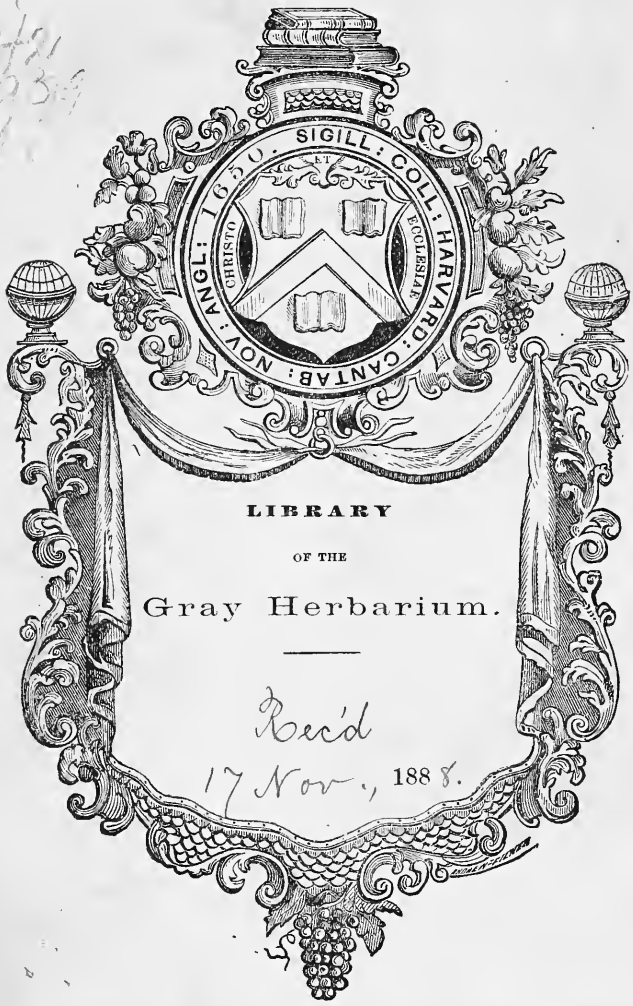


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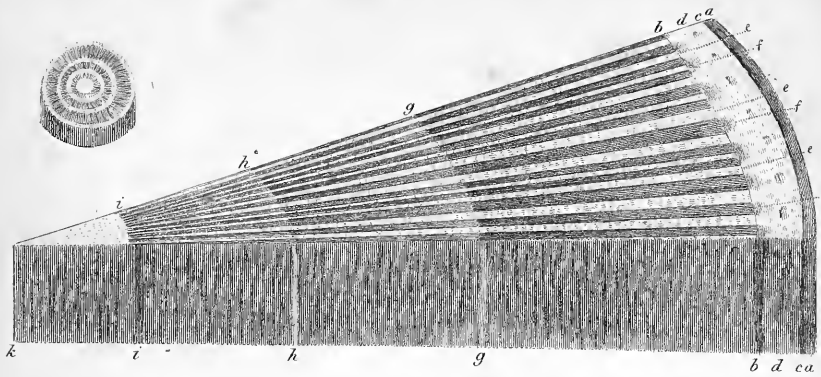
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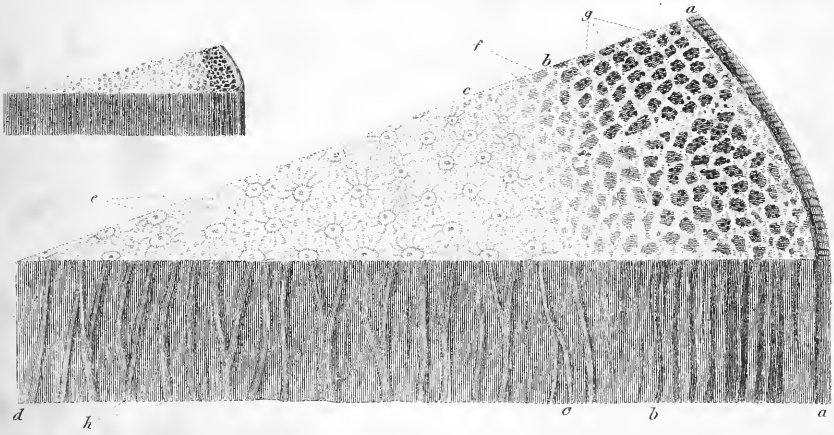
Gray Herbarium.

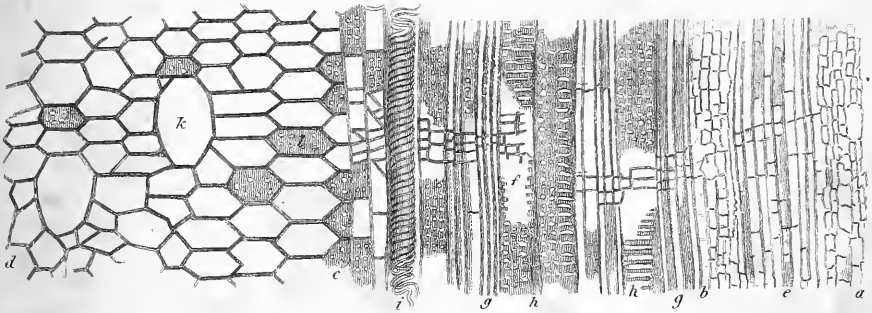
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J. Shury sculp.

London Published by Baldwin Cradock & Joy Paternoster Row Nov.1st 1821.

A

NATURAL ARRANGEMENT

OF

BRITISH PLANTS,

ACCORDING TO THEIR RELATIONS TO EACH OTHER,

AS POINTED OUT BY

JUSSIEU, DE CANDOLLE, BROWN, &c.

INCLUDING

THOSE CULTIVATED FOR USE;

WITH

AN INTRODUCTION TO BOTANY,

IN WHICH THE TERMS NEWLY INTRODUCED ARE EXPLAINED;

ILLUSTRATED BY FIGURES.

BY

SAMUEL FREDERICK GRAY,

Lecturer on Botany, the Materia Medica, and Pharmaceutic Chemistry.

VOL. I.

LONDON:

PRINTED FOR BALDWIN, CRADOCK, AND JOY,

PATERNOSTER-ROW.

1821.

See Journ. Bot. xiii, 127. 1855

1888, Nov. 17.
Athenæum Library.

" ——— Was every faultering tongue of man,
ALMIGHTY FATHER, silent in thy praise,
Thy works themselves would raise a general voice,
Ev'n in the depths of solitary woods,
By human foot untrod; proclaim thy power,
And to the choir celestial THEE resound,
Th' eternal Cause, Support, and End of all."

THOMSON.—*Summer.*

C. Baldwin, Printer,
New Bridge-street, London.

20755
B1.2

In Peddie + Waddington, Eng. Cat. Books - - - 1801-1836
Publ. 1914, on p. 241 - Gray's Nat. Arrang. is listed [13]22.
cf. D. Rogers - (note to publ.)

TO

THE MOST REVEREND

CHARLES,

BY DIVINE PROVIDENCE,

LORD ARCHBISHOP OF CANTERBURY,

PRIMATE OF ALL ENGLAND, AND METROPOLITAN,

THIS WORK

IS DEDICATED BY

HIS GRACE'S

MOST DEVOTED AND HUMBLE SERVANT,

THE AUTHOR.

" Consider the lilies of the field, how they grow; they toil not, neither do they spin: and yet I say unto you, that even Solomon, in all his glory, was not arrayed like one of these."

JESUS in *Matthew.*

PREFACE.

A VARIETY of methods have been adopted by authors for the arrangement of plants, in order that the knowledge mankind possesses of them may be more readily communicated to students in botany. The ancient authors considered only the uses of plants, and arranged them accordingly into timber or fruit trees, corn, pulse, culinary and medicinal plants, those used for dyeing, for garlands, for spinning or other mechanical purposes, and the like; while, as a kind of supplementary knowledge, those whose properties rendered them deleterious to man himself or to the animals bred or domesticated by him were considered under the title of poisons; and those which impeded the growth of the plants cultivated by him were arranged under the general name of weeds; while the great mass of vegetables, to which neither usefulness nor harm could be attributed, were slighted, and indeed entirely neglected, unless any of them presented a phenomenon that struck forcibly on the attention, as the apparently sensitive property of the mimosa, or the water-dropping faculty of the nepenthes distillatoria. Succeeding authors have been more philosophically inclined, and have wished to bestow an equal degree of attention upon all the productions of the Almighty Creator, to the end that those now esteemed as useless may be pointed out for future investigation. The botanists of this school have given us general or local catalogues of plants, arranged either in the alphabetic order of their names, or according to the periodical time of their flowering, or partly from the whole period of their growth in the open air and partly from the contrivances they require to produce an artificial

temperature similar to that of their native climates. None of these arrangements, however, afford any means by which a student, in possession of a plant unknown to him, can discover its situation in the catalogue; and, of course, he is necessitated to have recourse for this purpose to the instruction of a living master, who may not always be at hand.

With the view, therefore, of enabling a solitary student to refer an unknown plant to its congeners, Lobel discarded every other consideration than the structure of plants, particularly of their flowers, that being the period when they principally attract our attention. On this foundation, he investigated the natural affinities of plants to each other, and arranged those known to him in between forty and fifty families, beginning with the grasses; and gave a list of those belonging to each family, but without determining any common character by which the plants of each family may be known; leaving this decision, in respect to the plants not noticed by him, to the intelligence and acumen of the student. Cæsalpinus, Ray, Tournefort, Hermann, Boerhaave, and other authors, who were trained in the schools of logic and of the mathematics, have endeavoured to supply this deficiency, and to exhibit the marks or characters by which the several natural families may be recognized, and have further attempted to arrange these families in a regular series, so that the student, instead of relying upon his own conceptions of the affinity of a plant with those known to him, may, from a consideration of its structure when in a perfect state, refer it to its proper family, and ascertain its name if already known, or have, in the other case, a well grounded assurance that it has not hitherto been described or named by authors.

The first scientific botanists, in consequence of their attempts to employ none but very obvious characters, could only attain their end by using a multiplicity of them, and this necessitated an intricate arrangement. Succeeding authors attempted simpler methods, by choosing a few par-

ticular organs, common to the greater part of plants; and collecting together, in classes and subdivisions, the several plants which agreed in respect to the structure or number of these chosen organs, without any regard to the affinity a more accurate observation of the whole structure of the plant might develope. Of these mere artificial methods, as they are termed, Rivinus, professor at Leipzig, was the introducer, and he took his primary divisions from the regularity or irregularity of the corolla, or what is commonly called the bloom, and the number of parts into which it is cut, and subdivided each of these primary divisions in a uniform manner, according to the nature of the fruit. In this system he was followed by Hebenstreit, Knaut, Ludwig, and Ruppius. The botanists of this school considered the method of Rivinus in its proper light, as being merely a ready means of determining the family, or what is now called the genus, to which any plant belongs; and, therefore, contented themselves with following it up to that point, leaving the further knowledge of plants to be sought for in the authors who have arranged their works by the natural affinities of plants, or other considerations.

The want of the power of locomotion, by which plants are most evidently distinguished from the generality of animals, and the consequent inability of approaching each other, if the organs of reproduction were seated in distinct individuals and the analogy of animal generation strictly observed, while, at the same time, they are, from the same immobility, liable to a variety of accidents, which animals elude by the power of changing their place, rendered necessary the adoption of peculiar contrivances to preserve and multiply the species in which some analogy may be observed with those of animals, more apparent however than real.

The prurient mind of Linnæus, so visibly exhibited in his mode of describing bivalve shells, was struck by the great difference between animals and vegetables in this respect; and he immediately applied himself to arrange

plants by those organs that appear to be analogous in their functions to the sexual organs of animals. Assuming the flowering of plants to be what he poetically terms their nuptials, he likened each separate flower to a bridal chamber, and formed his primary divisions from the number of the male organs present in each flower, and his subdivisions were formed from the number of the female organs which were also present in the same chamber: the Omniscient Creator having lessened the chances of failure arising from the immobility of plants by multiplying the points of union, and increasing the number of the organs, especially of the male. As Linnæus considered not only the number of these organs, but in many cases their situation, connection, and proportion, he has departed from the simplicity which ought to form the basis of an artificial system and was so strictly observed by Rivinus, and has rendered his system as intricate as some of those who endeavoured to place kindred plants together. His successor in the chair at Upsal, Thunberg, has therefore endeavoured to simplify his method, but with considerable opposition. While Ludwig, in the second edition of his Genera, and Hill, along with the primary divisions of Rivinus taken from the corolla employed those of Linnæus for their subdivisions, but have not met with any followers.

The novelty of the Linnæan method, the distinction of the species being always taken from the variations to be observed in the plant itself, together with the industry of Linnæus and his followers in extending his catalogue, and forming, as it were, a new science, that of the nomenclature of plants, instead of the old botany, which, as we have said, principally devoted itself to the uses of plants, all contributed to give an eclat to his system, and to extend its influence beyond its proper limits. So that instead of being taught to use this method only as a finder, or as an index to the authors who wrote on the natural history of plants, the student was led to believe that this was the only arrangement that ought to be adopted in all works that treat of

plants: and there have not been wanting authors who have even written works upon gardening, or the materia medica, arranged on the Linnæan system.* This undue extension of the sexual method is contrary even to the declared opinion of Linnæus himself, who expressly says, he considered it only as a temporary substitute until the natural method, or that which considers the mutual affinities of plants, be so far improved as to admit of a clue being applied to it, by which the student may investigate the place of a plant in the method without any other help.

* Thus the Linnæan botanists committed the same error as the grammarians and the philologers have frequently done in the composition of dictionaries, vocabularies, and etymologicons, from not considering the different uses of the various methods. Some interpreting dictionaries are arranged by roots, as those of Scapula, Mair, Salmon, and for most of the Oriental languages, to the great hindrance of the young student; while, on the other hand, Gesner, Johnson, the Della Crusca, and the French Academy, have given us critical dictionaries, in the alphabetical order of the words, and have thus deprived themselves of the great help they might have deduced from the method of the roots, or the vocabulary form.

If these authors had reflected upon the subject, instead of blindly following the track of some preceding author, who had perhaps a different object in view, they would certainly have discovered that, for interpreting an unknown language into a known, the alphabetic order either of the initial or terminal letters was indeed the most proper, because the letters of the word are, by hypothesis, the only guide. Whether the initial letters, as used in most cases, or the terminal, as adopted in the Coptic dictionaries, be the most proper, may admit of some dispute, the latter has the advantage of exhibiting the sense attached to the various terminations more clearly than the former. When the words of a known language are used to find the corresponding words in one that is unknown, the vocabulary form has the advantage of bringing together all those words that would denote nearly similar ideas. Whether this form, or the alphabetic order be adopted, this is the proper part of a double interpreting dictionary, to produce examples from the classic writers in the less known tongue, as authority for the use of those words; and not, as was absurdly done by Ainsworth, in the unknown—known part, since, in reading a foreign work, the context will enable the reader to choose the proper signification if the word be ambiguous; whereas, in writing a foreign language, we have occasion for examples to guide us in our choice of nearly synonymous words. The utility of the method of roots, for a critical dictionary, and the difficulty of using one on this plan for interpretation, is surely self-evident.

Linnæus, considering only the external appearance of the flower and fruit, despaired of finding this clue; but the favourers of the older arrangements have bestowed so much attention in examining the internal organization of plants, particularly of the fruit and seed, and various organs, which were neglected by the Linnæan nomenclators, that this desirable point is now attained. The present work exhibits the results of the latest investigations into the mutual affinities of plants; and the synopsis of the subdivisions attached to the several divisions furnishes a clue which will enable a student to trace the connexion of the several parts, and their dependence upon each other. When the author considered the great pains which had been taken with many of the families, and especially with those, which, from their not plainly exhibiting the sexual organs, were huddled together by Linnæus in his twenty-fourth class, which contains probably far more plants than all his other twenty-three classes put together; and that there had not yet appeared in this country any detailed account of these researches, he was led to engage in preparing this system for the use of the English students of this delightful species of knowledge.

An essential difference exists between the mere determination of the name of plants, and the study of their affinities to each other. The nomenclature of plants requires the study of so many only of their organs, and such a slight consideration of these as may suffice to determine the difference that may exist betwixt any two plants that might otherwise be confounded. The scientific study of their affinities requires, on the contrary, the whole of their organization to be kept in view, and the changes it may undergo during their natural life; hence there arises a necessity for a more accurate discrimination of the various forms of their organs than is required for the nomenclature only. The botanists of the natural school have, therefore, been led to invent a far greater number of terms than were introduced into use when Linnæus wrote his Philosophia

Botanica. Whatever opinion may be entertained of the necessity of increasing the number of substantives to denote the several organs, and their principal variations, instead of using the old substantives with the addition of appropriate adjectives to limit their signification, yet as these new substantives are used by the greatest part of modern authors, and have not yet been explained in our language, there appeared a necessity of prefixing an introduction to botany, principally for the purpose of giving a connected view of the anatomy of vegetables, according to the latest views of Mirbel, De Candolle, and other eminent botanists. The figures annexed to this part of the work have been very carefully selected, with a view of comprising as much information as possible in a small compass.

In consequence of the addition of this introduction, this work contains all that is necessary for the student of English botany, unless he is desirous of verifying his first steps in the science by a reference to the figures of plants. The very high price of Sowerby's English Botany, which is seldom to be procured for less than fifty guineas, rendering it inaccessible to the generality of students, it has been judged preferable to refer to Gerarde's Herbal as edited by Johnson, and the Theatre of Parkinson, either of which may be purchased at a very moderate price; and their figures, although only wood cuts, will give a good idea of the plants. Some may prefer the figures of those parts only which characterize the genera, and of these the cheapest is Tournefort's Institutiones Rei herbariæ, whose genera in general correspond with those of Ray. But these helps desert the student when he attempts the study of the plants which were called by the ancient botanists, on account of their not bearing flowers, imperfect plants; and by Linnæus, because he could not detect in them the presence of the sexual organs, which his preconceived opinion required to be present in all plants, cryptogamia, that is to say, secret marriages. Should the student endeavour to penetrate this, the higher botany, and wish for

the help of figures, he will require either the Historia Muscorum of Dillenius, the Hydrophyta Danica of Lyngbye, the System der Pilze und Schwamm of Esenbeck, or Sowerby's English Fungi, according to his peculiar views.

With the view of assisting those students who have been accustomed to use the Linnæan mode of investigating plants, there is prefixed to the second volume, which contains the perfect, or phenogamous, plants, an analytical guide to the families, according to the number of the sexual organs.

It remains then only to say a few words respecting the index. In general, the Latin generic names only have been quoted, but when a genus contains a great number of species, as agaricus, lichen, conferva, rosa, juncus, and some others, the trivial names are referred to, or the second word of the specific difference, if the plant had no name given to it by the old botanists. In a few cases, when the second word was an adjective, agreeing not with the generic name, but with a following substantive, this adjective is omitted, and the governing substantive inserted, as bryum perangustis crebrioribus foliis, &c. of Dillenius in Raii Synopsis, is referred to in the index under Bryum foliis.

As to English names, a considerable number of new ones have, for the sake of system, been given to the genera of plants; in forming the majority of which, the form and fashion of our ancient names have been as closely adhered to as was possible; but, in some instances, Anglicized Latin names are used: these, however, ought to be regarded as only temporary. In regard to the manner in which compound English names are inserted in an index, a considerable difference is observable in authors. Some few insert them as they are spoken, as plough mans' spike nard under P, evening prim rose under E. Other authors seem to consider spike nard and prim rose as generic names, and place them under S and P. Some carelessly insert them without any regular rule, so that a person is frequently obliged to search for all the words of which a name is composed before he finds the reference. To avoid this, a general rule has been

laid down, and they are inserted under their last word, even when the composition is not apparent at first sight, as tur-nep, the nep which is round as if turned in a lathe, so pars-nep, that which from its size requires to be chopped or divided into parts to fit it for eating, as schoolboys are said to parse their lessons, when they divide them grammatically. Pars-ley is, by an error only referred to under ley. It signifies an herb to be chopped, alluding to its use in sauces and stuffing. The ley being only another spelling of lea, grass, as in the song—

Over the water and over the lea;

but, in parsley, is used for herb, as Virgil, on the contrary, uses herba for grass:—

In molli consedimus herbâ.—*Buc.* 3, 55.

An index of the authors mentioned in the Introduction, and a very copious index of the botanical terms, are subjoined to the first volume. It was at first intended to omit the references to those terms which are self-evident to an English reader, but, upon considering that foreigners might have occasion to ascertain their meaning, they have been inserted, omitting however those English terms which vary but slightly in their termination from the corresponding Latin terms.

I have now to return my thanks for the kind assistance I have received, and particularly to A. B. Lambert, R.A. Salisbury, and A. H. Haworth, Esqrs. Messrs. E. and J. Bennett, and Mr. Deer. The death of Sir Joseph Banks, during the printing, has, to my great regret, prevented me from a similar acknowledgement, as a slight return for the many advantages I have received from the use of his Library and Herbarium: and has also been a cause of great delay, in being obliged to wait the arrival of another copy of Esenbeck's work from Germany, that those interesting plants the fungi might be arranged according to the latest improvements.

Principio, genus herbarum, viridemque nitorem,
Terra dedit circum colleis; camposque per omneis
Florida fulserunt viridanti prata colore:
Arboribusque datum est variis exinde per auras
Crescundi magnum immissis certamen habenis.
Ut pluma atque pilei primum, setæque, creantur
Quadrupedum membris, et corpore pennipotentum;
Sic nova tum tellus herbas, virgultaque, primum
Substulit; inde loci mortalia corda creavit,
Multa, modis multis, varia ratione, coorta.

LUCRETIUS, V. 781—790.

THE GENERA OF BRITISH PLANTS,

According to their mutual relations, with the number of species in each genus.

PLANTÆ CELLULOSÆ.

I A. Pl. cell. aphylleæ.

1. *Hydrophytæ.*

A. 1. Vaginaria 1
2. Oscillatoria 5
3. Humida 3
4. Elisa 9
5. Rivularia 4
6. Scytonema 5
B. 7. Girardia 2
C. 8. Lemania 2
D. 9. Bryopsis 1
10. Vaucheria 13
11. Codium 2
E. 12. Fragillaria 3
13. Biddulphia 3
14. Diatoma 4
F. 15. Zygnema 2
16. Conjugata 7
17. Choaspis 1
18. Agardhia 1
19. Serpentinaria 2
G. 20. Hydrodictyon 1
H. 21. Chætophora 1
22. Leathesia 1
23. Myriodactylon 2
24. Draparnaldia 2
25. Conferva 55

2. *Thalassiophytæ.*

A. 26. Mesogloja 1
27. Bulbochæte 1
28. Ectocarpus 6
29. Callithamnion 17
30. Ceramium 3
31. Griffitsia 3
32. Borrichius 1
33. Batrachospermum 2
B. 34. Cladostephus 3
35. Sphacelaria 5
36. Ellisius 2
37. Hutchinsia 17
38. Vertebrata 1
C. 39. Jania 2
40. Corallina 3
D. 41. Zonaria 2
42. Dictyota 2
43. Dictyopteris 1
E. 44. Asperococcus 1
45. Ulva 12
46. Scytosiphon 9
47. Palmella 2
48. Merretia 4
49. Olivia 6
F. 50. Carrodorus 1
51. Nostoc 7
G. 52. Alcyonidium 1
53. Ephidatia 1
54. Spongilla 2
H. 55. Tupha 13
56. Scypha 9
57. Spongia 14
58. Tethya 3
I. 59. Delesseria 5
60. Odonthalia 1
61. Sphærococcus 15
62. Gigartina 18
63. Gastridium 16
K. 64. Fasciata 2
65. Laminaria 4
66. Phasgonon 2
67. Chorda 2
68. Chordaria 1
69. Sporochnus 2
70. Desmarestia 2
71. Lichina 2
72. Himanthalia 1
73. Cervina 1
74. Fucus 3
75. Halidrys 3
76. Mackaia 6
77. Baccalaria 2
78. Siliquaria 1
79. Furcellaria 1

3. *Homothalameæ.*

A. 80. Placynthium 1

81. Enchylium 11
82. Scytenium 1
83. Mallotium 2
84. Lathagrium..... 4
85. Leptogium 3
86. Polychidium 6
B. 87. Usnea 3
C. 88. Cornicularia 6
89. Ramalina 4
90. Alectoria..... 3

4. *Cenothalameæ.*

A. 91. Stereocaulon 2
92. Isidium..... 4
93. Bæomyces 3
B. 94. Cerania 1
95. Cladonia..... 6
96. Helopodium 2
97. Schasmaria 1
98. Scyphophora 17
99. Pycnothelia 1
C. 100. Evernia 1
D. 101. Roccella 3
102. Nephroma 2
103. Peltidea 8
104. Solorina 2
105. Sticta 8
106. Cetraria 6
107. Borrera 7
108. Physcia..... 2
109. Parmelia.....31
E. 110. Psoroma 8
111. Placodium 9
112. Rinodina.....35
113. Urceolaria 9
114. Lepidoma 11
115. Lecidea 58
F. 116. Gyrophora 9
G. 117. Arthonia..... 5
118. Spiloma 8
H. 119. Acolium 3
120. Phacotrum 11
121. Strongylium 3

5. *Idiothalameæ.*

A. 122. Sphærophoron 3
123. Rhizomorpha.....11
B. 124. Variolaria 9
C. 125. Pyrenula..... 3
126. Thelotrema..... 3
127. Porina..... 2
D. 128. Lejophlea 4
129. Lithœcia 6
130. Inoderma..... 2
131. Endocarpon.....13
E. 132. Graphis..... 8
133. Alyxoria..... 2
134. Hysterina 12

6. *Sarcothalameæ.*

A. 135. Actidium..... 1
136. Hypoderma 6
137. Hysterium..... 3
B. 138. Xylaria 6
139. Hypoxylon..... 5
140. Periplierostoma.....15
141. Poronia 1
142. Nemania.....21
143. Cucurbitaria 4
144. Engizostoma 6
145. Circinostoma..... 6
146. Exormatostoma.....10
147. Astoma 21
148. Sphæria.....36
C. 149. Thelebolus 1
D. 150. Nemaspora..... 5

7. *Protomyceæ.*

A. 151. Rœstelia..... 5
152. Æcidium.....21
153. Ustilago 3
154. Uredo 10
155. Albugo..... 3
156. Cœmurus..... 5
157. Dicæoma..... 9
158. Puccinia..... 5
159. Podisoma 1
B. 160. Fusidium..... 3
161. Stilbospora..... 2
C. 162. Xyloma 5
D. 163. Gymnosporangium 1
E. 164. Ægerita 1
165. Fusarium..... 1
F. 166. Tuberculariа 2

8. *Nematomyceæ.*

A. 167. Acremonium 2
168. Epochnium..... 1
169. Trichothecium..... 1
170. Sporotrichum..... 5
171. Byssocladium..... 4
B. 172. Haplaria..... 1
173. Acrosporium 1
174. Virgaria 2
175. Botrytis 1
176. Stachylidium 2
177. Polyactis 1
178. Penicillum 2
179. Aspergillus..... 4
C. 180. Erineum 1
181. Rubigo..... 3
D. 182. Cladosporium 1
183. Helmisporium 2
184. Heliocosporium..... 1
185. Monilia 1
186. Torula 1
187. Racodium 1
188. Dematium 1
189. Byssus 1
190. Typhoderma 4
191. Xylostroma..... 1
E. 192. Trichoderma 2

F. 193. Thamnidium 1
194. Mucor 5
195. Ascophora 2
196. Pilobolus 1
G. 197. Ceratium 1
198. Isaria 3
199. Coremium 2
200 Cephalotrichum 1
H. 201. Stilbum 3

9. *Gasteromyceæ.*

A. 202. Eurotium 1
203. Æthalium 1
204. Lignidium 1
205. Spumaria 1
206. Strongylium 1
207. Lycogala 4
B. 208. Myrothecium 1
209. Dichosporum 1
210. Licea 2
211. Dermodium. 2
C. 212. Didymium 3
213. Diderma 1
214. Cionium 6
215. Physarum 7
216. Leangium 2
217. Leocarpus 2
D. 218. Trichia 8
219. Arcyria 5
E. 220. Cribaria 3
221. Dictydium 2
F. 222. Stemonitis 4
G. 223. Craterium 3
224. Pyxidium 1
H. 225. Onygena 1
I. 226. Sphærobolus 1
K. 227. Scleroderma 4
228. Hypogæum 1
229. Bovista 3
230. Lycoperdon 7
231. Geastrum 6
232. Polystoma 1
L. 233. Tulostoma 1
M. 234. Polyangium 1
N. 235. Cyathus 4

10. *Sarcotheceæ.*

A. 236. Erysibe 10
237. Thanatophytum 1
238. Sclerotium 9
B. 239. Tuber 3
C. 240. Tremella 1
241. Gyraria 12
242. Coryne 2

11. *Hymenotheceæ.*

A. 243. Amanita 8
244. Vaginata 3
245. Lepiota 8
246. Gymnopus 36
247. Omphalia 18
248. Pleuropus 5
249. Crepidopus 5
250. Apus 2
251. Resupinatus 1
B. 252. Russula 4
253. Mycena 17
254. Micromphale 8
255. Lactarius 12
C. 256. Pratella 5
257. Cortinaria 15
258. Prunulus 10
259. Coprinus 16
D. 260. Asterophora 1
E. 261. Merulius 1
262. Cantharellus 5
263. Corniola 2
264. Serpula 1
265. Gomphus 1
F. 266. Dædalea 5
G. 267. Poria 5
268. Boletus 17
269. Grifola 6
270. Coltricia 3
271. Striglia 1
272. Albatrellos 2
273. Polyporus 1
H. 274. Suillus 1
275. Pinuzzus 1
276. Leccinum 10
277. Fistulina 1
I. 278. Sistotrema 2
279. Cerrena 1
280. Xylodon 2
K. 281. Hydnum 1
282. Dentinum 2
283. Auriscalpium 1
284. Steccherinum 3
285. Odontia 2
286. Hericium 1
L. 287. Craterella 1
288. Stereum 5
289. Corticium 1
290. Merisma 2
M. 291. Corynoides 4
292. Ramaria 8
293. Clavaria 12
N. 294. Geoglossum 9
295. Mitrula 2
296. Leotia 2
297. Helotium 3
298. Relhanum 1
O. 299. Morchella 4
300. Helvella 3
301. Spathularia 1
P. 302. Stictis 3
303. Patellaria 5
304. Peziza 14
305. Octospora 8
306. Scodellina 10
307. Calycina 5
308. Dasyscyphus 6

309. Macroscyphus..... 8
310. Hymenoscyphus..... 9
Q. 311. Ascobolus..... 1

12. *Lytotheceæ.*

312. Batarrea..... 1
313. Ithyphallus..... 1
314. Phallus..... 2

1 B. Pl. CELL. FOLIOSÆ.

13. *Hepaticæ.*

A. 315. Riccia..... 5
B. 316. Targionia..... 1
317. Sphærocarpus..... 1
C. 318. Anthoceros..... 3
D. 319. Marchantia..... 2
320. Strozzius..... 2
321. Cyathophora..... 1
322. Staurophora..... 1
E. 323. Riccardius..... 3
324. Pallavicinius..... 2
325. Herverus..... 2
326. Papa..... 1
327. Blasia..... 1
328. Maurocenius..... 1
329. Salviatus..... 3
330. Pandulphinius..... 4
331. Marchesinus..... 1
332. Cavendishia..... 2
333. Martinellius..... 9
334. Mylius..... 4
335. Nardius..... 3
336. Jungermannia.....39
337. Bazzanius..... 1
338. Scalius..... 1
339. Cesius..... 1
340. Herbertus..... 1
341. Lippius..... 1
342. Kantius..... 1

14. *Musci.*

343. Andræa..... 4
344. Spagnum..... 4
345. Phascum.....11
346. Schistostega..... 1
347. Anictangium..... 2
348. Gymnostomum.....14
349. Diphyscium..... 1
350. Tetraphis..... 2
351. Splachnum..... 7
352. Conostomum..... 1
353. Polytrichum..... 9
354. Cinclidotus..... 1
355. Tortula.....11
356. Encalypta..... 3
357. Grimmia..... 7
358. Pterogonium..... 3
359. Weissia.....18
360. Dicranum.....24
361. Trichostomum..... 9
362. Leucodon..... 1
363. Didymodon..... 8
364. Funaria..... 3
365. Zygodon..... 1
366. Orthotrichum.....10
367. Neckera..... 2
368. Anomodon..... 2
369. Daltonia..... 2
370. Fontinalis..... 3
371. Buxbaumia..... 1
372. Bartramia..... 6
373. Hookeria..... 2
374. Hypnum.....60
375. Bryum.....25

2. PLANTÆ ENDOGENÆ.

2 A. Pl. end. cryptogamæ.

1. *Filices.*

A. 1. Osmunda 1
2. Ceterach 1
B. 3. Polypodium 4
C. 4. Aspidium 10
5. Cyclopteris 2
6. Athyrium 4
D. 7. Asplenium 8
E. 8. Scolopendrium 1
F. 9. Blechnum 1
10. Stegania 1
G. 11. Pteris 1
12. Adiantum 1
H. 13. Woodsia 1
14. Trichomanes 1
15. Hymenophyllum 1
I. 16. Bostrichium 3
K. 17. Ophioglossum 1

2. *Lycopodiaceæ.*

18. Lycopodium 5
19. Bernhardia 2
20. Isoetes 1

3. *Marsileaceæ.*

21. Pilularia 1

4. *Equisetaceæ.*

22. Equisetum 7

5. *Charadeæ.*

23. Chara 5

2 B. Pl. end. phenogamæ.

6. *Fluviatiles.*

24. Zannichellia 2
25. Ruppia 1
26. Potamogiton 14
27. Zostera 1

7. *Aroideæ.*

28. Arum 1

7*. *Lemnadeæ.*

28*. Lemna 4

8. *Typhaceæ.*

29. Sparganium 2
30. Platanaria 1
31. Typha 3

9. *Cyperaceæ.*

A. 32. Carex 25
33. Trasus 34
34. Cobresia 1
B. 35. Cyperus 2
36. Cladium 1
37. Chætospora 2
38. Rhyucospora 2
39. Schœnus 2
C. 40. Scirpus 11
41. Eleocharis 2
42. Isolepis 3
43. Trichophorum 1
44. Eriophorum 5

10. *Gramineæ.*

A. 42*. Nardus 1
43*. Ophiurus 2
44*. Hordeum 2
45. Zeocriton 5
46. Secale 1
47. Elymus 3
48. Lolium 3
49. Agropyrum 5
50. Triticum 7
B. 51. Cynodon 1
C. 52. Sclerochloa 1
53. Megastachya 1
54. Poa 20
55. Briza 3
56. Enodium 1
57. Melica 2
58. Triodia 1
59. Brachypodium 4
60. Schenodorus 5
61. Zerna 5
62. Bromus 7
63. Festuca 10
64. Vulpia 3
65. Glyceria 1
66. Dactylis 1
67. Kœleria 1
68. Cynosurus 1
69. Sesleria 1
70. Chrysurus 1
D. 71. Arundo 1
E. 72. Trisetum 1
73. Danthonia 1
74. Avena 7
75. Arrhenatherum 2
76. Catabrosia 1
77. Aira 4
78. Anthoxanthum 1
78*. Hierochloa 1
79. Holcus 2
80. Deschampsia 2
81. Corynephorus 1
F. 82. Chilochloa 4
83. Phleum 3
84. Phalaris 2
85. Alopecurus 6
86. Psamma 1
87. Spartina 1
88. Vilfa 5
89. Agrostis 3
90. Apera 2

91. Agraulus 3
92. Achnatherium..... 1
93. Calamagrostis..... 2
94. Gastridium 1
95. Polypogon..... 2
96. Lagurus..... 1
G. 97. Stipa..... 1
H. 98. Milium 1
99. Milora..... 1
100. Digitaria 2
101. Setaria 3
102. Echinochloa 1

11. *Restiaceæ.*

103. Eriocaulon 1

12. *Junceæ.*

104. Acorus..... 1
105. Juncus 23
106. Luzula 7
107. Abama 1

13. *Colchicaceæ.*

108. Tofieldia..... 1
109. Colchicum 1

14. *Liliaceæ.*

110. Tulipa..... 1
111. Fritillaria 1

15. *Asphodeleæ.*

A. 112. Phalangium..... 1
B. 113. Muscari 1
114. Hyacinthus..... 1
C. 115. Honorius 1
116. Scilla..... 3
117. Ornithogalum..... 2
118. Gagea..... 1
D. 119. Moly..... 1
120. Allium..... 7
121. Cepa..... 5

16. *Asparageæ.*

122. Asparagus..... 1

17. *Smilaceæ.*

123. Paris..... 1
124. Convallaria..... 1
125. Polygonatum 3
126. Ruscus. 1

18. *Tamaceæ.*

127. Tamus 1

19. *Amaryllideæ.*

128. Narcissus..... 2
129. Ajax..... 2
130. Leucojum..... 1
131. Galanthus 1

20. *Irideæ.*

A. 132. Crocus..... 3
133. Trichomema 1
B. 134. Iris 3

21. *Orchideæ.*

A. 135. Loroglossum 1
136. Aceras 1
137. Anacamptis..... 1
138. Orchis 8
139. Ophrys..... 3
140. Gymnadenia 1
141. Entaticus..... 2
142. Platanthera..... 1
143. Herminium 1
B. 144. Goodyera..... 1
C. 145. Spiranthes 1
146. Neottia..... 1
147. Listera..... 2
148. Cephalanthera 3
149. Epipactis..... 2
150. Cypripedium 1
D. 151. Pseudorchis 1
152. Malaxis 1
153. Corallorhiza 1

