. p. 348.—*L. defossum*, Sow. t. 311. *With.* v. 4. p. 350. *Purt.* v. 2 & 3. n. 1071. t. 19. f. 2.

Woods and hedgebanks on a loose soil. Common.—*Stem* thick, lacunose,

#### 78. POLYSÁCCUM. *Desportes*. Polysaccum.

*Common peridium* naked, cellular within. Heaps of *sporidia* surrounded by generally amorphous *peridiola*.—Name, πολλοί, many, and σακκός, a sack.

1. *P. oliváceum*, Fr. (*olive Polysaccum*); peridium subrotund olive as well as the minute regular peridiola; stem attenuated downwards præmorse nearly rootless. Fr. *Syst. Myc.* v. 3. p. 54.—*Lyc. capsuliferum*, Sow. t. 424.

On the ground. Highgate Hill. Mr. Jackson.—Only one specimen appears to have been met with, and this I cannot find in Sowerby's Herbarium, and am therefore unable to add any thing to the account given by Fries.

#### 79. ELAPHOMÝCES. *Nees*. Elaphomyces.

*Peridium* furnished with a warty bark, not bursting spontaneously, divided within by intersecting veins into little chambers.—Name, ελαφοί, a stag, and μυκή, a fungus.

1. *E. granulátus*, Alb. & Schw. (*granulated Elaphomyces*); rounded unequal papilloso-verrucose, sporidia black. Fr. *Syst.*

*Myc. v. 3. p. 58.*—*Lyc. cervinum*, *Linn. Sp. Pl. 2. p. 1053.*—*Scler. cervinum*, *Pers. Syn. p. 156.* *Moug. & Nest. ! n. 282.*—*Tuber cervinum*, *Nies, f. 147.*

In dry heathy ground. Probably not uncommon. Thornhaugh, Norths. *Rev. M. J. Berkeley.*—Several localities are given by Withering under *Tuber cervinum*, but it is uncertain to which of the two species they respectively apply. Sowerby's figure, t. 269, seems to represent the following, but I have seen no specimens. The surface in my fungus is at first entirely concealed, by the expansion of the fibrous radicles of the plants amongst the roots of which it is produced.

2. *E. muricatus*, Fr. (*sharp-warted Elaphomyces*); globose rough with more or less four-sided crowded warts, sporidia at length black. *Fr. Syst. Myc. v. 3. p. 59.*—*Lyc. Tuber*, *Linn. Succ. 1281.*

"In mountainous woods, attached to the radicles of beech-trees." Aviemore. *Klotzsch, in Hook. Herb.*—Very hard when dry. Differing from the last in its more muricated surface, less deep black *sporidia*, and, according to Fries, punctiform cells and not unpleasant odour. It is curious that hitherto *Sphæria capitata* has been found only on the former of the two species, and *S. ophioglossoides* on the latter.

#### 80. CENOCÓCCUM. Fr. Cenococcum.

*Peridium* naked, thick, of a hard corky substance not bursting spontaneously. *Flocci* none.—Name, *κενός*, empty, and *κεκοκός*, a berry.

1. *C. géophilum*, Fr. (*common Cenococcum*); black as well as the sporidia. *Fr. Syst. Myc. v. 3. p. 66.*—*Lyc. graniforme*, *Sow. ! t. 270.*

On the ground in woods. Hampstead. *Mr. Hunt.*—Fries also informs us that he has received specimens from England on the crust of *Lecidea uliginosa*. Scattered like small shot upon the ground without any root.

\*\* MYXOGASTRES. (*μύξα*, mucus, and *γαστήρ*, the belly.) *At first very soft and mucilaginous.\**

#### 81. LYCOGÁLA. Mich. Lycogala.

*Peridium* determinate, composed of a double membrane, somewhat warty, persistent, bursting at the apex. *Flocci* very delicate.—Name, *λύκος*, a wolf, and *γάλα*, milk.

1. *L. Epidéndrum*, L. (*scarlet Lycogala*); subglobose blood-red then brownish-grey punctato-scabrous, mouth irregular, sporidia becoming pale. *Fr. Syst. Myc. v. 3. p. 80.*—*Lycog. miniata*, *Pers. Syn. p. 158.* *Moug. & Nest. ! n. 85.* *Grav. Fl.*

\* Some species, in their infant state, appear under the form of creeping, undulated, anastomosing threads, and, in consequence, have been described as true *Hymenomyces*, as, for example, the species of *Phlebomorpha* in *Pers. Myc. Eur.*

*Ed. p.* 482. *Sc. Crypt. Fl. t.* 38.—*Lycop. Epidendrum*, Linn. *Suec. n.* 1279. *Bull. t.* 503. *With. v.* 4. *p.* 352. *Bolt. t.* 119. *f.* 1. *Sow. t.* 52, 400. *f.* 2, 3. *Purt. v.* 2. § 3. *n.* 1072.—*Mucor fragiformis*, Schæff. *t.* 193.

On rotten stumps, pales, &c. Spring—Autumn. Common.—Varying much in colour and size, and the hue of the sporidia. The surface is rough with dot-like scurfy warts, and changes colour sooner than the pulpy mass within, which is often of the finest scarlet, and oozes out in large drops if the peridium is injured. *Lycogala fuliginosa*, Johnst. ! *Fl. Berw.* 2. *p.* 189, agrees in colour with *Lyc. plumbeum*, Fr., but it appears not to be furnished with a regular mouth, and is probably only a form of the present species.

## 82. RETICULÁRIA. *Bull.* *Reticularia*.

*Peridium* indeterminate, simple, naked, fugacious. *Flocci* branched and shrubby, reticulated.—Name, *reticulum*, a little net.

1. *R. máxima*, Fr. (*large Reticularia*); hypothallus effused, peridium very thin tuberculate white then purple-black, flocci adnate at the base fasciculate, sporidia black-purple. *Fr. Syst. Myc. v.* 3. *p.* 85.—*Lycop. echiniformis*, *Sow. t.* 400. *f.* 1.

On trunks of felled trees near the ground. Kensington Gardens. Sowerby.—I am not sure whether the plant of Sowerby before me is the same with that of Fries, as the specimens are not perfect, but I judge from the colour of the sporidia, effused *hypothallus*, and tuberculate surface. Sowerby found it in great abundance, and a quantity of the *sporidia* subjected to considerable heat by Dr. Wollaston formed a phosphoric glass.

2. *R. átra*, A. & S. (*black Reticularia*); subpulvinate, peridium very thin subreticulate, flocci arising from the base divaricated dendroid black as well as the mature sporidia. *Alb. & Schw. t.* 3. *f.* 3. *Fr. Syst. Myc. v.* 3. *p.* 86.—*Lycop. fuliginosum*, *Sow. t.* 257.

On the wood and bark of recently fallen pines. Kirriemuir. *Klotzsch, in Hook. Herb.* On floating deals in the Thames, frequent, *Sowerby*.

3. *R. umbrína*, Fr. (*umber Reticularia*); subpulvinate, peridium very thin nearly even silvery then umber, flocci springing from the base erect branched umber as well as the sporidia. *Fr. Syst. Myc. v.* 3. *p.* 87. *Fl. Dan. t.* 1976. *f.* 2.—*Ret. Lycoperdon*, *Bull. t.* 446. *f.* 4, 476. *f.* 1—3. *Sow. t.* 272. *With. v.* 4. *p.* 353.—*Lycogala argentea*, Grev. *Fl. Ed. p.* 453.—*Sc. Crypt. Fl. t.* 106.—*Mucor lycogalus*, *Bolt. t.* 133. *f.* 2.—*Strongylium fuliginoides*, *Ditm. in St. Deutsch. Fl. t.* 38.

On stumps, rails, hollow trees, &c. Not uncommon.—When growing on an horizontal surface, sometimes several inches broad; *peridium*, before bursting, of a beautiful silvery umber, passing beneath the mass of *sporidia*, and in favourable circumstances entirely separable from the matrix. From the base, spring the compressed, branched, reticulated

*flocci*, which are umber, like the sporidia, but shine with a golden or bronze-like lustre. They probably vary in form, as in the foregoing species, but I doubt whether Dr. Greville has observed the true *flocci*, as his figure recedes so much from the common structure of the species. It should be observed, however, that Fries himself suspected that there are two species with more or less evolved *flocci*, the one being the horizontal state, *Bull. t.* 466. *f.* 4, and the other that figured at *t.* 476, 1—3, which is the plant of Sowerby and Greville. I have not a specimen by me for examination. Bulliard's last mentioned figure, however, represents the *flocci* as erect and springing from the base. If Ditmar's figure be correct, the sporidia are sometimes arranged in transverse rows upon the *flocci*. I have seen, but indistinctly, the same kind of arrangement in *R. atra*. It may not be superfluous to notice that the best way of observing the *flocci* in this and other plants of the present tribe, is gently blowing away the sporidia until the *flocci* alone remain, as in the more minute species their colour is seen with difficulty if any of the sporidia are left.

4. *R. olivacea*, Fr. (*olive Reticularia*); peridium membranaceous subplicate hyaline, *flocci* adnate dendroid reticulated, sporidia green-olive. *Fr. Syst. Myc. v.* 3. *p.* 89.

On fallen trunks of fir-trees. Appin. *Captain Carmichael*.—In the Appin specimens the surface is rather nodulose or tuberculate than plicate. *Peridium* hyaline, but appearing olivaceous from the shining through of the *sporidia* which are of a beautiful green olive.

### 83. ÆTHALIUM. *Link.* Æthaliium.

*Peridium* indeterminate, falling away, covered with a floccose bark, within divided by *flocci* into cells.—Name, *αιθαλιον*, soot.

1. *Æ. sépticum*, L. (*common Æthaliium*).—*Fr. Syst. Myc. v.* 3. *p.* 93.—a. yellow. *Æ. flavum*, *Grev. Sc. Crypt. Fl. t.* 272.—*Reticularia hortensis*, *Bull. t.* 424. *Sow. t.* 399. *f.* 1. *With. v.* 4. *p.* 355. *Purt. v.* 2. *p.* 703.—*R. lutea*, *Bull. t.* 380. *f.* 1. *Sow. l. c. f.* 2. *Purt. v.* 3. *p.* 275.—*R. carnosa, cerea*, *Sow. l. c. f.* 3, 4.—*R. septica*, *Purt. l. c. p.* 703.—*R. ovata*, *With. v.* 4. *p.* 355.—*Mucor ovatus*, *Schaff. t.* 192.—*M. septicus*, *Linn. Sp. Pl.* 2. *p.* 1656. *Bolt. t.* 134.—d. violet.—*Fuligo violacea*, *Pers. Syn. p.* 160.  *Ic. Pict. t.* 1. *p.* 1.

a. On tan in hot-houses, but also on mosses in woods. Common. Very injurious in hot-houses from the rapidity of its growth and its abundant sporidia which smother the plants.—d. Clifton, Notts. *Rev. M. J. Berkeley*. A reddish-brown form has also been found near Glasgow.

### 84. SPUMÁRIA. *Pers.* Spumaria.

*Peridium* indeterminate, falling away, simple, divided within into cells by distinct, regular ascending folds.—Name, *spuma*, foam.

1. *S. álba*, *Bull.* (*common Spumaria*).—*Fr. Syst. Myc. v.* 3. *p.* 95.—*Ret. álba*, *Bull. t.* 326.—a. *laminosa*; folds sessile passing into membranaceous confluent white torn laminæ. *Kl.!*

*Fung. Germ. n. 59.*—*Sp. Mucilago*, Nees, f. 94. *Grev. Sc. Crypt. Fl. t. 267.*—*β. cornuta*; folds stipitate branched, branches corniculate forming firm closed blueish peridiola, bursting at the apices. *Sp. Mucilago*, Pers. *Syn. p. 163.*—*S. alba*, *Fl. Dan. t. 1978. f. 1.*—*Ret. alba*, *Sow. t. 280. Pert. v. 2. § 3. n. 1076.*

On stems of grass, &c., generally some inches above the soil. Common.—The var. *β.* is most frequent; and is probably merely a more perfectly developed form. The plant at first appears like a thick white froth and might easily be supposed of animal origin.

### 85. DIDÉRMA. Pers. *Diderma*.

*Peridium* double; outer crust-like smooth distinct; inner very delicate.—Name, *δις*, double, and *δερμα*, the skin.

\* *Stipitate, stem distinct.*

1. *D. floriforme*, Bull. (*flower-shaped Diderma*); dirty yellowish-white, stem slender, peridium spherical splitting in a stellate manner, the lobes reflexed, columella obconic, sporidia black-brown. *Pers. Syn. p. 164. Fr. Syst. Myc. v. 3. p. 99.*—*Sphærocarpus floriformis*, Bull. t. 371.—*Leangium floriforme*, *Grev. Fl. Ed. p. 455.*

On decaying trunks of trees, mosses, &c. Autumn. Swanston wood, near Edinburgh. *Dr. Greville.*—Stems springing from a common, thickish membrane.

2. *D. umbilicatum*, Pers. (*umbilicated Diderma*); dirty-white, stem very short blunt, peridium subrotund umbilicated beneath, splitting into at length patent laciniae, columella somewhat rufous, sporidia purple-black. *Pers. Syn. p. 165. Fl. Dan. t. 1972. f. 1. Fr. Syst. Myc. v. 3. p. 99.*

On bark of trees and mosses. Appin. *Captain Carmichael.*—The columella is very large white within, resembling strongly the nucleus of *Nematelia encephala*.

3. *D. citrinum*, Schum. (*lemon-coloured Diderma*); lemon-coloured, stem firm even, peridium hemispherical squamulose deliscent, columella spurious, sporidia black-brown. *Fr. Syst. Myc. v. 3. p. 100.*—*Physarum citrinum*, Schum. *Sæll. 2. p. 201. Fl. Dan. t. 1912. f. 1. (fide Fr.)*

On leaves of *Sphagnum obtusifolium*. Inverary. *Rev. C. Smith.*—Of this I have seen but a few specimens and those only in a dry state. They grow in a scattered manner, each plant adhering by a separate membranous base, stem shortish, thickest below, when dry tawny-yellow. *Peridium* brownish, splitting irregularly in a stellate manner, covered, under the lens, with minute roundish white scattered scales. These differences arise perhaps merely from the plant not being fresh. I have unfortunately not been able to see the figure referred to above. Fries gives as the place of growth, the leaves of mosses of the genus *Mnium*.

\*\* *Stipitate, stem spurious somewhat confluent.*

4. *D. vernicosum*, Pers. (*varnished Diderma*); peridia obo-



vate, outer thick shining bay, inner yellow, stems capillary short lax, sporidia blackish. *Pers. ! Obs. 1. t. 3. f. 7. Hook. Scot. 2. p. 12. Fr. Syst. Myc. v. 3. p. 102.*—*Leocarpus vernicosus, Grev. ! Fl. Ed. p. 453. Sc. Crypt. Fl. t. 111.*—*Lycop. fragile, Dicks. 1. t. 3. f. 5. With. v. 4. p. 353. Sow. t. 136. Purt. v. 3. p. 273.*

On grass, twigs, mosses, &c. Not uncommon.

5. *D. spumarioides, Fr. (Spumaria-like Diderma)*; effused crust-like, peridia subrotund irregular, outer white, inner glaucous, often forming by confluence a cellular mass, columella spurious white as well as the flocci, sporidia black. *Fl. Dan. t. 1978. f. 2. Fr. Syst. Myc. v. 3. p. 104.*

On leaves, moss, &c. Botanic Garden, Oxford. *Mr. Baxter.*—The specimen before me has obovate-oblong distinct peridia, stems arising from the hypothallus, a cylindrical central white columella and flocci of the same colour mixed with the sporidia. In form it exactly resembles *D. oblongum*, to which it was referred by Klotzsch, but Persoon expressly says that that species has no columella, and I can find nothing in the account of that species given by Fries which agrees with the above description of the contents of the peridium, which, on the other hand, exactly tallies with his description of *D. spumarioides*. The stem is entirely formed from the hypothallus and in the specimen before me is hyaline. It resembles in many respects *Diachaa elegans*, which does not appear hitherto to have occurred in this country.

\*\*\* *Sessile.*

6. *D. Trevelyanii, Fr. (Mr. Trevelyan's Diderma)*; sessile ovato-globose, outer peridium splitting into many linear reflexed laciniae, inner obsolete, columella minute, sporidia black. *Fr. Syst. Myc. v. 3. p. 105.*—*Leangium ? Trevelyanii, Grev. Sc. Crypt. Fl. t. 132.*

On *Bryum ligulatum*. Northumberland. *W. C. Trevelyan, Esq.* About Edinburgh. *Dr. Greville.*—In specimens communicated to Mr. Sowerby by Mr. Trevelyan, there is a very short but distinct cylindrical stem; the peridium at first appears under the lens like a coriander seed, pale-brown with pallid striae which indicate the points at which it will split, and perfectly smooth. Within this is a distinct white inner peridium, lining it very closely and probably in general breaking off with it. Flocci greyish. I can find no trace of a columella, and in old plants when the flocci and sporidia are completely gone, the bottom of the peridium within is perfectly even.

7. *D. Carmichaelianum, Berk. (Capt. Carmichael's Diderma)*; perfectly sessile, outer peridium brick-red splitting into many revolute rays, inner white intimately connected with the outer, columella large, sporidia black-brown.

On moss. Appin. *Capt. Carmichael.*—Perfectly distinct from the foregoing species. The columella resembles that of *D. umbilicatum*.

8. *D. nitens, Kl. (shining Diderma)*; applanato-sessile round hemispherical caespitose, outer peridium crust-like silvery white

brittle, inner very thin hyaline; columella none, sporidia black-brown. *Klotzsch! in Hook. Herb.*

On bark. Appin. *Capt. Carmichael.*

9. *D. globosum*, Pers. (*globose white Diderma*); sessile globose-hemispheric, outer peridium white, inner cinereous, columella globose, sporidia dingy-brown black. *Pers. Disp. t. 4. f. 4, 5. Ditm. in St. Deutsch. Fl. 1. t. 6. Hook. Scot. 2. p. 12. Grev. Fl. Ed. p. 453. Sc. Crypt. Fl. t. 122. Fr. Syst. Myc. v. 3. p. 106.*

On oak and beech leaves, &c. Common.

10. *D. cyanescens*, Fr. (*amorphous Diderma*); sessile-adnate, subrotund but irregular, outer peridium thick white, inner glaucous, columella none, flocci and sporidia black-brown. *Fr. Syst. Myc. v. 3. p. 109.—D. difforme, Alb. & Schw. Consp. p. 90.*

On dead oak leaves. Appin. *Capt. Carmichael.*—Fries gives as the habitat, living leaves of *Oxalis*. The specimens before me have a crustaceous, white, outer *peridium*, like the shell of some small egg; inner peridium in the dry state brownish, except at the base where it is adnate and rufous.

11. *D. deplanatum*, Fr. (*depressed Diderma*); sessile rounded, outer peridium thick white, inner very thin hyaline, columella and flocci none, sporidia black-brown. *Fr. Syst. Myc. v. 3. p. 110.*

On dead oak leaves. Appin. *Captain Carmichael.*—When the *sporidia* have fallen out, the base within is of a somewhat tawny tinge. I find a few *flocci*. The Appin specimens form reticulated masses.

## 86. DIDYMIUM. *Schrad.* Didymium.

Inner *peridium* very delicate, membranaceous, bursting irregularly, externally clothed with the bark-like outer *peridium*, which breaks up into little furfuraceous scales or mealy down.—Name, *διδυμο;* *double*.

\* *Stipitate, stem distinct.*

1. *D. hemisphaericum*, Bull. (*hemispherical Didymium*); peridium hemispherical depressed erect, clothed with a dirty-white veil, beneath plano-umbilicate, stem short thick dirty-white, columella obsolete, sporidia dingy-brown black. *Fr. Syst. Myc. v. 3. p. 115.—Ret. hemisphaerica, Bull. t. 446. f. 1. Sow. ! t. 12. (marked 13.) With. v. 4. p. 353.*

On leaves, twigs, &c. Hampstead, Hornsey, Wanstead, &c. *Sowerby.*—Fries criticises Sowerby's figure; but, as it appears to me, without reason, the original specimens being such as they are represented. The curious, flat, subhemispherical *peridia*, with a broad shallow umbilicus beneath, and the short, dirty-white stem are sufficient proof that it is the true plant.

2. *D. squamulosum*, A. & S. (*squamulose Didymium*); peri-

dium globoso-depressed furnished beneath with a cinereous umbilicus, stem very short even white, columella white, sporidia brown-black. *Fr. Syst. Myc. v. 3. p. 118.*—*Diderma squamulosum*, *Alb. & Schw. Consp. t. 4. f. 5.*—*Diderma globosum*, *Purt. ! MSS.*

On leaves, twigs, &c. Not uncommon.

3. *D. farináceum*, *Schrad. (mealy Didymium)*; peridium subrotund very delicate at length black, clothed with cinereous flocculose meal, stem short brown-black as well as the sporidia. *Schrad. nov. gen. t. 5. f. 6.* *Fr. Syst. Myc. v. 3. p. 119.*—*Phys. farinaceum*, *Pers. Syn. p. 174.*—*Trichia sphaerocephala*, *Sow. ! t. 240.*

On leaves, moss, bark, &c. Not uncommon.

4. *D. nigripes*, *Lk. (black-stemmed Didymium)*; peridium globose grey from the delicate meal with which it is clothed, stem elongated rigid even black, columella obsolete, flocci and sporidia dingy-brown. *Fr. Syst. Myc. v. 3. p. 119.*—*Physarum nigripes*, *Link, in Berl. Mag. 3. p. 27.* *Ditm. in St. Deutsch. Fl. t. 42.* *Greiv. Fl. Ed. p. 454.*—*Trichia alba*, *Purt. v. 2 & 3. n. 1113.*

On rotten wood. Not rare.—Remarkable for its dark, stiff, hair-like stem.

5. *D. pertusum*, *Berk. (pierced Didymium)*; scattered, peridium white mealy depresso-globose deeply but narrowly umbilicated, stem attenuated upwards rufous, columella central white, flocci brownish, sporidia brown-black.

On the decorticated stem of some large herbaceous plant. *Appin. Captain Carmichael.*—This approaches very near to *D. xanthopus*, but the columella is not truly stipitate, but only apparently so from the great depth of the umbilicus.

6. *D. leucopus*, *Lk. (white-stemmed Didymium)*; head globoso-depressed pale glaucous, stem very short thick pale at length brownish. *Fr. Syst. Myc. v. 3. p. 121.*—*Phys. leucopus*, *Link, l. c.* *Greiv. Fl. Ed. p. 454.*

On dead beech wood. Autumn. Foxhall, near Edinburgh. *Capt. Wauch.*—“Very minute, of an uncommonly stiff and dwarf aspect. Filaments very few. Differs from *Link's Ph. leucopus* only in having a coloured stem.” *Greiv. l. c.* Dr. Greville does not inform us whether it has or has not a columella. I have given his specific character above, as, of course, more likely to enable any one to recognise the plant he had in view, but as this differs somewhat from that assumed by Fries, it may be proper to subjoin it. “Minute, globose, white, stem white slightly entering the peridium, flocci white.”

7. *D. Sowerbëii*, *Berk. (dark-grey Didymium)*; subfasciculate, peridium globose dark-grey umbilicated beneath, stem slender, columella white. *Sow. t. 412. f. 3.*

On a decaying bulb in a parlour. London. *Sowerby.*

\*\* *Sessile*.

8. *D. lobatum*, Nees, (*lobed Didymium*); nearly sessile, peridia subrotund or variable somewhat lobed black, clothed with dirty-white scurf, columella depressed, flocci and sporidia black-brown. *Nees, f. 104. Fr. Syst. Myc. v. 3. p. 123.*

On moss close to the ground. Manchester. *Mr. Hobson.*

\*\*\* *Adnate*.

9. *D. physaroides*, Pers. (*Physarum-like Didymium*); peridia crowded subrotundo-irregular black clothed with dirty-white meal, columella none, sporidia blackish conglobated. *Fr. Syst. Myc. v. 3. p. 125.—Spumaria physaroides, Pers. Syn. p. 163.*

On rotten stumps, mosses, &c. Appin. *Captain Carmichael.*

10. *D. cinereum*, Batsch, (*cinereous Didymium*); adnate, peridia subglobose dirty-white clothed with caesio-cinereous scurf, flocci reticulated white, sporidia black. *Fr. Syst. Myc. v. 3. p. 125.—Lycop. cinereum, Batsch, Cont. 1. f. 169.—Physarum cinereum, Pers. Syn. p. 170.*

On bark and wood. Appin. *Captain Carmichael.* Duglesham, *Kl. in Hook. Herb.* Apethorpe, Norths. *Rev. M. J. Berkeley.*—Springing from white, gelatinous serpentine threads. Inner *peridium* very delicate, reflecting prismatic colours; *flocci* flat, white, irregularly reticulated.

11. *D. Sérpula*, Fr. (*serpentine Didymium*); flattened, peridium elongated creeping vein-like flexuous and reticulated lead-blue clothed with whitish meal, sporidia compact black. *Fr. Syst. Myc. v. 3. p. 126.*

On leaves. Appin. *Captain Carmichael.*

## 87. PHYSÁRUM. Pers. Physarum.

*Peridium* simple, very delicate, membranaceous, bursting irregularly, externally naked. *Columella* none.—Name, *φυσζ*, a bladder.

\* *Stipitate*.

1. *P. nútans*, Pers. (*nodding Physarum*); peridium lentiform umbilicate beneath even at length subsquamulose cernuous, stem subulate at length brownish, flocci very delicate dirty-white, sporidia dingy-brown black. *Pers. Syn. p. 203. Grev. Fl. Ed. p. 454.—Sphaerocarpus albus, Bull. t. 407. f. 3, 470. f. 1. Purt. v. 3. p. 490. (in part.)—β. viride*; peridium green. *Pers. Syn. p. 172. Ditm. in St. Deutsch. Fl. t. 24. Grev. Fl. Ed. p. 454.—Sphaerocarpus viridis, Bull. t. 407. f. 1.—γ. aureum*; peridium golden yellow. *Pers. Disp. t. 1. f. 6. Ditm. l. c. t. 23. Grev. Sc. Crypt. Fl. t. 124.*

On stumps of trees, &c. *α.* and *γ.* Common.—*β.* Swanston wood, near Edinburgh. *Dr. Greville.*—This species appears to me more properly a *Didymium*, there being certainly a mealy outer coat. The stem, when

dry, is longitudinally plicato-sulcate. I have gathered a form with a very striking *hypothallus*, and the *peridia* not umbilicate, but agreeing in the white *flocci* and other distinguishing features. The *flocci* are described by Dr. Greville as dark; and they appear so if the sporidia be not completely blown away.

2. *P. bulbiforme*, Schum. (*bulb-shaped Physarum*); peridium hemispherical umbilicate beneath erect black purple, stem attenuated sulcate dirty-white, flocci and sporidia brown-black. *Fl. Dan. t. 1974. f. 3.* *Fr. Syst. Myc. v. 3. p. 131.*—*P. sulcatum*, Link, *Berl. Mag. v. 3. p. 27.* *Grev. Fl. Ed. p. 453.*

On rotten wood. Swanston wood. Pentland hills, &c. *Dr. Greville.*—It appears doubtful whether the plants of Schumacher and Link are really the same; and if so, the same doubt would remain as to the species of Dr. Greville. I, therefore, subjoin the character as given, principally from Link, in the Fl. Ed. "Head globose, flattish beneath, grey inclined; stem rather long, pale, weak sulcate; sporidia dark-brown."

3. *P. rubiginosum*, Chev. (*rust-red Physarum*); peridia globose-turbinate rust-red as well as the slender stem, flocci reticulated white, sporidia black. *Chev. Par. 1. p. 338.* *Fr. Syst. Myc. v. 3. p. 137.*

On trunks of trees amongst moss. Appin. *Captain Carmichael.*—The specimens before me agree in so many respects with Chevallier's description that I can scarcely doubt that they belong to his species. In the present instance, however, the stem penetrates the *peridium*, but, from the close adherence of the coat, not in such a manner as to form an evident umbilicus, nor distinct columella, and it is not paler than the peridium, nor is the *hypothallus* paler. The upper portion of the peridium is nearly white as if bleached.

4. *P. hyalinum*, Pers. (*hyaline Physarum*); peridia globose inflated very delicate whitish, stems fasciculate flaccid ascending rufous, flocci white, sporidia black. *Pers. Disp. t. 2. f. 2, 3.* *Fr. Syst. Myc. v. 3. p. 139.*

On rotten wood. Appin. *Captain Carmichael.*—*Trichia rufiformis*, *Purt. t. 37*, is possibly the same species.

\*\* *Adnate.*

5. *P. sinuosum*, Bull. (*bivalve Physarum*); peridia compressed elongato-flexuous venulose dirty greyish-white splitting in a labiate manner, flocci white reticulated, sporidia black-brown. *Fr. Syst. Myc. v. 3. p. 145.*—*Ret. sinuosa*, *Bull. t. 446. f. 3.* *Sow. t. 6.*—*Angioridium sinuosum*, *Grev. Sc. Crypt. Fl. t. 310.*

On various substances. Not rare.—Dr. Greville has formed a new genus for the reception of this species, but the filaments, which are branched, and not simple, as represented in his figure, are precisely of the same nature as in *Didymium cinereum* and other species of this and neighbouring genera.

6. *P. album*, Nees, (*flat white Physarum*); peridia very delicate subrotundo-depressed adnate even dirty-white, flocci

few delicate loose black as well as the sporidia. *Fr. Syst. Myc. v. 3. p. 147.*—*Licea alba*, *Nees in Kunz. Myc. Hef. 2. p. 66.*—*Lycogala minuta*, *Grev. ! Sc. Crypt. Fl. t. 40. Fl. Ed. p. 453.*

On various substances. Exceedingly common.—The *sporidia* are globose or subelliptic, but I have not seen them so decidedly elliptic as in Dr. Greville's figure, even in authentic specimens. I have gathered this species on the bulbs of Hyacinths, of a very decided blue when moist. Probably *P. casium*, *Schum.*, is not distinct.

### 88. CRATÉRIUM. *Trentepohl. Craterium.*

*Peridium* simple, papyraceous, closed by a deciduous *operculum*. *Columella* none.—Name, *κζατηρ*, a goblet.

1. *C. pedunculatum*, *Trent.* (*common Craterium*); peridium cupshaped subcernuous chestnut, operculum firm chalk-white, stem elongated even orange-yellow, sporidia black. *Fr. Syst. Myc. v. 3. p. 150.*—*Cr. vulgare*, *Ditm. in St. Deutsch. Fl. t. 9. Grev. Fl. Ed. p. 456.*

On mosses, sticks, leaves, &c. About Edinburgh, *Dr. Greville.*

2. *C. pyriforme*, *Ditm.* (*pear-shaped Craterium*); peridium pyriform nearly erect ochraceous as well as the even short stem; operculum firm chalk-white, sporidia black. *Ditm. l. c. t. 10. Fr. Syst. Myc. v. 3. p. 150.*

On bark. *Appin. Capt. Carmichael.*

3. *C. minutum*, *Leers.* (*minute Craterium*); peridium pear-shaped erect yellowish, operculum convex of the same colour, stem short even reddish-brown, sporidia black. *Fr. Syst. Myc. v. 3. p. 151.*—*Cyathus minutus*, *Sow. t. 239.*—*Sphaerocarpus turbinatus*, *Bull. t. 484. f. 1.*

On moss, leaves, &c. Common.—The operculum which is yellow at first, at last becomes quite white.

4. *C. leucocéphalum*, *Hoffm.* (*white headed Craterium*); peridium turbinate erect bright brown, at length becoming pale, operculum very thin evanescent, stem striate bay, flocci white, sporidia black. *Ditm. l. c. t. 11. Grev. ! Sc. Crypt. Fl. t. 65. Fl. Ed. p. 456. Fr. Syst. Myc. v. 3. p. 153.*—*Arcyria leucocephala*, *Hoffm. Fl. Germ. Cr. t. 6. f. 1.*—*Cyathus cinereus*, *Purt. v. 3. n. 1561. t. 35.*

On various substances. Not uncommon.

5. *C. mutabile*, *Fr.* (*variable Craterium*); peridium subrotundo-turbinate torn erect, base and short stem striate and golden yellow, flocci yellow, sporidia black. *Fr. Syst. Myc. v. 3. p. 154.*—*Phys. sulphureum*,  $\beta$ . *atomum*, *Klotzsch in Hook. Herb.*

On bark, moss, &c. *Appin. Capt. Carmichael.*—A very curious species, distinguished by its scarcely having any true operculum, and by its yellow flocci.

89. STEMONÍTIS. *Gled.* Stemonitis.

*Peridium* membranaceous, exceedingly fugacious. *Capillitium* reticulated, growing on the penetrating stem.—Name, στενημων, a stamen.

1. *S. fusca*, Roth, (*brown Stemonitis*); fasciculate, hypothallus persistent, peridia very fugacious cylindrical as well as the capillitium, sporidia black-brown. *Fr. Syst. Myc. v. 3. p. 157.*—*S. fasciculata*, Nees, *f. 118.* *Grev. Fl. Ed. p. 451.* *Sc. Crypt. Fl. t. 170.*—*Trichia nuda*, *With. v. 4. p. 364.* *Sow. t. 50. Part. 2 § 3. n. 1110.*—*Clathrus nudus*, *Linn. Sp. Pl. 1649. Bolt. t. 93. f. 1.*

On rotten wood. Very common.—In the present genus the stem absolutely penetrates the peridium, which, as far as I have seen, is not the case in those *Didymia*, &c., which have an apparently stipitate columella, there being always a portion of the peridium closely attached to the entering portion of the stem, and in consequence there is beneath a more or less apparent umbilicus as the union between the stem and peridium is less or more intimate. *St. ferruginea*, figured by *Bull. t. 477. f. 1*, a very nearly allied species, is distinguished by its smaller differently coloured sporidia. And there is yet another nearly allied species, *S. typhoides*, Bull. with small sporidia to which Withering refers his *Tr. nuda, var. 2.*

2. *S. ovata*, Pers. (*ovate Stemonitis*); scattered, peridium ovate very fugacious at length steel-blue, capillitium purplish, sporidia brown, stem not reaching the apex. *Pers. Syn. p. 189.* *Fr. Syst. Myc. v. 3. p. 160.*—*Trichia alba*, *Sow. t. 259.*—*Mucor Embolus*, *Linn. Succ. n. 1288.*

On rotten wood, inside of wainscoting, &c. Not uncommon.

3. *S. obtusata*, Fr. (*obtuse Stemonitis*); scattered, peridium globose fugacious at length black, capillitium black-brown, stem slightly penetrating. *Fr. Syst. Myc. v. 3. p. 160.*

On wood. Apethorpe, Norths. *Rev. M. J. Berkeley.*—At first white, then ruddy-brown.

4. *S. papillata*, Pers. (*papillary Stemonitis*); peridium globose very fugacious at length cinereous, apex papillary from the excurrent stem, capillitium and sporidia black-brown. *Pers. Disp. t. 1. f. 4. Syn. p. 188.* *Grev. Fl. Ed. p. 456.* *Fr. Syst. Myc. v. 3. p. 610.*—*Enerthenema elegans*, *Bowm. Linn. Tr. v. 16. p. 151. t. 16.*

On rotten wood. Near Edinburgh. *Captain Wauch.* Erthig near Wrexham, Denb. *Mr. Bowman.*—The plant of the latter gentleman, of which I have unfortunately seen but imperfect prematurely dried specimens, is, I believe, the true species of Persoon. Fries, however, has inserted the genus *Enerthenema* as distinct in his *Ind. Alph.*, and does not appear to suspect any affinity with the *Stemonitis* before us.

90. DICTYDÍUM. *Schrad.* Dictydium.

*Peridium* very delicate, persistent; *capillitium* innate, forming

veinlike reticulations.—Name, δίπυρον, a net, and εἶδος, resemblance.

1. *D. umbilicatum*, Schrad. (*umbilicate Dictydium*); peridium cernuous umbilicate above, veins parallel joined by others which are transverse, sporidia brown-purple. Schrad. Nov. Gen. t. 4. f. 1. Fr. Syst. Myc. v. 3. p. 165.—*D. cernuum*, Nees, f. 117. Grev. Sc. Crypt. Fl. t. 153.—*Mucor cancellatus*, Batsch, Cont. 2. f. 232.—*Trichia recutita*, With. v. 4. p. 367 (excluding the *syn. of Linn.*)

On rotten wood. Appin. Captain Carmichael. Edinburgh. Dr. Greville. Bucks. Mr. Knapp.—One of the most elegant plants of the present tribe, resembling a little balloon of network.

#### 91. CRIBRÁRIA. Schrad. Cribraria.

*Peridium* membranaceous, the upper part falling off; *capillitium* innate, at length forming a network above.—Name, *cribrum*, a sieve.

1. *C. intermedia*, Berk. (*Mr. Sowerby's Cribraria*); peridium globose yellow, excipulum entire, stem pellucid white tapering upwards, sporidia yellow.—*Sphaerocarpus semitrichioides*, Sow. t. 400. f. 5.

On rotten wood. Kensington Gardens.—Intermediate between *C. vulgaris* and *C. aurantiaca*.

#### 92. ARCÝRIA. Hill. Arcyria.

*Peridium* splitting all round at the base, the upper part very fugacious. *Capillitium* dense, interwoven, elastic.—Name, ἀργύριον, a net.

1. *A. punicea*, Pers. (*splendid Arcyria*); peridia crowded stipitate subovate, capillitium elongated, sporidia bright purplish-vermilion. Pers. Syn. p. 185. Grev. Fl. Ed. p. 455. Scot. Crypt. Fl. t. 130. Fr. Syst. Myc. v. 3. p. 177.—*Trichia cinnabaris*, Bull. t. 502. f. 1.—*T. denudata*, With. v. 4. p. 365. Sow. t. 49. Pert. v. 2 § 3. n. 1111. t. 24. f. 2.—*Clathrus denudatus*, Linn. Sp. Pl. 1649. Bolt. t. 93. f. 2.

On rotten stumps. Extremely common.

2. *A. incarnata*, Pers. (*flesh-coloured Arcyria*); peridia crowded substipitate ovate, capillitium elongated effuse flesh-coloured as well as the sporidia. Pers. Obs. 1. t. 5. f. 4, 5. Ditm. in St. Deutsch, Fl. t. 44. Fr. Syst. Myc. v. 3. p. 178.

On rotten wood. Not uncommon.—Smaller than the foregoing and more shortly stipitate. In the former the *peridium* is venose, in the present species veinless. The var.  $\beta$ . *flexuosa* appears to have been found by Capt. Carmichael, but the specimens so marked are quite decayed.

3. *A. cinerea*, Bull. (*cinereous Arcyria*); gregarious, peridia stipitate globoso-ovate cinereous, capillitium ovato-cylindric



glaucous as well as the sporidia. *Fl. Dan. t. 1975. f. 1. Fr. Syst. Myc. v. 3. p. 180.*—*Trichia cinerea, Bull. t. 477. f. 3.*—*Clathrus recutitus, Linn. Suec. n. 1264.*

On wood. Appin. *Captain Carmichael.*

4. *A. nutans, Bull. (flaccid Arcyria);* crowded peridia cylindrical, capillitium very long nodding dirty-yellow as well as the sporidia. *Fr. Syst. Myc. v. 3. p. 180.*—*Trichia nutans, Bull. t. 502. f. 3. Dicks. 3. p. 23. With. v. 4. p. 366. Sow. t. 260. Purt. v. 2 & 3. n. 1116. t. 24. f. 1. Grev. Fl. Ed. p. 45.*—*Arcyria flava, Grev. Sc. Cr. Fl. t. 309.*

On rotten wood. Not common.—Varying much in the degree of brightness of the sporidia.

### 93. TRICHIA. Hall. Trichia.

*Peridium* simple, persistent, bursting irregularly. *Capillitium* densely interwoven, elastic.—Name,  $\theta\tau\tau\zeta$ , a hair.

1. *T. pyriformis, Hoffm. (pear-shaped Trichia);* subfasciculate, peridia turbinate pyriform black-red, stems somewhat elongated tawny, capillitium and sporidia saffron-tawny. *Hoffm. Cr. 2. t. 1. f. 1. Fr. Syst. Myc. v. 3. p. 184.*—*T. Botrytis, z. Pers. Syn. p. 176. Ic. Pict. t. 12. f. 1, 2.*—*Sphaerocarpus fragilis, Sow. t. 279. Purt. v. 3. p. 310. t. 24. f. 3.*

On rotten stumps. Not uncommon, especially in Scotland.—*Peridium* generally of a beautiful red inclining to black; occasionally, however, there is but a very slight ruddy tinge. The *peridia* are sometimes scattered.

2. *T. serotina, Schrad. (late Trichia);* scattered, peridium obovate bay even, capillitium and sporidia yellowish. *Schrad. Jour. Bot. 1799. 2. t. 3. f. 2. (fide Fr.) Fr. Syst. Myc. v. 3. p. 184.*

On rotten wood. Appin. *Capt. Carmichael.*—I rely entirely on M. Klotzsch for the correct determination of the present species, as I have no opportunity of inspecting the figures quoted by Fries. On the same piece of wood is a single specimen of *Trichia rubiformis, Pers.*; but as it appears highly probable from its being placed in the Herbarium with foreign specimens of that plant, that it has been attached by accident, I do not venture to record the species as British.

3. *T. fallax, Pers. (irregular Trichia);* gregarious, peridium turbinate at first vermilion then clay-coloured, below plaited as well as the stem, capillitium and sporidia dusky ochre. *Pers. Syn. p. 177. Mong. & Nest. n. 578. Grev. Fl. Ed. p. 455. Fr. Syst. Myc. v. 3. p. 185.*—*T. decipiens, Pers. Obs. 1. t. 3. f. 4, 5.*—*Sphaerocarpus ficoides, Bull. t. 417. f. 3.*—*Trichia fulva, Purt. v. 3. n. 1534.*

On rotten wood. Not common.—Sowerby's *T. fragilis*, usually quoted here, from its bright red *peridium* when mature and highly coloured *sporidia*, appears to me more probably a scattered form of *T. pyriformis*. The present species when young is of a beautiful vermilion red, which when dried prematurely it sometimes retains, though

often assuming a black hue, as is the case with the specimens figured by Bulliard.

