

8. *Amphistoma* \* Small intestine of black scoter (*Oidemia nigra*).  
 9. ——— .. Small intestine of crow (*Corvus Corone*).  
 [————— .. Intestines of turtle (*Chelonia imbricata*).]

\* I only once met with this species of *Amphistoma*, and have only a single specimen; it was alive when removed from the intestine of the bird. It is nearly two lines in length; the head distinct, about half the length of the body, whiter, and more cylindrical; body flattened and wider, the edges crenate. The pores appear to be of equal size; if there is any difference, the anterior is rather larger; it is also rather inferior than terminal. The oviducts run along each side of the body near the margin, and appear to contain numerous ova; a yellowish canal is seen in the median line, commencing where the head and body join, and passing backwards towards the terminal pore.

[To be continued.]

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XLII.—*Notices of British Fungi*. By the Rev. M. J. BERKELEY, M.A., F.L.S.

[Continued from vol. vi. p. 439.]

[With a Plate.]

257. *Agaricus rachodes*, Vitt. Mang. p. 158. t. 20; Fr. Ep. p. 13.

I have found this species in great abundance and perfection in Lord Fitzwilliam's park at Milton. The flesh when broken becomes red, the substratum of the pileus is beautifully silky, and there is a peculiarity about the habit; besides it is not edible; still it must be confessed that it is extremely near to *Ag. procerus*, to which it has been referred by authors. There is no doubt, notwithstanding the hesitation of Fries, that Sowerby's figure, tab. 190, represents the true *Ag. procerus*. I take this opportunity of remarking that *Ag. piluliformis*, Fr. Ep. p. 25, is nothing more than the young of *Ag. spadiceus*, as indeed is noticed in the text of Bulliard and Ventenat.

258. *Ag. chrysodon*, Batsch, f. 212.

This very beautiful species occurred in profusion in a wood at King's Cliffe in the autumn of 1842. I had never seen it previously. It not only grew under the lime-underwood, but amongst grass in the open glades. It resembles very closely in many respects *Ag. eburneus*, but is beautifully distinguished by the golden yellow pubescence which is sprinkled here and there over the plant, but principally on the stem and margin of the pileus. Sometimes the gills are elegantly edged with yellow flocci. The smell is strong, like that of *Ag. cossus*.

\*259. *Ag. Columbetta*, Fr. Syst. Myc. p. 44. In woods, King's Cliffe.





\*260. *Agaricus blandus*, Berk. = *Ag. brevipes*, Bull., Kl. in Fl. Reg. Bor. t. 374. My plant is a long-stemmed variety of the species figured by Bulliard. Klotzsch's figure is very characteristic.

\*261. *Ag. murinaceus*, Bull. t. 520; Sow. t. 106. King's Cliffe, Sept. 10, 1841.

Pileus  $4\frac{1}{2}$  inches across, at first campanulate, slightly umbonate, then expanded, thin, firm, but very brittle, mouse-coloured, cracked and virgate, silky, not the least viscid; flesh white. Taste bitter, unpleasant, rather acrid. Smell neither powerful nor nitrous. Stem 3 inches high, 1 inch thick at the top, cracked and streaked, silky, with minute black scales, solid but fibrous, not the least stuffed or hollow. Gills very broad, undulate, distant, having a tendency to become forked and anastomosing, brittle, often marked with raised lines, cinereous, powdery; interstices slightly veined; edge at length black. Individuals occur much thicker and larger.

Having at length found this species, I am able to state positively that it is not the plant of Fries. The specific name refers to the colour, not to the scent, which is very slight and by no means nitrous. It is not at all moist or viscid, but has a clothly feel, being virgate and silky. The gills are not olivaceous when rubbed. Its affinities are rather with *Ag. argyraceus* than with *Hygrophorus*.

262. *Ag. ovinus*, Fr. Syst. Myc. vol. i. p. 109. In pastures, Apethorpe. Not so frequent as *Ag. cuneifolius*.

263. *Ag. platyphyllus*, P., Fr. Syst. Myc. vol. i. p. 117. *Ag. grammocephalus*, Bull. t. 594. On the ground in woods, like Bulliard's plant, not on wood like that of Fries. King's Cliffe, September 6, 1841.

Pileus 5 inches or more across, smooth, hygrophanous, expanded, with a broad umbo, sinuated and undulate; thin except in the centre; umber shaded with bistre, more or less virgate, but by no means silky, though it has a sleek shining aspect, like that of *Ag. rhodopodius*; flesh brownish beneath the subcartilaginous cuticle, but in other parts firm and white. Stem  $2\frac{1}{2}$  inches high,  $\frac{1}{8}$ th of an inch thick, nearly equal, obtuse, stringy, slightly twisted, streaked, smooth, not rooting in my specimens. Gills broad, truncato-adnexed, at first white, at length pallid, distant. Smell, like that of *Ag. grammopodius*, strong; taste not unpleasant.

There is no reason to doubt that this species is the *Ag. platyphyllus* of Fries, notwithstanding the difference in the habitat. It is exactly the plant of Bulliard, which, like mine, is terrestrial.

264. *Ag. elixus*, Sow. t. 172. Pileo obconico umbonato demum explanato fuligineo, sericeo minutissime virgato; stipite deorsum incrassato concolore depresso-pubescente; lamellis an-

gustis arcuato-decurrentibus distantibus albis ; interstitiis venosis. King's Cliffe. On the ground in woods where there is little underwood. Oct. 6, 1840.

Pileus 2 inches broad, at first very strongly umbonate, obconical, at length flat or even depressed, with the border flexuous, not the least involute in any stage of growth ; disc fuliginous, very minutely virgate ; border whitish, with dingy sodden spots. It is not viscid, though it has a damp appearance. Stem 1 inch high,  $\frac{3}{8}$ ths of an inch thick, or 2 inches high and  $\frac{2}{8}$ ths of an inch thick ; sometimes short and stout, sometimes much elongated, dingy like the pileus, clothed with matted down which reaches up to the base of the gills, often smooth at the base, which is buried amongst leaves and attached to them by the downy mycelium ; solid, mottled within, slightly discoloured beneath the cuticle. Gills very distant, decurrent, white, interstices more or less veined. Spores elliptic ; spicules long.