22. *Alismaceæ.*

154. Sagittaria..... 1
155. Alisma..... 3
156. Damasonium 1

23. *Butomaceæ.*

157. Butomus 1

24. *Juncagineæ.*

158. Scheuchzeria 1
159. Triglochin 2

25. *Hydrocharideæ.*

160. Hydrocharis 1
161. Stratiotes..... 1

3. PLANTÆ EXOGENÆ.

3 A. Pl. ex. monochlamydeæ.

1. *Abietideæ.*

1. Pinus 1
2. Abies 2
3. Larix 1

2. *Cupressideæ.*

4. Juniperus 2

3. *Taxideæ.*

5. Taxus 1

4. *Salicinæ.*

6. Salix 57
7. Populus 4

5. *Betulideæ.*

8. Betula 2
9. Alnus 1

6. *Corylideæ.*

10. Carpinus 1
11. Corylus 1
12. Quercus 3
13. Fagus 1
14. Castanea 1

7. *Myricæ.*

15. Myrica 1

7*. *Empetrideæ.*

15*. Empetrum 1

8. *Ulmaceæ.*

16. Ulmus 5

9. *Urticaceæ.*

17. Lupulus 1
18. Urtica 3
19. Parietaria 1
20. Cannabis 1
? 21. Xanthium 1

10. *Euphorbiaceæ.*

A. 22. Galarhœus 4
23. Esula 6
24. Characias 2
25. Chamæsyce 1
B. 26. Mercurialis 2
27. Buxus 1

11. *Aristolochiæ.*

28. Aristolochiæ 1
29. Asarum 1

12. *Santalaceæ.*

30. Thesium 1

13. *Eleagneæ.*

31. Hippophae 1

14. *Thymeleæ.*

32. Daphne 3

15. *Polygoneæ.*

A. 33. Bistorta 2
34. Persicaria 9
35. Polygonum 1
36. Fagopyrum 3
B. 37. Lapathum 11
38. Acetosa 3
39. Oxyria 1

16. *Chenopodeæ.*

40. Blitum 1
41. Beta 2
42. Spinachia 2
43. Atriplex 7
44. Chenopodium 14
45. Salicornia 4
46. Salsola 1

17. *Amaranthideæ.*

47. Amaranthus 1

3 B. Pl. ex. corolliflorÆ.

18. *Plantaginideæ.*

48. Plantago 3
49. Arnoglossum 6
50. Asterogeum 1

19. *Littorellideæ.*

51. Littorella 1

20. *Staticinæ.*

52. Statice 1
53. Limonium 2

21. *Primulaceæ.*

54. Centunculus 1
55. Anagallis 2
56. Irasekia 1
57. Lysimachia 2
58. Naumburgia 1
59. Numularia 1
60. Hottouia 1
61. Trientalis 1
62. Primula 4
63. Cyclamen 1
63*. Samolus 1
63**. Glaux 1

22. *Rhinanthuceæ.*

A. 64. Veronica 21
65. Sibthorpia 1
66. Euphrasia 1
67. Odontites 1
68. Bartsia 2

69. Rhinanthus..... 1
70. Pedicularia..... 2
B. 71. Melampyrum 4

23. *Orobancheæ.*

72. Orobanche 6
73. Lathræa 1

24. *Lentibulariæ.*

74. Utricularia 3
75. Pinguicula 3

25. *Scrofularinæ.*

76. Limosella..... 1
77. Scrofularia..... 4
78. Elatine..... 2
79. Cymbalaria..... 1
80. Antirrhinum 4
81. Orontium..... 2
82. Digitalis 1

26. *Solaneæ.*

A. 83. Verbascum 8
84. Hyoscyamus 2
85. Nicotiana..... 1
86. Stramonium..... 1
B. 87. Atropa 1
88. Dulcamara 1
89. Solanum..... 3
90. Lycopersicon..... 1

27. *Gentianæ.*

A. 91. Pneumonanthe 2
92. Ericala..... 3
93. Erythalia..... 2
94. Erythræa..... 3
95. Franquevillia..... 1
96. Chlora 1
97. Swertia..... 1
B. 98. Limnanthes..... 1
99. Menyanthes..... 1

28. *Polemoniaceæ.*

100. Polemonium 1

29. *Vincæ.*

101. Vinca..... 2

30. *Convolvulaceæ.*

A. 102. Calystegia 2
103. Convolvulus 2
B. 104. Cuscuta..... 1
105. Cassytha 1

31. *Borragineæ.*

106. Myosotis 5
107. Cynoglossum 2
108. Omphalodes 1
109. Borrago 1
110. Asperugo..... 1
111. Buglossa 2
112. Anchusa 1
113. Pulmonaria 2
114. Mertensia..... 1
115. Ægonychon 2
116. Lithospermum 1
117. Symphytum..... 2
118. Echium 2

32. *Labiatæ.*

119. Lycopus 1
120. Mentha..... 12
121. Pulegium..... 1
122. Bugula..... 4
123. Chamædrys..... 3
124. Scorodonia 1
125. Lavandula 1
126. Nepeta 1
127. Betonica 1
128. Stachys 3
129. Trixago 1
130. Eriostomum 1
131. Glechoma..... 2
132. Lamium 5
133. Galeobdulon 1
134. Galeopsis..... 6
135. Cardiaca 1
136. Ballote..... 1
137. Marrubium..... 1
138. Origanum 1
139. Majorana..... 2
140. Thymus..... 4
141. Acynos..... 1
142. Calamintha..... 2
143. Satureja 2
144. Clinopodium 1
145. Melissa..... 1
146. Melittis..... 1
147. Salvia 1
148. Sclarea..... 1
149. Horminum 1
150. Brunella 1
151. Scutellaria 2

33. *Pyrenaceæ.*

152. Verbena..... 1

34. *Oleinæ.*

153. Ligustrum 1

35. *Fraxineæ.*

154. Fraxinus 1

3 C. Pl. ex. calyciflorÆ.

36. *Ericinæ.*

A. 155. Menziesia 1
156. Phyllodoce 1
157. Eremocallis..... 2
158. Gypsocallis..... 1
159. Calluna..... 1
160. Andromeda..... 1

161. Arbutus 1
162. Uva ursi 2
B. 163. Chamæcistus 1
165. Pyrola 4
166. Moneses 1
C. 167. Hypopitys 1

37. *Vaccineæ.*

168. Vaccinium 2
169. Vitis-Idæa 1
170. Oxycoccus 1

38. *Campanulaceæ.*

A. 171. Campanula 9
172. Legousia 2
173. Phyteuma 1
174. Jasione 1
B. 175. Lobelia 2

39. *Compositæ.*

A. 176. Lapsana 1
177. Arnoseris 1
178. Chondrilla 1
179. Prenanthes 1
180. Lactuca 4
181. Sonchus 4
182. Hieracium 18
183. Crepis 2
184. Barkhausia 1
185. Taraxacum 2
186. Achyrophorus 2
187. Hypochæris 1
188. Thrica 2
189. Virea 4
190. Picris 1
191. Helminthia 1
192. Tragopogon 2
193. Cichorium 2
B. 194. Onopordum 1
195. Arctium 2
196. Serratula 1
197. Silybum 1
198. Carduus 3
199. Cirsium 8
200. Bennettia 1
201. Carlina 1
202. Cyanus 1
203. Phrygia 3
204. Jacea 1
205. Hippophæstum 1
206. Polyacantha 1
207. Leucantha 1
C. 208. Calendula 1
209. Helianthus 1
210. Bidens 2
211. Tanacetum 1
212. Artemisia 6
213. Absinthium 1
214. Diotis 1
215. Chrysanthemum 1
216. Leucanthemum 1
217. Pyrethrum 2
218. Matricaria 1
219. Chamomilla 1
220. Bellis 1
221. Chamæmelum 2
222. Maruta 1
223. Anthemis 2
224. Achillea 4
225. Antennaria 2
226. Gnaphalium 5
227. Filago 4
228. Conyza 1
229. Pulicaria 2
230. Inula 1
231. Eritheis 1
232. Eurybia 1
233. Solidago 1
234. Erigeron 1
235. Trimorpha 3
236. Chrysocoma 1
237. Doronicum 1
238. Cineraria 3
239. Senecio 9
240. Tussilago 1
241. Petasites 1
242. Eupatorium 1

40. *Dipsaceæ.*

243. Dipsacus 2
244. Galedragon 1
245. Succisa 1
246. Columbaria 1
247. Scabiosa 1

41. *Valerianeæ.*

248. Valeriana 4
249. Centranthus 1
250. Valerianella 2

42. *Rubiaceæ.*

251. Sherardia 1
252. Asperula 2
253. Galium 14
254. Rubia 2

43. *Caprifoliaceæ.*

A. 255. Linnæa 1
256. Xylosteon 1
257. Periclymenum 2
B. 258. Viburnum 1
259. Opulus 1
260. Sambucus 2
C. 261. Cornus 2
262. Hedera 1

44. *Loranthideæ.*

264. Viscum 1
? 265. Adoxa 1

45. *Umbelliferæ.*

266. Daucus 2
267. Sanicula 1
268. Torilis 3
269. Caucalis 1
270. Turgenia 1
271. Cerefolium 2
272. Anthriscus 1
273. Scandix 1
274. Myrrhis 1
275. Chærophyllum 3
276. Drepanophyllum 1
277. Sium 7
278. Hydrocotyle 1
279. Cicuta 1
280. Phellandrium 1
281. Œnanthe 4
282. Echinophora 1
283. Crithmum 1
284. Pimpinella 5
285. Trinia 1
286. Æthusa 1
287. Conium 1
288. Bunium 2
289. Ægopodium 1
290. Carum 1
291. Meum 1
292. Ligusticum 1
293. Pseudospermum 1
294. Libanotis 1
295. Thysselinum 1
296. Imperatoria 1
297. Angelica 1
298. Archangelica 1
299. Spondylium 1
300. Tordylium 2
301. Coriandrum 1
302. Peucedanum 1
303. Pastinaca 1
304. Silaus 1
305. Petroselinum 1
306. Apium 1
307. Fœniculum 1
308. Smyrnium 1
309. Bupleurum 1
310. Agostana 2
311. Eryngium 2

46. *Saxifrageæ.*

312. Robertsonia 6
313. Hydatica 1
314. Miscopetalum 1
315. Kingstonia 1
316. Saxifraga 25
317. Chrysosplenium 2

47. *Crassulaceæ.*

318. Umbilicus 2
319. Tillæa 1
320. Sedum 13
321. Sempervivum 1

48. *Portulaceæ.*

322. Montia 1

49. *Paronychideæ.*

A. 323. Scleranthus 2
324. Adenarium 1
B. 325. Illecebrum 1
326. Corrigiola 1
327. Herniaria 2
328. Polycarpon 1
C. 329. Larbrea 1

50. *Grossulariæ.*

330. Ribes 5

51. *Cucurbitaceæ.*

331. Bryonia 1
332. Cucumis 2
333. Cucurbita 1

52. *Salicariæ.*

334. Lythrum 2
335. Portula 1

53. *Tamaricinæ.*

336. Tamarix 1

54. *Ceratophylleæ.*

337. Ceratophyllum 2

55. *Haloragææ.*

338. Callitriche 2
339. Hippuris 1
340. Myriophyllum 2

56. *Onagrariæ.*

A. 341. Circæa 3
B. 342. Œnothera 1
343. Chamænerion 1
344. Epilobium 7

57. *Pomaceæ.*

345. Pyrus 5
346. Cratægus 2
347. Mespilus 3

58. *Rosaceæ.*

348. Rosa 26

59. *Agrimoniaceæ.*

349. Poterium 1
350. Sanguisorba 1
351. Alchemilla 4
352. Agrimonia 1

60. *Dryadeæ.*

353. Dryas 1
354. Geum 3
355. Sibbaldia 1

356. Potentilla.....14
357. Fragaria 2
358. Rubus 8

61. *Ulmariæ.*

359. Spiræa..... 3

62. *Drupaceæ.*

360. Cerasus..... 3
361. Prunus..... 3

63. *Leguminosæ.*

A. 362. Ulex 2
363. Genista..... 4
364. Ononis 1
365. Anthyllis..... 1
B. 366. Trifolium.....17
367. Melilotus..... 1
368. Medicago..... 6
369. Trigonella 1
370. Lotus..... 3
371. Glycyrrhiza..... 1
C. 372. Oxytropus 2
373. Astragalus..... 2
D. 374. Lathyrus 7
375. Pisum..... . 2
376. Orobus..... ... 4
377. Vicia... 12
E. 378. Ornithopus 1
379. Hippocrepis 1
380. Onobrychis..... 1

64. *Celastrinæ.*

381. Staphylea 1
382. Evonymus 1
382*. Ilex..... 1

65. *Rhamneæ.*

383. Rhamnus..... 2

3 D. Pl. ex. thalamifloræ.

66. *Geranieæ.*

A. 384. Erodium 4
385. Geranium 13
B. 386. Impatiens 1
C. 387. Oxalis..... 3

67. *Hypericineæ.*

388. Androsæmum..... 1
389. Hypericum.....10

68. *Acerineæ.*

390. Acer..... 2

69. *Tiliaceæ.*

391. Tilia..... 2

70. *Malvaceæ.*

392. Malva 3
393. Althæa..... 2
394. Lavatera 1

71. *Lineæ.*

395. Linum 5

72. *Caryophylleæ.*

A. 396. Saponaria 1
397. Dianthus..... 5
398. Cucubalus 3
399. Silene 8
400. Lychnis 6
B. 401. Buffonia 1
402. Willisellus 1
403. Sagina 3
404. Spergula 5
405. Cherleria..... 1
406. Arenaria..... 5
407. Alsinella..... 3
408. Holosteum 1
409. Stellaria 16
410. Mœnchia..... 1

73. *Cistineæ.*

411. Helianthemum 7

74. *Frankeniaceæ.*

412. Frankenia 2

75. *Droseraceæ.*

413. Drosera 3

76. *Resedaceæ.*

414. Reseda..... 2

77. *Polygaleæ.*

415. Polygala..... 2

78. *Violaceæ.*

416. Viola..... 7

79. *Parnassiæ.*

417. Parnassia 1

80. *Cruciferæ.*

A. 418. Cardamine 7
419. Arabis..... 6
420. Turritis 1
421. Barbarea..... 2
422. Nasturtium..... 4
423. Sisymbrium..... 3
424. Erysimum..... 3
425. Cheiranthus..... 1
426. Matthiola 2
427. Hesperis 1
B. 428. Brassica 5
429. Sinapis..... 5
C. 430. Raphanus 1
431. Raphanistrum 2
D. 432. Cakile 1
433. Crambe 1
E. 434. Coronopus 2

F. 435. Isatis 1
G. 436. Vella 1
437. Thlaspi 4
438. Nasturtiolum 1
439. Teesdalia 1
440. Iberis 1
441. Lepidium 5
442. Cochlearia 4
443. Subularia 1
444. Draba 5
445. Camelina 1
446. Alyssum 1

81. *Fumarideæ.*

447. Fumaria 3
448. Corydalis 3

82. *Papaveraceæ.*

449. Chelidonium 2
450. Glaucium 3
451. Cerastites 5
452. Papaver 2

83. *Nymphaceæ.*

453. Nuphar 2
454. Nymphæa 1

84. *Berberideæ.*

455. Berberis 1
456. Epimedium 1

85. *Ranunculaceæ.*

A. 457. Actæa 1
458. Pæonia 2
B. 459. Consolida 1
460. Aquilegia 1
461. Helleborus 2
462. Trollius 1
463. Caltha 3
C. 464. Ficaria 1
465. Ranunculus 13
466. Batrachium 5
467. Myosurus 1
D. 468. Adonis 2
469. Anemonanthæa 3
470. Pulsatilla 1
471. Thalictrum 4
E. 472. Clematis 1

TOTAL NUMBERS.

	Fam.	*Gen.*	*Spec.*
Cellulosæ	14	375	1936
Endogenæ	26	166	477
Exogenæ	86	474	1218
	126	1015	3631

" Call the vales, and bid them hither cast
Their bells, and flow'rets of a thousand hues,
Ye valleys low, where the mild whispers use
Of shades, and wanton winds, and gushing brooks;
On whose fresh lap, the swart star sparely looks,
Throw hither all your quaint enamelled eyes,
That on the green turf suck the honied showers,
And purple all the ground with vernal flowers."

MILTON.

INTRODUCTION

TO

BOTANY.

1. *On the Use of Botany.*

THE use and pleasure of studying botany have been so long acknowledged, that it may seem perfectly superfluous to discourse upon that subject; but a slight sketch of the use and pleasure accruing by this study is here given, in order to convince those students, who have not yet reflected upon the subject, that in bestowing their time, their labour, or their money, upon the acquirement of this science, they will not court an ungrateful mistress, but one who will amply reward them for the pains they take in acquiring her.

The greater part of those who study botany, are persons of the medical profession, and of course the use of botany in medicine is the first to be considered. It will therefore be necessary, before any further progress is made, to advert to the great difference between practising in large cities and sea-port towns on the one hand, and in country villages on the other. To the former merchants resort, and the warehouses are filled with the choicest drugs of foreign regions; the poverty induced by the vicissitudes of commerce requires alleviation from the charity of the rich, hospitals and dispensaries arise, and become medical schools. The time of the practitioners being fully occupied by the denseness of the population, they find it more convenient to use the drugs in the warehouses, than to collect themselves the indigenous productions of the surrounding country; hence they regard with indifference whether the drug be native or foreign, and this indifference, or rather preference for foreign drugs, passes of course into the pharmacopœias published in those cities.

But these commercial ideas have less force in the country. There the practitioner has more time on his hands; in his rounds to visit his patients, he can collect the herbs profusely scattered in his path, and although his education at the hospitals in town naturally influences him in his choice, yet if prudence has any share in his character, he must be struck with the impropriety of neglecting the resources freely offered by nature to his possession for purchased ones. It is a favourite axiom with botanical physicians that where nature produces diseases, there she also produces the remedies for them, and they adduce in proof of this dogma, the growth of scurvy grass, and other antiscorbutic plants in those cold climates where scurvy reigns as an epidemic; of pepper and other spices in hot countries where the stomach is liable to torpor, and requires an extraordinary stimulus to promote its healthy action; as also of calamus aromaticus in those humid situations which are liable to intermittent fevers; and of sarsaparilla and guiacum in the regions, supposed to be the native seats of the venereal lues, and where, according to a Spanish traveller, d'Aranda, in his account of South America, it is a sporadic disease. Without absolutely professing a dogma, which has much appearance of truth in it, there can be no doubt but that the remedies necessary for most of the diseases that afflict human nature may be found at the country practitioner's own door, or very near at hand. That he may be enabled however to make use of them, it is necessary he should know them well, the more especially as many plants are so much alike, that it requires attention directed to proper characteristics to distinguish them. Now botany is that science which enables us to distinguish plants from one another, to assign to them their proper names, and to declare their several uses; without which last part, although too often neglected by the general botanist, it would be a barren study.

Another part of medicine, in which the use of botany is evident, too frequently happens, in consequence of the similitude of plants to one another, so that those ignorant of the means of distinguishing them are led to use a plant of such powerful action on the human frame as to kill, or very violently affect, the unfortunate person who has mistaken it for some nutrimental vegetable, especially foreigners, who use a greater variety of vegetables than ourselves. Yet even among us, the instances are not rare in which hemlock has been mistaken for parsley, the roots of wild

cicely, or cow-weed, for parsneps, dog's mercury for a spinage-herb, the berries of nightshade for esculent ones, and more especially the deleterious mushrooms for those that are eatable with some degree of safety, for, in truth, all are to be held as of doubtful salubrity. Now the skilful botanist, who can determine from the remains of what has been taken the cause of the symptoms, has an evident advantage in respect to the mode of treating his patient, over one who is ignorant of the cause, and must therefore prescribe at random. And if the practitioner can thus save one fellow-creature from the grave, and restore him to his friends, far more a dear relative, a cherished companion, this alone would amply repay him for the study of this science. And it is on this account, that the Society of Apothecaries of London, to whom the legislation have lately committed the examination of persons intending to practise as apothecaries, have given public notice, that they expect the applicants for a license to be competent in medical botany.

As to the economical or general use of botany, although it be of course more varied than the medical, less need be said about it. Our houses are principally built and furnished from the vegetable kingdom of nature; and this is also the case with ships and other vessels: plants furnish us with a very considerable part of our clothing; this clothing, and the ornamental drapery of our houses, is dyed of various colours by different vegetables. Hence the study of that science which exhibits these various uses cannot but be instructive to all.

The diet of mankind is, in the warmer regions of the earth, almost entirely vegetable; as the climate becomes colder, more and more animal food is taken, until in the cold regions of the North, man becomes nearly a carnivorous animal. But vegetables are never entirely disused by him; hence a knowledge of them is of universal use, more especially to travellers, who may thus instruct a whole nation in the use of plants abundantly produced in their country, yet either disregarded by them, or even considered as deleterious, although in fact one of the agreeable luxuries of the table: nor is this an idle supposition. The embassy sent from Bengal to Thibet observed in their route the strawberry growing plentifully in the woods; on desiring their conductors to gather some, they were informed that it was a poisonous berry: this naturally enough produced some hesitation, lest they might be deceived by a

mere resemblance of that delicious fruit; but, upon investigation of the botanical characters of the flower, its identity was confirmed, and the natives were highly pleased to have their supposed poisonous berry shown to be one of the most pleasant and wholesome fruits.

But the most striking use of botany is when famine is apprehended; for although direct experiments may enable a person to discover what plants are wholesome and nutritive from those which are not, yet these experiments require time when none, particularly in cases of shipwreck, can be spared, and from the greater number of poisonous, or, at least, medicinal plants of very violent operation, the experiments would, if not guided by botanical analogies, be highly dangerous, and inevitably fatal in many cases. But by knowing the botanical characters of those families of plants which abound in edible fruits, or are remarkable for any other dietetic articles, considerable advantages will be gained, and unknown articles may be freely used with little apprehension of danger. This is a species of knowledge less cultivated in the British islands than it ought to be, especially considering the maritime situation which leads so many of their inhabitants to embrace a seafaring life, and become exposed to the dangers of shipwreck upon uninhabited coasts; and where the dauntless energetic spirit of our youth impels so many to engage in distant expeditions, and the unfortunate issue of some of these expeditions, for what mortal can always command success, plunges them into distressful circumstances in a foreign and perhaps inhospitable country.

Another use, if I may so express myself, is the contemplation of the beauties of nature; and in this respect botany yields to no other branch of human knowledge, and in one respect surpasses most in that, while wealth may exhibit its splendour in collecting living plants, yet the study is also compatible with the most humble fortunes, and may be made to beguile the tedious hours of convalescence, while it need not confine the sufferer to his room, but will even entice him forth to breathe the dewy incense of the morn. Few are the studies that require so little apparatus, or less trouble to produce a collection, which will lie in a small compass, and will afford an agreeable exhibition to friends and visitors.

2. *The Rise and Progress of Botany, particularly in England.*

The modern botanists, who are overwhelmed with the continually increasing number of new plants offered to their view, and the necessity of learning the ever-varying nomenclature, are accused, perhaps with some justice, of paying less attention to the uses of plants than they ought; and, on the other hand, the ancients seem to have had no other idea of botany than as being the knowledge of the grains, pulse, potherbs, &c. of use in domestic economy, or of those plants which chance, or experiments made in the great hierarchal colleges of Persia or Egypt, had shown to be of use in the cure of the sick and hurt; for it appears by the Greek authors, whose writings have survived the barbarism which took place in Europe on the subversion of the Western Empire by the northern nations, that it was the intention of the early Greek writers, in their botanical works, rather to relate the uses or culture of plants, than to describe them so that posterity might be enabled to recognize them whenever they were met with.

Hippocrates the Coan, the venerable father of medicine, the lineal descendant of that Esculapius whom the gratitude of mankind had raised to divine honours, is the oldest author we possess, being born about four hundred and fifty years before Christ. Those who are versed in the history of medicine, well know the valuable use he made of the cases recorded in the temples of his ancestor, which were the public hospitals of antiquity, especially in respect to the prognosis of diseases. He has mentioned, in his therapeutic writings, the uses of about two hundred and forty plants; and he would have merited still more the thanks of mankind, if he had carefully described them, so that we might be certain of the species of plants which he intended by those names.—This task he seems to have left to Cratevas, of whose knowledge in botany he makes the most honourable mention. The loss of the works of Cratevas is much to be deplored, as they probably contained the description, or at least place of growth, of the plants mentioned by Hippocrates.

The expansion of the human intellect which took place in consequence of the freedom of opinion that was allowed in Athens, under the mild but firm government of Pisistratus, by which the factious demagogues and the priest of that city were restrained from persecuting every man

whose abilities were superior to their own, caused that city to become the focus of literature and science; and the writings produced in that short space of time still remain the noblest monuments of the powers of the human mind, for they have commanded the admiration of succeeding ages, and left nothing for future writers to do but to imitate, as far as is possible, their excellencies. In the schools which were then established, that of the peripatetics, whose founder was Aristotle, was the one that, cultivating natural history, of course merits most notice in a history of botany.

Aristotle, the son of a perfumer, who were in those days the dispensers of compound medicines prescribed by lay practitioners, had, from his well-merited reputation, been raised to be the tutor of Alexander the Great; and, on his pupil becoming possessed of the treasures collected by the Persian monarch, he formed the project, among other vast schemes of literary renown, of writing a complete history of natural substances from actual observation, or the relation of the numerous collectors which his influence over his former pupil enabled him to employ; and took the zoological and meteorological parts under his own immediate care; and his History of Animals, although little regarded in the schools engaged in teaching the elements of knowledge, is a splendid monument of his abilities.

The mineralogical and botanical part of this general history of nature was entrusted to his pupil Theophrastus, who also succeeded to the professorial chair in the public school. A work of Theophrastus on minerals, and two on plants, have, after a very narrow escape from oblivion, descended to our times. He treats his subject generally in a philosophical manner. In his book on the causes of plants, he considered the propagation, culture, qualities, and uses of plants in general; but very few are described by him in a particular manner, as he supposes the reader to be either acquainted with them, or to be informed by a master. In his larger work, entitled, the History of Plants, he mentions about five hundred plants, and begins with the organization, generation, and propagation of vegetables. In the third and fourth books he goes on to treat largely upon trees; then follows his observations upon timber and choice of it. The sixth book is on shrubs, thorny plants, roses, and other ornamental plants usually cultivated in gardens. In the seventh he treats upon kitchen-garden plants, and those that grow wild. In the eighth upon grain of different kinds, upon which he is very

copious. The ninth and last book is upon gums, exudations, and the means of obtaining them. It is much to be lamented, that neither Aristotle nor Theophrastus, whose mental abilities were of the first order, perceived the advantages that would accrue from a detailed description of natural substances, by which a student deprived of the *vivâ voce* instruction of a master might be enabled to recognise them.

The next author that occurs is Dioscorides. As a physician, the object of Dioscorides being only the *materia medica*, he discusses each article used by medical practitioners in a separate chapter, and comprises the whole in five books; in which, although the order is not very exactly kept, the vegetables are treated of as they are aromatic, alimentary, and medicinal. For the precedence of the aromatics two reasons may be given: one, the usual preference given to objects of luxury above those of use; and the other, that the perfumers were the apothecaries of ancient times, and naturally affected those substances which formed the principal articles of their trade, especially when we consider the much greater use of perfumed oils and ointments by the ancients than by the moderns. His descriptions are chiefly respecting the colour, size, mode of growing as compared with other plants then well known, and therefore left undescribed. Thus he says: Hyssopus is well known to all; and then having compared origanum to hyssop, he compares centaurium minus, tragoriganum, serpillum, marum, polycnemon, symphytum petræum, ageratum, papaver erraticum, to origanum; so that the knowledge of all these plants are made to depend upon that of hyssop. In like manner ocimum is made a type for the knowledge of the first sort of calamintha, acinum, ocimoides, crinum, solanum, mercurialis, and heliotropium; although by the lapse of years, the ocimum of Dioscorides is now become uncertain, and of course the knowledge of the other plants is rendered unattainable.

Although Columella and Cato among the Romans wrote on Husbandry, yet none of their works can be said to be botanical. Pliny the elder, who commanded the Roman fleet stationed in the Bay of Naples, and who perished in the year of Christ 71, in an attempt to explore an eruption of Mount Vesuvius, is the only author of that nation whose writings can be said to belong to the scope of our work. In his Historia Mundi, a vast encyclopædia, scarcely less varied than the world itself, he has treated from the 12th

to the 27th book upon plants, as well philosophically as historically, medically, economically, magically, &c. A great part of his work is nearly the same as Dioscorides, who, however, is never quoted by name, and therefore, considering the candour with which Pliny names the writers from whom his book was extracted, there is reason to think that Dioscorides and Pliny wrote about the same time, and both made use of the same author, either Sextius Niger, or Diodorus, or Julius Bassus, but more probably, as it would appear from certain passages in Dioscorides, of Niger. Pliny, however, was a mere compiler, and whatever knowledge of plants he might have acquired in his walks in the physic garden of Antonius Castor, it is certain that none of it appears in his work, which exhibits only a collection of memorandums badly translated from the Greek, in which, for want of critical and botanical knowledge, numerous mistakes are evident. The design of the work was grand, but far too vast to be accomplished by any one man, and especially by one immerged in public business. The order in which he has disposed his subjects is very confused. The great value of Pliny's work, therefore, consists in his having preserved to us the remains of ancient knowledge on the subject, and especially the application of it to the arts of life in those remote times, so that he may be considered as the historian of ancient botany; and to his indefatigable industry we owe the names of several hundred substances not mentioned by those other ancient writers whose works have been preserved; although it must be confessed, that much of this knowledge is of little use, as the substances denoted by those names are unknown for want of descriptions.

The next writer that occurs is Apulejus. This author, who lived in the second century, was born at Madura in Africa, which was then a kind of university. He afterwards studied at Carthage and Athens, and for some time applied himself to the profession of the law in Rome; but marrying a rich widow, he retired from the bar, and wholly gave himself up to philosophy and the practice of physic. He is well known as the author of "*The Golden Ass*," one of the few works of amusement, or what is called light reading, that have descended to us from the ancients. But the work which entitles him to our notice is his book, De Herbis, sive de Nominibus et Virtutibus Herbarum. In this work he gives the synonyms of 130 medicinal herbs in Greek, Latin, Egyptian, Punic, Celtic, Dacian, and of

some in the oriental languages, which he had acquired in his travels. After these names he adds a short description of the plant, the place of growth, and the properties of it. Some of the critics have supposed that this work is supposititious, and written long after his time. Johnson, who edited the second edition of Gerarde's Herbal, imagined it was the translation of a work written by some physician of Constantinople in the eighth century, but Fabricius thinks this conjecture is not probable; indeed internal evidence seems against it. Apulejus was a heathen priest, well read in his religion, and much attached to it, as well by natural inclination as from the persecutions he suffered from the Christian relations of his wife, who accused him of magic, and of obtaining her hand and fortune by sorcery; now the work is filled with those modes of exhibiting remedies, which, although only intended by the practitioner to aid their operation by the power of fancy, are usually considered by others as superstitious, and even magical.

Galen, who was born about 133 years after Christ, was contemporary with Apulejus, and became so celebrated as a physician and medical writer, as to have entirely ruled in the schools of medicine, to the exclusion of almost every other author. His industry in acquiring a knowledge of the materia medica, including medical botany, was very great, as he sailed to Lemnos to investigate the terra Lemnia in its native bed, to Cyprus to visit the mines and collect cadmia, pompholyx, diphryges, chalcanthum, and other minerals; as also to Cilicia, Phœnicia, Crete, and Egypt. His writings are as remarkable for their diffuse style, and his continual digressions, as those of Pliny are for their conciseness; and it is not easy to say which is the most tiresome to the reader, or requires the steadiest attention to peruse. Galen principally treats of plants in the sixth, seventh, and eighth books of his work, On Simples, in which he mentions the uses of about 450 medical plants. He also occasionally treats of several others in different parts of his works. It was his great object to account for their effects from the second and third qualities, as they were called; that is to say, from the degree of their dryness or moisture, and heat and coldness, of each of which he distinguishes four degrees. In his introduction, he writes against those authors who had attempted to describe plants, and thinks the knowledge of them is better acquired by tradition. When we consider the great authority which the writings of Galen bore in the schools of medicine for

so many centuries, we need not wonder at the loss of these writers thus branded as nearly useless.

The Greek writers, Oribasius, Aetius, Egineta, who succeeded Galen, were such servile copiers of him, that they merit not notice. At length, after the lapse of a few centuries, the Arabs, inspired by the zeal of a new religion, burst from their sandy deserts, and over-run the west of Asia, the north of Africa, and south of Europe. As soon as they had formed regular establishments, they began to attend to the sciences, and translated the most popular Greek authors.

In this they differed from the later Greeks, that being devoid of that superstitious veneration which the Greeks possessed for the writers of their golden age of literature, they did not confine themselves to the knowledge that had been delivered by those writers, but added much of their own. To them physicians were indebted for the introduction into practice of berberries, camphire, cloves, wall-flower, cassia fistula, galangals, hyssop, kermes, lavender, mace, manna, Persian manna, mezereon, myrobalans, nutmegs, nymphæa, rhubarb, opium, sugar, gum sandarac, red sanders, sebestens, senna, tamarinds, hops, and zedoary. Though some of these medical plants have fallen into desuetude, others still remain, and form some of the principal instruments of physicians to this day. Among these Arab writers Serapio stands pre-eminent, although Rhazis, Avicena, Actuarius (who wrote in Greek), and Mesue, must not be forgotten; and it may be also mentioned, to the honour of the Arabs, that it is to them we are indebted, if not for the invention, yet for the introduction of chemical medicines into practice, so that we may easily estimate the great improvements of which they were the introducers.

The writings of Galen, and of his Greek and Arabian disciples, were the only ones taught in the medical schools of Europe, through the medium of wretched translations, from the seventh to the fifteenth century. As to those parts of natural history, not comprised in the multifarious materia medica of this period, the knowledge of them was at the lowest ebb. What little was known was a mixture of extracts from Pliny, and the relations of travellers who endeavoured to give a wonderful cast to the most common appearances; who explained the mercantile names of articles by some fancied etymology. and then invented a tale to support the interpretation. In short, in the natural historians of this long period, as Hildeguard, Sylvaticus,

Glanville, and others now almost forgotten, the mixture of truth and falsehood is at least in equal parts, as the authors wrote down whatever they found in others, without exercising any critical acumen to distinguish the truth.

A book under the name of Macer's Herbal seems also to have been common in England before the invention of printing. Ovid praises the poetry of Macer, a medical writer on herbs; but as it is impossible he could mean the barbarous leonine verses in which this book, De Naturis, Qualitatibus, et Virtutibus Herbarum, are written, it is generally allowed to be a pseudonymous work, and accordingly it is ascribed by some to Odo, or Odobonus, said to have been a French physician. It was translated into English by Mr. John Lelamar, the master of Hertford School, who lived about the year 1373. At the first invention of printing two editions of it were published, and it is surprising that so paltry a work, which treats only of 88 plants, should have been translated or commented upon by the great Dr. Linacre, one of the medical ornaments of the reign of Henry the Eighth, and who obtained from that monarch the establishment of the College of Physicians.

While these inferior works engrossed the public attention, the writings of Theophrastus, Dioscorides, and Pliny, the true fathers of natural history, and in particular of botany, were utterly neglected, and indeed scarcely known.

It was not until 1468, or the year after, that Pliny's History of Nature was first printed; and from this author Isidore and Platearius was speedily compiled, a German work with the title of The Book of Nature, which treats of animals and plants; of which latter 176 kinds are noticed, and many of them figured. This work is supposed by Seguier to be the first book on plants with wood-cuts: it was published between the years 1475 and 1478.

As the Greek language was but little understood in Western Europe, till the conquest of Constantinople by a people of a different religion drove the Greeks into Italy; and as this emigration was speedily followed by the invention of printing, the learned emigrants, who were obliged to exert themselves to maintain their former station in society, endeavoured to render the Greek authors fashionable in the West.

Of the Greek naturalists, Dioscorides was the first printed, with a Latin translation by Barbarus, a Venetian nobleman, who died at the early age of 29. This work was

brought out in 1478, and was followed in 1483 by an edition of Theophrastus, with a Latin translation by Theodore Gaza, a Greek emigrant, which is still esteemed the best. The translation of Dioscorides by Matthiolus, first printed in 1554, supplanted that by Barbarus, and run through seventeen editions, 32,000 copies being said to be sold before the year 1561; but the edition of Caspar Bauhin, in 1598, is now esteemed the best.

The publication of these fathers of botany was followed by that of a host of commentaries upon them, whose authors endeavoured to find the plants of Syria and Egypt in Germany, forgetful of the difference of climate; and thus, instead of dilucidating the author, they merely mislead their followers. Even now, after the labours of Rauwolf, who travelled in Syria, Babylon, and Egypt, in the sixteenth century; of Tournefort, who travelled also in Greece, Crete, &c.; and of Sir James Edward Smith; it does not appear, that of the 700 medical plants mentioned by Dioscorides, more than 400 can be said to be properly ascertained.

These translations of the ancients were followed in 1484, at which time Richard the Third reigned here, by a famous herbal, printed at Mentz, under the title of Herbarium; and this was followed the next year by the Ortus [*i. e.* Hortus] Sanitatis, ascribed to Cuba, a physician, first of Augsburgh, and afterwards of Frankfort. The wood-cuts with which they are adorned, or rather disfigured, are rude, and seldom have much resemblance of the thing which they profess to illustrate.

Although printing was introduced into England in the reign of Henry the Seventh, yet no works on botany, in the English language, were produced in his reign, although hunting and angling had occupied the labours of the press. It was not indeed till 1516, the seventh of Henry the Eighth, that the Grete Herbal, with cuts, appeared. This book was very popular, and went through several editions. There is no author's name to it, but it was probably made up from the French translation of the Hortus Sanitatis, with some alterations and additions. It mentions more than 400 vegetables, or their products, and of these about 150 are English, but they are no ways distinguished from the exotics. The cuts are smaller than those of the Hortus, but equally rude and inaccurate.

While the mere English reader was obliged to content himself with this miserable compilation, Otho Brunsfel and

others were studying botany practically in the fields, and endeavouring, as we already said, to reconcile the plants of Germany to the descriptions of Dioscorides. Brunsfel's work was published in 1530, and Cordus, another writer on the same subject, in 1535. The learned Gesner bestowed part of his attention upon botany, and first proposed to denominate all plants which have the same flower and fruit, however different they may be in other respects, by the same common name; or, in modern language, to found the genera upon the fructification alone. The plants of Germany were, however, still further examined by Leonard Fuchs, a physician, and professor at Tubingen. His History of Plants is adorned with 510 of the most beautiful and correct outlines that have ever been cut in wood. The draughtsmen employed were Henry Fullmaurer and Albert Meyer, and the wood-engraver was Vitus Rudolph Speckle; all whose portraits, in half-lengths, are given at the end of the work, as Fuchs', in full length, ornaments the back of the title. The author had good reason to be proud of his artists. His great error was in applying the names of Dioscorides to the plants of Northern Europe; nor was he less an admirer of Hippocrates and Galen, whose medical writings he vigorously defended against all opposers.

Although the Great Herbal was the only botanical work published in England during the reign of the eighth Harry, much attention was given to agriculture and kitchen-gardening. One of the judges (Fitzherbert) did not disdain to write on Husbandry. A committee of privy council, the prototype of our present Board of Agriculture, was appointed to obtain statistical accounts of the kingdom. Anne of Cleves, when transformed by act of Parliament from the wife into the sister of Henry, endeavoured to forget the slights of the monarch in the cultivation of vegetables. And it is probable, that some of the kitchen-gardeners at Chelsea are the descendants of the Flemish gardeners, whom her real brother sent over to manage her garden there.