4. *T. claváta*, Pers. (*club-shaped Trichia*); gregarious, peridium obovate yellow shining even, stem rugose nearly of the same colour, capillitium and sporidia ochraceous. *Pers. Syn. p.* 178. *Moug. & Nest.!* n. 284. *Fr. Syst. Myc. v. 3. p.* 186.—*T. pyriformis*,<sup>†</sup> *Sow. t.* 400. *f.* 6.—*Sphærocarpus pyriformis*, *Purt. v. 3. n.* 1564.

On rotten stumps. Not uncommon.—The lower part of the *peridium*, which has a shining, transparent skinny appearance, remains when the *sporidium* and *capillitium* have vanished; and in this state it resembles a *Craterium*. This and the three foregoing species have more or less the habit of *Arcyria*, splitting, though irregularly, all round.

5. *T. turbináta*, With. (*turbinate Trichia*); crowded, peridia obovate sessile even tan-coloured, capillitium and sporidia ochraceous. *With. v. 4. p.* 368. *Sow. t.* 85. *Fr. Syst. Myc. v. 3. p.* 187.—*T. ovata*, *Pers. Syn. p.* 180. *Hook. Scot. 2. p.* 12. *Greav. Fl. Ed. p.* 454.—*Clathrus turbinatus*, *Bolt. t.* 94. *f.* 3. *Huds. p.* 632.

On rotten wood. Common.—“Early in the morning whitish and resembling cream. At noon of the same day it becomes of a drier texture with an outward skin and is then yellow. The skin often begins to separate and the seeds to ripen the same evening. If the sun shines upon them they may happen to dry into a little horny substance.” *Sow. l. c.* The *sporidia* are not bright yellow, as in the following species.

6. *T. chryso-spérma*, Dec. (*yellow-seeded Trichia*); crowded, peridia rounded nearly sessile yellow inclining to cinnamon-red, sporidia and capillitium ochraceous golden-yellow. *Fr. Syst. Myc. v. 3. p.* 187.—*T. nitens*, *Pers. Syn. p.* 180. *Greav.!* *Sc. Crypt. Fl. t.* 281.—*T. turbinata*, *Purt.!* 2 & 3. n. 1115.—*Sphærocarpus chryso-spermus*, *Bull. t.* 417. *f.* 4.

On rotten wood. Common.—The colour of *peridium* varies in this and the foregoing species; the principal dependance is to be placed in the *sporidia*.

7. *T. vária*, Pers. (*variable Trichia*); scattered, peridia sessile subrotund or reniform at length yellow, capillitium and sporidia ochraceous. *Pers. Syn. p.* 181. *Fr. Syst. Myc. v. 3. p.* 188.—*Mucor granulatus*, *Schæff. t.* 296.

On decaying wood. Appin. *Capt. Carmichael*.

8. *T. Sérpula*, Pers. (*reticulated Trichia*); peridia creeping vein-like flexuous and reticulated yellow as well as the capillitium and sporidia. *Pers. Syn. p.* 181. *Fr. Syst. Myc. v. 3. p.* 188.—*T. reticulata*, *Pers. l. c. p.* 182. *l. c. & Desc. t.* 12. *f.* 1. *Greav. Sc. Crypt. Fl. t.* 266. *Fl. Ed. p.* 454.

On rotten branches, leaves, &c. Not uncommon.—The *peridium* is of a more or less bright yellow, and sometimes even bay; the *sporidia* and *floci* of a golden yellow, even more bright than in *T. chryso-sperma*. There are specimens of this species in Dr. Hooker's Herbarium, from St. Vincents.

## 94. PERICHÆNA. Fr. Perichæna.

*Peridium* persistent, splitting all round, rarely torn. *Flocci* few, free, elastic.—Name  $\pi\epsilon\tau\tau\iota$ , around, and  $\gamma\alpha\upsilon\omega$ , to gape.

1. *P. strobilina*, Fr. (*Fir-cone Perichæna*); crowded, peridia rounded red-brown more or less regularly splitting all round, sporidia dirty yellow becoming pale. *Grev. Sc. Crypt. Fl. t. 275. Fr. Syst. Myc. v. 3. p. 190.*—*Licea strobilina*, *Alb. & Schw. t. 6. f. 3. Ditm. in St. Deutsch. Fl. t. 20. Moug. & Nest. ! n. 579.*

Between the scales of old cones of *Pinus Abies*. *Appin. Captain Carmichael.*—*Sporidia* containing *sporidiola*. The circumstance does not appear to have been noticed, but if I mistake not, the present plant is erumpent.

2. *P. abietina*, Fr. (*Fir-wood Perichæna*); peridia obovato-globose bay-black more or less regularly splitting all round, flocci and sporidia yellow. *Fr. Syst. Myc. v. 3. p. 191.*—*Trichia fusco-atra*, *Sibth. O.v. n. 1152.*—*Sphærocarpus sessilis*, *Sow. t. 258.*

On fir wood. Shotover plantations, *Sibthorpe*. Kensington gardens, *Sowerby*.—The plant figured by *Sowerby* must be the present species, probably confounded by him with the following, of which abundant specimens exist in his herbarium. There is an evident *hypothallus* in the figure, which is one of the peculiar characters of the species.

3. *P. populina*, Fr. (*Poplar Perichæna*); peridia globose depressed yellow-brown splitting all round, flocci and sporidia yellow. *Grev. Sc. Crypt. Fl. t. 252. Fr. Syst. Myc. v. 3. p. 191. Desm. ! n. 671.*—*Sphærocarpus sessilis*, *Bull. t. 417. f. 5.*—*Trichia gymnosperma*, *Pers. Obs. 1. t. 6. f. 1, 2.*—*Licea circumscissa*, *Pers. Syn. p. 196. Hook. Scot. 2. p. 13. Grev. Fl. Ed. p. 451.*

On fallen poplars. Common. Sometimes almost covering the tree.

95. LICÆA. *Schrad.* Licea.

*Peridium* subpersistent, bursting variously. *Flocci* none.—Name of uncertain derivation.

1. *L. cylindrica*, Fr. (*tubular Licea*); equally effused, peridia linear connate, sporidia earthy-ferruginous. *Fr. Syst. Myc. v. 3. p. 195.*—*Sphærocarpus cylindricus*, *Bull. t. 470. f. 3.*—*Reticularia multicapsula*, *Sow. t. 179 (marked 169).*—*Trichia meteorica*, *Sow. t. 435.*—*Tubulina cylindrica*, *Dec. Fl. Fr. 2. p. 249. Chev. Par. 1. p. 346.*

On very rotten wood. *Sowerby*.

2. *L. fragifórmis*, *Nees*, (*Strawberry Licea*); conglomerated, peridia linear subconnate, sporidia umber. *Nees, Syst. f. 102. Fr. Syst. Myc. v. 3. p. 196. Grev. Sc. Crypt. Fl. t. 308. Fl.*

*Ed. p. 451.*—*Sphærocarpus fragiformis*, *Dec. Fl. Fr. 2. p. 250.*  
*Chev. Par. t. 9. f. 23.*

On very rotten wood, moss, &c., after much rain. Not uncommon.  
—Very beautiful just before maturity, and resembling a strawberry.

TRIBE 4. TRICHODERMACEÆ. (*θρίξ*, a hair, and *ἐξμα*, a skin).—*Peridium* composed of loosely interwoven flocci, rarely membranous, evanescent in the centre. *Sporidia* conglomerate. *Texture* floccose.

96. ASTERÓPHORA. *Ditm.* *Asterophora*.

*Peridium* capitate, floccose above, evanescent. *Sporidia* angular.—Name, *αστήρ*, a star, and *φέρω*, to bear.

1. *A. Agaricoides*, *Fr.* (*Agaric-shaped Asterophora*); head hemispherical furnished beneath with barren gills. *Fr. Syst. Myc. v. 3. p. 205.*—*Ast. Lycoperdoides*, *Ditm. in St. Deutsch. Fl. t. 26.*—*Agaricus Lycoperdonoides*, *Bull. t. 166. 516. f. 1.* *Pers. Syn. p. 325.*

On dry blackened Agarics of the Subgenus *Galorrhæus*, as *A. adustus* and *A. piperatus*. Autumn. Occasionally in all parts of Great Britain, but seldom abundant.—This curious plant so closely resembles *Agaricus parasiticus* that it may easily be passed over as a state of it corrupted by some parasite. The gills are however altogether spurious, and the angular substellate sporidia under the microscope immediately indicate the genus *Asterophora*. When young it has a light cottony aspect, very different from the adpressed silkiness of the Agaric. The latter I observe to spring from the inner substance of the matrix, the former to be superficial, but I am not certain that this is constantly the case.

2. *A. Lycoperdoides*, *Fr.* (*gill-less Asterophora*); head hemispherical even beneath. *Fr. Syst. Myc. v. 3. p. 206.*—*Agaricus Lycoperdonoides*, *Sow. t. 279.*

In the same situation as the last. Rather more common.—I find the stem frequently an inch long, as represented by Sowerby, and therefore omit a part of Fries' specific character. The stem is sometimes quite obsolete; when present, silky, composed of fibres, white then greyish-umber, solid, somewhat dilated upwards. Head hemispherical or sometimes globose; peridium delicate, floccose, fugacious; sporidia pentagonal or hexagonal, fawn-coloured.

97. ONÝGENA. *Pers.* *Onygena*.

*Peridium* capitate, crustaceous, consisting of interwoven flocci, evanescent. *Sporidia* rounded. *Texture* floccose.—Name, *ὄνηξ*, a hoof, and *γίνομαι*, to spring from.

1. *O. equina*, *Pers.* (*horse-hoof Onygena*); head lenticular furfuraceous dirty-white at length more or less regularly splitting all round, stem abbreviated. *Pers. Syn. p. 203.* *Moug. & Nest. ! n. 775.* *Grev. Sc. Crypt. Fl. t. 343.* *Fr. Syst. Myc. v.*

3. p. 207.—*Lycop. equinum*, *With. v. 4. p. 347.* *Sow. t. 292.*  
—*Lyc. gossypinum*, *Bolt. t. 178.*—*Fungi parvi globosi ex ungulo equino*, &c. *Raii Syn. ed. 3. p. 13. t. 1. f. 3.*

On the hoofs of horses, cows, sheep, &c., also on horns. Occasionally. There is a specimen in Hook. Herb. from Dr. Richardson, gathered in the Arctic Regions on the horn of a Buffalo.

The genus *Institule*, Fr. which follows in the Syst. Myc., founded on two productions figured by Sowerby, must now be expunged, as the first, *I. acariforme*, appears from authentic specimens to be *Sphaeria fragiformis*, with an obscure Isariæ-form parasite springing from its base, resembling somewhat *Isaria umbrina*, Pers., but as far as I can see in the original specimens, as well as from others from Mr. Francis in Hook. Herb., and some gathered by myself at Margate, it is altogether destitute of sporidia; and the other, *I. radiatum*, of which also I have examined authentic specimens, together with one communicated to Dr. Hooker by Mr. Francis, has been proved by Desmazières to be an early stage of *Agaricus radiatus*.

#### 98. TRICHODÉRMA. Pers. Trichoderma.

*Peridium* more or less rounded, formed of loosely interwoven branched *floci*, soon obliterated in the centre. *Sporidia* dry, collected together in the centre, and forming a sort of disc.—Name, *τριχ*, a hair, and *δερμα*, skin.

1. *T. viride*, Pers. (*green Trichoderma*); *peridium* villous white, *sporidia* globose dusky green. *Pers. Syn. p. 230.* *Grev. Fl. Ed. p. 465.* *Sc. Crypt. Fl. t. 271.* *Fr. Syst. Myc. v. 3. p. 215.*—*Pyrenium lignorum*, a. *Tode, Fung. Meck. f. 29.*—*Mucor lignifragus*, *Bull. t. 504. f. 6.* *Sow. t. 378. f. 14. Pert. v. 2 § 3. n. 1122.*

On fallen trees, &c. Very common.

#### 99. MYROTHÉCIUM. Tode. Myrothecium.

*Peridium* more or less rounded, floccose, evanescent in the centre. *Sporidia* minute, at first rather gelatinous, forming a sort of disc.—Name, *μυρω*, to flow, and *θηκη*, a receptacle.

1. *M. roridum*, Tode, (*spangled Myrothecium*); disc turgid, *sporidia* cylindric. *Tode, Fung. Meck. f. 38.* *Fr. Syst. Myc. v. 3. p. 217.*—*M. Carmichaelii*, *Grev. Sc. Crypt. Fl. t. 140.*

On rotting plants, dried Agarics, &c. *Appin. Capt. Carmichael.*—The specimens on dried Agarics, though agreeing at first sight with *M. inundatum*, have cylindric not globose *sporidia*. This fact was noticed by M. Klotzsch when inspecting Dr. Hooker's Herbarium, and my own observations are in accordance with his. This is one among many instances of the necessity of always having recourse to the microscope for the correct determination of the more minute fungi. The mass of *sporidia* in the present genus bears a remarkable analogy to that in the genus *Phallus*.

#### 100. ÆGERÍTA. Pers. Ægerita.

*Peridium* spherical, very fugacious. *Sporidia* farinaceous,

loose, sprinkled over the surface of the grumous receptacle.—Name, ἀργεῖος, a poplar.

1. *Æ. candida*, Pers. (*white Ægerita*); smooth, soon mealy. *Pers. Syn.* p. 684. *Grev. Sc. Crypt. Fl. t.* 268. *f.* 1. *Fr. Syst. Myc. v.* 3. p. 220.—*Sclerotium Ægerita*, *Hoffm. Fl. Germ.* 2. t. 9. *f.* 1.

On damp decaying wood. Not uncommon, according to *Dr. Greville*.—Fries informs us that the present plant, when young, has a peridium, and that he has consequently referred it to the present Tribe. *Æ. setosa*, *Grev.* appears to me to possess quite a different structure, and to belong to the genus *Psilonia*.

TRIBE 5. PERISPORIACEÆ. (περὶ, around, and σπορος, seed).—*Peridium thin, submembranaceous, bursting. Sporidia immersed in pulp, free or included in peridiola.*

#### 101. RACÓDIUM. Pers. *Racodium*.

*Peridium* subcorneous, rigid, scarcely bursting spontaneously, subgelatinous within. *Sporidia* arranged more or less in a moniliform manner. *Thallus* abundant, between cottony and spongy.—Name, ρακος, lint.

1. *R. cellare*, Pers. (*mouse-skin Byssus*); thallus very thick and abundant lax composed of septate flocci olive-black, peridia globose seated upon the thallus and supported by simple flocci. *Pers. Syn.* p. 701. *Hook. Scot.* 2. p. 34. *Moug. & Nest. n.* 790. *Grev. Fl. Ed.* p. 470. *Sc. Crypt. Fl. t.* 259.—*Antennaria cellaris*, *Fr. Syst. Myc. v.* 3. p. 229.—*Byssus septica*, *With. v.* 4. p. 142. *Purt. (var. 2.)* 2. p. 607.—*Fibrillaria vinaria*, *Sow. t.* 432. 387. *f.* 3.

On casks, bottles, &c., in cellars, often hanging down a foot or more from the roof, in almost every close cellar.—Persoon noticed the appearance of granules upon the thallus and suspected that they were the fructification. The name *Antennaria*, applied to this genus by Fries, on account of the heterogeneous nature of Persoon's *Racodium*, is not admissible, being preoccupied for a genus separated from *Gnaphalium*. This, as far as I know, is the only British species, for what is marked in the Appin collection by Klotzsch *Antennaria pinophila* is certainly something else, having distinct globose moniliform flocci, throughout very different from those of the true plant, in which they are rather torulose than moniliform. I have gathered the same production in Scotland on the bark of fir-trees, not on the small branches, and believe it to be a species of Agardh's genus *Chroolepus*.

#### 102. LASIOBÓTRYΣ. Kunze. *Lasiobotrys*.

*Peridium* carnosio-corneous, collapsing at the top, filled with a granuloso-gelatinous mass contained in a solitary *peridiolum*. *Sporidia* globose, filled with *sporidiola*. *Thallus* consisting of short simple radiating fibres.—Name, λαιος, shaggy, and βοτρυς, a bunch.

1. *L. Lonicææ*, Kunze, (*Honey-suckle Lasiobotrys*). Kunze, *Myc. Hest.* 2. p. 88. *Grev. Sc. Crypt. Fl.* t. 191. *Moug. & Nest.* n. 860. *Fr. Syst. Myc.* v. 3. p. 233.—*Dothidea Lonicææ*, *Fr. Syst. Myc.* v. 2. p. 557.—*Xyloma Lonicææ*, *Fr. Obs.* 1. t. 4. f. 7.

On various living species of *Lonicera*. Not uncommon in Scotland.—Isle of Wight, *Rev. M. J. Berkeley*.—Epiphyllous or cauline.—With or without a yellow spot, at first covered by the epidermis. I can perceive no *sporangium*, but the whole fleshy mass is interspersed with subglobose *sporidia*. There are frequently abortive *peridia* which may easily be taken for *sporangia*. The structure, as described by Kunze, wants confirmation, and it is desirable that it should be examined in an advanced stage of growth on fading or fallen leaves.

103. ΕΡΥΣΙΠΗ. *Hedw. fil.*—*Dec.* Mildew. Erysiphe.

*Peridium* fleshy, opening at the collapsing apex, subgelatinous within. *Sporidia* included in one or more *peridiola*, often containing *sporidiola*. *Thallus* floccose, effused, free.—Name, ερυσιπη, mildew.

\* *Thallus effused, without any thicker supporting flocci.*

1. *E. pannósa*, Schlecht. (*Rose Mildew*); flocci at length pulvinate white, *peridia* sessile very minute globose with a solitary *peridiolum*. *Lk. in Willd. Sp. Pl.* v. 6. P. 1. p. 104. *Fr. Syst. Myc.* v. 3. p. 236.—*Eurotium Rosarum*, *Grev. Sc. Crypt. Fl.* t. 164. f. 2. *Bast. Ox. n.* 92. *Fr. Syst. Myc.* v. 3. p. 232.

On the leaves, &c., of various species of Rose. Common in some situations.—Easily known by its shining clothly aspect, very different from the general habit of the genus. There is, however, considerable doubt as to whether it be a true *Erysiphe* or an *Eurotium*; Link and especially Wallroth describing it as an *Erysiphe* with a gelatinous, white *peridiolum*, containing 6–8 small spheroid *sporidia*; Greville as an *Eurotium*, containing numerous, minute, globular *sporidia*, which accords, as Fries remarks, with the dry plant, and which I find to be the structure in authentic specimens. The point can only be settled by a very careful examination of fresh individuals in different stages of growth, for which at present I have no opportunity.

\*\* *Thallus effuse, peridia supported by flocci.*

a. *peridiolum* single.

2. *E. maculáris*, Wallr. (*Hop Mildew*); flocci effused white woven together into subdeterminate spots, fulcra crisped bent upwards, *peridiolum* solitary. *Fr. Syst. Myc.* v. 3. p. 237. *Kl. Fung. Germ. exs. n.* 63.—*a. Humuli*. *Lk. l. c.* p. 101.

On the leaves of hops and other rough-leaved plants. Most abundant on hops and often extremely injurious.—The upper side of the leaf has a farinaceous appearance and is generally, but not always, barren.

b. *peridiola* many.

3. *E. commúnis*, Schlecht. (*common Erysiphe*); flocci effused

arachnoid dirty-white at length forming spots, fulera simple acute deflexed, peridiola many. *Lk. l. c. p. 105.* *Fr. Syst. Myc. v. 3. p. 289.*—*E. Artemisiæ, Grev. Fl. Ed. p. 459.*—*E. Lathyri, Robiniæ, Pisi, Arctii, Aquilegii, Alchemillæ, Asperifoliorum, Ranunculi, ejusd. l. c. p. 460, 461.*—*E. nitida, Buxt. ! Ox. n. 97.*—*E. Pisi, Grev. Scot. Crypt. Fl. t. 134.*

On various herbaceous plants. Extremely common.—A slightly different form occurs on almost every herbaceous plant, nor are the peculiar forms confined to plants belonging to the same Natural Orders. It seems to me quite superfluous to give a detailed account of all which have hitherto occurred in this country. Fries appears to have very judiciously reduced the various cognate species of authors to *Erysiphe communis*. Nothing can be more easy than the mere collection of individuals and classifying them according to the names of the plants on which they are found; but after the main groupings of the genus have been determined, distinguished by marked diversity of structure, each of which abounds in varieties differing slightly according to the more or less succulent nature of the matrix, it is a matter of the utmost difficulty, if not altogether hopeless, to refer those slightly different forms to the species which may be proposed by authors, who consider every form a species, except, as said above, the mere name of the plant give the clue and be considered as decisive. Or indeed, where a higher object is aimed at, and it is endeavoured to arrange the multitudinous varieties, under something deserving the name of a species, does there appear to me much less uncertainty, when the changes which take place at the several periods of growth are called to mind, and convinced as I am that all such will be soon found fallible from the constant occurrence of intermediate states. It may be well to take the present opportunity of making a remark upon the genera *Æcidium*, *Uredo*, and *Puccinia*, as they labour under the same inconvenience of ill defined species. Though much study has been devoted by various persons to the subject, nothing comparatively has been done towards the establishment of certain species. Link has attempted something in *Æcidium*, but I think unsuccessfully; indeed he does not appear himself to be satisfied, and he arranges the species, as in the other two genera, according to the Natural Orders of the plants on which they grow. In *Uredo* and *Puccinia* there are very striking discrepancies in the forms of the *sporidia*, which at present there is no reason to believe dependant on the peculiar matrix, and there is therefore in general, under the present state of knowledge, no possibility of avoiding assigning a distinct species to each plant, or at any rate to each natural order. And, in consequence, as the species are of course determined with the greatest ease and without any study, there is a great temptation to beginners in Mycology to pay attention at first to such plants, to the neglect of those whose determination is attended with more difficulty, and hence too often a loose and empirical mode of examination is acquired. Fries in his *Systema* has many remarks to the same effect, but I think that as regards the three last mentioned genera he has run into the opposite extreme; except indeed it be borne in mind that according to his theory, which I believe to be quite untenable, they be regarded as mere “anamorphoses” of the cellular tissue of plants. The numerous species found by Dr. Greville about Edinburgh are admirably treated in the *Flora Edinensis*. The present genus he has confessedly not studied so much, and I therefore



do not feel any hesitation, in accordance with my own views, in considering several of his species, of most of which I have authentic specimens before me, as mere forms of *E. communis*.

4. *E. tórtilis*, Lk. (*tortuous Erysiphe*); flocci brown loose regularly interwoven, fulcra very long turned upwards tortuous simple at the apex, peridiola many.

On the under side of living leaves of *Cornus sanguinea*. Thornhaugh, &c., Norths. *Rev. M. J. Berkeley*.—The fulcra turn upwards after they are given off from the *peridium*. I have not been able to verify the character of the flocci of the thallus decussating at right angles.

5. *E. penicilláta*, Schlecht. (*pencilled Erysiphe*); flocci greyish-dirty-white forming effused spots densely interwoven, fulcra pencilled at the apex, peridiola many. *Lk. l. c. p. 113. Fr. Syst. Myc. v. 3. p. 243. Desm. ! exs. (var. Berberidis) n. 519. —E. Berberidis, Grev. Fl. Ed. p. 460.—E. Lonicæræ, l. c. p. 461.*

On the living leaves of various low shrubs. On Gooseberry. *Appin. Captain Carmichael*. On Barberry and Honeysuckle. *Dr. Greville*. On *Viburnum Opulus*. *Dr. Hooker*.—In this very interesting species the fulcra scarcely exceed the diameter of the peridium, are quite straight and curiously pencilled or flagelliform at the apex, with short slightly flexuous and somewhat divided filaments.

6. *E. bicórnis*, Lk. (*forked Erysiphe*); flocci milk-white densely woven into a close pellicle, fulcra very short forked and nodose at the apex, peridiola many. *Lk. l. c. p. 112. Fr. Syst. Myc. v. 3. p. 244.—E. Aceris, Grev. Fl. Ed. p. 461.*

On the leaves of Maple and Sycamore. Extremely common, often rendering a whole maple hoary, by which the trees producing it are known at some distance. On the Sycamore the thallus is far less copious.

7. *E. adúnca*, Schlecht. (*hook-tipped Erysiphe*); flocci very delicate white woven into an effuse nearly even spot, flocci very long inflexed hooked and doubled back at the tip, peridia persistent, peridiola many. *Lk. l. c. p. 111. Grev. ! Sc. Crypt. Fl. t. 296. Bart. ! Ox. n. 95. Fr. Syst. Myc. v. 3. p. 245.*

On leaves of Willows, Poplars, &c. Common.—A specimen from Persoon of *Mucor Erysiphe* is the present species on Poplar.

8. *E. guttáta*, Schlecht. (*bulbous-haired Erysiphe*); flocci white loose interwoven subevanescent, fulcra bulbous elevating the peridia which at length are open and subdiscoid, peridiola many erumpent. *Lk. l. c. p. 116. Bart. ! Ox. n. 96. Fr. Syst. Myc. v. 3. p. 246.—E. Coryli, Moug. & Nest. ! n. 83.—E. Betula, Grev. Fl. Ed. p. 460.*

On leaves of larger shrubs and trees. Very common on Hasel.—Easily distinguished when mature by the bulbous bases of the flocci.

#### 104. CHÆTÓMIUM. Kunze. Chætomium.

*Peridium* membranaceous, clothed with hairs which spring

from the thallus. *Sporidia* subpellucid, mixed with gelatinous pulp.—Name, *χαιτη*, a hair.

1. *C. elátum*, Kunze, (*tall Chætomium*); peridium subovate, base radiato-fibrous, hairs of the vertex very long interwoven branched, sporidia elliptic. *Kunze, Myc. Hef.* 1. p. 15. 6. 1. f. 9. *Grev. Sc. Crypt. Fl.* t. 230. *Fr. Syst. Myc.* v. 3. p. 254. *Scler. Succ.*! n. 459.—*Sphæria scopula*, *Sow.*! t. 386. f. 4.

On mouldering straw, old matting, damp plaster, &c. Very common.—*Sporidia* broadly elliptic, apiculate at either end. Varying from black to brown, and with a more or less crustaceous peridium.

2. *C. chartárum*, Ehr. (*Paper Chætorium*); peridium subglobose black surrounded by a bright yellow spot, sporidia subglobose. *Fr. Syst. Myc.* v. 3. p. 255.

On silver paper shut up with fungi in a tin box. Stibbington, Hunts. *Rev. M. J. Berkeley*.—In the specimens before me, which have been gathered many years, the yellow spots which appear to be a thin thallus are nearly gone. The *sporidia* are decidedly more globose than in *C. elatum*, having very little of the peculiar lemon-like form of that species.

#### 105. ILLOSPÓRIUM. *Mart.* *Illosporium*.

*Peridium* subgelatinous, falling to pieces. *Sporidia* simple, pellucid, generally surrounded by an hyaline *peridiolum*.—Name *ἰλλω*, to involve, and *σποροσ*, seed.

1. *I. róseum*, *Fr.* (*rose-coloured Illosporium*); heaped up into an irregular tubercle, soft breaking to pieces, rose-coloured. *Fr. Syst. Myc.* v. 3. p. 258.—*Tubercularia rosea*, *Pers. Syn.* p. 114.—*Palmella rosea*, *Lyngh. Hyd. Dan.* p. 207. *Grev. Scot. Crypt. Fl.* t. 51. *Fl. Ed.* p. 323.

On various Lichens, as *Parmelia saxatilis*, &c. Common, but seldom abundant.—It is highly probable that the black granules, figured by Sowerby in *Eng. Bot.* on *Lichen Glaucoma*, are *Sclerococcum sphærale*, *Fr.* but this is scarcely sufficient authority for its insertion.

SUBORDER 3. HYPHOMYCETES. (*υφη*, a web, and *μυκησ*, a fungus).—*Sporidiferous flocci* naked (not included in a uterus or seated on a proper receptacle), distinct or interwoven in a common trunk.

TRIBE 1. CEPHALOTRICHEI. (*κεφαλη*, a head, and *θηξ*.)—*Flocci* collected into a common vertical or horizontal sporidiferous stroma.

#### 106. ISÁRIA. *Hill.* *Isaria*.

*Stroma* elongated, formed of densely interwoven *flocci*, clothed with patent sporidiferous *flocci*. *Sporidia* globose, simple.—(Name, *ισος*, equal.)

1. *I. farinósa*, *Fr.* (*mealy Isaria*); subcæspitose white, stem distinct simple at length smooth, clavulæ incrassated mealy. *Fr. Syst. Myc.* v. 3. p. 271.—*Ramaria farinosa*, *Holmsk. Ot.* 1.

p. 94. f. 7.—*Clavaria farinosa*, Dicks. 2. p. 25. With. v. 4. p. 338. Sow. t. 308. Purt. v. 2 & 3. n. 1061.

On dead pupæ, spider's nests, &c. Not common.—Plant 1—2 inches high, in form resembling a *Clavaria*, but evidently of a mucedinous nature. *Isaria microscopica*, Grev., which is very common on *Trichia*, appears, as Fries remarks, to be an imperfectly developed *Stilbum tomentosum*; at any rate being entirely destitute of flocci and sporidia, it can have no place in the present genus.

### 107. ANTHINA. Fr. Anthina.

*Stroma* vertical, elongated, dilated upwards, contiguous with the at length rigid, somewhat attenuated stem, floccose, covered on all sides with sporidiferous *flocci*, free only at their apices. *Sporidia* latent.—Name, ἀνθή, a flower.

1. *A. flammca*, Fr. (*flame-coloured Anthina*); attenuated downwards smooth bright red-saffron, dilated above plumose yellow. Fr. Syst. Myc. v. 3. p. 283.—*Ceratonema dilatatum*, Roth, Cat. Bot. 2. t. 3. f. 1.—*Anthina miniata*, Grev. in Loud. Hort. Brit. p. 462.—*Clavaria miniata*, Purt. v. 3. p. 267. t. 18.

On dead sticks buried amongst moss. Oversley wood. Purton.—In an early part of the present volume, I have expressed an opinion that Purton's plant is not referrible to the genus *Anthina*; this I am now inclined to retract on more mature consideration, though the subject is not altogether free from difficulties, especially as regards the copious discharge of powder from its surface. If, however, it is to be regarded as belonging to the present genus, I see no character by which it can be separated from *A. flammca*, varying, as that species confessedly does, in form.

### 108. CERATIUM. A. & S. Ceratium.

*Stroma* somewhat horn-shaped, of a mucilaginous consistence, sprinkled with *flocci*, which collapse into minute granules (*conidia*) and free *sporidia*.—Name, κέρα, a horn.

1. *C. hydnoïdes*, A. & S. (*hydnoïd Ceratium*); aggregate, clavate subdiscrete resembling prickles at length chalk-white. Alb. & Schw. Consp. t. 2. f. 7. Grev. Fl. Ed. p. 436. Sect. Crypt. Fl. t. 168. Fr. Syst. Myc. v. 3. p. 294.—*Reticularia hydnoïdes*, With. v. 4. p. 354. Purt. v. 2 & 3. n. 1080.—*Clavaria byssoides*, Sow. t. 335.

On rotten wood. Not uncommon.—Easily known when perfect, but sometimes in its collapsed state difficult to be recognised.

TRIBE 2. MUCORINI. *Sporidia* very minute, generated within the tube of the *flocci*, at length collected within or upon the swollen apices of the filaments or their branches, sometimes involved in jelly, more frequently contained in an inflated persistent vesicle.

### 109. STILBUM. Tode. Stilbum.

*Sporidia* collected into a solid head, involved in jelly. *Flocci* forming a solid stem.—Name, στίβον, shining.

1. *S. tomentósum*, Schrad. (*glandular Stilbum*); white, head globose, stems equal glanduloso-tomentose. Schrad. *N. Jour. Bot.* 2. p. 65. t. 3. f. 2. a. b. (*vide Ditm*). Pers. *Syn.* p. 680. Grev. *Sc. Crypt. Fl.* t. 281. Fr. *Syst. Myc.* v. 3. p. 301.—*Stilbum parasiticum*, Ditm. in *St. Deutsch. Fl.* t. 46.

On different species of *Trichia*. Appin. Captain Carmichael, on *Trichia fallax*. Cotterstock, Norths. Rev. M. J. Berkeley, on *T. chrysosperma*; from whence the specimens figured by Dr. Greville were sent.—I cannot be sure that the plant gathered in Glenfinlas is the same, as I have not been able to find the specimens.

2. *S. erythrocephalum*, Ditm. (*ruddy Stilbum*); head globoso-turbinate rose-coloured, stem rather thick dirty-white pilose. Ditm. *l. c.* t. 45. Fr. *Syst. Myc.* v. 3. p. 302.

On dung, confined to the hard undigested stipulæ of some willow. King's Cliffe, Norths. Rev. M. J. Berkeley.—Scattered. Stem equal or attenuated upwards, at first blunt without any head, and clothed with patent subfasciculate or suberect down, with a few spreading flocci at the base; at length the apex swells, at first downy all over, but soon smooth, a little rugged, firm; sporidia elliptic.

3. *S. bicolor*, Pers. (*two-coloured Stilbum*); head dirty-white subrotund, stem subulate pale olive-brown below. Pers. *Syn.* p. 682. Fr. *Syst. Myc.* v. 3. p. 303.

On trunks of trees. Appin. Captain Carmichael.

4. *S. pellucidum*, Schrad. (*pellucid Stilbum*); head subrotund dirty-white, stem equal rigid hyaline. Schrad. *l. c.* p. 65. (*vide Fr.*) Pers. *Syn.* p. 682. Fr. *Syst. Myc.* v. 3. p. 304.

On wood and rotten fungi. Appin. Captain Carmichael, on whose authority this and the foregoing species are introduced; the specimens preserved being too imperfect for verification. There is besides, a species in his collection, doubtfully referred to *S. filiforme*.

5. *S. turbinátum*, Tode, (*turbinate Stilbum*); head globoso-turbinate pellucid yellow as well as the nearly equal stem. Tode, *Fung. Meck.* t. 2. f. 2. Pers. *Syn.* p. 683.—*St. citrinum*, Pers. *Syn.* p. 681.  *Ic. Pict.* t. 22. f. 1.

On soft, rotten wood. Cotterstock, King's Cliffe, Norths. Rev. M. J. Berkeley.—Head inversely pear-shaped, white, sporidia globose. Stem attenuated upwards, pale-yellow, at length verdigris-green at the base, probably from the presence of some minute *Algæ*.

6. *S. vulgáre*, Tode, (*common Stilbum*); head roundish nearly white semifluid at length firmer and yellowish, stem rather thick cylindric. Tode, *l. c.* f. 16. Pers. *Syn.* p. 682. Ditm. *l. c.* t. 58. Grev. *El. Ed.* p. 448. Fr. *Syst. Myc.* v. 3. p. 305.

On decaying stems of plants, &c. Frequent about Edinburgh. Dr. Greville.

7. *S. nígrum*, Berk. (*black Stilbum*); stem short dirty-white, head ovate or subglobose granulated, sporidia subcylindric.

On specimens of *Eriophorum pubescens*, which had been shut up for

some weeks in a tin box with wet moss. Stibbington, Hunts. *Rev. M. J. Berkeley*.—About  $\frac{1}{2}$  a line high, stem rather more than  $\frac{1}{2}$  the whole height; head somewhat granulated, compact and not the least pulverulent when dry, dissolving in water and giving out a multitude of minute, subcylindric *sporidia*, which are spread over the depressed black apex of the stem.

### 110. ASCÓPHORA. *Tode*. Ascophora.

*Sporidia* (at length?) spread over a rounded, inflated, terminal vesicle. *Flocci* fistulose, septate.—Name, *ασκος*, a vessel, and *φερω*, to bear.

1. *A. Mucédo*, *Tode*, (common *Ascophora*). *Tode*, *Fung. Meck. f.* 22. *Grev. Fl. Ed.* p. 448. *Sc. Crypt. Fl. t.* 269. *Fr. Syst. Myc. v.* 3. p. 310.

On various bodies, especially bread. Common.—The *peridiolum* at length collapses and falls down round the top of the stem, assuming a campanulate form.

### 111. HYDRÓPHORA. *Tode*. Hydrophora.

*Peridiolum* at first crystalline, watery, then turbid, at length indurated, persistent. *Sporidia* conglobated. *Flocci* tubular, erect, subseptate.—Name, *υδωρ*, water, and *φερω*, to bear.

1. *H. stercórea*, *Tode*, (common *Hydrophora*); fleecy, *flocci* simple very long fugacious white, *peridiola* spherical yellow at length black. *Tode*, *l. c.* 2. p. 6. *Fr. Syst. Myc. v.* 3. p. 314.—*Mucor stercoreus*, *Lk. Sp.* 1. p. 90. *Grev. Fl. Ed.* p. 448.

On dung of various animals after much rain. Common.—Distinguished from analogous species of *Mucor*, by the crystalline, watery, not membranous, and dehiscent *peridiolum*, and the indurated mass of *sporidia* not falling away in water.

2. *H. murína*, *Fr.* (rat's-dung *Hydrophora*); *flocci* scattered short simple persistent white, *peridiola* spherical yellow at length opaque. *Fr. Syst. Myc. v.* 3. p. 315.—*Mucor murinus*, *Pers. Syn. p.* 201.—*Mucor fulvus*, *Sow. t.* 400. f. 4.

On rats' dung. *Sowerby*.

### 112. MÚCOR. *Mich.* Mould.

*Sporidia* discrete, contained within a rounded membranaceous dehiscent *peridiolum*, bursting forth when immersed in water. *Flocci* tubular, more or less septate.—Name; *mucor*, mould.

1. *M. ramósus*, *Bull.* (branched Mould); laniform, fertile *flocci* branched above racemose, *peridiola* globose. *Bull. t.* 480. f. 3. *Fr. Syst. Myc. v.* 3. p. 318.—*M. rufus*, *Pers. Syn. p.* 200.—*M. flavidus*, *Pers. Obs. 1. t.* 6. f. 5, 6. b. *Syn. p.* 199.

On rotting fungi, &c. *Thornhaugh*, Norths. *Rev. M. J. Berkeley*.—My specimens belong to the variety with yellow, then bluish-grey, *peridiola*. Sometimes they are reddish-brown. The branches are alternate and racemose. In the dry plant they are, at least in my specimens, extremely divaricate.

2. *M. Mucedo*, L. (*common Mould*); byssoid, fertile flocci simple, peridiola and sporidia globose at length blackish. *Linn. Sp. Pl.* 2. p. 1655. *Bolt. t.* 132. f. 1. *Sow. t.* 378. f. 6. *Fr. Syst. Myc. v.* 3. p. 320.—*M. sphaerocephalus*, *Bull. t.* 480. f. 2. On fruit, paste, preserves, &c. Extremely common.

3. *M. caninus*, Pers. (*small yellow-headed Mould*); fertile flocci simple, peridiola at length yellow or ferruginous globose, sporidia globose or elliptic. *Pers. Syn. p.* 201. *Obs. Myc. t.* 6. f. 3, 4. *Greav. Sc. Crypt. Fl: t.* 305. *Fr. Syst. Myc. v.* 3. p. 320.

On the dung of dogs and cats in wet weather. Very common.—The *sporidia* in this species are by no means constantly globose; they are figured as elliptic by Dr. Greville and such I find them. *Head* at first white, then bright yellow, then yellow-brown, at length black. Occasionally the colour is not so bright and in the last stage the heads are scarcely black. *Flocci* at first erect, soon leaning in every direction.

4. *M. fusiger*, Lk. (*Spindle-seeded Mould*); byssoid, fertile flocci simple, peridiola globose hyaline, at length black, sporidia fusiform. *Lk. Sp. 1. p.* 93. *Fr. Syst. Myc. v.* 3. p. 321.

On the gills of decaying Agarics. East Morden, Dors., *Rev. M. J. Berkeley*.—*Flocci* septate, filled internally with distinct granules, thinly scattered, divergent, springing from the branched *mycelium* in such a manner that several of the sterile *flocci* unite to give off the simple sporidiferous thread. *Sporidia* exactly fusiform.

5. *M. clavatus*, Lk. (*clavate Mould*); byssoid, fertile flocci simple penetrating the globose peridiola by their clavate apices, sporidia globose. *Lk. Sp. 1. p.* 92. *Fr. Syst. Myc.* 321.

On rotten pears. Winter. Apethorpe, Norths. *Rev. M. J. Berkeley*.—*Heads* at first white, then brown, at length black, fertile flocci not septate, indistinctly granular within. *Sporidia* minute.

6. *M. amethysteus*, Berk. (*Amethyst Mould*); fertile flocci simple, peridiola white, then pale-yellow, then crystalline and pure violet, at length violet-black or brownish, sporidia globose filled with globose sporidiola dull violet.

On rotting pears with the foregoing.—Fertile *flocci* about  $\frac{1}{4}$  of an inch high, four times as thick as in *M. clavatus*, filled with distinct granules; *heads* depresso-globose, sometimes collapsing slightly and nodding; *sporidia* rather large, containing globose *sporidiola*, which easily separate. *Mycelium* thick, expanded, pure white, closely interwoven.

7. *M. delicatulus*, Berk. (*minute yellow-headed Mould*); fertile flocci simple abbreviated of the same thickness as those of the *mycelium*, peridiola globose pale-yellow, sporidia globose.

On rotting gourds. Autumn. Apethorpe, Norths. *Rev. M. J. Berkeley*.—So small as to be scarcely perceptible by the naked eye, forming a velvety stratum saturated with the juice of the matrix, *Head* at first white, then very pale yellow, sometimes apparently springing immediately from the branched septate *mycelium* and decumbent.