Much eaten by slugs. This is certainly quite a distinct species from *Ag. camarophyllus*, to which Fries refers it. The gills are by no means thick ; they are narrow and white, not glaucous. The whole in moist weather is like a sponge sodden with water. It does not appear to me to have any affinity with *Hygrophorus*. When young, the pileus has quite the form of *Gomphidius glutinosus*.

\*265. *Agaricus gilvus*, P. Syn. p. 448. Wothorpe Grove, Oct. 7, 1840.

Pileus 3 inches broad, fleshy, plane, with the border convex and involute, opaque-white, smooth, with a few dirty ochraceous patches ; flesh white, brittle. Stem 2 inches high, about 1 inch thick, blunt, opaque-white with a slight tinge of fawn-colour. Gills crowded, decurrent, white with a reddish tinge, somewhat forked at the base. Smell strong but not unpleasant.

266. *Ag. calopus*, P. Syn. p. 373 ; Lib. Pl. exs. Ard. no. 318. The specimens referred formerly to *Ag. Vaillantii* belong to this species ; at least they are identical with what Madame Libert has published as the plant of Persoon, and her authority is confessedly very great. My specimens have the gills as in *Ag. Vaillantii*, and by no means merely adnexed ; but this accords with the observation of Fries in the 'Systema Mycologicum.' We must therefore still depend for *Ag. Vaillantii*, as entitled to a place in our Flora, on Withering.

\*267. *Ag. umbelliferus*, L. The beautiful yellow variety represented by Holmskiold, vol. ii. t. 34, occurred at Capel Curig in 1842, and Mr. Salwey has sent it to me from Llyn Howel.

\*268. *Ag. stellatus*, Fr. On bramble, Oct. 7, 1840, Wothorpe. I have also received it from the west of England from Mr. Salwey.

\*269. *Agaricus carneo-tomentosus*, Batsch. *Ag. carnosus*, Bolt. On the stump of an old tree hanging over the rivulet immediately below the waterfall in Hestercombe Park, Som., Dec. 1838, Rev. T. Hugo; King's Cliffe, Aug. 1843.

270. *Ag. Leightonii*, n. s. Sessilis; pileo primum oblique conico umbrino, demum plumbeo furfuraceo setulis intermixtis; strato superiore gelatinoso; lamellis crassiusculis alutaceis distantibus basi subfurcatis leviter undulatis; interstitiis vix reticulatis. Montford Bridge near Shrewsbury, Dec. 1, 1841, Rev. W. A. Leighton.

Pileus 5 lines broad, at first cyphellæform, obliquely conical, umber-brown, gradually becoming paler, at length of a pallid lead-colour, furfuraceous, especially behind, where there are a few bristles; flesh consisting of two distinct strata, of which the upper is gelatinous and of the colour of the pileus, the lower white. Stem none. Gills of a pallid tan colour, thickish, distant, undulated, obscurely wrinkled at the base, but the interstices can scarcely be said to be reticulated; sporophores with short spicules.

This species, of which I can find no account, belongs to the same section as *Ag. mastrucatus* and *algidus*. *Ag. ponticola* is analogous, but it belongs to the dark-seeded series.

PLATE IX. fig. 1. *a*, *Ag. Leightonii*, nat. size; *b*, section of do.; *c*, sporophores with their spicules.

271. *Ag. petasatus*, Fr. Ep. p. 142. In Mr. Marshall's wine-vault at Hitchin, immersed for about two inches in saw-dust, with the base of the stem resting on the bare brick, Jan. 20, 1843.

An excellent drawing of this noble species was kindly communicated to me by Mr. Isaac Brown, but unfortunately without any description or specimen. It accords, however, so closely with the characters given by Fries, that I have no hesitation in referring it to his *Ag. petasatus*. The only point of difference is that the border of the pileus is not, strictly speaking, membranaceous. That others may have an opportunity of judging, I have thought it best to give a figure.

PLATE IX. fig. 2. *a*, *Ag. petasatus*, nat. size; *b*, section of do.

272. *Ag. pholideus*, Fr. Syst. Myc. p. 219. In wood, King's Cliffe. My plant is clearly that figured by Bulliard under the name of *Ag. psammocephalus*.

273. *Ag. vervacti*, Fr. Ep. p. 197. Near Bromley, Kent, Mr. G. Sparkes.

274. *Ag. semiorbicularis*, Bull., Fr. Ep. p. 197. A very common species in rich pastures, often confounded with *Ag. virosus*.

275. *Marasmius urens*, Fr. Ep. p. 373. Bristol, H. O. Stephens, Esq.

276. *Marasmius archyropus*, Fr. Ep. p. 378 ; Pers. Myc. Eur. p. 135. t. 25. fig. 4. Bristol, H. O. Stephens, Esq.

A very elegant species. Mons. Desvaux informs me that Persoon's plant is identical with *Ag. hariolorum*, Bull. Persoon's figure exactly accords with what I have received from Mr. Stephens.

277. *M. amadelphus*, Fr. Ep. p. 380. Bristol, H. O. Stephens, Esq. On ash twigs.

278. *Boletus viscidus*, Linn. Fl. Suec. no. 1248. Bristol, H. O. Stephens, Esq.

Distinguished at once from *B. luteus*, *Grevillii*, &c. by its brown spores.

\*279. *Dædalea confragosa*, P. I have received fine specimens of this rare species from H. O. Stephens, Esq., gathered near Bristol, and from C. E. Broome, Esq., collected at Spye Park, Wilts. Precisely the same species occurs in New Zealand.

280. *Hydnum graveolens*, Delastre, Fr. Ep. p. 509. Found two successive summers at Dolgelley by J. Ralfs, Esq., from whom I received my specimens.

When fresh he informs me it is extremely beautiful, being dark in the centre with a white border. The prickles are pale, and the sporidia evidently white. The whole plant smells extremely strong of melilot, and after it has been dried three or four years the scent is as strong as ever.

281. *H. spathulatum*, Fr. Ep. p. 517. Apethorpe, Norths. On an old log of wood.

I have found this species once only. The whole plant separates easily from the wood, and the teeth are broad and spathulate, by which characters it is readily distinguished.