The reign of Edward the Sixth was distinguished by the publication of Turner's New Herbal; in which the alphabetical arrangement of former authors was still followed. Turner was born at Morpeth in Northumberland, and educated at Cambridge, about 1538. He complains much of the ignorance of natural history that then prevailed in England, even in the universities. "Being then,"

he says, "a student of Pembroke Hall, where I could learn never one Greke, neither Latin, nor English name, even among the physicians, of any herbe or tree, such was the ignorance at that time; and as yet there was no English Herbal, but one" (the great Herbal just mentioned) "all full of unlearned cacographies, and falsely naming of herbs." He went into holy orders, and was a celebrated preacher as well as a physician, and lived for some time in Germany, where his fondness for botany led him to have a botanic garden at Weissenberg; and also in Italy, where he procured the foundation of a public botanic garden to be attached to the university of Bologna. After which he returned to England, and being made Dean of Wells, divided his time between that place and his house in Crutched Friars, London. He had a botanic garden not only at Wells, but also at Kew. His attainments in science were not confined to Botany alone, but extended to the knowledge of birds and fishes, in which respects he assisted his friend Gesner in his Historia Animalium, and also paid attention to mineral waters, of which he published a small tract, annexed to his Herbal; to say nothing of his numerous religious books, and his collation and correction of the Bible.

The complete edition of Turner's Herbal, which was originally published in three parts, was printed at Cologne in 1568, embellished with upwards of 400 figures, which had been used for the octavo edition of Fuchs; and about 90 new figures, making in all 502. In the Dedication he mentions his contemporary botanists of England, viz. Dr. Clement, Dr. Merdy, Owen Wooton, and Mr. Falconer, who appears to have had a *hortus siccus* of foreign as well as English plants. Turner was the introducer of lucerne into England, by the name of horned clover; and throughout the whole of his Herbal he appears to have exhibited uncommon diligence and great erudition, and fully to deserve the character of an original writer. Our English herbalists, Gerarde, Johnson, and Parkinson, do not appear to have been sufficiently just to his merits; but Ray was very sensible of his worth, styling him a man of solid erudition and judgment.

Botany was also pursued at the same time in Germany by Tragus, who published in 1552; and in the next year Dodoens, a Fleming, began to publish his Herbal, which was the first in which the alphabetical lists of plants were exchanged for some gross arrangement. In the present

case, the plants were divided into six books: the first, a farrago of very dissimilar plants in alphabetical order: the second, flowers and umbelliferous plants: the third, medicinal roots, purgative plants, climbers, poisonous plants, ferns, mosses, fungi: the fourth, grain, pulse, grasses, water and marsh plants: the fifth, edibles, gourds, esculent roots, olera, thistles, and spinose plants: the sixth and last, shrubs and trees. Certes a most confused arrangement, but it showed the value of bringing the history of plants which resembled each other near together.

Soon after the accession of Elizabeth, Dr. William Bullein published his "Bulwark of Defence against all Sicknesse, Soarnesse, and Woundes that doe daily assaulte Mankinde." He was, like Turner, a clergyman as well as a physician. Notwithstanding his high reputation, he underwent much prosecution from the brother of Sir Thomas Hilton, who accused him of murdering that gentleman, who had been the patron of Bullein, and who had died of a malignant fever. Although his innocence was fully manifested, his prosecutor arrested him for a debt due to the deceased, and flung him into prison, where he wrote a great part of his medical writings. In one of the parts of this collection of his writings he enumerates the virtues of British simples, partly from preceding writers, and partly from his own experience. On one point he is very patriotic, and he vindicates the fertility and climate of England with much ardour.

Contemporary with Turner and Bullein was Dr. Thomas Penny, who was not only a botanist of repute, but was one of the first Englishmen who studied entomology. He published no works of his own, but he furnished Gesner, Clusius, and Camerarius, with many communications relating to English botany; and his papers, which he left to Turner and Mouffet, formed the basis of the Theatrum Insectorum of the latter.

Lobel, although a Fleming, passed the greater part of his life in England, where he was afterwards appointed botanist to King James the First. He published, conjointly with Pena, the first edition of his Adversaria, in 1570, which afterwards underwent several improvements. In this work, the arrangement proposed by Dodonæus was much improved, and an attempt made to form a natural arrangement in forty-four tribes; at the head of each of which is given a list of the plants belonging to it. He begins with the grasses, of which he describes a number of

new species: to each species he adds the Greek, German, Dutch, French, and English name; the description, which is frequently obscure and insufficient; the time of flowering, and the places in England where some of the rarer plants are to be found. To these are annexed figures. As Lobel had carefully studied the ancients, and had spent much time in practical botany, exploring France, Switzerland, part of Germany and Italy, and various parts of England, the Adversaria is a work of much merit, and abounds with a deal of curious information. In 1576 he published "Observationes, sive Stirpium Historiæ, cui annexum est Adversariorum Volumen," with 1486 figures. Some additions were afterwards made to these figures, and they were printed separately in music quarto, with an index in seven languages, which rendered them a popular book for many years. Lobel mentions several English botanists, as Edward Saint Loo, Esq. of Somersetshire; Mr. Nasmyth, a surgeon; Mr. De Franqueville, a merchant, particularly fond of flowers; Mr. Hugh Morgan, apothecary to Queen Elizabeth; and Mr. Wm. Coys, of Essex. All the three last had good gardens; that of Mr. Coys was well stored with exotic plants; and under his care, in 1604, the yucca first flowered in England. Lobel's daughter married a Mr. James Coel, of Highgate, and, from the frequent mention that Lobel makes of that place in his last work, the "Illustrationes," it is probable that he spent the evening of his life with his son-in-law.

Hitherto only the appearance of plants, as they appeared to a common observer, or their uses, or some equally unscientific arrangement, had been followed, but, in 1583, Cæsalpinus, an Italian physician, published his book *De Plantis*, in which he laid down the basis of a philosophical division of them, according to their fruit and seed, and which has been since extended and corrected by Ray, Hermann, Boerhaave, and Gærtner. This system of Cæsalpinus, although the first scientific one, is still valuable, and merits attention. A few years after the publication of Cæsalpinus's work, namely in 1597, was published the first edition of Gerarde's Herbal. This work is in the main a translation of Dodonæus. Gerarde, although the Master of the Chirurgeons' Company, was not sufficiently versed in Latin to make this translation himself, and thereof altered a manuscript translation of one Dr. Priest, which the latter had intended to publish, but died before he accomplished his purpose; and his papers falling into

the hands of Gerarde, they were transposed from Dodonæus's arrangement of his subject into that of Lobell, and published by Gerarde without any acknowledgement of Dr. Priest's labour in the translation; indeed he speaks in his Preface of Dr. Priest's translation as having perished, although both Lobell and Johnson affirm that he used it himself with no other alteration than the above-mentioned change of order in disposing the chapters, and some additions. For the embellishment of the work, the publisher procured from the Continent the wood-blocks that had been used in the printing of Dodonæus, Lobell, and Clusius. Lobell was extremely angry at Gerarde having adopted his method, at which we may be surprised, since it undoubtedly may be considered at this time of day as an acknowledgement of his superiority over the order, if order it can be called, of Dodonæus; perhaps the real cause of Lobell's anger was, that Gerarde's work being in English, had a preferable sale to that of his own works in Latin, and might thus injure his purse, however the complaisance of Gerarde might flatter his self-love.

The reign of James the First seems not to have been favourable to botanical studies, as no works of any consequence were published in his reign in England; but Basil Besler, an apothecary at Norimberg, published the Hortus Eystettensis, or account of the plants in the bishop's garden there, with 1083 figures on copper, digested according to the order of their flowering; a superb work for the time. And in 1623 Caspar Bauhin, professor of anatomy and medicine at Basil, published his invaluable Pinax, the labour of forty years, in which he collected the various names which all the preceding authors had given to the then known plants; so that this work has ever since formed a repertory, by which, on knowing the name, that any one old author has given to a plant, we are enabled, without any trouble, to discover it in the works of other writers; and this book is of course indispensable in a botanical library of any extent.

Two authors distinguish the unfortunate reign of the first Charles, namely, Johnson and Parkinson. Johnson was a physician, but, during the civil wars, he became a lieutenant-colonel on the king's side, and died of the wounds he received in a sally from Basing-house. His first botanical publication was the "Iter Cantianum, or a Journey into Kent in Search of Plants." Then followed his list of the plants growing upon Hampstead Heath,

which has ever been one of the favourite resorts of the London botanists. His great work was a new edition of Gerarde's Herbal, with numerous additional articles, by which it included in all 2850 plants, with 2730 figures. As this work included foreign plants as well as native ones, he published, in the next year, his "Mercurius Botanicus," which exhibited a list of the plants he found in a botanical excursion to the west of England; so that he was the first author who began to distinguish the native plants from the others.

Parkinson published his "Paradisus," or Flower and Fruit Garden, in 1629, a work which shows, that at this time the gardens of our forefathers were far better stocked than we imagine. His profession of an apothecary, or, as it is now called, that of a chemist and druggist, taking up much of his time, and the time necessary for cutting a new set of figures, delayed the publication of his general history, or Theatre of Plants, which is more extensive than those of Gerarde or Johnson, as it contains 3800 plants, with 2786 figures. The descriptions are new, and the whole has a true botanical cast, whereas both Gerarde and Johnson were intended more for mere medical use.

The reign of the second Charles was extremely favourable to the knowledge of plants. Gardening and planting were in high vogue, and among the authors in this department Evelyn stands pre-eminent: in 1658 he published his French Gardener; in 1664 his Sylva, or Treatise on Forest-trees, to which his Kalendarium Hortense, the first specimen of this kind, was annexed as an appendix; and in a fourth edition he also added Pomona, or a Treatise on Fruit-trees; in 1675 his Terra, or a Philosophical Discourse on Earth. But this reign is still more remarkable for the attention paid to British botany. In 1650 Dr. How made the first attempt to give, in his Phytologia, a complete list of the British plants, of which he enumerated 1220. A still larger list was afterwards given by Dr. Merrett, in his Pinax, published in 1667; a very useful work, which included not only 1400 British plants, but also mentioned the animals and minerals then known to be produced in these islands. Three years afterwards the celebrated Ray, who had already entered upon his career of natural history, by publishing, in 1660, his Catalogus Plantarum circa Cantabrigiam nascentium, extended his Catalogue to a general one of the British islands, and enumerated only 1050 species, rejecting many of those

mentioned by How and Merrett, as being either mere varieties, or foreign plants, unjustly called British.

Ray gave a new character to botany, and by his illustrating every part of natural history, has left behind him a series of works which has rendered his name equally durable with the science and the Latin language. He merits therefore peculiar notice, particularly as his life shows that riches are not necessary to acquire the highest honours in science, since his own origin was of the most humble description. He was born in 1628 at Black Notley, near Braintree in Essex, where his father was a blacksmith, and, as usual in the country, probably a farrier. Being instructed in Latin in the grammar-school of Braintree, he went to Cambridge when 16 years of age. At 21 he was there chosen minor-fellow of Trinity College; at 23 was made Greek lecturer; at 25 mathematical lecturer; and at 27 humanity reader. These early appointments show the opinion his fellow-collegians entertained of his abilities. No establishment for the study of natural history was then formed at Cambridge, although Oxford already possessed a botanic garden. Mr. Ray, therefore, collected a few of his associates, and formed a small society for this purpose. In December, 1660, being then 32, he entered the church; but in September, 1662, on refusing to subscribe an opinion, that an act of parliament could render an oath not binding upon those who had taken it, he was superseded in his college appointments, and deprived of all hope of church preferment. One of his fellow-students, Mr. Willoughby, took him several journeys, engaged him as tutor to his children, and upon his death left his MSS. upon birds and fishes, as also his two sons to his care, with an annuity of 60*l.* a year. The small patrimony he received from his father he settled, at his marriage, upon his wife, by whom he had four daughters, three of whom survived him. He died 17th January, 1706, at his native place (to which he retired some years after Mr. Willoughby's death), in the same humble state as he began life.

Besides his two catalogues already mentioned, he published at different times,

A Catalogue of Plants observed in his travels.

A new Method of Plants.

A History of Plants, in three large volumes, folio, in which upwards of 17,000 plants are enumerated, and the greatest part accurately described.

A Methodical Synopsis of British Plants, of which he gave himself two editions, and a third was published after his death by Dr. Dillenius.

An emendated Method of Plants, concerning which I shall hereafter speak more at large.

A controversial tract respecting the two contemporary systems of Rivinus and Tournefort.

A Synopsis of Quadrupeds and Serpents.

A Method of Insects.

These works are all in Latin, by which means they are unfortunately less known in their own country than they are on the Continent: and to this list may be added,

The editing of Willoughby's History of Birds, in Latin; and also translating and publishing it in English.

The editing of Willoughby's History of Fishes, in Latin.

He left in manuscript an unfinished Historia Insectorum, which was published by Dr. Derham, who, after a long trouble, succeeded in obtaining from the bookseller in whose hands they had been lodged, Ray's Synopsis Avium, and his Synopsis Piscium; both which Derham published. To this list might be added several philological, moral, and theological works; a volume of Travels, and two volumes of his Correspondence, which Derham and Scott have given to the world: but enough has been said to prove his indefatigable industry.

To prosecute the history of botany since the time of Ray, in the same ample manner as I have dwelt upon the infancy of it, which is always the most interesting portion of the history of any science, would take up too much time. The remainder, therefore, can only be sketched by a hasty outline.

In 1677 Dr. Plott gave the first natural history of a small local district, by publishing his Oxfordshire, which was succeeded two years afterwards by his Staffordshire: these still remain very favourable specimens of this species of literature, and have not been exceeded.

Sir Hans Sloane, Petiver apothecary to the Charter-House, and the elder Martyn Professor of Botany at Cambridge, were the principal disciples of Ray in this country. The French botanists mostly followed Tournefort, and the Germans Rivinus, or some of the modifications of his systematic arrangement, until a new adventurer appeared in the world of science, who was destined to effect

a great change in botany, and who disputed the palm of victory with the celebrated Haller. What man, either of letters or science, has not heard of Haller? In poetry, devotion, anatomy, physiology, botany, literary history, he had few equals, perhaps no superior. In respect to botany, he was a follower of Ray, upon whom he bestows the highest praise, and attempted to render his arrangement still more natural than it is, using the simpler method of Ruppius as a finder, in consequence of the abstruseness of his own system. Unfortunately his labours were confined to the plants of Switzerland, while his competitor embraced the whole extent of nature, and each edition of his Catalogue was printed upon an expensive scale, in two elegant folio volumes, which rendered their circulation very confined, while his edition of Ruppius did not display the characters of the genera: otherwise the superiority of his own system, and the easiness of Ruppius's as an auxiliary, would have smothered the Linnæan botany in its birth.

Hitherto the names of plants had remained nearly stationary, and if any alteration was attempted the name quoted by Caspar Bauhin, in his Pinax, was annexed as the common repertory of botanists. The uses also of plants had never been neglected. Another point was to use the words of the language, whether of the Latin or the vulgar tongue, in their usual signification. To these Ray had added a fourth, namely that to excite inquiry, he gave lists of such plants as were only imperfectly known to him.

Linnæus violated these old rules by degrees, as his systematic arrangement of plants became more and more in use. He changed the names of plants with the utmost unconcern; he neglected almost entirely the detail of the uses; and as to the language, he scrupled not to change the terms used in describing plants, and to affix new significations to well-known words. Another peculiarity in Linnæus's writings is, that he does not give any lists of those natural substances of which he had only an imperfect knowledge; so that a person is apt to suppose them more perfect than they really are.

Let it not however be thought, that some very great improvements were not introduced by him, particularly in the typographical execution of his works. His taking the characters of the families, from the same parts, although carried by him to excess, as being extended to the whole grand division, now called phenogamous plants, instead of being changed in each class according to circumstances, is

a great improvement. His distinction of the species being formed from characters visible in the plants themselves, instead of the place where found, their size compared with others, or their use, is a still greater improvement. If we compare his manner of printing the synoptic tables of the genera, prefixed to each class, with the tables of Ray, or Knaut, the superiority of his method will be evident. The same superiority exists in the manner of printing the few descriptions he has published. By always observing the same order in treating of the several parts, breaking the description into short paragraphs, and using a different type for the leading word of the several divisions of a paragraph, the eye of a person accustomed to his works glances immediately to the information that is required.

These real improvements, added to the industry which he manifested in publishing the successive improvements of his system, and the cheapness of his works, in which the expense of figures was avoided, brought his system into vogue, particularly in Germany and England, it being a striking feature in the national characters of their inhabitants to prefer the works of foreigners to those of their countrymen.

In France, however, although he was followed by many, yet the greater national pride prevalent there forbade them to discard their own Tournefort to oblivion. Linnæus had pronounced the discovery of the natural arrangement of plants, as attempted by Ray, to be nearly hopeless; but the French botanists did not so easily despair; Adanson, Bernard Jussieu, his nephew Anthony Jussieu the present professor at Paris, Lamarcke, and still more lately De Candolle, the present professor at Geneva, have again attempted this task, and have certainly carried it to a degree of perfection, as may be seen in this work, in which the plants of the British islands are arranged according to the latest improvements of these celebrated botanists.

The authors since Ray may seem, perhaps, to be passed over in too rapid a manner; but when we consider, that since his time the uses of vegetables have been almost entirely neglected, and that the Linnean school has principally supplied us with authors who have new arranged, and new named old things; so that they have plunged us again into the same chaos, from which we were rescued by C. Bauhin in his Pinax, the notice taken of these name-setters and rangers, as Hooke would emphatically call them, is fully sufficient for their merit. A few demand

our thanks, particularly those who have investigated the imperfect or cryptogamous plants, as Micheli, the liverworts and fungi; Persoon, Link, and Esenbeck, the fungi; Dillenius and Hedwig, the mosses; Gærtner, the fruit of plants. Of living British authors I purposely abstain from any mention, or I would bestow the proper meed of praise upon R. Brown, R. A. Salisbury, Goodenough, Dillwyn, Turner, and many other successful investigators of nature.

Having thus brought the history of botany to the present time, the following chronological epitome will exhibit a clear view of its progress since the invention of printing, and also a succinct list of the principal authors, and particularly of those relative to English Botany, or the establishment of the natural system, in the order of their publication.

EDWARD IV.

1468. Pliny first printed.
1471. Crescentius. Opus ruralium Commodorum. First dated edition.
1475. Buch der Natur printed. *First wood-cuts of natural history.*
1477. Æmilius Macer. De Virtutibus Herbarum. Printed.
1478. Dioscorides translated and printed.
1483. Theophrastus translated and printed.

EDW. V. and RICH. III.

1484. Herbarium, published at Mentz.

HENRY VII.

1485. *Printing introduced into England by Caxton.*
Cuba? Ortus Sanitatis.

HENRY VIII.

1516. Great Herbal. Latin names alphabetical. *The first English herbal.*
1528. Lucius Apulejus. De Virtutibus Herbarum. Printed with Galen's works.
1530. Brunsfels. Herbarium. *Restores practical Botany in Europe.*
1534. Judge Fitzherbert. Husbandry.
1535. Valerius Cordus. Dispensatorium. *First pharmacopœia.*
1541. Gesner. Historia Plantarum. *Proposes genera by the fructification.*

1542. Fuchs. Historia Plantarum. 516 fig. outlines only, but beautiful.

EDWARD VI.

1548. Matthiolus. Commentarii in Dioscoridem.
1551. Turner. New Herbal.
1552. Tragus. De Stirpibus. 567 figures.
Serapio. De Simplicium Historia. Printed.
Dodoens. Frugum Historia.

ELIZABETH.

1560. Miraldi. Secretorum Enchiridion.
1562. Bulleyn. Castle of Defense against Sicknesse.
Dr. Penny, first British entomologist.
1568. Turner. Herbal. Completed, with figures from the small editions of Fuchs.
1570. Lobel and Pena. Adversaria. *The first arrangement of plants.*
1578. Lyte. Herbal. A translation of Dodonæus. 1050 plants.
1583. Dodoens. Herbal, completed and all the parts published together with 1305 figures.
1585. Cæsalpinus. De Plantis. *The first strict logical system.*
Newton. Herbal to the Bible.
1588. Tabernæmontanus. Kræuterbuch, begun.
1592. Columna. Phytobasanos.
1594. Mountain. Gardeners' Labyrinth. *The first English book on Gardening?*
1597. Gerarde. Herbal.
1599. Imperati. Historia Naturalis.
1600. Schwenckfeld. Stirpium, &c. Silesiæ Catalogus. *The first Flora of any country.*
1601. Clusius. Rariorum Plantarum Historia. *This author is highly esteemed for the purity of his Latin.*

JAMES I.

1605. Clusius. Exoticorum Libri decem.
Lobel. Adversariorum altera pars.
1611. Clusius. Curæ posteriores.
1612. Besler. Hortus Eystettensis. 1083 figures on copper. *The first superb work in botany.*
1616. Columna. Ecphrasis.
1620. C. Bauhin. Prodromus Theatri Botanici, 1st edit.

1623. C. Bauhin. Pinax Theatri Botanici, 1st edit. *An immense collection of synonyms.*

CHARLES I.

1629. Johnson. Iter Cantianum. *The first account of a herborisation in England.*
Parkinson. Paradisus terrestris. *The first catalogue of common garden plants.*
1632. Johnson. Ericetum Hampstediense. *The first catalogue of a small botanizing ground.*
1633. ——— Gerarde's Herbal. 2850 plants.
1634. ——— Mercurius Botanicus. *The first separation of British plants from foreign ones.*
1643. Parkinson. Theatre of Botany. 3800 plants, with new figures, cut in England.
1648. Bobart. Hortus Oxoniensis. *The first catalogue of a British botanic garden.*
Marcgraff. Historia Brasiliæ.

CHARLES II.

1650. How. Phytologia. 1220 plants. *The first attempt at a complete list of British plants.*
J. Bauhin. Historia Plantarum.
1652. Culpeper. The English Physician. 1st edition.
1655. Lobel. Stirpium Illustrationes, a How.
1656. Cole. The Art of Simpling.
Tradescant. Museum. *The first catalogue of an English collection.*
1658. Browne. Hortus Oxoniensis.
1659. Lovell. Pambotanologia. 1st edition.
1660. Ray. Catalogus Plantarum Cantabrigensis. 626 plants. *The first work by Ray.*
1664. Evelyn. Sylva, with Kalendarium Hortense. *The first Gardener's Calendar.*
Turner. British Physician.
1665. Lovell. Pambotanologia. 2d edition.
1667. Merrett. Pinax Rerum Britannicarum. 1400 plants. *Willisell mentioned by Merrett as an active collector.*
1669. Morison. Hortus Blesensis.
1670. Ray. Catalogus Plantarum Angliæ. 1050 plants.
Grew. Anatomy of vegetables begun.
1672. Morison. Plantæ umbelliferæ. *The first monograph.*
1673. Ray. Catalogus Stirpium externarum.
1675. Malpighi. Anatome Plantarum.

1677. Plot. Oxfordshire. *The first natural history of an English county.*
1678. Van Rheede. Hortus Malabaricus begun.
1679. Plot. Staffordshire.
Evelyn. Terra.
1680. Morison. Historia Plantarum. Tom. ii. *The first general history in a systematic order, and with copper-plate figures.* Note, *The first volume on trees still in manuscript.*
1682. Wheeler's Journey into Greece. *An attempt to investigate the plants of the ancients in their native soil.*
Ray. Methodus nova Plantarum.
Dr. Tancred Robinson mentioned by Ray.
1684. Sibbald. Scotland.
1685. Glen. *A herbarium of* 600 *plants, with this date, mentioned by Dr. Pulteney as being still in existence.*
Abercrombie. Ars explorandi medicas Plantarum Facultates ex solo Sapore.

JAMES II.

1686. Ray. Historia Plantarum. Tom. i.
1688. Knaut. Plantæ Hallenses.
Ray. Historia Plantarum. Tom. ii. 16,000 *plants in systematic order.*
—— Fasciculus Stirpium post Catalogum observatarum.

WILLIAM III.

1689. Magnol. Prodromus Historiæ Plantarum.
1690. Ray. Synopsis Stirpium Britannicarum. First edition. 1050 plants.
Doody and Lawson mentioned by Ray.
Rivinus. Introductio in Rem herbariam.
——— Plantæ monopetalæ irregulares.
1691. ——— Plantæ tetrapetalæ irregulares.
Plukenet. Phytographia.
1692. Glen. *A herbarium of* 660 *plants, with this date, mentioned by Dr. Pulteney as still remaining.*
Petiver. Museum.
1693. *Ray. Synopsis Quadrupedum.*
Dale. Pharmacologia. First edition.
Sherard, now known.
1694. Tournefort. Elemens de la Botanique.
Peachy. Compleat Herbal.

1696. Ray Synopsis. Second edition.
Sloane. Catalogus Plantarum Jamaicæ.
Plukenet. Almagestum.
1699. Morison. Historia. Tom. iii. a Bobart.
Rivinus. Plantæ pentapetalæ irregulares.
Llhwyd. Lithophylacium Britannicum.
1700. Plukenet. Almagesti Mantissa.
Leigh. Lancashire.

ANNE.

1702. Petiver. Gazophylacium.
1703. Ray. Methodus emendata.
Plumier. Nova Genera Plantarum.
1704. Ray. Historia Plantarum. Tom. iii. 11,300 plants.
1705. Plukenet. Amaltheum.
Plumier. Fougeres de l'Amerique.
1707. Sloane. History of Jamaica.
1708. Lecaan. Advice to the Army, *on the Spanish and Portuguese plants.*
1709. Robinson. Westmoreland.
1710. Ray. Historia Insectorum.
Dr. Richardon, Mr. Brewer, and Mr. Harrison, mentioned by Ray.
Johren. Hodegus Botanicus. *The first attempt at an analytical method of plants.*
Boerhaave. Index Plantarum Lugduno-Batavorum.
1711. Salmon. Botanologia, or English Herbal.
1712. Morton. Northamptonshire.
1713. *Ray. Synopsis Avium et Piscium.*
Petiver. Figures to Ray's British Plants.
Bradley, now known.

GEORGE I.

1716. Knaut (Filius). Methodus Plantarum Genuina.
Bradley. Succulent Plants.
1717. Tournefort. Institutiones, a Jussieu.
1718. Ruppius. Flora Jenensis. First edition.
Blair. Botanick Essays.
1719. Scheuchzer. Agrostographia Helvetica.
Dillenius. Catalogus Plantarum circa Gissam.
1720. Magnol. Novus Caracter Plantarum. *Contains his calycine method.*
1721. Knowles. Materia Medica Botanica, *in Latin verses.*

1723. Blair. Pharmaco-botanologia. Begun.
1724. Ray. Synopsis. Third edition. A Dillenio.
1725. Sloane. Jamaica. Vol. ii.
Douglas. Amaryllis, *or Guernsey Lily.*
1726. Martyn. Plantæ officinales.
Ruppius. Hora Jenensis aucta.

GEORGE II.

1727. Threlkeld. Synopsis Stirpium Hibernicarum.
Boerhaave. Historia Plantarum in Horto Lugduno-Bativorum.
Martyn. Methodus Plantarum Cantabrigensium.
Hales. Vegetable Statics.
1728. *Knowlton and Miller begun to be known.*
Bradley. Dictionarium Botanicum.
Kæmpfer. History of Japan, translated.
1729. Micheli. Nova Plantarum Genera.
1730. Hebenstreit. Definitiones Plantarum. *The genera of Rivinus.*
Catesby. Carolina.
Miller. Gardeners' Dictionary. First edition.
1732. Dillenius. Hortus Elthamensis.
Tournefort. History of Plants, translated by Martyn.
Linnæus. Florula Lapponica.
1735. ——— Systema Naturæ. First edition.
1736. ——— *Came to England.*
——— Fundamenta Botanica.
——— Bibliotheca Botanica.
——— Musa Cliffortiana.
1737. ——— Flora Lapponica. First edition.
——— Genera Plantarum. First edition.
——— Critica Botanica.
——— Hortus Cliffortianus.
Blackstone. Harefield Plants.
Dale. Pharmacologia. Second edition.
Blackwell. Herbal.
Ludwig. Definitiones Plantarum. First edition.
1738. Deering. Nottingham Plants.
1740. Van Royen. Floræ Leydensis Prodromus. *Contains his System, and is said to have been written by Linnæus.*
1741. Dillenius. Historia Muscorum.
Linnæus made Professor at Upsal.

1742. Haller Enumeratio Stirpium Helveticarum.
1744. Wilson. Synopsis of British Plants. Vol. i. *A translation of Ray's Synopsis, slightly altered from Tournefort.*
1745. Linnæus. Flora Suecica.
Needham. Microscopical Discoveries.
Parsons. Theatre of Seeds.
Ruppius. Flora Jenensis, a Hallero.
1746. Blackstone. Specimen Botanicum. *Contains the habitats of rare British plants.*
1747. Short. Medicina Britannica.
1748. Heister. Systema Plantarum. *A near approach to the present natural system; but the trees separated from the herbs.*
1749. Linnæus. Materia Medica. First edition.
———— Amœnitates Academicæ. First edition begun.
1750. Ehret and Trew. Centuriæ. Begun.
Hughes. Barbadoes.
1751. *Fulham-garden very full of plants.*
Linnæus. Philosophia Botanica. First edition.
Forster. Flora Americæ Septentrionalis.
Sauvages. Methodus Foliorum.
1752. *Sir Hans Sloane died.*
Newton. Compleat Herbal.
1753. Linnæus. Species Plantarum. First edition.
Alston. Tyrocinium.
1755. Miller. Figures to his Dictionary. Begun.
Ellis. History of the Corallines.
1756. Browne. Jamaica.
Sheldrake. Herbal.
1757. Kniphoff. Herbarium vivum. Begun and carried on to 12 centuries. *First publication of dried specimens.*
1758. Borlase. Cornwall.
1759. Stillingfleet. Miscellaneous tracts.
B. Jussieu arranges the garden at Trianon. Foundation of the present natural system.

George III.

1760. *Solander to England.*
Lee. Introduction to Botany. First edition.
Flora Danica. Begun by Oeder.
1761. Schæffer. Fungi. Begun.

1762. Hudson. Flora Anglica. First edition.
Martyn. Herbationes Cantabrigenses.
1763. Lyons. Plantæ Cantabrigenses.
Adanson. Familles des Plantes.
1764. Oeder. Elementa Botanica.
Berkenhout. Botanical Lexicon.
1766. Crantz. Institutiones Rei Herbariæ.
1767. Catesby. Hortus Europæ Americanus.
——— Present taste of planting.
1768. Gmelin. Historia Fucorum.
Hill. Hortus Kewensis.
Haller. Historia Stirpium Helveticarum.
Miller. Gardener's Dictionary, 8th edition, *altered to the Linnean system.*
1769. Wallis. Northumberland.
Haller. Nomenclator Stirpium Helveticarum.
Plukenet. Opera.
Hill. Herbarium Britannicum.
1770. Alston. Materia Medica.
Berkenhout. Outlines. Vol. ii. Vegetables.
Weis. Plantæ cryptogamicæ Gottingensis.
Milne. Botanical Dictionary.
1771. Necker. Methodus Muscorum.
Weston. Universal Botanist.
Warner. Woodford Plants.
Milne. Institutes of Botany.
1772. *Cook's Second Voyage began.*
Haller. Bibliotheca Botanica.
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Withering. Botanical Arrangement. First edition.
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——————— Methodus Muscorum illustrata.
Pulteney. Review of Linnæus's Writings.
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Forster. Additions to Warner's Woodford Plants.
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Pallas. Flora Rossica. Begun.
Jones. Religious Use of Botanical Philosophy.
1785. Bolton. Filices Britannicæ. Begun.
Rosseau. Letters on Botany, translated by Martyn.
Cavanilles. Monadelphia. Begun.
Dickson. Plantæ cryptogamicæ Britannicæ. Begun.
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Relham. Flora Cantabrigensis. Begun.
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Hoffmann. Vegetabilia cryptogamica. Begun.
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Leers. Flora Herborniensis.
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1790. Pulteney. Progress of Botany in England.
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Milne and Gordon. Indigenous Botany. *Left imperfect.*
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Bonpland. Jardin de Malmaison. Begun.
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3. *Explanation of the Terms used in Botany.*

PLANTS, VEGETABLES, *Plantæ, vegetabilia;* in composition—*phytos,—botanos,—botane.*

1. *Species.*

Tree, *Arbor*, in composition—*dendron.* A plant with a single woody stem, growing at least three times as high as a man.

Small tree, *Arbuscula.* A tree which does not grow above five times as high as a man.

Shrub, *Frutex, Arbustum, Fruticulus.* A plant with a woody stem, not growing three times as high as a man, and branched very near the ground.

Bush, *Dumus, Dumetum.* A low shrub much branched at the bottom.

Under shrub, *Suffrutex.* A woody plant, without buds, which is not an arm's length in height.

Herb, *Herba.* A plant with a soft stalk of the same consistence as leaves, and renewed every year, at least the part above ground.

2. *Containing Parts.*

Elementary parts, *Organa elementaria, Partes similares.* Small parts, common to the whole vegetable, and appearing to be the organic elements of which the vegetable is composed.

Membranous texture, *Contextus, Complexus membranaceus.* A tissue of membranes united together, either cellular or vascular.

Cellular texture, *Complexus cellulosus, Tela cellulosa, Complexus utricularis.* A membranous tissue composed of cells, which do not communicate with each other, and resemble soap-suds. Pl. 1. fig. 5. c, d.

Cells, pores, vesicles, bladders, *Cellulæ, Utriculi.* The void spaces in the cellular texture. They vary in respect to their sides, a, or form, b.

a. 1. Simple cells, *Cellulæ simplices.* The sides transparent.

a. 2. Dotted cells, porous cells, *Cellulæ punctatæ.* The sides have opake dots, like glands, which are probably pores. Pl. 1. fig. 5. e, h, l.

a. 3. Streaked cells, *Cellulæ lineatæ.* The sides have transverse streaks, of a glandular appearance, which are probably slits. Pl. 1. fig. 5. g. h.

b. 1. Regular cells, *Cellulæ regulares, Contextus globularis, Tela vesicularis.* Cells exhibit a hexagonal section in every direction; forming the principal mass of the parenchyme. Pl. 1. fig. 5. d.

b. 2. Tubular cells, *Cellulæ elongatæ. C. tubulosæ, Tubi parvi, Utriculi fibrosi, Complexus cellulosus lignosus, Tela elongata, Tela alveolaria.* Long cells, closed at each end; forming the wood and ribs of plants. Pl. 1. fig. 5. g.

b. 3. Necklace cells, *Cellulæ moniliformes, Cellulæ precatoriæ, Vasa moniliformia, Vasa precatoria, Vasa vermicularia, Vasa intercepta.* Oval cells, dotted, separated from one another by partitions, resembling the beads of a necklace; forming the knots and joints of plants, and their roots. They are intermediate between cells and vessels, and may be referred to either.

Vessels, *Vasa, Tubi.* Void spaces in the membranous texture, open at their extremities: they differ in use, as they convey the sap, a. or other fluids, b. c.

a. Sap vessels, *Vasa lymphatica, Lymphæductus, Vasa pneumatica.* These are either:

a. 1. Dotted vessels, *Vasa punctata, Vasa porosa.* Pl. 1. fig. 5. h.

a. 2. Streaked vessels, *Vasa lineata, Tracheæ spuriæ, Vasa fissa, Vasa scalaria, Vasa annularia.* These differ from cells only by their length.

a. 3. Air vessels, Spiral vessels, *Vasa spiralia, Tracheæ, Vasa pneumato-chymifera, Pneumatophora.* Tubes com-

posed of an elastic membrane rolled up like the spring of a bell into a cylinder, abundant in young shoots; supposed to convey air. Pl. 1. fig. 5. i.

a. 4. Mixed vessels, *Vasa mixta.* Tubes of a mixed nature, in some parts dotted, in others streaked or spiral.

b. *Vasa adducentia spiralia, Vasa chymifera, Vasa hydrogera.* The spiral thread forming the air vessels; considered by Hedwig as a distinct species of vessels itself.

c. Proper vessels, *Vasa propria, Receptacula succi proprii.* Cavities dispersed in the cellular texture, closed on all sides, and filled with some peculiar juice.

c. 1. Bladdery reservoirs, *Receptacula vesiculosa, Glandulæ vesiculares.* Spherical bladders, usually contain essential oils, dispersed in the parenchyme of the leaves, or bark. Myrtus communis, Citrus Aurantium.

c. 2. Blind reservoirs, *Receptacula cæciformia, Vittæ.* Short tubes, filled with essential oils, as in the bark of the seeds of umbelliferous plants.

c. 3. Milk vessels, Turpentine vessels, *Receptacula tubulosa, Vasa propria solitaria.* Single tubes in the cellular texture, filled with a milky, or turpentine juice.

c. 4. Fascicular reservoirs, *Receptacula fascicularia, Vasa propria fascicularia.* Bundles of small parallel tubular cells, filled with a peculiar juice; as in the bark of apocineæ.

c. 5. Accidental reservoirs, *Receptacula accidentalia.* Accidental cavities, into which the juices formed in other parts has filtrated: in the coniferæ the turpentine frequently bursts its own vessels, and penetrates the pith and sap-vessels.

Tubular openings. Open spaces of the pith, *Lacunæ, Cavitates aëreæ, Vasa pneumatica, Receptacula aërea accidentalia.* Cavities filled with air, frequently found in the cellular texture, formed by rupture or absorption.

1. Irregular, *L. irregulares.* Found in the middle of the fleshy parts of plants. Pl. 1. fig. 5. k.

2. Fistular, *L. fistulosæ.* Occupy the centre of the stalk, and render it hollow like a flute. Gramineæ.

3. Regular, *L. regulares.* Occupy the centre of the stem of water plants, the cells being disposed in a regular order. Scirpus.

4. Cellular, *L. cellulares.* Large cavities, of which the sides are themselves composed of cellular texture. Sparganium.

Fibre, *Fibra.* A collection of vessels and tubular cells fastened together, so that they can be detached from the surrounding cellular texture in long threads; their principal use is to direct the flow of the juices. Pl. 1. fig. 5. e.

Nerves, *Nervi.* Fibres visible on the external surface of the plant or its leaves.

Fleshy parts, *Parenchyma.* A pulpy substance, formed of soft cellular texture; common in leaves and fruits.

Cuticle, Skin, *Epiderma, Epidermis, Cuticula.* The fine membrane, usually transparent, which covers the whole surface of the plant.