113. EURÓTIUM. *Link.* Eurotium.

*Peridia* membranaceous, sessile, springing immediately from the *mycelium*, bursting irregularly. *Sporidia* globose, minute, falling away in water, pellucid.—Name, εὐρώτις, mouldiness.

1. *E. herbariorum*, Lk. (*yellow Eurotium*); peridiola spherical subdepressed yellow, surrounded by radiating expanded branched intricate flocci. *Lk. Sp.* 1. p. 79. *Greav. Sc. Crypt. Fl. t.* 164. f. 1. *Fr. Syst. Myc. v.* 3. p. 332.—*Mucor Herbariorum*, Pers. *Syn. p.* 202.—*Farinaria sulphurea*, Sow. t. 379. f. 3.

On damp plants in Herbaria, preserves and various decaying bodies. Very common.—There is a white and an orange variety.

TRIBE 3. DEMATIEI. *Springing from corticated, continuous or septate, sporidiferous flocci.*

114. SPORÓCYBE. *Fr.* Sporocybe.

*Sporidia* simple, conglobated into a terminal head. *Flocci* somewhat fibrous.—Name, σποροκύβη, seed, and κεφαλή, a head.

1. *S. calicioïdes*, Fr. (*Calicium-like Sporocybe*); black, mycelium effused spot-like, head globose compact, stem slender subulate. *Fr. Syst. Myc. v.* 3. p. 342.—*Calicium haustellare*, Ach. in *Vetesk. Acad. Hand.* 1816. t. 5. f. 6. (*in part.*)

On decaying stems of plants. Apethorpe, Norths. *Rev. M. J. Berkeley.*—Much larger than the following species, the stems breaking up into fibres which give it a fibrillose appearance. *Head* small, soon falling off.

2. *S. byssoïdes*, Fr. (*small black Sporocybe*); black, head globose compact, sporidia globose, stem subulate pellucid at the apex. *Fr. Syst. Myc. v.* 3. p. 343.—*Periconia byssoïdes*, Pers. ! *Syn. p.* 686. *Nees, Nov. Nat. Cur. v. ix. p.* 239. t. 5. f. 9.

On small sticks and mouldering stems of herbaceous plants, especially those belonging to the order *Malvaceæ*. Winter. Common in Norths. *Rev. M. J. Berkeley.*—Forming a thin, black, velvety stratum, easily recognised under a lens by the globose heads with which the hairs of the pile are terminated. Scarcely  $\frac{1}{2}$  a line high. *Stem* stiff, brown, obscurely annulated. *Sporidia* large, globose, pellucid, brown, minutely echinulate. The apex of the stem is generally a little incrassated, forming a receptacle for the *sporidia*.

115. PACHNÓCYBE. *Berk.* Pachnocybe.

*Stem* solid, filiform, swollen above and forming a receptacle which is pruinose with the *sporidia*.—Name, παχύνκη, hoar-frost, and κεφαλή, a head.

1. *P. subulata*, Berk. (*subulate Pachnocybe*); stem brown-grey subulate slightly incrassated above, sporidia minute.—*Periconia subulata*, *Nees, Nov. Act. Nat. Cur. ix. p.* 238. t. 5. f. 8.

*Lk. Sp.* 2. p. 109. *Chev. Par.* 1. p. 41.—*Doratomyces Neesii*, *Cord. in St. Deutsch. Fl. Fung.* v. 2. t. 30.

On wood, sticks, stems of herbaceous plants, rotting potatoes, &c. Winter and Spring. Very common in Northamptonshire. *Rev. M. J. Berkeley*.—*Stem*  $\frac{1}{2}$ —2 lines or more high, brownish-cinereous, truly subulate or slightly incrassated above, often fasciculate; occasionally breaking up longitudinally into the *flocci* of which it is composed; the upper half clouded with the minute elliptic *sporidia*, which gradually fall away when the plant is placed in water, altogether unmixed with *flocci*. My plant is altogether that of Nees von Esenbeck, and is entirely destitute of filaments amongst the *sporidia*. I have examined it at various times and in every stage of growth and could never detect any. It does not then accord with the genus *Cephalotrichum*, and as the original plant of Tode appears to have an inflated vesicular head, and the word *Doratomyces*, formed by Corda for a single species, does not express the general character of the genus as now proposed, I think it best to give it an entirely new name alluding to the heads frosted over with the *sporidia*. I have foreborne quoting the figures of Haller, Fl. Dan. and Sowerby, though some certainly belong to the present fungus, as I know not clearly what *Cephalotrichum Stemonitis* is, and I am unwilling to create any needless confusion.

2. *P. grisea*, Berk. (*grey round-headed Pachnocybe*); densely gregarious abbreviated, stem blackish, heads globose, *sporidia* grey.

On decaying stems of herbaceous plants. Apethorpe, Norths. *Rev. M. J. Berkeley*.—Much stouter than *P. acicula*, with which it agrees much in habit; *stem* dark, nearly black, composed of fibres not a line high, head greyish at length dusky; *sporidia* elliptic.

3. *P. ferruginea*, Berk. (*ferruginous Pachnocybe*); stem shining ferruginous, mycelium floccose, head globose.—*Mucor ferrugineus*, *Sow. ! t.* 378. f. 10.—*Aspergillus ferrugineus*, *Lk. Sp.* 1. p. 68. *Pers. Myc. Eur.* 1. p. 30. *Fr. Syst. Myc.* v. 3. p. 387.

On deal and various decaying substances. *Sowerby*.—Authentic specimens from *Sowerby's Herbarium*, though not those figured, are now before me, on deal bought for fire-wood, and though scarcely agreeing as to habit with *Persoon's* species in the *Myc. Eur.*, their plants are probably the same, as the form is altogether that of *Aspergillus*. The specimens before me are extremely short, scarcely visible to the naked eye, furnished with a thin but decided mucedinous mycelium; *stem* capillary, shining, ferruginous, composed of many filaments; *head* globose or depressed. *Sporidia* elliptic.

4. *P. acicula*, Berk. (*white round-headed Pachnocybe*); gregarious stem white or pallid, head subglobose.

On rotting stems of herbaceous plants. Apethorpe, Norths. *Rev. M. J. Berkeley*.—*Mycelium* obsolete. Scarcely a line high, gregarious, but rather scattered, pure white or with the slightest possible pallid tinge on the stem. *Stem* splitting up into fibres; receptacle subglobose, covered with minute elliptic *sporidia*. It has much the habit of *Aspergillus candidus*; from which however it is known by the different structure of the stem and the elliptic, not globose and moniliform, *sporidia*.



5. *P. albida*, Berk. (*white clavate Pachnocybe*); gregarious pure white clavate, sporidia large oval (oval-oblong, Fr.).—*Sporocybe albida*, Fr. *Syst. Myc.* v. 3. p. 14.

On rotten wood, in company with *Stachylidium bicolor*. King's Cliffe, Norths. *Rev. M. J. Berkeley*.—Not a line high. Gregarious, but rather scattered, white; stem marked with cells like the leaves of an *Hypnum*, filiform at the base, confluent with the strongly clavate apex, which is sometimes forked. *Sporidia* scattered on the receptacle, large, oval, beautiful, transparent. This beautiful plant differs in one point only from *Sporocybe albida*, Fr., viz., that the *sporidia* are oval, and not oval-oblong; but when it is considered how frequently in the lower fungi the sporidia acquire a longer major axis, this can be scarcely a sufficient reason for considering my plant as altogether new. It is placed doubtfully by Fries in *Sporocybe*, with the species of which it does not agree in habit, but it seems to come not unnaturally into the present genus, there being a tendency in the preceding species, which is white, to acquire a darker tinge on the stem. I do not see in what other tribe of *Hypnomyces* it can be placed, and perhaps this is one of the cases in which the exception confirms the rule.

#### 116. MYXÓTRICHUM. Kunze. Myxotrichum.

*Sporidia* simple, conglomerate, at first glued together by a viscid substance. *Flocci* solid, opaque.—Name, μυζῆα, *gluten*, and ὄζιζ, a *hair*.

1. *M. cæsium*, Fr. (*grey Myxotrichum*); fibres tufted intricate blueish-grey nodose at the points from which spring the branches and branchlets, sporidia conglobated globose pellucid. Fr. *Syst. Myc.* v. 3. p. 348.—*Gonytrichum cæsium*, Nees, *Nov. Act. Nat. Cur. l. c.* p. 244. f. 14.

On rotten branches. Apethorpe, &c., Norths. *Rev. M. J. Berkeley*.—Forming dense greyish tufts, at length black, consisting of very much branched fibres; branches patent, nodose at their origin and there furnished with numerous globose *sporidia*. I find a form, which I cannot separate, very much resembling *M. murinum*, as figured by Ditmar.

#### 117. HELICOSPÓRIUM. Nees. Helicosporium.

*Sporidia* flocciform, spirally involute, septate, at length breaking at the articulations.—Name, ἑλιζῆα, a *spire*, and σπειροειδής, *scel.*

1. *H. pulvinátum*, Fr. (*minute Helicosporium*); fibres caespitoso-pulvinate very slender branched septate at their apices, sporidia yellow-green. Fr. *Syst. Myc.* v. 3. p. 354.—*Helicotrichum pulvinatum*, Nees, *l. c.* f. 15.—b. *effusum*; effused very thin, sporidia whitish.

b. On wood. Stibbington, Hunts. *Rev. M. J. Berkeley*.—Forming a very thin black stratum, following the inequalities of the wood; *flocci* branched, branches patent, articulated; articulations about as long as broad; *apices* pointed, pellucid, terminated by the minute closely involute extremely fugacious *sporidia*, which consist of about three volutions and as many articulations, extremely fugacious; volutions at first

so close that the *sporidia* appear globose, and their true nature might easily be overlooked. Nees von Esenbeck describes his plant as forming irregular, pulvinate tufts, about  $\frac{1}{2}$  a line high, consisting of soft olive fibres, and yellow-green *sporidia*. In every point, except its less tufted mode of growth and difference of colour, mine agrees with his, and I therefore consider it rather as a form than as a new species.

### 118. HELMINTHOSPÓRIUM. *Lk.* *Helminthosporium*.

*Sporidia* large, often clavate, septate, at first growing on the erect fibres.—Name, εἰ.μυρς, a worm, and σπορος, seed.

#### \* *Fibres cuspidate, sporidiferous.*

1. *H. macrocárpum*, Grev. (*large-seeded Helminthosporium*); fibres aggregate lax subulate simple black, *sporidia* large clavato-fusiform pellucid 6—8-septate. *Grev. Sc. Crypt. Fl. t. 148. f. 1. Fr. Syst. Myc. v. 3. p. 356. Scler. Succ. ! n. 438.—Sphæria ciliaris, Sow. ! t. 339. Purt. ! v. 3. n. 1101.*

On rotten sticks. Not uncommon.—Easily distinguished by the large, clavate, multiseptate *sporidia*. The fibres are frequently broken off above, so as to lose in great measure their subulate form.

2. *H. subulátum*, Nees, (*awl-shaped Helminthosporium*); fibres aggregate subulate nearly simple straight black, *sporidia* large clavate incurved 3—4-septate. *Nees, l. c. p. 242. f. 13. Lk. Sp. 1. p. 48. Corda, l. c. t. 14. Fr. Syst. Myc. v. 3. p. 357.*

On oak branches. Appin. *Captain Carmichael*.—*Fibres* far more slender than in the foregoing, so that the habit is different.

#### \*\* *Fibres obtuse, sporidiferous.*

3. *H. velutinum*, Lk. (*velvety Helminthosporium*); fibres densely aggregate somewhat branched obtuse black, *sporidia* large obovato-clavate 3—4-septate. *Lk. Sp. 1. p. 47. Nees, Syst. f. 65. B. Grev. Sc. Crypt. Fl. t. 148. f. 2. Fr. Syst. Myc. v. 3. p. 359.*

On rotten sticks. Appin. *Captain Carmichael*. Edinburgh. *Dr. Greville*.

4. *H. fusispórium*, Berk. (*Spindle-seeded Helminthosporium*); fibres densely aggregate slightly branched obtuse black, *sporidia* fusiform narrower than the fibres 6—7-septate.

On rotten sticks, with *Hydnum ochraceum*. Beeston, Notts. *Rev. M. J. Berkeley*.

5. *H. nánium*, Nees, (*dark-seeded Helminthosporium*); fibres scattered simple or forked obtuse knotty their apices forming large subcylindric 3—4-septate *sporidia*, slightly shorter than the fibres. *Nees, in Nov. Act. Sc. l. c. f. 13. Fr. Syst. Myc. v. 3. p. 359.*

On stems of the larger herbaceous plants. Winter. Very common in Norths. *Rev. M. J. Berkeley*.—I cannot distinguish my plant from that of Nees, though its habitat be different. The *sporidia* are of a dark, subpellucid brown.

6. *H. simplex*, Kunze, (*simple Helminthosporium*); fibres aggregate simple or slightly branched obtuse black, sporidia fusiform acute pellucid, septa evanescent. *Nees, l. c. p. 241. f. 11. Lk. Sp. 1. p. 4. Corda, l. c. t. 13. Fr. Syst. Myc. v. 3. p. 359.*

On rotten branches. Rockingham Forest, Norths. *Rev. M. J. Berkeley.*—Forming a thin, dirty, uniform stratum like that of some *Torula*; *septa* 2—3. *Nees* however describes his plant as having oblongo-clavate *sporidia*, with 3—5 *septa*, though he does not so figure it.

\*\*\* *Primary fibres changed into sporidia, which in consequence are sessile.*

7. *H. Tiliæ*, Fr. (*Linden Helminthosporium*); fibres simple obtuse obscurely annulated brown-black fasciculate on a convex erumpent stroma, the greater part changed into sporidia. *Fr. Syst. Myc. v. 3. p. 360.—Exosporium Tiliæ, Lk. Sp. 2. p. 121. Fr. Scler. Suc. n. 178. Grev. Sc. Crypt. Fl. t. 208.—Sphaeria echinata, Sow. ! Herb.*

On fallen branches of lime trees. Very common.

#### 119. DEMÁTIIUM. *Pers.* Dematium.

*Sporidia* simple, free, disposed in rows or conglomerated upon the straight fibres.—Name, δέματιον, a bundle.

1. *D. griseum*, *Pers.* (*grey Dematium*); fibres aggregate brown-black quite simple above, sporidia oblongo-cylindric grey conglomerated just above the base upon very short branchlets. *Pers. Myc. Eur. 1. p. 15. Fr. Syst. Myc. v. 3. p. 364.—Chætopsis Wauchii, Grev. Sc. Crypt. Fl. t. 236.—Chloridium griseum, Lk. Sp. 1. p. 38. Grev. Syn. Gen. et. Sp. p. 6.*

On rotten hasel stumps, generally in the neighbourhood of *Sphaeria fusca*. Edinburgh. *Captain Wauch.* Fineshade, Norths. *Rev. M. J. Berkeley.*—This curious fungus may be easily recognised by the greyish, cylindrical masses of *sporidia*, just above the base of the threads. The *sporidia* I find of a very different form from that represented by Dr. Greville, but as he calls them in his Synopsis oblongo-cylindric, and it is notorious that sporidia often acquire a more elongated form in an advanced stage of growth, I see no reason, without the examination of authentic specimens, to suppose my plant, in which they are six times as long as broad and very slightly but decidedly curved with a round pellucid globule in the centre, really distinct. I find however the branchlets very obscure, if not altogether wanting, and I suspect from the account given by Fries, who has evidently drawn up his character after the figure in the Scottish Cryptogamic Flora, and the absence of all mention of them in Link's description, that in general they are not so much developed as in Dr. Greville's plant. Two other minute differences may also be noticed, that in my specimens the fibres are not bulbous at the base, and that several fibres frequently pass through the same heap of *sporidia*. I do not doubt that my plant is

the same as Link's, but it is possible that Dr. Greville's is distinct, and if this should be the case it would bear the name of *Dematium Wauchii*.

2. *D. hispidulum*, Fr. (*hispid Dematium*); fibres fasciculate simple black, sporidia globose of the same colour opaque conglomerated towards the base of the fibres. *Fr. Syst. Myc.* v. 3. p. 366.—*Conoplea hispidula*, Pers. *Syn.* p. 235. *Fr.!* *Scler. Succ.* n. 380. *Lk. Sp.* 1. p. 46.

On dry leaves and stems of grasses. Scotland. *Dr. Greville in Hook. Herb.*, whose specimens accord precisely with those of Fries, who informs us that he has seen the *sporidia* collected above the base of the filaments as in the last species. An acute eye is requisite to distinguish this from several fungi of a similar habit that occur on grasses.

## 120. POLYTHRINCUM. *Kunze.* Polythrincium.

*Sporidia* free, uniseptate, at length scattered upon the moniliform *flocci*.—Name, πολλοὶ, many, and ἐπιγυνοί, a partition.

1. *P. Trifolii*, Kunze, (*common Polythrincium*).—*Kunze, Myc. Heft.* 1. t. 1. f. 8. *Gre. Sc. Crypt. Fl.* t. 216. *Lk. Sp.* 1. p. 43. *Moug. & Nest.!* n. 683. *Bart.!* *Ox.* n. 84. *Corda, l. c.* t. 9.—*Farinaria Trifolii*, *Sow.!* t. 396. f. 7.

On the fading leaves of several species of *Trifolium*. Common.—Often associated with *Sph. Trifolii* and *Ascobolus Trifolii*. Forming little black sooty dots on the leaves.

## 121. CLADOSPORIUM. *Lk.* Cladosporium.

*Sporidia* arranged in short, moniliform branchlets, at length falling off. *Flocci* septate above.—Name, κλάδοι, a branch, and σπέρμα, seed.

1. *C. herbarum*, *Lk.* (*common Cladosporium*); tufts effuse soft dense green then olive-black, fibres collapsing pellucid as well as the olivaceous sporidia. *Lk. Sp.* 1. p. 39. *Nees, Syst.* f. 64. *B. Gre. Fl. Ed.* p. 469. *Johnst. Fl. Berw.* 2. p. 209. *Fr. Syst. Myc.* v. 3. p. 370.—*Dematium herbarum*, Pers. *Syn.* p. 699.—*D. articulatum*, *Sow.!* t. 400. f. 8.

On all sorts of decaying substances, damp paint, fungi, &c. Every where.—This is perhaps the most common of all Fungi, growing on all decaying substances and in consequence assuming various forms. There is however no difficulty in recognising it. *Clad. velutinum*, *Gre.*, appears to have no characters to distinguish it, unless a multitude of species be formed. It is often quite black when old. *Clad. Fumago*, *Lk.* and *Fr.* I scarcely think distinct. I have little doubt that in most cases it originates on leaves more or less sprinkled with honey-dew from the presence of *Aphides*, and as there is frequently a repeated deposit of nutritive matter, the plant acquires a peculiar grumous appearance. I have lately, on a plum-tree which is completely smothered by it, found some leaves in which the parasite has contrived to emerge completely from its disguise and appear in its own form. Mr. Lowe informs me that the orange trees in Madeira are dreadfully infested with either this or a similar production.

122. MACROSPÓRIUM. *Fr.* Macrosporium.

*Sporidia* erect, stipitate, multiseptate, arising from delicate septate evanescent *flocci* (*mycelia*).—Name, μακροσ, long, and σποροσ, seed.

1. *M. Cheiránthi*, *Fr.* (*wallflower Macrosporium*); *flocci* decumbent extremely fugacious, sporidia pyriform articulato-septate black, peduncle short. *Fr. Syst. Myc. v. 3. p. 374.*—*Helmisporium Cheiranthi*, *Duby, Syn. Gal. 2. p. 929.*

On the decaying leaves and stems of Stocks and Wallflowers. *Ape-thorpe, King's Cliffe, Norths. Rev. M. J. Berkeley.*—The *sporidia* vary extremely in form: some are clavate with a single row of articulations; in others the two or three upper cells have a vertical septum; others are broadly clavate, and others again obovate, each articulation divided by vertical partitions into many cells. All are more or less constricted. The *flocci* are very delicate and difficult to detect though certainly present. The peduncles vary in length; more than one are sometimes given off by the same thread of the *mycelium*.

2. *M. Brassicæ*, *Berk.* (*cabbage Macrosporium*); *flocci* obsolete, sporidia clavate antennæform 5—11-septate rather longer than the peduncle.

On decaying cabbage leaves amongst *Cladosporium herbarum*. *King's Cliffe, Norths. Rev. M. J. Berkeley.*

TRIBE 4. MUCEDINES. *Sporidia* arising amongst tubular, septate, pellucid *flocci*, which are formed of a simple membrane, sometimes arranged in moniliform rows.

123. ASPERGÍLLUS. *Mich.* Aspergillus.

*Sporidia* (at first included) simple, globose, more or less disposed in moniliform rows closely packed upon the swollen apices of the fertile *flocci*.—Name, *aspergillus*, the brush used for sprinkling holy water.

1. *A. candidus*, *Lk.* (*white Aspergillus*); sterile *flocci* effused white, fertile simple incrassated at the apices, sporidia compact white. *Lk. Sp. 1. p. 65. Chev. Par. 1. t. 4. f. 17. Fr. Syst. Myc. v. 3. p. 385.*—*Monilia candida*, *Pers. Syn. p. 692.*

On various decaying substances. Very common.—Distinguished from the following species by its smaller size, stiff arid habit and more compact *sporidia*. The two species however appear to me to be too closely allied, intermediate states occurring which it is almost impossible to refer exactly to either.

2. *A. glaucus*, *Lk.* (*blue Mould*); sterile *flocci* effused white, fertile simple their apices capitate, sporidia rather loosely packed at length glaucous. *Lk. Sp. 1. p. 67. Grev. Fl. Ed. p. 467. Johnst. Fl. Berw. 2. p. 211. Corda, l. c. h. 11. t. 7. Fr. Syst. Myc. v. 3. p. 386.*—*Mucor glaucus*, *Linn. Sp. Pl. 2. p. 1556.*

*Sow. t. 378. f. 9. With. v. 4. p. 369.*—*Mucor Aspergillus*, *Bull. t. 504. f. 10.*—*Monilia glauca*, *Pers. Syn. p. 691. Hook. Scot. 2. p. 33.*

On various decaying substances, as lard, bread, cheese, &c.—Flocci indistinctly articulate when fresh; head covered with a subpellucid grumous substance on which are seated the globose sporidia arranged in radiating moniliform threads. This agrees with the account given by Corda, but the grumous substance is not constantly present.—One of the most common moulds and always unacceptable, except upon cheese which is valued when attacked by it. On the same substance the *mycelium* is often of various colours, as bright-yellow, green, &c., and the *sporidia* partake in great measure of the same tint, but all so intimately blended that it is impossible to distinguish species.

3. *A. róseus*, Lk. (*pink Aspergillus*); mycelium thin, fertile flocci simple, sporidia globose rose-red. *Lk. Sp. 1. p. 68.*—*Monilia rosea*, *Pers. Syn. p. 697. Batsch, El. p. 183. f. 58.*

On damp paper, lint, carpet, &c. Sent to Sowerby by *Mr. Templeton* on damp blue paper.—*Flocci* not septate; *sporidia* globose, minute, arranged in moniliform rows. I am inclined to think this a distinct species. It is doubtful whether the plant on hazel-nuts, &c., figured by *Sowerby, t. 378. f. 11*, is the same.

4. *A. áureus*, Berk. (*golden-yellow Aspergillus*); fertile flocci erect short simple clavate, sporidia large thinly scattered elliptic golden-yellow.

On bark. *Sowerby*.—This very beautiful and distinct species I find unmarked in *Sowerby's* collection and suspect that he considered it a form of his *Mucor ferrugineus*. The *flocci* are short, consisting of about four articulations, clavate above and covered thinly with large, subelliptic yellow *sporidia*, in which it recedes from the usual character of the genus and from *Asp. flavus*.

5. *A. máximus*, Lk. (*large Aspergillus*); sterile flocci yellow-brown forming a compact fleecy stratum, fertile dichotomously branched clavate above, sporidia very large at length of the same colour with the flocci. *Nees, Syst. f. 61. Fr. Syst. Myc. v. 3. p. 387.*—*Asp. laneus*, *Grev. Fl. Ed. p. 467.*—*Sporodinia grandis*, *Lk. Sp. 1. p. 91.*

On putrid fungi. About Edinburgh. *Dr. Greville.*

6. *A. móllis*, Berk. (*white branched Aspergillus*); fertile flocci white erect dichotomously branched, apices clavate, sporidia large subglobose.

On dead leaves. Winter. Apethorpe, Norths. *Rev. M. J. Berkeley.*—Forming minute, scattered, pure white fascicles, with a thin procumbent *mycelium*.

7. *A. vírens*, Lk. (*green branched Aspergillus*); tufts rather dense, flocci entangled suberect, heads as well as the branched flocci greenish. *Lk. Sp. 1. p. 67. Grev. Fl. Ed. p. 467. Fr. Syst. Myc. v. 3. p. 388.*

On decaying Agarics. Carlowrie, near Edinburgh. *Dr. Greville.*

## 124. STACHYLÍDIUM. Lk. Stachylidium.

*Sporidia* (at first included in a *spore*) simple, collected upon proper short discrete lateral branchlets.—Name, *σταχυς*, a spike, and *εἶδος*, resemblance.

1. *S. bicolor*, Lk. (*two-coloured Stachylidium*); fertile flocci simple grey putting forth quaternate blunt sporiferous branchlets at the upper joints. *Lk. Sp. 1. p. 78. Nees, Syst. f. 56. Fr. Syst. Myc. v. 3. p. 391.*—*Dematium verticillatum*, Hoffm. Germ. 2. t. 13. f. 1.

On stalks of herbaceous plants laid in heaps in gardens. Apethorpe, Norths. Margate, &c. *Rev. M. J. Berkeley.*—Investing the plant on which it grows with a greyish subolivaceous down, resembling somewhat *Botrytis vulgaris*. Filaments simple, but furnished above with whorls of quaternate, obtuse branchlets, each bearing a single, globose *spore*, filled with oblong-elliptic *sporidia*. Sometimes the branchlets are acute, which appears to arise from the *spore* being abortive and forming a second depauperated articulation. I have rarely seen the plant so perfect as described above; few objects are more elegant.

2. *S. terréstre*, Lk. (*white Stachylidium*); fertile flocci branched white, above putting forth quaternate obtuse sporiferous branchlets. *Lk. Sp. 1. p. 78. Grev. Fl. Ed. p. 466. Sc. Crypt. Fl. t. 257. Fr. Syst. Myc. v. 3. p. 391.*—*Stachylidium candidum*, Grev. in Wern. Tr. p. 72. t. 5. f. 6.

On rotten sticks. About Edinburgh. *Dr. Greville.* Apethorpe, Norths. *Rev. M. J. Berkeley.*—Easily distinguishable even to the naked eye by a peculiar scattered dot-like mode of growth. *Mycelium* dense, branched, intricate. *Sporidia* globose. It does not appear that they have been actually observed to be contained in a *spore*.

3. *S. diffusum*, Fr. (*diffuse Stachylidium*); fertile flocci branched white, fertile branchlets scattered bearing quaternate spores, *sporidia* at length collected at their apices in globular masses. *Fr. Syst. Myc. v. 3. p. 392.*—*Botrytis diffusa*, Alb. & Schw. p. 362. *Grev. Fl. Ed. p. 468. Sc. Crypt. Fl. t. 126. f. 2. Wern. Tr. l. c. f. 7.*—*Botryosporium diffusum*, Corda, l. c. t. 5.

On stems of decaying herbaceous plants, especially potatoes. About Edinburgh. *Dr. Greville.* Common in Norths. *Rev. M. J. Berkeley.*—Forming loose tufts, 3—4 lines high. Albertini and Schweinitz, as also Fries, have observed the branchlets at first to bear quaternate *spores*. They are usually crowned with globular masses of globose or sometimes elliptic *sporidia*. In this and the foregoing genus the true affinity is perhaps with the *Mucorini*; but in *Aspergillus*, scarcely sufficient observations have been recorded as to the real primary structure, and in the present genus individuals are so seldom found in the sporiferous state, that I prefer, with Fries, retaining them in their present situation; especially as there is reason to believe that some species of *Botrytis* have the *sporidia* at first included.

125. BÓTRYTIS. *Mich.* Botrytis.

*Sporidia* (at first included) simple, collected in little *sori* on or towards the apices of the *flocci* and their branches.—Name, *βοτρυς*, a bunch of grapes.

1. *B. grisea*, Fr. (*grey Botrytis*); fertile *flocci* scattered subsimple equal grey, sporidia of the same colour collected here and there in heaps upon the filaments. *Fr. Syst. Myc. v. 3. p. 396.*—*Haplaria grisea*, Nees, *Syst. f. 49.* *Lk. Sp. 1. p. 52.*

On decaying vegetables. Margate. Nov. On decaying petioles of vines in a greenhouse. *Rev. M. J. Berkeley.*—It is usually found on *Sparganium* and allied plants. *Flocci* simple or forked, grey, slender but rather rigid, septate, at the apices and sides of which are little heaps of globose grey sporidia, giving it at first a whorled aspect. They soon fall off and leave the *flocci* quite naked.

2. *B. cinerea*, Pers. (*cinereous Botrytis*); fertile *flocci* gregarious subsimple cinereous soon strangulated, sporidia attached here and there globose whiter than the *flocci*. *Pers. Syn. p. 690.* *Disp. t. 3. f. 9, 10.* *Lk. Sp. 1. p. 60.* *Johnst. Fl. Berw. 2. p. 212.*

On stems of herbaceous plants, frequently springing from *Sclerotium durum*. Not uncommon.—*Sphæria solida*, Sow. t. 314, is, I believe, *Sclerotium durum* beset with the present plant in an old state after the *sporidia* have been washed off.

3. *B. cána*, Schmidt, (*hoary Botrytis*); *flocci* cinereous or whitish, sterile effuse, fertile branched at the apex, sporidia large oval. *Kunze & Schm. Myc. Heft. 1. p. 83.* *Lk. Sp. 1. 59.* *Fr. Syst. Myc. v. 3. p. 397.*—*Mucor racemosus*, Bull. t. 504. f. 7.

On rotting stems and leaves. Apethorpe. Norths. *Rev. M. J. Berkeley.*—It also appears to have been found at Appin by Captain Carmichael on the leaves of *Scrophularia nodosa*, the very habitat of the plant as described under the above name by Schmidt. This species is easily distinguished by the large oval, not ovate, *sporidia*. Branches growing in a botryoid rather than racemose form. The *flocci* are sometimes nearly white.

4. *B. vulgáris*, Fr. (*common Botrytis*); *flocci* grey, sterile rather fleecy, fertile divided at the apex into lobe-like branchlets, on which are collected the globose minute sporidia. *Fr. Syst. Myc. v. 3. p. 398.*—*Botrytis polyactis*, *Lk. Sp. 1. p. 59.*—*Polyactis vulgaris*, Nees, *Syst. f. 57.*

On rotting plants, gourds, cabbages, &c. Common in Norths. *Rev. M. J. Berkeley.*—This species varies in the degree and manner of branching, the branchlets being sometimes far less obtuse, the *sporidia* also vary from white to glaucous. I have no doubt that Fries is quite right in referring *B. leucospora*, *Lk.* to this species. In its best state it resembles *Chondria obtusa* in miniature.

5. *B. vera*, Fr. (*Micheli's Botrytis*); *flocci* grey, sterile rather



fleecy, fertile branched above forming spikes about the slender apices. *Fr. Syst. Myc. v. 3. p. 398.*—*Bot. spicata, Pers. Syn. p. 691.*—*Mucor Botrytis, Bolt. t. 132. f. 3. With. v. 4. p. 370.*—*Botrytis spicata, &c. Mich. p. 212. t. 91. f. 4.*

On various decaying substances. On *Polyporus versicolor*, near Halifax, *Bolton*, who alone appears to have observed this species.

6. *B. lateritia*, *Fr. (tile-coloured Botrytis)*; flocci brick-red inclining to rufous, sterile widely effused, fertile irregularly verticillate multifid at the apex, sporidia oval. *Fr. Syst. Myc. v. 3. p. 402.*—*Sporotrichum lateritium, Lk. Sp. 1. p. 15.*

On decaying stems of herbaceous plants, not unfrequently within the hollow, old potatoes, beet-root, &c. Common in Norths. *Rev. M. J. Berkeley.*—This species has at first sight entirely the habit of a *Sporotrichum*, forming a thin almost uninterrupted stratum, but a careful examination shows it to be a true *Botrytis*. Each apex is at first terminated with a single *sporidium*. *Desmazières's Verticillium ochro-rubrum, Ann. des Sc. N. S. v. 2. t. 2. f. 5*, differs in nothing except the globose sporidia.

7. *B. crustosa*, *Fr. (crust-like Botrytis)*; flocci white in every stage of growth, fertile simple, trifid and verticillate, spores globose terminal. *Fr. Syst. Myc. v. 3. p. 403.*—*Mucor Demati-um, Fr. Obs. 1. p. 210.*

On leaves and stems of plants, especially *Heracleum Sphondylium*. On leaves of *Egopodium Podagraria*. *Berwick. Dr. Johnston.*—The specimens referred to the present species were marked, previously, however, to the publication of the concluding portion of the *Syst. Myc.* as a new species. The filaments confessedly vary so much in their manner and degree of branching, that I rely more upon the evident affinities of the plant than on the technical character given above from *Fries*, which according to his own account would at times be scarcely sufficient to distinguish the species. The spores I find both globose and elliptic on the same individual, the branches rather cymose than verticillate above, and the apices sometimes exactly trifid, the spores very large and decidedly filled with sporidia as in *Mucor*, and altogether destitute of the jewel-like brilliancy of the large *sporidia* in *Botrytis caua*.

8. *B. parasitica*, *Pers. (parasitic Botrytis)*; flocci white in every stage of growth, branches of the fertile flocci ramulose, sporidia very large globose. *Pers. Obs. 1. t. 5. f. 5. Grev. Fl. Ed. p. 468.* *Fr. Syst. Myc. v. 3. p. 403.*—*Bot. agaricina, Johnst. Fl. Berw. 2. p. 212.*—*Mucor Botrytis, Sow. t. 359.*

On stems of *Capsella Bursa Pastoris*, *Erophila verna*, &c. generally when infested with *Uredo candida*. Very common. The same plant appears to be figured by *Sowerby* upon the pods of *Erysimum Alliaria*; the *sporidia*, however, are represented as oval.

9. *B. effusa*, *Grev. (Spinach Mould)*; pale purplish-grey spreading, fertile flocci branched above, branches short divaricated, spores large oval. *Grev.! Fl. Ed. p. 468.*—*Mucor spinacca, Sow.! Herb.*

On the under side of the leaves of spinach. Spring and autumn. Very frequent and highly injurious.—Forming effused spots, 2—6 lines broad, resembling some small *Erineum*, generally rendering the leaf yellow. *Flocci* very short, often abruptly recurved. Dr. Greville's plant is exactly the same as that I have in view. There is little doubt that *B. farinosa*, Fr. is also synonymous; but he describes the branches as simply elongated and corymbose.

#### 126. PENICÍLLIUM. Lk. Penicillium.

*Sporidia* simple, globose, disposed in *sori* about the penicillate apices of the tubular septate fertile *flocci*.—Name, *penicillum*, a painting brush.

1. *P. spársum*, Grev. (*scattered Penicillium*); sterile *flocci* effuse, fertile simple scattered penicillate above, sporidia white. *Grev. in Wern. Tr. iv. p. 71. t. 5. f. 5. Sc. Crypt. Fl. t. 58. f. 2. Fl. Ed. p. 467. Fr. Syst. Myc. v. 3. p. 407.*

On semiputrid stems of *Arctium Lappa*. About Edinburgh. Dr. Greville.

2. *P. crustáceum*, Fr. (*crustaceous Mould*); sterile *flocci* white forming a close crust-like web, fertile somewhat branched intricate bifido-penicillate above, sporidia verdigris-green. *Fr. Syst. Myc. v. 3. p. 407.—P. glaucum*, Grev. *Sc. Crypt. Fl. t. 58. f. 1. Fl. Ed. l. c. Lk. Sp. 1. p. 78.—Mucor crustaceus*, Linn. *Suec. p. 460.—β. Coremium*; fertile *flocci* woven into a dense white stem. *Fr. l. c. p. 408.—Coremium leucopus*, Pers. *Myc. Eur. 1. p. 42.—Floccaria glauca*, Grev. *Sc. Crypt. Fl. t. 301.—Byssus scoparia*, Fl. Dan. t. 897. f. 1.

On all sorts of decaying bodies. Extremely common.—β. on gum, apples, &c. Not uncommon.—Fries has certainly shown a correct judgment in considering *Floccaria glauca* as a state of this species. I have seen the one clearly passing into the other on the same apple, and I believe that this very singular change takes place in general from a too abundant supply of moisture.

3. *P. cándidum*, Lk. (*white Penicillium*); sterile *flocci* woven together pure white, fertile branched penicillate, sporidia pure white. *Lk. Sp. 1. p. 69. Fr. Syst. Myc. v. 3. p. 409.—β. Coremium*; subclavate, *flocci* woven into a stem. *Fr. l. c.—Coremium candidum*, Nees, t. 86. *Pers. Myc. Eur. 1. p. 43. Lk. Sp. 1. p. 71.*

On various decaying substances. Apethorpe, Norths., α. and β. *Rev. M. J. Berkeley.*

#### 127. MONÍLIA. Hill. Monilia.

*Flocci* tubular, septate, bearing above moniliform branches, which break up into globose pellucid *sporidia*.—Name, *monile*, a necklace.

1. *M. penicilláta*, Fr. (*pencilled Monilia*); *flocci* scattered simple, chains of sporidia terminal lax very numerous. *Fr.*

*Syst. Myc. v. 3. p. 410.*—*Aspergillus penicillatus*, Grev. *Sc. Crypt. Fl. t. 32. Fl. Ed. p. 467.*—*Penicillium sparsum*, Lk. *Sp. 1. p. 70.*—*Briarea elegans*, Corda, *l. c. t. 6.*

On damp grasses in Herbaria. *Dr. Greville.*—A most elegant plant; considered as doubtful by Link, but confirmed by Corda, who found his specimens on damp hay and straw. Dark grey; *flocci* articulate, constricted at the articulations; head drooping in consequence of the weight of the sporidia.

2. *M. racemosa*, Pers. (*racemose Monilia*); *flocci* cæspitose branched in a racemose manner, chains of sporidia lateral and terminal ternate. *Pers. Syn. p. 692. Fr. Syst. Myc. v. 3. p. 411.*—*Monilia cæspitosa*, *Purt. v. 3. n. 1579, t. 34.*—*Mucor cæspitosus*, Linn. *Sp. p. 1156. Bolt. t. 132. f. 2.*—*Aspergillus terrestris*, *Sc. Mich. p. 213. t. 91. f. 4.*

On decaying substances. Halifax, *Bolton.*—It has also been found by Mr. Probart, whose discovery is the more interesting, as the figure given in the Midland Flora completely confirms the accuracy of Micheli's representation.

## 128. DACTÝLIUM. *Nes.* Dactylium.

*Flocci* tubular, septate; *sporidia* loosely adhering to their apices, clavate or elongated, septate. *Septa* not always discernible.—Name, δακτυλίος, a *finger*.

1. *D. pyriferum*, Fr. (*pear-seeded Dactylium*); *flocci* aggregate white here and there branched, sporidia pyriform, septa evanescent. *Fr. Syst. Myc. v. 3. p. 413.*

On mouldering stems of herbaceous plants. Apethorpe, Norths. *Rev. M. J. Berkeley* on an Holly oak.—Forming little white confluent tufts. *Flocci* very slightly branched; *sporidia* often lateral, shaped exactly like a grape-seed, the upper swollen portion filled with a granular mass, the lower pellucid and apparently solid. I have not detected any septa. My specimens were probably in an early stage of growth. I have found the plant once only, and it did not alter though kept in a damp situation, favourable to its further development. The septa indeed are so seldom visible in most of the species, that for practical purposes it would be better perhaps to place them all in *Botrytis*; nor indeed does the character itself, judging from analogy, seem to be of very great importance.

2. *D. macrosporum*, Fr. (*long-seeded Dactylium*); *flocci* aggregate white and rose-coloured, branchlets of the fertile *flocci* very short subverticillate ending in obovato-cylindric subternate now and then septate sporidia. *Fr. Syst. Myc. v. 3. p. 414.*—*Botrytis macrospora*, *Ditm. in St. Deutsch. Fl. t. 50.*

On the ground amongst moss, rotten wood and leaves, &c., also on fungi. Stibington, Hunts.; *Rev. M. J. Berkeley.*—Changing from white to rose-coloured.

3. *D. dendroïdes*, Fr. (*Tree-like Dactylium*); *flocci* aggregate very much branched white, branchlets racemose, sporidia ter-

minal obovato-cylindric septate. *Fr. Syst. Myc. v. 3. p. 414.*  
 —*Botrytis agaricina*, *Lk. Sp. 1. p. 84. Ditm. l. c. t. 51. Grev. Fl. Ed. p. 468. Sc. Crypt. Fl. t. 126. f. 1.*—*Mucor dendroides*, *Bull. t. 504. f. 9.*

On decaying *Agarics*, *Boleti*, *Polypori*, &c. Very common.—The *sporidia* are very rarely septate, at least I have never been able to meet with them in that state; Fries, however, states that when full grown they are so, and that they acquire, moreover, an elongated form.

## 129. SPORÓTRICHUM. *Lk. Sporotrichum.*

*Flocci* erect or cæspitoso-convergent, at length flaccid and decumbent, branched, septate, uniform. *Sporidia* free, simple, at first interwoven with or covered by the flocci, at length scattered over them.—Name,  $\sigma\tau\alpha\sigma\tau\iota\varsigma$ , *seed*,  $\theta\upsilon\tau\iota\varsigma$ , *a hair*.\*

1. *S. nigrum*, *Fr. (black Sporotrichum)*; flocci erect dichotomously virgate black attenuated at their apices, sporidia globose of the same colour. *Fr. Syst. Myc. v. 3. p. 416.*—*Botrytis nigra*, *Lk. Sp. 1. p. 62. Grev. Sc. Crypt. Fl. t. 274.*—*Virgaria nigra*, *Nees, Syst. f. 52.*

On dead trunks, branches, &c. About Edinburgh, *Dr. Greville*. Not frequent.—The Appin station belongs to the following species, which, in addition to the curious but possibly accidental character of having the branches of distinct plants united longitudinally, half a dozen individuals being thus connected together in the most irregular way, is distinguished by the elliptic sporidia.