282. *Grandinia papillosa*, Fr. Ep. p. 528 ; Libert, Pl. Ard. no. 21. Wiltshire, C. E. Broome, Esq. On sticks which have not yet lost their bark. By no means confined to fir or pine.

283. *Thelephora caryophyllæa*, Fr. Ep. p. 536 ; Berk. Brit. Fung. Fasc. 4. no. 241. Abundantly at Bungay, Mr. D. Stock.

This is perhaps the most beautiful of the British *Thelephoræ*. It assumes every form from that of a perfect cup with a central stem to a much and irregularly branched frond, in which state it is *Clavaria flabellaris*, Batsch. When once seen it cannot be confounded with any of the neighbouring species.

\*284. *T. cristata*, Fr., Berk. Brit. Fung. Fasc. 4. no. 243. Bungay, Mr. Stock.

This species is, I believe, often confounded with *T. mollissima*, which is in reality of a very different nature. This is much more after the fashion of *T. incrustans*, with which it agrees as to the colour of the spores, and has the hymenium white.

285. *Thelephora fastidiosa*, Fr. Bristol, H. O. Stephens, Esq. ; near the Box Tunnel, C. E. Broome, Esq.

Distinguishable at once by its abominable odour, which remains for a long time in dried specimens. I have never myself met with it.

286. *T. mollissima*, P. Syn. p. 572 ; Berk. Brit. Fung. no. 245. *Merisma cristatum*, var. *fusco-badium*, Desm. ! no. 362. Extremely common in the Northamptonshire woods, running over moss, small sticks, &c.

I have seen precisely the same species gathered by Delastre in the south of France. The plant published by Desmazières is just the same. I have found a specimen of this growing freely from a central stem and assuming the form of *Thel. palmata*.

287. *Corticium arachnoideum*, n. s. Totum effusum niveum, molle tenerimum mycelio latissime-serpente arachnoideo, hymenio lævi glaberrimo. Creeping over mosses and lichens on fallen sticks, Northamptonshire.

Forming delicate effused arachnoid patches of a snowy white ; threads by no means forming fibres, but spreading like a delicate web, and often remaining barren, but under favourable circumstances giving rise to a smooth even hymenium, consisting of elliptic sporophores arranged in little bunches. I have not yet seen perfect spores. The species appears to me undescribed, and is very distinct from all with which I am acquainted. Its habit is not unlike that of *Thel. bombycina*. The genera *Thelephora* and *Corticium*, it may be observed, are very far from being completely settled. The character upon which Fries mainly relies, of endosporous and exosporous fructifying cells, is manifestly untenable, as all species with endosporous asci must be removed from *Hymenomycetes*.

PLATE IX. fig. 3. Part of the hymenium of *C. arachnoideum* highly magnified.

288. *C. velutinum*, Fr. Lambley, Notts, Rev. M. J. Berkeley ; Linlithgowshire, C. E. Bauchop, Esq.

A very elegant species of a pale pink, remarkable for its floccose mycelium, and the delicate pile with which the whole of the hymenium is clothed, giving it a velvety appearance.

289. *Cyphella griseo-pallida*, Weinm. Fl. Ross. p. 522. Minima, primo granuliformis demum elongata erecta cupulæformis stipite brevissimo basi fibris brevibus strigosulis albis affixa, demum dependens subintegra, extus floccosa, hymenio lævi pallide gilvo. On hard gravel where discoloured with minute algæ, Apethorpe, Jan., Rev. M. J. Berkeley.

Whole plant one-third of a line in diameter, at first granuliform, then regularly cup-shaped, with a short stem and attached by a few radiating, white, substrigose, short threads, at length de-

pendent, mostly entire, clothed with white villous down; hymenium even, pale reddish gray; border slightly undulated.

A very elegant and distinct little species, according exactly with the description of Weinmann.

290. *Geoglossum glutinosum*, Fr. El. p. 582; Moug. ! exs. no. 780. Edinburgh, J. C. Bauchop, Esq.

291. *Clavaria contorta*, Holmskiöld, t. 29. Grace Dieu Wood, Leic. On dead branches of hazel.

292. *Nematelia encephala*, Fr. Ep. p. 591; Berk. Brit. Fung. Fasc. 4. no. 291. Abundant in Wales on larch, J. Ralfs, Esq.

The species formerly published under this name in the 'English Flora' is almost identical with *Nematelia nucleata*, an American species, and very different from this. The figure in Römer's 'Magazin für die Botanik,' part 4. tab. 4. fig. 14, is extremely characteristic. This I had not seen at the time of the publication of the 'English Flora.'

*Hymenogaster*, Vitt. Mon. Tub. p. 20. "Fungi globosi læves basi absorbente præditi, carnosi, firmi vel molliusculi, fragiles nec gelatinoso-tenaces, intus cellulosi cellulis cavis hymeniferis, hymenio plerumque subæquali; sporophoris prominulis mono- vel 2-sporis (rarius 3—4-sporis) quandoque cystidiis immixtis; sporis crassis ovatis, citrifirmibus vel cuspidatis, lævibus vel rugulosis et papillois, opacis hyalinisve, guttulis sæpius refertis sessilibus vel brevissime fulcitis. Exoleti subfriabiles evadunt, rarius putridi deliquescunt; maturi siccati obdurescunt."—Tul. Ann. d. Sc. Nat. vol. xix. p. 373.

\*293. *H. citrinus*, Vitt. l. c. p. 21; Berk. Brit. Fung. Fasc. 4. no. 284. Audley End, Essex, Rev. J. E. Leefe. Found abundantly in Wiltshire by C. E. Broome, Esq. The yellow veins, subfusiform, rough, dark-coloured spores, the frequently coloured sporophores, and the strong cheese-like scent which communicates itself to everything which it is near, are the criterions of this species. The species which I have referred below to *H. olivaceus* is sometimes very difficult to distinguish, especially when it has been imbued with the odour of *H. citrinus*. It may however be known by its reddish substance, larger cells, more transparent, paler and smoother spores, which are more frequently abruptly acuminate. When young *H. citrinus* is of a greenish yellow, but this soon wears off when rubbed or exposed to air.