Vasa exhalantia. The lines separating the fleshy part from which the cuticle has been removed into hexagonal spaces.

Articulation, *Articulatio, Junctura.* A part in which, at a determinate period, the plant may be separated into two or more pieces, without much violence.

Joint, *Articulus.* The interval between two articulations.

Cicatrix, *Cicatricula.* The mark remaining at the articulation after a joint has been detached.

Knot, *Nodus, Geniculum.* The swelling of the texture of the plant, forming a protuberant ring. Grasses. Pinks.

Internodium. The space between two knots.

Nodosity, *Nodositas.* A concretion formed by vegetation, and occasioning a swelling, or tumour, as in the leaves of what are called Junci articulati.

Pores, *Pori.* Very small openings, in the membranous texture, visible by the microscope.

Insensible pores, *Pori inconspicui, Pori cellulares.* Pores supposed to exist, although invisible, and to be the organs of insensible perspiration.

Cortical pores, *Pori corticales, Stomatia, Glandulæ corticales, Pori elongati, Pori magni, Pori evaporatorii, Pori epidermidis, Glandulæ miliares, Glandulæ epidermoidales.* Oval pores, very visible with a lens, on the surface of the fleshy parts which are above ground: appear to be the organs of exhalation, and perhaps of the inhalation of watery vapour, but do not admit the passage of coloured fluids.

Spongiolæ. Organs like a sponge, capable of taking up coloured fluids, although no pores can be observed with the highest magnifying powers. Lemna, Pandanus, Stigmata of flowers.

Glands, *Glandulæ,* in composition — *aden,* — *adenos.* Organs for the purpose of secreting peculiar liquids, and

tubercles resembling these organs, although they do not really secrete any liquid.

1. Cellular glands, *Glandulæ cellulares, Glandulæ excretoriæ.* Formed of cellular texture without any communication with vessels. Nectaries of flowers.

2. Vascular glands, *Glandulæ vasculares, Gl. secretorii, Gl. urceolares.* Formed of cellular texture, traversed by vessels. Ovary of the cobæa, Tubercles on the petiole of drupaceæ.

Hairs, *Pili, Villi.* Small, tender, hairlike appendages, composed of one or more cells projecting from the texture of the plant.

1. Glanduliferous hairs, *Pili glanduliferi.* Supporting glands on their tip. Cicer arietinum, Croton penicillatum.

2. Excretory hairs, *Pili excretorii.* Placed on glands serving as excretory ducts. Urtica urens, Malpighia urens.

3. *Pili lymphatici.* Not connected with any gland; seem mere organs of evaporation.

Organic parts, *Partes organicæ, Organa composita, Organa.* Parts composed of the former; and generally visible.

1. Organs of vegetation, *Organa nutritiva.* Necessary to the growth and life of the individual, as the root, stem, bud, and leaf.

2. Organs of reproduction, *Organa reproductiva.* Necessary for the reproduction of the individual, or life of the species, as the flower, fruit, seeds, buds, &c.

Organs of fructification, *Organa fructificationis.* Organs of reproduction by means of fecundation; as the flower, fruit, seed.

Organs of germination, *Organa germinationis.* Organs of reproduction without fecundation; as germens, gongyli, propagines, and conidia.

3. Accessory organs, *Organa accessoria.* Not found in all plants, seated upon the other organs, as thorns, prickles, cirri.

3. *Contained Juices.*

Sap, *Alimonia, Humor, Lympha.* A watery liquid newly absorbed, and not yet much changed by vegetation.

Cambium. The mucilaginous juice, already changed, traversing the membranous texture, from which the new parts are formed; is perhaps a liquid gum.

Juice, *Sućcus.* Any liquid that can be pressed out of a plant: they vary in different plants.

Nectar. Juices secreted by glands placed upon the organs of fructification.

Glaucous bloom, *Pollen glaucum. Pruina.* A substance like wax, upon certain leaves and fruits, to preserve them from moisture.

Milk, *Lac.* An emulsive liquid, usually white and opake.

4. *Race.*

Primitive, *Plantæ primigeniæ.* Species originally created, and not formed by crossing from others.

Mule, *hybridæ.* Species not originally created, but formed by the pollen of one species being absorbed by the female organ of another species. Veronica hybrida, Primula cortusoides, Delphinium hybridum, Sorbus hybrida.

5. *Consistence.*

Spumescent, *Plantæ spumescentes.* Like a scum. Spumaria Mucilago.

Gelatinous, *gelatinosæ.* Like jelly. Tremella.

Fungous, *fungosæ.* Solid, elastic, soft. Boletus igniarius.

Corky, *suberosæ.* Solid, elastic, hard. Many Fungi.

Fleshy, *carnosæ.* Thick, juicy, but firm. Tuber cibarium.

Membranous, *membranaceæ, membranosæ.* In a thin flake, flexible, rather juicy. Many ulvæ and fuci.

Leathery, *coriaceæ.* Tough, flexible, rather thick. Many fuci.

Horny, *corneæ.* Dry, hard, compact, flexible, semi-transparent. Many fuci.

Crustaceous, *crustaceæ.* Dry, hard, friable, in form of a crust. Lepraria, Variolaria.

Filamentous, *filamentosæ.* In long, slender threads, either simple or branched. Conferva.

Herbaceous, *herbaceæ.* Stem and branches do not form a solid wood, but perish after a few months' vegetation, and are covered with a bark, usually green, of the same consistence as the leaves.

Woody, *lignosæ.* Stem and branches at first weak like herbs, but form a solid wood, and vegetate for several years.

Succulent, *succulentæ.* Thick, juicy, with much cellular texture, and few fibres. Sedum, Sempervivum tectorum.

Milky, *lactescentes.* Containing a milky juice. Euphorbia, Lactuca virosa, Sonchus.

6. *Duration.*

Once-fruiting, *Plantæ monocarpicæ.* Bearing fruit only once in their life.

1. Ephemeral, *ephemeræ, fugaces.* Lasting only a few days, or even hours. Tremella, many fungi.

2. Annual, *annuæ.* Lasting near a whole summer. Hordeum.

3. Biennial, *biennes.* Producing leaves only the first year, and flowers and fruit in the succeeding. Verbascum decurrens, Œnothera biennis.

4. Slow growing, *perennes.* Being several years before they flower, and dying soon after. Agave.

Many-fruiting, *polycarpicæ.* Bearing fruit several times during their life.

1. Perennial, *perennes, restibilia, rhizocarpicæ.* Dying down to the ground every year, and in the following producing new flowering stems. Aster.

2. Arborescent, *caulocarpicæ, fruticosæ.* The stem itself lasts during the life of the plant. Trees, shrubs.

7. *Mode of production.*

Seed-bearing, *Plantæ seminiferæ.* Bearing seeds. Most plants.

Gongyliferous, *gongyliferæ.* Bearing gongyles or spores. Mosses, Algæ.

Stool-bearing, *Stoloniferæ.* Throwing out stools, *stolones,* which take root. Pilosella.

Runner-bearing, *viticulosæ.* Throwing out runners, *viticulæ, sarmenta,* or *flagella,* which take root from space to space.

Shoot-bearing, *surculiferæ.* Throwing out shoots, surculi, from the crown of the root, which may be separated, and will then produce a new plant. Oliva europæa.

Propaculiferæ. Throwing out a shoot terminating by a leaf-bud, which, when separated from the original plant, will grow. Sempervivum.?

Bulbous, *bulbosæ.* Furnished with a bulb, under ground, throwing up leaves and a stem. Lilium, Tulipa, Allium, Cepa.

Bulbilliferous, *bulbilliferæ, soboliferæ.* Producing small bulbs, *bulbilli, propagines, bacilli, soboles, sautellæ,* on the axillæ of their branches, or leaves, or elsewhere, above ground. Crinum bulbiferum, Allium.

¶ Wild, *sylvestres, agrestes.* Growing without the assistance of man.

Cultivated, *sativæ.* Sown, or planted by man.

8. *Mode of Growth.*

Stemless, *Plantæ acaules.* Growing without any stem. Plantago lanceolata, Bellis perennis.

Stalked, *caulescentes.* Growing with a stem. Most plants.

¶ Outside-growing, *exogenæ.* Growing by their bark, and in arborescent plants depositing layers of woods internally.

Inside-growing, *endogenæ.* Growing by their summit only, not increasing in diameter, the outside being the older.

9. *Repetition of flowering.*

Once bearing, *Plantæ uniferæ.* Bearing flowers once a year only. Most plants.

Twice flowering, *biferæ.* Bearing flowers twice a year.

Monthly, *multiferæ.* Flowering several times in a year, as in some roses.

10. *Position of certain Parts.*

Root-flowering, *Plantæ rhizanthæ.* The flower growing on the root.

Stem-fruiting, *caulocarpæ.* The fruit growing on the stem.

Calicostemones. The stamens growing on the calyx.

Gynandrous, *gynandræ.* The stamen growing on the pistil.

Calyx-flowering, *calycifloræ.* The corolla growing on the calyx.

Thalamiflora. The corolla growing on the receptacle.

11. *Sex.*

Neuter, *Plantæ neutræ, agenicæ, agamæ, gynæciæ.* In which sexual organs have not been discovered. Fungi, lichens.

Cryptogamous, *cryptogamæ.* The sexual organs difficult to be discovered from their small size, their form, or situation. Mosses.

Phenogamous, *phænogamæ.* The sexual organs very distinct and visible. Lily, Rose.

¶ Unisexual, *unisexuales*. Having the organs of one sex only, on the same root.

Male, *masculæ, idiogynæ*. Having the male organs only on the same root.

Female, *femineæ*. Having the female organs only on the same root.

Bisexual, *bisexuales*. Having the organs of both the sexes on the same root.

Androgynous, *androgynæ*. Having male and female organs on the same root, but not in the same flowers. Morus, Betula, Pinus, Cucumber.

Hermaphrodite, *hermaphroditæ*. Having male and female organs not only on the same root, but also in the same flowers. The generality of plants.

Polygamous, *polygamæ*. Having on the same root some flowers with the organs of both sexes, and others with those of only one.

Necessarily polygamous, *polygamæ necessariæ*. Having on the same root imperfect hermaphrodite flowers which are barren from a defect in their female organs, and female flowers which are the only fruitful ones.

Superfluously polygamous, *polygamæ superfluæ*. Having on the same root perfect hermaphrodite flowers, and also fruitful female flowers.

Uselessly polygamous, *polygamæ frustaneæ*. Having on the same root perfect fruitful, fruitful hermaphrodite flowers, and imperfect or barren females.

¶ Monoicous, *monoicæ*. All the roots of the same species are alike in respect to the sex of the flowers.

Dioicous, *dioicæ*. Having in the same species two kinds of roots, which differ in regard to the sex of their flowers.

Trioicous, *trioicæ*. Having in the same species three kinds of roots, which differ in regard to the sex of their flowers. Ceratonia, Ficus.

12. *Cotyledons*.

Acotyledon, *Plantæ acotyledoneæ*. Without any cotyledons. Fungi, Lichens.

Monocotyledon, *monocotyledoneæ*. With only one cotyledon. Grasses, Palms, Liliaceæ, Orchideæ.

Dicotyledon, *dicotyledoneæ*. With two cotyledons. Labiatæ, Ranunculaceæ, Cruciferæ, Leguminosæ.

Polycotyledon, *polycotyledoneæ*. With many cotyledons. Pinus, Abies, Ceratophyllum.

¶ *Dermoblastæ.* The cotyledon formed of a membrane that bursts irregularly. Fungi?

Nemoblastæ. The cotyledon threadshape. Mosses, Ferns.

Plexeoblastæ. The cotyledons come out of the ground in two lobes, which change to leaves different from the common leaves.

Geoblastæ. The cotyledons remain under ground. Peas, Grasses.

1. *Rhizoblastæ.* The embrio throws out a root.

2. *Arhizoblastæ.* The embrio has no root. Parasitic plants.

Sphæroblastæ. The cotyledons do not divide into two pieces, but come out of the ground like small balls with footstalks. Juncus bufonius.

13. *Surface.*

Smooth, *Plantæ leves.* Without any inequalities. Fumaria vulgaris, Adoxa Moschatellina.

Bald, *glabræ.* Without any downiness. Ruscus aculeatus, Opulus palustris.

Polished, *levigatæ.* Bald and smooth. Veronica fontinalis, Valeriana rubra.

Shining, *lucidæ.* Polished and reflecting light like polished metal, or a varnished substance. Arum maculatum, Chenopodium murale.

Rough, *asperæ.* Rubia tinctorum. Galium uncinatum.

Nipply, *papulosæ.* Having round protuberances, filled with a fluid. Mesembryanthemum papulosum.

Glutinous, sticky, *glutinosæ*, *viscosæ*, Covered with a substance sticking to the fingers. Hyoscyamus niger, Silene Anglica.

Powdery, *pulverulentæ.* Covered with a dust which comes off easily. Primula farinosa.

Glaucous, *glaucæ.* The dust with which they are covered is of a sea-green colour. Chlora perfoliata, Fumaria officinalis, Crambe maritima.

Downy, *pubescentes.* With short, soft hairs, not very close. Galium verum, Circæ Lutetiana, Althæa officinalis.

Velvety, *velutinæ.* With soft, close, short hairs, of an equal length. Digitalis purpurea.

Hairy, *pilosæ.* With scattered, long, soft hairs. Hyoscyamus niger, Githago segetum, Hieracium Pilosella.

Villous, *villosæ.* With numerous soft hairs. Veronica officinalis, Geranium pratense, Lychnis dioica.

Silky, *sericeæ*. With long, soft, brilliant hairs, lying flat. Absinthium vulgare.

Woolly, *lanatæ*. With long hair, lying flat, and more or less clotted, like coarse cloth.

Clothlike, nappy, *tomentosæ*. With close hairs, more or less matted, like fine cloth.

Hispid, *hispidæ*, *hispidosæ*. With rough hair.

Hispidulous, *hispidulæ*. With hair rather rough.

Hirsute, *hirsutæ*, *hirtuosæ*, *hirtæ*. With rough, pricking hair. Borago officinalis.

Strigose, *strigosæ*. With stiff, long hair, swelled at their root.

Echinate, *echinatæ*, *spinellosæ*. With points, *spinellæ*, stronger, thicker, and harder than hairs. Dipsacus fullonum, D. laciniatus.

Prickly, *aculeatæ*. With woody points adhering only to the bark, and easily broke off. Rosa.

Thorny, *spinosæ*. With points growing out of the wood of the plant. Ulex Europæus, Prunus spinosa.

14. *Stations.*

Land, *Plantæ terrestres*, *terraneæ*.

Sand, *arenariæ*, *sabulosæ*. Psamma arenaria, Ulex.

Rock, *saxatiles*, *rupestres*, *petrosæ*. Sedum.

Gravel, *glareosæ*. Aira flexuosa.

Wall, *ruderales*. On walls and ruins. Chenopodium murale, Urtica dioica, Parietaria officinalis.

Cavern, *cavernariæ*. In caves and mines. Byssus, Boletus.

Clay, *argillosæ*.

Chalk, *cretaceæ*. Hippocrepis comosa, Caucalis daucoides, orchideæ.

Granitic, *graniticæ*.

Slate, *schistosæ*.

Limestone, *calcareæ*.

Garden, *hortenses*. Lamium amplexicaule, Galium uncinatum, Alsine media. These are usually called Weeds.

Vineyard, *vineales*. Aristolochia infesta.

Field, *agrestes*. Growing in arable land. Chrysanthemum segetum, Githago segetum.

Fallow land, *arvenses*. Growing in fallowed fields. Melampyrum arvense, Aphanes arvensis, Acetosa repens.

Meadow, *pratenses*. Growing in grass-land. Trifolium pratense, Ranunculus acris.

Woodland, *sylvaticæ*, *nemorosæ*. Anemone nemorosa, Paris quadrifolia, Adoxa moschatellina.

Shady, *umbrosæ*. Most woodland plants.

Open ground, *campestres*, *apricæ*. Artemisia campestris, Draba verna, Echium vulgare.

Hill, *collinæ*. Dianthus collinus, Daphne collina.

Mountain, *montanæ*, *alpestres*. Valeriana montana.

Alpine, *alpinæ*. Bartsia alpina, Thalictrum alpinum.

Snow, *glaciales*, *nivales*. Growing among the snow and ice of high mountains. Gentiana nivalis.

Cold country, *frigidæ*, *hyperboreæ*. Growing only in cold countries. Linnæa borealis, Saxifraga Grœnlandica.

Salt, *salinæ*, *salsæ*. Growing in soils impregnated with salt, or Glauber's salt. Salicornia, Salsola.

Freshwater shore, *littorales*, *ripariæ*. Eupatorium cannabinum, Scutellaria, Lythrum.

Saltwater shore, *maritimæ*. Glaux maritima, Limonium commune. Hippophae rhamnoides.

¶ Water, *aquaticæ*. As the following:

Sea, *marinæ*. Fucus, Ulva, Zostera marina.

Lake, *lacustres*. Isoetes Pilularia, Scirpus lacustris.

Spring, *fontinales*. Veronica Beccabunga, Sisymbrium Nasturtium.

River, *fluviatiles*, *fluviales*. Potamogeton, Platanaria natans.

Sunken, *submergæ*, *demersæ*, *immersæ*. Growing under water. Conferva Ægagropila, Myriophyllum spicatum.

Emerging, *emersæ*. Rising above the surface of the water in which they grow. Hottonia palustris, Myriophyllum verticillatum.

Floating, *fluitantes*. Rooted in the ground, but the leaves, &c. floating, Potamogeton lucens.

Swimming, *natantes*. Not rooted in the ground, but floating freely. Lemna.

Marsh, *palustres*, *paludosæ*. In marshes and still waters. Chara, Phellandrium divaricatum, Menyanthes.

Bog, *uliginosæ*. Vaccinium uliginosum, Pinguicula.

Moss, *torfaceæ*. In peat mosses. Sphagnum palustre.

¶ Amphibious, *amphibiæ*. Growing indifferent on land or in water. Cicuta virosa, Apium graveolens.

¶ Parasitic, *epiphytæ*. Growing upon other plants.

False parasitic, *pseudo-parasiticæ*. Not hurting the plant on which they grow. Mosses.

True parasitic, *parasiticæ.* Growing at the expense of the plant on which they fix themselves.

1. On the root, *epirhizæ.* Orobanche, Hypopithys lutea.

2. On the bark, *corticales.* Many lichens.

3. On the wood, *epixyloneæ.* Most hypoxyleæ.

4. On leaves, *epiphyllæ.* Uredo, Æcidium, Puccinia.

¶ Subterranean, *subterraneæ.* Growing under the ground. Tuber cibarium.

¶ Growing on dead animals, *epizoariæ.*

15. *Country.*

Native, *indigenæ.* Natural to the soil on which they grow, whether wild or cultivated.

Foreign, *exoticæ.* Brought from foreign countries.

16. *Fertility.*

Fertile, *plantæ fertiles.* Producing fruits; Female, Hermaphrodite, and polygamous plants.

Barren, *steriles.* Not producing fruit; Male and neuter plants.

ROOT.

Radix,—rhizos. *That part of the plant, which is usually buried in the earth, and absorbs the nutriment of the plant.*

1. *Species.*

Root, *Radix.* A root of the common sort, and of a large size.

Rootlet, *Radicula.* A smaller root than common.

Radicelle, *Radicella.* The new roots when first emitted in germination.

2. *Parts.*

Main root, *Radix, Descensus, Truncus subterraneus.* The part next the stem, not yet divided into radicles.

Radicles, *Radiculæ.* The ramifications from the main root.

Head of the root, *Caput radicis.* The part which touches an herbaceous stem.

Extremity of the root, *Caudex radicis.* That part of a main root not branched, which is further from the stem.

Fibres, *Fibrillæ.* The fine hair-like extremities of the radicles. Pl. 2; fig. 1. c. c; 11. d.

Root stigmata, *Stigmata radicis, Spongiolæ radicales, Oræ radicum.* Spongioles at the end of the root; very visible in lemna and pandanus.

Tuber, *Tuberculum.* A thick, solid part, usually filled with feculæ, placed either upon the root, as in turneps, earthnuts, filipendula, or on those lower branches of the stem which are subterraneous and rootlike, as in the potatoe.

Exostosis. A tuber of a woody consistence, not containing feculæ. Cyperus disticha.

Ampullæ. Hollow globular bodies found on the roots of some water plants. Utricularia.

3. Situation.

Subterraneous, *Radix subterranea.* Most roots.

Exposed, *aeria.* Growing upon some part exposed to the air. Viscum.

Aquatic, *aquatica.* Growing in the water. Lemna, Utricularia, Trapa natans.

4. Substance.

Woody, *Radix lignosa.* All trees, shrubs, and undershrubs.

Fleshy, *carnosa.* Thick, juicy, mostly formed of cellular texture. Iris palustris, Beta vulgaris, Solanum tuberosum.

5. Form.

Threadshape, *Radix filiformis.* Lemna.

Fibrous, *fibrosa.* The threads being of some thickness. Cepa esculenta, Ranunculus flammeus.

Thongshape, *flagelliformis.* Long, supple, slender. Arenaria maritima, Carduus arvensis.

Cordshape, *funiliformis.* Of thick fibres like ropes. Palms, Pandanus, Dracena.

Spindleshape, *fusiformis.* Simple, long, swelled out in the middle, and small at each end. Raphanus sativus.

Turnep shape, *napiformis.* Simple, globular. Brassica macrorhiza.

Conical, *conica.* Gradually decreasing from top to bottom, Daucus vulgaris.

Cylindrical, *teres.* Dictamnus albus.

Roundish, *subrotunda.* Bunium majus, B. minus.

Tuberous, *tuberosa.* In thick fleshy masses. Cyclamen, Solanum tuberosum, Bryonia dioica.

Scrotiform, *scrotiformis, testiculata.* Formed of two roundish lumps connected together. Orchis maculata, O. militaris. Pl. 2. fig. 1.

1. The old tuber, *Tuberculum senior.* That part of the scrotiform root which supported the stem of the former year. Pl. 2, fig. 1, d.

2. The new tuber, *Tuberculum junior.* That part of the scrotiform root which would have supported the stem of the next year. Pl. 2, fig. 1, b.

Handed, *palmata.* Tuberous, flat, divided by a few slight slits so as to resemble an open hand. Orchis maculata, Satyrium nigrum.

Fingered, *digitata.* Tuberous, divided by deep slits so as to resemble fingers. Dioscorea alternifolia.

Grumose, *grumosa.* Tuberous, and resembling a collection of small seeds. Neottia abortiva. Pl. 2, fig. 3.

Knotty, *nodosa, moniliformis.* Composed of tubercles, or knots connected together in strings. Avena elatior nodosa. Pl. 2. fig. 5.

Filipendular, *filipendula.* In threads having tubercles at their ends.

Jointed, *articulata.* Appearing as if composed of several joints. Gratiola officinalis. Pl. 2. fig. 4.

Kneed, *geniculata.* Jointed and bent at each joint. Gratiola officinalis.

Bent, *contorta.* Bent in various directions. Bistorta major.

Truncated, bitten, *truncata, præmorsa.* Appearing as if the end was bitten off. Scabiosa succisa, Leontodon autumnale. Pl. 2. fig. 7.

6. *Division.*

Simple, *Radix simplex.* Carota vulgaris, Brassica macrorhiza.

Branchy, *ramosa.* Subdivided into radicles. Most trees and shrubs.

Fasciculate, *fasciculata.* Divided to the head into several long fleshy parts, connected together in a bundle. Asphodelus ramosus. Pl. 2. fig. 9.

Capillary, *capillaris.* Composed of many fine threads. Anthoxanthum odoratum, and most grasses.

Comose, *comosa.* Garnished with numerous capillary ramifications. Rhododendron, Erica.

7. *Surface.*

Seal-like, *Radix sigillata.* Having at certain distances scars resembling impressions of seals, these being the places where herbaceous stems have formerly grown. Polygonatum vulgare. Pl. 2, fig. 11, b.

Bladdery, *utriculosa.* Having small bladders which appear to serve the purposes of leaves. Utricularia.

Scaly, *squamosa.* These scales are abortive leaves. Lathræa squamosa, Oxalis vulgaris. Pl. 2, fig. 10.

Toothed, *dentata.* Furnished with appendages like teeth, which are abortive leaves. Cardamine amara, Adoxa, Dentaria pentaphylla.

8. *Duration.*

Annual, *Radix annua.* Dying with the year.

Biennial, *biennis.* Lasting a second year.

Perennial, *perennis.* Lasting more than two years.

9. *Growth.*

Perpendicular, *Radix perpendicularis.* The principal root growing right down into the ground. Daucus, Fraxinus, Quercus.

Horizontal, *horizontalis.* Growing level with the ground. Iris, Anemone nemorosa, Oxalis vulgaris. Pl. 2, fig. 4.

Creeping, *repens.* Growing horizontally, but sending off shoots and stalks. Mentha, Achillea millefolia. Pl. 2, fig. 4; pl. 8, fig. 9.

Progressive, *progrediens.* Extending itself one way, and dying away in another part. Polygonatum vulgare, Bistorta major, Anemone nemorosa, Allium nutans. Pl. 2, fig. 2, 4, 11.

Sucker-bearing, *stolonifera.* Œnanthe fistulosa, Fragaria.

Bulb-bearing, *bulbifera.* Having a bulb, or onion, at the top. Cepa esculenta, Hyacinthus. Pl. 2, fig. 8; pl. 3, fig. 1, 2, 3, 4.

Sprouting, *turionifera.* Bearing eyes or asparagi. Asparagus officinalis, Solanum tuberosum. Pl. 2, fig. 2.

STEM.

Caulis. Truncus ascendens, Adscensus,—caulon. *The support of those parts of the vegetable which usually appear above ground, and bear the flowers and fruit.*

1. *Species.*

Trunk, *Truncus.* That part of a tree which is naked, and without branches.

Head, *Cymus.* That part of a tree where the stem is divided into branches.

Straw, *Culmus.* The cylindrical, usually hollow, stem of a grass, with solid knots at certain distances. Triticum, Avena.

Reed, *Calamus.* A simple stem, more or less hollow, without knots. Juncus.

Root-sucker, *Surculus.* A branch springing from the root, capable of being separated, and of becoming a new individual. Rosa.

Stool, *Stolo.* A branch from the head of the root, bending down, taking root, and emitting leaves here and there. Pilosella.

Runner, *Flagellum, Sarmentum, Viticula.* A naked branch lying on the ground, taking root with a tuft of leaves at certain distances. Fragaria vesca.

Offset, *Propaculum.* A runner terminated by a leaf-bud capable of taking root when separated. Sedum, Sempervivum.

Rhizoma. Caudex descendens. A subterraneous, or superficial shoot, which emits radicles. Iris, Filices.

Base of the bulb. *Lecus.* The flat plate of a bulb, throwing out radicles beneath, and from its upper surface the leaves and flowers. Cepa esculenta, Hyacinthus.

Bulbo-tuber. Combus. A solid tuber placed on the neck of the plant, and frequently covered with the base of the leaves. Pl. 2, fig. 8. Crocus sativus.

Crown, *Caudex.* The part of an annual stem that remains attached to a perennial root, and throws up the next season a fresh stem.

2. Internal Parts.

Pith, *Medulla.* The fine cellular texture, usually white, contained in a cylindrical cavity in the centre of the stem of dicotyledon plants, and seeming to nourish the young shoots. Pl. 1, fig. 2, i to k.

Medullary canal, *Canalis medullaris.* The cylindrical cavity containing the pith.

Medullary sheath, *Vagina medullaris.* The internal rank of fibres immediately next to the pith.

Medullary rays. Silver grain. *Radii. Productiones. Insertiones medullares.* Vertical flakes, similar to the pith, pushed out towards the circumference; appearing, in a transverse section of a stem, like the spokes of a wheel. Pl. 1, fig. 2, e. It is in the direction of these rays that wood, however hard, may be easily riven.

Ligneous portion. *Corpus ligneum. Lignea portio.* The part of a stem between the pith and the bark, by which the juices pass from the root to the leaves. Pl. 1, fig. 2, b to i. In monocotyledon plants it composes the whole of the stem. Pl. 1, fig. 4, a to d.

Wood, heart, *Lignum, — xylon.* That part of the ligneous portion of a stem which has acquired its utmost hardness: in dicotyledon plants it forms the centre of the stem, in monocotyledon plants the circumference.

Alburnum. Alburna. That part of the ligneous portion of a stem which has not acquired its utmost hardness, and is generally of a paler colour than the rest.

Woody layers. Spurious grain. *Strata lignea. Involucra lignea.* Zones formed round the pith or centre of a stem, appearing in a transverse section like concentric circles, usually supposed to denote the growth of each successive summer that the plant has existed. Pl. 1, fig. 2, b, g, h.

Bark, *Cortex, — derma.* A part of the stem (and root) of dicotyledon plants, which encloses the woody portion, separating easily at certain seasons, or by maceration, and through which the juices of the plant do not pass in going from the root-sponges to the leaves. Pl. 1, fig. 2, a, b.

Cortical layers, *Strata corticalia.* The layers, or concentric circles to be observed in the bark. Pl. 1, fig. 2, a, b, c, d.

Inner bark. Bast. *Liber.* The internal cortical layers, which may be easily separated from the others. Pl. 1, fig. 2, b to d.

Corky substance, *Stratum cellulosus, Complexus cellulosus, Parenchyma.* A layer of cellular tissue, lying on the outside of the cortical layers, and in some plants very thick.

Epidermis, Epiderma. A membrane which covers every part of the plant as well as the stem.

3. *Duration.*

Annual, *Caulis annuus.* From annual roots, and those biennials which do not throw up the stem till the second year.

Perennial, *perennis.* The stem of trees, shrubs, and undershrubs.

4. *Consistence.*

Woody, *Caulis ligneus.* Lasting many years, forming a solid wood.

Herbaceous, *herbaceus.* Of a softer nature.

Succulent, *succulentus.* Orobanche major, Sempervivum tectorum.

Pithy, *medullaris.* Filled with pith. Helianthus annuus, Sambucus humilis.

Spongy, *spongiosus.* Filled with a compressible, elastic tissue, which retains moisture like a sponge. Typha latifolia, Zea Mays, Hypericum elodes.

Solid, *plenus, solidus.* Having no internal cavity. Zea Mays, Orchis maculata, Saccharum officinale.

Hollow, *fistulosus.* Having in its middle, a cavity, either continued uninterrupted through the whole length, or parted in cells by midriffs. Equisetum, Gramineæ, Orchis latifolia. Sonchus arvensis.

5. *Form.*

Cylindrical, *Caulis cylindricus, teres.* Long, the transverse section being circular; nearly the same size throughout the greatest part of its length. Chenopodium spinacifolium, Abies, Stramonium fœtidum.

Lengthened, *virgatus.* Long, straight-lined, and weak; growing narrower from the bottom to the top. Campanula esculenta, Reseda salicifolia, Althæa officinalis.

Flagelliform, *flagelliformis.* Thin, and supple like a thong. Vinca major, Clematis Vitalba, Rubus saxatilis.

Melon-shaped, *meloniformis.* Cactus Melocactus, Euphorbia cucumerina.

Compressed, *compressus.* Flattened on two opposite sides, Poa compressa, Cactus Opuntia.

Two-edged, *anceps.* Compressed with two sharp edges like a dagger. Androsæmum officinale.

Leaf-like, *phylloideus.* Flattened and herbaceous like leaves. Cactus Phyllanthus, Platylobium scolopendrium.

Obtuse-angled, *obtusè angulatus.* When it has angles which are obtuse. Salvia pratensis, Melissa officinalis.

Acute-angled, *acutè angulatus.* When it has angles which are acute. Hypericum quadrangulare, Lathyrus pratensis.

Three-sided, *trigonus.* When it has three faces, and of course three corners. Carex acuta, Scirpus sylvaticus.

Four-sided, *tetragonus.* When it has four sides. Mentha sativa, Lamium album, and other labiateæ.

Five-sided, *pentagonus.* Cactus pentagonus.

Six-sided, *hexagonus.* Cactus hexagonus.

Three-cornered, *triangularis.*

Four-cornered, *quadrangularis:* and so onwards.

Three-edged, *triqueter.*

Four-edged, *tetraqueter:* and so onwards.

Angular, *angulosus.* When the angles are not, or can not be counted. Polygonatum vulgare, Solanum nigrum, Achillea millefolia.

Jointed, *articulatus.* Formed of joints connected endways with each other, with or without knots. Fucus articulatus, Equisetum, Viscum album, Gramineæ.

Knotted, *nodosus.* Having swellings or knots at certain distances. Many of the gramineæ, Persicaria acris.

Kneed, *geniculatus.* Jointed and bent at each joint. Alopecurus geniculatus, Geranium sanguineum, Stellaria media, Spergula arvensis.

Stipiform, *stipiformis.* Stem of a dicotyledon plant, growing like those of palm-trees; with a bunch of leaves at top, and bearing the marks where the old leaves have fallen off. Statice fasciculata, Brassica oleracea capitata.

6. *Strength and thickness.*

Stiff, *Caulis rigidus, strictus, rigens.* Straight, not easily bent, although it be slender. Bistorta major. Bupleurum rotundifolium.

Brittle, *fragilis.* Stiff, and breaking as soon as it is attempted to be bent. Sonchus oleraceus, Geranium Robertianum.

Sarmentose, *sarmentosus.* Woody, and climbing or rampant. Hedera communis, Vitis vinifera, Rubus fruticosus.

Weak, *debilis.* Too feeble to keep upright. Irasekia alpina, Geranium lucidum, Sedum dasyphyllum.

Slender, *gracilis.* Long in comparison with its thickness. Orchis maculata, Stellaria holostea.

Threadshaped, *filiformis.* Zanichella palustris, Hydrocotyle vulgaris.

Hairlike, *capillaris.* Eleocharis acicularis.

7. *Number.*

Single, *Caulis unicus.* When the root produces only one stem.

Many, *multiplex.* When the root produces several stems.

8. *Composition.*

Very simple, *Caulis simplicissimus.* When it has no branches whatever, Fritillaria tessellata, Bistorta major. Orobanche major.

Simple, *simplex.* Without any large branches, but with some weak ones only. Verbascum decurrens, Swertia perennis.

Branchy, *ramosus.* Divided into branches.

Very branchy, *ramosissimus.* Cucubalus bacciferus, Ulex Europæus.

Shrubby, *decompositus.* Branched from near the root, so as to have scarcely any main stem. Ulex Europæus.

Two-forked, *dichotomus.* Divided and subdivided into two parts at each division. Stramonium fœtidum, Viscum album.

Three-forked, *trichotomus.* Divided and subdivided into three parts at each division. Mirabilis Jalapa.

Continued, *integer.* Growing up from the root to the top of the plant like an axis from which the branches spring out. Abies excelsa, Abies pectinata.

9. *Direction of the main Stem.*

Upright, *Caulis verticalis, perpendicularis, erectus.* Growing perpendicular to the horizon. Mentha sylvestris, Androsæmum officinale. Abies.

Oblique, *obliquus.* Growing sloping to the horizon. Poa annua.

Curved, *curvatus, arcuatus.* Forming a curve.

Inclined, *inclinatus.* Growing in a very marked curve, bending to the ground.

Nodding, *nutans, cernuus.* The top inclining to the ground. Polygonatum vulgare, Cedrus.

Ascending, *ascendens.* Forming a curve, bending up towards the sky. Veronica spicata, Trifolium pratense, Circæa alpina.

Procumbent, *procumbens, prostratus, humifusus.* Spread upon the ground, and not striking root. Polygonum aviculare, Herniaria hirsuta, Illecebrum verticillata, Arenaria rubra. Uva-ursi buxifolia.

Creeping, *repens, reptans.* Spread upon the ground, and striking root in it. Veronica officinalis. Glechoma hederacea, Potentilla reptans.

Climbing, *scandens.* Incapable of keeping itself upright without support, but raising itself by laying hold of other bodies.

a. by its own twisting. Cuscuta minor, Fagopyrum carinatum, Convolvulus sepium.

b. by tendrils. Vitis vinifera, Pisum.

c. by holdfasts. Hedera communis.

d. by the twisting of the leaf-stalks. Clematis Viticella.

Twining from left to right, *volubilis sinistrorsum.* Lupulus communis, Tamus communis.

Twining from right to left, *volubilis dextrorsum.* Convolvulus sepium, Phaseolus vulgaris.

Flexuose, *flexuosus.* Bent in various irregular directions. Aristolochia, Serpentaria, Solidago flexicaulis.

Tortuous, *tortuosus.* Bent many times in different directions. Cuscuta minor, Cakile maritima.

Straight, *rectilineus, rectus.* Without any bending. Lilium album, Rumex aquaticus, Verbascus decurrens.

10. *Clothing and appendages.*

Leafed, *Caulis foliatus.* Furnished with leaves.

Leafless, *aphyllus.* Without leaves. Cassytha major.

Scaly, *squamosus.* Furnished with leaves like scales. Orobanche major. Neottia abortiva.

Sheathed, *vaginatus.* Clothed with sheaths formed by the bottom part of leaves. Gramineæ.

Stipuled, *stipulatus.* Furnished with stipules. Vicia sativa, Lathyrus aphyllus.

Winged, *alatus.* Furnished lengthways with membranous or leafy expansions. Verbascum decurrens, Symphytum officinale, Lathyrus latifolius, Onopordum vulgare. Carduus palustris.

Tendrilled, *cirriferus.* Furnished with tendrils. Vitis, Bryonia dioica.

Rooting, *radicans.* Throwing out roots by which it fixes itself. Hedera communis, Bignonia radicans.

Naked, *nudus.* Without leaves, scales or tendrils. Teesdalia irregularis.

Bulbiferous, *bulbiferus.* Throwing out bulbilli which fall off and take root. Cardamine bulbifera.

11. *Surface.*

Smooth, *Caulis lævis.* Tamus communis, Carduus arvensis, Fagus sylvatica.

Bald, *glaber*. Illecebrum verticillatum, Vinca major, Cuscuta. Oenanthe fistulosa. Imperatoria major.

Smoothened, *lævigatus*. Geranium lucidum.

Shining, *lucidus*. Lysimachia nemorum.

Powdery, *pulverulentus*. Covered with a powder produced by itself. Primula farinosa.

Glaucous, *glaucus*. The dust is of a sea-green colour. Oenanthe fistulosa, Angelica sylvestris, Cucubalus inflatus.

Dotted, *punctatus*. Sprinkled with dots, either sunk in, or projecting, or only spots of colour. Hypericum perforatum.

Spotted, *maculatus*, *maculosus*. Marked with spots. Phlox maculata, Conium maculatum.

Rough, *asper*, *scaber*. Equisetum hyemale, Melampyrum arvense, Jasione montana, Sphondylium vulgare, Lychnis plumaria.