2. *S. inósculans*, *Berk. (umber-brown Sporotrichum)*; effuse dark umber-brown forming a velvety crust, flocci erect virgate, sporidia minute elliptic.—*Botrytis inosculans*, *Carm. MSS.*—*B. umbrina*, *Klotzsch in Hook. Herb.*

On *Thelephora avellana*. Appin, *Captain Carmichael*.

3. *S. géochorum*, *Desm. (olive-grey Sporotrichum)*; flocci erect very much branched dichotomous virgate olive-grey, sporidia globose minute. *Desm. exs. n. 117. collaps. (fide Fr.). Fr. Syst. Myc. v. 3. p. 416.*—*Bot. Polyspora*, *Ditm. l. c. t. 35. Lk. Sp. 1. p. 56.*

On rotten wood. Stibbington, Hunts. Rockingham Forest, Norths. *Rev. M. J. Berkeley.*—*Sporidia* subglobose, yellowish when viewed by transmitted light.

4. *S. chlorinum*, *Lk. (yellow-green Sporotrichum)*; erect intricate, flocci dense very soft simple and branched, sporidia

\* Nothing can be more difficult than to distinguish between true *Sporotricha* and the *mycelia* of other fungi. Fries gives as a practical rule, that all species with expanded centrifugal flocci are *mycelia*; but that many are equally *mycelia* with erect flocci, which are the more deceptive in consequence of their being accompanied by minute dust-like pellucid particles (*conidia*). Few true species have hitherto been observed in Great Britain, and amongst the myriads of Sporotrichoid forms which occur everywhere, future observers, especially if unpractised, should be very cautious in the admission of species.

heaped together globose yellow-green. *Lk. Sp.* 1. p. 17. *Fr. Syst. Myc.* v. 3. p. 421.

On dry leaves. Botanic Garden, Glasgow. *Klotzsch, in Hook. Herb.*

5. *S. aurantiacum*, Grev. (*orange Sporotrichum*); tufts of a reddish-orange, filaments very slender much entangled, sporidia globose extremely minute. *Grev. in Wern. Tr.* v. 4. p. t. 5. f. 4. *Fl. Ed.* p. 465.

On dung, &c., in damp cellars. Edinburgh, *Dr. Greville*.—I know not whether this is the same as *S. aurantiacum*, Fr. on bark lying on the ground, whose characters I subjoin. "Effused, flocci crisp, lax, sporidia globose, saffron-yellow or tawny."

6. *S. sulphúreum*, Grev. (*sulphur-yellow Sporotrichum*); flocci forming minute tufts at length evanescent, sporidia minute globose heaped together sulphur-yellow. *Grev. Wern. Tr.* l. c. f. 3. *Fl. Ed.* p. 465. *Sc. Crypt. Fl.* t. 108. f. 2. *Fr. Syst. Myc.* v. 3. p. 423.

In cellars on various substances, especially corks. Very common.

7. *S. laxum*, Lk. (*loose white Sporotrichum*); very delicate lax, flocci few white as well as the oval sporidia. *Lk. Sp.* 1. p. 1. *Nees, f.* 45.—*S. minutum*, Grev. *Wern. Tr.* l. c. f. 1. *Fl. Ed.* p. 464. *Sc. Crypt. Fl.* t. 108. f. 1.

On various substances. Very common. Easily recognised by its oval sporidia. *Spor. tenuissimum*, Grev. which is thus characterized, "very white forming a web densely interwoven very fine, sporidia globular scattered very minute" (*Grev. Wern. Tr.* l. c. f. 2.), is probably a *mycelium*. It appears to vanish entirely in drying; at least in authentic specimens I can find no trace of the plant.

### 130. ACREMÓNIUM. *Lk.* Acremonium.

*Flocci* septate, furnished with very slender lateral branchlets, crowned with a vesicular spore.—Name, *ακρεμόνιον*, a branch.

1. *A. verticillátum*, Lk. (*whorled Acremonium*); white, fertile branchlets whorled, spores ovate. *Lk. Sp.* 1. p. 74. *Grev. Sc. Crypt. Fl.* t. 124. f. 2. *Fr. Syst. Myc.* v. 3. p. 425.

On dead wood and trunks of trees. Spring. Edinburgh, *Dr. Greville*.

2. *A. alternátum*, Lk. (*alternate branched Acremonium*); white, fertile branchlets alternate, spores globose. *Ditm. l. c.* t. 2. *Lk. Sp.* 1. p. 74. *Fr. Syst. Myc.* v. 3. p. 425.

On decaying leaves. Autumn. On a seedling *Hibiscus*, in a sunny window. Stibbington, Hunts. *Rev. M. J. Berkeley*.

3. *A. fúscum*, Schm. (*brown Acremonium*); olive-brown, fertile branchlets opposite or alternate, spores globose. *Schmidt, Myc. Hest.* 1. p. 79. t. 2. f. 23. *Lk. Sp.* 1. p. 75. *Grev. Fl. Ed.* p. 468. *Sc. Crypt. Fl.* t. 124. f. 1.

On dead wood and sticks. Autumn. Braid Hermitage, near Edinburgh, *Dr. Greville*.

131. TRICHOThÉCIUM. *Lk.* Trichothecium.

*Sporidia* uniseptate, oval, scattered on the *floci*.—Name,  $\theta\rho\iota\zeta$ , a hair, and  $\theta\rho\alpha\chi\eta$ , a vessel.

1. *T. fuscum*, Fr. (*brown Trichothecium*); *floci* ascending brown, sporidia oblong subdidymous. Fr. *Syst. Myc.* v. 3. p. 426.—*Macrosporium heterosporium*, Grev. Ed. *Phil. Journ.* (*vide Fr.*).

On dead capsules of *Gentiana campestris*, Dr. Greville.—Tufts thin, indeterminate. *Floci* branched, flexuous, intricate; branches divergent, obtuse. *Sporidia* few, 1—2-septate, intermixed with some which are more minute. I suppose there must be some error in the citation of Fries, as I have in vain looked over all the volumes of the Edinburgh *Phil. Journ.*, and can find no notice of the plant. I have therefore copied the information given by Fries.\*

2. *T. roseum*, Lk. (*rose-coloured Trichothecium*); *floci* branched cæspitose-intricate covering the rose-coloured oblong uniseptate sporidia. Grev. *Fl. Ed.* p. 465. *Sc. Crypt. Fl.* t. 172. Fr. *Syst. Myc.* v. 3. p. 427.

On sticks, herbaceous plants, &c. Not uncommon.

134. OÍDIUM. *Lk.* Oidium.

*Sporidia* simple, more or less oval, arising from the terminal moniliform joints of the *floci*.—Name,  $\omega\omicron\rho$ , an egg, and  $\epsilon\iota\delta\epsilon\varsigma$ , resemblance.

1. *O. aureum*, Lk. (*golden Oidium*); tufts dense at first villous white at length golden-yellow, fertile *floci* breaking up into oval joints. Lk. *Sp.* 1. p. 121. Nees, *Syst. f.* 44. Fr. *Syst. Myc.* v. 3. p. 430.—*Torula aurea*, Corda, *l. c.* t. 8. f. 56.—*Mucor quereus*, Sow. *! t.* 378. f. 12.

On rotten wood. In the hollow of the Fairlop oak. Sowerby.—It should seem, if the figures are to be trusted, that this plant varies much in colour. Sowerby's plant agrees exactly in this respect with Nees' figure, being of the beautiful orange-ochre sold under the name of golden chrome. Viewed with a good lens, it has somewhat of the botryoid appearance figured by Sowerby, but on analysis it is most clearly a true *Oidium*.

2. *O. fulvum*, Lk. (*tawny Oidium*); tufts dense at first white and villous at length tawny, fertile *floci* breaking up into oblong-lanceolate joints. Lk. *Sp.* 1. p. 121. Fr. *Syst. Myc.* v. 3. p. 430.—*Torula fulva*, Corda, *l. c.* t. 37.

On very rotten wood. King's Cliffe, Norths. Rev. M. J. Berkeley.—Joints oblongo-lanceolate, the lanceolate form arising from a little truncate subcylindric apiculus.

\* The precise place quoted by Sprengel is "Grev. Edinb. Philos. Journ. 3. p. 64. t. 1."

3. *O. fructigenum*, Schm. (*Fruit Oidium*); tufts subcompact at first villous with white branched flocci then with simple cream-coloured flocci breaking up into oval pellucid joints. *Kunze and Schm. Myc. Hest.* 1. p. 80. t. 2. f. 22. *Lk. Sp.* 1. p. 122. *Fr. Syst. Myc.* v. 1. p. 430. *Desm.!* n. 512.—*Torula fructigena*, *Pers. Obs. Myc.* 1. t. 1. f. 7.

On decayed pears, apples, plums, &c. exposed to wet. Apethorpe, Norths. *Rev. M. J. Berkeley*.—There is a distinct hemispheric black stroma, resembling a *Sclerotium*. Cream-coloured, greyish, or fawn-coloured.

4. *O. monilioides*, Lk. (*necklace Oidium*); tufts loose white or yellowish, flocci simple breaking up into oval joints. *Lk. Sp.* 1. p. 122. *Fr. Syst. Myc.* v. 3. p. 431.—*Acrosporium monilioides*, *Nees, f.* 49. b. *Johnst. Fl. Berw.* 2. p. 211.—*Monilia hyalina*, *Fr. Obs.* 1. p. 210. t. 3. f. 4.—*Torula monilioides*, *Corda, l. c. t.* 34.— $\beta$ . joints globose.—*Acrosporium monilioides*, *Grev.!* *Scot. Crypt. Fl.* t. 73. *Fl. Ed.* p. 469.

On leaves and culms of grasses. Common.—Dr. Greville's plant has the articulations perfectly globose, in specimens before me; exactly as represented in his figure. *Puccinia minuta*, Sow., growing on some *Asterophora*, though quoted here by Fries, is surely different.

5. *O. erysiphoides*, Fr. (*Mildew Oidium*); widely effused indeterminate white, fertile flocci collected here and there into little heaps, entirely breaking up into oval-oblong joints. *Fr. Syst. Myc.* v. 3. p. 430.—*Sporotrichum macrosporum*, *Grev. Fl. Ed.* p. 461.—*Torula botryoides*, *Corda, l. c. t.* 35.

On leaves of various plants, common. Very destructive to peach-trees, cabbages, &c. In the former case its progress is sometimes stopped by powdering the leaves and fruit with sulphur.

6. *O. leucoconium*, Desm. (*small mildew Oidium*); white, forming effused spots, flocci distinct not jointed below, breaking up into oval sporidia. *Desm. exs. n.* 303. *Ann. d. Sc. Nat.* v. 17. t. 6. *Fr. Syst. Myc.* v. 3. p. 432.—*Var. ulmaria*, *Desm. n.* 511.

On leaves of various plants, especially Roses.—*Sporotrichum macrosporum*, *Grev.!* belongs in part to this species, which is perhaps too closely allied to the foregoing, for in that I always find a short inarticulate peduncle. I am inclined to think that Unger's *Cylindrosporium concentricum*, in his work on the Exanthemata of plants, is only a state of the present species. *Farinaria seminaria*, Sow., appears to me to be a small imperfect *Uredo* accompanied by a gummy exusion from the leaves intermixed with either this or the foregoing species.

7. *O. fasciculatum*, Berk. (*fasciculate Oidium*); filaments branched somewhat fasciculate erect forming spreading tufts white at first, at length of a fine glaucous hue.—*Acrosporium fasciculatum*, *Grev. Fl. Ed.* p. 469.

On putrefying oranges. *Dr. Greville*.—"Commencing at first in minute, distinct, pulverulent spots, which speedily become confluent and deep glaucous." *Grev. l. c.*

133. BACTRIDIUM. *Kunze*. Bactridium.

*Flocci* septate, the ultimate septa swelling here and there into oblong deciduous *sporidia*, filled in the centre with a grumous mass, their apices hyaline.—Name, βακτριον, a staff, and εἶδος, resemblance.

1. *B. atrovirens*, Berk. (*dark-green Bactridium*); *flocci* forked pellucid, *sporidia* lanceolate 1—2-septate dark-green.

On the horizontal surface of the stump of a tree which had been sawn asunder. Winter. Apethorpe, Norths. *Rev. M. J. Berkeley*.—Forming a thin, dark, black-green, minutely granulated stratum. *Flocci* white, so slender and transparent as to be seen only with some difficulty. *Sporidia* lanceolate with one or more frequently two septa.

134. SPORENDONÉMA. *Desm*. Sporendonema.

*Sporidia* rather large, disposed in rows within the tubular pellucid *flocci*.—Name, σποροζοός, seed, εἶδος, within, and νήμα, a thread.

1. *S. Cási*, *Desm*. (*red cheese-mould*); *flocci* somewhat branched woven together into pulvinate red tufts.—*Desm. Ann. des Sc. Nat. v. 2. t. 21. Fr. Syst. Myc. v. 3. p. 435. Moug. & Nest. n. 998.—Mucor crustaceus, Bull. t. 504. f. 2.—Mucor caseus, With. v. 4. p. 371.—Sepedonium caseorum, Lk. Sp. 1. p. 29.—Trichia polymorpha, Sow. (in part).*

On cheese. Not very general, at least I have had great difficulty in procuring specimens.—*Sporidia* globose in my specimens, not elliptic as figured by Desmazières.

2. *S. muscæ*, Fr. (*Fly mould*); *flocci* simple glued together into somewhat lobed white tufts. *Fr. Syst. Myc. v. 3. p. 435.*

On flies, adhering to leaves, ceilings, &c. Autumn. Extremely common.—This is the white substance, noticed in *Loudon's Mag. Nat. Hist. v. 7. p. 532*. It makes its appearance in little tufts, oozing out as it were between the plates of the abdomen.

TRIBE 5. SEPEDONIEI. *Mycelium* floccose, without any distinct sporidiferous filaments. *Sporidia* heaped together, lying upon and in general springing from the matrix.

135. SEPEDONIUM. *Lk*. Sepedonium.

*Sporidia* globose, pellucid, filled with *sporidiola*, at first covered by the *flocci* of the fleecy *mycelium*.—Name, σηπιδιον, putrescence.

1. *S. chryso-spérnum*, Lk. (*yellow Sepedonium*); *flocci* fleecy dense white, *sporidia* golden-yellow not appendiculated. *Lk. Sp. 1. p. 29. Grev. Fl. Ed. p. 466. Sc. Crypt. Fl. t. 198. Fr. Syst. Myc. v. 3. p. 438.—Reticularia chryso-sperma, Bull.*



t. 476. f. 4.—*Mucor chrysospermus*, Bull. t. 504. f. 1. Sow. t. 378. f. 13. With. v. 4. p. 370. Pert. v. 2 & 3. n. 1121.

On decaying fungi. Extremely common. Frequently penetrating the whole fungus and converting it into yellow dust.—*Sporidia* globose, certainly echinulate, at least when dry, as observed by Klotzsch in Hook. Herb.

2. *S. roseum*, Fr. (rose-coloured *Scpedonium*); flocci fleecy white, sporidia red appendiculated. Fr. Syst. Myc. v. 3. p. 438. *Mycogone rosea*, Lk. Sp. 1. p. 29.

On decaying fungi. On *Agaricus vellerens*. Appin, Captain Carmichael. Inverary, Klotzsch in Hook. Herb.—More superficial than the last. *Sporidia* larger, globose, with a broad pellucid border and a thick blunt appendage. This should perhaps form a distinct genus, the *sporidia* in the young state being apparently attached by the peduncle to the flocci. I have however only seen dry specimens.

### 136. FUSISPORIUM. Lk. Fusisporium.

*Sporidia* fusiform, pellucid, glued together into heaps resting on the matrix. *Septa* none or evanescent.—Name, *fusus*, a spindle, and  $\sigma\tau\omega\sigma\zeta$ , seed.

1. *F. atrovirens*, Berk. (dark-green *Fusisporium*); flocci effused white, sporidia at first greyish-green then green-black strongly curved.

On onions. Summer. King's Cliffe, Norths. Rev. M. J. Berkeley. —*Sporidia* forming about the third of a circle. Originating in little dot-like spots with radiating flocci crowned with a gelatinous greyish mass; these at length unite and the whole of the centre is occupied by the sporidia, the border still increasing and quite fleecy if meeting with any impediment; at length the whole is green-black and the border obliterated. This is at least one cause of the mildew which is so destructive to onions, just before they arrive at perfection.

2. *F. aurantiacum*, Lk. (orange *Fusisporium*); flocci fleecy white at length evanescent, sporidia conglutinate slender slightly curved. Lk. Sp. 1. p. 30. Nees, Syst. f. 40. B. Fr. Syst. Myc. v. 3. p. 445. Dism! exs. n. 664. (on bark.)

On decayed cucumbers, gourds, &c. Apethorpe, Norths. Rev. M. J. Berkeley.—At first clothed with fleecy white branched flocci, which spread beyond the mass of the sporidia, and at length vanish, leaving a tremelloid stratum. *Sporidia* septate, *septa* evanescent. It does not always commence in downy patches, but sometimes in little dot-like gelatinous masses, which at length become confluent, without any mycelium.

3. *F. flavo-virens*, Fr. (yellow-green *Fusisporium*); spot-like flocci very delicate evanescent, sporidia aggregate fusiform straight yellow-green. Fr. Syst. Myc. v. 3. p. 446.—*Fusidium flavo-virens*, Ditm. l. c. t. 18. Lk. Sp. 2. p. 97. Græv. Fl. Ed. p. 464. Sc. Crypt. Fl. t. 102. f. 2.

On fallen leaves, wood, fungi, &c. Not uncommon.—Sometimes of

a sulphur-yellow, in which case it appears to be the plant referred by Captain Carmichael to *F. sulphureum*, Lk.

4. *F. griseum*, Fr. (*grey Fusisporium*); spot-like, flocci very delicate evanescent, sporidia fusiform straight greyish-white. *Fr. Syst. Myc. v. 3. p. 447.*—*Fusidium griseum*, Lk. 2. p. 96. *Ditm. l. c. t. 17.* *Grev. Fl. Ed. p. 464.* *Sc. Crypt. Fl. t. 102. f. 1.*

On fallen leaves. Extremely common.

5. *F. Buxi*, Fr. (*Box-leaf Fusisporium*); heaps small scattered rose-coloured at first surrounded by erect flocci, sporidia fusiform extremely minute becoming paler by age. *Fr. Syst. Myc. v. 3. p. 447.*—*Tubercularia Buxi* (*young plant*). *Dec. Fl. Fr. 6. p. 110.*—*Fusidium Buxi*, (*old plant*). *Lk. Sp. 2. p. 97.*

On dry Box-leaves. Stibbington, Hunts. *Rev. M. J. Berkeley.*—I have found this plant in the young state only, in which it is a beautiful, though minute object, and depend therefore entirely on Fries for his correctness, as to the change which takes place in the *sporidia*, with more advanced growth.

### 137. EPÓCHNIUM. Lk. Epochnium.

*Sporidia* heaped together, springing from the matrix and adnate with it, oblong, apiculate, septate. *Flocci* of the *mycelium* effused, intricate, mucedinous; distinct sporidiferous *flocci* none.—Name, *ἐπι*, upon, and *εγγύρα*, a wild pear tree.

1. *E. fungorum*, Fr. (*black-green Epochnium*); flocci effused very delicate, sporidia pellucid dark-green. *Fr. Syst. Myc. v. 3. p. 449.*—*Sporidermium atrum*, *Grev. Sc. Crypt. Fl. t. 194.*—*Sporidesmium atrum*, *Desm. ! exs. n. 708.*

On *Thelephoræ*. Very common.—Forming a thin black-green stratum, which overruns various *Thelephoræ*. *Mycelium* pellucid, black according to Fries, branched, the apices of the short lateral branchlets swelling into sporidia, which are at first uniseptate then biseptate; they appear then to fall off and are oblong and subcylindric, obtuse at either extremity, at length a pedicelliform apiculus is formed, and the septa are 3—5. The plant of Dr. Greville is certainly the same as what I have in view, as I have ascertained by an authentic specimen from Captain Carmichael, who referred it to *Sporidesmium*, and I conceive by so doing misled Dr. Greville, who figured the specimens with Link's analysis unconsciously impressed upon him. Specimens sent by Dr. Greville to Fries, equally receded from the true *Sporidesmium*. I am not at all convinced that the plant is rightly referred by Fries to the present genus, for the same reason that *Arthrimum* is excluded; but as I am not acquainted with the other species I have given the generic character exactly after Fries, and leave the matter for future investigation. The *sporidia* resemble much those of *Corynea*. It is to be observed that the early structure of the plant can only be seen towards the extreme edge of the patches.

### 138. PSILÓNIA. Fr. Pselonia.

*Sporidia* simple, pellucid, not glued together, at first covered

by the converging twisted *flocci* of the *mycelium*.\*—Name,  $\psi\lambda\omicron\zeta$ , a spot.

1. *P. gilva*, (*red-grey Pilonia*); tufts subrotund compact reddish-grey inclining to brown, *flocci* intricate twisted mostly simple, covering the variously shaped sporidia. *Fr. Syst. Myc. v. 3. p. 451.*—*Conoplea gilva*, *Pers. Myc. Eur. 1. p. 12.*

Of the flat surface of a felled oak. Southwick, Norths. *Rev. M. J. Berkeley.*—Masses 1—2 lines broad, subinnate; *flocci* very fine, curiously twisted together, the external surface finely tomentose, from their free apices. *Sporidia*, in my specimens, as in those described by Sommerfelt, fusiform, though sometimes globose or oval. They are often collected about the apices of the filaments, being, I suppose, washed up by rain.

SUBORDER IV. CONIOMYCETES ( $\kappa\omicron\mu\zeta$ , *dust*, and  $\mu\omicron\zeta\eta\zeta$ , a *fungus*.)—*Sporidia* produced beneath the epidermis of plants or within the matrix, naked, (without any hymenium, perithecium, peridium, asci, or true sporidiferous *flocci*).†

\* I take this opportunity of describing two or three productions, which are referrible to *Psilonia*, when defined so as to include *P. Buzi*. but not as limited above. The three first have the habit of that plant and of *Tubercularia ciliata*, Alb. & Schwein. (*Volutella*, Fr.), but they are not erumpent, and therefore cannot be placed in the last named genus. It is possible they may be imperfect *Fusisporia*, but they are too interesting to pass by entirely unnoticed. I shall refer them, then, but only provisionally, to *Psilonia*.

a. *P. setosa*, Berk. (*bristly Pilonia*); quite sessile white, mass of sporidia surrounded by and mixed with erect elongated bristles.—*Æ. setosa*, *Grev. Sc. Crypt. Fl. t. 268. f. 2.* *Fr. Syst. Myc. v. 3. p. 220.*

On wood, stems of herbaceous plants, &c. Appin. *Capt. Carmichael.*—This certainly is not a true *Æverita*, as defined by Fries; indeed the mass of sporidia is not beset with bristles, but the bristles spring from the base and penetrate the whole mass. *Sporidia* globose and fusiform.

b. *P. rosea*, Berk. (*rose-coloured Pilonia*); quite sessile whitish or bright rose-coloured, mass of sporidia surrounded by and mixed with erect elongated bristles.

On Potatoes. Winter and Spring. Apethorpe, King's Cliffe, Norths. *Rev. M. J. Berkeley.*—*Sporidia* elliptic or oblong, larger and slightly curved. Bristles sharp-pointed, septate. There is a sort of stroma, probably formed from abortive bristles.

c. *P. hyacinthorum*, Berk. (*white stipitate Pilonia*); very minute white very shortly but distinctly stipitate, mass of sporidia surrounded by bristles.

On hyacinths in glasses nourished by water only. King's Cliffe, Norths. *Rev. M. J. Berkeley.*

d. *P. densa*, Berk. (*condensed Pilonia*); sessile hemispherical, *flocci* condensed dichotomous, sporidia at length long fusiform obscurely septate.

On Potatoes when quite soft and juicy within. Apethorpe, Norths. *Rev. M. J. Berkeley.*—This plant, though at first sight very different, appears when compared with *P. rosea* to be allied, the stroma being more developed and consisting distinctly of dichotomous erect *flocci*. The masses are  $1\frac{1}{2}$  line broad, having much the habit of *Periderma*, brownish at the base within, then dirty-white, outer stratum of sporidia pure white; this with age is reddish-brown and the sporidia, which at first were oblong, are much elongated, slightly curved, more acute and obscurely septate.

† In a few species there is a sort of receptacle, which however is innate and so differs from any thing analogous in *Hypomyces*, and in the genus *Æcidium*

TRIBE I. TUBERCULARINI. *Sporidia glued together into an erumpent disc.*

139. TUBERCULÁRIA. *Tode.* Tubercularia.

*Sporidia* simple, subglobose, closely packed upon an erumpent distinct more or less stem-like disc.—Name from the tuberculate form of the species.

1. *T. vulgáris*, Tode, (*common Tubercularia*); erumpent, stratum of sporidia red, margin naked. *Tode, Fung. Meck.* 1. p. 18. f. 30. *Moug. & Nest.!* n. 84. *Greav. Fl. Ed.* p. 463. *Fr. Syst. Myc.* v. 3. p. 464.—*Clavaria coccinea*, *Sow. t.* 294. *Purt. v. 2 & 3. n.* 1068.—*Sphæria tremelloides*, *With. v. 4. p.* 359.—*b. minor*.—*T. confluens*, *Moug. & Nest.!* n. 576. *Baxt.!* *Ox. n.* 100.—*T. discoidea*, *Fr.!* *Scler. Suec. n.* 256.

On decayed sticks and branches. Extremely common.—Varying greatly in the length of the receptacle, which is sometimes quite obsolete. I have seen it on recently felled decorticated trees exactly in the state mentioned by Fries, with the habit of a *Dacrymyces* and very highly coloured, the total absence of the stem arising probably from the hardness of the matrix. *b. minor* differs only in size and is common on *Robinia Pseudacacia*. *T. discoidea* and *T. confluens* are mere forms.

2. *T. granuláta*, Pers. (*granulated Tubercularia*); stratum of sporidia rugose dirty-red at length brown, margin naked. *Pers. Syn. p.* 113. *Scler. Suec.!* n. 257. *Greav. Sc. Crypt. Fl. t.* 187. *Fr. Syst. Myc. v. 3. p.* 465.

On dead branches of various trees. Not common. Edinburgh, *Dr. Greville*, Berwick, *Dr. Johnston*.—*Sporidia* subfusiform. Fries now considers his *T. liceoides*, which has been found in Durham by *Dr. Greville*, a form of the present species.

3. *T. nigricans*, Lk. (*blackened Tubercularia*); stratum of sporidia even red at length black, margin naked. *Lk. Sp. 2. p.* 102. *Fr. Syst. Myc. v. 3. p.* 466.—*Trem. nigricans*, *Bull. t.* 455. f. 1.

On trunks of trees. King's Cliffe, Norths. *Rev. M. J. Berkeley*.—This is probably only a variety of *T. vulgáris*.

4. *T. álvida*, Berk. (*dirty-white Tubercularia*); receptacle hard at length black simple or confluent within of the same colour, stratum of sporidia dirty-white.

On oak branches; left upon the wood when the bark falls off. Oct. Cotterstock, Norths. *Rev. M. J. Berkeley*.—When dry it has a peculiar semitransparent horny appearance.

140. FUSÁRIUM. *Lk.* Fusarium.

*Sporidia* simple, at length fusiform, acuminate, somewhat

there is a distinct sac of a cellular structure, the nature of which is very imperfectly understood.

curved, glued together into an innato-erumpent immarginate discoid stratum.—Name, *fuscus*, a spindle.

1. *F. tremelloides*, Grev. (*Tremella-like Fusarium*); hemispherico-depressed soft orange-red, stroma not distinct, sporidia very long pellucid curved. *Grev. Sc. Crypt. Fl. t. 20. Bact. ! Ox. n. 50. Fr. Syst. Myc. v. 3. p. 470.*—*Tremella Urticæ*, *Pers. Syn. p. 628.*—*Dacrymyces Urticæ*, *Fr. Syst. Myc. v. 2. p. 231. Moug. & Nest. ! n. 396.*

On decaying nettle-stems. Very common. There is a species on *Hypna* in the Appin collection, which I cannot distinguish; though, possibly, in recent individuals there might be sufficient characters.

2. *F. roseum*, Lk. (*rose-coloured Fusarium*); hemispherical rather firm rose-coloured, stroma convex, sporidia pale nearly straight. *Lk. Sp. 2. p. 105. Fr. Syst. Myc. v. 3. p. 471.*

On the stems of various plants, as Beans, Tulips, Jerusalem Artichokes, &c. Apethorpe, Norths. *Rev. M. J. Berkeley.*—Forming little gregarious red dots.

#### 141. CORÝNEUM. *Nees.* Coryneum.

*Sporidia* fusiform (or clavate), multiseptate, adnate by a pedicel, densely and vertically crowded into a disc, at first glued together.—Name, *κορυνη*, a club.

1. *C. pulvinatum*, Schm. (*pulvinate Coryneum*); disc convex, sporidia oval. *Myc. Hef. 1. t. 2. f. 18. Moug. & Nest. ! n. 574.*—*C. umbonatum (pulvinatum)*, *Fr. Syst. Myc. v. 3. p. 474.*

On twigs of Sycamore. Oundle, Norths. *Rev. M. J. Berkeley.*

2. *C. macrospórium*, Berk. (*long-seeded Coryneum*); sporidia fusiform 7—12-septate pellucid above greatly elongated and curved back.

On beech twigs. Apethorpe, Norths. *Rev. M. J. Berkeley.*—Disc slightly depressed, articulations of the sporidia with a central paler spot. This very curious species approaches somewhat in structure to *C. marginatum*.

TRIBE 2. STILBOSPOREI. *Sporidia* glued together into a nucleus, without any perithecium, under the cuticle of plants, at length bursting forth together with the gelatine or fec.

#### 142. NEMÁSPORA. *Fr.* Nemaspora.

*Sporidia* simple, coloured, collected into a cellular nucleus, at length flowing forth together with the gelatine in the form of tendrils.—Name, *νημα*, a thread, and *σποροσ*, seed.

1. *N. crócea*, Pers. (*saffron-yellow Nemaspora*); nucleus pallid, sporidia (at length) curved very slender orange. *Pers. Syn. p. 109. Scler. Succ. ! n. 107. Moug. & Nest. ! n. 177.* (in the specimens before me sporidiferous). *Desm. Ann. des Sc. Nat. v. 19. t. 5. f. 3.* (conidiferous).—*Sphacria profusa*, *Sow. ! t.*

377. (conidiferous).—*Libertella faginea*, *Desm. l. c. f. 5.* (sporidiferous).

On trunks of beech-trees. Common.—In an imperfect state it is a mere gelatinous mass of minute globose *conidia*; the perfect *sporidia* are strongly curved.

2. *N. Rósæ*, *Desm. (semicircular-seeded Næmaspora)*; sporidia curved into a semicircle very slender orange. *Fr. Syst. Myc. v. 3. p. 479.*—*Libertella Rosæ*, *Desm. l. c. f. 6.*—*b. Syringæ*. heaps round.

b. On branches of *Syringa vulgaris*. Apethorpe, Norths. *Rev. M. J. Berkeley.*—There seems to be no essential difference between the plant on the Lilac, and that on Roses. The sporidia are very delicate, semicircular, and flaccid, so as to resemble minute worms, of an orange-flesh colour.

#### 143. SEPTÓRIA. *Fr.* Septoria.

*Sporidia* fusiform, septate, originating beneath the cuticle, oozing forth.—Name, *septum*, a *partition*.

1. *S. Ulmi*, *Kunze, (Elm-leaf Septoria)*; spots brown, heaps of sporidia small scattered, cirrhi dirty-white, sporidia nearly straight subquadrisepate. *Kunze, Myc. Heft. 2. p. 107. Lk. Sp. 2. p. 87. Grev. Sc. Crypt. Fl. t. 112. Fr. El. 2. p. 118.*

On elm-leaves. Common.—My reasons for following Desmazieres in placing *Septoria* in the present situation have been stated in a former portion of this volume. The name has been altered from *Septaria* to *Septoria*, as the former appellation has been used for a genus of *Gasteropodous Mollusca*.

2. *S. Oxyacanthæ*, *Kunze, (Hawthorn Septoria)*; spots purple, tendrils yellow, sporidia very long 8—12-septate curved. *Kunze, Myc. Heft. 2. p. 109. Lk. Sp. 2. p. 88.*

On living hawthorn leaves. Not uncommon.

3. *S. Ægopódii*, *Desm. (Gout-weed Septoria)*; epiphyllous, spots pale, pustules globular black very visible on the under surface, sporidia long curved. *Desm. ! n. 616.*

On leaves of *Ægopodium Podagraria*. About Berwick, *Dr. Johnston*, in whose plant (communicated as a doubtful state of *Sphaeria Ægopodii*), the *sporidia* are discharged in distinct tendrils.

#### 144. STILBÓSPORA. *Pers.* Stilbospora.

*Sporidia* septate (septa sometimes evanescent), filled with *sporidiola*, glued together into a nucleus without any proper *perithecium*, at length bursting forth and free.—Name, *στιλβω*, to *shine*, and *σπороς*, *seed*.

1. *S. asterospërma*, *Pers. (star-seeded Stilbospora)*; stroma floccoso-grumous, sporidia stellate. *Pers. Syn. p. 96. Hoffm. Fl. Germ. 2. t. 13. f. 3. Fr. Syst. Myc. v. 3. p. 484.*—*Asterosporium Hoffmanni*, *Moug. & Nest. n. 669.*

On twigs of beech. Extremely common.—Easily known by its stellate pointed conical *sporidia*.

2. *S. ovata*, Pers. (*ovate Stilbospora*); stroma scarcely any, *sporidia* ovate triseptate, septa sometimes obsolete. *Pers. Obs. l. t. 2. f. 2.* *Greav. Sc. Cr. Fl. t. 212. f. 2.* *Fr. Syst. Myc. v. 3. p. 485.*—*Stilbospora pyriformis*, *Hoffm. Fl. Germ. 2. t. 13. f. 2.* *Fr. Scler. Succ. n. 214.*

On sticks. About Edinburgh, *Dr. Greville*. Oundle, Norths. *Rev. M. J. Berkeley*.—My specimens accord exactly with those published by Fries, being ovate or, more correctly speaking, obovate, 3-septate, minutely truncate at the base and sometimes elongated, as if in an early stage of growth they were pedicellate. *Dr. Greville's* plant has no septa, and he informs us that the *sporidia* are shorter than in that of Fries.

3. *S. magna*, Berk. (*large Stilbospora*); *sporidia* oval or sub-ovate not septate.—*Nemaspora magna*, *Greav. Sc. Crypt. Fl. t. 349.*—*N. carpinea*, *Baxt. n. 76.*—*Sphaeria Carpinii*, *Sow. t. 376.* *Purt. v. 3. p. 286.*

On trunks of hornbeam and walnut. Not uncommon. Sometimes covering the whole trunk.—This species comes nearest to *S. ovata*, from which, however, it is very different. I refer it to the present genus, rather than to *Melanconium*, on account of its rather large, decidedly ovate *sporidia*. As a species, it is very distinct and not a mere form of various species, with the *sporidia* oozing out in long tendrils, in consequence of some particular conditions of moisture.

#### 145. DIDYMOSPÓRIUM. *Nees*. Didymosporium.

*Sporidia* miseptate, glued together into a nucleus, without any *perithecium*, at length bursting forth and free.—Name, διδύμουρις, double, and σπόριος, seed.

1. *D. profusum*, *Greav.* (*profuse Didymosporium*); stroma none, *sporidia* oblong miseptate very minute black. *Greav. Syn. Gen. & Sp. p. 3.* *Fr. Syst. Myc. v. 3. p. 489.*—*Stilbospora profusa*, *Greav. Sc. Crypt. Fl. t. 212. f. 1.*

On branches of sycamore. About Edinburgh, *Dr. Greville*. Appleton, *Captain Carmichael*.

2. *D. elevatum*, *Lk.* (*raised Didymosporium*); stroma sub-conic pallid, *sporidia* oval. *Lk. Sp. 2. p. 94.* *Fr. Syst. Myc. v. 3. p. 486.*—*D. betulinum*, *Greav. Scot. Crypt. Fl. t. 273.*—*Melanconium betulinum*, *Mong. & Nest. n. 670.* *Scler. Succ. n. 299.*

On twigs of birch, common.

#### 146. MELANCÓNÍUM. *Lk.* Melanconium.

*Sporidia* globose (or subglobose) simple, glued together into a nucleus without any *perithecium*, at length oozing forth and free.—Name, μελάριον, black, and κονίς, dust.

1. *M. sphaeroidéum*, Lk. (*sphaeroid Melanconium*); stroma elevated latent, sporidia compact globose (or subglobose) very small pellucid. Lk. *Sp.* 2. p. 92.—*Stilbospora microsperma*, *Moug. & Nest.!* n. 384.

On branches. Appin. *Captain Carmichael*.—The sporidia, in *Captain Carmichael's* specimens, like those of *Mougeot* and *Nestler*, are not truly globose but inclined to oval. I have however, seen specimens from *Mougeot*, marked *Stil. microsperma*, *Pers.* which are identical with my *Stilbospora magna*.

TRIBE 3. SPORIDESMIEI. (σποροειδής, *seed*, and δεσμωδής, a *chain*.)  
*Sporidia chained together into flocci, at length free.*

147. ARÉGMA. *Fr.* *Aregma*.

*Sporidia moniliformi-connate*, opaque, with very long free pellucid peduncles, at length separating from each other, containing a single globular mass.—Name, α, *without*, and γηγμα, an *opening*, from the *sporidia* separating entire.

1. *A. bulbósum*, *Fr.* (*Bramble Aregma*); sporidia about 4, the terminal one sterile apiculate, peduncles incrassated and bulbous at the base. *Fr. Syst. Myc.* v. 3. p. 497.—*Phragmidium incrassatum*, var. 2. *bulbosum*, Lk. *Sp.* 2. p. 85.—*Puccinia Rubi*, *Sow. t.* 400. f. 9. *Moug. & Nest.!* n. 193. *Grev. Fl. Ed.* p. 428. *Baxt.!* 33.—*P. mucronata*, β. *Pers. Syn.* p. 230.—*P. Rosæ*, var. 3. *Purt. v.* 3. p. 301.

On the under side of the leaves of *Rubus fruticosus* and its allies. Extremely common.—Always, I believe, like the other epiphyllous species, springing from an *Uredo*.

2. *A. grácile*, *Grev.* (*slender Aregma*); sporidia 7—9, the terminal one sterile apiculate, stem slender incrassated at the base.—*Puccinia gracilis*, *Grev. Fl. Ed.* p. 428. *Baxt.!* n. 39.—*P. Rubi-Idæi*, *Dec. Fr. v.* 6. p. 54.

On the under side of Raspberry leaves. About Edinburgh, *Dr. Greville*. Appin, *Captain Carmichael*. Rumbling Brigg, *Dr. Hooker*. Oxford, *Baxter*.

3. *A. mucronátum*, *Fr.* (*Rose-leaf Aregma*); sporidia 5—7, terminal one sterile mucronate, peduncles incrassated below fusiform. *Fr. Syst. Myc.* v. 3. p. 497.—*Phragmidium incrassatum*, var. 1. Lk. *Sp.* 2. p. 85.—*Puccinia mucronata*, α. *Pers. l. c.*—*P. Rosæ*, *Moug. & Nest.!* n. 293. *Grev. Sc. Crypt. Fl. t.* 15. *Fl. Ed.* p. 428. *Purt. v.* 3. t. 28. n. 1551. *Baxt.!* n. 37.

On the leaves of various Roses. Autumn. Frequent.

4. *A. acuminátum*, *Fr.* (*Burnet Aregma*); terminal sporidium sterile acuminate, peduncles equal. *Fr. Ob.* 1. p. 226. *Syst. Myc.* v. 3. p. 497.—*Phragmidium intermedium*, Lk. *Sp.* 2. p. 85.

On *Poterium Sanguisorba*, Isle of Wight. July. *Rev. M. J. Berkeley*.



5. *A. obtusatum*, Fr. (*obtuse Aregma*); terminal sporidium sterile obtuse, peduncles equal. *Fr. Syst. Myc. v. 3. p. 497.*—*Phragmidium obtusum*, Lk. *Sp. 2. p. 84.*—*Puccinia Potentillæ*, Pers. *Syn. p. 229.* *Grev. Sc. Crypt. Fl. t. 37. Fl. Ed. p. 428.*—*P. Fragariæ*, *Purt. ! v. 3. n. 1554.*

On *Potentilla Fragariastrum*, &c. Rosslyn, *Dr. Greville.*—It has been found also by Mr. Purton.

#### 148. TÓRULA. Pers. Torula.

*Sporidia* chained together into moniliform erect flocci, without any common peduncle, filled within with a grumous mass.—Name, *torus*, a *twisted cord*.

1. *T. antennáta*, Pers. (*antennæ-form Torula*); sporidia oval obtuse at either end, flocci aggregate. *Pers. Myc. Eur. 1. p. 21.* *Corda, l. c. t. 39.* *Fr. Syst. Myc. v. 3. p. 501.*—*Monilia antennata*, *Grev. Sc. Crypt. Fl. t. 245.*

On wood and sticks. Not uncommon.—*Dr. Greville's* figure is excellent, the obtuseness of the sporidia is much exaggerated in that of *Corda*. The *sporidia* have 1—3 transverse bands; I find, in general, three.