In this species the sporophores occasionally become of a much darker colour than the neighbouring cells, and have a resinous appearance. In some specimens so circumstanced there is not the slightest trace of spores, but the sporophores project beyond the general surface of the hymenium, and do not show any indication of becoming bifid. In other specimens some of the sporophores have two more or less imperfect spores extremely variable

in outline and very dark, while others project very much and are paler and barren. In other specimens again the spores are nearly of the normal form, and the sporophores but little darker than the neighbouring cells. If I am not mistaken, the cells vary very much in different specimens, and even in different portions of the same individual, as to length, thickness, articulation, &c., which is not to be wondered at, if the sporophores, which are modifications of them, and their spores vary. The length of the peduncle also varies extremely, and occasionally, though rarely, the spores are as much acuminate as in *H. olivaceus*. Were it not for this circumstance, I should have thought, from a sketch communicated by Mr. Broome, that he had met with *H. decorus*, Tul. I also observe, that amongst the abortive spores a large number have no trace of the terminal papilla. This may perhaps illustrate the state or variety of *Melanogaster ambiguus*, to be noticed presently.

I have not hesitated in these observations to bring a portion of the Truffles into contact with other Hymenogastrous Fungi, leaving the ascosporous species to come in their proper position amongst those fungi which agree with them in the structure of the parts of fructification. The relation between the two series is merely analogical, for there is no real affinity whatever, the general resemblance arising merely from their common place of growth.

I am indebted for the greater part of the Hypogæous Fungi which I have now the pleasure of recording as British to the unwearied researches of C. E. Broome, Esq., who has also accompanied his specimens with notes and sketches, which are the more necessary as no fungi stand more in need of an inspection, not merely in a recent state but in their place of growth, and under the different phases of evolution, than the Truffles. In consequence of not being able to do this, though I have had hundreds of specimens sent to me in a recent state, my observations are still very imperfect, and will not for a moment bear comparison with those of Messrs. Tulasne, to whom I am indebted both for information and specimens. Those who are interested in the subject will do well to consult their short memoir in the 19th volume of the 'Annales des Sc. Naturelles,' a memoir of such interest, as, though confessedly a mere sketch, to raise to the highest pitch one's expectations from the full detail which they promise. I have been so fortunate as to see a large quantity of the illustrations prepared for the more complete history of the French species, than which nothing can be more beautiful.

294. *Hymenogaster luteus*, Vitt. l. c. p. 22. Rudloe, Wiltshire, C. E. Broome, Esq. Abundantly.

Distinguished by its bright permanently yellow hymenium,

and smooth, papillate, very variable, often triangular spores. The tint varies according to the quantity of spores. Some specimens have but little scent; others, especially the larger ones, are powerfully foetid.

295. *Hymenogaster olivaceus*, Vitt. l. c. p. 24; *H. populetorum*, Berk. Brit. Fung. Fasc. 4. no. 304. Abundant in the neighbourhood of Corsham, Wilts, during the greater part of the year, C. E. Broome, Esq.

I am now convinced that I have too hastily considered this as identical with *H. populetorum*, Tul., of which I have authentic specimens. It agrees perfectly in outward appearance and in the nature of the cells, but there is more difference in the sporidia (which are very much smaller and of a different form and texture) than is consistent even with the known inconstancy of form, not merely in different individuals but within the same peridium. The spores are precisely what are represented by Vittadini under *H. olivaceus*; but in the absence of authentic specimens of that species, and with the hesitation on the part of Messrs. Tulasne, to whom specimens were communicated to refer it definitively to *H. olivaceus*, I cannot but speak cautiously myself.

The species varies in size from that of a hazel-nut to that of a walnut. Peridium at first white, slightly tinged with lemon-colour; cells at first white, gradually becoming of a dull buff, and then of a reddish gray or brown. The smell is exactly like that of *Ag. theiogalus*, or in some specimens of *Ag. gambosus*, with rather less pungency than in the pink-fleshed species to be described presently. Spores ovate, shortly pedicellate, with an abrupt, elongated, sometimes irregular apex; in general smooth and transparent, and containing two or three nuclei, but sometimes slightly rugose, though by no means opaque as in *H. citrinus*. The colour within is far less bright than in *H. luteus*, from which also it differs as regards the sporidia. It is possible, from some more or less important differences which occur amongst the species as regards the size of the cells, &c., that there may be one or more species confounded with it, but in this department of fungi great caution is needful. Messrs. Tulasne remark in one of their letters, "la forme des spores n'est pas très constante, et n'est pas toujours suffisante pour caractériser les espèces; il faut voir les plantes vivantes bien des fois, les suivre dans leurs développemens et surtout les recueillir soi-même car quelques heures d'exposition à la lumière, le toucher ou le moindre accident modéfient singulièrement leur couleur et leur aspect." These judicious remarks I have borne especially in mind, as I have not been able to collect the species myself; I have not however had merely my own eyes to trust to, but Mr. Broome has himself taken the greatest pains in observing every change of form, and illustrating his remarks

by specimens. I must also plead guilty to not having observed sufficiently the differences between the sporophores and adjacent cells in the several species, which has arisen in great measure from not being able to examine the specimens on the spot at the exact moment when these bodies were in perfection, and before the external characters had become at all disguised. Indeed, under the most favourable circumstances to do so, requires much patience and some discrimination.

296. *Hymenogaster albus* ; *Hymenangium album*, Kl.! Fl. Regn. Bor. t. 466 ; *Rhizopogon albus*, Eng. Fl. vol. v. pt. 2. p. 229 (exclusis omnibus synonymis).

This has been found at Glasgow only. The single individual in Sir W. J. Hooker's collection accords perfectly with German specimens kindly communicated by Klotzsch himself. It is quite distinct from any of the other British species. It is not exactly known what Bulliard's *Tuber album* is, but I suspect it will prove to be the same species with a truffle collected by Dufour in the west of France, and respecting which he has published some observations in a Departmental Agricultural Journal, to which I am not able at this moment to refer. Sowerby's *Tuber album* must also be regarded at present as very uncertain. I have tried in vain to procure it.