Warty, *verrucosus*. With small callous excrescences. Evonymous verrucosus.

Tubercular, *tuberculatus*. With small protuberances. Genista pilosa, Malpighia tuberculata.

Streaked, *striatus*. With small raised lines lengthways. Aristolochia infesta, Acetosa pratensis, Erysimum cordifolium. Orobus tuberosus.

Grooved, *sulcatus*. Grooved lengthways. Chara hispida, Equisetum hyemale, Lampsana communis, Conium maculatum.

Wrinkled, *rimosus*. Ulmus campestris, Castanea vesca.

Corky, *suberosus*. Covered with a bark of the nature of cork. Quercus Suber, Ulmus suberosa.

12. *Villosity.*

Downy, *Caulis pubescens*. Orobanche major, Digitalis purpurea, Ornithopus perpusillus, Sempervivum tectorum, Saxifraga granulata.

Velvetty, *velutinus*. Cotyledon coccinea.

Hairy, *pilosus*. Clinopodium vulgare, Ranunculus acris, Erodium cicutarium, Agrimonia vulgaris.

Villous, *villosus*. Veronica montana, V. agrestis, Calamintha vulgaris.

Silky, *sericeus*. Protea argentea, Aster sericeus.

Woolly, *lanatus*. Stachys Germanica, Marrubium vulgare, Carlina vulgaris.

Tomentose, *tomentosus*. Verbascum decurrens, Geranium rotundifolium.

Hispid, *hispidus*, *hirsutus*, *hirtus*. Galeopsis nodosus, Scabiosa arvensis, Sinapis arvensis, Geranium dissectum.

Spinose, *spinellosus*, *echinatus*. Dipsacus fullonum.

13. *Armature.*

Prickly, *Caulis aculeatus*. Arms affixed to the bark. Rosa rubiginosa, R. centifolia, Rubus fruticosus.

Thorny, *spinosus*. Arms affixed to the wood. Genista Anglica.

Branches.

First branches, *Ramus*. First divisions of the stem.

Second branches, branchlets, twigs, *Ramuli*. First divisions of the branches.

Third branches, small twigs, *Ramunculi*. Second divisions of the branches.

1. *Attachment.*

Alternate, *Rami alterni*. Shooting out singly in different directions at nearly equal distances. Alcea rosea, Rhamnus catharticus.

One rowed, *secundi*. Shooting out on one side only. Algæ variæ.

Two-rowed, *distichi*. Ranged in two opposite rows. Ulmus vulgaris, Abies Canadensis.

Opposite, *oppositi*. Growing in pairs from opposite points. Fraxinus, Æsculus Hippocastanum.

Crossing, *decussati*. Growing in pairs which cross each other at right angles. Syringa vulgaris, Acer major.

Whorled, *verticillati*. Placed in circles round the main stem. Equisetum fluviatile, Abies pectinata, Pinus sylvestre.

Scattered, *sparsi*. Placed without any determinate order. Usually owing to abortion.

2. *Direction.*

Erect, *Rami erecti*. Growing almost perpendicular to the horizon. Salsola fruticosa, Euphrasia officinalis, Populus fastigiata.

Closed, *appressi*. Converging very close to the main stem. Genista tinctoria, Populus fastigiata.

Inflected, *introflexi*, *incurvi*. Anastatica Hierunchita, &c.

Open, *patentes*, *patuli*. Forming with the main stem an angle of about 45°. Galium vulgare, Erysimum officinale.

Very open, *patentissimi.* Growing at right angles with the stem. Asparagus officinalis, Arctium major, Pyrus sylvestris.

Divergent, *divergentes.* Very open and verticillate. Abies.

Arm-like, *brachiati.* Very open and crossing each other in pairs. Melampyrum cristatum, Hypericum crispum.

Divaricated, *divaricati.* Very open and growing in many different directions. Rumex pulcher, Teucrium fruticans, Cichorium sylvestre, Ranunculus hederaceus.

Diffused, *diffusi.* Growing without any order. Campanula hederacea, Fumaria officinalis, Geranium dissectum.

Bent outwards, *reflexi, recurvati.* Bent with the convexity upwards. Equisetum sylvaticum, Larix Europæa.

Hanging, *penduli.* Falling below its origin perpendicularly towards the earth. Salix Babylonica, Betula alba, Fraxinus excelsior pendula.

Bent back, *retroflecti, refracti.* Bent back upon themselves. Rumex pulcher, Dulcamara flexuosa.

Thorn-ended, *Spinescens.* Ending in a thorn instead of a bud. Ononis arvensis, Hippophae littoralis.

OUTLINE OF THE RAMIFICATIONS.

Rounded, *Ramificatio subrotunda.* Malus communis.

Flat-topped, *corymbosa, fastigiata* Linnæus. When the ramifications end all at the same height from the ground. Dodartia Orientalis, Pinus Pinea.

Pyramidal, *pyramidalis.* Spread horizontally, and growing smaller as they approach the top. Abies pectinata.

Fastigiate, *fastigiata* Mirbell. All the branches growing close to the stem, and their divisions pointing to the sky. Populus fastigiata, Quercus fastigiata.

LEAF SCAR.

Cicatricula. A mark left on the stem by the jointed leaves, when they fall off.

REMAINS OF LEAVES.

Reliquiæ foliorum. Ramenta. The remains of leaves which remain attached to the stem, after the death of the principal part.

CUSHION.

Pulvinus. A small protuberance, frequently found under the leaf scar.

PROJECTURES.

Projecturæ. Small rising edges, which beginning at the setting on of a leaf, are prolonged upwards and downwards. Leguminosæ.

LEAVES.

Folium, in composition —phyllum. *Expanded organs generally attached to the stem, flat, green, horizontal, formed for imbibing and exhaling different fluids.*

1. *Situation.*

Seed, *Folia seminalia.* Placed immediately below the plumule, formed of the cotyledons which rise above ground. Raphanus sativus.

Root, *radicalia, fundi.* Growing from the top of the root. Alisma major, Taraxacum officinale, Drosera rotundifolia. Pl. 8, fig. 5, e.

Stem, *caulinaria, caulina.* Growing on the stem.

Branch, *ramealia, ramea.* Growing on the branches.

Joint, *articulares.* Growing from the knots or joints of the stem or its branches. Gramineæ, Dianthus.

Inferaxillary, *inferaxillaria.* Growing under the branch. Tilia, Aster Chinensis.

Flower, *floralia.* Growing at the bottom of flowers, and not differing from the other leaves. Periclymenum perfoliatum. These are not to be confounded with *bracteæ.*

2. *Disposition.*

In whirls, *Folia verticillata, stellata.* More than two leaves growing at the same height on the stem. Hippuris, Asperula odorata, Spergula arvensis. Pl. 6, fig. 6.

By threes, *terna.* Forming a whirl of three leaves. Lysimachia vulgaris, Verbera triphylla.

By fours, *quaterna.* Valantia cruciata, Rubia tinctorum.

By fives, *quina.* Myriophyllum verticillatum, Galium Witheringii.

By sixes, *sena.* Galium uliginosum.

By eights, *octona.* Asperula odorata. Pl. 6, fig. 6.

¶ Opposite, *opposita.* Two by two, on opposite sides of the stem. Veronica officinalis, Labiatæ, Gentianeæ. Pl. 6, fig. 8.

Crossed, *decussatæ.* Opposite, the pairs placed near together, and crossing each other. Hypericum quadrangulare, Euphorbia Lathyris.

Alternate, *alterna*. One by one by spaces along the stem. Gramineæ, Acetosa vulgaris, Hesperis matronalis, Rosa, Pyrus.

Spirally, *spiralia*. Alternate in two, three, or more parallel series round the stem. Abies Picea, Lycopodium abietiforme.

Orderless, scattered, *sparsa*. Growing without any regular order. Antirrhinum majus, Hedera communis, Reseda salicifolia.

Two-ranked, *disticha*. With their points of attachment, and their direction on two opposite sides. Ulmus campestris.

¶ Distant, *remota*. Placed at a greater distance from one another than usual.

Crowded, *approximata*, *conferta*. Placed at a less distance from one another than usual. Daphne sempervirens.

Tile-like, *imbricata*. One covering another like the tiles of a house. Saxifraga oppositifolia, Sedum acre, S. rupestre.

Roselike, rosaceous, *roselata*. Alternate, numerous, crowded, and diverging, so as to appear like a double rose. Sempervivum tectorum, Saxifraga pyramidalis.

Crowning, *coronantia*. Roselike, and terminating the stem or its divisions. Palmæ, Filices arboreæ, Carica Papaya.

¶ In bundles, *fasciculata*. Several leaves from the same point. Berberis vulgaris, Larix.

Twin, *geminata*, *bina*. In bundles of two leaves each. Galanthus nivalis, Atropa lethalis, Pinus sylvestris, P. maritima.

In bundles of three, *terna*. Pinus Tæda, P. palustris.

In bundles of five, *quina*. Pinus Strobus, P. Cembro.

3. *Attachment*.

Squatted, *Folia sessilia*. Growing without any footstalk. Mentha sylvestris, Androsæmum officinale, Genista, Telephium.

Decurrent, *decurrentia*. Sessile, and the lower part of the leaf extended along the stem. Symphytum officinale, Carduus lanceolata. Pl. 6, fig. 11.

Embracing, *amplexicaulia*. Embracing the stalk, by an enlargement of their base. Silybum Mariæ, Papaver somniferum. Pl. 6, fig. 7.

Perfoliated, *perfoliata*. Having the disk pierced by the stem. Bupleurum perfoliatum. Pl. 6, fig. 10.

Grown together, *connata, coadnata*. Opposite or whirled leaves sessile and conjoined together by their lower part. Dipsacus fullonum, Saponaria officinalis, Lychnis plumaria, Periclymenum perfoliatum. Pl. 6, fig. 8.

Sheathing, *vaginantia*. The base enveloping the stem like a sheath. Orchis latifolia.

4. *Direction.*

Reversed, *Folia deviata, obliqua, adversa*. When the upper surface of the leaf is not turned from the ground. Lactuca virosa, Allium obliquum.

¶ One-rowed, *unilateralia, secunda*. When they grow all on one side. Convallaria multiflora.

Two-sided, *bilateralia*. When they grow on two opposite sides. Taxus baccata, Abies taxifolia.

¶ Adpressed, *appressa*. When the face of the leaf is applied close to the stem. Buchnera gesnerioides.

Erect, *erecta*. Forming an acute angle with the utmost part of the stem. Typha latifolia, Sagittaria, Pinus sylvestris.

Inflected, *inflexa, incurva*. Bent inwardly, Araucaria excelsa, &c.

Open, *patentia, patula*. Forming an angle of about 45 deg. with the upper part of the stem. Veronica fontinalis, Antirrhinum vulgare.

Very open, *patentissima*. Forming an angle of about 90 deg. with the stem. Glechoma hederacea, Cucubalus bacciferus, Androsæmum vulgare.

Reflected, *reflexa, recurva*. Bent down towards the ground. Bryum pellucidum, Pulicaria uliginosa.

Hanging, *dependentia, demissa*. Growing down perpendicular to the ground. Laureola sempervirens, Convolvulus sepium.

Lying down, *humifusa*. Growing flat on the ground. Bellis perennis.

¶ Floating, *natans*. Lying flat on the water. Potamogeton natans, Nymphæa alba, Nuphar luteum.

Sunken, *submersa, demersa*. Growing in the water. Hottonia palustris.

Emergent, *emersa*. Rising by their footstalk above the water. Sagittaria sagittifolia, Alisma major.

5. Substance.

Herbaceous, *Folia herbacea.* Green and soft. Spinachia oleracea.

Membranous, *membranacea, membranosa.* Soft, supple, very thin. Most plants.

Paper-like, *papyracea.* Thin, dry, may be bent like paper. Dracæna terminalis.

Scarious, *scariosa.* Thin, dry, semitransparent. Potamogiton crispum.

Soft, *mollia.* Althæa officinalis.

Leathery, *coriacea.* Viscum album.

Stiff, *rigida.* Arundo arenaria, Ruscus aculeatus, Pinus sylvestris.

Fleshy, *carnosa.* Thick, and formed of a cellular tissue resembling the pulp of an apple. Lemna, Sempervivum tectorum.

Succulent, *succulenta, succosa.* Thick, and formed of a cellular tissue resembling the pulp of a plum. Sedum reflexum, S. dasyphyllum.

¶ Hollow, *cava.* Having an internal cavity. Cepa esculenta.

Pitchershaped, *utricularia.* Hollow and bellied out like a pitcher. Aldrovanda.

Bilocular, *bilocularia.* Hollow and divided into two parts by a partition. Lobelia Dortmanna.

Many-locular, *loculosa.* Hollow and divided into several parts by partitions. Juncus articulatus, &c.

6. Formation.

Petiolean, *Folia petiolanea.* Formed from footstalks. Mimosa suaveolens, Mimosæ of New Holland.

Ramean, *rameanea.* Formed from branches. Ruscus aculeatus.

7. Production.

Flowerbearing, *Folia florifera.* Producing flowers. Lemna, Xylophylla falcata. Pl. 8, fig. 3.

Rooting, *radicantia.* Producing roots. Asplenium rhizophyllum.

Thornbearing, *spinifera.* Producing thorns. Solanum Pyracantha.

Proliferous, *prolifera.* Producing other leaves. Lemna.

8. *Figure.*

Round, *Folia orbicularia.* Outline resembling a circle. Hydrocotyle vulgaris.

Rounded, *subrotunda, rotundata.* Approaching to a round figure. Lysimachia repens, Mentha rotundifolia, Marrubium vulgare, Corylus sylvestris.

Oblong, *oblonga.* Longer than broad, the ends being rounded. Carlina vulgaris, Inula dysenterica.

Elliptic, *elliptica* Mirbel, *ovalia* Linnæus, once and a half or twice as long as broad, with rounded ends equal to each other. Convallaria majalis, Hieracium repens.

Oval, *ovalia* Mirbel, *ovata* Linnæus. Resembling elliptic leaves, the lower end larger than the other. Hernaria glabra, Vinca major, Alsine media, Androsæmum vulgare.

Reverse oval, *obovalia.* Resembling elliptic leaves, but the upper end larger than the other. Samolus Valerandi, Vitis Idæa punctifolia.

Parabolic, *parabolica.* Oblong, diminishing insensibly to its end, which is obtuse. Amaranthus minor.

Wedgelike, *cunearia.* Enlarging from the base to the end, which is very obtuse, or even truncated. Galarhœus helioscopius.

Fanshaped, *flabelliformia.* Wedgelike, rounded at the top. Salisburia aspleniifolia.

Lanceshaped, *lanceolata.* Longer than broad; diminishing each way from the middle. Daphne florida, Plantago lanceolata, Salix alba.

Spatulashaped, *spathulata.* Drawn in at the bottom, broad and round at the top. Bellis perennis, Silene parviflora, Montia fontana.

Three-cornered, *triangularia.* The face has three straight sides. Atriplex hortensis, Betula alba, Chenopodium urbicum.

Four-cornered, *quadrangularia.* The face has four straight sides. Trapa natans.

Rhombic, *rhombea.* The leaf is four-sided, the opposite ones being parallel. Hibiscus rhombifolius.

Trapezoid, *trapezoidea.* The leaf is four-sided; the opposite sides, or at least two of them, are not parallel. Populus nigra.

Scalelike, *squamiformia.* Partly embracing the stem, short and broad, like a scale. Orobanche major.

¶ Long, *elongata.* Long and narrow; to which belong the five following ones.

Linear, *linearia*. Long, not above one twelfth of an inch broad; with the sides parallel, from bottom to top. Lolium perenne, Taxus baccata, Juncus bufonius, Poa annua.

Ribband, *fascialia*, *graminea*. Like linear leaves, but much larger. Typha latifolia.

Awlshape, *subulata*. Linear at the bottom, but becoming narrower by degrees, and ending in a point. Ulex Europæus, Juniperus communis.

Hairlike, *capillaria*. Very fine, and very flexible, resembling hairs. Asparagus tenuifolius.

Needlelike, *acerosa*, *acicularia*, *setacea*. Long, fine, stiff, and sharp, resembling bristles or needles. Asparagus acutifolius, Juniperus communis.

¶ Dissimilar, *dissimilia*. Of different figures on the same plant. Quercus nigra, Broussenetia papyrifera, Dorstenia arifolia, Boehmeria, Ludia heterophylla.

9. *Form or Substance.*

Cylindrical, *Folia cylindrica, teretia*. Long, and like a rod. Sedum album, Cepa tenuifolia.

Half-cylindrical, *hemicylindrica*, *hemicylindracea*, *semicylindrica*. Long, one face being flat, the other convex. Isoetes, Pinus sylvestris, Typha angustifolia.

Pipelike, *fistulosa*. Cylindrical and hollow. Cepa esculenta, Allium oleraceum.

Compressed, *compressa*. Flattened sideways, so that they are much thicker than broad. Mesembryanthemum dolabriforme.

Very much compressed, *compressissima*. So much flattened sideways, that the sides appear like faces. Iris, many lycopodia.

Swordshape, *ensiformia*, *gladiata*. Rather thick in the middle, sharp-edged, and narrower from their bottom to their point. Iris, and many irideæ.

Sabreshape, *acinaciformia*. Fleshy, and flattened so as to have two edges, one thick and blunt, the other sharp, bent backwards. Mesembryanthemum acinaciforme.

Adzeshape, *dolabriformia*. Fleshy, nearly cylindric at bottom, flat at top with two edges, the one straight and thick, the other circular, broad, and cutting. Mesembryanthemum dolabriforme.

Tongue-shape, *linguiformia*. Fleshy, long, convex below, blunt at top. Sempervivum tectorum.

Gibbous, *gibbosa*. Fleshy and raised up in a hunch upon both surfaces. Crassula Cotyledon, Sedum dasyphyllum, S. Anglicum.

Deltoid, *deltoidea*. Short, narrow at the two ends, having three faces. Mesembryanthemum deltoides.

Three-sided, *triquetra, trigona*. Long, prismatic, having three faces. Butomus umbellatus, Asphodelus luteus.

Four-sided, *tetragona*. Long, prismatic with four faces. Gladiolus tristis.

10. *Bottom.*

Heartshape, *Folia cordiformia, cordata*. Longer than broad, parted at bottom into two lobes. Tamnus communis, Erysimum cordifolium, Tilia Europæa, Nymphæa.

Oblique heartshape, *oblique cordata*. Heartshaped, with the point on one side. Begonia obliqua.

Kidneyshape, *reniformia, renaria*. Rounded and divided into two broad obtuse lobes. Asarum Europæum, Glechoma hederacea.

Halfmoonshape, *semilunata, lunata*. Rounded and divided into two narrow lobes. Hydrocotyle lunata.

Arrowshape, *sagittata*. Bottom lengthened into two sharp-pointed lobes, not or but little spread out. Sagittaria sagittifolia, Fagopyrum esculentum.

Halbert-shape, *hastata*. Bottom prolonged into two lobes spread out wide apart. Arum maculatum, Elatine hastata.

¶ Unequal at bottom, *basi inæqualia*. Bottom lengthened more on one side than the other. Stramonium fœtidum, Ulmus campestris.

Narrowed at bottom, *basi attenuata*. Becoming narrow at bottom. Polygonum aviculare, Hieracium sylvaticum, Chenopodium.

11. *Point.*

Sharp, *Folia acuta*. The two edges forming an acute angle. Epilobium angustifolium, E. hirsutum, Scrophularia nodosa.

Pointed, *acuminata*. The two edges change their direction when they approach each other, and are prolonged beyond the place where they would otherwise meet. Cornus mascula, Corylus sylvestris, Cerasus racemosa.

Cuspidated, *cuspidata*. Long, narrowing by degrees, ending in a sharp hard point resembling awlshape leaves, but much larger. Bromelia Ananas.

Dagger-pointed, *mucronata.* Finishing in a narrow point. Sempervivum tectorum, Amaranthus minor.

Hooked, *uncinata.* Ending in a crooked point or hook. Mesembryanthemum uncinatum.

Obtuse, *obtusa.* Rounded at top. Berberis vulgaris, Corrigiola littoralis.

Bluntly notched, *retusa.* Ending in a blunt notch. Vitis-Idæa punctifolia, Amaranthus lividus.

Notched, nicked, *emarginata.* Ending in a sharp notch. Asarum Europæum, Buxus sempervirens. Pl. 5, fig. 15.

Truncated, *truncata.* Ending abruptly by a transverse line. Aloe retusa.

Bitten, *præmorsa.* Ending as if bitten by the teeth. Caryota urens.

Three-toothed, *tridentata.* Ending in three teeth. Saxifraga tridentata, Genista tridentata.

Five-toothed, *quinquedentata.* Hydrocotyle tridentata, Saxifraga ascendens.

Reverse-heartshape, *obcordata, obcordiformia.* Oblong and parted at the end into two rounded lobes. Leaflets of Oxalis vulgaris.

¶ Circinated, *circinata, apice cirrosa.* Lengthened out at the end into a long point rolled upon itself. Gloriosa superba.

Ascidiated, *ascidiata.* Ending in a hollow vase, *ascidium,* covered with a moveable cover. Nepenthes distillatoria, N. phyllamphora.

12. *Contour.*

Not in the least notched, *Folia integerrima.* The edge being without the least incision whatever. Lysimachia repens, Periclymenum vulgare, Androsæmum vulgare.

Crenate, *crenata.* The edge cut into small rounded parts. Chamædrys palustris, Betonica officinalis, Marrubium vulgare, Glechoma hederacea, Caltha palustris, Populus tremula.

Doubly crenate, *duplicato-crenata.* The crenules of the edge crenulated also. Chrysosplenium alternifolium.

Reversely crenate, *obcrenata.* The edge cut into sharp points, separated by rounded sinuses. Theophrastus Americana.

Serrate, *serrata.* The edge cut into teeth, *serraturæ* sharp-pointed and inclined to the tip of the leaf. Scrophularia aquatica, Vaccinium montanum, Viola odorata,

Evonymus Europæus, Acer Pseudoplatanus, Viburnum Lantana. Pl. 6, fig. 2.

Doubly serrate, *duplicato-serrate*. The serratures of which are also serrate themselves. Ribes rubrum, Ulmus campestris, Corylus Avellana.

Toothed, *dentata*. The edge cut into teeth, which do not incline either to the tip or bottom of the leaf. Tussilago vulgaris, Senecio vulgaris, Erysimum cordifolium, Sinapis alba.

Denticulated, *denticulata*, } When the teeth or serratures
Serrulated, *serrulata*. } are extremely small. Lactuca virosa, Circæa Lutetiana, Inula dysenterica, Senecio Doria.

Gnawed, *erosa*. The edge cut into small unequal parts, as if eaten by an insect. Senecio Doria, Sinapis alba.

Sinuated, *sinuata*. The edge cut into rounded jags, separated by sinuses also rounded. Stramonium fœtidum, Carduus natans, Quercus longæva, Onopordium vulgare. Pl. 4, fig. 8.

Violon-shaped, *panduriformia*. Oblong, with a rounded sinus on each side. Rumex pulcher, Convolvulus panduratus. Pl. 4, fig. 9.

Repand, *sinuolata*, *repanda*. When the sinuses are very shallow. Solanum nigrum, Inula dysenteria, Chrysoplenium oppositifolium, Alnus glutinosus.

Angulous, *angulosa*. The edge having several angular jags, whose number is indeterminable. Stramonium fœtidum, Tussilago vulgare, Chelidonium glaucum, Ficaria verna. Pl. 6, fig. 7.

Five-angled, *quinque-angulata*. Pelargonium peltatum, &c.

Seven-angled, *septem-angulata*. Hibiscus Abelmoschus, &c.

Fringed, *ciliata*. Bordered with straight hairs like eyelashes. Juncus pilosus, Sempervivum tectorum, Eremocallis glomerata. Pl. 4, fig. 9.

13. *Edge*.

Callous, *margine calloso*. Covered with small hard tumours. Saxifraga Cotyledon.

Gristly, *cartilagineo*. Hard, elastic, and of some other colour than green. Vitis Idæa punctifolia. Pl. 4, fig. 6.

Thorny, *spinoso*. Armed with hard prickles. Agave Americana, Carduus lanceolatus, Silybum Mariæ, Carlina vulgaris. Pl. 6, fig. 9.

Rolled up, *revoluto*. Rosmarinus officinalis, Andromeda polifolia, Oxycoccus palustris, Eremocallis glomerata.

14. *Incisions.*

Cut, *Folia incisa* Mirbel, *lobata* De Candolle. With deep incisions on the edges, the size and form being left undetermined.

Jagged, *laciniata*. The incisions irregular.

Feather-cut, *pinnaticisa*. Incisions disposed sideways like the feathers of a quill.

Lyrate, *lyrata*. Feather-cut leaves, the side lobes being much smaller than the end one. Barbarea præcox, Brassica Eruca, Geum urbanum, Raphanistrum vulgare. Pl. 4, fig. 10.

Runcinate, *runcinata*. Feather-cut leaves, the side lobes sharp-pointed and bent towards the stem like a hook. Taraxacum officinale, Sonchus arvensis, S. oleraceus, Prenanthes muralis, Hypochæris radicata. Pl. 4, fig. 11.

Eared, *auriculata*. Having two small lobes at their base. Salvia officinalis.

¶ Lobed, *lobata* Mirbel, *partita* De Candolle. The incisions penetrating more than halfway into the face of the leaf, but not reaching the middle rib so as to separate the parenchyme of the leaf into segments.

Two-lobed, *biloba*, *bilobata*. Bauhinia porrecta.

Three-lobed, *triloba*. Anemone hepatica, Opulus palustris, Ribes alpinum. Pl. 6, fig. 18.

Five-lobed, *quinqueloba*. Veronica hederæfolia, Cymbalaria hederacea, Acer majus, Bryonia officinalis, Ribes rubrum. Pl. 5, fig. 6.

Seven-lobed, *septemloba*. Malva sylvestris.

Nine-lobed, *novemloba*. Alchemilla vulgaris, A. hybrida.

Many-lobed, *multiloba*, &c.

¶ Split, *fissa*. Cut leaves like the lobed, but the incisions are straight.

Two-cut, *bifida*.

Three-cut, *trifida*. Chamædrys officinalis, Mespilus monogyna.

Four-cut, *quadrifida*.

Feather-cut, *pinnatifida* Mirbel, *pinnatipartita* De Candolle. Divided sideways into shallower or deeper lobes, the parenchyme of the leaf not being interrupted by the divisions. Polypodium vulgare, Silybum Mariæ, Coronopus coadunatus. Pl. 4, fig. 13.

Pedately cut, *pedatifida*. Cut into two lobes, and each of these divided into segments on the side next the division. Helleborus niger, H. fœtidus. Pl. 5, fig. 1.

Comblike, *pectinata*. Feather-cut leaves, the lobes being straight and placed parallelly like the teeth of a comb. Lavandula dentata, Achillea pectinata.

¶ Parted, *partita* Mirbel, *secta* De Candolle. Side incisions penetrating to the middle rib of the leaf the parenchyme being interrupted by the division; and the longitudinal incisions beyond two-thirds of the face.

Two-parted, *bipartita*. Divided into two, by a very deep longitudinal incision. Bidens tripartita, Passiflora incarnata.

Five-parted, *quinque-partita*. Ipomea quinque-loba.

Many-parted, *multi-partita*. Consolida regalis, Trollius Europæus.

Palmate, *palmata*. Many-parted leaves, with longitudinal divisions like fingers. Ipomæa quinque-loba, Passiflora cærulea. Pl. 5, fig. 7.

Forked, *dichotoma*. Ceratophyllum demersum.

Feather-parted, *pennatipartita* Mirbel, *pinnatisectus* De Candolle. Cut sideways to the middle rib of the leaf, the parenchyme being interrupted by the divisions. Valeriana Sibirica, Polypodium unitum.

Twice feather-cut, *Bipennaticisa*. The segments of the leaf cut again in a similar manner.

Twice feather-parted, *Bipennatipartita*.

Thrice feather-cut, *Tripennaticisa*. The secondary segments cut again in a similar manner.

15. *Composition.*

Compound. *Folia composita*. Footstalk not divided, but bearing several leaflets.

One leafletted, *unifoliata*. A jointed footstalk bearing only one leaflet. Citrus Aurantium, Rosa simplicifolia, Hedysarum vespertilionis, &c. Analogy, and the joint of the footstalk, causes these to be considered as compound leaves.

Fingered, *digitata*, *palmata* De Candolle. Leaflets terminating the common footstalk, like fingers, instead of being placed on the side.

Two-fingered, *bidigitata*, *digitata-bifoliolata*, *binata* Linnæus. No example known. Zygophyllum Fabago, quoted by Linnæus, is one-paired.

Three fingered, *tridigitata*, *digitata trifoliolata*, *ternata* Linnæus. Menyanthes trifoliata, Oxalis vulgaris. Pl. 5, fig. 9.

Four-fingered, *quadridigitata*, *digitata quadrifoliolata*. Marsilia quadrifolia.

Five-fingered, *quinquedigitata*, *quinata* Linnæus. Potentilla reptans, Rubus fruticosa, Lupinus albus.

Seven-fingered, *septemdigitata*. Æsculus Hippocastanum. Pl. 5, fig. 8.

Nine-fingered, *novemdigitata*. Sterculia fœtida.

Many-fingered, *multidigitata*. Lupinus varius.

Vertebral, *vertebrata* Mirbel, *lomentacea* De Candolle. Leaflets narrowed at distances, and at each narrowing there is a joint. Cussonia spicata, Citrus Aurantium. Pl. 5, fig. 10.

Pinnate, *pinnata*. Leaflets disposed upon two sides of a foostalk.

Three-leafletted, *trifoliolata*. Dolichos, Hedysarum gyrans. Pl. 5, fig. 13.

Paired, *conjugata*, *opposite-pinnata*. Leaflets in pairs.

One-paired, *Unijuga*, *conjugata* Linnæus. One pair only of leaflets. Zygophyllum Fabago, Lathyrus pratensis, L. sylvestris.

Two-paired, *bijuga*. Mimosa nodosa.

Three-paired, *trijuga*. Orobus tuberosus, Vicia lathyroides.

Four-paired, *quadrijuga*. Cassia longisiliqua.

Five-paired, *quinquejuga*. Cassia occidentalis.

Many-paired, *multijuga*. Orobus sylvaticus, Vicia multiflora. Pl. 4, fig. 15.

Alternately disposed, *foliolis alternatim positis*. Leaflets alternate, instead of being opposite and in pairs. Potentilla rupestris.

Abruptly terminated, *abrupte pinnata*, *abrupte terminata*, *pari-pinnata*. Leaflets in pairs, without an odd leaflet, or tendril, at the end of the footstalk. Orobus tuberosus. Pl. 4, fig. 15.

With an odd leaflet, *foliolo impari*, *impari-pinnata*. Pinnate, terminated by an odd leaflet. Asplenium saxatile, Fraxinus excelsior, Cardamine impatiens, Erodium cicutarium, Rosa. Pl. 4, fig. 14.

Terminated by a tendril, *cirrho terminato*. Pinnate, terminated by tendrils instead of an odd leaflet. Fumaria claviculata, Vicia, Pisum sativum, Lathyrus odoratus.

Interruptedly pinnate, *foliolis interruptis, interrupte pinnata.* Leaflets alternately large and small. Solanum tuberosum, Agrimonia vulgaris, Spiræa odorata, Sp. vulgaris, Potentilla anserina. Pl. 4, fig. 14.

Decreasingly pinnate, *foliolis decrescentibus.* Leaflets diminishing in size as they approach the top. Pl. 4, fig. 17.

Decursively pinnate, *foliolis decursivis, decursive pinnata.* Footstalk winged by the prolongation of the bottom of the leaflets. Melianthus major.

¶ Twice compounded, *decomposita.* Second degree of composition; the common footstalk divided into secondary ones.

Fingered-pinnate, *digitato-pinnata, conjugato-pinnata.* Secondary footstalks, arising from the end of the common footstalk.

Two-fingered-pinnate, *bidigitato-pinnata.* Secondary footstalks, two in number. Mimosa purpurea. Pl. 5, fig. 14.

Bigeminate, *bigeminata, biconjugata.* Two secondary footstalks, each of which have one pair of leaves. Mimosa Unguis cati. Pl. 5, fig. 12.

Trigeminate, *tergimina, tergeminata.* Two secondary footstalks, each of which have one pair of leaves, and a third pair of leaves is borne at the parting of the two secondary footstalks. Mimosa tergimina.

Three-fingered pinnate, *tridigitato-pinnata, ternato-pinnata.* The common footstalk has three secondary footstalks from its tip, all of which have leaflets attached on their sides. Hoffmanseggia.

Four-fingered pinnate, *quadridigitato-pinnata.* Mimosa pudica.

Many-fingered pinnate, *multidigitato-pinnata.*

Bipinnate, *bipinnata, duplicato-pinnata.* The secondary footstalks, to the sides of which the leaflets are attached, are placed on the sides not the tip of the main footstalk. Carum officinale, Fumaria officinalis. Pl. 4, fig. 16.

Biternate, *biternata, duplicato-ternate.* The common footstalk is parted into three secondary footstalks, each of which has leaflets. Fumaria bulbosa, Cicuta virosa, Imperatoria major.

Pedate, *pedata.* The common footstalk is parted at top into two diverging branches, bearing leaflets on that side only which is next the fork. Pl. 5, fig. 2.

¶ Thrice compounded, *supra-decomposita.* Third degree

of composition: the primary footstalk divided into secondary footstalks, and those into third-rank footstalks.

Triternate, *triternata*. The primary footstalk divided into three, and each of these into three others; all the nine bearing three leaflets each. Epimedium alpinum, Crithmum maritimum, Smyrnium vulgare, Actæa spicata. Pl. 6, fig. 1.

Tripinnate, *tripinnata*. The common footstalk has on its sides secondary footstalks, and these have also on their sides third-rank footstalks, to the sides of which leaflets are attached. Daucus vulgaris, Phellandrium aquaticum, Thalictrum minus.

The leaflets of compound leaves admit most of the characters of simple leaves.

16. *Expansion.*

Flat, *Folia plana*. Most plants.

Convex, *convexa*. The upper face convex, the lower concave. Ocymum Basilicum majus.

Concave, *concava*. The upper face concave, the lower convex, Drosera rotundifolia, Umbilicus pendulinus, Saxifraga oppositifolia.

Grooved, channelled, *canaliculata*. Long, with a hollow channel throughout their whole length. Lygeum Spartum, Salsola decumbens, Pinus sylvestris.

Keeled, *carinata*. Grooved, with a projection on the under surface the whole length, like the keel of a vessel. Sparganium erectum, Tragopogon pratense, Stellaria holostea, Narcissus biflorus, Ajax fenestralis.

Folded, *plicata*. Having several folds lengthways. Veratrum album, Althæa officinalis, Malva sylvestris.

Puckered, *crispa*. Wrinkled irregularly over the whole surface. Rumex crispus, Mentha crispa, Malva crispa, Hypericum crispum.

Bullate, *bullata*. With the upper surface raised up in bubblelike or conical tubercles, which are hollowed on the under side. Lamium Orvalla, Ocymum Basilicum majus. Pl. 6, fig. 2.

Wrinkled, *rugosa*. With the veins sunk in a little, so as to form a number of wrinkles. Salvia officinalis, Scorodonia solitaria, Marrubium vulgare.

Waved, *undulata*. The edge rising and falling alternately in roundish folds like waves. Persicaria acris, Bistorta major, Jasione montana, Inula pulicaria.

Capped, *cucullata.* Rolled up lengthways like a cornet. Geranium cucullatum, Plantago maxima.

17. *Nervature.*

Ribbed, *Folia nervata, nervosa.* With one or more ribs. Linum perenne, Plantago media, P. lanceolata, Opulus palustris.

One-ribbed, *uninervia, uninervata.* With only one rib. Linum perenne.

Three-ribbed, *trinervia.* With three ribs extended lengthways the leaf, from the base. Saponaria officinalis, Linum usitatissimum. Pl. 5, fig. 16.

Five-ribbed, *quinquenervia.* With five ribs, lengthways the leaf, from the base. Gentiana lutea.

Seven-ribbed, *septem-nervia.* Alisma major.

Nine-ribbed, *novem-nervia.* Melastoma grandiflora.

Many-ribbed, *multinervia.* Cypripedium ferrugineum. Pl. 4, fig. 2.

Triple-ribbed, *triplinervia.* The rib is tripled, throwing out two side-branches a little above the base of the leaves. Melastoma multiflora. Pl. 6, fig. 3.

Quintuple-ribbed, *quintupli-nervia.* With four side branches. Melastoma discolor.

Multiple-ribbed, *multipli-nervia.* With many side branches. Hydrogeton fenestralis. Pl. 5, fig. 15.

¶ Straight-ribbed, *rectinervia, penninervia.* Ribs running in a straight line. Alnus glutinosa, Castanea vesca, Carpinus ulmoides. Pl. 4, fig. 4.

Curve-ribbed, *curvinervia, converginervia.* Ribs describe a curve. Plantago media. Pl. 5, fig. 15; Pl. 4, fig. 2.

Parallel-ribbed, *parallelinervia.* Ribs keep at an equal distance from one another. Cratægus alpina, Alnus glutinosa, Castanea vesca, Carpinus ulmoides.

Diverging-ribbed, *diverginervia.* Ribs spread out as they go from base to tip. Opulus palustris, Alchimilla vulgaris. Pl. 6, fig. 16.

Star-ribbed, *stellinervia, peltinervia.* Ribs run from the middle of the leaf to the circumference. Hydrocotyle vulgaris, Ricinus communis. Pl. 6, fig. 9.

¶ Nervato-veined, *nervato-venosa.* Ribs divided several times, and divided into veins. Tropæolum majus.

Ribless, *innervia.* The ribs being enveloped with parenchyme do not appear externally, and the leaves are considered as being without ribs. Sempervivum tectorum.

¶ Veined, *venosa.* With veins appearing on the surface of the leaf. Androsæmum officinale, Lithospermum officinale, Vitis Idæa punctifolia.

Parallel, *paralleli-venosa.* Musa Sapientum.

Diverging-veined, *divergi-venosa.* Salisburia asplenii-folia.

Reticulate-veined, *reticulato-venosa.* The veins anastomosing in all parts. Stachys Germanica, Uva-ursi buxifolia, Salix aurita, Salix reticulata.

Veinless, *avenia.* Limonium commune, Lithospermum arvense, Arenaria maritima.

18. *Ribs or veins.*

Straight, *nervis vel venis rectis.* Ribs or veins running in a straight line. Betula. Castanea vesca.