2. *T. monilioides*, *Cord. (necklace-like Torula)*; sporidia oblong-elliptic, flocci subeffuse erect aggregate simple jet-black. *Corda, l. c. t. 38.*

On sticks. *Appin, Captain Carmichael.*—*Klotzsch* (in *Hook. Herb.*) has drawn this species with two *sporidiola*; I have, however, in vain sought for such an appearance.

3. *T. ovalispora*, *Berk. (smaller antennæ-form Torula)*; sporidia broadly oval pale minute, flocci densely aggregate.

On wood. Very common, often accompanied by some *Peziza*.—*Sporidia* many times shorter than in *T. antennata* and much paler, under the microscope of a broader form and not distinctly truncate. It forms little flat roundish, at length confluent patches, of a brownish-black hue with sometimes a glaucous bloom externally. I cannot help suspecting that this and not the first species is the *Dematium antennæ-forme* of *Hoffmann*.

4. *T. Eriophori*, *Berk. (Cotton-rush Torula)*; sporidia minute elliptic rather pointed distinct, flocci crowded into a round minute tubercle.

On dead leaves of *Eriophorum angustifolium*. *King's Cliffe, Norths. Rev. M. J. Berkeley.*—Habit exactly that of *Arthrimum Caricis*.

5. *T. herbárum*, *Lk. (green-black Torula)*; sporidia globose green then black, flocci aggregate not strongly moniliform. *Pers. Myc. Eur. 1. p. 121.* *Lk. Sp. 1. p. 128.* *Grev. Fl. Ed. p. 469.* *Cord. l. c. t. 48.*

On stems of herbaceous plants, especially *Umbelliferae*.—Forming flat sooty patches, variegated with olive-green; flocci branched.

6. *T. cylíndrica*, *Berk. (even-threaded Torula)*; effused, threads not moniliform. sporidia fasciated.

On sticks. Appin, *Captain Carmichael*. Norths. *Rev. M. J. Berkeley*.—*Sporidia* united four together, into short equal cylindrical flocci, which resemble in some states those of *Arthrimum*. It appears like a thin black wash on the bark of sticks. This species recedes from the usual characters of *Torula*, and will hereafter probably constitute a distinct genus.

#### 149. SPILOCÆA. Fr. *Spilocæa*.

*Sporidia* simple, closely adnate to the matrix and to each other, at first covered by the epidermis—Name, σπιλωσις, a spot.

1. *S. Pómi*, Fr. (*Apple Spilocæa*); epidermis breaking up into fragments, spots effuse contiguous. *Lk. Sp. 2. p. 86. Fr. Syst. Myc. v. 3. p. 504.*

On apples. Aug. King's Cliffe, Norths. *Rev. M. J. Berkeley*.—*Sporidia* pyriform, sometimes strongly constricted. I have not seen Fries' specimen in *Scler. Suec.*, but I have no doubt that my plant is the same with his.

TRIBE 4. HYPODERMII. (υπο, beneath, and δερμα, the cuticle.)  
*Sporidia* free or stipitate, springing from beneath the cuticle of living plants.\*

\* I cannot adopt the character of Fries, which begins, "no proper vegetation, *sporidia* arising from an anamorphosis of the cells of living vegetables." If this were really the case, however interesting in a physiological point of view, these productions ought to be excluded entirely from the list of Fungi, on the same principle by which the exclusion of *Erineum* is justified. The evidence, however, to be collected from observations instituted with an express view to the point, appears to me to be in favour of their being considered as true plants. As the matter is of some interest, it may not be out of place to lay some portion of such evidence before our readers. It has already been stated, in the Introduction, that the experiments of Bauer and others, and the practice of steeping seed-corn, tend to show that they are propagated by *sporidia*, and if so that they are true Fungi.

Brougniart, some years since, instituted an inquiry into the nature of *Uredo segetum*, Pers. which is published in *Ann. des Sc. Nat. v. 2. p. 171*. He found the part attacked to be not the seed but the peduncle or axis of the spikelet, the essential parts of the flower being raised up by it, and reduced to a rudimentary state. The axis is formed of elongated cellular tissue, consisting of juxtaposed cellules without perceptible intercellular spaces and of fibro-vascular bundles, composed of greatly elongated cells of false tracheæ and tracheæ.

In the fleshy mass occupied by the *Uredo*, there is nothing analogous, at whatever epoch it is observed, but it consists entirely of uniform tissue, presenting large almost quadrilateral cavities, separated by walls, composed of one or two layers of very small cells, filled with a compact homogeneous mass of very minute granules, perfectly spherical and equal, slightly adhering to one another, and at first green, afterwards free or simply conglomerate towards the centre of each mass and of a pale rufous hue; at length the cellular walls disappear, the globules become completely insulated, and the whole mass is changed into a heap of powder, consisting of very regular globules, perfectly alike, black, and just like the reproductive bodies of other fungi. From which he concludes that the production is a real fungus and not a mere modification of the tissue.

This is only an examination of a single species, and perhaps the inference of Brougniart may not be considered by all equally conclusive; for though it is clear that the globules are not modifications of the cells, it is not equally clear that they are not modifications of the granules contained in the cells, the ordinary structure of the axis being deranged; for in *U. olivacea*, Dec. there

## 150. GYMNOSPORANGIUM. Dec. Gymnosporangium.

*Sporidia* uniseptate, stalked, growing from the eruptive stroma which is formed from the matrix, and agglutinated by gelatine into an irregular naked expanded mass.—Name, γυμνος, naked, and *sporangium*.

1. *G. Juniperi*, Lk. (common Juniper *Gymnosporangium*). Nees, f. 23. a. Lk. Sp. 2. p. 127. Fr. Syst. Myc. v. 3. p. 506.—*Tremella juniperina*, Linn. Succ. p. 428.

are distinct traces of the fibro-vascular bundles, and if I mistake not sometimes even in *U. soletum*. A work, however, has been lately published, containing an account of very extended observations on numerous species, by Unger, entitled "Die Exantheme der Pflanzen und Einige mit diesen verwandte Krankheiten der Gewächse," Vienne, 1823, in which an attempt is made to show that the Hypodermous Fungi are merely cutaneous disorders of vegetables, analogous to those of animals, arising from a derangement of the respiratory functions. Extracts of this are given in *Ann. des Sc. Nat. n. s. v. 2. p. 193*, and it is to these I am indebted for my knowledge of the work, as I have not met with the book itself. His reasoning appears to me most inconclusive, and the main result of his investigations is, that they are not modifications of cellular tissue, and that they almost always originate at the stomata, the organs which serve for the gaseous and vaporous exhalations of plants. The intercellular spaces, according to M. Unger, are gorged with the superabundant juices, which coagulate; one of these either immediately beneath the epidermis, or the first, second or third layer of cells becomes larger than the rest, and the mass with which it is replete, is resolved into grains, which originate from the centre towards the circumference, producing in fact, an *Uredo*; sometimes the mass acquires an enveloping cellular membrane, and then is resolved as before from the centre to the circumference into granules, such productions being what authors refer to *Æcidium*; the origin of this pseudo-peridium is obscure, but as, if M. Unger be correct, it is perfected before the granules, it is most probably given out from the surrounding cellular tissue, in consequence, as he expresses it, of a reaction of the mass of coagulated juice against their walls; and it is not to be considered a single stratum of sporidia soldered together, as has sometimes been supposed. Its nature has not however been at present sufficiently investigated. It frequently is much elongated above; and it would be interesting to observe the change which takes place in the form and size of its component cells during the progress of its development. It is at any rate quite clear that it is not a mere modification of the *cuticle* alone; whatever relation it may bear to the subjacent cells of the parenchyme. In a third case again, the granules are stipitate and sometimes much elongated and septate, forming *Puccinia*, &c. In an early stage it is probable that the greater portion of *Uredines* have the granules stipitate; some are so, and those very distinct from *Puccinia*, as well as others which are doubtful, even after the epidermis is ruptured. There is nothing to show that such productions are a mere organization of this copious supply of nutritious juices; analogy is decidedly against such a notion; and indeed as it appears to me, the conclusion to be drawn by any mind not prepossessed with a predilection for doctrines kindred to that of equivocal generation, is simply that in the present state of knowledge the *Hypodermii* are as much entitled to rank amongst Fungi as any other species. Any conclusion to the contrary is at present mere assertion. Indeed too much is proved by M. Unger's investigations, for, according to his own testimony, certain *Mucedines* spring from *Stomata*, as well as what he considers mere eruptions, and the assertion that the one arise from putrefaction and the other from a sort of fermentation, is little more than stating the fact that the one spring generally from dead and the other from living vegetables. Whatever may be thought, however, of the views entertained by M. Unger, the notion of Fries that such productions are merely altered cellular tissue, is certainly altogether disproved, and if my own opinions coincided with those put forth by M. Unger, it certainly would be most unjustifiable, with no better evidence, and I know of none such, to pass over in silence the numerous recorded species.

On living twigs of *Juniperus communis*. Normanton, Rutls. *Rev. T. K. Bonney*, Archdeacon of Leicester.—Sent with *Podisoma Juniperi communis*, which militates against the assertion of Fries that the two plants are not found in the same locality. Forming a very soft gelatinous irregular orange mass, which dries up, so as frequently to leave scarcely any trace. *Sporidia* ovate or subelliptic, filled with subglobose granules.

151. PODISÓMA. *Lk.* *Podisoma*.

*Sporidia* mostly uniseptate, stalked, stalks joined together into a common stem, above agglutinated by gelatine into a naked vertical clavariæform mass.—Name, *πουζ*, a *foot*, and *σωμα*, a *body*.

1. *P. Juniperi communis*, *Fr.* (*common Juniper Podisoma*); orange clavariæform somewhat branched, stroma simple. *Fr. Syst. Myc. v. 3. p. 508.*—*Tremella clavariæformis*, *Pers. Syn. p. 629.*—*T. ligularis*, *Bull. t. 427. f. 1.*—*T. Sabinae*, *var. 2. With. v. 4. p. 68.*

On living branches of *Juniperus communis*. Normanton, Rutls. *Rev. Arch. Bonney*.—Specimens also exist in Mr. Sowerby's Herbarium.—This species has the habit of *Calocera*. *Sporidia* very long, lanceolate, resembling, as Fries observes, two cones applied to each other by their bases, filled with elliptic granules.

2. *P. foliocolum*, *Berk.* (*Juniper-leaf Podisoma*); epiphyllous brown-black, masses subglobose or subelliptic, sporidia multi-septate.

On living leaves of *Juniperus communis*. Sent by *Mr. Wilson* to *Dr. Hooker*.—Masses subelliptic or irregular, dark-brown-black, consisting of radiating, crowded, very slender, agglutinated filaments, each bearing an elliptic or clavate, very obtuse *sporidium*, with 3—5 septa. Some of the filaments are simply clavate and barren. This very interesting species is a beautiful link between *Podisoma* and *Puccinia*. I have seen very few specimens, all of which have the masses depressed; but as this is the case with other species of the genus in an early stage of growth, it is possible that when further advanced, they might acquire a clavate form. I refer it to the present genus rather than to *Gymnosporangium*, to which technically it is more easily referrible, on account of the close resemblance of the sporidia to those of the following species.

3. *P. Juniperi Sabinae*, *Fr.* (*Savine Podisoma*); red-brown tuberculiform and clavate simple, stroma obliterated. *Fr. Syst. Myc. v. 3. p. 508.*—*P. Juniperi*, *Nees, f. 15. Lk. Sp. 2. p. 127.*—*Puccinia Juniperi*, *Pers. Disp. t. 2. f. 1.*—*Tremella Sabinae*, *Dicks. 1. p. 14. Eng. Bot. t. 710. With. v. 4. p. 68. Purt. 2 & 3. n. 883.*

On living branches of *Juniperus Sabina*. Not uncommon.—*Sporidia* obovate, uniseptate, figured, however, by *Nees*, as multiseptate. If *Sir J. E. Smith* had ever examined a morsel of this plant, under the microscope, he could not have entertained the opinion that it is a mere gummy exudation.

## 152. PUCCÍNIA. Pers. Puccinia.

*Sporidia* 1—2 septate, adnate with the matrix by a filiform peduncle, and crowded into a tubercle, which is at first covered by the epidermis.—Named from *Puccini*, a Florentine Professor, first applied by Micheli to *Podisoma Juniperi Sabinæ*.

1. *P. Gráminis*, Pers. (*Mildew*); spots pale diffuse, sori linear confluent amphigenous, sporidia at length black. Pers.! *Disp. t. 3. f. 3. Moug. & Nest.! n. 675. Grev. Fl. Ed. p. 433.—Uredo Frumenti*, Sow. t. 140. Banks. *Ann. Bot. v. 2. p. 51.* with figures by Bauer. *Purt. v. 2. n. 1128.—β. Arundinis*, sori broad. *Moug. & Nest. n. 592.—P. arundinacea*, *Johnst. Fl. Berw. 2. p. 195.*

On leaves and culms of corn and grasses.—β. on Reeds.—Most injurious to corn. *Sporidia* in α. clavate, very slightly constricted at the septum; in β. more constricted, and furnished with longer stalks.

2. *P. striola*, Lk. (*streak-like Puccinia*); spots pallid, sori linear crowded distinct amphigenous subconvex, sporidia at length black. Lk. *Sp. 2. p. 67. Desm.! n. 614.—P. Caricis*, *Dec. Fl. Fr. 6. p. 60.—P. caricina*, *Grev. Fl. Ed. p. 433.*

On *Carices*, *Junci*, *Allia*, &c. Very common.—I am not quite convinced that the plants on *Carices* and *Junci* ought to be considered as identical; in the former the *sporidia* are oblong and slightly constricted, in the latter obovate and not at all constricted. I should prefer uniting the former with *P. Graminis*.

3. *P. Aspáragi*, Dec. (*Asparagus Puccinia*); spots none, sori red-brown cauline rarely epiphyllous scattered and crowded ovato-oblong puvinate surrounded by the longitudinally burst epidermis, stem white long filiform, sporidia oblong obtuse constricted. *Dec. Fl. Fr. 2. p. 595. Moug. & Nest.! n. 392. Grev. Fl. Ed. p. 429. Dub. Syn. p. 889.*

On dead stems of *Asparagus* and *Cabbages*. Edinburgh, Dr. Greville.

4. *P. Polygonórum*, Lk. (*Polygonum Puccinia*); spots yellowish, sori minute crowded into orbicular patches nearly plane hypophyllous, sporidia brown black. Lk. *Sp. 2. p. 69. Johnst. Fl. Berw. 2. p. 195.—P. Polygoni amphibii*, Pers.! *Syn. p. 227.—P. Polygoni*, *Grev. Fl. Ed. p. 430.*

On various *Polygona*. Very common.—*Sporidia* obovate-oblong, frequently, but not always, constricted, so that the upper joint is globose.

5. *P. Vaginálium*, Lk. (*Knot-grass Puccinia*); spots none, sori subrotund or oblong hypogenous or cauline convex, at first surrounded by the ruptured epidermis, sporidia brown. Lk. *Sp. 2. p. 69.—P. Polygoni avicularie*, Pers. *Syn. p. 227.—P. Avicularie*, *Grev. Fl. Ed. p. 429. Johnst. Fl. Berw. 2. p. 195.*

On *Polygonum aviculare*. About Edinburgh. Messrs. Hooker and Greville. Berwick. Dr. Johnston.

6. *P. Primulæ*, Grev. (*Primrose Puccinia*); hypogenous deep brown solitary, scattered or concentric and subconfluent, sporidia rather slender, their lower cell attenuated into a short stem. *Grev. ! Fl. Ed. p. 432.*

On *Primula vulgaris*. Kirkcaldy, *Dr. Greville*.—*Sporidia* obovate-oblong, slightly constricted. This is not the same with *P. Primulæ*, *Dub. Syn. p. 891*, to which he refers *U. Primulæ*, *Dec.*

7. *P. Veronicarum*, *Dec.* (*Speedwell Puccinia*); spots yellowish, sori hypogenous subglobose, the greater part aggregate or circinating, the central one large, sporidia brown. *Dec. Fl. Fr. 2. p. 594. Lk. Sp. 2. p. 71. Johnst. ! Fl. Berw. 2. p. 194*

On *Veronica*. Pease Bridge, *Berw. Dr. Johnston*.—*Sporidia* obovate, oblong, more or less constricted.

8. *P. Glechómatis*, *Dec.* (*Ground-Ivy Puccinia*); spots brownish, sori subrotund scattered convex hypogenous nearly plane, sporidia brown. *Dec. Fl. Fr. 6. p. 56. Lk. Sp. 2. p. 71. Purton. MSS.—Dicaoma verrucosum, Nees, f. 12.*

On *Ground Ivy*. *Purton*.—*Sporidia* rather short, subelliptic, scarcely at all constricted.

9. *P. Ménthæ*, *Pers.* (*Mint Puccinia*); spots obliterated, sori small subrotund scattered various in size nearly plane hypogenous, sporidia at length black, peduncles short. *Pers. Syn. p. 227. Lk. Sp. 2. p. 71. Grev. Fl. Ed. p. 430. Johnst. Fl. Berw. 2. p. 195.*

On *Mints*. Very common.—*Sporidia* subglobose or 3—4-angular.

10. *P. Scorodóniæ*, *Lk.* (*wood-sage Puccinia*); spots obliterated, sori minute running together into large subrotund patches, sporidia cinnamon, peduncles very long. *Lk. Sp. 2. p. 72. Johnst. Fl. Berw. 2. p. 194.*

On *Teucrium Scorodonia*. *Berw., Dr. Johnston.*

11. *P. Betónicæ*, *Dec.* (*Betony Puccinia*); spots obliterated, sori subrotund aggregate surrounded by the annular epidermis concave after the dispersion of the pale brown sporidia, hypogenous, peduncles minute. *Dec. Fl. Fr. 6. p. 57. Lk. Sp. 2. p. 72. Grev. Fl. Ed. p. 431. Purton. MSS.*

On *Betonica officinalis*. About *Edinburgh, Dr. Greville*. It has also been found by *Purton*.—*Sporidia* short, obovate-elliptic, very pale, peduncles very short. The whole mass appears ferruginous.

12. *P. Vincæ*, *Berk.* (*Periwinkle Puccinia*); hypogenous, spots yellowish, sori thickly scattered subrotund surrounded by the ruptured epidermis, sporidia brown oblong slightly constricted lower cell slightly attenuated, peduncle very short.

On *Vinca major*. *Isle of Wight. July. Rev. M. J. Berkeley*.—The leaves on which it grows are slightly thickened. With the septate sporidia, others are intermixed which are ovate or subelliptic, without any septum or peduncle, like those of *Uredo Vincæ*.

13. *P. Campánulae*, Carm. (*Bell-flower Puccinia*); hypogenous, sori large irregular bullate crowded, for a long time covered with the epidermis and at length surrounded by it, sporidia oblong-ovate or slightly constricted, peduncle very short. Carm. MSS.

On *Campanulae*. Appin. Captain Carmichael.—Spots apparently none.

14. *P. clandestina*, Carm. (*minute Puccinia*); spots yellowish, sori extremely minute distinct but collected together upon the spots in great numbers, dark brown, epidermis evanescent, sporidia oblong very slightly constricted with a distinct peduncle. Carm. MSS.

On *Scabiosa succisa*. Appin. Captain Carmichael.—This may possibly be the same with *P. succisæ*, Kunze, but according to the description it should seem to be distinct.

15. *P. Compositarum*, Schlecht. (*Compositæ Puccinia*); spots obliterated or white, sori subrotund small subconvex generally hypogenous surrounded by the epidermis, sporidia brown, peduncles short. Lk. Sp. 2. p. 75. Johnst. Fl. Berw. 2. p. 196. —*P. Centaureæ*, Grev. Fl. Ed. p. 430.

On *Centaureæ*, &c. Not uncommon.—Sporidia oval, scarcely constricted, the lower cell not attenuated.

16. *P. Syngenesiarum*, Lk. (*Syngenesiæ Puccinia*); spots obliterated, sori minute covered with the bullate epidermis, then nearly plane, forming a large compound subrotund patch, sporidia brown, peduncles very short. Lk. Sp. 2. p. 74. Johnst. Fl. Berw. 2. p. 97.

On *Thistles*. Dr. Johnston.—I have not seen specimens of the plant on thistles. That on Goats' Beard, referred to this species, is surely not the true plant.

17. *P. glomerata*, Grev. (*conglomerate Puccinia*); spots pale hypogenous, sori orbicular depressed broad dark fuscous compounded of many smaller ones confluent at the centre, sporidia oblong, the lower cell somewhat attenuated.

On *Senecio Jacobææ*. Coast of Fife. Dr. Greville. Bungay. Mr. Stock.—There are scarcely two sporidia alike in the same heap.

18. *P. variabilis*, Grev. (*variable Puccinia*); amphigenous, sori minute nearly black orbicular bordered by the ruptured epidermis, sporidia variable very obtuse round, cells often subdivided, stem very short. Grev. Sc. Crypt. Fl. t. 75. Fl. Ed. p. 431. Johnst. Fl. Berw. 2. p. 106.

On *Leontodon Taraxacum*. About Edinburgh, Dr. Greville. Berw., Dr. Johnston. The species is not uncommon in Scotland.—It agrees in character with Link's genus *Triphragmium*.

19. *P. Valantiæ*, Pers. (*Cross-wort Puccinia*); spots obliterated, sori small subrotund convex scattered or crowded, sporidia conglobated pale-brown, peduncles short. Pers. Syn.

p. 227. *Lk. Sp. 2. p. 75. Grev. Fl. Ed. p. 432 (in part).—P. Galii cruciati, Johnst. Fl. Berw. v. 2. p. 196.*

On *Galium cruciatum*. Edinburgh. *Dr. Greville*. Berwick. *Dr. Johnston*.—*Sporidia* obovate, attenuated below, the upper joint globular, easily separating.

20. *P. Galiorum*, *Lk. (Bed-straw Puccinia)*; spots obliterated half-covered with and surrounded by the ruptured bullate epidermis, nearly plane scattered hypogenous, sporidia brown. *Lk. Sp. 2. p. 76.—P. Valantiæ, Grev. l. c. (in part).*

On *Galium verum*. About Edinburgh, *Dr. Greville*.

21. *P. tumida*, *Grev. (swollen Puccinia)*; hypophyllous and on the petioles conglomerated confluent brownish-grey before bursting, sporidia nearly black obtuse scarcely constricted the upper cell sometimes subdivided. *Grev. Fl. Ed. p. 430.*

On *Bunium Bulbocastanum* and *Peucedanum Silaus*. Not uncommon.—Distorting the parts on which it grows: peduncle very short; sporidia more or less obovate.

22. *P. Umbelliferarum*, *Dec. (Kex Puccinia)*; spots obliterated, sori small subrotund scattered nearly plane surrounded by the ruptured epidermis, sporidia brown shortly pedicellate. *Dec. Fl. Fr. 6. p. 58. Lk. 2. p. 77. Grev. Fl. Ed. p. 431. Johnst. Fl. Berw. 2. p. 196.—P. Chærophylli, Purt. v. 3. n. 1553.*

On various *Umbellifera*. Common.—*Sporidia* short broadly, elliptic, much constricted; peduncle very short. *P. Heraclei (Grev. ! Sc. Cr. Fl. t. 42.)* does not differ at all in the sporidia, for the figure does not represent them sufficiently constricted. I regard it as a mere variety.

23. *P. Ægopódii*, *Lk. (gout-weed Puccinia)*; spots brown, sori minute subrotund and elongated surrounded by the ruptured epidermis often circinating and forming roundish patches, sporidia brown, peduncles very short. *Lk. Sp. 2. p. 77. Grev. Fl. Ed. p. 429.*

On *Ægopodium Podagraria*. Balmuto, *Dr. Greville*. Oxford. *Baxter*.

24. *P. Saniculæ*, *Grev. (Sanicle Puccinia)*; hypophyllous orbicular very variable in size blackish-brown scattered rather confluent, sporidia very obtuse with a somewhat elongated peduncle. *Grev. ! Fl. Ed. p. 431.*

On *Sanicula Europæa*. Auchindenny woods. *Dr. Greville*.—"Stem longer; *sporidia* not so short. There is a disposition in the smaller punctiform pustules to form a circle round the larger ones." *Grev. l. c.* The difference in the sporidia is, however, very slight.

25. *P. Bullária*, *Lk. (bullate Puccinia)*; spots obliterated, sori subrotund or oblong always covered with the bullate epidermis, sporidia brown, peduncles obsolete. *Lk. Sp. 2. p. 78. Johnst. Fl. Berw. 2. p. 197.—Uredo bullata, Pers. Obs. 1. t. 2. f. 5.—Bullaria umbelliferarum, Dec. Fl. Fr. v. 2. p. 226.*



On dry stems of *Umbelliferae*. Berwick, *Dr. Johnston*. Norths. *Rev. M. J. Berkeley*.—One of the most interesting species. I find a short peduncle constantly in the specimens before me. It is singular that a species, with a similar habitat, should occur in America, with exceedingly long filiform peduncles.

26. *P. Anémones*, Pers. (*Wind-flower Puccinia*); spots obliterated, sori subrotund surrounded by the ruptured epidermis plane scattered aggregate and confluent, sporidia brown, peduncles scarcely any. *Pers. ! Syn. p. 226. Moug. & Nest. ! n. 191. Lk. 2. p. 78. Baxt. ! n. 82.*

On various species of *Anemone*. Not uncommon.—*Sporidia* very much constricted, consisting of two nearly globose portions, echinulate; peduncles very short.

27. *P. Cálthæ*, Lk. (*Marsh-marigold Puccinia*); spots brownish, sori small subrotund convex surrounded by the ruptured epidermis scattered or circinating, sporidia brown. *Lk. Sp. 2. p. 79. Johnst. 2. p. 196.*

On *Caltha palustris*. About Edinburgh, *Dr. Greville*. Coldingham Moor, Berw., *Dr. Johnston*.—*Sporidia* obovate, attenuated below, slightly constricted, peduncle very short.

28. *P. Violárum*, Lk. (*Violet Puccinia*); spots yellowish, sori small crowded covered with the bullate epidermis, and then surrounded by it generally hypogenous, sporidia brown, peduncles very short. *Lk. Sp. 2. p. 80.—P. Viola, Dec. Fl. Fr. 6. p. 62. Grev. Fl. Éd. p. 432. Johnst. Fl. Berw. 2. p. 196.*

On Violets. Common.—*Sporidia* elliptic or broadly elliptic, slightly constricted.

29. *P. Lychnideárum*, Lk. (*Lychnideæ Puccinia*); spots yellowish, sori subrotund and oblong convex unequal scattered and circinating rarely confluent hypogenous or cauline, sporidia white at length brown. *Lk. Sp. 2. p. 80. Johnst. ! Fl. Berw. 2. p. 194.—P. caryophyllacearum, var. lychnidea, Desm. ! n. 558.*

On leaves and stems of *Lychnideæ*. On *Lychnis dioica*, *Dr. Johnston*. On *Sagina procumbens*. Anglesea, *Mr. W. Wilson*.—*Sporidia* elongated, oblong, slightly constricted.

30. *P. Saxifragárum*, Schlecht. (*Saxifrage Puccinia*); spots obliterated, sori subrotund scattered crowded and confluent nearly plane, when young surrounded by the epidermis amphigenous, sporidia red-brown, peduncles very short often obsolete. *Lk. Sp. 2. p. 80.—P. Adoxu, Grev. Fl. Éd. p. 432.—P. Chrysosplenii, l. c. p. 429.*

On *Adoxa moschatellina*. Not uncommon.—*Sporidia* rather short, oblong, very slightly constricted.

31. *P. Chrysosplenii*, Grev. (*Golden-saxifrage Puccinia*); hypogenous, sori of various sizes few together and confluent pale-brown, sporidia long somewhat waved much attenuated at either extremity, peduncle elongated. *Grev. ! in Hook. Herb.*

On *Chrysosplenium oppositifolium*. Balmuto, *Dr. Greville*.—Evidently distinct from the last in its very differently formed sporidia.

32. *P. Epilobii*, Dec. (*Willow-herb Puccinia*); spots pale, sori subrotund crowded hypogenous, epidermis evanescent, sporidia effuse cinnamon, peduncles very short. *Dec. Fr.* 6. p. 61. *Lk. Sp.* 2. p. 81. *Grev.!* *Fl. Ed.* p. 431.

On *Epilobium palustre*. Duddingston Loch, *Dr. Greville*. King's Cliffe, Norths. *Rev. M. J. Berkeley*.—*Sporidia* broadly elliptic, rather strongly constricted.

33. *P. pulverulenta*, Grev. (*pulverulent Puccinia*); hypogenous dark-brown scattered or subconfluent often concentric, sporidia dust-like obtusely oval slightly constricted in the middle the lower cell terminating in an abrupt and short peduncle. *Grev.!* *Fl. Ed.* p. 432. *Baxt.!* n. 81.—*Uredo Epilobii*, *Purt.* 3. n. 1604.

On *Epilobium montanum* and *hirsutum*. About Edinburgh, *Dr. Greville*.—*Sporidia* scarcely "obtusely oval," but obovate, slightly constricted, the lower cell attenuated slightly; stem not very short. Certainly nearly allied to the foregoing species, but distinct in the form of its sporidia.

34. *P. Circææ*, Pers. (*Enchanter's-nightshade Puccinia*); spots obliterated, sori minute semiglobose crowded into subrotund patches here and there confluent, almost always covered, sporidia brown, peduncles long. *Pers. Syn.* p. 228. *Lk. Sp.* 2. p. 82. *Moug. & Nest.!* n. 192. *Purt.* 3. p. 303. *Grev. Fl. Ed.* p. 429. *Desm.!* n. 615.

On *Circæa Lutetiana* and *C. alpina*. Highlands of Scotland, *Dr. Greville*.—*Sporidia* oblong, often acute, sometimes however obtuse; stem long thick. A very handsome species.

35. *P. Prunorum*, Lk. (*plum Puccinia*); spots obliterated, sori subrotund plane scattered hypogenous, epidermis obliterated, sporidia brown, peduncles very short. *Lk. Sp.* 2. p. 82. *Baxt.!* 83.—*P. Pruni spinosæ*, Pers. *Syn.* p. 226.—*P. Pruni*, *Purt.* 3. n. 1552.

On leaves of Plum trees. Very common.

36. *P. Ulmariæ*, Dec. (*Meadow-sweet Puccinia*); spots obliterated, sori at first subrotund covered with the epidermis, at length when the cuticle has vanished effuse, sporidia brown shortly pedicellate. *Dec. Fl. Fr.* 6. p. 56. *Grev. Fl. Ed.* p. 433. *Johnst. Fl. Berw.* 2. p. 194.—*Triphragmium Ulmariæ*, *Lk. Sp.* 2. p. 84. *Moug. & Nest.!* n. 891.—*P. Spirææ*, *Purt.* 3. n. 1555.

On *Spiræa Ulmaria*. Carlowie, *Dr. Greville*. It has also been found by Purton.—*Sporidia* subturbinate; upper cell often divided by a vertical dissepiment, peduncle very short.

37. *P. Fábæ*, Lk. (*Bean Puccinia*); spots none, sori subrotund hypogenous or elongated when on the stem, subconvex, surrounded by the ruptured epidermis, sporidia at length black.

*Lk. Sp. 2. p. 82.*—*P. globosa*, *Grev. Sc. Cr. Fl. t. 29. Fl. Ed. p. 434.*

On the common Bean. Not uncommon.—*Sporidia* ovato-globose, peduncle slender. *P. Fabæ*, *Johnst.*, includes *Uredo appendiculosa*.

38. *P. Buxi*, *Dec. (Box Puccinia)*; spots none, sori subrotund convex scattered amphigenous, sporidia brown, peduncles long. *Dec. Fl. Fr. 6. p. 60. Lk. Sp. 2. p. 83. Sow. t. 439. Moug. & Nest. ! n. 676.*

On Box. Not uncommon.—*Sporidia* oblong, rather strongly constricted, lower cell in general slightly attenuated, peduncle very long.

### 153. ÆCIDIUM. Pers. Æcidium.

*Sporidia* free, contained in a cellular membranous sac (*pseudoperidium*) distinct from the epidermis and at length bursting at the apex.—Name, *arzion*, a wheel.

1. *Æ. Allii*, *Grev. (Garlic Æcidium)*; spots rather pale, pseudoperidia circinating not contiguous, sporidia yellowish. *Grev. ! Fl. Ed. p. 447.*—*Æ. Allii ursini*, *Pers. Syn. p. 210.*—*Cæoma alliatum*, *Lk. Sp. 2. p. 42.*

On *Allium ursinum*. Rosslyn woods, *Dr. Greville*.

2. *Æ. Ari*, *Berk. (Wake-robin Æcidium)*; spots round confluent, pseudoperidia circinating not crowded, those in the centre generally abortive.

On *Arum maculatum*. Bungay, *Mr. Stock*.

3. *Æ. rubellum*, *Pers. (Dock Æcidium)*; spots purple, pseudoperidia circinating, centre free, sporidia yellowish-white. *Pers. in Gmel. Linn. 2. p. 1473. Grev. Fl. Ed. p. 447.*—*Æ. Rumicis*, *Pers. Syn. p. 207. Moug. & Nest. n. 286. Sow. t. 405. Purv. v. 3. n. 1540. t. 26.*—*Cæoma rubellatum*, *Lk. Sp. p. 44.*

On leaves of various *Rumices*. Common.

4. *Æ. Primulæ*, *Dec. (Primrose Æcidium)*; spots obliterated, pseudoperidia solitary scattered and crowded hypogenous, sporidia whitish-yellow. *Dec. Fl. Fr. 6. p. 90.*—*Cæoma primulatum*, *Lk. Sp. 2. p. 46.*

On leaves of primroses. Appin, *Captain Carmichael*. Communicated also to *Dr. Hooker* by *Mr. W. Wilson*.

5. *Æ. Soldanellæ*, *Hornsc. (Soldanella Æcidium)*; spots obliterated, pseudoperidia solitary regularly scattered over the whole inferior surface, sporidia orange. *Moug. ! exs.*—*Cæoma soldanellatum*, *Lk. Sp. 2. p. 46.*

On *Soldanella alpina*. Botanic Garden, Glasgow. *Hook. Herb.*—The specimens were referred by *Klotzsch* to *Uredo*, but there is certainly a *pseudoperidium*.

6. *Æ. Menthæ*, *Dec. (Mint Æcidium)*; spots obliterated, subiculum incrassated, pseudoperidia scattered at length emersed

subrotund, or aggregate immersed and suboval, sporidia orange. *Dec. Fl. Fr. v. 6. p. 95.*—*Cæoma menthatum*, *Lk. Sp. 2. p. 47.*

On Mints. Common. The stem when infected is much distorted.—*Sporidia* elliptic, white when dry.

7. *Æ. Tragopogónis*, Pers. (*Goat's-beard Æcidium*); spots obliterated, pseudo-peridia scattered torn wider above, sporidia orange at length black. *Pers. Syn. p. 211. Sow. t. 397. f. 2.*—*Cæoma tragopogonatum*, *Lk. Sp. 2. p. 50.*—*Æ. Tragopogi*, *Moug. & Nest. ! n. 388.*—*Æ. Cichoraceorum*, *Johnst. Fl. Berw. 2. p. 205.*

On the stems and under sides of the leaves of the common Goat's-beard. *Sowerby. Berwick, Dr. Johnston.*

8. *Æ. compositarum*, Mart. (*Composite Æcidium*); spots purplish subrotund subconfluent above, pseudoperidia crowded into orbicular patches or circinating hypogenous, sporidia orange. *Mart. Erl. p. 314.*—*Æ. Taraxaci*, *Grev. Fl. Ed. p. 444. Johnst. Fl. Berw. 2. p. 205.*—*Æ. Prenanthis*, *Pers. Syn. p. 208. Grev. l. c. p. 445. Johnst. l. c. p. 206.*—*Æ. Tussilaginis*, *Pers. Syn. p. 209. Sow. t. 397. f. 1. Moug. & Nest. ! n. 88. Grev. l. c. Johnst. l. c. p. 207.*—*Æ. Jacobææ*, *Grev. l. c.*—*Æ. Senecionis*, *Desm. ! n. 677.*—*Æ. Lapsani*, *Purt. MSS.*—*Cæoma compositatum*, *Lk. Sp. 2. p. 50.*

On various *Compositæ*. Common.—The colour of the spots and sporidia, and the disposition of the *pseudoperidia* vary a little; the *sporidia* in all are oval.

9. *Æ. Valerianacearum*, Dub. (*Valerian-tribe Æcidium*); hypogenous, rarely cauline, pseudoperidia scattered more or less crowded cup-shaped tawny, margin erect denticulate, sporidia dirty-yellow. *Dub. Syn. p. 908. Johnst. Fl. Berw. 2. p. 206.*

On *Valeriana officinalis*. *Berwick, Dr. Johnston.*

10. *Æ. Periclymeni*, Dec. (*Honeysuckle Æcidium*); spots variegated with yellow and brown, subiculum rather thick, pseudoperidia disposed in subrotund or effused hypogenous heaps, sporidia orange. *Dec. Fl. Fr. 2. p. 597. Grev. Fl. Ed. p. 445.*—*Cæoma periclymenatum*, *Lk. Sp. 2. p. 52.*

On woodbine. *Roslyn, Dr. Greville. Appin, Captain Carmichael. Hamilton, Klotzsch in Hook. Herb. Oxford, Baxter.*—*Peridia* sometimes very much elongated.

11. *Æ. Búnii*, Dec. (*Pig-nut Æcidium*); spots obliterated, subiculum incrassated, pseudoperidia disposed in irregular subrotund or oval heaps, sporidia orange. *Dec. Fl. Fr. 6. p. 96. Grev. Fl. Ed. p. 445.*—*Æ. Buniatum*, *Lk. Sp. 2. p. 53.*

On *Bunium Bulbocastanum* and *Pimpinella Saxifraga*. *Balmuto, Dr. Greville. Oxford, Baxter.*

12. *Æ. Ranunculacearum*, Dec. (*Crowfoot Æcidium*); spots

obliterated, subiculum thick, pseudoperidia densely crowded into irregular heaps sporidia orange. *Dec. Fl. Fr.* 6. p. 97. *Grev. ! Fl. Ed.* p. 446.—*Æ. Ranunculi*, *Sow. t.* 397. f. 2—*Æ. confertum*, *Grev. ! l. c.* *Johnst. Fl. Berw.* 2. p. 205.—*Æ. Ficariæ*, *Purt. v.* 3. p. 333.

On leaves of various *Ranunculaceæ*. Common.—The colour varies slightly, being paler in *Ranunculus Ficaria*, and is said sometimes to be brown. The latter circumstance, as Link observes, should seem to indicate that there are at least two species.

13. *Æ. Calthæ*, *Grev.* (*Marsh-marigold Æcidium*); hypogenous and on the petioles aggregate somewhat campanulate with numerous very minute marginal teeth, sporidia bright orange subglobose or oval. *Grev. Fl. Ed.* p. 446.

On *Caltha palustris*. About Edinburgh, *Dr. Greville*.—Of this I have seen no specimens; but *Dr. Greville* assures us that it differs in its brighter and darker colour, but especially in the margin of the pseudoperidia being pale and brittle.

14. *Æ. leucospermum*, *Dec.* (*white-seeded Æcidium*); spots yellowish, pseudoperidia scattered amphigenous often occupying the whole under surface, sporidia ovate white. *Dec. Fl. Fr. v.* 2. p. 239. *Moug. & Nest. ! n.* 185. *Baxt. ! n.* 89.—*Cœoma leucospermum*, *Lk. Sp.* 2. p. 54.—*Æ. Anemones*, *Pers. ! Syn.* p. 212.—*Lycop. innatum*, *With. v.* 4. p. 352.—*Lycop. Anemones*, *Pult. Linn. Tr. v.* 2. p. 311.

On the *Wood Anemone*. Appin, *Captain Carmichael*. Oxford, *Baxter*.—In *Captain Carmichael's* specimens I find the sporidia elliptic, in authentic specimens from *Persoon* they are globose.

15. *Æ. quadrifidum*, *Dec.* (*four-lobed Æcidium*); spots brownish, pseudoperidia scattered hypogenous occupying almost the whole under-surface, sporidia subglobose brown. *Dec. Fl. Fr. v.* 6. p. 90.—*Cœoma quadrifidum*, *Lk. Sp.* 2. p. 55.

On *Anemone Coronaria*. Ap.—May. Botanic Garden, Oxf. *Baxter*.—Pseudoperidia not constantly quadrifid.

16. *Æ. Thalictri*, *Grev.* (*Meadow-rue Æcidium*); hypophyllous collected into roundish clusters, pseudoperidia oblong, sporidia bright orange. *Grev. ! Sc. Crypt. Fl. t.* 4.

On *Thalictrum alpinum*. Scottish alps. Not uncommon.

17. *Æ. Geranii*, *Dec.* (*Cranes-bill Æcidium*); spots yellow and purple, pseudoperidia disposed in somewhat circinating hypogenous clusters, sporidia yellow, at length brown. *Dec. Fl. Fr.* 6. p. 93. *Lk. Sp.* 2. p. 57. *Johnst. Fl. Berw.* 2. p. 205.

On *Geranium pratense*. Whiteadder Bridge, Berw., *Dr. Johnston*.—Sometimes from the confluence of one or two clusters forming elongated patches, more frequently disposed in circles.

18. *Æ. Berbéridis*, *Pers.* (*Barberry Æcidium*); spots roundish bright-red, subiculum rather thick, pseudoperidia disposed in

subrotund or oval patches gradually increasing in length, often greatly elongated, sporidia orange. *Pers. in Gmel. l. c. Syn. p. 209. Sow. t. 397. f. 5. Moug. & Nest. ! n. 86. Purt. 2 & 3. n. 1125. Grev. Sc. Crypt. Fl. t. 97. Fl. Ed. p. 446.—Cæoma Berberidatum, Lk. 2. p. 57. Kl. ! ex. 95.*

On the leaves, peduncles and fruit of *Berberis vulgaris*. Common.—Barberry bushes are commonly supposed to cause blight in wheat, probably in consequence of their being frequently infested with this parasite.