297. *H. tener*, n. s. Parvus, globosus, mollis, externe albus sericeus peridio tenui interne pallide roseus, demum umbrinogriseus, basi absorbente manifesta alba ; cellulis laxioribus ; sporis parvis late ellipticis papillatis minute verrucosis. *H. lilacinus*, Berk. Brit. Fung. Fasc. 4. no. 305. Abundant about Rudloe, Wiltshire. Found also sparingly at Hazlebeech, Norths, C. E. Broome, Esq., spring and summer. On the surface of the ground in beech and fir plantations. Here and there one is buried in the earth. The plant is always covered by moss or dead fir-leaves, so as not be visible till the ground is raked.

About the size of a bean or large hazel-nut ; globose, soft and tender, white and silky externally ; peridium thin, at length dingy, at first white within, but soon acquiring a delicate pink tinge, which, as the spores ripen, changes to an umber-gray. Absorbing base white, very distinct, exactly as in *Tuber nitidum*. Cells looser than in *H. olivaceus*. Spores much smaller than in the neighbouring species, broad, elliptic, with a minute papilla, never acuminate, minutely verrucose. Smell like that of *Ag. theiogalus*. When inclosed in numbers in a box they give out a disagreeable suffocating odour. Decayed specimens have a strong smell like that of old mushrooms.

I at first referred this to *H. lilacinus* with the sanction of Messrs. Tulasne, but I am now convinced that it is quite distinct. The form and size of the sporidia are very constant, and quite

different from those of *H. lilacinus*, and the soft delicate texture is very remarkable. It accords also very closely with *H. niveus*, Vitt., but its odour has no resemblance to that of *Geranium Robertianum*. I have seen no specimen of Vittadini's plant, and therefore dare not consider mine the same, especially as he has not represented in his figure the very important character of the white absorbing base.

*Hysterangium*, Vitt., l. c. "Fungi globosi, solidi, carnosocar-tilaginei, demum mucosi diffuentes, appendicibus radicalibus instructi, intus minute cellulosi; cellulis cavis; parietibus basidiis, sporas 2 rarius 3—4 oblongas obtusas subsessiles gerentibus, compositis; sporis minutissimis lævibus guttulas 2 vel plures includentibus."—Tul. l. c. p. 375.

298. *H. nephriticum*, n. s. Depresso-globosum, polyrrhizum, punctis variis mycelio candido valde ramoso adhærens; peridio crassiusculo firmo elastico solubili demum discreto lævi tomentoso candido; substantia cartilagineo-glutinosa pellucida pallide cærulea fungi ad basim crassiore atque inde radiante; cellulis irregularibus vacuis floccis tenuibus percursis; sporis minutis oblongis brevissime pedicellatis utrinque obtusis lævibus pellucidis pallidissime argillaceis. Clifton, Som., Feb. 1844, C. E. Broome, Esq. Abundantly.

Above  $\frac{1}{2}$ —1 inch across, gregarious, sometimes confluent, snow-white, downy, seated on a white, flat, branched mycelium which penetrates deeply into the clayey soil, and is attached at various points to the peridium; peridium firm, elastic, easily separating from the fructifying mass, but in the process of drying in young plants adhering closely to it, in older plants often separating entirely; when rubbed or cut contracting sometimes a pale rufous tinge; substance firm, cartilagineo-glutinous, proceeding from the base and radiating into the mass, the arrangement of which has a strong resemblance to that of a kidney, of a pale blue or gray, which in parts exhibits a green tinge from the subjacent spores; in very young specimens, before the spores are formed, there is not the slightest blue tinge but a very pale pink; cells irregular, minute, sometimes straight and radiating, clothed with very pale argillaceous oblong spores, and emitting from their walls irregular threads which either terminate abruptly or cross over to the opposite wall. As the plant dries, the blue and consequently the green tint vanishes almost entirely, and the mass is of a very pale clay-colour from the spores. The central mass contracts extremely, and the outer surface becomes more or less irregular. Smell scarcely any at first, then like that of some *Hypericum*, at length precisely like that of a decaying puffball.

If the fungus is cut exactly through the centre, the arrangement of its tissue is seen distinctly to proceed from the base; but if the

section fall on either side, it appears to be central. In an injured specimen I find the cells darker, and mixed with the spores are a multitude of smaller globose bodies.

This species is doubtless extremely near to *H. Pompholyx*, of which I have specimens from Messrs. Tulasne, but it is larger; the peridium is firm, and in old specimens does not contract together with the central mass; the spores not rose-coloured, and perhaps rather longer. There is besides no mention made by those gentlemen of the presence of filaments projecting from the walls, and they themselves sanction me in considering it as undescribed. It approaches also to *H. membranaceum*, Vitt., but differs in several respects from it. I am the more induced to keep it distinct, as I have the authority of Messrs. Tulasne, whose opinion ought to have the greatest weight, that the species of hypogæous Fungi are really more numerous than might at first be supposed. In this and other exosporous truffles, spicules (sterigmata) are not formed first, as is the case in the higher Hymenomycetes, but the sporophores give off the spores immediately. I do not mean to affirm that there are no exceptions to this, but I have not myself observed any.

*Hydnangium*, Wallr., Klotzsch. "Fungi globosi carnosi solidi fibrillis radicalibus seu basi absorbente peridioque solubili nudo instructi, intus eximie cellulosi; cellulis cavis, ad parietes subæquales hymeniferis; sporophoris 2—4-sporis; cystidiis conicis immixtis; sporis sphaericis echinatis sterigmatibus longis suffultis."—Tul. l. c.

299. *H. carotæcolor*, n. s. Oblongum, eradicatum, peridio tenui demum ruguloso sublateritio; substantia interiori minute cellulosa aurantio-lateritio; cellulis non fartis; sporis subellipticis pallidis echinulatis, nucleo globoso. In a fir-wood, Bristol, Sept., Nov., H. O. Stephens, Esq.

Oblong,  $\frac{3}{4}$ ths of an inch in diameter, externally slightly tomentose, pale orange-red, fleshy, but by no means deliquescent, rootless; peridium thin, at length rugulose, within minutely cellular; substance of a beautiful orange-red; cells hollow, clothed with obtuse bisporous sporophores and slender cystidia: the cells are also traversed from wall to wall by slender, occasionally branched threads. Spores subelliptic, strongly echinulate, supported on short but distinct sterigmata.