Curved, *curvis, convergentibus.* Running in a curve line so as to meet at each end. Plantago media.

Featherlike, *pennatis.* A main rib throwing out branches on each side, which keep parallel to one another. Castanea vesca.

Footlike, *pedatis.* Two main ribs throwing out branches on the side next to each other. Helleborus fœtidus. Pl. 5, fig. 1.

Handlike, *palmatis.* Several main ribs thrown out from the insertion of the leaf, and tending to the circumference. Vitis vinifera.

Shieldlike, *peltatis, stellatis.* Several main ribs thrown out from the insertion of the petiole, in the disk of the leaf. Hydrocotyle vulgaris. Pl. 6, fig. 9.

Netted, *reticulatis.* Ribs and veins anastomosing in all parts. Stachys Germanica, Uva-ursi buxifolia, Salix aurita.

19. *Surface.*

Pierced, *Folia pertusa.* Pierced with large holes irregularly distributed, Menispermum fenestratum.

Fretted, *cancellata.* Having no parenchyme, but only nerves and veins which anastomose and form an open network. Hydrogeton fenestralis. Pl. 5, fig. 15.

Furrowed, *sulcata.* Digitalis ferruginea, Asphodelus luteus.

Streaked, *striata.* Scirpus maritimus.

Even, *lævia.* Convallaria majalis, Nymphæa.

Smooth, *glabra.* Tamnus communis, Androsæmum officinale, Linum usitatissimum, Reseda salicifolia, Acer Pseudo-platanus.

Shining, *lucida, nitida, splendentia.* Tamnus communis, Vitis Idæa punctifolia, Silybum Mariæ, Hedera communis, Prunus Lauro-cerasus, Ficaria ranunculoides.

Dotted, *punctata.* Anagallis Phœnicea, Thymus campestris, Calamintha vulgaris, Hypericum perforatum.

Rough, *scàbra, aspera.* Lithospermum officinale, Jasione montana, Ulmus campestris, Tordylium maximum.

Papulous, *papulosa.* Mesembryanthemum crystallinum.

Papillous, warty, *papillosa, verrucosa.* The surface covered with round firm eminences.

Glutinous, viscous, *glutinosa, viscosa.* Nicotiana glutinosa, Inula viscosa.

20. *Villosity.*

Downy, *Folia pubescentia.* Cynoglossum officinale, Althæa officinalis, Geranium molle, Circæa Lutetiana.

Velvetty, *velutina.* Cotyledon coccinea.

Hairy, *pilosa.* Scorodonia solitaria, Antirrhinum spurium, Daucus vulgaris.

Villous, *villosa.* Valantia cruciata, Epilobium hirsutum.

Silky, *sericea.* Potentilla anserina.

Woolly, *lanata.* Stachys Germanica, Verbascum decurrens.

Cottony, *tomentosa.* Geranium rotundifolium, Onopordum acanthium.

Floccy, *floccosa.* Covered with hair matted together, which come off in small lumps. Verbascum floccosum.

Hispid, *hispida.* Galeopsis nodosa, Pulmonaria officinalis, Borrago officinalis, Lycopsis arvensis.

Spinellose, *spinellosa, echinata.* Helminthia echioides.

21. *Colour.*

Green, *Folia viridia.* As in most leaves.

Coloured, *colorata.* Of another colour than green. Atriplex hortensis rubra.

Glaucous, *glauca.* Brassica oleracea, Stellaria holostea, Arenaria rubra, Sedum dasyphyllum.

Spotted, *maculata.* Orchis mascula, Persicaria maculosa, Pulmonaria officinalis, Hieracium murorum.

Variegated, *variegata.* Amaranthus tricolor, Silybum Mariæ.

Banded, *fasciata.* Phalaris arundinacea picta.

Differently coloured, *discoloria.* The two faces of the leaf are of different colours. Cymbalaria hederacea, Lemna polyrrhiza, Oxalis purpurea.

Zoned, *zonata.* Having coloured bands disposed round a central point. Geranium zonale.

22. *Petiolation.*

Nearly sessile, *subsessilia.* The footstalk of the leaf very short. Epilobium angustifolium, Buxus sempervirens.

Footstalked, *petiolata.* The footstalk very distinct. Pyrus, and most plants. Pl. 6, fig. 9.

Peltate, *peltata.* The leaf attached to the leafstalk by its lower surface, and not by its edge. Tropæolum majus, Hydrocotyle vulgaris. Pl. 6, fig. 9.

23. *Duration.*

Fugacious, *Folia fugacia, caduca.* Falling soon after their first appearance. Cactus Opuntia.

Annual, *decidua, annua.* Falling off in autumn. Pyrus, Æsculus, and most plants which are natives of temperate climates.

Evergreen, *persistentia, sempervirentia, perennia.* Keeping on the plant for more than a year. Daphne sempervirens, Vinca major, V. minor, Uva-ursi buxifolia, Hedera communis, Pinus, Taxus.

24. *Time of appearance.*

Anticipating the flowers, *Folia proteranthea.* Coming out before the flowers appear. Most plants.

Accompanying the flowers, *synanthea.* Coming out at the same time as the flowers.

Succeeding the flowers, *hysteranthea.* Coming out after the flowers have begun to appear. Amygdalus communis, Tussilago vulgaris.

25. *Disposition during sleep.*

Connivent, *somno conniventia.* Simple leaves, opposite, turned up at night, and applied against the stem by the upper face. Atriplex hortensis.

Including, *includentia.* Simple leaves, alternate and applied against the stem. Sida Abutilon.

Surrounding, *circumsepientia.* Rolled inwards, and surrounding the young shoots. Malva Peruviana.

Sheltering, *munientia.* Bowing towards the earth, and forming a shelter above the lower flowers. Impatiens palustris.

Conduplicant, *conduplicantia.* Opposite and brought up so as to be applied to each other by their upper surface.

Cradling, *involventia.* The leaflets of a trifoliolated leaf bend their tops towards each other so as to form a cradle which hides the flowers. Lotus ornithopodioides.

Diverging, *divergentia.* The leaflets of a trifoliolated leaf rise up and come near each other by their base, but further separated by their tips. Melilotus.

Hanging, *dependentia.* The leaflets of a compound leaf fall below their footstalk, and turn their tip to the ground. Oxalis.

Turning, *invertentia.* The leaflets turn half round on their footstalk, so that the upper face of the leaflets is turned where the lower face was, and *vice versa.* Cassia.

Tiling, *imbricantia.* The leaflets, directing their tips towards the top of the leaf, apply themselves to the footstalk, and cover one another. Mimosa pudica.

Bent back, *retrorsa.* The leaflets, directing their tips to the base of the leaf, apply themselves to the footstalk, and cover one another. Galega Caribæa.

LEAFSTALK.

Petiole, Petiolus. *The support of the leaf, connecting it with the stem, or root.*

Simple, *Petiolus simplex.* Without any division or joint. Pyrus.

Compound, *compositus.* Divided into *petiolules* or partial footstalks, which bear the leaflets. Epimedium alpinum. Pl. 6, fig. 1; Pl. 4, fig. 16.

¶ Jointed, *articulatus.* Appearing as if formed of pieces connected together lengthways, by having at its point of attachment, or at the places where it is divided, a swelling, or contraction, or a change of direction, of colour, or of substance. Rodinia Pseudo-acacia, Gleditsia. Pl. 4, fig. 16.

Jointless, *inarticulatus.* Without any joint. Umbelliferæ.

¶ Primary, common, *primarius, communis.* Common to several leaflets, or to several secondary leafstalks. Phaseolus. Pl. 4, fig. 15 and 16; Pl. 6, fig. 1.

Secondary, *secundarius.* First division of the primary leafstalk.

Partial, proper, *partial, proprius.* Peculiar to one leaflet.

¶ Two-forked, *dichotomus.* Divided and subdivided into secondary, &c. leafstalks by being split each time into two.

Three-forked, *trichotomus*. Divided and subdivided into secondary, &c. leafstalks by being split each time into three. Epimedium alpinum. Pl. 6, fig. 1.

¶ Tendril-bearing, *cirriferus*. Bearing tendrils. Smilax horrida. Pl. 8, fig. 2.

Tendril-like, *cirriformis*. Twining like a tendril. Fumaria capreolata, Clematis orientalis. Pl. 6, fig. 14.

Stipuled, *stipuliferus*. Leafstalk, or the primary leafstalk, if compound, furnished at the bottom with stipules. Rosa, Ononis, Mespilus Germanica, Oxalis corniculata.

Stipellated, *stipellati*. Secondary, &c. leafstalks furnished at their base with small stipules.

Gland-bearing, *glanduliferus*. Furnished with glands. Opulus palustris, Prunus.

Margined, winged, *marginatus*, *alatus*. Furnished with expansions on the sides. Pisum Ochrus, Citrus Aurantium.

Sheathing, *vaginans*. Forming a sheath round the stem or scape. Gramineæ, Cyperaceæ, Umbelliferæ. Pl. 4, fig. 1.

Convolute, *convolutus*. Resembling a lamina rolled round the stalk. Gramineæ.

Tubular, *tubulatus*. Forming a tube sheathing the stem. Cyperaceæ.

Inflated, *inflatus*. Hollow and swelling. Trapa natans.

Locular, *loculosus*. Hollow and divided by partitions. Eryngium corniculatum.

Thorned, *spinescens*. Ending in a thorn. Robinia Halodendron.

Beside these characters, it is necessary to attend to the form of the leafstalk, whether cylindrical, clubshape, grooved, compressed, depressed; to its length compared with that of the leaf; and to its length in respect to our common measures.

LIGULE.

Ligula, Collare. *A membranous appendage surmounting the sheathing petiole, at the junction between the sheath and the blade of the leaf.*

Uncut, *Ligula integra*. Poa pratensis.

Cleft, *fissa*. Phleum crinitum.

Torn, *lacera*. Milium lentigerum.

Fringed, *ciliata*. Holcus lanatus.

Truncated, *truncata*. Avena fatua.

Acuminated, *acuminata*. Phalaris paradoxa.

Scalelike, *squamiformis*. Poa arenosa. Pl. 4, fig. 1.

STIPULE.

Stipula. *A leaflike appendage accompanying the proper leaves of the plant.*

1. *Attachment to the plant.*

Cauline, *Stipulæ caulinares.* Attached to the stem rather than to the leaves. Rubiaceæ, Malvaceæ, Lathyrus aphyllus, Alnus glutinosa.

Amplexicaul, *amplexicaules.* Embracing the stem. Cardamine impatiens, Morus, Ficus.

Sheathing, *vaginantes, tubulosæ.* Forming a tube round the stem. Polygoneæ, Alchemilla vulgaris.

Hypocrateriform, *hypocrateriformes.* Forming a tube round the stem, terminating at top by an enlarged flat rim. Polygonum orientale, Platanus.

Inferaxillary, *inferaxillares.* Attached to the stem below the leaves. Berberis, Ribes spinosum.

Intermediate, *intermediæ.* Growing upon the stem between opposite leaves. Coffea. In the rubiaceæ they unite with the leaves in forming a whirl, and appear to be really abortive leaves.

Lateral, *laterales.* Placed on the stem on each side of the base of the leafstalk. Tilia, many leguminosæ, Alnus glutinosa.

Ambiguous, *ambiguæ.* Attached nearly equally to the stem and to the leaves. Polygoneæ, Lotus siliquosus.

¶ Petiolar, *petiolares.* Attached on the leafstalk. Rosa, Mespilus, Ononis.

Marginal, *marginales, adnatæ.* Attached along the sides of the leafstalk. Rosa canina, Piper nigrum, Nymphæa.

Detached, *solutæ.* Attached to the leafstalk by their base only.

Anterior, *anteriores, intrafoliaceæ.* Joined at their base only to the anterior part of the leafstalk, free at their upper part, and so forming a lamina placed between the stem and the leafstalk. Melianthus, Trifolium pratense, Illecebrum verticillatum, Arenaria rubra.

Petiolular, *petiolulares.* Growing at the base of the leaflets of a compound leaf, upon the petiolules. Dolichos. Pl. 5, fig. 13.

2. *Number.*

Single, *Stipulæ solitariæ.* A single stipule to each leaf. Berberis. In ruscus the solitary stipule appears to be an

abortive leaf, and the apparent leaf in reality a metamorphosed branch.

Twin, *geminæ*. Two stipules to each leaf. Almost all plants that have stipules.

3. Connexion.

Distinct, *Stipulæ distinctæ*. Separated from one another throughout their whole length. Almost every plant that has stipules.

Conjoined, connate, *connatæ*. Joined one to the other. Melianthus, Humulus.

4. Nature.

Leaflike, *Stipulæ foliaceæ*. Resembling leaves in colour and consistence. Agrimonia vulgaris, Lathyrus aphyllus, Lotus corniculatus.

Membranaceous, *membranaceæ*. Polygonum amphibium, Herniaria glabra, Corrigiola.

Scarious, *scariosæ*. Thin, dry, semitransparent. Polygonum aviculare, Illecebrum verticillatum, Erodium cicutarium, Potentilla fruticosa.

Spinescent, *spinescentes*. Becoming spines, or thorns. Berberis vulgaris, Ribes spinosum. Pl. 6, fig. 16.

Very small, *minutæ*. Gleditsia triacanthos, Ceratonia Siliqua.

5. Figure.

Rounded, *Stipulæ subrotundæ*. Spiræa odorata.

Oval, *ovales*. Erodium cicutarium, Trifolium pratense, Astragalus glycyphyllos.

Semioval, *semiovales*. Trifolium procumbens, Medicago sativa.

Rather heartshaped, *subcordiformes, subcordatæ*. Geranium inquinans, Lotus tetragonolobus.

Obliquely heartshaped, *oblique-cordatæ*. Pisum sativum.

Half-heartshaped, *semi-cordiformes*. Mespilus Pyracantha.

Kidneyshape, *renariæ, reniformes*. Salix capræa.

Halfmooned, *lunatæ, semi-lunatæ*. Agrimonia vulgaris, Mespilus digyna, Cratægus Crus galli.

Sagittate, *sagittatæ*. Galea officinalis.

Semi-sagittate, *semi-sagittatæ*. Vicia multiflora, Vicia sativa, Lathyrus odoratus, Lathyrus annuus, Lathyrus sylvestris, Orobus vernus.

Lanceolate, *lanceolatæ*. Viola odorata, Hippocrepis comosa.

Linear, *lineares*. Pyrus sylvestris, Pyrus communis, Trifolium arvense.

Awlshape, *subulatæ*. Rubus Idæus, Lathyrus Nissolia, Cytisus Laburnum.

Bristlelike, *setaceæ*. Populus tremula.

Edge and incisions.

Uncut, *Stipulæ integræ*. Polygonum amphibium, Lathyrus aphyllus, Trifolium procumbens.

Toothed, *dentatæ*. Mespilus digyna, Medicago polymorpha, Pisum sativum, Vicia sativa.

Pinnatifid, *pinnatifidæ*. Viola tricolor, Viola grandiflora.

Jagged, *laciniatæ*. Medicago orbicularis, Medicago coronata.

Torn, *laceræ*. Illecebrum verticillatum, Arenaria rubra.

Fringed, *ciliatæ*. Persicaria maculosa, Cardamine impatiens, Trifolium procumbens.

Duration.

Fugacious, *fugaces*. Falling off before the leaves. Tilia, Gleditsia, Ficus Carica.

Deciduous, *caducæ*, *deciduæ*. Falling with the leaves. Most plants.

Remaining, *persistentes*. Remain after the falling of the leaves. Coccoloba pubescens.

The stipules may also have the other characters of the leaves, of which they are in fact a species.

SHEATH.

Vagina. A portion of certain leaves, surrounding the stem, and considered by some botanists as a kind of petiole.

Not cut, *Vagina integra*. Forming a perfect tube. Cyperaceæ.

Slit, *fissa*. Slit down lengthways. Gramineæ.

OCREA.

A membranous sheath, not completely surrounding the stem. Polygoneæ. Some look upon it as a stipule.

Reticulum.

A fibrous sheath at the base of the leaves of the palmæ.

Pericladium.

A hollow part of the base of the leaves which surrounds the branches or peduncles. Umbelliferæ.

Phyllodium.

A greatly expanded petiole of compounded or deeply cut leaves, which assumes the appearance of a real leaf. Sunk leaves of the Alismaceæ, Bupleurum, Batrachium. Some botanists call these, petiolaneous leaves, folia petiolanea.

Support.

Stipes, Peridroma, Rachis. The petiole of a fern, differing from the proper petiole, as bearing the fructification as well as the leaf, or leaflets.

Stipelle.

Stipella. A kind of stipule placed at the base of the leaflets on the common petiole. Phaseolus.

Hypophyllium.

A small sheath, representing the true leaf, having branches at the axillæ similar to leaves. Asparagi.

Vaginelle.

Vaginella. A small membranaceous sheath, embracing the base of bundles of leaves. Pinus, Larix.

Auricle.

Auricula, Amphigaster. A kind of stipule accompanying the leaves of the jungermanniæ.

Vesicles.

Vesicula. A hollow enclosed part, full of air, found on the leaves, Fuci; or in the petiole, Trapa natans.

Goblet.

Ascidium, Vasculum. A kind of cup formed either by the leaf being rolled up and the edges soldered together, Sarracenia; or by the concavity of the leaf itself, Cephalotus; or by a peculiar hollowing out of the extremity of the main rib, Nepenthes.

Cover.

Operculum. A moveable leaflike expansion, which covers the goblet. Sarracenia, Nepenthes.

BUTTONS.

Gemmæ. *The rudiments of young shoots, either naked or surrounded with peculiar coverings.*

Species.

Bulb, *Bulbus.* Thick, placed on the roots. Liliaceæ, Asphodeleæ.

Bulbille, *Bulbillus.* Small, growing on different parts, above the ground, falling off and taking root. Lilium bulbiferum.

Bud, *Gemma.* Growing on the stem or its branches, not falling off, but expanding itself on the place. Most trees in temperate and cold climates.

Eye, *Turio.* Growing on the root, smaller than the bulb. Arum Italicum, Asparagus officinalis, Solanum tuberosum.

Sobole, *Soboles, Bacillus.* Growing in the pericarpium, instead of seeds. Crinum Asiaticum.

Bulb.

Tuberose, *Bulbus tuberosus, solidus.* Uniform in its texture, without concentric coats or scales. Colchicum autumnale, Crocus, Gladiolus, Fumaria bulbosa.

Coated, *tunicatus.* Enveloped with coats. Fumaria bulbosa.

Scaly, *squamosus, imbricatus.* Composed of straight scales or tiles overlaying one another. Lilium, Saxifraga granulata.

Formed of coats, *tunicosus.* Composed entirely of fleshy coats, one surrounding the other. Cepa esculenta.

¶ Aggregated, *compositus, aggregatus.* Composed of several cloves, or *bulbuli,* Allium sativum.

Bulbille and Sobole.

Scaly, *Bulbillus squamosus.* Lilium bulbiferum.

Solid, *tuberosus, solidus.* Crinum Asiaticum.

¶ Axillary, *axillaris.* Growing at the setting on of the leaves. Lilium bulbiferum.

Pericarpial, *pericarpialis.* Growing in the pericarpium in the place of seeds. Crinum Asiaticum.

Floralis, *floralis.* Growing in the place of the flowers. Allium arenarium, A. carinatum.

Bud and Turio.

Naked, *Gemmæ nudæ.* Without any perule. Hippophae littoralis.

Perulated, *perulatæ.* Covered with a perule. Daphne, Syringa, Malus, Ficus, Pinus.

¶ External, *externæ.* Appearing above the surface as soon as it begins to be formed. Daphne, Fraxinus, Pyrus, Pl. 3, fig. 5 and 6.

Internal, *internæ.* Hidden in the stem until it is developed. Dircæa, Robinia Pseudo-acacia.

¶ Simple, *simplices.* Exhibiting the rudiments of only one branch. Fraxinus, Ficus, Alnus, Carpinus.

Composite, *compositæ.* Containing under a single perule, the rudiments of several branches, distinct even before their shooting. Pinus maritima.

¶ Leaf-bearing, *foliiferæ.* Producing a shoot of leaves only. Terminal bud of daphne florida, Populus, Alnus.

Flower-bearing, *floriferæ.* Producing flowers only. Daphne florida, Populus.

Mixed, *mixta, foliifloriferæ.* Producing both leaves and flowers. Syringa. Pl. 3, fig. 5.

¶ Sessile, *sessiles.* Growing upon the stem without any footstalk.

Pedicelled, *pedicellatæ.* Growing upon a small excrescence or support. Alnus communis.

Perule.

Perula, The cover of a bud.

Simple, *Perula integra.* Formed of one piece, and therefore torn when the bud shoots. Persicaria and other polygoneæ.

Scaly, *squamosa.* Daphne, Syringa, Malus.

Petiolane, *petiolanea.* Formed of enlarged and abortive leaf-stalks. Juglans.

Stipulane, *stipulanea.* Formed of stipules. Persicaria, Carpinus, Ficus.

Vernation.

Vernatio, Disposition of the leaves, &c. in the bud.

Revolute, *Vernatio revoluta, revolutiva.* The two edges of the leaves rolled to the outside. Persicaria maculosa, Carduus, Tussilago. Pl. 3, fig. 10 and 20.

Involute, *involute*, *involutiva*. The two edges rolled to the inside. Periclymenum perfoliatum, Viola, Pyrus, Populus. Pl. 3, fig. 9, 18 and 19.

Convolute, *convoluta*, *convolutiva*. The leaves rolled on one only of their edges. Aster, Solidago, Berberis. Pl. 3, fig. 8 and 16.

Bent, *curvativa*. The leaves being very large the rolling up is but slight.

Circinate, *circinata*, *circinalia*. Rolled up on their main rib from the tip to the base. The ferns.

Conduplicate, *conduplicata*, *conduplicativa*. Rolled up lengthways, and placed side by side. Tilia, Rosa, Cerasus, Corylus, Quercus. Pl. 3, fig. 11.

Riding over one another, *equitantia*, *equitativa*, *amplexa*. One leaf folded lengthways receives into its folding another leaf folded in the same manner. Carex, Poa, Hemerocallis, Iris. Pl. 3, fig. 12, 17, and 21.

Mutually riding, *se invicem equitantia*, *semi-amplexa*, *obvoluta*. One leaf folded lengthways receives into the fold only the half of a leaf folded in the same manner. Salvia, Marrubium, Saponaria, Lychnis. Pl. 3, fig. 14.

Opposite, *se invicem spectantia*, *imbricativa*, *imbricata*. Two leaves opposite to each other, and slightly folded lengthways touch one another's edges. Syringa, Ligustrum. Pl. 3, fig. 13.

Folded, *plicata*, *plicativa*. Folded in small folds lengthways like a fan that is shut up. Opulus palustris, Acer, Vitis, Althæa, Cratægus, Alnus glutinosa. Pl. 3, fig. 15.

Inflected, *inflexa*, *replicativa*, *reclinata*. Folded from tip to base. Cyclamen, Aconitum, Anemone Hepatica, Pulsatilla vulgaris.

Applied together, *adpressa*. Faces of the leaves flat, and close to each other. Amaryllis.

GLANDS.

Glandulæ. *Organs of secretion.*

Miliary, *Glandulæ miliares*. Visible by the microscope. Leaves of the grasses, larix, pinus, and almost all the parts of plants which are exposed to the air.

Bladdery, *vesiculares*. Leaves, calices, corollæ, pistils, fruits, cotyledons of most aurantiaceæ.

Globular, *globulares*. Anthers of cardiaca.

Utricular, *utriculares*. Mesembryanthemum crystallinum.

Papillary, *papillares.* Satureja hortensis, Horminum Pyreniacum.

Cupshape, *cyathiformis.* Leafstalks of amygdalus Persica, Cerasus hortensis, Ricinus.

¶ Sessiles, *sessiles.* Mimosa Julibrissin.

Footstalked, *pedicellatæ.* Rosa, Amygdalus, Croton penicillatum.

¶ Stem, *caulinares.* Upon the stem.

Leafstalk, *petiolares.* Opulus palustris.

Leaf, *foliares.* Pinguicula, Drosera, Amygdalus.

Stipular, *stipulares.* Prunus Armeniaca.

Calycine, *calycinæ.* Malpighia.

Corolla, *epipetaleæ.* Delphinium, Berberis.

Staminal, *epistaminales.* Geranium, Dictamnus albus.

HAIRS.

Pili. *Threadlike organs growing upon different parts of a plant, and appearing to be excretory ducts.*

Simple, *Pili simplices.* Without branches, Borrago, Urtica dioica.

Awlshape, *subulati.* Borrago laxiflora.

Headed, *capitati.* Swelled to a head at their top. Dictamnus albus.

Nailshape, *claviformes.* Swelling into a club from the base to the summit. Dictamnus albus.

Jointed, *articulati.* Marked at certain distances by lines in rings, which mark the places of internal partitions. Brunella ovata, Lychnis Chalcedonicus.

Beadlike, *moniliformes.* Jointed, with the joints narrowed. Mirabilis Jalapa.

Pointed, *mucronati.* Having a very small fine point at top. Dictamnus albus.

Two-forked, *bifurcati.* Ending in a fork of two teeth.

Three-forked, *trifurcati.* Ending in three teeth.

Branchy, *ramosi.* Lavendula Spica, Turritis verna.

Starred, *stellati.* Producing simple branches which diverge from a common centre. Althæa officinalis.

Bottle-brush like, *aspergilliformes.* Producing simple branches disposed round a common axis. Marrubium peregrinum.

Two-pointed, *bi-acuminati.* With two points tending opposite ways, and appearing fixed by their middle. Lupulus communis.

Dotted, *punctati.* Brunella ovata, Lychnis Chalcedonica.

Gland-bearing, *glanduliferi.* Rosa maxima, Croton penicillatum. These are identical with footstalked glands.

Perforated, *perforati.* Perforated at top. Urtica dioica.

Based, *basilati.* Raised upon cellular nipples. Lupulus communis, Urtica dioica.

Sessile, squat, *sessiles.* Growing on a flat surface. Malpighia.

¶ Cobweblike, *arachnoides.* Long and crossed like a spider's web. Sempervivum arachnoides.

Flock-like, *floccosi.* Resembling flocks of wool. Verbascum floccosum, Solanum marginatum.

In rows, *seriales.* The stalk-hairs of veronica bibarbata, and of alsine.

Perpendicular, *perpendiculares, patenti.* Growing upright. Geranium Pyreniacum, Hieracium aurantiacum, Crepis fœtida.

Ascending, *ascendentes.* Directed towards the top of the part on which they grow. Cerastites macrocephala.

Descending, turned backwards, *descendentes, reflexi.* Directed towards the bottom of the part on which they grow. Bromus dumetorum, Veronica spicata, Geranium dissectum.

Appressed, *appressi.* Applied close to the part on which they grow, throughout their whole length. Malpighia, Stem hairs of cerastites macrocephala.

ARMS.

Arma. *Woody excrescences, sharp-pointed, attached on various parts of the plant.*

1. *Species.*

Prickles, *Aculei.* Adhering to the bark only of the plant. Rosa, Rubus. Pl. 6. fig. 17.

Spines, thorns, *Spinæ.* Adhering to the internal tissue or wood of the plant. Prunus, Ribes spinosum.

2. *Situation.*

Stem, *Aculei (vel spinæ) caulini.* Growing on the stem. Cactus, Gleditsia ferox, Rosa, Rubus.

Terminal, *terminales.* Growing at the end of the branches. Elæagnus.

Leaf, *foliares.* Growing on the leaves. Solanum Melongena, Silybum Mariæ.

Leafstalk, *petiolares.* Growing on the leafstalks. Chamærops humilis.

Axillary, *axillares.* Growing at the setting on of the leaves. Citrus Medica, Celastrus multiflorus.

Infraxillary, *inferaxillares.* Growing below the setting on of the leaves. Ribes spinosum. Pl. 6, fig. 16.

Superaxillary, *superaxillares.* Growing above the setting on of the leaves. Gleditsia triacanthos. Pl. 4, fig. 16.

Involucral, *involucrales.* Growing on the involucrum. Silybum Mariæ, Centaurea benedicta.

Pericarpial, *pericarpiales.* Growing on the pericarp. Allamanda cathartica.

3. *Origin.*

Stipulean, *Aculei stipuleani.* Growing near the leaves, and appearing to arise from stipules changed. Berberis, Ribes spinosum. Paliurus aculeatus.

Petiolean, *petioleani.* Arising from leafstalks changed into arms. Mimosa verticillata.

Foliolean, *folioleani.* Arising from leaves changed into arms. Chamærops humilis.

Ramean, *rameani.* Arising from branches changed into arms. Prunus spinosi, Elæagnus angustifolia.

4. *Direction.*

Bent upwards, *Aculei inflexi.* Bent and pointing to the upper part of the stem, or branch. Rosa muscosa, Mimosa cineraria.

Bent downwards, *reflexi.* Bent and pointing to the lower part of the stem, or branch. Rubus fruticosus, Rosa rubiginosa, R. canina.

5. *Form.*

Awlshape, *Aculei subulati.* Rosa villosa, Robinia Pseudo-acacia.

Bristlelike, *setacei.* Very slender, Rosa spinosissima.

Conical, *conici.* Zanthoxylum Clava-Herculis.

¶ Straight, *rectilinei, recti.* Rosa spinosissima.

Bent, *curvi.* Rosa muscosa, R. rubiginosa.

6. *Simplicity.*

Simple, *Aculei simplices.* Cactus, Celastrus.

Branched, *ramosi.* Gleditsia horrida.

Two-parted, *bipartiti.*

Three-parted, *tripartiti.* Berberis vulgaris, Ribes sylvestris. Pl. 6, fig. 16.

Many-parted, *multipartiti.* Divided to the base.

Feather-cut, *pinnatifidi.* Disposed on two opposite sides. Carduus. Centaurea.

7. *Number.*

Single, *Aculei solitarii.* Insulated from one another. Euphorbia cucumerina.

Bundled, *fasciculati.* Several coming out from the same point. Cactus cylindricus, C. heptagonus, C. Peruvianus.

TENDRILS.

Cirri, Capreoli, Claviculi. *Threadlike appendages twisting round other substances, by means of which the plants are supported and raised above the ground.*

1. *Situation.*

Axillary, *Cirri axillarii.* Growing in the setting on of the leaves. Passiflora.

Opposite to the leaves, *Oppositifolii.* Vitis vinifera. Pl. 6, fig. 18.

2. *Origin.*

Petiolean, *Cirri petioleani, petiolares.* Resulting from the change of a leafstalk. Fumaria vesicaria, Pisum sativum, Lathyrus latifolius. Pl. 4, fig. 17; Pl. 6, fig. 14.

Leaf, *foliares.* The leaf itself is lengthened, and forms a twining appendage. Methonica superba.

Stipulean, *stipuleani.* Resulting from the change of a stipule. Smilax horrida, S. herbacea. Pl. 8, fig. 2 a.

Leaf-rib, *nervales.* The main rib of the leaves lengthened into twining appendages. Nepenthes.

Pedunculean, *pedunculeani.* Resulting from the change of a flower-stalk. Vitis vinifera, Passiflora. Pl. 6, fig. 18.

Corolla, *corollares.* The petals lengthened into twining appendages. Strophanthes.

3. *Simplicity.*

Simple, *Cirri simplices.* Single undivided threads. Lathyrus Aphaca, Vicia lathyroides, Bryonia officinalis.

Two-cut, *bifidi.* Divided in two branches. Vitis, Ervum tetraspermum. Pl. 6, fig. 18.

Three-cut, *trifidi.* Bignonia Unguis cati.

Many-cut, *multifidi, ramosus.* Vicia multiflora, Cobea scandens. Pl. 4, fig. 17.

Suckers.

Haustoria. Tubercles placed on the stem, fastening it to another plant, and also serving to extract nourishment from the supporting plant. Cuscuta.

Holdfasts.

Fulcra. Tubercles serving to fasten a plant to other bodies, but not organized so as to extract nourishment from the support. Hedera communis, Fucus.

FLOWER.

Flos, in composition, —*anthos*. *A temporary part of a vegetable, in which the fecundation of the ovules take place; and which consists essentially of the sexual organs.*

1. *Situation.*

Root, *Flores radicales.* Proceeding from the crown of the root. Colchicum autumnale, Primula, Bellis, Sarracenia purpurea. Pl. 8, fig. 5, b.

Stem, *caulinares.* Proceeding from the stem. Cuscuta, Vicia sativa.

Branch, *rameales.* Upon the branches. Daphne florida, Cucubalus bacciferus, Pyrus.

Terminal, *terminales.* From the tip of the stem and branches. Pneumonanthe vulgaris, Eremocallis glomerata, Pastinaca.

Leaf, *foliares.* Upon the leaves. Xylophylla montana, Ruscus aculeatus. Pl. 8, fig. 3.

Petiolar, *petiolares.* Upon the footstalks of the leaves. Hibiscus moschatus.

Axillary, *axillares.* From the *axillæ*, or angles made by the leaves with the stem or branches. Polygonatum vulgare, Veronica fontinalis, Chamædrys officinalis, Stramonium fœtidum, Vinca, Spartium scoparium, Vicia sativa.

Extra-axillary, *extra-axillares, laterales.* Growing on the outside of the axillæ. Solanum nigrum, Physalis, Capsicum.

Super-axillary, *superaxillares.* Growing above the axillæ of the leaves. Borragineæ.

Opposite to the leaves, *oppositifolii.* Growing from a point diametrically opposite to the setting on of the leaf. Dulcamara flexuosa, Sium nodiflorum, Tordylium maximum, Phellandrium divaricatum, Batrachium heterophyllum, Erodium cicutarium, Vitis vinifera.

Interposed, *interpositivi, intrafoliacei.* Growing between a pair of opposite leaves, and alternately with them. Stellaria aquatica, Arenaria lateriflora, Asclepias Syriaca.

By the side of the leaves, *laterifolii.* Growing on the sides of leaves which are not opposite. Solanum Bonariense, Atropa physaloides.

2. Attachment.

Peduncled, *Flores pedunculati.* Borne on a peduncle. Cerasus. Pl. 8. fig. 2, 5, 6.

Sessile, *sessiles.* Not having any peduncle. Daphne florida, Salsola decumbens, Erythræa vulgaris, Cactus Opuntia.

3. Disposition.

Alternate, *Flores alterni.* Not placed opposite to each other. Vinca, Passiflora.

Opposite, *oppositi.* Placed opposite to each other. Nummularia repens, Bugula arvensis.

Scattered, *sparsi.* Daphne florida.

One-rowed, *unilaterales.* All placed on one side of the peduncle or support. Digitalis purpurea, Scorodonia solitaria.

Facing one way, *secundi.* When they not only come out on one side only of the support, but also all face one way. Polygonatum vulgare.

Two-rowed, *distichi.* When they grow in two rows opposite to each other. Triticum monococcum, T. Spelta, Zeocriton distichon.

Four-rowed, *tetrastichi.* When they grow in four rows, two rows on one side of the support, and two on the other. Hordeum tetrastichum.

Six-rowed, *hexastichi.* In six rows. Hordeum hexastichum.

Spiral, *spirales.* Disposed in a spiral line round the support. Neottia.

4. Position.

Upright, *Flores erecti.* Directing themselves to the sky. Colchicum, Crocus, Vinca minor, Ericala verna, Thalictrum flavum.

Drooping, nodding, *cernui, nutantes.* Inclining to the earth. Galanthus nivalis, Fritillaria tessellata, Cypripedium ferrugineum, Linnæa borcalis, Viola odorata, Geum rivale.

Hanging down, *penduli.* Hanging perpendicularly towards the ground. Impatiens palustris.

5. Number.

Unique, *Flos unicus.* Only one flower on the plant. Tulipa Gesneriana, Narcissus majalis, Sarracenia purpurea.

Single, *Flores solitarii.* Flowers many, but only one in a place. Stramonium fœtidum, Vinca, Vicia lutea.

By twos, *binati, bini geminati.* Flowers many, growing only two together in a place. Chamædrys palustris.

By threes, *ternati.* Flowers many, growing three together. Chamædrys officinalis, C. laciniata.

Aggregated, *aggregati, congesti.* Collected into a bundle. Polygonum aviculare, Trientalis Europæa, Cuscuta minor, Malva vulgaris, Buxus sempervirens, Ulmus campestris.

Compound, *compositi.* Several flowers borne on the same peduncle in a regular manner. Salix, Gramineæ, Labiatæ, Umbelliferæ, Compositæ.

6. Perfection.

Complete, perfect, *Flores completi, perfecti.* Composed of the organs of both sexes, with two covers, the outer usually green, herblike, the inner of a finer texture, and coloured. Viola, Rosa canina. Pl. 9, fig. 10, 12; Pl. 10, fig. 15.

Incomplete, *incompleti.* Wanting either the organs of one or both sexes, or one or both of the covers. Hyacinthus, Narcissus, Galanthus, Crocus, Lupulus communis, Cannabis sativa, Cucumis sativus.

¶ Regular, *regulares.* When they may be divided from the centre, in three or more parts perfectly alike in all respects. Tulipa. Pl. 9, fig. 9.

Uniform, *uniformes.* When they may be divided by a longitudinal section into two parts perfectly alike. Labiatæ, Cruciformes. Pl. 10, fig. 8.

Irregular, *difformes, irregulares.* When they cannot be mentally divided into two or more parts perfectly alike.

7. Sex.

Hermaphrodite, *Flores hermaphroditi.* Containing the organs of both the sexes. Lilium, Tulipa, Dianthus, and most plants. Pl. 8, fig. 4; Pl. 9, fig. 7, 9, 12; Pl. 10, fig. 1, 2, 5, 13, 15.

Male hermaphrodites, *hermaphroditi masculi.* Apparent hermaphrodite flowers, in which, however, the female organs are too imperfect to perform their proper office. Musa Paradisiaca.

Female hermaphrodites, *hermaphroditi fœminei.* Apparent hermaphrodite flowers, in which, however, the male organs are too imperfect to perform their proper office. Musa Paradisiaca.

Unisexual, *unisexuales.* Some of the flowers containing the organ of the male sex only, and others that of the female. Lupulus communis, Cannabis sativa, Cucumis sativus.

Male, *masculi.* The flowers which contain the male organs only.

Female, *fœminei.* The flowers which contain the female organs only.

Neuter, *neutri, agami.* Flowers in which the sexual organs have disappeared, or become too imperfect to perform their office, in consequence of monstrosity. Opulus palustris, Hortensia, Saccharum officinale.

¶ Fruitful, *fertiles.* Flowers which are succeeded by seeds. This includes the hermaphrodite, female hermaphrodite, and female flowers.

Barren, *steriles.* Flowers which are not succeeded by seeds. This includes the male, male hermaphrodite and neuter flowers.