19. *Æ. Viola*, Schum. (*Violet Æcidium*); spots yellowish, pseudoperidia disposed in irregular heaps seriate and scattered, sporidia orange at length brown. *Grev. Fl. Ed. p. 444. Æ. Violarum, Johnst. Fl. Berw. 2. p. 250.—Cæoma Violatum, Lk. 2. p. 58.*

On the leaves, petioles and sepals of violets. Not uncommon.

20. *Æ. Behénis*, Dec. (*Bladder Campion Æcidium*); spots yellow circumscribed brown on the opposite side, pseudoperidia somewhat circinating loosely disposed in subrotund heaps some short open, some closed larger brown, sporidia brown. *Dec. Fl. Fr. 6. p. 94. Baxt. ! n. 90.—Æ. lychnideatum, Lk. Sp. 2. p. 59.*

On *Silene inflata*. Oxford, *Baxter*.—Baxter's specimens are very pale, but so much alteration takes place in drying in this and the following genus, that it is impossible to say whether they are distinct or not

21. *Æ. albescens*, Grev. (*Moschatell Æcidium*); leaf blistered whitish, hypogenous and on the petioles scattered distinct, peridia very white split into a few comparatively large teeth, sporidia yellowish-white. *Grev. Fl. Ed. p. 444. Johnst. Fl. Berw. 2. p. 205.—Æ. Adoxæ, Graves, in Dub. Syn. p. 908. Desm. ! n. 555.*

On *Adoxa moschatellina*. Arniston woods, *Dr. Greville*. Oxford, *Baxter*.

22. *Æ. Epilóbii*, Dec. (*Willow-herb Æcidium*); spots obliterated, pseudoperidia scattered often amphigenous at length oval wider above, sporidia orange at length brown. *Dec. Fl. Fr. 2. p. 238. Grev. Fl. Ed. p. 444. Johnst. Fl. Berw. 2. p. 204.—Cæoma epilobiatum, Lk. Sp. 2. p. 54.*

On *Epilobium montanum*. Common.

23. *Æ. Grossulariæ*, Dec. (*Goose-berry Æcidium*); spots yellow not extended brown on the opposite side tuberculate, pseudoperidia crowded into roundish heaps at length brown and surrounded with a brown area hypogenous, sporidia orange. *Dec. Fl. Fr. 6. p. 92. Grev. Sc. Crypt. Fl. t. 62. Fl. Ed. p. 446. Johnst. Fl. Berw. 2. p. 206.—Æ. Rumicis β. Grossulariæ, Pers. in Gmel. l. c. Moug. & Nest. ! n. 287.—Cæoma grossulariatum, Lk. Sp. 2. p. 59.*

On the leaves and fruit of *Gooseberries*. Very common.—I have

given the specific character from Link ; the upper surface of the spots is however generally bright-red, with a yellow border. Dr. Greville's section scarcely gives a correct idea of the pseudoperidium, which is, I believe, in all the species, certainly in this, more or less rounded below. When the fruit is attacked, it is somewhat distorted and acquires a peculiar disagreeable taste, and becomes ripe prematurely. Though generally very common, I cannot find this year a single specimen on the leaves.

24. *Æ. crássum*, Pers. (*Buckthorn Æcidium*) ; spots yellow-brown not expanded, subiculum generally thickened, pseudoperidia crowded into a roundish heap at first globose yellow at length open, sporidia orange. *Pers. Syn. p. 208. Pers. Ic. & Descr. t. 10. f. 1, 2. Moug. & Nest. ! n. 89.—Æ. Rhamni, Purt. 3. n. 1538.*

On *Rhamnus catharticus*. Very common.

25. *Æ. cornúatum*, Pers. (*horn-like Æcidium*) ; hypogenous, pseudoperidia cylindrical elongated slightly curved yellowish-brown springing from an orange thickened portion of the leaf, sporidia greyish at length brown. *Pers. ! Syn. p. 205. Moug. & Nest. ! n. 183. Sow. t. 319. Grev. Fl. Ed. p. 447. Sc. Cr. Fl. t. 180. Johnst. Fl. Berw. 2. p. 207.—Cœoma cylindritis, Lk. 2. p. 64. (in part). Kl. ! eas. n. 96.*

On leaves of the *Mountain-Ash*. Not uncommon.

26. *Æ. lacerátum*, Sow. (*jagged Æcidium*) ; hypogenous on the petioles and fruit, pseudoperidia elongated agglomerated brown splitting to the base in capillary segments, sporidia light-brown. *Sow. t. 318. Grev. Fl. Ed. p. 447. Sc. Cr. Fl. t. 209. Johnst. Fl. Berw. 2. p. 207.—Æc. oxyacantha, Pers. ! Syn. p. 206.—Æ. Cratægi, Purt. v. 3. p. 570.—Cœoma cylindrites, Lk. 2. p. 64. (in part).*

On the common *Hawthorn*. Not uncommon. Beautiful specimens were sent by Mr. Purton on *Mespilus grandiflora* and *Germanica*, probably from Mr. Baxter.

27. *Æ. cancellátum*, Pers. (*Pear Æcidium*) ; spots yellow then red prominent, pseudoperidia split to the base into laciniae which are united above. *Pers. ! in Gmel. Linn. v. 2. p. 1472. Syn. p. 205. Sow. t. 410. Moug. & Nest. ! n. 184.—Cœoma Rœstilibes, Lk. l. c. Kl. ! ex. n. 97.*

On Pear leaves. Not common, but in general abundant where it occurs.—The upper side of the spots is granulated with abortive pseudoperidia, as is the case also frequently in the two foregoing species. An *Æcidium*, apparently of some interest, has been found by Dr. Greville on *Poterium Sanguisorba*, the specimens however in Dr. Hooker's Herbarium are too young to describe.

28. *Æ. Órobi*, Dec. (*Bitter-vetch Æcidium*) ; spots yellow effused, pseudoperidia scattered and disposed in small heaps,

sporidia at length white. *Dec. Fl. Fr.* 6. p. 95.—*C. Leguminosatum*, *Lk.* 2. 61.

On the stems and leaves of *Orobus tuberosus*. Scotland, *Dr. Greville*.

29. *Æ. Euphórbicæ*, *Pers.* (*Spurge Æcidium*); spots obliterated, leaf incrassated, pseudoperidia scattered and crowded distinct generally hypogenous, sporidia orange. *Pers. in Gmel. Linn. v. 2. p. 1473. Syn. p. 211. Part. 2 & 3. n. 1537.*—*Cæoma Euphorbiatum*, *Lk. Sp. 2. p. 61.*—*Æ. Cyparissicæ*, *Moug. & Nest.!* n. 87.

On Spurges. Common.

30. *Æ. Urticæ*, *Dec.* (*Nettle Æcidium*); spots obliterated, subiculum incrassated, pseudoperidia disposed in elongated or subrotund heaps at first subglobose then widely gaping hypogenous, sporidia orange. *Dec. Fl. Fr.* 2. p. 243. *Moug. & Nest.!* n. 389. *Grev. Fl. Ed. p. 445. Johnst. Fl. Berw. 2. p. 206. Desm.!* n. 676.

On Nettles. Extremely common.

31. *Æ. Pini*, *Pers.* (*Pine Æcidium*); pseudoperidia oblong somewhat compressed scattered bursting irregularly, sporidia orange. *Pers. in Gmel. l. c. Syn. p. 213. Moug. & Nest.!* n. 186. *Grev. Sc. Crypt. Fl. t. 7. Fl. Ed. p. 444.*—*Cæoma Pineum*, *Lk. Sp. 2. p. 66.*

On the leaves and bark of Scotch Firs. Common in the highlands of Scotland and occasionally occurring in England, especially in young plantations. On branches it is sometimes two lines or more high.

#### 154. URÉDO. *Pers.* Uredo.

*Sporidia*\* free, aggregate, covered by the epidermis of living plants.—Name, *uro*, to burn.

##### A. *Sporidia equal.*

\* *Sporidia yellow, brown, black.*

1. *U. segetum*, *Pers.* (*Smut*); on the receptacle and rachis, epidermis soon ruptured, sporidia loose minute perfectly spherical black. *Pers. Syn. p. 224. Moug. & Nest.!* n. 291. *Grev. Fl. Ed. p. 442. Johnst. Fl. Berw. 2. p. 203. Baxt.!* n. 43.—*Ustilago segetum*, *Ditm. St. Deutsch. Fl. t. 33. Fr. Syst. Myc. v. 3. p. 519.*—*Cæoma segetum*, *Lk. 2. p. 1. Kl.!* n. 81.—*Reticularia segetum*, *Bull. t. 472. f. 2. With. 4. p. 356. Part. 2 & 3. n. 1079.*

On wheat, barley, oats, &c. Very common and destructive.

\* Such is the state of the sporidia in normal *Uredines*. But many of the species approach very near to *Puccinia*, being attached by more or less perfectly developed peduncles, and differing only in being simple and not septate.



2. *U. Cáries*, Dec. (*Bunt*); included within the germen, sporidia exactly spherical rather large globose black. *Dec. Fl. Fr.* 6. p. 78. *Greiv. Fl. Ed.* p. 443. *Johnst. Fl. Berw.* 2. p. 204.—*Uredo sitophila*, *Dicn. l. c. t.* 34.—*Cæoma sitophilum*, *Lk. Sp.* 2. p. 2.

On Wheat. Very common, exceedingly fœtid when crushed. Highly injurious, as the whole sample is spoiled by the bunt corn.—The sporidia are much larger than in the foregoing species and contain granules.

3. *U. longissima*, Sow. (*elongated Uredo*); spots obliterated sori linear very long parallel dirty-olive, epidermis bursting longitudinally, sporidia exactly globose minute olive-black. *Sow. t.* 139.—*Cæoma longissimum*, *Lk. Sp.* 2. p. 4. *Kl. ! n.* 84.

On *Poa aquatica*. Common. Summer.—Giving the leaves a very remarkable appearance; sporidia globose, breaking up into minute granules.

4. *U. paralléla*, Berk. (*parallel Uredo*); sori very long linear, epidermis bursting longitudinally, sporidia globose with several projecting nodules dark-brown.

On the culms and sheaths of Rye. Kensington, June 15, 1800. *Sowerby*, Herb.

5. *U. lineáris*, Pers. (*yellow grass Uredo*); spots yellow-brown, sori elliptic then elongated and linear, epidermis bursting, sporidia oblong yellow. *Pers. Syn.* p. 216. *Greiv. Fl. Ed.* p. 440. (*in part*). *Johnst. Fl. Berw.* 2. p. 198.—*U. linearis*, *α. frumenti*, *Moug. & Nest. ! n.* 288.—*Cæoma lineare*, *Lk. Sp.* 2. p. 4.

On the leaves and sheaths of corn and grasses. Very common.—Sporidia oblong and globose in the same heap.

6. *U. Rubígo*, Dec. (*Rust*); spots yellow, heaps oval scattered generally epigenous, epidermis at length bursting longitudinally, sporidia subglobose red-brown easily dispersed. *U. Rubigo vera*, *Fl. Fr.* 6. p. 83.—*Cæoma Rubigo*, *Lk. Sp.* 2. p. 4.

On grasses and corn. Common, but not so injurious as the true mildew, (*Puccinia graminis*.)

7. *U. urceolórum*, Dec. (*Sedge-glume Uredo*); on the glumes and utriculi in the latter case surrounding the abortive seed with a dense mass, epidermis soon bursting, sporidia effuse globose rather large. *Dec. Fl. Fr.* 6. p. 78. *Greiv. Fl. Ed.* p. 443. *Johnst. Fl. Berw.* 2. p. 204.—*U. Caricis*, *Pers. Syn.* p. 225.—*Cæoma Caricis*, *Lk. Sp.* 2. p. 5.—*Ustilago utriculorum*, *Fr. Syst. Myc. v.* 3. p. 519.—*Furinaria carbonaria*, *Sow. t.* 396. f. 4.

On various *Carices*. About Edinburgh, *Dr. Greville*. Berwick, *Dr. Johnston*. Fotheringhay, Norths., *Rev. M. J. Berkeley*.—Link, in his specific character, calls the sporidia effuse; in my specimens they form a compact mass, breaking up into grains like gunpowder, in the centre of which is the nearly abortive though white and slightly farina-

ceous seed retaining its triquetrous form ; epidermis cracked, white and very delicate. *Sporidia* large, subglobose, furnished with a pellucid border, their surface granulated.

8. *U. olivácea*, Dec. (*olive-green Uredo*) ; infesting the enlarged receptacle, epidermis soon bursting, sporidia olive-green powdery minute mixed with fibres which belong to the receptacle. *Dec. Fl. Fr.* 6. p. 78.—*Cæoma olivaceum*, *Lk. Sp.* 2. p. 6.

On *Carex riparia*. Fotheringhay, Norths. *Rev. M. J. Berkeley*.—Springing from the receptacle as in *U. segetum*, which is much increased in size. *Sporidia* accompanied by vertical filaments, which on dissection are seen to spring from the hard base and are I believe the fibro-vascular cords which run from the rachis. The utriculi are altogether external to the mass. I have not seen sufficient specimens to ascertain whether the germen as well as receptacle is attacked, but I am inclined to think that such is not the case.

9. *U. caricína*, Schleich, (*Sedge Uredo*) ; spots red, sori oval minute scattered surrounded by the ruptured epidermis, sporidia subglobose reddish then brown. *Dec. Fl. Fr.* 6. p. 83.—*U. oblongata*, *Grev. Sc. Crypt. Fl. t.* 12. *Fl. Ed.* p. 437. (*in part*).—*Cæoma Pseudo-Cyperii*, *Lk. Sp.* 2. p. 6.

On *Carex pendula* and *Pseudo-Cyperus*. Edinburgh, *Dr. Greville*.—The specimens figured by *Dr. Greville* are on *C. pendula*, and are seated on a yellow spot. It is matter of doubt therefore whether they may not belong to *U. Rubigo*, those gathered by him on *C. Pseudo-Cyperus* being the true *U. caricína*. The plant on *Luzula* is quite different and is the true *U. oblongata*.

10. *U. oblongáta*, *Grev.* (*oblong-seeded Uredo*) ; spots oblong often confluent yellow-brown, sori elliptic amphigenous, epidermis closed, sporidia brown obtuse at either extremity. *Grev. Sc. Crypt. Fl. & Fl. Ed. l. c.* (*in part.*) *Johnst. Fl. Berw.* 2. p. 202.—*Cæoma oblongum*, *Lk. Sp.* 2. p. 7.

On *Luzula*. Edinburgh, *Dr. Greville*. Berwick, *Dr. Johnston*. Bagley Wood, Oxf., *Baxter*.—Very different from the last in its sporidia.

11. *U. Scillárum*, *Grev.* (*Hare-bell Uredo*) ; spots oblong or subrotund crowded into patches, epidermis bursting longitudinally, sporidia rubiginous obovate shortly pedunculate. *Grev. ! in Hook. Herb.*—*Puccinia scillarum*, *Baxt. ! n.* 40.

On the Hare-bell, *Dr. Greville*.—The sporidia are rubiginous in the dried specimens before me, from which the above character is drawn up.

12. *U. Alliórum*, Dec. (*Garlic Uredo*) ; spots obliterated, sori linear oblong and oval amphigenous, sporidia ovoid or subglobose, yellow or whitish. *Dec. Fl. Fr.* 6. p. 82. *Desm. ! 528.*—*Cæoma alliorum*, *Lk. Sp.* 2. p. 7.—*Uredo Porri*, *Sow. t.* 411.

On various species of Garlic. Common.

13. *U. Íridis*, Dub. (*Iris Uredo*) ; hypogenous or rarely pigenous, spots yellow, sori small pale red-brown oblong and

linear scattered or aggregate scarcely convex, often circumscribed, epidermis bullate very rarely bursting longitudinally, sporidia exactly globose pale-brown pellucid. *Dub. Syn. p. 898.*

On *Iris fetidissima*. Bath Hills, Ditchingham, *Mr. Stock*. Isle of Wight, *Rev. M. J. Berkeley*.—Duby's description is excellent; I find however the sporidia broadly elliptic, as well as globose. In an early stage of growth, they have an orange cast, but in the perfectly developed plant, they are decidedly brown. It is one of the most beautiful species of the genus.

14. *U. Polygonórum*, Dec. (*Polygonum Uredo*); spots red-yellow widely effused, sori subrotund scattered sometimes forming a ring, epidermis at length bursting, sporidia ovoid brown. *Dec. Fl. Fr. 6. p. 71. Grev. Sc. C. Fl. t. 80. Fl. Ed. p. 434. Johnst. Fl. Berw. 2. p. 201.*

On various species of *Polygonum*. Common, often accompanied by *Puccinia Polygonorum*.—Sporidia somewhat obovate.

15. *U. utriculósum*, Nees, (*Utricle Uredo*); sori produced in the germen and perigonium, epidermis soon ruptured, sporidia effuse minute globose black. *Nees, Syst. f. 6.—Cæoma utriculosum, Lk. Sp. 2. p. 10.*

On *Polygonum Hydripiper*, &c. Appin, *Captain Carmichael*.—Sporidia purple-black.

16. *U. Bétæ*, Pers. (*Beet Uredo*); spots yellow, heaps subrotund and oval scattered and concentric epigenous, epidermis at length bursting, sporidia subglobose brown. *Pers. Syn. p. 220.—Cæoma Betarum, Lk. Sp. p. 11.*

On Beet Root. King's Cliffe, Norths., *Rev. M. J. Berkeley*.—In very red varieties of Beet the sporidia are bright rubiginous. Sporidia subglobose, shortly pedicellate. Sowerby's *Uredo Chenopodii* appears to me a mere discoloured spot.

17. *U. Armériæ*, Dub. (*Thrift Uredo*); spots obliterated, sori irregular scattered, epidermis bullate closed, sporidia globose rufous. *Dub. Syn. p. 899.—Cæoma Armeriæ, Lk. Sp. 2. p. 11.*

On various species of *Armeria*. Botanic Garden, Glasgow, *Professor Hooker*.—Most of the sori are closed, but some are ruptured. Sporidia truly globose.

18. *U. Primulæ*, Dec. (*Primrose Uredo*); spots yellowish, sori subrotund and oval aggregate hypogenous, epidermis at length bursting, sporidia ovoid brown. *Dec. Fl. Fr. 2. p. 68. Grev. Fl. Ed. p. 435.—Cæoma primularum, Lk. Sp. 2. p. 12.*

On *Primula vulgaris*. About Edinburgh, *Dr. Greville*. Appin, *Captain Carmichael*.

19. *U. Rhinanthaceárum*, Dec. (*Yellow-rattle tribe Uredo*); spots none or subferruginous, sori irregular confluent hypogenous rarely amphigenous, sporidia subglobose compact golden-yellow. *Dec. Fl. Fr. 6. p. 80. Grev. Fl. Ed. p. 439. Johnst. Fl. Berw. 2. p. 200.—Cæoma Rhinanthacearum, Lk. Sp. 2. p. 13.*

On *Euphrasia officinalis* and *Bartsia Odontites*. Pentland Hills, Dr. Greville. Appin, Captain Carmichael. Berwick, Dr. Johnston.

20. *U. Labiatarum*, Dec. (*Labiata* tribe *Uredo*); spots yellowish and brown, sori subrotund scattered subaggregate hypogenous, epidermis ruptured, sporidia subglobose brown. Dec. Fl. Fr. 6. p. 72. Grev. Fl. Ed. p. 436. Johnst. Fl. Berw. 2. p. 203.—*U. Menthæ*, Purst. 3. n. 1550.—*Æc. Menthæ*, Sow. ! t. 398. f. 3.—*Cœoma Labiatarum*, Lk. Sp. 2. p. 13.

On various *Labiata*, especially Mints. Common.

21. *U. Vincæ*, Dec. (*Periwinkle Uredo*); spots yellowish, sori small subrotund and oval, epidermis ruptured surrounding the brown ovoid sporidia. Dec. Fl. Fr. 6. p. 70.—*Cœoma Vincæ*, Lk. Sp. 2. p. 14.

On leaves of *Vinca major*. Bungay. Mr. Stock.—Hypogenous. Sporidia oval, rather ovoid.

22. *U. Vacciniorum*, Johnst. (*Whortle-berry Uredo*); spots yellow-brown, sori subrotund minute aggregate and scattered hypogenous, epidermis seldom ruptured, sporidia ovoid yellowish. Johnst. Fl. Berw. 2. p. 199.—*U. pustulata*, γγ. *Vaccinii*, Alb. & Schwein, Consp. p. 126.—*Cœoma Vacciniorum*, Lk. Sp. 2. p. 15.

On *Vaccinium Myrtillus*. Appin, Captain Carmichael. Berwick, Dr. Johnston.

23. *U. Pýrolæ*, Grev. (*Winter-green Uredo*); spots yellowish, brown on the opposite side, sori globose minute scattered or aggregate hypogenous, epidermis generally closed, sporidia subglobose yellow. Grev. ! Fl. Ed. p. 440. Johnst. Fl. Berw. 2. p. 198.—*Cœoma Pýrolæ*, Lk. Sp. 2. p. 15.

On *Pyrolæ*. About Edinburgh, Dr. Greville and Mr. Macnab. Berwick, Dr. Johnston.—Sporidia ovate, with, sometimes, an obsolete peduncle in Mr. Macnab's specimen on *Pyrola rotundifolia*, sori scattered all over the leaf, epidermis ruptured. Sporidia in Dr. Greville's specimens on *P. minor* oblong and narrow, sori collected in small clusters. In the former case, however, there are a few oblong sporidia sometimes intermixed.

24. *U. Campánulæ*, Pers. (*Bell-flower Uredo*); spots obliterated brown on the opposite side, sori irregular confluent plain hypogenous, sporidia subglobose cohering yellow at length pale. Pers. Syn. p. 217. Grev. Fl. Ed. p. 440. Johnst. Fl. Berw. 2. p. 200. Baxt. ! 41.—*Cœoma campanularum*, Lk. Sp. 2. p. 16.

On the leaves of various *Campanulæ*. Balmuto. Salisbury Craigs, Dr. Greville. Berwick, Dr. Johnston. Oxford, Baxter.

25. *U. crustácea*, Berk. (*crust-like Uredo*); spots brownish, sori subglobose bullate scattered and aggregate amphigenous, epidermis ruptured, sporidia ovoid.—*C. crustaceum*, Lk. Sp. 2. p. 17.

On the radical leaves of *Campanula rotundifolia*. Appin, Captain Carmichael.—*Sporidia* distinctly ovoid.

26. *U. compransor*, Schlecht. (*associated Uredo*); spots yellow-brown, sori obliterated subrotund scattered and aggregate sometimes confluent generally hypogenous surrounded by the ruptured epidermis, sporidia subglobose tawny at first adhering together.—*U. Sonchi*, Pers. Syn. p. 217. *Purt.* 3. n. 1547. *Grev. Fl. Ed.* p. 441. *Johnst. Fl. Berw.* 2. p. 198.—*U. Tussilaginis*, Pers. Syn. p. 218. *Moug. & Nest.!* n. 390. *Grev.!* *Fl. Ed.* p. 437. *Johnst. l. c.*—*U. Petasites*, *Grev. Fl. Ed.* p. 441. *Johnst. l. c.*—*Cæoma compransor*, *Lk. Sp.* 2. p. 17. *Kl.!* n. 85.

On Sowthistles, Colts-foot, *Cacalia suaveolens*, &c. Common.

27. *U. suaveolens*, Pers. (*sweet-scented Uredo*); spots obliterated yellow on the opposite side, sori subrotund nearly plane scattered at length confluent hypogenous surrounded by the ruptured epidermis, sporidia globose brown. *Pers. Syn.* p. 221. *Moug. & Nest.* n. 189. *Purt.!* 3. n. 1548. *Grev. Fl. Ed.* p. 434. —*Æc. Cardui*, *Sow. t.* 398. f. 5.

On *Cnicus arvensis*. Very common.—Flies, according to Sowerby, often gorge themselves with this plant, which has occasionally a strong odour, and are killed. It frequently covers the whole under-surface of the leaves.

28. *U. Senecionis*, Schlecht. (*Grounsel Uredo*); spots obliterated, sori solitary or regularly crowded subrotund and oval hypogenous surrounded by the ruptured epidermis, sporidia subglobose orange. *Grev. Fl. Ed.* p. 438. *Johnst. Fl. Berw.* 2. p. 198. *Desm.!* n. 673.—*Cæoma Senecionis*, *Lk. Sp.* 2. p. 20.

On various species of *Grounsel*. Very common.—Dr. Johnston's *U. Gnaphalii*, of which I have seen only very imperfect specimens, is scarcely described enough at length to enable me to judge whether it be new or not.

29. *U. flosculorum*, Dec. (*Floret Uredo*); produced within the florets, sporidia minute purplish-brown. *Dec. Fl. Fr.* 6. p. 79. *Grev. Fl. Ed.* p. 443. *Johnst. Fl. Berw.* 2. p. 204.—*Cæoma flosculorum*, *Lk. Sp.* 2. p. 21.—*Ustilago flosculorum*, *Fr. Syst. Myc.* v. 3. p. 518.—*Farinaria Scabiosæ*, *Sow. t.* 396. f. 2.

On *Scabiosa arvensis*. Not common.

30. *U. Petroselinii*, Dec. (*yellow Umbelliferæ Uredo*); spots yellowish, sori subrotund and oval confluent amphigenous, epidermis at length ruptured, sporidia pale yellow. *Dec. Fl. Fr.* 2. p. 597.—*U. æciliiformis*, *Grev. Fl. Ed.* p. 441.—*Cæoma Petroselinii*, *Lk. Sp.* 2. p. 23.

On various *Umbelliferæ*. On *Heracleum Sphondylium* and *Cherophyllum sylvestre*. Edinburgh, Dr. Greville. On *Smyrniuum Olusatrum*, Mr. Stock. On *Scandix odorata*. Oxford, Baxter.—*Sporidia* globose or subglobose, occasionally obsolete pedicellate.

31. *U. Umbellatarum*, Johnst. (*brown Umbelliferæ Uredo*); spots yellowish, sori subrotund and ovate scattered hypogenous surrounded by the ruptured epidermis, sporidia ovoid brown. *Johnst. Fl. Berw. 2. p. 202.*—*Cœoma umbellatarum*, Lk. *Sp. 2. p. 23.*

On various *Umbelliferæ*. On *Conium maculatum*. Berwick, Dr. Johnston. On *Apium graveolens*, Rev. M. J. Berkeley.—Sporidia in the same heap, ovate, oval and oblong. There is in the Appin collection a species, with globose sporidia, on *Sanicula Europæa*, probably distinct.

32. *U. Heraclæi*, Grev. (*Hog-weed Uredo*); hypogenous scattered sometimes subconfluent roundish light-brown, girt by the remains of the epidermis, sporidia ovoid sometimes furnished with a very short blunt peduncle. *Grev. in Hook. Herb.*

On *Heracleum Sphondylium*. Edinburgh, Dr. Greville. Appin, Captain Carmichael.—This appears to me distinct, the sporidia being all oviform or more probably obovate, with a very short stem. I see no trace of a stem in the foregoing species.

33. *U. Ranunculacearum*, Dec. (*Crowfoot Uredo*); spots yellowish, sori scattered aggregate confluent and expanded, epidermis ruptured, sporidia ovoid brown sometimes pedicellate. *Dec. Fl. Fr. 6. p. 75.*—*U. Ficariæ*, Alb. & Schw. p. 128.—*Grev. Fl. Ed. p. 434.* *Johnst. Fl. Berw. 2. p. 203.*—*U. Anemones*, Pers. *Syn. p. 223.*—*Cœoma Ranunculacearum*, Lk. *Sp. 2. p. 23.*

On *Ranunculaceæ*. Not uncommon.

34. *U. Hypericorum*, Dec. (*St. John's-wort Uredo*); spots yellowish, sori subrotund small bullate distinct scattered hypogenous, epidermis at length bursting, sporidia subglobose cohering orange. *Dec. Fl. Fr. 6. p. 81.* *Baxt! n. 42.*—*Cœoma Hypericorum*, Lk. *Sp. 2. p. 24.*

On various *Hyperica*. Appin, Captain Carmichael.—Oxf. Baxter. There are also specimens in Dr. Hooker's Herbarium which appear to have been received from Dr. Greville.

35. *U. Geranii*, Dec. (*Crane's-bill Uredo*); spots yellowish, sori subrotund nearly plane scattered or confluent, sporidia subglobose brown. *Dec. Fl. Fr. 6. p. 73.* *Grev. Sc. Crypt. Fl. t. 8. Fl. Ed. p. 434.* *Johnst. Fl. Berw. 2. p. 201.*

On various *Geraniums*. Edinburgh, Dr. Greville. Berwick, Dr. Johnston. Cambridge, Rev. M. J. Berkeley.

36. *U. Violarum*, Dec. (*Violet Uredo*); spots yellowish, sori subrotund scattered bullate generally hypogenous, epidermis ruptured persistent, sporidia subglobose brown, some scattered about naked. *Dec. Fl. Fr. 6. p. 73.* *Johnst. Fl. Berw. 2. p. 202.*—*Cœoma Violarum*, Lk. *Sp. 2. p. 25.*—*Granularia Violæ*, Sow. t. 440.

On the leaves and petioles of *Violets*, not uncommon; when growing on the latter greatly distorting them.

37. *U. Caryophyllacearum*, Johnst. (*Chickweed Tribe Uredo*); spots yellowish, sori subglobose scattered and aggregate minute generally hypogenous, epidermis closed, sporidia oval at length yellow. *Johnst. Fl. Berw.* 2. p. 199.—*Cœoma Caryophyllacearum*, *Lk. Sp.* 2. p. 26.

On *Cerastia* and *Stellaria*. Edinburgh, *Dr. Greville*. Berwick, *Dr. Johnston*.

38. *U. Antherarum*, Dec. (*Anther Uredo*); sori on the anthers and germen, sporidia subglobose effuse violet. *Dec. Fl. Fr.* 6. p. 79. *Grev. Fl. Ed.* p. 443.—*Uredo violacea*, *Pers. Syn.* p. 225.—*Farinaria Stellariæ*, *Sow. t.* 396. f. 1.—*Ustilago Antherarum*, *Fr. Syst. Myc. v.* 3. p. 519.—*Cœoma Antherarum*, *Nees, Syst. f.* 5. *Lk. Sp.* 2. p. 26.

On various *Caryophyllaceæ*. Sowerby. Edinburgh, *Dr. Greville*.

39. *U. Saxifragarum*, Dec. (*Saxifrage Uredo*); spots pallid, sori subrotund and oval raised scattered and aggregate hypogenous, epidermis ruptured persistent, sporidia subglobose yellow. *Dec. Fl. Fr.* 6. p. 87. *Grev. Fl. Ed.* p. 440.—*Cœoma Saxifragarum*, *Lk. Sp.* 2. p. 28.

On various *Saxifragæ*. Balmuto, *Dr. Greville*.

40. *U. Epilobii*, Dec. (*Willow-herb Uredo*); spots yellowish, sori subrotund scattered surrounded by the ruptured epidermis often hypogenous, sporidia subglobose brown. *Dec. Fl. Fr.* 6. p. 73. *Johnst. Fl. Berw.* 3. p. 200.—*Cœoma Epilobii*, *Lk. Sp.* 2. p. 29.

On *Epilobia*. Berwick, *Dr. Johnston*.

41. *U. pustulata*, Pers. (*yellow Willow-herb Uredo*); spots yellowish, sori subrotund minute closed scattered and confluent amphigenous, sporidia globose yellow. *Pers. Syn.* p. 219. *Grev. Fl. Ed.* p. 441.—*Cœoma Onagrarum*, *Lk. Sp.* 2. p. 29.

On *Epilobium palustre*. Duddingston Loch, *Dr. Greville*, who describes the *sporidia* as suboval.

42. *U. Rosæ*, Dec. (*Rose Uredo*); spots yellow small scattered, sporidia orange suboval with sometimes a minute peduncle. *Dec. (a.) Fl. Fr.* 2. p. 232. *Grev. Fl. Ed.* p. 438.—*U. Rosæ centifoliæ*, *Pers. Syn.* p. 215.—*U. miniata*, *a. Eglanteriæ*, *Moug. & Nest.!* 187.—*U. aurea*, *Purt.* 3. n. 1127. (*in part*).—*Cœoma Rosæ*, *var.* 1. *punctiforme*, *Lk. Sp.* 2. p. 30.—*C. Rosæ*, *Kl.!* n. 90.

On Rose leaves. Extremely common.

43. *U. effusa*, Strauss. (*Vermilion Uredo*); spots yellow, sori effused over the nerves and petioles, sporidia subglobose. *Grev. Sc. Crypt. Fl. t.* 19. *Fl. Ed.* p. 439. *Johnst. Fl. Berw.* 2. p. 199.—*U. Rosæ*,  $\beta$ . *Dec. l. c.*—*U. miniata*, *a. Pers. Syn.* p. 216.

—*U. pinguis*, Desm. ! n. 529.—*U. aurea*, Purt. l. c. (in part).  
—*Cæoma Rosæ*, var. 2. *miniatum*, Lk. Sp. 2. p. 30.

On the leaves, petioles and seed-vessels of Roses. Extremely common.—This and the foregoing species are represented together. Sow. t. 398. f. 8.

44. *U. Rubórum*, Dec. (*Bramble Uredo*) ; spots pale, brown on the opposite side, sori subrotund aggregate, epidermis soon bursting generally hypogenous, sporidia subglobose orange. Dec. Fl. Fr. 2. p. 234. Moug. & Nest. ! n. 92. Grev. Fl. Ed. p. 438. Johnst. Fl. Berw. 2. p. 199.—*U. Rubi fruticosi*, Pers. Syn. p. 218.—*Cæoma Ruborum*, Lk. Sp. 2. p. 30.—*Æcidium Rubi*, Sow. t. 398. f. 1.

On Brambles. Very common.—Spots often impressed above, and purple ; sporidia globose or subglobose, echinulate, bright ochraceous-yellow.

45. *U. Potentillárum*, Dec. (*Potentilla Uredo*) ; spots yellowish, sori subrotund and oval bullate aggregate often confluent, sporidia subglobose subcoherent orange. Dec. Fl. Fr. 6. p. 81.—*U. Potentillæ*, l. c. 2. p. 232. Grev. Fl. Ed. p. 438. Johnst. Fl. Berw. 2. p. 199.—*U. Fragariæ*, Sow. ! t. 398. f. 2. Purt. 3. n. 1549.—*U. Alchemillæ*, Pers. Syn. p. 215. Moug. & Nest. ! n. 91. Grev. l. c. p. 439. Johnst. l. c.—*U. Spireæ*, Sow. t. 398. f. 7.—*Cæoma Potentillarum*, Lk. Sp. 2. p. 31. Kl. ! n. 91.

On various *Rosacea*. Common.—Dr. Greville refers the plant on *Spiræa Ulmaria*, to *U. effusa*.

46. *U. intrúsa*, Grev. (*brown Lady's-Mantle Uredo*) ; hypogenous scattered or partially aggregate reddish-brown rounded somewhat prominent minute very unequal, sporidia roundish or oval rarely pedicellate. Grev. Fl. Ed. p. 436. Dub. Syn. p. 898. Johnst. Fl. Berw. 2. p. 201.

On *Alchemilla vulgaris*, with the last. Auchindenny woods, Dr. Greville. Berwick, Dr. Johnston.

47. *U. apiculósa*, Lk. (*apiculate Uredo*) ; spots yellow and brown, sori subrotund scattered surrounded by the ruptured epidermis generally amphigenous, sporidia ovoid brown furnished with a short peduncle.—*U. bifrons*, Grev. ! Fl. Ed. p. 435.—*U. Rumicum*, Dec. Fl. Fr. 6. p. 66. Purt. Grev. l. c. p. 436. Johnst. Fl. Berw. 2. p. 201.—*U. Rumicis*, Purt. 3. n. 1544.—*U. Cichoracearum*, Dec. l. c. 2. p. 229. Grev. l. c. p. 435. Johnst. l. c.—*Cæoma apiculosum*, Lk. Sp. 2. p. 32.

On various plants. Very common.

48. *U. bifrons*, Grev. (*two-faced Uredo*) ; amphigenous often opposite scattered round light-brown girt with the remains of



the epidermis, sporidia globose. *Grev. ! Fl. Ed. p. 435.*—*U. Rumicum*,  $\beta$ . *Rumicis acetosa*, *Dec. Fl. Fr. 6. p. 66.*

On *Rumex acetosa* and *acetosella*. Rosslyn woods and Newhaven. *Dr. Greville.*—This appears to be really distinct in having globose sporidia. It is placed here instead of after *n. 15*, for the sake of closer comparison with *U. apiculosa*.

49. *U. Leguminosarum*, Lk. (*Pea-tribe Uredo*); spots obliterated, sori subrotund and oval bullate scattered and aggregate surrounded by the ruptured epidermis, sporidia ovoid brown not pedicellate.—*U. Fabæ*, *Grev. Sc. Crypt. Fl. t. 95. Fl. Ed. p. 436. (in part).*—*U. Viciæ fabæ*, *Pers. Syn. p. 221.*—*U. fusca*, *Purt. ! 2 & 3. n. 1130.*—*Cœoma Leguminosarum*, *Lk. Sp. 2. p. 34. Kl. ! n. 92.*

On various *Leguminosæ*. Common.—*Dr. Greville's* plant appears in part to be referrible to *U. apiculosa*, if indeed the two species be really distinct.

50. *U. appendiculosa*, Berk. (*long-stalked pea-tribe Uredo*); spots yellowish brown, heaps subrotund and oval confluent nearly plane amphigenous, epidermis bursting, sporidia ovoid brown furnished with long peduncles. *U. appendiculata*,  $\beta$ . *Pisi sativi*, *Pers. Syn. p. 222.*—*Cœoma appendiculosum*, *Lk. Sp. 2. p. 33.*

On various *leguminosæ*. King's Cliffe, Norths. *Rev. M. J. Berkeley*, on garden Peas. One of the finest of the British *Uredines*.

51. *U. Anthyllidis*, Grev. (*Finger-Vetch Uredo*); scattered, sori irregularly round or suboval surrounded by the ruptured epidermis, sporidia brown globose. *Grev. ! in Hook. Herb.*

On *Anthyllis vulneraria*, *Dr. Greville*. A very distinct species.

52. *U. confluens*, Dec. (*confluent Uredo*); hypogenous depressed yellow oblong concentric at length confluent, sporidia nearly oval. *Dec. Fl. Fr. 2. p. 233.* *Grev. Fl. Ed. p. 438.*—*U. confluens*,  $\beta$ . *Pers. Syn. p. 214.*—*Cœoma Mercurialis*, *Lk. Sp. 2. p. 35 ?*

On *Mercurialis perennis*. Rosslyn, *Dr. Greville*. Charlton, Kent. *Sowerby*. Oxford, *Baxter*.—Link says that his plant has brown sporidia, it is doubtful therefore whether it be the same with that of *Dr. Greville*.

53. *U. Quercus*, Brondeau, (*Oak Uredo*); hypogenous, sori yellow then orange minute ovate and orbicular slightly prominent scattered solitary or agglomerated into minute patches, surrounded by the ruptured epidermis, sporidia subglobose pelucid not cohering. *Dub. Syn. p. 893.*

On Oak leaves. Bungay, *Mr. Stock*.

54. *U. Filicum*, Desm. (*Fern Uredo*); spots yellowish, sori subrotund bullate scattered and aggregate hypogenous, epidermis at length bursting, sporidia subglobose yellow. *Desm. ! 530.*

—*U. aurea*, Sow. t. 320.—*U. linearis*,  $\beta$ . *Polypodii*, Pers. Syn. p. 217. *Moug. & Nest.!* 289.—*Cæoma Filicum*, Lk. Sp. 2. p. 36.

On *Pteris crispata*. Sowerby. On the continent it is found on various *Aspidia* and *Polypodia*.

55. *U. Equiséti*, Berk. (*Mare's-tail Uredo*); sori linear occupying the striæ of the stem, bursting longitudinally, sporidia globose minute atro-sanguineous.

On *Equisetum limosum*. Fineshade, Norths. *Rev. M. J. Berkeley.*

\*\* *Sporidia white.*

56. *U. candida*, Pers. (*white Uredo*); sporidia globose ovoid or oblong with obtuse apices, white. Pers. Syn. p. 223. *Moug. & Nest.!* n. 190. *Grev. Fl. Ed. p. 442. Sc. Crypt. Fl. t. 251. Baxt.!* 88.—*U. Thlaspi*, Sow. t. 340. *Purt. 3. n. 1543. (in part).*—*U. cruciferarum*, Dec. Syn. p. 49. *Moug. & Nest.!* n. 290.—*Cæoma candidum*, Lk. Sp. 2. p. 37.

On *Cruciferae*, &c. Very common.

57. *U. cylindróspora*, Fr. (*cylindric-seeded Uredo*); sporidia very minute cylindrical subtruncate white. Fr. Syst. Myc. v. 3. p. 516.—*Cylindrosporium concentricum*, Grev. *!* *Sc. Crypt. Fl. t. 29. Fl. Ed. p. 471.*

On both surfaces of the living leaves of Cabbages. About Edinburgh. *Dr. Greville.*—Certainly distinct from the foregoing, and if the sporidia be not conglutinated, which from authentic specimens I do not perceive to be the case, not distinguishable from *Uredo*. The sporidia are very minute, cylindrical and subtruncate, but not so abruptly as represented in Dr. Greville's figure.

B. *Sporidia unequal.*

58. *U. Lini*, Dec. (*Purging-flax Uredo*); spots yellowish, sori convex subrotund, scattered surrounded by the ruptured epidermis, sporidia globose or pyriform sometimes pedicellate. *Dec. Fl. Fr. 2. p. 234. Moug. & Nest.!* 90. *Grev. Sc. Cr. Fl. t. 31. Fl. Ed. p. 439. Desm.!* 675.—*Cæoma Lini*, Lk. Sp. 2. p. 38.