I have seen but three specimens of this species, communicated by Mr. Stephens in three successive years, which is perhaps one of the most beautiful of the group to which it belongs. The colour is very vivid, exactly like that of a fine carrot. When dry it communicates a lemon-coloured stain to the paper in which it is preserved.

It is undoubtedly congeneric with *Hydnangium carneum*, of

which I have fine specimens from Dr. Klotzsch, and with the following species. I have not seen *H. candidum*, Tul., but suppose that also congeneric, and I have consequently adopted Messrs. Tulasne's characters for the genus.

The principal difference between *Hydnangium* and *Hymenogaster* consists in the echinulate spores, for the peridium does not burst in all the species, neither, as far as I have seen in the British species of *Hymenogaster*, do the cells deliquesce. *Hymenogaster albus*, whose characters it is which are contrasted by Klotzsch, I have seen only when dry. The trama of the cells becomes dark in drying, giving to a section of the hymenium a peculiar appearance which is not usual in *Hymenogaster*. I have at present not had an opportunity of examining young specimens, and must therefore beg leave to have some allowance made, should my description of the interior of the cells not be altogether correct. In any case however there will be no difficulty in ascertaining the species.

300. *H. Stephensii*, Berk. Irregulare, oblongum, externe rufum; basi plicato-rugosa cribrosa radicibus fibrosis insidenti; intus album, minute cellulosum lactifluum, demum aëri expositum rufum; cellulis non fartis; sporis globosis demum echinulatis. Clifton, Aug. 1843, C. E. Broome, Esq., and H. O. Stephens, Esq.

About  $\frac{3}{4}$ ths of an inch in diameter, oblong, attached by a branched fibrous root, smooth, not cracked, dark rufous, curiously plicate at the base and cribose; within white, yielding when cut a white milky fluid; substance when cut and exposed to the air soon acquiring a red tinge, which is not however permanent, and in young specimens vanishes almost entirely in drying, in which state the hymenium is cream-coloured; cells minute; spores at first irregularly globose, with a broad rugulose border, somewhat after the fashion of the young spores of *Scleroderma*, at length echinulate.

This is a very curious species, remarkable for its milky juice, smooth dark peridium and plicate base. I have not seen it with the sporophores perfect. It cannot be confounded with any other hypogæous fungus. The smell in my specimens was slight, resembling that of *Ag. theiogalus*.

*Melanogaster*, Corda in Sturm's Deutschl. Fl. "Fungi carnosi, solidi, undique filamentis crassis funiformibus ramosis hinc applicatis, et in peridium suberosum crassum abeuntibus; illinc liberis cum mycelio confusis terram petentibus obvoluti; basi absorbenti propria distincta (an semper?) orbati, intus cellulosi, cellulis ab initio fartis septis crassis immutabilibus distinctis; materie intercellulari tandem pultacea diffuente atra, e filamentis mucilaginosi implexis apice tetrasporis constanti; sporis subsessilibus minutis lævibus hyalinis."—Tulasne, l. c.

\*301. *Melanogaster Broomeianus*, Berk., Tul. in Ann. d. Sc. Nat. vol. xix. p. 377. *Tuber moschatum*, Sow. t. 426; Berk. Brit. Fung. Fasc. 4. no. 285.

I have received this species in great abundance and perfection from C. E. Broome, Esq., who finds it in Wiltshire, near Corsham, from May to November, under Lombardy poplar and beech, in tufts of five or six together, and several of such tufts under each tree, half of them being in general exposed and half beneath the soil. When fresh it is minutely tomentose, of a reddish ochre, which however becomes less bright when handled or badly dried. The veins are for the most part pale, sometimes becoming red when dry, but sometimes unchangeable. I have never seen them bright yellow as in *M. variegatus*. At first it is white within, then of a very pale yellow, at length fuliginous. When very young it has not much scent, but as the spores advance it acquires first an odour like that of *Agaricus theiogalus*, and then a sweet treacly smell like that of *Agaricus pyriodorus*. The spores are elliptic and minute, without any papilla; they contain one or two globose nuclei. In ripe individuals, spherical bodies of the size of the nuclei are often mixed with the spores. In an early stage of growth the sporophores are very conspicuous, each bearing four spores. The cavities however are soon filled up, and the number of spores is at length so great, and the walls of the cavities alter so much, that the structure cannot be ascertained. It is highly probable that the sporophores bear a succession of spores, as has been proved lately in the case of the fructifying threads of the genus *Vaucheria*.

This species, though little noticed by botanists, has been long known at Bath under the name of the Red Truffle, and is eaten there in considerable quantities, being preferred to the common truffle. It must however have an entirely different flavour. The species is undoubtedly extremely near *M. variegatus*, Vitt., differing principally in the colour of the veins and the less powerful odour. I have not yet received *M. variegatus* as British, but both it and the present species are found in France. The differences may arise, as Messrs. Tulasne remark, from difference of climate. In a portion of an authentic specimen of *M. variegatus* from Vittadini, given to me by Dr. Montagne, the walls are still of a bright yellow.

As regards the genus to which Messrs. Tulasne have referred this and the cognate species, it appears that they have exercised great judgement. Few matters in botany are more perplexed than the synonymy of the hypogæous Fungi. Unfortunately Vittadini, from want of authentic specimens and the little intercourse between the north and south of Europe, has not always been able to clear up difficulties, and in some cases has unavoidably added to the confusion.

It is probable that *Rhizopogon luteolus*, Fr., belongs to this genus, though this is far from certain; but if so, the characters of the genus are mainly drawn up from a species, whatever it be (with which however the generic name does not accord), belonging to the ascophorous group of Truffles. Corda indeed has applied the name to those truffles referred by Vittadini to his genus *Choiromyces*, but not happily, as the structure of the plant of Fries is uncertain, and Bulliard's species not less so. *Hyperrhiza*, Bosc, can scarcely be the same thing, as it is described as splitting in a stellate manner at the apex, and I have a *Scleroderma* from Texas which in many respects calls Bosc's plant to mind. Klotzsch therefore cannot be considered as judicious in adopting that name. *Bullardia*, Junghuhn, was proposed in the year 1830 for a truffle, according in many respects with the present genus, but so remarkable from the presence of free threads projecting from the walls of the cavities, that in the absence of specimens it would have been hazardous to adopt that name, though filaments traverse the cells of some other genera in which filaments usually are not present. Besides, the name was given so early as 1801 by DeCandolle to *Tillæa aquatica*, and is at any rate retained as a sectional name. Corda in the following year proposed for a species evidently congeneric the name of *Melanogaster*, which Messrs. Tulasne have adopted, having the priority of *Argyrium* proposed by Wallroth in 1833. Vittadini included the species in his genus *Octaviana*, proposed also in 1831; but this name has been reserved by Messrs. Tulasne for a species with echinulate spores, differing very materially from the others.