8. *Stamens.*

One-stamened, *Flores monandri.* Having only one anther in each flower. Hippuris, Salicornia, Valeriana rubra.

Two-stamened, *diandri.* Having two anthers in each flower. Jasminum, Syringa, Olea, Veronica.

Three-stamened, *triandri.* Having three anthers in each flower. Most cyperaceæ, most gramineæ, Iris, Gladiolus.

Four-stamened, *tetrandri.* Plantagineæ, Labiatæ, most rubiaceæ. Pl. 9, fig. 17.

Five-stamened, *pentandri.* Most plants. Pl. 9, fig. 12; pl. 10, fig. 17.

Six-stamened, *hexandri.* Asparagi, Liliaceæ, Asphodeleæ, Narcissus, Cruciferæ.

Seven-stamened, *heptandri.* Trientalis, Æsculus Hippocastanum, Saururus.

Eight-stamened, *octandri.* Fagopyrum esculentum, Ericinæ, Acer, Epilobium.

Nine-stamened, *enneandri.* Butomus, Laurus, Rheum Rhaponticum.

Ten-stamened, *decandri.* Many caryophylleæ, most leguminosæ. Pl. 10, fig. 5.

Dodecandrous, *dodecandri.* Having not less than twelve, nor more than nineteen anthers in each flower. Reseda, Sempervivum, Lythrum spicatum.

Icosandrous, *icosandri.* Having twenty stamens, at least, inserted on the sides of the calyx. Rosaceæ, Pomaceæ.

Polyandrous, *polyandri.* Having twenty stamens, at least, not attached to the sides of the calyx, but at the bottom, under the ovary. Ranunculaceæ, Papaveraceæ. Pl. 10, fig. 15.

¶ Gynandrous, *gynandri.* When the male organs are seated on some part of the female. Orchideæ, Aristolochia.

¶ *Isostemones.* The stamens equal in number to the petals, or lobes of the corolla. Umbelliferæ. Pl. 10, fig. 17.

Anisostemones. The stamens not equal in number to the petals, or lobes of the corolla.

Meiostemones. The stamens fewer than the petals, or lobes of the corolla. Veronica.

Dyplostemones. The stamens twice as many as the petals. Sedum, Caryophylleæ.

Polystemones. The stamens much more numerous than the petals. Ranunculaceæ, Papaveraceæ.

¶ Didynamous, *didynami.* Two of the stamens longer than the others. Labiatæ.

Tetradynamous, *tetradynami.* Four of the stamens longer than the others. Cruciferæ. Pl. 10, fig. 1.

¶ *Symphyostemones.* Stamens soldered together.

Monadelphous, *monadelphi, cylindrobasiostemones.* Filaments soldered together in a tube. Malvaceæ, Jatropha. Pl. 11, fig. 14.

Diadelphous, *diadelphi.* Filaments in two divisions. Fumaria, most leguminosæ, but in the latter one of the filaments remains separate. Pl. 10, fig. 9.

Polyadelphous, *polyadelphi.* Filaments soldered together in three or more bundles. Hypericum. Pl. 10, fig. 15.

Syngenesious, *syngenesi, symphytantheri, cylindrantheri, synantheri.* Anthers soldered together. Compositæ, Viola.

Eleutherantheri. Anthers not soldered together. Most simple flowers.

9. *Pistils.*

One-styled, *Flores monogyni.* When each flower has only one style. Cruciferæ, Lilium.

Two-styled, *digyni*. When each flower has only two styles. Most gramineæ.

Three-styled, *trigyni*. When each flower has only three styles. Dianthus.

Four-styled, *tetragyni*. Potamogeton.

Five-styled, *pentagyni*. Silene.

Six-styled, *hexagyni*. Damasonium.

Seven-styled, *heptagyni*. Septas.

Twelve-styled, *dodecagyni*. Sempervivum.

Many-styled, *polygyni*. Anemone, Alisma.

10. *Multiplication.*

Flores multiplicati. Flowers which have more petals than is natural to them in a wild state.

Double, *duplicati*. The petals are twice, thrice, or four times as many as are natural.

Full, *pleni*. The petals are in very great number, and the stamens are wanting. Ranunculus Asiaticus flore pleno.

Semidouble, *multiplicati* Mirbell. The number of the petals is increased, but part of the stamens still remain. Hyacinthus orientalis flore duplicato, Ranunculus Asiaticus flore duplicato. Rosa.

¶ Petaloid, *petaloidei*. Becoming double by the change of part or all the sexual organs into petals.

Multiplied, *multiplicati* De Candolle. Becoming double by the increase in number of the parts of the corolla, or of the sexual organs changed into petals.

Changed, *permutati*. The abortion of the organs of one or both sexes produces a remarkable change in the form or dimension of the floral covers.

¶ *Calycinarii*. Petals increased by the parts of the calyx being changed into them.

Corollarii. Petals increased in number.

Staminarii. Stamens changed into petals.

Pistillarii. Pistills changed into petals.

Perigoniarii. Perigonium changed into petals, or the calyx changed into petals, and the petals themselves multiplied.

Androgynarii. Sexual organs changed into petals without any alteration in the floral covers.

Corniculate, *corniculati*, *antherogeni*. Anthers changed into hornshape petals. Aquilegia vulgaris corniculata.

Semi-staminarii. Part of the stamens changed into petals.

Hemigoniarii. Part of the organs of both the sexes changed into petals.

Andropetalarii. Petals increased in number, and the stamens changed into petals; the pistil remaining unchanged.

Olopetalarii. The floral coverings changed either entirely or in part, and the stamens and pistils changed into petals or petaloid lobes.

Agynarii. The floral covers and changed stamens form the entire flower, the pistil being wanting.

Anandriarii. The multiplied floral covers and pistils form the entire flower, the stamens being wanting.

¶ *Bractearii.* Changed flowers in which the change has taken place in the bracteæ.

Calycinarii. Flowers changed in respect to the calyx.

Corollarii. Flowers changed in respect to the corolla.

Perigoniarii. Flowers changed in respect to the perigonium, or single floral cover.

¶ *Liguliferi.* Compound flowers whose tubular flowrets are changed into ligulate flowrets. Aster Chinensis flore pleno.

Tubiferi. Compound flowers whose ligulate flowrets are changed into tubular flowrets. Aster Chinensis flore pleno.

¶ Hen and chicken, childing, *proliferi.* When another flower, or a leaf-bud grows out of the centre of a flower. Anemone, Dianthus, Rosa, Bellis.

11. *Envelopes.*

Naked, *Flores nudi.* Having neither calyx nor corolla. Arum maculatum, Fraxinus excelsior.

Perianthei. Having a calyx or corolla, or both. Liliaceæ, Labiatæ, Borragineæ, Cruciferæ, Carophylleæ. Pl. 9, fig. 12.

Petaloid, *petaloidei, corollati, bracteati.* Having a corolla, and consequently a calyx. Primulaceæ, Borragineæ, Caryophylleæ. Pl. 9, fig. 10, 12, 13, 14 and 15.

Apetalous, stamineous, *apetali, staminei.* Not having any corolla. Junceæ, Polygoneæ.

¶ Glumaceous, *glumacei.* Sexual organs enclosed in glumes instead of a calyx or corolla. Gramineæ. Pl. 11, fig. 12 to 19.

Bracteated, *bracteati.* Sexual organs accompanied with bracteæ. Origanum, Convolvulus sepium. Pl. 7, fig. 5 and 6.

Spathaceous, *spathati, spathacei.* Sexual organs accompanied with a spathe. Arum maculatum, Calla, Palmæ, Narcissus. Pl. 7, fig. 12.

Involucrated, *involucrati.* Sexual organs accompanied with an involucrum. Daucus vulgaris, Anemone, Ammi majus. Pl. 7, fig. 1.

Cupped, *cupulati.* Sexual organs accompanied with a cupula. Cupressideæ, Corylideæ.

12. *Time of flowering.*

Springtide, vernal, *Flores vernales, verni.* Flowering in the spring of the year, that is in England, in April and May. Primula veris, Draba verna.

Summer, *estivales.* Flowering in summer, that is, June, July, and August. Most plants.

Autumnal, *autumnales.* Flowering in autumn, that is, September and October. Crocus serotinus, Colchicum autumnale.

Winter, *hyberni, hybernales, hiemales.* Flowering in winter, that is, from the beginning of November to the end of March. Galanthus nivalis, Helleborus niger.

¶ Early, *precoces.* Flowering earlier than those of the same division. Daphne florida, Cornus mascula.

Late, *serotini.* Flowering later than other plants of the same division.

13. *Opening and shutting.*

Meteoric, *Flores meteorici.* Influenced by the weather which accelerates or retards their opening or shutting. Calendula pluvialis, Oxalis versicolor, Sonchus Sibiricus, Anagallis Phœnicia.

Equinoctial, *equinoxiales.* Opening and shutting at certain hours.

Ephemeral, *ephemeri.* Remaining open a few hours only, and then either fall off, or close never more to open again. Convolvulus purpureus, Cistus, Cactus grandiflorus.

Periodical, *periodici.* Opening and shutting for several days successively. Ornithogalum umbellatum, Mesembryanthema.

Day, *diurni.* Open and shut in the course of the day. Anagallis arvensis, Calendula arvensis, Cistus.

Morning, *matutini.* Opening in the morning. Cichorium sylvestre, Leontodon officinale, Nymphæa alba.

Noon, *meridiani.* Not opening until the middle of the day. Mesembryanthemum crystallinum, M. nodiflorum.

Night, *nocturni.* Open late in the evening, and close again in the morning. Mirabilis Jalapa, Geranium triste, Silene noctiflora.

14. *Parts of a flower.*

Sexual organs, *Genitalia, — gonoi.* The parts of the flower appropriated to the reproduction of the species; which include the pistil, stamens, and gymnostemium, and are essential to the very being of a flower.

Pistil, Pointal, *Pistillum, — gyne, — gynos.* The female organ of the plant, seated in the centre of the flower, and most commonly single. Pl. 9, fig. 7, b; pl. 10, fig. 1, a, b; 5, d; 6, e; 9, c; 17, a.

Chive, *Stamen, — stemon.* The male organ of the plant surrounding the pistil, and most commonly five in number. Pl. 9, fig. 7, c; pl. 10, fig. 1, c; 5, c; 6, d; 9, a, b.

Gymnostemium, Columna. An organ found only in some few plants, and formed by a union of the male and female organs, into a single columnar mass. Orchideæ. Pl. 12, fig. 2, 3, 4, 6, and 8.

Floral integuments, Covers of the sexual organs, *Tegumenta, Integumenta floralia, Perigynandra.* The parts of the flower which cover and defend the sexual organs, at least while young; usually two, but one or even both are wanting in some plants: they comprise the corolla, calyx, and perigonium.

Bloom, Blossom, *Corolla, Auleum, Perigynandra interior.* The internal integument when there are two; it is usually of a fine texture and gay colour, does not remain and adhere to the fruit, and is inserted on the receptacle either conjointly with the stamens, or at the same point. Pl. 9, fig. 10, 11, 12; pl. 10, fig. 5, b; 8, b, c, d; 13, 14, 15, 17.

Empalement, Flower-cup, *Calyx, Thalamus, Perianthium, Perigynandra exterior.* The external integument when there are two; it is usually of a coarse texture and green colour; it frequently remains after the flowering is over, and adheres to the fruit, and is always perfectly distinct from the stamens. Pl. 9, fig. 10; 12 a; 13; pl. 10, fig. 8 a; 15.

Perigonium De Candolle, *Perianthium* Mirbel, Brown, *Calyx* Jussieu. The integument of a flower when there is but one, whatever may be its appearance. Convallaria, Lilium, Hyacinthus, Tulipa, Aristolochia, Daphne semper-

virens, Juncus: but Link and others with more propriety restrict the term perigonium to those single integuments of flowers whose appearance renders it doubtful whether they ought to be considered either as a calyx or corolla, or as a union of the two soldered together, the inner surface having the characters of a corolla, and the outer of a calyx: and as to the others, they consider them either as calyces or corollæ, according to circumstances.

Receptacle of the flower, Seat of the flower, *Receptaculum floris, Sedes floris, Torus,—clinium,—thalamum.* That part of the flower on which the sexual organs and corolla are placed, and which is surrounded by the calyx; being an enlargement of the peduncle. Pl. 10, fig. 4 e; 6 f; pl. 11, fig. 12 a.

Nectary, *Nectarium.* Glandular organs which in some flowers are situated on the receptacle, or base of the pistil, and secrete peculiar juices. Menyanthes nymphoides, Scrophularia sambucifolia, Scutellaria alpina. Pl. 11, fig. 5, 4, 12 b.

¶ Flowret, *Flosculus.* A small flower considered as part of a larger compound flower. Umbelliferæ, Compositæ.

15. *Modes of Composition.*

In catkins, amentaceous, *Flores amentacei, in julos collecti.* Disposed on bracteæ on a common axis. Betula, Salix, Pinus, Quercus. Pl. 7, fig. 5 and 6; pl. 10, fig 18.

Spiked, *spicati.* Sessile on a common axis. Triticum, Chenopodium spinacifolium, Plantago. Pl. 7, fig. 3; pl. 8, fig. 1.

Bunched, in bunches, *racemosi.* On single-flowered pedicells upon a common axis. Ribes rubrum, Cerasus racemosa, Borago officinalis. Pl. 8, fig. 6.

In panicles, paniculate, *paniculati, jubati.* On branched pedicells upon a common axis. Avena sativa, Juncus acutus. Pl. 8, fig. 7.

In thyrses, *in thyrsos collecti.* In a close, oval panicle. Syringa vulgaris. Pl. 7, fig. 4.

Irregularly umbelled, corymbose, *corymbosi.* In umbels whose peduncles are irregularly branched. Achillea millefolia, Cardamine pratensis, Iberis umbellata. Pl. 7, fig. 2.

Cymose, *cymosi.* In umbels whose peduncles are branched twice, and irregularly. Sambucus niger, S. humilis, Cornus sanguinea. Pl. 7, fig. 8.

In bundles, fasciculate, *fasciculati.* Grouped together very close, and nearly of the same height. Dianthus barbatus, D. Carthusianum. Pl. 7, fig. 10.

In umbels, umbellated, *umbellati.* On peduncles divided once or twice, the branches of each division being of equal length. Umbelliferæ. Pl. 7, fig. 1 and 9.

In whirls, verticillate, *verticillati.* Attached in a ring round their support. Hippuris vulgaris, Myriophyllum verticillatum, Damasonium Dalechampii, Lapathum aureum, Illecebrum verticillatum. Pl. 8, fig. 4.

In half whirls, *semiverticillati.* In a half ring. Acetosa pratensis, Lapathum acutum.

In heads, *in capitulos collecti.* Collected into a dense round head. Cephalanthus, Jasione montana. Pl. 7, fig. 7.

In glomerules, *in glomerulos collecti.* In small heads, placed along the stem, or uniting together to form a larger head. Blitum capitatum.

In calathides, *compositi, in calathides collecti.* Sessile, in a flat or hemispherical head. Compositæ. Pl. 9, fig. 19.

¶ Flosculous, *flosculosi.* In calathides, the corollæ of all the flowers being tubular. Carduus, Centaurium.

Semiflosculous, *semiflosculosi, pleni.* In calathides, the corollæ of all the flowers being ligulate. Leontodon, Hieracium.

Radiated, *radiati.* In calathides, the corollæ of the centre flowers being tubular, and those of the circumference ligulate. Aster, Helianthus. Or although tubular yet larger. Scabiosa. Also in umbels, cymes or corymbi, the flowers towards the circumference being enlarged. Caucalis, Heracleum, Coriandrum, Iberis.

Flower-bud.

Alabastrum. The flower previous to its full opening.

Disposition of its contents.

Simple, *Æstivatio* Linnæus, *Prefoliatio* Richard, *simplex.* When the integuments of the future flower are all disposed in a uniform manner.

Compound, *composita.* When the calyx is disposed differently from the corolla, or the external divisions of the perigonium from the internal. Dianthus, Tradescantia Virginica.

¶ Valvular, *valvaris, valvata.* When the petals, or other parts, only touch each other at their edges. Compositæ, Araliaceæ.

Induplicativa. When the petals, or other parts, only touch other, and are then folded inwards. Clematides viticellæ.

Twisted, *obvoluta, contorta.* When the petals, &c. are placed obliquely, and cover one another spirally. Dianthus, Apocyniæ.

Alternate, *alternata, alternativa.* When the petals, &c. are placed in two or more rows, so that each petal of the exterior rows cover two halves of the petals of the interior rows opposite to them. Liliaceæ.

Quincuncial, *quincuncialis.* When there are five pieces, two interior, two exterior, and a fifth, one side of which covers the interior pieces, and the other side is covered by the exterior. Calyces of rosæ and dianthi.

Covering, *vexillaris.* When one of the pieces, folded inwardly on the middle rib, encloses all the others which are placed opposite to each other. Leguminosæ.

Snail-like, *cochlearis.* When one of the pieces, being larger than the rest, and bent in a curve, covers all the rest. Aconitum, many labiatæ.

Tiled, *imbricata, imbricativa.* When the pieces are in diverse series, and the exterior series being smaller than the interior, cover them only at the base. Involucra of many of the compositæ, petals of double peionies.

Calycular, *calycularis.* The pieces being in two series, the external covers only the base of the internal. Involucra of the seneciones.

Enveloping, *convolutiva.* When each exterior piece in succession is bent so as to cover all the pieces within it. Petals of cheiranthus, and of many other cruciferæ.

Rumpled, *plicativa.* The pieces are folded, or rumpled up without any apparent order. Corollæ of the papaveraceæ, Cistus, Punica.

These are the principal variations that have been hitherto noticed, but the study of the flower-bud is still in its infancy, although of great use in ascertaining the natural affinity of plants.

SUPPORTERS OF THE FLOWER.

Fulcra floris. *Distinguished from the stem and its branches by not bearing any leaves like those of the other parts of the plant.*

Species.

Scape, *Scapus*. A supporter of the flower arising immediately from the crown of the root, and appearing like a naked stem. Plantago, Hyacinthus, Tulipa, Cepa. Pl. 8, fig. 5 c.

Flower-stalk, Peduncle, *Pedunculus*, — *pes*, — *podos*, — *pus*. A supporter of the flower growing out of the stem, or its divisions. Most plants, all trees. Pl. 8, fig. 2.

Spadix. A supporter accompanied with a spathe. Arum maculatum. Calla Æthiopica. Pl. 7, fig. 12 c.

Anthurus. Long peduncles bearing flowers in bundles.

Receptacle of the flower, Clinanthe. *Receptaculum floris*, *Clinanthium*, *Phoranthium*, *Thalamus*, *Amphantium*. The enlarged tip of a peduncle, supporting several sessile flowers. Compositæ, Dipsaceæ, Dorstenia, Ficus.

Rachis, *Axis*, *Receptaculum filiforme*. An elongation of the supporter bearing several flowers, either sessile, or upon pedicells. Gramineæ. Pl. 8, fig. 1, 6 and 7.

Pedicell, *pedicellus*. The last divisions of a branched support, to which the flowers are attached.

SCAPE.

Simple, *Scapus simplex*. Plantago lanceolata, Taraxacum officinale, Hieracium repens, Statice pulchellum. Pl. 8, fig. 5 c.

Branched, *ramosus*. Limonium vulgare, Alisma major.

¶ Intrafoliaceous, *intrafoliaceus*. Growing among the root-leaves. Hyacinthus, Plantago, Taraxacum officinale, Bellis perennis.

Extrafoliaceous, *extrafoliaceus*. Springing from a different point than the root-leaves. Convallaria majalis, Limodorum purpureum.

¶ Cylindrical, *cylindricus*. Hyacinthus nutans, Tulipa, Butomus umbellatus, Taraxacum officinale, Bellis perennis.

Half-cylindrical, *hemicylindricus*. Flat on one side, convex on the other. Convallaria majalis, Hyacinthus Orientalis, Allium ursinum.

Compressed, *compressus*. Pancratium declinatum, Amaryllis longifolia.

Two-edged, *anceps*. Ajax fenestralis, Narcissus majalis, Leucojum vernum.

Cornered, *angulosus*. Triglochin palustre, Allium ursinum.

Three-sided, *trigonus*. Alisma major, Sagittaria aquatica.

Pipey, *fistulosus*. Cepa esculenta, Taraxacum officinale.

Bellied, *ventricosus*. Swelled out in one part of its length. Cepa esculenta.

¶ Scaly, *squamosus*. Clothed with scales, or rudiments of leaves. Tussilago vulgaris, Petasites vulgaris.

Sheathed, *vaginatus*. Enveloped among leaves, or clothed with a sheathing petiole. Musa Paradisiaca.

¶ One-flowered, *uniflorus*. Ajax fenestralis, Cyclamen. Pl. 8, fig. 5.

Many-flowered, *multiflorus*. Hyacinthus nutans, Butomus umbellatus, Primula elatior.

Peduncle.

Cylindrical, *Pedunculus cylindricus*. Statice pulchellum, Atropa lethalis, Ranunculus acris.

Grooved, *sulcatus*. Ranunculus repens, R. bulbosus.

Threadlike, *filiformis*. Vicia tetrasperma, Fuchsia coccinea.

Hairlike, *capillaris*. Elatine hastata, Erica vagans, Bidens tenella.

Cornered, *angulatus*. Paris quadrifolia, Ranunculus bulbosus, Vicia multiflora.

Three-sided, *trigonus*. Loranthus Stelis.

Four-sided, *tetragonus*. Convolvulus sepium.

Kneed, *geniculatus*. Pelargonium.

Thicker at top, *apice incrassatus*. Convolvulus arvensis, Solanum Melongena, Tragopogon porrifolium, Arnoseris pusilla.

Much thinner at bottom, *apice attenuatus*. Hieracium paniculatum.

¶ Stiff, *rigidus*, *strictus*. Tropæolum majus.

Weak, *debilis*. Ribes oxyacanthoides.

Nodding, *nutans*. The end inclining to the ground. Atropa lethalis, Aquilegia vulgaris, Ribes spinosum.

Hanging down, *pendulus*. Inclining perpendicular to the ground. Cytisus Laburnum, Ribes rubrum.

Turned, backed, *refractus*, *retroflectus*. Changing its direction suddenly, as if bent by force. Stellaria aquatica, Spergula arvensis.

Spiral, heliacal, *spiralis, heliacalis.* Bent round like a bell-spring. Vallisneria spiralis fœminea. Pl. 8, fig. 5 b.

¶ Very long, *longissimus.* When its length is very great, compared with that of the plant. Vallisneria spiralis fœminea, Stellaria holostæa, Geranium sanguineum, Anthemis montana.

Very short, *brevissimus.* Vallisneria spiralis mascula, Stramonium fœtidum, Cuscuta minor, Galium rubrum, Ulmus campestris.

¶ Simple, undivided, *simplex.* Asarum, Vallisneria, Viola canina.

Compound, *compositus.* Umbelliferæ, Cerasus racemosa. Pl. 7, fig. 1, 2, 4, 8; pl. 8, fig. 2, 6 and 7.

Two-forked, *dichotomus.* Divided and subdivided into two partial peduncles, or pedicells. Dianthus caryophylleus, Cucubalus inflatus, Stellaria holostea, Evonymus Europæus.

¶ One-flowered, *uniflorus.* Asarum, Atropa lethalis, Glaucium luteum, Papaver somniferum.

Two-flowered, *biflorus.* With two flowers on each peduncle or pedicell. Geranium phæum, G. pratense.

Three-flowered, *triflorus.* Convolvulus farinosus.

Spadix.

Simple, *Spadix simplex.* Arum, Calla. Pl. 7, fig. 11 and 12.

Branched, *ramosus.* Phœnix dactylifera.

¶ Cylindrical, *cylindricus.* Calla Æthiopica.

Spherical, *sphæricus.* Pothos.

Eggshaped, *ovoideus.* Artocarpus incisa.

Clubshape, *claviformis.* Arum maculatum, A. Italicum.

Compressed, *compressus.* Zostera marina.

Straplike, *linearis.* Zostera marina.

¶ Fleshy, *carnosus.* Arum maculatum, Calla Æthiopica.

Pipey, *fistulosus.* Arum Dracunculus.

¶ Naked at top, *apice nudus.* Arum maculatum, Calla Æthiopica. Pl. 7, fig. 11 and 12.

Clinanthe.

Flat, *Clinanthium planum.* Matricaria vulgaris, Achillea millefolia, A. sylvestris, Dorstenia.

Concave, *concavum.* Ambora.

Convex, *convexum.* Carthamus tinctorius, Erigeron Canadense, Leucanthemum vulgare.

Conical, *conicum*. Bellis perennis, Chamæmelum arvense, Helenium quadridentatum.

¶ Dotted, *punctatum*. Marked, after the fruit has separated, with points, which distinguish the places where the fruit was attached. Taraxacum officinale, Leucanthemum vulgare, Inula grandiflora, Senecio vulgaris, Bellis perennis.

Pitted, *scrobiculatum*. Covered with small holes in which the flowers are lodged. Erigeron Canadense, Antennaria montana, Tussilago vulgaris.

Honeycombed, *favosum*, *alveolatum*. Hollowed out in angular, regular pits, like those of a honeycomb. Crepis tectorum, Barkhausia fœtida, Onopordum vulgare, Dorstenia.

¶ Villous, *villosum*. Andryala, Lagasca mollis.

Hairy, *pilosum*. Absinthium vulgare.

Bristly, *setosum*. Covered with long, straight bracteæ, or setæ. Carduus, Centaurea, Carthamus, Arctium majus, Maruta fœtida.

Chaffy, *paleaceum*. Covered with membranaceous or scarious bracteæ, or chaffs. Bidens tripartita, Anthemis arvenis, A. tinctoria, Achillea sylvestris, A. millefolia, Scabiosa.

Tubercled, *tuberculatum*. Gnaphalium luteo-album, Filago filiformis, F. vulgaris, Conyza squarrosa.

Nippled, papillous, *papillosum*. Inula grandiflora, Pulicaria uliginosa.

Naked, *nudum*. Taraxacum officinale, Hyoseris minima, Artemisia vulgaris.

Axis.

Simple, *Axis simplex*. Plantago, Trasus sylvaticus, T. chlorostachyos.

Branched, *ramosus*. Dactylis glomerata, Alisma major.

¶ Straight, *rectus*. Triglochin palustre, Plantago.

Bent, *flexuosus*. Bromus dumetorum, Dactylis glomerata, Festuca arundinacea, Lolium perenne.

¶ Cylindrical, *cylindricus*. Zea Mays fœminea.

Threadlike, *filiformis*. Carex sylvatica, Phleum pratense.

Hairlike, *capillaris*. Briza media, B. maxima, Apera effusa.

Three-sided, *trigonus*. Alisma major.

Four-sided, *tetragonus*. Salvia pratensis, S. verticillata.

Spearshape, *lanceolatus*. Cycas.

Compressed, *compressus*. Cycas.

Jointed, *articulatus*. Composed of joints, placed end to end. Triticum, Secale, Hordeum, Lolium, Ægilops.

Vertebrated, *vertebratus*. Jointed, and the joints easily separating from one another when the seed is ripe. Ægilops ovata.

Toothed, *dentatus*. Jointed, the joints bearing alternately to the right and left, and leaving between each a shelf on which the flowers are affixed. Triticum, Lolium.

¶ Membranaceous, *membranaceus*. Paspalum membranaceum.

Fleshy, *carnosus*. Bromelia, Ananas, Musa.

COMPOUND FLOWERS.

1. Catkin.

Amentum, Catulus, Julus, Nucamentum. *The flowers borne upon bracteæ which are themselves borne upon an axis.*

Male, *Amentum masculum*. Having only male flowers. Betula, Taxus, Corylus.

Female, *fœmineum*. Betula, Taxus, Corylus.

¶ Simple, *simplex*. The flowerbearing bracteæ are borne immediately on the axis. Populus, Salix. Pl. 7, fig. 5 and 6.

Compound, *compositum*. The flowerbearing bracteæ are borne upon short branches springing from the axis. Juglans regia.

¶ Single, *solitarium*. Betula alba, Cedrus, Larix, Salix, Capræa.

Grouped together, *agglomeratum*. Male flowers of pinus sylvestris, P. maritima.

¶ Globular, sphærical, *globosum*, *sphæricum*, *globulosum*. Platanus, Male flowers of taxus communis.

Eggshape, *ovoideum*, *ovatum*. Female flowers of larix, cedrus, alnus glutinosa, salix capræa.

Cylindrical, *cylindricum*. Male flowers of fagus sylvatica, corylus sylvestris, betula alba, juglans regia.

¶ Slender, *gracile*. Male flowers of fagus pumila, salix alba.

Thick, *crassum*. Male flowers of juglans regia, salix capræa.

Growing narrower, *attenuatum*. Diminishing in thickness towards the end. Castanea vesca.

¶ Compact, *compactum*. Axis covered with flowers quite close to each other. Betula, Platanus, Salix capræa.

Interrupted, *interruptum*. Flowers formed into groups at a distance from each other along the axis. Quercus longæva, Q. Cerris, Q. fastigiata.

¶ Upright, *erectum*. Salix triandra, S. capræa, S. prunifolia, Pinus, Abies, Cedrus.

Drooping, *pendulum*. Betula alba, Populus, Corylus. Pl. 7, fig. 5.

¶ Naked, *nudum*. Flowers attached immediately upon the axis, and not accompanied with bracteæ. Quercus, Castanea vesca.—These are in strict language spikes, but their analogy to other plants obliges botanists to consider them as naked catkins.

Spike.

Spica, — stachys. *The sessile, or nearly sessile, flowers are borne immediately upon an axis.*

Male, *Spica mascula*. Carex pilulifera, Trasus chlorostachyos.

Female, *fœminea*. The same plants.

¶ Simple, *simplex*. The axis having no branches. Plantago, Orobanche, Verbascum decurrens, Heliotropium Indicum, Hyoscyamus niger, Phyteuma spicata.

Branched, compound, *composita, ramosa*. The axis is divided into branches, and these branches entirely covered with sessile or nearly sessile flowers. Chenopodium spinacifolium, Heliotropium Europæum, Sempervivum tectorum.

Spikeletted, *spiculata*. Composed of several small spikes, sessile or nearly so, and pressed close to the axis. Carex divulsa, C. muricata, Lolium perenne. Pl. 8, fig. 1.

Paniculated, *paniculata*. The branches of the axis disposed like a panicle. Verbena officinalis, V. triphylla, Mentha rotundifolia, M. viridis.

Fingerlike, *digitata*. Axis divided to the bottom into several branches, not afterwards divided. Trasus digitatus, Andropogon Ischæmum, Chlora scoparia, Heliotropium Indicum.

¶ Terminal, *terminalis*. Triglochin, Musa, Persicaria amphibia, Bistorta major, Lavandula Tragi, Verbascum decurrens, Hyoscyamus niger, Fumaria lutea, Reseda lutea, Agrimonia vulgaris.

Nearly terminal, *subapicilaris*. When the top of the stem, or scape, without any branches or leaves, is prolonged a little beyond the spike. Acorus aromaticus.

Axillary, *axillaris*. Melilotus officinalis.

Opposite to the leaves, *oppositifolia*. Fumaria officinalis.

¶ Cylindrical, *cylindrica*. Trasus pendulus, Typha, Female flowers of zea mays, Loroglossum hircinum, Bistorta major, Verbascum decurrens.

Eggshape, *ovoidea*. Luzula campestris, Persicaria amphibia, Poterium minus, Trifolium pratense.

Oblong, *oblonga*. Luzula spicata.

Slender, *gracilis*. Listera ovata, Persicaria acris.

Threadlike, *filiformis*. Verbena officinalis, V. triphylla.

Thick, *crassa*. Typha latifolia, Female flowers of zea mays, Orobanche major.

Four-cornered, *quadrangularis*. Melampyrum cristatum.

Compressed, *compressa*. Flattened on the sides. Triticum cristatum.

¶ Loose, open, *laxa*. Platanthera bifolia, Melampyrum arvense, Fumaria officinalis.

Close, compact, *compacta*. The flowers pressed close towards each other, and hiding the axis entirely. Typha latifolia, Trasus pendulus, Orchis maculata, Persicaria amphibia, Bistorta major, Plantago media, Mentha sylvestris, Phyteuma spicata, Trifolium arvense, Melilotus officinalis.

Interrupted, *interrupta*. Flowers placed on the axis in groups, or whirls at some distance from each other. Potamogeton compressum, Damasonium Dalechampii, Lavandula Tragi, Mentha rotundifolia, Lythrum spicatum.

With flowers in whirls, *verticilliflora*. Composed of flowers in whirls. Lythrum spicatum, Mentha rotundifolia, Myriophyllum spicatum.

1. Whirls distant, *verticillis distantibus, v. remotis*. At a good distance from one another. Rumex palustris, Pulegium aromaticum.

2. Whirls slightly distant, *verticillis approximatis, v. remotiusculis*. At a small distance from one another. Mentha viridis.

3. Whirls crowded, *verticillis confertis*. Not sensibly distinct one from another. Rumex maritimus, Mentha sylvestris.

Rolled up, *circinalis*. Rolled up on itself. Heliotropium Europæum, Hyoscyamus niger. Pl. 7, fig. 3.

¶ Leafy, *foliata*. Rhinanthus glaber, Odontites rubra, Hyoscyamus niger, Orontium arvense.

Crowned, *comosa*. Terminated at top by leaves, or large bracteæ. Salvia Horminum, Lavandula Stæchas, Euchomis regia, Bromelia Ananas.

Bracteated, *bracteata.* Orchideæ, Melampyrum cristatum, M. arvense, Lavandula.

Spathed, *spathata.* Vallisneria spiralis fœmina, Arum, Calla.

Involucrated, *involucrata.* Having an involucrum at bottom. Brunella vulgaris.

¶ Upright, *erecta.* Triticum, Triglochin palustre, Persicaria amphibia, Bistorta major, Lavandula Tragi, Reseda lutea.

Hanging, *pendula.* Trasus pendulus, Musa, Hura crepitans.

Besides these distinctions, there are also to be considered, the number of the spikes, their disposition relative to each other, and the insertion of the flowers in each spike.

Spikelets.

Spiculæ, Locustæ. *The small spikes which are the divisions of a compound spike, or panicle.* Pl. 8, fig. 1.

These admit most of the distinctions of the simple spike.

Raceme.

Bunch, Racemus, — botrys. *The flowers are borne upon pedicells, which are generally single-flowered, and these again upon an axis.*

Simple, *Racemus simplex.* The axis having no branches. Actea spicata, Cerasus racemosa. Pl. 8, fig. 6.

Branched, *ramosus.* The axis branched. Fagopyrum esculentum. Borrago officinalis, Acer campestre.

¶ Upright, *erectus.* Acer campestre, Scrofularia nodosa, S. aquatica, S. scorodonifolia.

Hanging, *pendulus.* Berberis vulgaris, Cerasus racemosa, Acer majus. Pl. 8, fig. 6.

¶ Axillary, *axillaris.* Acer majus, Cerasus racemosus, Orobus sylvaticus. Pl. 8, fig, 6.

Opposite to the leaves, *oppositifolius.* Herniaria glabra, Phytolacca.

There must also be noticed, the number of the racemes, and their position in respect to one another.

Panicle.

Panicula, Juba. *The flowers are borne upon peduncles which are variously branched, and seated upon an axis.*

Terminal, *Panicula terminalis.* Bromus, Juncus acutus, Arbutus serratifolia.

Not quite terminal, *subapicularis, lateralis.* Juncus conglomeratus, J. effusus.

Axillary, *axillaris.* Nepeta melissæfolia.

¶ Very much branched, *ramosissima.* A great number of ramifications on the axis. Juncus effusus, J. sylvaticus, Lapathum obtusifolium.

Open, loose, *laxa, effusa.* The secondary, third, &c. peduncles are long, flexible, distant from one another, and inclined at the tip. Bromus arvensis, Avena sativa, A. fatua, Yucca gloriosa. Pl. 8, fig. 7.

Divaricated, *divaricata.* Ramifications separate from one another in every direction. Juncus pilosus, J. sylvaticus, Prenanthes muralis, Gypsophila paniculata.

Spread open, *patula.* Secondary peduncles very open, but not inclined. Prenanthes muralis.

Pyramidal, *pyramidalis.* Becoming smaller, from the base to the top. Yucca, Agave.

Closed, *coarctata.* Ramifications upright and pressed close to the axis. Achnatherium lanceolatum, Hypericum montanum.

Leafy, *foliata.* Ramifications intermingled with leaves. Rumex oppositifolius, Rheum undulatum.

Thyrse.

Thyrsus. *A panicle of flowers very closely compacted, so as to form an oval head.* — Syringa vulgaris, Ligustrum vulgare, Vitis vinifera, Æsculus Hippocastanum.

Corymbe.

Irregular umbell, Corymbus. *The flowers are borne upon secondary peduncles, which, although springing from different points of the main peduncle, are themselves of such different lengths as to raise the flowers nearly on a level.*

Simple, *Corymbus simplex.* The pedicells springing immediately from the main peduncle. Scilla bifolia, Ledum, Cardamine.

Branched, *ramosus*. The main peduncle divided into secondary and third peduncles. Achillæa crithmifolia. Pl. 7, fig. 2.

¶ Close, *coarctatus*. The peduncles are brought close to each other. Achillea millefolia, Sedum triphyllum, Mespilus monogyna, Cratægus terminalis, Pyrus aucuparia.

Loose, *laxus*. The peduncles are far apart from one another. Ornithogalum umbellatum.

¶ Regular, *regularis*. The peduncles are so proportioned that all the flowers are on a regular height, either flat or convex. Achillea millefolia. Pl. 7, fig. 2.

Irregular, *irregularis*. The peduncles are of such different length, that the flowers are of an irregular height. Many of the radiated compositæ.

The loose and irregular corymbi degenerate into panicles. The simple corymbi are only depressed racemes; in many of the cruciferæ the original corymbus lengthens out into a raceme.

Muscarium.

A corymbus of flowers not all on the same level.—Eupatorium.

Cyme.

Cyma. *The main peduncle throws out secondary peduncles from one and the same point, and these separate again into pedicels which spring from different parts of the secondary peduncles, and raise the flowers nearly to the same height.*—Sambucus, Cornus, Erythræa vulgaris, Nerium Oleander.

The variations of it are nearly the same with those of the corymbus.

Bundle.

Fasciculus. *The flowers are upright, grouped parallelly together very close, and are all nearly of the same height.*—Dianthus barbatus, D. Carthusianorum.

The variations are but slight, and easily made out by analogy.

Umbel.

Umbella. *The flowers are borne upon peduncles springing from the same point, the branches being of an equal length.*

Simple, *Umbella simplex*. The peduncle only once divided into rays. Butomus umbellatus. Pl. 7, fig. 9.