On *Linum catharticum*. Not uncommon.

59. *U. gyrósa*, Reb. (*gyrose Uredo*); spots obliterated, sori minute confluent and forming a small distinct ring, epiphyllous, epidermis bursting, sporidia subglobose and yellow, or pyriform and pale. *Reb. Neom. t. 3. f. 15. Grev. Fl. Ed. p. 439.*—*U. Rubi Idæi*, Pers. Syn. p. 218.—*Cæoma gyrosum*, Lk. Sp. 2. p. 38.

On Raspberry leaves. Balmuto. Rosslyn, *Dr. Greville.* Appin, *Captain Carmichael.*—Easily known by its forming a more, or less perfect, often somewhat gyrose ring, the centre being unoccupied. *Sporidia* globose and elongato-pyriform.

60. *U. Poterii*, Spreng. (*Burnet Uredo*); spots obliterated rufous on the opposite side, sori subrotund scattered minute hypogenous, epidermis bursting, sporidia subglobose orange. accompanied by others which are pale cylindrical and slightly curved. *Spreng. Syst.* 4. p. 576. *Dub. Syn.* p. 896.—*Cœoma Poterii*, Lk. *Sp.* 2. p. 38.

On *Poterium Sanguisorba*. Isle of Wight, *Rev. M. J. Berkeley*.—The subglobose sporidia are often pedicellate.

61. *U. Euphœbiæ*, Reb. (*Spurge Uredo*); spots obliterated, sori subrotund small scattered generally hypogenous surrounded by the ruptured epidermis, sporidia pyriform abortive, or subglobose and pedicellate, others perfect subglobose orange. *Reb. Neom.* p. 354. *Purt.* 3. p. 297.—*U. Helioscopiæ*, Dec. *Fl. Fr.* 2. p. 232. *Grev. Fl. Ed.* p. 440.—*Cœoma Euphorbiarum*, Lk. *Sp.* 2. p. 39.

On various species of *Spurge*, extremely common, especially on *E. Helioscopia* and *Peplus*.—Some of the sporidia have rather long peduncles.

62. *U. cylindrica*, Strauss. (*Poplar Uredo*); spots yellow, sori subrotund here and there confluent, epidermis at length bursting by a pore, some of the sporidia barren subglobose pedicellate, others cylindric obtuse at either end orange.—*U. populina*, Pers. ! *Syn.* p. 219. *Grev. ! Fl. Ed.* p. 442.—*U. Populi*, *Purt.* 3. n. 1542. t. 27. *Johnst. Fl. Berw.* 2. p. 200.—*U. ovata*,  $\alpha$ . &  $\beta$ . *Grev. l. c.* *Johnst. Fl. Berw.* 2. p. 198.—*Cœoma cylindricum*, Lk. *Lp.* 2. p. 39.

On *Populus nigra, balsamifera*, and *tremula*, also on *Betula alba*.—I see very little difference between *U. cylindrica* and *U. ovata*; the sporidia in the latter plant are seldom truly ovate, but more frequently exactly as in *U. cylindrica*. Link appears to me correct in uniting them.

62. *U. Saliceti*, Schlecht. (*Willow Uredo*); spots yellowish, sori subrotund solitary or disposed in circles with the centre free, surrounded by the ruptured epidermis mostly hypogenous, sporidia barren subglobose and pedicellate or pyriform, perfect subglobose orange.—*U. Vitellinæ*, Dec. *Fl. Fr.* 2. p. 231. *Grev. ! Fl. Ed.* p. 437. *Johnst. Fl. Berw.* 2. p. 200. *Desm. !* 531.—*U. salicis*, *Grev. ! l. c.*—*Cœoma Saliceti*, Lk. *Sp.* 2. p. 41.

On various Willows. Common.—Both the plants of Dr. Greville, referred to above, have the pyriform pedicellate sporidia, and appear to be the same, except indeed his *U. Salicis* be *U. Epitœa*, Kunze, which is distinguished principally by the paler sporidia and hardly ever confluent sori. This can scarcely be determined without recent specimens.

63. *U. Capreærum*, Dec. (*Sallow Uredo*); spots obliterated yellow on the opposite side, sori various in form nearly plain here and there confluent hypogenous surrounded by the rup-

tured epidermis, sporidia barren subglobose and pyriform pedicellate, perfect subglobose dirty yellow. *Dec. Fl. Fr.* 6. p. 80. —*U. farinosa*, *Pers. Syn.* p. 217. *Moug. & Nest.!* n. 188. *Purt.* 3. n. 1544. *Grev. Fl. Ed.* p. 437. *Johnst. Fl. Berw.* 2. p. 200. *Baxt.!* 86. *Desm.!* 532.—*Cæoma Capræarum*, *Lk. Sp.* 2. p. 41.

On Sallows. Extremely common.

## CLASS XXIV.

### CRYPTOGAMIA CONTINUED

#### ORDER VI. FUNGI.\* *Linn.* Fungi.

*Plants*, consisting of *cells* and *fibres*, always springing from organized and generally decayed or decaying substances, not perfected when immersed in water, bearing reproductive *sporidia*, either externally or internally, naked or inclosed in variously-formed cells, many of which frequently concur in the reproduction of a single individual. Varying extremely in substance and duration, generally soft and juicy, sometimes exceedingly hard, with or without a central gelatinous nucleus, or dry and powdery.†

\* When the printing of the species of this, the 2d Part of the Class CRYPTO-GAMIA, was commenced, I thought myself highly fortunate to have obtained the assistance of my valued friend, the *Rev. M. J. Berkeley*, in preparing the first Tribe, *Pileati*. I have now to express my cordial acknowledgments (in which I am satisfied I shall be joined by every Botanist in the country) to that gentleman for having kindly undertaken to prepare the whole of this vast family for the press: and it is certain that the task could not have fallen into better hands. W. J. H.

† It is almost impossible to draw up characters which shall in every case distinguish the three concluding Orders, LICHENES, ALGÆ and FUNGI. Indeed the more natural such Orders are, the more difficult it is to arrive at any thing approaching to mathematical precision; and this is equally true, as regards genera or species, which are often determinable more by the predominance of certain characters, than by any exact affirmative or negative definitions. Thus, in general, *Algae* grow in water; *Lichens*, in air, drawing their nourishment from the medium which surrounds each respectively, and not from the matrix; while *Fungi* are nourished by dead or decaying organized matter, and have therefore been styled *Usterophyta*. Yet true as these facts are, in general, there are a few instances in which, to a certain extent, they will be found incorrect, according to the letter. Thus several species of the genera *Leptomitis*, *Hygrogroscis*, &c., usually arranged amongst *Algae*, on account of their immersed manner of growth, are, beyond all doubt, imperfect specimens of *Mucor*, *Penicillium*, &c. Instances have been recorded in which this change has been observed, as by *Carus*, in the volume for 1823, of *Nova Acta Nat. Cur.*, §c., and by *Dutrochet*, in the 1st volume of the New Series of the *Annales des Sciences Naturelles*.

Fungi occur of all colours, except pure green; in such as are green, the tint always more or less inclines to that of verdigris, and does not appear to be owing to the action of light and oxygen upon the contents of the cells, as is probably the case in *Lichens*. This circumstance Fries, in the Introduction to his *Lichenographia Europæa*, is inclined to consider as most important and the main distinguishing feature between the two orders. Two others have been proposed, that there is no successive development of parts, and that there is no external sporuliferous *disc*; both of which points, especially the latter, are opposed by numerous obvious exceptions. Nor does the distinction, that they increase by addition to the inside, appear better founded.

Their qualities are various, many are used very extensively as articles of food, a few are endowed with valuable medicinal properties, numbers are highly poisonous, and the ravages of several in dock-yards, corn-fields, orchards, &c., are incalculable. A few possess the remarkable property of exhaling hydrogen gas. Some, however, exhale carbonic-acid gas and inhale oxygen.

Tannin, though prejudicial to phænogamous plants, is certainly harmless, if not beneficial, to many Fungi. One fungous production indeed, referred by authors to the obscure genus *Rhizomorpha*, originates in tan-pits.

In this country, *Fungi* are so generally objects of prejudice and disgust, that their real importance as useful productions, is little appreciated. With the exception of the common *Mushroom*, scarcely a single species of *Agaric* is in general accurately distinguished, and though many speak of another kind, under the name of *Champignon*, there are few persons who know what to gather, and the fatal mistakes which have in consequence been made, have increased the disinclination to the use of any but the *Mushroom*. *Truffles* and *Morels* are so local and scarce, that they are by no means generally known, seldom appearing at common tables, and probably the greater part of what are sold is imported. *Agaricus Georgii*, *A. personatus* and *A. procerus* are occasionally brought to Covent Garden Market, but their consumption is quite trifling. *Boletus edulis*, which is a most abundant and excellent species, is I believe altogether unknown, and the same may be said of several approved kinds, which, on the continent, are in constant use and regularly exposed for sale. Indeed in many parts of Europe, but especially Poland and Russia, they form a most important part of the food of the common people, and in the latter country, whole tribes are mainly supported by them, scarcely any species, except the *dung* and *fly Agarics*, being rejected. Even those kinds which are elsewhere refused by common consent, as

poisonous on account of their extreme acridity, are taken with impunity, being extensively dried or pickled in salt or vinegar for winter use. It is probable that this harmlessness arises from the particular mode of preparation, for from the exact account of Pallas, and the general diffusion of various species in various countries, there is no reason to doubt the fact, that sorts justly esteemed poisonous are really used; and it is well known that the noxious qualities of that most virulent species, *Agaricus vernus*, are communicated to brine, vinegar, &c., and that the *Olive tree Agaric* loses all its poisonous properties when salted, and becomes eatable. The pickle is probably in general thrown away; while as to dried fungi, I have been informed by a gentleman of great acuteness and observation, that in some town of Poland, where he was detained as a prisoner, he amused himself with collecting and drying the various fungi which grew within its walls, amongst which were many commonly reputed dangerous, and that, to his great surprise, his whole collection was devoured by the soldiers. Indeed two poisonous principles have been discovered in Fungi, one of which is so fugacious that it is dispelled by heat, or the act of drying, or by immersion in acids, alkalis or alcohol; the other is more fixed and resists such processes; and it is well observed by the late Professor Burnett, in his *Outlines of Botany*, § 725, “in certain situations, *truffles*, *morcls* and *common mushrooms*, are nearly flavourless, while in others their grateful tastes and smells are highly developed; and in a similar way certain *fungi*, which are eatable in one country or when gathered from one situation, are deleterious when growing in another: this difference depending upon the greater or less quantity of poisonous matter formed, the production of which may be favoured or suppressed by external physical circumstances, just from the same cause as *Celery* is said to be poisonous and *Sca-kale* and *Asparagus* not eatable, when growing wild, but which become bland and esculent when chance or culture, by excluding light, prevents the formation of their acrid principle.” It is however the practice in some districts to use *fungi* without any preparation whatever, as in their simple state they are considered more wholesome and nutritious. This practice is probably confined to kinds allied in their qualities to *Agaricus campestris*, and Schwægrichen assures us, in a letter quoted by Persoon, that in consequence of seeing the peasants about Nuremberg eating raw *mushrooms*, seasoned with anise and caraway-seed along with their black bread, he resolved to try their effect himself, and that during several weeks he ate nothing but bread and raw fungi, as *Boletus edulis*. *Agaricus campestris*, *Agaricus procerus*, &c., and drank nothing but water, when instead of finding his health affected, he rather experienced an increase of strength. A few species are recorded as used in

the southern hemisphere, and a kind of *Pachyma* is known in Van Diemen's Land by the name of "native bread."

The Kamtschatkans and Coriacks use *Agaricus muscarius*, or a nearly allied species, to produce intoxication, which often amounts to absolute delirium, and it is most remarkable that the narcotic property is communicated to the urine of the person who partakes of it, which is in consequence carefully preserved when the species is scarce, for the renewal of these disgusting orgies.

The medical uses of *Fungi*, are probably of far greater importance than their present very limited application might lead us to suppose. Several, which were formerly in high reputation for their active properties, are now altogether neglected or forgotten. Dufresnoy is said to have used *Agaricus emeticus* with success in the early stage of consumption, and doubtless if they were more studied, many of the active species might afford valuable remedies. However this may be, one, at least, the *Ergot*, is a highly powerful and invaluable specific, causing, as it does, a contraction of the uterus. It is most curious that this production, when occurring in great abundance among Rye, as it does frequently where that grain is extensively cultivated, and unavoidably composing a considerable part of the bread, gives rise to one of the most fearful and distressing diseases with which the human race is afflicted, in which the limbs gradually waste away with horrible pain, and eventually fall off. The same effect was produced, some years ago, in the neighbourhood of Bury St. Edmunds, upon several members of a family who had lived upon bread made from damaged Wheat. In this case, however, it is not at all clearly proved that the evil effects did not rise more from decomposition of the corn than from the presence of *ergot*, a circumstance highly curious, if correct, and rendered somewhat probable by cases which have occurred of dreadful illness, from the use of bread made of musty flour, which in a few hours was infested with mould, the fungi, however, proving perfectly innocuous, though the use of the bread itself was attended by the most alarming symptoms.

The Laplanders employ *Polyporus fomentarius* and some other species, which when beaten and steeped in saltpetre form most excellent tinder, known by the name of *Amadou*, to remove pain, by simply laying a small piece upon the part affected and igniting it. It is said that this remedy seldom fails. *Amadou* is also sometimes used like the soft contents of *puffballs* as a styptic, and forms occasionally a material for paper-making. When used, however, for stopping blood, it must be free from saltpetre.

In the economy of the world, *Fungi* perform a most important office in hastening the decomposition of dead organized



matter. It is this property which renders one or two species, known under the common name of *dry rot*, such a dreadful plague in ships and buildings. The disease doubtless originates on some unsound portion of the wood, but, once established, it spreads with wonderful rapidity and decomposes the sound wood beneath it, by absorbing its nutritive matter. The remedy is not difficult, where it is practicable to guard against the concurrence of circumstances favourable to its progress; but in many instances this is impossible. Various schemes have been proposed for its general prevention, but unsuccessfully, until Mr. Kyan impregnated the wood with corrosive sublimate, a well known enemy to vegetable life, which by combining with the nutritive matter of the wood renders it unfit for the support of vegetation, and as far as such short experience can testify, completely proved its efficacy. White of egg might probably be used with advantage on a small scale, as it seems, equally with corrosive sublimate, to prevent the growth of fungi; indeed it is sometimes employed by house-keepers for the prevention of mould by simply covering the articles to be preserved with paper steeped in it. In herbaria and cabinets, mouldiness may be kept away by the use of essential oils, or Russia leather.

*Fungi* are very destructive to corn, in the form of *Blight*, *Mildew*, *Bunt*, &c., doing injury not only by a diminution of the quantity but also of the nutritive matter, and as in the case of *Bunt*, by communicating to the corn an offensive taste and smell. The growth of these parasites depends so much upon accidental circumstances, that it is impossible for the most experienced cultivators to guard against them altogether, but the evil is greatly lessened by careful choice of seed, by steeping it in solutions of different substances, which destroy the vegetative power of the *sporidia* of these parasites, and by a judicious change of cropping, in the land subject to them. It appears that the reproductive contents of the *sporidia* are absorbed together with the water, containing the nutritive matter of the soil by the roots. At least it is certain that corn, sown in soil, which has been purposely mixed with the *sporidia*, is infested with the fungi to which those *sporidia* belong; and this has been proved also with regard to one of the entophytal parasites to which *Roses* are subject. Most plants are preyed upon by their peculiar parasites; *Pear-trees*, for instance, are sometimes much injured by *Aecidium cancellatum*, and young trees planted in their neighbourhood are observed to suffer.

The roots of certain plants, as *Saffron-Crocus*, *Lucerne*, *Convolvulus* *Batatus*, &c., are frequently exhausted by subterranean fungi. In the case of *Saffron*, the only remedy is to insulate the infected plot by a deep trench, which should seem to be a striking proof that these plants are really increased by seed.

Much has been written about the mode in which *Fungi* originate and are propagated, and some writers, of considerable weight, have considered them as the offspring of equivocal generation, under a certain concurrence of circumstances and special condition of the elements, from previously existing organized matter. It is to be observed, however, that this is a favourite notion with many continental naturalists, and by no means confined to *Fungi*, or even to the vegetable kingdom, as some appear to be of opinion that all organized beings have thus been produced, in consequence of laws imposed on matter by the Creator; while a few less scrupulous do not hesitate to descend into the very depths of materialism. As far then as any question may be raised with regard to the propriety of considering *Fungi* as real vegetables at all, even if the above stated opinion as to their origin be held correct, by parity of reasoning, their right to be so deemed is evident. And according to the views of these writers, it is no objection to such origin that they contain organs evidently destined for the reproduction of the species, because it appears to be the opinion of most of them, that though they originate by an equivocal generation, they can, when once developed, reproduce their species by seed.

It is not to be denied that difficulties about the appearance of *Fungi*, as of various other plants and animals, are often great; but it seems to me rash and precipitate in the extreme, because of a few points which at present baffle our powers of investigation, to have recourse to a principle which its supporters, at least as many as are at all of an humble and submissive frame of mind, dare not follow out into all its consequences. For my own part I can affirm, without hesitation, that I have never read a single essay of these writers without being struck with the utter inconclusiveness of their reasonings, and with their strange oversight of points which make against them so plainly and palpably that the most ordinary unprejudiced reader could not fail to seize them.

As to many entophytal parasites, such as *Uredines*, &c., it is a fair question whether they may not be mere developments (anamorphoses, as it is termed) of the tissue of those plants on which they are produced, though I believe that such an opinion is untenable, and if it be proved that they are propagated by seed, which is the fact, as far as the case admits of proof, they are most clearly true *Fungi*, and the question then resolves itself into the general one as to the mode of their origin.

Little is known at present with respect to the geographical distribution of *Fungi*, though the study of them with this especial view would clearly not be devoid of interest. Many, indeed, are found in every part of the world, but various forms are likewise confined within certain limits, and, as in the higher

plants, the tropics produce some of the richest and most curious. In general, they abound most where there is a constant succession of moisture, and consequently are most numerous in high latitudes; but too great heat does not appear favourable to their development, as many of the moist tropical woods are said to be almost destitute of them. Little however, comparatively, is known of tropical Fungi.

It is much to be regretted that the projected revision of his North American *Fungi*, was not accomplished by that most excellent mycologist, Schweinitz, as that alone would have afforded much ground for contemplation of the forms, characteristic of European and American vegetation, and might have given some clue to the distribution of species. In a late number of the *Annales des Sciences Naturelles*, an account is given by M. Montagne of the Fungi transmitted from Juan Fernández by Bertero, consisting of fifty-six species;\* of these it is curious that there is scarcely more than a third which are not referrible to well known European species, and only one which requires the formation of a new genus for its admission. One new species, in Dr. Hooker's Herbarium, which does not occur in that list, found upon ground on which wood had been burnt, I have myself discovered in a similar situation in this country.

Beautiful and highly interesting in form and structure as the objects are of which this present Order is composed, though much has been done in this country by *Hudson, Curtis, Dickson, Withering, Stackhouse, Bolton*, whose work has been translated into German, *Relhan*, and especially *Sowerby*, whose figures are often unrivalled for character, though sometimes involved in uncertainty from the almost total absence of descriptive matter and neglect of the microscope, towards amassing the materials out of which the mycological system of the present day has been formed, it has of late years, with one or two exceptions, been less studied than any other branch of Cryptogamic plants. This has arisen, I conceive, partly from the practical difficulty of preserving specimens for the herbarium, partly from the absence of any general work, adapted to the immense advances which have of late years been made in the study of Mycology. Gray's Natural Arrangement was intended, I suppose, to supply this deficiency, but from a certain meagreness and unsatisfactoriness, as well as from its having completely the air of a compilation, it appears to have been little consulted. To him, nevertheless, is certainly due the merit of having first given the British Botanist a connected account of the improved arrangement, unless indeed there may be previously something of that kind in some Encyclopædia, for I possess a copy of Albertini

\* There are a few species from Bertero in Dr. Hooker's Herbarium not included in M. Montagne's list.

and Schweinitz' *Conspectus*, which has been evidently used for such a purpose, though the degree of faith to be placed in it, if such exist, may be estimated from the fact, that the conductor gives directions to the compiler to construct, if possible, figures from the descriptions of such genera as are not represented in the work itself. As long as Withering's book kept pace at all with the current state of Mycology, students of this Order appear to have been more numerous; indeed, notwithstanding many faults, it contains so much original matter that it may even now be often consulted with advantage. The additions, however, which we find in later editions, so far from contributing to its usefulness, have, as it appears to me, often absolutely destroyed it, as they are frequently erroneous, and scarcely ever made with any just views either as to genera or species. A far more valuable publication (if comparison be made with the later editions of the Botanical Arrangement) is the *Midland Flora*, of the late Mr. Purton, well characterized by the writer of the former volumes of the present work, as an assiduous and faithful observer, containing much matter, and, considering his almost total neglect of the microscope, really surprising information. This, however, as the title shows, is only a local Flora, and has, in consequence, perhaps not received the attention it deserves; though its author has not been averse to improvements, and indeed in a manuscript revision, most kindly prepared with great care expressly for this volume, he has remodelled the greater part after the system of Fries. Almost the whole credit, however, of any knowledge of fungi which exists at present in this country, is due to the exertions of Dr. Greville, whose admirable publications have at least induced a better mode of study, if they have not as yet raised so many students as might have been expected from his labours. That his great work, containing certainly the most beautiful plates ever published, and which has been duly appreciated by all the highest authorities, should not have met with a support sufficient to ensure its continuance, is too lamentable a proof that such an indifference to the study of Fungi does exist. Indeed the general estimation in which it has been held, has put so completely within his power all the materials of the best mycologists, that it is greatly to be regretted that the immense stock of information he must have amassed, should be withheld from the public.

Of the present attempt to complete the concluding portion of the *English Flora*, comprising the *Fungi*, it is needful to say but a few words. The subject is of such extent that it was found absolutely impossible for Dr. Hooker himself, with all his various and important engagements, to give to the world, though he had long purposed to do so, a detailed account of

the Order, for which end he had made vast collections, and for which he was so well prepared from the peculiar attention he has always paid to Cryptogamic plants in general, to which his numerous works have borne, and ever will bear testimony. The project has only been abandoned by him gradually and with great reluctance, and it must frankly be confessed that it could never have been taken up by myself without the advantage of the stores accumulated for his own use. It has already been stated that a MS., containing an amended account of the species described in the Midland Flora, including such as had been detected by Mr. Purton, and especially by Mr. Baxter of Oxford, whose fasciculi of Cryptogamic plants included many *Fungi*, since the termination of that work, was prepared for Dr. Hooker, who was anxious to obtain the best information from every quarter. Dr. Klotzsch, now one of the Curators of the King's Herbarium at Berlin, arranged the whole of his collection, including that of Captain Carmichael, who has contributed to this Order, as well as to the Algae, an immense number of species hitherto unknown in Great Britain, together with authentic specimens of most of Dr. Greville's and Purton's species, and those enumerated by Dr. Johnston in the Flora of Berwick, as also many Fungi, communicated by Mr. W. Wilson and Mr. Stock. I am myself indebted to the liberality and kindness of Messrs. J. D. C. and C. E. Sowerby, for the opportunity of an unrestricted inspection of the original specimens figured in their father's work, and for the loan of all the more minute kinds which required much study and microscopic examination.

It is not pretended that the present volume contains at all a perfect list of *British Fungi*; numerous yet unobserved species, I am convinced, exist in my own immediate neighbourhood, while districts which were new to me, have always hitherto supplied an abundant harvest.

That others may with more certainty add to this list, it is my intention, if I have health and leisure to do so, to publish Fasciculi of dried Fungi, with an especial reference to this work; preparations for which are already made.\* Great facilities, as regards the more succulent Fungi, are now afforded by Dr. Klotzsch's plan, which is given in Dr. Hooker's *Botanical Miscellany*; and as it really removes some serious difficulties which stood in the way of studying these plants, it may be well to copy the greater part of the account there given, and to add a few words, as to the manner in which Dr. Hooker's collection is arranged.

\* In the determination of the various species of Fungi, it is very certain that nothing renders such valuable aid to the student as the being able to refer to authentic specimens. W. J. H.

Dr. Klotzsch writes thus :—“ The method I adopt by which the *Agarics* and *Boleti* may have their characters preserved and be fit for examination in the Herbarium, is as follows :—

“ With a delicate scymetar-shaped knife, or scalpel, such as is found in a surgeon’s instrument-case, I make a double vertical section, through the middle, from the top of the pileus to the base of the stipes, so as to remove a slice. This, it will be at once seen, shows the vertical outline of the whole *Fungus*, the internal nature of its stipes, whether hollow, or spongy, or solid, the thickness of the pileus and the peculiarities of the gills, whether equal or unequal in length, decurrent upon the stipes or otherwise, &c. There will then remain the two sides or (nearly) halves of the *Fungus*, which each in itself gives a correct idea, if I may so express myself, of the whole circumference of the plant. But before we proceed to dry them, it is necessary to separate the stipes from the pileus, and from the latter to scrape out the fleshy *lamellæ*, or *gills*,\* if it be an *Agaric*, or the *tubes* of the *Boletus*. We have thus the *Fungus* divided into five portions ; a central thin slice, two (nearly) halves of the stipes and the same sections of the pileus :—these, after being a little exposed to the air that they may part with some of their moisture, but not so long that they shrivel, are to be placed between dry blotting paper and subjected to pressure as other plants ; the papers being changed daily till the specimens are perfectly dry. When this is the case, the central portion or slice, and the two halves of the stipes, are to be fastened upon white paper, together with the respective halves of the pileus upon the top of the latter, in their original position. Here will thus be three sections, from which a correct idea of the whole plant may be obtained. The *volva* and *annulus* of such species as possess them, must be retained.

“ With care, even the most fugacious species, such as *Agaricus fimetarius*, *ovatus*, &c, may be very well preserved, according to this method.

“ Some of the smaller and less fleshy kinds will not require to have their lamellæ removed, such as *Agaricus filipes*, *supinus*, *galericulatus*, &c. In collecting fleshy *Fungi*, care must be taken that they are not too old and absolutely in a state of decomposition, or too much infested with the larvæ of insects. When this latter is the case, some oil of turpentine poured over them will either drive them rapidly from their holes or destroy them. Species, with a clammy viscid pileus, it is better to expose to a dry air or the heat of a fire, before being placed in papers.

\* Where the flesh is at all thick, it is requisite to cut out carefully the greater part of that also, and in large fungi to reduce the thickness of the stem.

“The separate parts of the genera *Phallus* and *Clathrus*, I fill with cotton. I keep them for a time exposed to a dry atmosphere, and then after removing the cotton, subject them to pressure. The same may be done with the large tremelloid *Pezizæ*.”

To this Dr. Hooker adds:—“I have witnessed, with great satisfaction, the whole of the above process for drying the fleshy *Fungi*, and have now many specimens in my Herbarium preserved according to this method. Not only is the outline of the *Fungus* thus retained, and in most instances, its essential distinguishing character; but there is this further advantage, that from the specimens containing a smaller quantity of fleshy matter, they are infinitely less liable to the depredations of insects than if the whole *Fungus* were submitted to pressure. In order to protect my Herbarium, in general, as much as possible from these troublesome visitors, I wash (with a camel-hair pencil) or sprinkle, such specimens as are most subject to them, with oil of turpentine, in which I put a small quantity of finely pounded corrosive sublimate. It is true that this substance is not dissolved in the oil; but by shaking the bottle before using it, it is widely spread over the specimen so treated, and remains to protect the plant after the oil has evaporated. Spirit of wine extracts the colour from the plant, and soils the paper on which the latter is fastened, as I have ascertained by experience.”

Dr. Hooker's collection is arranged in the following manner: For each genus, or if the genus be large, each subgenus or division, a sheet of cartridge paper is taken, marked in the centre, a little above the bottom of the first page, with the number of the Class and Order; then, below this, if the division of the order or genus is denoted by any name, this is inserted, and lastly, at the left-hand corner, in the same line, the number and name of the genus, together with the authority on which it is founded, as follows:—

## CLASSIS 2.

### ORDO. IV.

#### 13. SPUMARIA, *Pers.* MYXOGASTRES.

The specimens are glued upon separate pieces of paper, (the best plan probably is to have them 4to., 8vo., 12mo., foolscap size) and these, after they have been labelled in the left hand corner at the base, are pinned, with very fine pins, at one of the upper corners to the third page of a sheet of paper, which is soft and flexible, but moderately thick, each sheet thus contain-

ing from four to six specimens. All the sheets are then placed within the previously prepared sheet of cartridge paper. The specimens are thus kept in small compass, and from being secured by pins they do not slip about or rub against each other, which would be the destruction of many delicate species, and the first leaf of each sheet, which covers them, forms a further protection against friction. From being fixed on convenient slips of paper, which are readily removed, they can be examined more easily than if each were glued to a distinct leaf, as is the custom in other parts of the Herbarium. The larger specimens are kept in drawers, a ticket being pinned at the proper place notifying that such is the case.

KING'S CLIFFE, *Dec.* 1, 1835.



## SYNOPSIS OF THE GENERA.

SUBORDER I. HYMENOMYCETES. *Hymenium naked.*

TRIBE I. PILEATI. *Receptacle dilated more or less in a horizontal direction, sometimes branched, tending to an orbicular form. Hymenium inferior. Asci fixed.*

1. AGÁRICUS. *Hymenium* consisting of plates radiating from a common centre, with shorter ones in the interstices, composed of a double closely connected membrane, more or less distinct from the pileus. *Veil* various or absent. p. 1. (species 333.)

SERIES I. LEUCOSPORUS. *Sporidia white.*

- Subgenus 1. AMANITA, p. 1. (species 1—9.)  
 2. LEPIOTA, p. 6. (species 10—17.)  
 3. ARMILLARIA, p. 10. (sp. 18—20.)  
 4. LIMACIUM, p. 12. (sp. 21—26.)  
 5. TRICHOLOMA, p. 14. (sp. 27—41.)  
 6. RUSSULA, p. 20. (sp. 42—50.)  
 7. GALORRHEUS, p. 23. (sp. 51—72.)  
 8. CLITOCYBE, p. 31. (sp. 73—122.)  
 9. COLLYBIA, p. 49. (sp. 123—139.)  
 10. MYCENA, p. 55. (sp. 140—167.)  
 11. OMPHALIA, p. 64. (sp. 168—181.)  
 12. PLEUROPIUS, p. 69. (sp. 182—202.)

SERIES II. HYPORHODEUS. *Sporidia pale rose-coloured.*

- Subgenus 13. CLITOPILUS, p. 76. (sp. 203—212.)  
 14. LEPTONIA, p. 80. (sp. 213—215.)  
 15. NOLANEA, p. 81. (sp. 216.)  
 16. ECCILIA, p. 81. (sp. 217—218.)

SERIES III. CORTINARIA. *Sporidia reddish-ochre. Veil arachnoid.*

- Subgenus 17. TELAMONIA, p. 82. (sp. 219—226.)  
 18. INOLOMA, p. 85. (sp. 227—233.)  
 19. DERMOCYBE, p. 87. (sp. 234—242.)

SERIES IV. DERMINUS. *Veil not arachnoid. Sporidia ferrugineous.*

- Subgenus 20. PHOLIOTA, p. 89. (sp. 241—248.)  
 21. MYXACIUM, p. 73. (sp. 249—250.)  
 22. HEBELOMA, p. 93. (sp. 251.)  
 23. FLAMMULA, p. 94. (sp. 252—255.)  
 24. INOCYBE, p. 95. (sp. 256—265.)  
 25. NAUCORIA, p. 98. (sp. 266—268.)  
 26. GALERA, p. 99. (sp. 269—273.)  
 27. TAPINIA, p. 101. (sp. 274.)  
 28. CREPIDOTUS, p. 101. (sp. 275—280.)

SERIES V. PRATELLA. *Veil not arachnoid. Gills changing colour, clouded, at length dissolving. Sporidia brown-purple.*

- Subgenus 29. VOLVARIA, p. 103. (sp. 281—284.)  
 30. PÆALIOTA, p. 105. (sp. 285—290.)  
 31. HYPHOLONA, p. 110. (sp. 291—293.)  
 32. PSILOCYBE, p. 111. (sp. 294—296.)  
 33. PSATHYRA, p. 112. (sp. 297—306.)  
 34. COPRINARIUS, p. 115. (sp. 307—315.)  
 35. COPRINUS, p. 118. (sp. 316—331.)  
 36. GOMPHUS, p. 124. (sp. 332—333.)

2. CANTHARÉLLUS. *Pileus* furnished below with dichotomous radiating branched subparallel *folds*, not separable from the flesh, sometimes anastomosing or obsolete. p. 124. (sp. 10.)

3. MERÚLIUS. *Hymenium* veiny or sinuoso-plicate. *Folds* not distinct from the flesh of the pileus, forming unequal angular or flexuous pores. p. 128. (sp. 5.)

4. SCHIZOPHÝLLUM. *Gills* radiating from the base, composed of a folded membrane, which is ruptured along their edge, the two portions of the fold being revolute, bearing *asci* only on the outer surface. p. 130. (sp. 1.)

5. DÆDÁLEA. *Hymenium* composed of anastomosing gills or flexuous elongated pores, formed out of the corky substance of the pileus. p. 130. (sp. 12.)

6. POLYPÓRUS. *Hymenium* concrete with the substance of

the pileus, consisting of subrotund pores with thin simple dissepiments. p. 134. (sp. 45.)

7. BOLÉTUS. *Hymenium* distinct from the substance of the pileus, consisting of cylindric separable tubes. *Sporidia* oblong. p. 147. (sp. 16.)

8. FISTULÍNA. *Hymenium* formed of a distinct substance, but concrete with the fibres of the pileus. *Tubes* at first wart-like, somewhat remote, closed, radiato-fimbriate, at length approximated, elongated, open. p. 154. (sp. 1.)

9. HÝDNUM. *Hymenium* of the same substance as the pileus, composed of free spine-like processes. p. 155. (sp. 15.)

10. SISTOTRÉMA. *Hymenium* somewhat distinct from the pileus, composed of irregularly disposed, curved and gyrose, lamellate teeth. p. 169. (sp. 1.)

11. IRPEX. *Hymenium* concrete with the substance of the pileus, torn into distinct spines disposed in rows or in a reticulate manner, their bases connected together by lamellate, sinuous or porous folds. *Asci* slender, situated only on the toothed processes. p. 160. (sp. 2.)

12. RÁDULUM. *Hymenium* tuberculated. *Tubercles* shapeless, resembling papillæ or rude somewhat angular spines, more or less obtuse, distant, distinct or irregularly fasciculate, the inner substance homogeneous with the receptacle. *Asci* occupying indifferently all parts of the hymenium. p. 161. (sp. 1.)

13. PHLÉBIA. *Hymenium* homogeneous and concrete with the pileus, smooth, venoso-rugose; wrinkles interrupted, disposed irregularly, straight or flexuous, bearing *asci* all over. p. 161. (sp. 3.)

14. THELÉPHORA. *Hymenium* homogeneous and concrete with the pileus, even or papillate, the whole surface bearing *asci*. p. 162. (sp. 42.)

TRIBE II. CLAVATI. *Receptacle* vertical, simple or branched, tending to a cylindrical form, immarginate. *Hymenium* superior. *Asci* fixed.

15. CLAVÁRIA. *Receptacle* erect, more or less cylindrical, homogeneous, confluent with the stem. *Hymenium* occupying the whole surface. p. 173. (sp. 20.)

16. CALÓCERA. Between horny and gelatinous, tough, slimy, rooting, without any distinct stem. *Asci* slender. p. 177. (sp. 3.)

17. GEOGLÓSSUM. *Receptacle* erect, club-shaped, subcom-

pressed, produced downwards into a distinct stem. *Hymenium* concrete, covering the incrassated receptacle. *Asci* elongated. p. 178. (sp. 7.)

18. SPATHULÁRIA. *Receptacle* vertical, compressed, running down on either side into the distinct stem. p. 179. (sp. 1.)

19. MÍTRULA. *Receptacle* ovate, inflated, closely surrounding with its base the distinct stem. p. 180. (sp. 2.)

20. TÝPHULA. *Receptacle* somewhat cylindric, distinct from the capillary stem, bearing sporules on every side. *Asci* obsolete. p. 180. (sp. 5.)

21. PISTILLÁRIA. *Receptacle* slender, cylindrical, without any distinct stem. *Hymenium* even, occupying the whole surface, but producing *sporidia* only in the upper part. *Asci* obsolete. p. 181. (sp. 5.)

TRIBE III. MITRATI. *Receptacle* bullate, pileiform, margined. *Hymenium* superior, never closed.

22. MORCHÉLLA. *Receptacle* pileate. *Hymenium* costate, lacunose. p. 182. (sp. 3.)

23. HELVÉLLA. *Receptacle* pileate, deflexed, lobed. *Hymenium* even. p. 184. (sp. 3.)

24. VÉRPA. *Receptacle* conico-deflexed, equal. *Hymenium* even or wrinkled. p. 184. (sp. 2.)

25. LEÓTIA. *Receptacle* capitato-pileate; the margin revolute, bearing *asci* beneath as well as above. p. 185. (sp. 3.)

26. VIBRÍSSEA. *Receptacle* capitato-pileate; margin at first adnate, soon free. *Asci* emerging from the hymenium. p. 186. (sp. 1.)

TRIBE IV. CUPULATI. *Receptacle* patelliform, margined. *Hymenium* superior, more or less closed when young and concave.

27. PEZÍZA. *Cup* more or less concave, soon expanded, the disc naked. *Asci* fixed, accompanied by *paraphyses* (abortive *asci*). p. 186. (sp. 106.)

SERIES I. ALEURIA. *Fleshy* or *carnoso-membranaceous*, *pruinose*, or *floccoso-furfuraceous* from the concrete veil.

SUBGENUS 1. MEGALOPYXIS, p. 186. (sp. 1—10.)

2. GEOPYXIS, p. 189. (sp. 11—16.)

3. HUMARIA, p. 190. (sp. 17—21.)

4. ENCÆLIA, p. 191. (sp. 22—23.)

SERIES 2. LACHNEA. *Waxy, rarely fleshy, externally hairy or villous from the persistent distinct veil. Cup closed when young.*

5. SARCOSCYPHA, p. 192. (sp. 24—34.)

6. DASYSCYPHA, p. 194. (sp. 35—55.)

7. TAPESIA, p. 199. (sp. 56—62.)

8. FIBRINA, p. 200. (sp. 63.)

SERIES 3. PHIALEA. *Waxy or membranaceous, rarely gelatinous, smooth, naked.*

9. HYMENOSCYPHA, p. 200. (sp. 63.)

10. CALYCINA, p. 202. (sp. 71—84.)

11. MOLLISIA, p. 204. (sp. 85—97.)

12. PATELLEA, p. 207. (sp. 98—101.)

13. HELOTIUM, p. 207. (sp. 102—106.)

28. PATELLÁRIA. *Cup open, margined, disc somewhat pulverulent, destitute of a veil. Asci connate, without paraphyses; substance waxy. p. 208. (sp. 1.)*

29. ASCÓBOLUS. *Cup nearly plane. Asci projecting beyond the surface of the hymenium, at length bursting forth elastically. p. 208. (sp. 5.)*

30. BULGÁRIA. *Cup at first closed. Asci immersed, accompanied by paraphyses, at length free and bursting forth. Gelatinous. p. 209. (sp. 2.)*

31. DITÍOLA. *Hymenium at length plicate, deliquescent. Cup open. Veil universal. Corky. p. 210. (sp. 1.)*

32. TÝMPANIS. *Hymenium not persistent, but at length cracking and breaking up. Cup open. Veil partial. p. 210. (sp. 3.)*

33. CENÁNGIUM. *Hymenium even, persistent, rarely deliquescent. Cup closed, at length open, more or less evidently consisting of two distinct strata, the outer coriaceous or membranaceous, the inner subgrumous. p. 211. (sp. 7.)*

34. STÍCTIS. *Hymenium even, immersed. Cup more or less obliterated. Asci slender, without paraphyses. Sporidia minute. p. 212. (sp. 6.)*

35. CRYPTÓMYCES. *Hymenium even, irregular, at length exposed. Cup obliterated. Asci large, accompanied by paraphyses. Sporidia large, containing sporidiola. p. 214. (sp. 2.)*

36. CYPHÉLLA. *Cup* concave, pendulous. *Sporidia* separating like dust. *Asci* none. p. 214. (sp. 1.)

TRIBE V. TREMELLINI. *Receptacle* various in form, of a more or less gelatinous substance. *Sporidia* (generally free,) at length bursting forth.

37. TREMÉLLA. *Receptacle* gelatinous, homogeneous, bearing fruit all round, destitute of papillæ. *Sporidia* submergent. p. 215. (sp. 9.)

38. EXÍDIA. *Receptacle* gelatinous, homogeneous, covered above only with the papillate *hymenium*. *Sporidia* at length bursting forth elastically. p. 217. (sp. 3.)

39. NÆMATÉLIA. *Receptacle* gelatinous, surrounding an heterogeneous compact nucleus. *Sporidia* bursting forth. p. 218. (sp. 1.)

40. DACRYMÝCES. *Receptacle* gelatinous, homogeneous, filled within with suberect *flocçi*, and interspersed *sporidia*. p. 219. (sp. 3.)

41. AGÝRIUM. *Receptacle* convex or spherical, even, compact, wax-like, gelatinous when moist, at length breaking up into *sporidia*. p. 220. (sp. 1.)

42. HYMÉNULA. *Receptacle* scarcely distinguishable from the very thin persistent flat adnate even *hymenium*, which is of a soft coriaceous consistence. p. 220. (sp. 1.)

TRIBE VI. SCLEROTIACEI. *Receptacle* various in form, more or less compact, fleshy. *Sporidia* free, submergent.

43. PYRÉNIUM. More or less globose, rootless; outer coat even, of a filamentous structure, filled with a softer substance, at length more or less hollow. p. 220. (sp. 1.)