302. *M. ambiguus*, Tul. l. c. *Octaviania ambigua*, Vitt. Mon. Tub. p. 18. *Hyperrhiza liquaminosa*, Klotzsch! Fl. Regn. Bor. tab. 468. Under fir-trees, Apethorpe, Norths, July 1843, Rev. M. J. Berkeley, C. E. Broome, Esq.; Sibbertoft, Norths; Bowood, Spye Park, Wilts, C. E. Broome, Esq.; Clifton, H. O. Stephens, Esq.

Known at once by its much larger ovate spores with a papilla at the apex, and its abominable smell, which resembles that of assafoetida. A single specimen in a room is so strong as to make it scarcely habitable. The walls of the cells when cut are whitish, but soon become red: this is not however constantly the case. I have specimens of this both from Germany and France.

*β. intermedius*. Spores obovate, obtuse and even, very rarely slightly papillate.

This form, or more probably species, of which I have seen only an imperfect specimen, was found at Spye Park in August by Mr. Broome. It is as large as *M. Broomeianus*, of which it has the bright rusty colour, but the spores are much larger, equalling in size those of *M. ambiguus*, though of a very different form.

There is scarcely ever the slightest indication of a papilla, and they are obovate with a single globose nucleus. The smell resembles that of *M. ambiguus*. The walls of the cells are yellowish, and are red in the dry specimens.

\*303. *Batarrea phalloides*, P. Sent to Sir W. J. Hooker in 1843 from Dropmore.

304. *Clathrus cancellatus*, L. Isle of Wight, Dr. Broomfield and Mr. Kippist.

\*305. *Vibrissea truncorum*, Fr. Llyn Howel, Rev. T. Salwey.

Asci lineari-clavate, giving out a quantity of very slender, long, curved, linear sporidia.

\*306. *Peziza badia*, P. Milton, Mr. J. Henderson, by the side of a pond. The specimens were of a rich dark brown. This species also occurred abundantly on rubbish in the Botanic Garden, Regent's Park, towards the end of 1842. The specimens in this instance, found by Mr. J. D. C. Sowerby, were of a beautiful vinous purple.

307. *P. pustullata*, P. Milton, Mr. J. Henderson. The specimens grew in abundance on the bare soil, and were far more strongly furfuraceous than any specimen I ever saw of *P. vesiculosa*. There is besides no tendency as in that species to become expanded, the margin, as far as I have seen, being always inflected.

\*308. *P. cupularis*, P. Bristol, H. O. Stephens, Esq.; Bungay, Mr. D. Stock; Caistor, Norths, Mr. J. Henderson.

The specimens sent by Mr. Stephens are perfectly stemless. Those of Mr. Henderson have a very distinct stem, are dark externally and yellow within, and come near to *P. carbonaria*, which appears to be but a variety. Mr. Stock's specimens have a stem like those of Mr. Henderson, but are of a far paler colour.

\*309. *P. brunnea*, A. and S. Rudloe, C. E. Broome, Esq.

M. Desmazières's plant (of which I have a specimen) appears to me the same with Mr. Broome's, and both to accord with Mr. Sowerby's. My friend however—see Ann. d. Sc. Nat. vol. xix. p. 367—has come to a different conclusion.

310. *P. caulicola*, Fr. On stems of herbaceous plants. Not uncommon.

311. *P. corticalis*, P. Bristol, H. O. Stephens, Esq.; Thame, Dr. Ayres; Rudloe, Wilts, C. E. Broome, Esq.

312. *P. eriobasis*, n. s. *Gregaria nivea sessilis*, cupulis ut plurimum distinctis tomentosis planis rotundis siccitate flexuosis tomento basi affixis, hymenio albo, sicco ochraceo. On the smooth inner surface of bark, Sherwood Forest, Notts.

Gregarious but generally distinct; cups half a line broad, flat, orbicular, tomentose, fixed to little, round, snow-white, cottony spots, which sometimes, though rarely, become confluent, but do

not form a continuous stratum. When fresh the whole plant is white, but when dry the disc acquires a yellow tinge. Asci slightly clavate or obtusely lanceolate, sporidia oblong.

This species has very much the habit of *P. porioides*, but differs in its tomentose flat cups and scattered mode of growth. Its nearest ally however is *P. Chavetiae*, Libert, which perhaps is the same species with *P. cæsia*. From both of these it differs in its larger cups, pale disc, and in several other points. The cups are sometimes extremely thin, crowded, and pressed very close to the matrix, but this is not usually the case.

313. *Peziza Johnstoni*, n. s. Sessilis; cupulis globosis sub-turbinate demum tantum apertis rufis sericeo-nitentibus, subtus subiculo lato nigro-fusco grumoso-piloso affixis. Berwick, Dr. Johnston.

Forming a uniform stratum on decayed sticks. Cups half a line broad, at first brown and pulverulent, at length rufous, rather thin with a satiny lustre, subturbinate, with the margin permanently inflected, at first quite closed. Subiculum granulated, grumous, obscurely floccose.

I have seen no other specimen of this remarkable species, which has some resemblance to *P. fusca*, but is in reality extremely different, and has rather a tropical than an European habit. If the figure of *P. fusca* by Letellier be not exaggerated, it may possibly be the same species, but I am inclined to think such is not the case.

I have in vain waited to obtain further information respecting this species, and am now unable to give any account of its fructification as I cannot find any perfect asci.

The specimens given for *P. fusca*, no. 286 in the fourth Fasciculus of 'British Fungi,' do not belong to that species, but are a variety of *P. Rosæ* growing on sycamore. They were gathered at Speke Hall near Liverpool.

314. *Stictis Hysterioides*, Desm. Ann. d. Sc. Nat. vol. xix. p. 365; Berk. Br. Fung. Fasc. 4. no. 308. On dead leaves of *Carices*. Thame, Dr. Ayres; Rudloe, Wilts, C. E. Broome, Esq. This species appears to me to be the same with *Hysterium rufum*, Fr., but my specimens of that species are not so good as might be wished.

*Genea*, Vitt. Uterus rotundato-diformis, cavus extus intusque plicato-lacunosus, apice pervius. Asci cylindrici, transversim ac parallele dispositi, sporidiis octonis, subglobosis, seriatim positis; peridio extus intusque floccoso vel papilloso-muricato, hinc illinc duplicato-intruso. Klotzsch, Vitt. (paucis mutatis).

315. *G. papillosa*, Vitt. l. c. p. 28. Bowood Park, C. E. Broome, Esq., Oct. 1843.

Hemispherical,  $\frac{1}{3}$ rd of an inch broad, convex above, rather con-

cave below, black, warty. Peridium scarcely at all intruded, attached by copious brown flocci at the base. Fructifying stratum white. Asci linear, containing eight elliptic warty sporidia.

I have but a single specimen of this species, which differs essentially from *G. verrucosa* in its elliptic sporidia. It differs also from *G. papillosa*, Vitt., in being black, not brown; but this difference is less essential, and might vanish on the discovery of a series of specimens. The peridium also is minutely warty, exactly as in *Genea sphaerica*, Tul., and *G. verrucosa* (at least Klotzsch's plant), whereas Vittadini describes his species as papillose in contradistinction to verrucose. The species is possibly new, but I have not sufficient materials to warrant me in proposing it as such.

I have another species from the same locality differing in its black flesh and intruded peridium, which I cannot refer with any probability to a recorded species; but of this also I have only a single imperfect specimen. Young unexpanded specimens of *Peziza rhizopus* with their tufted rooting fibres bear a strong resemblance to a *Genea*.

316. *Genea bombycina*, Vitt. l. c. p. 29. Bowood Park, Wilts, Oct. 1843, C. E. Broome, Esq.

Distinguished from the foregoing by its floccose peridium, which is rather soft and dirty white, and is so much intruded as sometimes to leave no cavity. One specimen exceeds half an inch in diameter and has no central cavity. The sporidia are globose, at first smooth, at length verrucose. With age they lose their transparency. The smell is very strong and disagreeable, resembling that of *Melanogaster ambiguus*. A small slice of it placed in a drop of water on the field of the microscope produced when dry a quantity of fine radiating crystals.

*Hydnobolites*, Tulasne. "Peridium vere nullum; substantia carnosae compactae similis irregularis, extus anfractuosa exarata, intus sinubus serpentinis parvis, fungi ad superficiem apertis, varie pertusa; sporangia ovato-elliptica inordinate in substantia nidulantia, sporidia octo sphaerica reticulato-echinata (vel reticulata) foveantia."—Tul. l. c. p. 379.

317. *H. Tulasnei*, n. s. "Depresso-globosa, basi plicata cribroso-porosa, rufa velutina; cellulis magnis, parietibus albis pubescentibus; trama rufa; ascis longis; sporidiis globosis, demum lateritiis reticulatis, non echinulatis."—Berk. Brit. Fung. Fasc. 4. no. 302.

In sandy ground, Spye Park, Wiltshire, C. E. Broome, Esq., August 1843.

Depresso-globose, 1 inch or more in diameter, ferruginous with a tinge of vermilion, velvety, cribroso-porous at the base. Cells irregular, large, especially in mature individuals, pubescent; sub-

stance rufous; asci oblong-elliptic, containing eight globose spores, reticulated but not echinulate. In the centre of each reticulation there is a single globule.

This species so closely resembles *Balsamia vulgaris*, at least when dry, that without microscopic examination it is difficult to distinguish it. The walls of the cells have the same pubescent covering, which in the present case seems to arise from the admission of air, and is in fact, though blanched from its internal situation, of the same nature as that which clothes the outer surface, there being no true peridium. The asci and sporidia are however very different, and bring the plant much nearer to the true Truffles. Till a late period of growth the sporidia are much like those of *Picoa*, being colourless, globose and smooth, with a large nucleus; but they gradually acquire an irregular outer surface, and are at length reticulated, but not as far as I have seen echinulate, and of a fine brick-red. It is perhaps one of the finest species of hypogæous Fungi, differing remarkably from *H. cerebriformis*, of which I have specimens, in its highly coloured surface and in the smooth sporidia. Messrs. Tulasne, to whom I have dedicated the species, at once pronounced it to belong to their recently proposed genus *Hydnobolites*.

*Balsamia*, Vitt. "Uterus mollis sessilis arrhizus, semper clausus, celluloso-carnosus. Asci oblongi membranacei pedicellati octospori, cellularum parietibus immersi ac seriatim dispositi. Sporidia cylindracea, lævia, pellucida."—Vitt. l. c. p. 30.

318. *B. platyspora*, n. s. Minor globosa rufa, minute verrucosa; substantia pallide flava, minute cellulosa; sporidiis primum latiusculis oblongo-ellipticis, nucleo globoso magno, demum leviter elongatis nucleis tribus. Rudloe, October to December, C. E. Broome, Esq.

Globose, about the size of a horse-bean, rufous, with the interstices of the minute warts of a light yellow tint, from the exposure of the internal substance. Cells minute; sporidia at first broadly oblongo-elliptic with a large globose nucleus and a number of minute granules; in a specimen found in December the sporidia were slightly elongated, with one large and two small nuclei. Smell strong.

Assuming Tulasne's *Balsamia polyspora* to be the true plant of Vittadini, the specimens described above must constitute a distinct species. The sporidia are much larger and of a different form. In the older plant I do not find them so long as in that of Messrs. Tulasne, and the nuclei are very remarkable. It is right to remark, that Messrs. Tulasne's plant was not determined on a comparison of authentic specimens; therefore, though I have no doubt of the distinctness of my plant from theirs, I am not without doubts as to Vittadini's synonym. *Balsamia vulgaris*, of which



Berkeley, M. J. 1844. "XLII.—Notices of British Fungi." *The Annals and magazine of natural history; zoology, botany, and geology* 13, 340–360.

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