44. ACROSPÉRMUM. Elongated, subclavate, subcartilaginous, subhomogeneous within; *apex* at length somewhat tumid and pruinose from the *sporidia*. p. 221. (sp. 2.)

45. SCLERÓTIUM. More or less round, rootless, covered with a thin bark-like epidermis, bearing fruit (but rarely) all round. p. 221. (sp. 15.)

45. (*bis*) PERIÓLA. Rootless, fleshy, furnished with a persistent villous bark. p. 226. (sp. 1.)

46. SPERMÉDIA. *Substance* subfarinaceous; *epidermis* connate, squamulose or subpruinose. p. 226. (sp. 1.)

SUBORDER II. GASTEROMYCETES. *Hymenium included within the uteriform excipulum.*

TRIBE I. ANGIOGASTRES. *Uterus distinct from the included proper receptacle, on which the sporidia are spread.*

\* Phalloidei. *Receptacle distinct, at length bursting through the excipulum. Sporidia forming a mucous stratum.*

47. PHÁLLUS. *Receptacle stipitate, pileiform; border entire. p. 226. (sp. 3.)*

\*\* Tuberaeæ. *Sporangia membranaceous, scattered on the serpentine, vein-like hymenium, included in the concrete uterus. Sporidia at first pulpy.*

48. TUBER. *Uterus closed, marbled with veins internally. Sporangia pedicellate, confined to the veins. p. 227. (sp. 2.)*

49. RHIZOPÓGON. *Uterus sessile, bursting irregularly, marbled internally with anastomosing veins. Sporangia sessile, p. 229. (sp. 1.)*

\*\*\* Nidulariacei. *Uterus replete with free or elastically pedicellate sporangia.*

50. NIDULÁRIA. *Common peridium simple; sporangia at first floating in jelly, furnished with an highly elastic peduncle, lentiform, fleshy, filled with a compact mass of sporidia. p. 229. (sp. 3.)*

51. MYRIOCÓCCUM. *Peridium simple, floccoso-furfuraceous, evanescent. Sporangia globose; sporidia conglobated. p. 230. (sp. 1.)*

52. POLYÁNGIUM. *Peridium simple, membranaceous. Sporidia oblong, filled with a grumous mass. p. 230. (sp. 1.)*

\*\*\*\* Carpoboli. *Uterus protruding a solitary distinct sporangium.*

53. ATRACTÓBOLUS. *Peridium cup-shaped, operculate. Sporangium fusiform; sporidia mucous. p. 230. (sp. 1.)*

54. THELÉBOLUS. *Peridium sessile, urceolato-ventricose, mouth entire. Sporangium papilleform; sporidia mucous. p. 230. (sp. 1.)*

55. PILÓBOLUS.\* *Peridium membranaceous, produced into a stem shooting forth a globose sporangium replete with sporidia. p. 231. (sp. 2.)*

\* This genus is perhaps better associated with *Hyphomycetes*, between *Asco-phora* and *Hydrophora*. See *Fr. Syst. Myc.* v. 3, p. 312.

56. SPHÆRÓBOLUS. Subimmersed. *Peridium* double, each bursting in a stellate manner, internal membrane at length inverted and elastically shooting forth the globular *sporangium* which contains the *sporidia* in its centre. p. 231. (sp. 1.)

TRIBE II. PYRENOAMYCETES. *Uterus confluent with the receptacle (perithecium)*. *Sporidia generally contained in asci and arranged in one or more rows.*

57. SPHÆRIA. *Perithecia* rounded, entire, furnished at the apex with a minute orifice. *Asci* converging, at length dissolving. p. 232 (sp. 201.)

#### A. Compound.

\* PERIPHERICÆ. *Perithecia more or less divergent, generally almost superficial and simply papillated, very rarely piercing the stroma by an attenuated neck.*

Div. 1. CORDYCEPS, p. 232. (sp. 1—11.)

2. PORONIA, p. 235. (sp. 12.)

3. PULVINATÆ, p. 236. (sp. 13—19.)

4. CONNATÆ, p. 238. (sp. 20—26.)

\*\* HYPOPHERICÆ. *Perithecia vertical, immersed, covered with the stroma, and piercing it by an attenuated neck.*

5. GLEBOSÆ, p. 240. (sp. 27—28.)

6. LIGNOSÆ, p. 240. (sp. 29—37.)

7. VERSATILES, 243. (sp. 38—44.)

8. CONCRESCENTES, p. 246. (sp. 44—52.)

\*\*\* AMPHIPHERICÆ. *Compound. Perithecia attenuated and elongated above, disposed in circles, convergent, surrounded by a spurious persistent stroma.*

9. CIRCUMSCRIPTÆ, p. 246. (sp. 53—58.)

10. INCUSÆ, p. 248. (sp. 59—64.)

11. ØBVALLATÆ, p. 249. (sp. 65—71.)

12. CIRCINATÆ, p. 251. (sp. 72—76.)

\*\*\*\* EPIPHERICÆ. *Not strictly compound. Perithecia naked, destitute of a neck, seated upon a stroma which is frequently spurious, at first covered with the matrix.*

13. CÆSPITOSÆ, p. 252. (sp. 77—86.)

14. CONFLUENTES, p. 254. (sp. 87—91.)

15. SERIATÆ, p. 255. (sp. 92—97.)

16. CONFERTÆ, p. 257. (sp. 98—106.)



## B. Simple.

\*\*\*\*\* SUPERFICIALES. *Perithecia free, bicorticate, seated on an effused villous subiculum or altogether superficial.*

17. BYSSISEDÆ, p. 259. (sp. 107—111.)

18. VILLOSÆ, p. 260. (sp. 112—121.)

19. DENUDATÆ, p. 262. (sp. 122—137.)

20. PERTUSÆ, p. 266. (sp. 138—139.)

\*\*\*\*\* SUBIMMERSÆ. *Perithecia immersed, furnished with a dilated or elongated ostiolum.*

21. PLATYSTOMÆ, p. 266. (sp. 140.)

22. CERATOSTOMÆ, p. 266. (sp. 141—143.)

23. OBTECTÆ, p. 267. (sp. 144—159.)

\*\*\*\*\* SUBINNATÆ. *Perithecia more or less innate in the epidermis of the matrix. Veil none. Gelatinous contents of the perithecia more or less persistent.*

24. OBTURATÆ, p. 270. (sp. 160—163.)

25. SUBTECTÆ, p. 271. (sp. 164—168.)

26. CAULICOLÆ, p. 273. (sp. 169—184.)

27. FOLHICOLÆ, p. 276. (sp. 185—198.)

28. DEPAZEA, p. 279. (sp. 199—201.)

56.\* EUSTÉGIA. *Perithecia orbicular, splitting in the middle; operculum deciduous. Asci melting away.* p. 280. (sp. 1.)

57.\* LOPHIUM. *Perithecia vertical, compressed, opening by a longitudinal fissure. Asci breaking up into dust and escaping.* p. 280. (sp. 2.)

58. SPHERONĒMA. *Perithecia opening by a pore, including mucous sporidia in a very delicate sac, which at length ooze forth and harden into a globule.* p. 281. (sp. 1.)

59. CYTÍSPORA. *Perithecia celluloso-multilocular, cells irregular, membranaceous, united above. Nucleus gelatinous, at length oozing forth in the form of a globule or tendril.* p. 281. (sp. 6.)

60. CEUTHÓSPORA. *Stroma innate, containing one or more nuclei. Sporidia minute, escaping from the dissolving nucleus.* p. 283. (sp. 2.)

61. PHÓMA. *Perithecia obsolete; nucleus grumous, included in a tubercle formed from the matrix. Sporidia oozing out irregularly from the simple ostiolum.* p. 283. (sp. 4.)

62. THAMNOMÝCES. \**Pseudoperithecia* subrotund, formed from and supported by the shrubby stroma, furnished in the centre with a mass of free *sporidia*. p. 284. (sp. 1.)

63. DOTHÍDEA. *Nuclei* contained in the cells of a common stroma; *perithecia* obsolete. *Asci* erect, subpersistent. p. 285. (sp. 16.)

64. ASTERÓMA. Cells very small, slightly prominent, close, subconfluent, seated on more or less distinct radiating fibrillæ. p. 288. (sp. 4.)

65. RHYTÍΣMA. *Perithecia* of no regular form, bursting with a more or less flexuous fissure into transverse fragments. *Asci* erect. p. 289. (sp. 7.)

66. PHACÍDIUM. *Perithecia* orbicular, bursting from the centre towards the circumference in many lacinia. p. 291. (sp. 9.)

67. HYSTÉRIUM. *Perithecia* elliptic or elongated, bursting by a simple longitudinal fissure. p. 293. (sp. 14.)

\* 68. EXCÍPULA. *Perithecia* horny, at length opening by an entire orbicular aperture; *disc* soft, subdeliquescent. p. 296. (sp. 2.)

69. ACTINOTHÝRIUM. *Perithecia* innate, scutiform, radiatofibrous, covering the fusiform *sporidia*. p. 296. (sp. 1.)

70. PROSTHÉMIUM. *Perithecia* innate, orbicular, very much depressed, containing an entangled mass of cylindrical, articulated *filaments*; to which are attached, two or three together, in radiating fascicles, the fusiform septate *sporidia*. p. 297. (sp. 1.)

71. LEPTOSTRÓMA. *Perithecia* innate, subumbonate in the centre, dimidiate at length falling off and leaving a very thin disc. p. 297. (sp. 3.)

TRIBE III. TRICHOSPERMI. *Peridium* simple or double, bursting when full grown and pouring forth abundant naked dust-like *sporidia*. *Sporidia* rather large, subglobose, collected more or less in the centre of the *peridium*, loose or interwoven more or less with *floci*. *Texture* vesiculose.

\* *Trichogastres*. *At first fleshy*.

72. BATÁRREA. *Receptacle* bursting forth from a *volva*, stipitate, pileate, the upper surface villosopulverulent. p. 298. (sp. 1.)

73. GEÁSTER. *Peridium* double, outer distinct persistent, splitting into star-like expanding rays. p. 299. (sp. 8.)

\* In the text the word *pseudoperidia* is used, but perhaps the term given above is more correct.

74. BOVÍSTA. *Peridium* papyraceous, furnished with a distinct bark which at length peels off, the whole cavity fertile. *Capillitium* equal. p. 302. (sp. 2.)

75. LYCOPÉRDON. *Peridium* membranaceous, with an adnate subsistent bark, furnished within at the base with a spongy sterile stratum. p. 303. (sp. 5.)

76. TULÓSTOMA. *Peridium* papyraceous, with a deciduous bark distinct from the stem. *Capillitium* unequal. p. 305. (sp. 1.)

77. SCLERODÉRMA. *Peridium* hard, clothed with an innate bark, bursting irregularly. Heaps of *sporidia* minute, not contained in proper *peridiola*. p. 305. (sp. 3.)

78. POLYSÁCCUM. Common *peridium* naked, cellular within. Heaps of *sporidia* surrounded by generally amorphous *peridiola*. p. 306. (sp. 1.)

79. ELAPHOMÝCES. *Peridium* furnished with a warty bark, not bursting spontaneously, divided within by intersecting veins into little chambers. p. 306. (sp. 2.)

80. CENOCÓCCUM. *Peridium* naked, thick, of a hard corky substance, not bursting spontaneously. *Flocci* none. p. 367. (sp. 1.)

\*\* Myxogastres. *At first very soft and mucilaginous.*

81. LYCOGÁLA. *Peridium* determinate, composed of a double membrane, somewhat warty, persistent, bursting at the apex. p. 307. (sp. 1.)

82. RETICULÁRIA. *Peridium* indeterminate, simple, naked, fugacious. *Flocci* branched and shrubby, reticulated. p. 308. (sp. 4.)

83. ÆTHÁLIUM. *Peridium* indeterminate, falling away, covered with a floccose bark, divided within by *flocci* into cells. p. 309. (sp. 1.)

84. SPUMÁRIA. *Peridium* indeterminate, falling away, simple, divided within into cells by distinct regular ascending folds. p. 309. (sp. 1.)

85. DIDÉRMA. *Peridium* double; outer crust-like smooth distinct, inner very delicate. p. 310. (sp. 11.)

86. DIDÝMIUM. Inner *peridium* very delicate, membranaceous, bursting irregularly, clothed externally with the bark-like outer *peridium*, which breaks up into little furfuraceous scales or mealy down. p. 312. (sp. 11.)

87. PHYSÁRUM. *Peridium* simple, very delicate, membrana-

ceous, bursting irregularly, externally naked. *Columella* none. p. 314. (sp. 6.)

88. CRATÉRIUM. *Peridium* simple, papyraceous, closed by a deciduous operculum. *Columella* none. p. 316. (sp. 5.)

89. STEMONÍTIS. *Peridium* membranaceous, exceedingly fugacious. *Capillitium* reticulated, growing on the penetrating stem. p. 317. (sp. 4.)

90. DICTÝDIUM. *Peridium* very delicate, persistent. *Capillitium* innate, forming vein-like reticulations. p. 317. (sp. 1.)

91. CRIBRÁRIA. *Peridium* membranaceous, the upper part falling off. *Capillitium* innate, at length forming a net-work above. p. 318. (sp. 1.)

92. ARCÝRIA. *Peridium* splitting all round at the base, the upper part very fugacious. *Capillitium* dense, interwoven, elastic. p. 318. (sp. 4.)

93. TRÍCHIA. *Peridium* simple, persistent, bursting irregularly. *Capillitium* densely interwoven, elastic. p. 319. (sp. 8.)

94. PERICHÆNA. *Peridium* persistent, splitting all round, rarely torn. *Flocci* few, free, elastic. p. 321. (sp. 3.)

95. LICÆA. *Peridium* subpersistent, bursting variously. *Flocci* none. p. 321. (sp. 2.)

TRIBE IV. TRICHODERMACEI. *Peridium* composed of loosely interwoven flocci, rarely membranaceous, evanescent in the centre. *Sporidia* conglomerate. *Texture* floccose.

96. ASTERÓPHORA. *Peridium* capitate, floccose above, evanescent. *Sporidia* angular. p. 322. (sp. 2.)

97. ONÝGENA. *Peridium* capitate, crustaceous, consisting of densely interwoven flocci, evanescent. *Sporidia* rounded. *Texture* floccose. p. 322. (sp. 1.)

98. TRICHODÉRMA. *Peridium* more or less rounded, formed of loosely interwoven flocci, soon obliterated in the centre. *Sporidia* dry, collected together in the centre and forming a sort of disc. p. 323. (sp. 1.)

99. MYROTHÉCIUM. *Peridium* more or less rounded, floccose, evanescent in the centre. *Sporidia* minute, at first rather gelatinous, forming a sort of disc. p. 323. (sp. 1.)

100. ÆGERÍTA. *Peridium* spherical, very fugacious. *Sporidia* farinaceous, loose, sprinkled over the grumous receptacle. p. 324. (sp. 1.)

TRIBE V. PERISPORIACEI. *Peridium* scarcely distinct from

the nucleus. *Sporidia* immersed in pulp, free or included in *peridiola*.

101. **RACÓDIUM.** *Peridium* subcorneous, rigid, scarcely bursting, spontaneously subgelatinous within. *Sporidia* arranged more or less in a moniliform manner. *Thallus* abundant, between cottony and spongy. p. 324. (sp. 1.)

102. **LASIOBÓTRYX.** *Peridium* carnosio-corneous, collapsing at the top, filled with a granular gelatinous mass (contained in a solitary *peridiolum*?) *Sporidia* globose, filled with *sporidiola*. *Thallus* consisting of short simple radiating fibres. p. 324. (sp. 1.)

103. **ERÝSIPHE.** *Peridium* fleshy, opening at the collapsing apex, subgelatinous within. *Sporidia* included in one or more *peridiola*, often containing *sporidiola*. *Thallus* floccose, effused, free. p. 325. (sp. 8.)

104. **CHETÓMIUM.** *Peridium* membranaceous, clothed with hairs which spring from the *thallus*. *Sporidia* subpellucid, mixed with gelatinous pulp. p. 327. (sp. 2.)

105. **ILLOSPÓRIUM.** *Peridium* subgelatinous, falling to pieces. *Sporidia* simple, pellucid, generally surrounded by an hyaline *peridiolum*. p. 328. (sp. 1.)

### SUBORDER III. HYPHOMYCETES.

*Sporidiferous flocci* naked (not included in a uterus or seated on a proper receptacle) distinct, or interwoven into a common trunk.

**TRIBE I. CEPHALOTRICHEI.** *Flocci* collected into a common vertical or horizontal sporidiferous stroma.

106. **ISÁRIA.** *Stroma* elongated, formed of densely interwoven *flocci*, clothed with patent sporidiferous *flocci*. *Sporidia* globose, simple. p. 328. (sp. 1.)

107. **ANTHÍNA.** *Stroma* vertical, elongated, dilated upwards, contiguous with the at length rigid, somewhat attenuated stem, floccose, covered on all sides with sporidiferous *flocci*, free only at their apices. *Sporidia* latent. p. 329. (sp. 1.)

108. **CERÁTÍUM.** *Stroma* somewhat horn-shaped, of a mucilaginous consistence, sprinkled with *flocci* which collapse into minute granules (*conidia*) and free *sporidia*. p. 329. (sp. 1.)

**TRIBE II. MUCORINI.** *Sporidia* very minute, generated within the tube of the *flocci*, at length collected within or upon the swollen apices of the filaments or their branches, sometimes involved in jelly, more frequently contained in an inflated persistent vesicle.

109. **STÍLBUM.** *Sporidia* collected into a solid head, involved in jelly. *Flocci* forming a solid stem. p. 329. (sp. 7.)

110. ASCÓPHORA. *Sporidia* (at length?) spread over a rounded inflated terminal vesicle. *Flocci* fistulose, septate. p. 331. (sp. 1.)

111. HYDRÓPHORA. *Peridiolum* at first crystalline, watery, then turbid, at length indurated, persistent. *Sporidia* conglobated. *Flocci* tubular, erect, subseptate. p. 331. (sp. 2.)

112. MÚCOR. *Sporidia* discrete, contained within a rounded membranaceous deliscent *peridiolum*, bursting forth when immersed in water. *Flocci* tubular, more or less septate. p. 331. (sp. 7.)

113. EURÓTIUM. *Peridia* membranaceous, sessile, springing immediately from the *mycelium*, bursting irregularly. *Sporidia* globose, minute, pellucid, falling away in water. p. 333. (sp. 1.)

TRIBE III. DEMATIEI. *Sporidia* springing from corticated (or opaque) continuous or septate, sporidiferous flocci.

114. SPOROCÝBE. *Sporidia* simple, conglobated into a terminal head. *Flocci* somewhat fibrous. p. 333. (sp. 2.)

115. PACHNÓCYBE. *Stem* solid, filiform, swollen above and forming a receptacle, which is pruinose with the simple *sporidia*. p. 333. (sp. 5.)

116. MYXÓTRICHUM. *Sporidia* simple, conglomerated, at first glued together by a viscid substance. *Flocci* solid, opaque. p. 335. (sp. 1.)

117. HELICÓSPORIUM. *Sporidia* flocciform, spirally involute, septate, at length breaking at the articulations. p. 335. (sp. 1.)

118. HELMINTHÓSPORIUM. *Sporidia* large, often clavate, septate, at first growing on the erect fibres. p. 336. (sp. 7.)

119. DEMÁTIUM. *Sporidia* simple, free, disposed in rows or conglomerated upon the straight fibres. p. 337. (sp. 2.)

120. POLYTHRÍNCIUM. *Sporidia* free, uniseptate, at length scattered upon the moniliform *flocci*. p. 338. (sp. 1.)

121. CLADOSPÓRIUM. *Sporidia* arranged in short moniliform branchlets, at length falling off. *Flocci* septate above. p. 338. (sp. 1.)

122. MACROSPÓRIUM. *Sporidia* erect, stipitate, multiseptate, arising from the delicate septate, evanescent *mycelium*. p. 339. (sp. 2.)

TRIBE IV. MUCEDINES. *Sporidia* arising from tubular septate pellucid flocci, which are formed of a simple membrane, sometimes arranged in moniliform rows.

123. ASPERGÍLLUS. *Sporidia* (at first included) simple, globose, more or less disposed in moniliform rows, closely packed upon the swollen apices of the fertile *flocci*. p. 33. (sp. 7.)

124. STACHYLÍDIUM. *Sporidia* (at first included in a *spore*) simple, collected upon proper, short, discrete, lateral branchlets. p. 341. (sp. 3.)

125. BOTRÝTIS. *Sporidia* (at first included) simple, collected in little sori or towards the apices of the *flocci* and their branches. p. 342. (sp. 9.)

126. PENICÍLLIUM. *Sporidia* simple, globose, disposed in sori about the penicillate apices of the tubular, septate, fertile *flocci*. p. 344. (sp. 3.)

127. MONÍLIA. *Flocci* tubular, septate, bearing above moniliform branches which break up into globose pellucid *sporidia*. p. 344. (sp. 2.)

128. DACTÝLIUM. *Flocci* tubular, septate; *sporidia* loosely adhering to their apices, clavate or elongated, septate. p. 345. (sp. 3.)

129. SPORÓTRICHUM. *Flocci* erect or cæspitoso-convergent, at length flaccid and decumbent, branched, septate, uniform. *Sporidia* free, simple, at first interwoven with or covered by the *flocci*, at length scattered over them. p. 346. (sp. 7.)

130. ACREMÓNIUM. *Flocci* septate, furnished with very slender lateral branchlets, crowned with a vesicular *spore*. p. 357. (sp. 3.)

131. TRICHOTHÉCIUM. *Sporidia* uniseptate, oval, scattered on the *flocci*. p. 348. (sp. 2.)

132. OÍDIUM. *Sporidia* simple, more or less oval, arising from the terminal moniliform joints of the *flocci*. p. 348. (sp. 7.)

133. BACTRÍDIUM. *Flocci* septate, the ultimate septa swelling here and there into oblong deciduous *sporidia*, filled in the centre with a grumous mass, their apices hyaline. p. 350. (sp. 1.)

134. SPORENDONÉMA. *Sporidia* rather large, disposed in rows within the tubular pellucid *flocci*. p. 350. (sp. 2.)

TRIBE V. SEPEDONIEL. *Mycelium* floccose, without any distinct *sporidiferous* filaments. *Sporidia* heaped together, lying upon and in general springing from the matrix.

135. SEPEDÓNIUM. *Sporidia* globose, pellucid, filled with *sporidiola*, at first covered by the *flocci* of the fleecy *mycelium*. p. 350. (sp. 2.)

136. FUSISPÓRIUM. *Sporidia* fusiform, pellucid, glued together into heaps, resting on the matrix. p. 351. (sp. 5.)

137. EPÓCHNIUM. *Sporidia* heaped together, springing from the matrix and adnate with it, oblong, apiculate, septate. *Flocci* of the *mycelium* effused, intricate, mucedinous; distinct sporidiferous *flocci* none. p. 352. (sp. 1.)

138. PSILÓNIA. *Sporidia* simple, pellucid, not glued together, at first covered by the converging *flocci* of the *mycelium*. p. 352. (sp. 1.)

SUBORDER IV. CONIOMYCETES. *Sporidia* produced beneath the epidermis of plants or within the matrix, naked.

TRIBE I. TUBERCULARINI. *Sporidia* glued together into an erumpent disc.

139. TUBERCULÁRIA. *Sporidia* simple, subglobose, closely packed upon an erumpent, distinct, more or less stem-like disc. p. 354. (sp. 4.)

140. FUSÁRIUM. *Sporidia* simple, at length fusiform, acuminate, somewhat curved, glued together into an innate erumpent immarginate discoid stratum. p. 354. (sp. 2.)

141. CÓRYNEUM. *Sporidia* fusiform or (clavate), multiseptate, adnate by a peduncle, densely and vertically crowded into a disc, at first glued together. p. 355. (sp. 2.)

TRIBE II. STILBOSPOREI. *Sporidia* glued together into a nucleus, without any perithecium, under the cuticle of plants, at length bursting forth together with the gelatine or free.

142. NÆMÁSPORA. *Sporidia* simple, coloured, collected into a cellular nucleus, at length flowing forth together with the gelatine in the form of tendrils. p. 355. (sp. 2.)

143. SEPTÓRIA. *Sporidia* fusiform, septate, originating beneath the epidermis, oozing forth. p. 356. (sp. 3.)

144. STILBÓSPORA. *Sporidia* septate (septa sometimes evanescent) filled with *sporidiola* glued together into a nucleus without any proper perithecium, at length bursting forth and free. p. 356. (sp. 3.)

145. DIDYMO SPÓRIUM. *Sporidia* uniseptate, glued together into a nucleus without any perithecium, at length bursting forth and free. p. 357. (sp. 2.)

146. MELANCÓNÍUM. *Sporidia* globose (or subglobose), simple, glued together into a nucleus, without any perithecium, at length bursting forth and free. p. 357. (sp. 1.)

TRIBE III. SPORIDESMIEI. *Sporidia* chained together into *flocci*, at length free.



147. **ARÉGMA.** *Sporidia* moniliformi-connate, opaque, with very long free pellucid peduncles, at length separating from each other, each containing a single globular mass. p. 358. (sp. 5.)

148. **TÓRULA.** *Sporidia* chained together into moniliform erect *flocçi*, without any common peduncle, filled within with a grumous mass. p. 360. (sp. 6.)

149. **SPILOCÉA.** *Sporidia* simple, closely adnate to the matrix and to each other, at first covered by the epidermis. p. 360. (sp. 1.)

**TRIBE IV. HYPODERMIEI.** *Sporidia unattached or stipitate, springing from beneath the cuticle of living plants.*

150. **GÝMNOSPORÁNGIUM.** *Sporidia*, uniseptate, stalked, growing from the erumpent stroma, which is formed from the matrix and agglutinated by gelatine into an irregular, naked, expanded mass. p. 361. (sp. 1.)

151. **PODISÓMA.** *Sporidia* mostly uniseptate, stalked, the stalks joined together into a common stem, above agglutinated by gelatine into a naked vertical clavariæform mass. p. 362. (sp. 3.)

152. **PUCCÍNIA.** *Sporidia* 1—2-septate, adnate with the matrix by a filiform peduncle and crowded into a tubercle, which is at first covered by the epidermis. p. 363. (sp. 37.)

153. **ÆCÍDIUM.** *Sporidia* unattached, contained in a cellular membranous sac (*pseudo-peridium*) distinct from the epidermis and at length bursting at the apex. p. 369. (sp. 31.)

154. **URÉDO.** *Sporidia* mostly unattached, simple, aggregate, covered by the epidermis. p. 374. (sp. 63.)

## ADDENDA ET CORRIGENDA.

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In the subgenus COLLYBIA of AGARICUS, between *A. scorodonius* p. 49, and *A. esculentus*, p. 50, add

*A. cárneus*, Bull. (*small flesh-coloured Agaric*); pileus subcarnose even ruddy flesh-colour, gills adnexed white, stem somewhat stuffed short squamulose. *Bull. t. 533. f. 1. Fr. Syst. Myc. v. 1. p. 130.*

In pastures, among grass. Aug. and Sept. Not uncommon in Norths. *Rev. M. J. Berkeley*.—*Pileus* 1 inch or more broad, plane, subcarnose, often slightly umbonate, firm, shining rufous-pink, rather undulated; *flesh* white. *Gills* white, crowded, rounded behind with a short subdecurrent tooth. *Stem* 1 inch high,  $1\frac{1}{2}$  line thick, of the same colour as the pileus, stuffed below, at length hollow and frequently splitting, villososquamose. *A. puniceus*, With. agrees in many respects; but its pileus is described as clothly.

In the subgenus MYCENA, after *A. epipterygius*, p. 62, add

*A. róridus*, Fr. (*dripping Agaric*); pileus campanulate at length umbilicate, gills white decurrent, stem slender flaccid glutinous. *Fr. Syst. Myc. v. 1. p. 156.*— $\beta$ . *stillans*, pileus convex plicate dirty yellow, stem very long. *Fr. l. c.*

$\beta$ . On dead bramble twigs, &c. Sept. Lambley, Notts. Fineshade, Norths. *Rev. M. J. Berkeley* and *R. T. Lowe*.—At first appearing like a minute, brownish ochre-coloured, hemispherical, sessile knob. *Pileus*  $\frac{1}{2}$  an inch or more broad, dirty ochraceous, at length umbilicate and slightly depressed, striate or plicate, often rugose, very minutely scabrous under a high magnifier. *Gills* white, strongly decurrent, broad, their edge powdery. *Stem*  $1\frac{1}{2}$  inch or more high, very slender, fistulose, at first tinged with violet above, at length dirty-ochre, pulverulent within the pileus, below clothed with abundant white pellucid gluten which almost drips from it. Sometimes the whole plant is nearly white. I do not find the pileus ever conic, as it is described by Fries in the normal state of the species.

Insert the following description of *A. pyxidatus*, p. 65.

Amongst grass in exposed pastures. Oct. Apethorpe, Norths. *Rev. M. J. Berkeley*.—*Pileus* infundibuliform, bistre, at length turning pale with a pinkish tinge, scarcely subcarnose, the centre quite membranaceous and at length often pervious. *Gills* narrow decurrent, distant, rather thick, slightly rufescent. *Stem* flexuous. Solid at

first, then hollow especially above, thickened and pubescent at the base. Having lately met with this species abundantly, the above description and locality are inserted, as its claim to admission into the British Flora rested before upon *A. turfusus*, Sow., which is not altogether free from doubt.

Page 80. *Agaricus canaliculatus*, Grev. in Syn. Spec. (*A. turgidus*, Grev. Sc. Crypt. Fl.) is, I believe, not the true *A. canaliculatus*, Schum., but, as Fries suspected, the woodland state of *A. nebularis*.

Immediately after *A. varius*, p. 87, in the subgenus INOLOMA, add

*A. turbinatus*, Bull. (*top-shaped Agaric*); soft, pileus viscid even yellow or tawny, gills crowded very entire yellow at length cinnamon, stem bulbous white. *Bull. t.* 110. *Fr. Syst. Myc. v.* 1. p. 225.

In woods. Oct. King's Cliffe, Norths. *Rev. M. J. Berkeley.*—*Pileus* 2—3 inches or more broad, convex, scarcely umbonate, at length often depressed, viscid when moist, at length shining very even, yellow-tawny, carnose; epidermis easily peeling off. *Gills* numerous, yellowish then cinnamon, acutely adnate. *Stem* 2—3 inches high,  $\frac{1}{2}$  an inch or more thick, bulbous at the base and often marginate, solid, not the least violet. The description given under *A. glaucopus*, belongs to *A. calochrous*.  $\alpha$ . carne fracta stipiteque subtenui purpureo-violaccis.

Immediately after *A. volvaceus*, p. 104, in the subgenus VOLVARIA, add

*A. speciosus*, Fr. (*beautiful Agaric*); pileus smooth viscid yellow-bistre, at length white-grey, gills flesh-coloured, stem solid attenuated upwards villous as well as the loose volva. *Fl. Dan. t.* 1737. *Fr. Syst. Myc. v.* 1. p. 278.—*Amanita speciosa*, Fr. *Obs.* 2. p. 1.

Amongst rotting weeds. Oct. Southwick, Norths. *Rev. M. J. Berkeley.*—*Pileus* at first globose, very viscid, covered by the white downy volva, at length expanded, plane, subumbonate, 2—3 inches or more broad, yellow-bistre, the centre very dark, at length white-grey, the edge pinkish, striate, flesh brownish towards the disc. *Gills* at first pale yellow, ventricose, broader in front, flesh-coloured when old. *Stem* 3 inches or more high,  $\frac{1}{2}$  an inch or more thick, bulbous at the base where it is surrounded by the loose volva, which passes completely beneath it, villous as well as the volva, juicy, somewhat fibrous.

Immediately after *A. semiglobatus*, p. 108, in the subgenus PSALIOTA, add

*A. squamosus*, Pers. (*graceful scaly Agaric*); pileus slightly viscid yellow clothed with scattered concentric scales, gills adnate blackish-stem stuffed, villososquamosa below the ring. *Pers. Syn. p.* 409. *Fr. Syst. Myc. v.* 1. p. 284.

In woods. Wothorpe, Norths. *Rev. M. J. Berkeley.*—*Pileus* 1 inch or more broad, at length nearly plane, obtuse, slightly viscid, shining when dry, ochre tinged with red-lead, clothed with concentric yellowish scattered scales. *Gills* broad, crowded with olive-black or purplish-brown. *Stem* 3 inches or more high, 2 lines thick, filled with a white pith, at length hollow, furnished half way up with a suberect ring, above which it is white and pulverulent, below ferruginous and villososquamosa, strigose at the slightly incrassated base.

*Phallus caninus*, p. 227, add this habitat,

Wood behind the manse of Stevenston, Ayrshire. *Rev. D. Lansborough*.—A very interesting addition to the *Scottish Flora*.

45. \*\* RHIZOCTÓNIA. *Dec.* Rhizoctonia, p. 226.

Irregular, clothed with an inseparable very thin membranaceous bark, joined by root-like fibres.

1. *R. Crocorum*, *Dec.* (*Crocus-blight*); rufous, fibres few expanded into a disc on the bulbs. *Dec. Mém. Mus. v. 2. p. 216.* *Fr. Syst. Myc. 2. p. 265.* *Loud. Hort. Brit. p. 461.*—*Sclerotium Crocorum*, *Pers. Syn. p. 119.*—*Tuber parasiticum*, *Bull. t. 456.*—*Thanatophytum Crocorum*, *Nees, f. 135.*

On the roots of Saffron. Introduced on the authority of Loudon's *Hortus Britannicus*.—Bulliard describes the flesh as composed of little imbricated scales; Chevallier as containing small rounded slightly compressed *sporangia*; his figure accords exactly with that of Bulliard. The genera *Amphisporium* and *Dichosporium*, though included in Loudon's list, are omitted, as their affinities and nature are altogether uncertain.

At p. 289. *Asteroma Cratægi*, Berk. (*Service Asteroma*); epiphyllous, spots brown, fibres radiating from the centre, branched distinct whitish, at length black from the very minute connate nodular perithecia.—*Actinonema Cratægi*, *Pers. Myc. Eur. 1. p. 52.* *Fr. El. 2. p. 151.* *Moug. §. Nest. ! n. 864.*

On living leaves of *Cratægus torminalis*. August. Fineshade, Norths. *Rev. M. J. Berkeley*.—Barren when hypophyllous. A most elegant plant in the perfect state, and I believe a true *Asteroma*.

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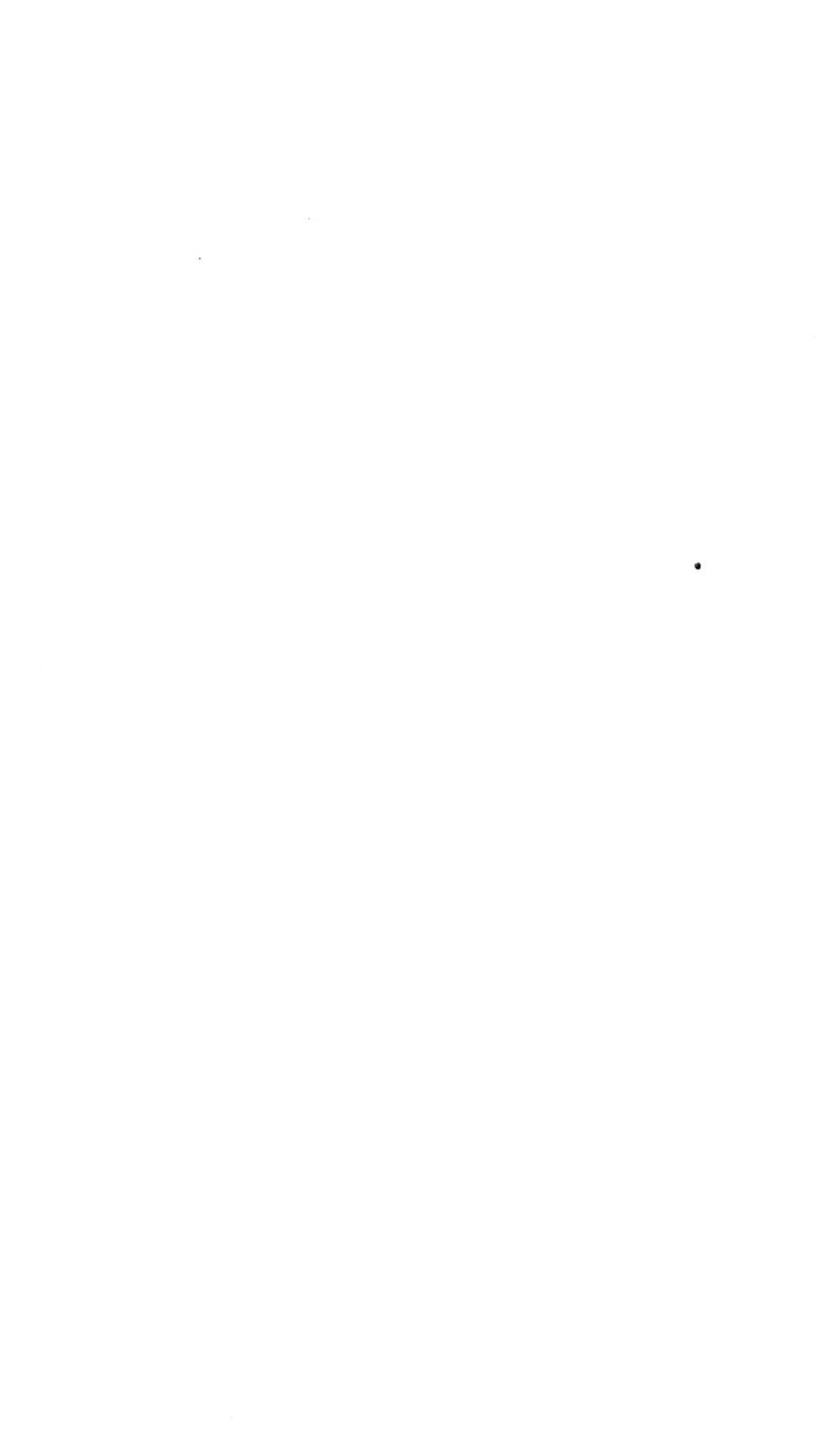
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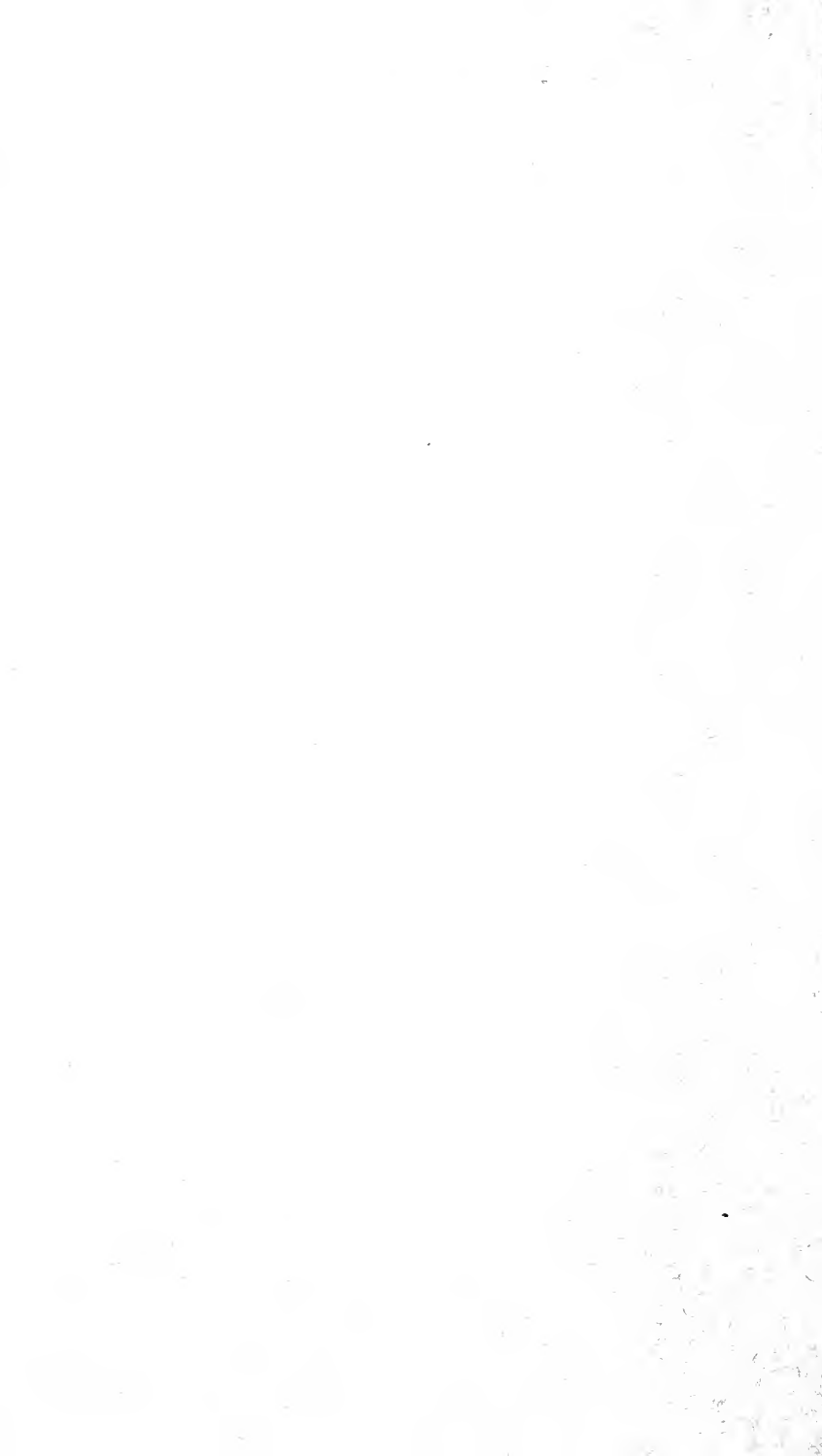












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