Compound, *composita.* The rays of the peduncles are again subdivided. Daucus vulgaris, Pastinaca, Ammi and many other umbelliferæ. Pl. 7, fig. 1.

¶ Naked, *nuda.* Without any involucra at the base of the rays. Solanum nigrum, Pimpinella major.

Involucrated, *involucrata.* With involucra. Daucus vulgaris.

Spathed, *spathata.* Proceeding from a spathe. Allium.

¶ Rounded, *sphærica.* Forming a spherical head of flowers. Allium lætum. Cepa esculenta.

Convex, *convexa.* Forming a rounded surface. Asclepias Syriaca, Daucus hispida.

Flat, *plana.* Forming a flat surface. Sphondylium vulgare, Fœniculum vulgare, Imperatoria major.

Concave, *concava.* Forming a concave surface. Daucus vulgare when in fruit.

¶ Loose, *laxa.* The peduncles at some distance from each other. Athamanta latifolia.

Close, *coarctata, densa.* The peduncles very near each other. Cepa vulgaris, Daucus vulgaris, Hydrocotyle vulgaris.

¶ Few-rayed, *pauciradiata, depauperata.* Having only a few rays. Hydrocotyle vulgaris, Scandix vulgaris.

Proliferous, *prolifera.* If one or more of the peduncles of a simple umbel throw out one or more umbellules. Hydrocotyle vulgaris.

¶ Like-flowered, uniform, *similiflora.* All the flowers alike. Sium verticillatum, Imperatoria major.

Unlike-flowered, radiant, *diversiflora, radians.* The flowers in the centre regular, and those in the circumference irregular, the outside petals being larger than those towards the centre. Tordylium officinale, Coriandrum sativum.

Umbellule.

Umbellula. *A small partial umbel, being part of a large umbel, and formed by the secondary rays.*—Daucus vulgaris, and many other umbelliferæ. Pl. 7, fig. 1.

Bouquet.

Sertulum. *A simple umbel in which the peduncle is only once divided into rays.*—Buttomus umbellatus. Pl. 8, fig. 2.

Head.

Capitulum, Glomus, Glomerulus, Corymbus *Pliny*, Caput florum, — cephalum. *Flowers collected into a ball, and so close together that at a distance they might be taken for a single flower.*

Naked, *Capitulum nudum.* Cephalanthus.

Involucrated, *involucratum.* Gomphrena globosa, Jasione montana. Pl. 7, fig. 7.

Compound Flower.

Calathide, Flos compositus absolute compositus, Anthodium, Cephalanthium, Calathidis. *Sessile flowers, or nearly sessile, upon a clinanthe, surrounded by an involucrum.*

Radiated, *Calathidis radiata.* Having tubular flowrets in the centre, and ligulate flowers at the circumference. Calendula, Helianthus, Bellis, Chrysanthemum.

Flosculous, *flosculosa.* All the flowrets tubular, both in the centre and the circumference, Carduus, Centaurea, Cynara.

Semiflosculous, *semiflosculosa, ligulata.* All the flowrets ligulate. Taraxacum officinale, Lactuca, Sonchus.

¶ Open, *aperta.* The involucrum open, so that all the flowrets are visible. Carlina, Hieracium, Helianthus and the other compositæ, Scabiosa, Dorstenia.

Half open, *semi-aperta.* The involucrum brought partly over the flowers so as to hide them in some degree. Ambora.

Closed, *clausa.* The involucrum brought entirely over the flowers, so as to leave only a very small opening, and thus hiding them entirely. Ficus.

¶ One-flowered, *uniflora.* Echinops. This is considered as a compound flower from the analogy of its other parts to those of compound flowers in general.

Few-flowered, *pauciflora.* Knautia.

Many-flowered, *multiflora.* Helianthus annuus, Euphorbia, Ficus, Dorstenia.

Disk, *Discus.* The flowrets composing the central part of a compound flower.

Rays, *Radii.* The flowrets composing the circumference of a compound flower.

BRACTEÆ.

Leaf-like organs accompanying the flowers.

Floral Leaf.

Bractea. *Leaf-like organs, placed near the flowers, and frequently very slightly differing from the common leaves.*

Rounded, *Bractea subrotunda.* Salix viminalis.

Heartshape, *cordiformis, cordata.* Melampyrum cristatum, Salvia pratensis, S. bicolor, Lactuca virosa.

Spearshape, *lanceolata.* Orchis morio, O. mascula, Orobanche major, Melampyrum arvense, Mentha rotundifolia, Ribes alpina.

Awlshape, *subulata.* Cephalanthera ensifolia.

Bristlelike, *setacea.* Mentha viridis.

Keeled, *carinata.* Gomphrena globosa.

Fringed, *ciliata.* Mentha viridis, Calamintha vulgaris, Brunella vulgaris, Carpinus ulmoides.

Thornlike, *spinescens.* Salsola decumbens.

Palmate, *palmata.* Fumaria bulbosa, Anthyllis vulneraria.

Feather-cut, *pinnatifida.* Melampyrum vulgatum.

Comblike, *pectinata.* Melampyrum cristatum.

¶ Crowning, *coronans.* Forming a crown above the flowers. Fritillaria imperialis, Eucomis regia.

Coloured, *colorata.* Melampyrum cristatum, Salvia nemorosa.

Flower-bearing, *florifera.* Bearing the flowers. Populus, Corylus, Salix, Larix, Cupressus. Pl. 7, fig. 6.

Bracteole.

Bracteolæ. *Smaller floral leaves attached to the divisions of an assemblage of flowers.*

Tuft.

Coma. *An assemblage of floral leaves crowning the tip of some spikes or racemes.*—Salvia Horminum.

Spathe.

Spatha, Calopodium, Valva. *A leaflike organ, which at first envelopes the flowers, but afterwards opens and lets them escape.*

Common, *Spatha communis.* Enclosing several flowers. Arum, Phœnix.

General, *generalis*. Enclosing several flowers, each furnished with its particular spathille.

Particular, *propria*. Enclosed in a larger spathe.

¶ Hoodlike, *cuculliformis, convoluta*. Rolled up like a cornet. Arum. Pl. 7, fig. 12.

One-leafed, *monophylla, univalvis*. Formed only of one piece. Arum, Calla, Phœnix, Chamærops.

Two-leaved, *diphylla, bivalvis*. Formed of two pieces. Allium oleraceum, A. carinatum.

Many-leaved, *polyphylla*. Caryota, Corypha.

¶ Tearing, *ruptilis*. Tearing instead of opening regularly. Ajax fenestralis, Narcissus majalis.

¶ Two-flowered, *biflora*. Narcissus biflorus.

Many-flowered, *multiflora*. Arum, Calla, Narcissus Jonquilla, N. Tazetta.

¶ Blossom-like, *petaloidea*. Soft and coloured like a blossom. Calla Æthiopica.

Leaf-like, herbaceous, *foliacea, herbacea*. Similar in substance and colour to leaves. Gladiolus communis.

Membranaceous, *membranacea*. Allium.

Woody, *lignosa*. Having the consistence and structure of wood. Phœnix dactylifera.

¶ Fugacious, *fugax, caduca*. Falling off soon after it opens. Allium lætum.

Lasting, *persistens*. Continuing until the fruit is ripe. Arum Calla.

Spathilles.

Spathillæ. *Smaller spathes enclosed in a larger one.*

Involucrum.

Involucrum. *A collar of one or more bracteæ placed under the flower.*

Single-flowered, *Involucrum uniflorum*. Placed under only one flower. Anemonanthea nemorosa.

Many-flowered, *multiflorum, commune*. Placed under several flowers. Umbelliferæ, Compositæ, Euphorbia, Ficus.

¶ Umbel-flowered, *umbelliferum*. Surrounding the bottom of an umbel. Androsace, many Umbelliferæ.

General, *generale*. Surrounding the bottom of a compound umbel. Daucus vulgaris, Tordylium officinale.

Particular, *proprium*. Surrounding the bottom of an umbellule. Daucus vulgaris, Ammi majus.

Halved, *dimidiatum*. Only surrounding one half of the peduncle. Petroselinum vulgare.

Turned back, *reflexum*. Turning over from the top to the bottom. Meum Athamanticum.

¶ Calathide-flowered, *calathidiflorum*. Surrounding a clinanthe and resembling a basket. Compositæ.

Globular, *globulosum, globosum*. Achillæa sambucina, Centaurea nigra.

Pitchershape, *urceolatum*. Swollen at bottom, contracted at top, and dilated at its orifice like the calyx of a rose. Crepis biennis, Cirsium palustre.

Reverse topshape, *obturbinatum*. Swollen and rounded at bottom, growing narrow to the top. Carthamus tinctorius.

Bellshape, *campanulatum*. Lampsana lyrata, Chrysocoma Coma aurea.

Hemispherical, *hemisphericum*. Like a bason, Matricaria vulgaris, Anthemis tinctoria.

Egglike, *ovoideum*. Cirsium lanceolatum, Artemisia vulgaris, Tagetes patula.

Reverse conical, *obconicum*. Growing narrower from the bottom to the top. Aster fruticosus, Anthemis clavata.

Cylindrical, *cylindraceum*. Long, and nearly cylindrical. Senecio vulgaris, Achillea millefolia.

Cuplike, *cupulare*. Trimorpha alpina, Achillea sylvestris.

Contracted, *coarctatum*. Becoming much narrower towards its orifice. Centaurea, Carduus.

Open, *patens, planiusculum*. Chamomilla vulgaris, Leucanthemum vulgare.

One-leafed, *monophyllum*. Of one single piece. Tagetes patula.

Many-leaved, *polyphyllum*. Of several pieces. Taraxacum vulgare, Cynara Scolymus, Aster Chinensis.

Simple, *simplex*. Of a single piece, or rather of several pieces disposed in a single row. Urospermum picroides.

Double, calyculate, *calyculatum*. Having an outer row of bracteæ which compose a second involucrum. Crepis biennis.

Tiled, *imbricatum*. Achyrophorus imbricatus, Carduus, Centaurea.

Leaflike, *foliaceum*. The bracteæ that form the involucrum are large, thin, green, like the generality of leaves. Silphium perfoliatum, Carthamus tinctorius.

Scarious, *scariosum*. The bracteæ that form the involucrum are thin, dry, semitransparent. Xeranthemum, Gnaphalium Stæchas, G. dioichum.

Squarrose, *squarrosum*. Composed of stiff bracteæ, close together, the upper part bent back. Cnicus cernuus, Carduus pycnocephalus, Cynara Cardunculus.

Spinous, *spinosum*. The bracteæ are armed with spines. Hippophæstum vulgare, Silybum Mariæ, Onopordum vulgare.

Burlike, fish-hooked, *lappaceum, hamosum*. The bracteæ bend down at the tip like a fish-hook. Arctium.

Involucelle.

Involucellum. *The bracteæ that are attached to umbellules, or the partial divisions of compound flowers that have an involucrum attached to the whole assemblage.*

Calycule.

Calyculus. *An involucrum that is attached to a single flower, and adheres by its base to the true calyx.*

Collar.

Collare. *The involucrum of an umbel when composed of a single row of bracteæ, placed in a whirl.*

Pericline.

Common calyx, Periclinium, Calyx communis, Perigynandra communis, Periphorantium. *The involucrum of a true compound flower, surrounding the clinanthe.* Compositæ.—The same as the involucrum calathidiflorum, mentioned in the preceding page.

Cupule.

Cupula. *An envelope containing the female flowers, never perfectly closed, and remaining attached to the fruit.*

One-flowered, *Cupula uniflora*. Ephedra, Taxus baccata, Pinus, Abies, Larix, Juniperus, Cupressus, Thuya, Corylus.

Two-flowered, *biflora*. Fagus sylvatica.

Three-flowered, *triflora*. Castanea vesca.

¶ Double, *duplex*. The inner woody, one-flowered; the exterior succulent, one or two-flowered, at first only a slight embossment, but grows larger, and assumes the form of a berry. Taxus baccata.

The principal distinctions of the cupule must be taken from its appearance in the fruit.

In general the cupule is very different from the common leaves, but there is a regular series of changes from the cupule of the corylus avellana, which resembles two leaves united together by their edges, through the quercus composed of small scales or bracteæ soldered together by their lower part, and scarcely differing from some involucrums, and the ephedra, in which the sheaths at each joint are evidently opposite leaves soldered together, approaching near the fruit, and composing a series of cupules set one within another; and so on to the cupule of pinus, abies, &c.

Glume.

Bale, Calyx, External glume, Gluma, Calyx, Gluma exterior, Gluma calycinalis, Tegmen, Lepicena. *The external common involucrum of the flowers of the grasses, situated at the bottom of the locusta.*

Cupule-like, *Gluma cupuliformis.* Having the appearance of a cupule. Alopecurus agrestis.

Involucrated, *involucrata.* Surrounded by an involucrum. Cynosurus cristatus.

¶ One-flowered, *uniflora.* Alopecurus agrestis, Oryza sativa, Hordeum, Zeocriton.

Two-flowered, *biflora.* Panicum, Holcus mollis, H. lanatus, Aira caryophyllea.

Three-flowered, *triflora.* Anthoxanthum odoratum.

Many-flowered, *multiflora.* Briza, Cynosurus, Festuca fluitans, Lolium, Avena, Bromus, Secale.

¶ Longer than the glumelle, *glumellâ longior.* Avena fatua, A. sterilis, Achnatherium lanceolatum.

Shorter than the glumelle, *glumellâ brevior.* Bromus arvensis, Secale cereale.

¶ One-spathelled, *unispathellata, unipaleacea.* Formed of only one spathelle. Eleocharis palustris.

Two-spathelled, *bispathellata, bipaleacea.* Formed of two spathelles. Bromus, Triticum, Avena, Secale.

Spathelles.

Valves, Glumes, Chaffs, Spathellæ, Valvulæ, Glumæ, Paleæ. *The pieces that compose the glume.*

Opposite, *Spathellæ oppositæ.* Two pieces, attached opposite each other at the same height. Triticum, Secale, Ægilops. Pl. 12, fig. 12.

Conjointed, *connatæ, coadunatæ, coadnatæ, coalitæ.* Two pieces, attached opposite to each other, and joined by their edges. Alopecurus pratensis, A. agrestis, A. bulbosus.

One-sided, *unilaterales.* Attached side by side, on one side only of the axis, at the same height. Hordeum.

Alternate, *alternæ.* When the two spathelles are attached on opposite sides of the axis, but with one rather higher than the other. Agrostis canina, Phleum, Phalaris, Briza, Melica, Bromus, Avena. Pl. 12, fig. 14.

¶ Similar, *similares.* When both the upper and lower spathelles are alike.

Dissimilar, *dissimilares.* When the spathelles are different. Bromus, Vulpia, Festuca.

¶ Equal, *æquales.* Spathelles of equal length. Triticum, Secale, Hordeum, Phalaris.

Unequal, *inequales.* Arrhenatherum elatius, Panicum, Anthoxanthum odoratum, Lolium temulentum.

¶ Herbaceous, *herbaceæ.* Milium effusum.

Membranaceous, *membranaceæ.* Arrhenatherum elatius, Melica nutans.

Scarious, *scariosæ.* Phalaris Canadensis.

Thick, *crassæ.* Tripsacum hermaphroditum.

Leathery, *coriaceæ.* Bambusa arundinacea.

Ribbed, *nervatæ, nervosæ.* With rising ribs. Paspalum.

Spined, *spinellosæ, echinatæ.* Tragus racemosus.

¶ Rounded, *subrotundæ.* Paspalum.

Ovales, *ovales.* Melica nutans.

Lanceolate, *lanceolatæ.* Dactylis glomerata, Bromus dumetorum, Achnatherium lanceolatum, Avena.

Linear, *lineares.* Oryza sativa.

Awlshape, *subulatæ.* Hordeum, Secale.

Bristlelike, *setaceæ.* Zeocriton secalinum.

Concave, *concavæ.* Hollowed like a spoon. Briza minor, B. major, B. media.

Compressed, *compressæ.* Folded in two, lengthways. Phleum pratense, P. nodosum.

Keeled, *carinatæ.* Dactylis glomerata, Phalaris.

Boatlike, *naviculares.* Concave, and compressed sideways. Triticum æstivum, Phalaris.

Not cut, *integræ.* Without teeth or notches. Briza.

Two-teethed, *bidentatæ.* Triticum hybernum.

Four-teethed, *quadridentatæ.* Pommereulia.

Pointed, *mucronatæ.* Dactylis glomeratæ, Phleum pratense, P. nodosum, Digitaria.

¶ Awned, *aristatæ*. Furnished with awns. Secale.
Unarmed, *muticæ*. Without awn, or point. Briza.

Glumelle.

Stragule, Corolla, Interior glume, Glumella, Stragula, Gluma interior, Gluma corollina, Perigonium. *The internal particular involucrum of the flowers of the grasses, similar in structure to the glumes, but peculiar to each flower, and situated next the sexual organs.*

One-spathelluled, *Glumella unispathellata, unipaleacea.* Composed of one piece only. Agraulis caninus, Alopecurus. Pl. 12, fig. 13, 14, and 19.

Two-spathelluled, *bispathellulata, bipaleacea.* Composed of two pieces. Bromus, Avena, Secale, Briza.

Spathellules.

Valves, Spathelles, Chaffs, Spathellulæ, Valvulæ, Spathellæ, Glumæ, Paleæ. *The pieces that compose the glumelle.*

Similar, *Spathellulæ similares.* When both spathellules are alike.

Dissimilar, *dissimilares.* When the lower spathellule is different from the upper.

¶ Two-rowed, *distichæ.* Briza, Bromus.

Tiled, *imbricatæ.* Briza, Bromus.

Conjoined, *connatæ, coadnutæ, coalitæ.* Alopecurus agrestis, A. pratensis, A. bulbosus.

Rounded, *subrotundæ.* Briza.

Oval, *ovales.* Melica nutans.

Lanceolate, *lanceolatæ.* Bromus, Avena.

Truncated, *truncatæ.* Phleum.

Concave, *concavæ.* Briza, Melica nutans.

Compressed, *compressæ.* Oryza sativa.

Boatlike, *naviculares.* Triticum æstivum, Secale cereale, Phalaris Canariensis.

Uncut, *integræ.* Briza.

¶ Membranaceous, *membranaceæ.* Melica áltissima.

Leatherlike, *coriaceæ.* Olyra pauciflora, Stipa.

Ribbed, *nervatæ, nervosæ.* Secale cereale. Pl. 12, fig. 12.

Two-teethed, *bidentatæ.* Agraulis caninus, Bromus arvensis, Achnatherium lanceolatum, Aira caryophyllea.

Four-teethed, *quadridentatæ.* Achnatherium lanceolatum.

¶ Pointed, *mucronatæ.* Uniola.

Awned, *aristatæ*. Alopecurus, Apera effusa, Agraulus caninus, Holcus, Avena, Hordeum, Triticum, Secale, Bromus. Pl. 12, fig. 14 and 17.

Awns.

Aristæ, — athera. *A stiff hair, or threadlike point, inserted on the spathelles and spathellules, and not appearing to be the continuation of a rib or nerve, but arising suddenly from the back or end.*

Straight, *Aristæ rectilineæ, rectæ.*

Kneed, *geniculatæ*. Bent in the middle, Avena.

Twisted, *torsæ*. Avena, Agraulus caninus. Pl. 12, fig. 14 and 17.

Jointed, *articulatæ*. Stipa.

Featherlike, *plumosæ*. Stipa pennata.

¶ From the tip, *apiculares*. From the tip of the glumes.

Below the tip, *subapiculares*. Pl. 12, fig. 16.

Dorsal, *dorsales*. From the back of the glumes. Avena, Agraulus caninus. Pl. 12, fig. 17.

From the base, *basilares.*

¶ Persistent, *persistentes*. Avena.

Falling off, *caducæ*. Stipa.

Bristles.

Setæ, — chæta. *A stiff hairlike point, inserted on the spathelles and spathellules, being a visible continuation and elongation of a rib or nerve.* Pl. 12, fig. 12.

The bristle admits the same distinction as the awn, and has been generally confounded under the same name.

LODICULE.

Nectary, Glumelle, Corolla, Lodicula, Glumellula, Glumella. *An involucrum formed of very small petaloid scales attached to the receptacle of the gramineæ with the sexual organs, and surrounded by the glumelle.*

One-paleolated, *Lodicula unipaleolata.* Composed of a single paleole.

Two-paleolated, *bipaleolata*. Of two paleoles. Avena, Bromus, Triticum, Secale. Pl. 12, fig. 15.

Three-paleolated, *tripaleolata*. Of three paleoles. Rambusia arundinacea.

Paleoles.

Scales, Paleolæ, Squamæ. *The pieces that compose the lodicule.*

Eggshape, *Paleolæ ovatæ.* Secale cereale, Triticum æstivum. Pl. 12, fig. 15.

Lanceolate, *lanceolatæ.* Bambusa arundinaceæ.

Awlshape, *subulatæ.* Arrhenatherum elatius, Milium effusum.

Truncated, *truncatæ.* Melica nutans.

Bunched, *gibbosæ.* Brachypodium pinnatum.

¶ Velvety, *villosæ.* Elymus giganteus.

Fringed, *ciliatæ.* Secale cereale, Triticum æstivum.

The bristles that accompany the ovary of some cyperaceæ, Pl. 12, fig. 13, and the inflated nectary of others, Pl. 12, fig. 18, which afterwards covers the akenium, are considered by some botanists as lodicules.

CALYX.

Empalement, Flower-cup, Perianthium, Perigynandra exterior, Thalamus. *The outer cover of the flower, defending the blossom if there be any, and the sexual organs; or a coarse, green, single cover.*

1. *Composition.*

Gamo-sepaled, one-leafed, *Calyx monosepalus, gamosepalus, monophyllus.* Formed of one piece, however deeply it may be divided. Labiatæ, Hyoscyamus, Dianthus, Cucubalus, Leguminosæ. Pl. 9, fig. 12, 13, 14, and 15; pl. 10, fig. 7, 8, 11, and 14.

Two-sepaled, two-leaved, *disepalus, diphyllus.* Composed of two pieces. Papaver, Fumaria, Impatiens palustris.

Three-sepaled, three-leaved, *trisepalus, triphyllus.* Tradescantia, Ficaria.

Four-sepaled, four-leaved, *tetrasepalus, tetraphyllus.* Cruciferæ, Epimedium, Sagina.

Five-sepaled, five-leaved, *pentasepalus, pentaphyllus.*

Six-sepaled, six-leaved, *hexasepalus, hexaphyllus.* Berberis vulgaris.

Many-sepaled, many-leaved, *polysepalus, polyphyllus.*

All calyces that are adherent to the ovary, or which support the corolla or stamens, or which accompany a ga-

mopetalous corolla, are gamosepalous, and of course persistent. It is very rare that a calyx which is not gamosepalous is persistent.

2. *Regularity.*

Regular, *Calyx regularis.* When all its parts as taken from the centre of the flower are perfectly alike. Cucubalus, Adonis, Androsæmum, Tormentilla.

Irregular, *irregularis.* When the several parts are not all alike. Salvia, Delphinium, Tropæolum.

3. *Form.*

Tubular, *Calyx tubulatus.* In form of a tube.

Pipelike, *tubulosus.* The tube very long, and narrow at top. Primula, Stramonium, Nepeta longiflora, Silene, Dianthus.

Conical, *conicus.* In form of a cone. Stachys coccinea, and many labiatæ.

Topshape, pearshape, *turbinatus.* Conical, but slightly contracted towards the orifice. Spiræa trifoliata.

Swollen, *inflatus.* Membranous and dilated like a bladder. Rhinanthus glaber, Cucubalus inflatus, Anthyllis leguminosa.

Pitchershape, *urceolatus, ventricosus.* Swollen in the middle, contracted towards the top, the limb spread out. Hyoscyamus niger, Rosa.

Cupshape, *cupularis.* Very short and quite open. Citrus Medica, Verbena glomerata.

Cylindrical, *cylindricus.* Forming a pipe which is nearly equal throughout its whole length. Dianthus.

Clubshape, *claviformis, clavatus.* Tubular, long, and swollen at top. Silene latifolia.

Bellshape, *campanulatus.* Hollow, and becoming more and more open from its bottom to the top. Statice pulchella, Melittis grandiflora, Cucubalus bacciferus.

Compressed, *compressus.* Large, and flat as if squeezed sideways. Rhinanthus glaber, Pedicularia palustris

Prismatic, *prismaticus.* Having longitudinal angles and flat surfaces. Stramonium fœtidum, Pulmonaria officinalis.

Angular, *angulosus.* Having longitudinal angles. Pedicularia sylvatica, Silene latifolia.

Ribbed, *costatus.* With raised ribs. Pedicularia palustris, Thymus campestris, Lychnis segetum, Silene conica, S. nutans, S. quinquevulnera.

Furrowed, *sulcatus*. Calamintha vulgaris.

Spurred, *calcaratus*. Having a hollow elongation, resembling the spur of a cock. Delphinium, Tropæolum.

Two-lipped, *bilabiatus*. With two principal divisions, one above, the other below; not quite equal, and open so as to resemble two lips. Salvia, and many other labiatæ.

Calyculate, *calyculatus*. Having a calycule, or involucrum resembling a second calyx. Calluna sagittæfolia, Linnæa borealis.

4. Limb and edge.

Not cut, *Calyx integer*. Having neither teeth nor lobes, used indefinitely in opposition to toothed or lobed.

Truncated, *truncatus*. Appearing as if cut off across. Fissilia.

Torn, *erosus*. Edge uneven, as if bitten by some insect. Chenopodium spinacifolium.

Crenated, *crenatus*. Guarea trichilioides.

Toothed, *dentatus*. With slight angular cuts.

Fine toothed, *denticulatus*. With very slight angular cuts.

Three-toothed, *tridentatus*. Triphasia, Cneorum.

Four-toothed, *quadridentatus*. Ligustrum, Cornus.

Five-toothed, *quinquedentatus*. Stachys and many other labiatæ. Coriandrum, Dianthus, Cucubalus, Silene.

Divided, *incisus, divisus*. Split, lobed, or parted, used in opposition to not cut.

¶ Cut, *fissus*. Divided, the incisions reaching to the middle of the length of the calyx; the divisions being narrow.

Two-cut, *bifidus*. Divided into two divisions. Utricularis, Pedicularia palustris, Verbena nodiflora.

Three-cut, *trifidus*.

Four-cut, *quadrifidus*. Rhinanthus, Reseda salicifolia.

Five-cut, *quinquefidus*. Hyoscyamus niger, Cucubalus bacciferus, Rosa.

Six-cut, *sexfidus*.

Eight-cut, *octofidus*. Tormentilla.

Ten-cut, *decemfidus*. Potentilla, Fragaria.

Twelve-cut, *duodecemfidus*. Peplis.

¶ Lobed, *lobatus*. Divided into cuts, but the divisions are broad.

Two-lobed, *bilobatus*.

Three-lobed, *trilobatus*, &c.

¶ Parted, *partitus*. Divided, and the incisions reaching nearly to the bottom.

Two-parted, *bipartitus*. Orobanche.

Three-parted, *tripartitus*. Alisma major, Sagittaria aquatica.

Four-parted, *quadripartitus*. Veronica officinalis, Erythalia campestris.

Five-parted, *quinquepartitus*. Digitalis speciosa, Orontium majus, Borrago officinalis.

Many-parted, *pluripartitus*. The number of divisions not being required to be exactly expressed, or being really indefinite.

5. *Length, in relation to the corolla.*

Long, *Calyx corollâ longior*. Longer than the corolla. Lychnis segetum, Stellaria media, Arenaria rubra, A. tenuifolia.

Equal, *corollâ equalis*. Stellaria vulgata.

Short, *corollâ brevior*. Shorter than the corolla, Dianthus, Stellaria arvensis.

6. *Attachment.*

Adherent, *Calyx adherens*. United throughout its whole length to the ovary. Compositæ, Myrtus, Agrimonia, Pyrus.

Superior, *superus*. United to the ovary, but with the limb free. Punica granatum.

Semi-adherent, *semi-adherens, semi-inferus*. The calyx adhering to the ovary only part of its length. Limosella aquatica.

Not adherent, free, *inadherens, liber, inferus*. The calyx totally detached from the ovary. Labiatæ, Caryophylleæ, Fragaria, Rubus, Rosa.

7. *Colour.*

Coloured, *Calyx coloratus*. Of some other colour than green. Tropæolum, Andromeda polifolia, Fuchsia, Punica Granatum.

Blossomlike, *petaloideus*. Aquilegia.

Doubtful, *ambiguus*. Appearing like a calyx externally, and like a corolla internally. Grewia.

8. *Duration.*

Fugacious, *Calyx fugax, caducus*. Falling off as soon as the flower opens. Papaver, Epimedium.

Deciduous, *deciduus*. Falling off after the fecundation of the ovules, at the same time with the corolla. Actæa spicata, Chelidonium majus, Cruciferæ, Berberis.

Persisting, *persistens*. Remaining after the flowering is over. Anagallis, Rhinanthus, Labiatæ, Hyoscyamus niger, Borragineæ, Convolvulus, Androsæmum officinale, Cucubalus bacciferus, Saxifraga, Rubus.

Withering, *marcescens*. Persisting, but withering and becoming dry. Anagallis, Rhinanthus, Rubus.

Enlarging, *acrescens*. Persisting, and continuing to grow and increase in size along with the fruit. Physalis Alkekengi, Fissilia disparilis, Heisteria coccinea.

Induvial, *induvialis*. Persisting and enclosing the fruit. Physalis, Rosa.

Sepales.

Leaves, Sepala, Phylli, Folioli calycini. The distinct segments into which the calyx is divided.

Upright, *Sepala erecta*. Parallel to the axis of the flower. Primula, Nicotiana, Erythræa vulgaris, Cheiranthus, Silene, Dianthus.

Contiguous, *contigua, conniventia lateraliter, clausa*. Placed side by side, without any considerable intervals. Raphanus, Cheiranthus.

Imbricated, *imbricata*. Covering one another by their edges. Convolvulus, Thea.

Connivent, *conniventia*. Converging together at top. Trollius Europæus.

Diverging, spreading, *patentia, patula, divergentia*. Separating from one another, and placed nearly parallel to the base of the flower. Borrago officinalis, Hydrophyllum, Reseda, Adonis, Nigella, Ranunculus acris, R. repens, Lychnis segetum, Saxifraga aizoides.

Turned back, reflected, *reflexa, deflecta*. Turned over outwards, so as to show their internal surface. Ranunculus bulbosus, R. flammea, Androsæmum officinale, Œnothera biennis, Cerasus hortensis.

Rolled over, *revoluta*. Turned over, and rolled up. Proteaceæ.

Rolled inwardly, *involuta*. Valeriana rubra.

¶ Equal, *æqualia*. All of one size. Primula, Borrago officinalis, Adonis, Ranunculus, Nigella.

Unequal, *inequalia*. Of different sizes, Salvia, Erythralia campestris, Androsæmum officinale, Tormentilla, Potentilla.

The lobes, segments, and teeth, admit of similar distinctions to the sepales.

COROLLA.

Blossom, Bloom, Auleum, Perigynandra interior. *The internal integument of the sexual organs, when there are two; or a fine and coloured single integument of the same texture as the stamens, and either inserted along with them on the receptacle, or bearing them itself.*

1. *Insertion.*

Hypogynous, *Corolla hypogyna.* Growing out from below the ovary, whether the ovary be sessile. Cheiranthus, Cruciferæ; or seated on a gynophore, Dianthus, Silene, Cucubalus, and other caryophylleæ, Cleome. Pl. 10, fig. 4, 6.

Perigynous, *perigyna.* Growing out from the internal surface of the calyx. Campanulaceæ, Salicaria, Rosaceæ.

Epigynous, *epigyna.* Growing from the top of the ovary. Compositæ, Caprifoliaceæ, Rubiaceæ, Umbelliferæ.

2. *Structure.*

Polypetalous, *Corolla polypetala.* Composed of several separate pieces, or petals. Umbelliferæ, Cruciferæ, Caryophylleæ, Saxifrageæ, Rosaceæ, Pomaceæ, Dryadeæ, Leguminosæ.

Gamopetalous, monopetalous, *Corolla gamopetala, monopetala.* Composed of only one piece, surrounding the sexual organs on every side, the several divisions or petals being soldered together. Labiatæ, Borragineæ, Apocyneæ, Compositæ. Pl. 9, fig. 10, 11, 12, 13, 14, 15, 20, 21.

¶ Regular, *regularis.* Borrago, Convolvulus, Aquilegia, Cruciferæ, Carophylleæ, Rosaceæ, Dryadeæ, Pomaceæ.

Irregular, *irregularis.* Labiatæ, most leguminosæ.

3. *Composition.*

Two-petaled, *Corolla dipetala.* Formed of two pieces. Circæa.

Three-petaled, *tripetala.* Formed of three pieces. Alisma, Sagittaria.

Four-petaled, *tetrapetala.* Of four pieces. Cruciferæ, Chelidonium.

Five-petaled, *pentapetala.* Umbelliferæ, Adonis, Ranunculus, Caryophylleæ, Rosa.

Six-petaled, *hexapetala.* Berberis, Anona.

Eight-petaled, *octopetala.* Nigella Hispanica.

¶ One-petaled, *monopetala, unipetala.* A single petal not entirely surrounding the sexual organs, as in the gamopetalous corollæ. Amorpha.

4. *Form.*

Crosslike, *Corolla cruciformis.* Regular and composed of four petals with long claws, and the expansion open, disposed in a cross. Cruciferæ.

Roselike, *rosacea, roselata.* Regular and composed of three, four, or five petals, with short claws, and diverging from one another. Rosaceæ, Dryadeæ, Chelidonium, Papaver.

Clovegilliflowerlike, *caryophyllata.* Regular and composed of five petals, the claws being very long, but surrounded and hidden by the calyx. Dianthus, Silene.

Butterflylike, *papilionacea.* Composed of five petals, of three different forms and sizes, and to which peculiar names have been assigned. Leguminosæ.

1. The standard, *Vexillum.* The large wide petal, usually turned back, that overtops the others.

2. The two wings, *Alæ, Talaræ.* The two side petals.

3. The keel, *Carina, Scaphium,—tropis.* Formed of the two lowermost petals usually turned up at their tip, and either touching each other, or soldered together.

Irregularly many petaled, *polypetala anomala.* Composed of irregular petals, but not butterflylike. Aconitum, Delphinium, Tropæolum, Viola.

Tubulate, *tubulata.* Monopetalous, regular, with a tube. Many labiatæ.

Tubulous, *tubulosa.* Monopetalous, regular, with a tube longer than the diameter of the tube. Hamelia, Spigelia Marylandica.

Bellshape, *campanulata, campaniformis.* Monopetalous, regular, in form of a bell. Atropa lethalis, Pneumonanthe vulgaris, Vitis-Idæa punctifolia, Campanula urticifolia.

Globular, *globosa, globulosa.* Andromeda polifolia.

Eggshape, *ovata.* Arbutus, Eremocallis glomerata, Menziesia polifolia.

Pitchershape, *urceolata.* Vaccinium montanum.

Clubshaped, *claviformis, clavata.* Erica pinea, E. cerinthoides.

Funnelshape, *infundibuliformis.* Nerium Oleander, Nicotiana Tabacum.

Oldfashion-salvershape, *hypocrateriformis.* The tube long, the limb regular and spread out flat, or nearly so. Vinca, Phlox, Ericala verna.

Gobletshape, *cyathiformis.* Tube long, slightly dilated at top, the limb regular and upright. Symphytum tuberosum.

Wheel-like, *rotata.* Tube very short, limb regular, open, flat, with broad divisions. Borrago officinalis, Verbascum decurrens, Physalis Alkekengi.

Starlike, *stellata.* Tube very short, limb regular, open, flat, with pointed divisions. Galium verum, Valantia cruciata.

¶ One-lipped, *unilabiata.* Monopetalous, irregular, the lower part of the limb prolonged beyond the rest. Acanthus.

Scooplike, *ligulata.* One-lipped, the lip very long and straight. Taraxacum officinale, Helianthus, and many other compositæ.

Two-lipped, *bilabiata.* The limb split on the sides into two lips, of different forms. Labiatæ, Rhinanthus, Pedicularis.

Gaping, *ringens.* The two lips being placed apart resemble the throat of an animal. Salvia officinalis, Lamium album, Dracocephalum, Stachys.

Masklike, *personata.* The two lips are closed by an internal projection of the throat of the flower, called the palate, *palatium.* Orontium majus, Antirrhinum vulgare.—Some include under this irregular monopetalous corollæ of various anomalous forms.

Turned over, *resupinata.* Two-lipped, and appearing at the first view, as if the lips had changed their usual places. Ocymum Basilicum, Plectranthus punctatus.

5. *Appendages.*

Appendiculated, *Corolla appendiculata.* Having an elongation or additional part, more than the ordinary form of petals, either at the base, Hypericum Ægyptiacum, or at the summit, Silene.

Hooked, *uncinata.* With an appendage like a hook, placed at the top of the petals. Heisteria coccinea, Ximenia aculeata.

Glanduliferous, *glandulifera.* With glands. Statice monopetala, Ranunculus, Berberis.

6. *Colour.*

Red, *Corolla rubra.* Rosa Damascena, Dianthus Caryophyllus ruber.

Reddish violet, *rubro-violacea.* Lythrum spicatum, Celosia cristata.

Violet, *violacea.* Aconitum Napellus, Campanula Carpathica.

Bluish-violet, *cæruleo-violacea.* Convolvulus tricolor, Cyanus vulgaris, Cineraria amelloides.

Blue, *cærulea.* Pneumonanthe vulgaris, Delphinium grandiflorum.

Bluish-green, *cæruleo-viridis.*

Green, *viridis.*

Greenish-yellow, *viridi-lutea.* Hedera communis, Acer majus, Silene parviflora.

Yellow, *lutea.* Ranunculus longifolius.

Yellowish-orange, *luteo-aurantiaca.* Calendula officinalis.

Orange, *aurantiaca.* Tropæolum majus.

Reddish-orange, *rubro-aurantiaca.* Salvia coccinea, Papaver erraticum.

¶ White, *alba.* Parnassia palustris.

7. *Duration.*

Persisting, withering, *Corolla persistens, marcescens.* Lasting after the fecundation of the ovules, but in a withered state. Trientalis Europæa, Erica, Campanula, Corrigiola, Trifolium procumbens, Cucumis.

Passing away, *decidua, transitoria.* Falling soon after the fecundation of the ovules. The generality of flowers.

Fugacious, *fugax, caduca.* Falling off as soon as the flower is completely open, or even before. Actæa, Thalictrum, Chelidonium corniculatum, Glaucium violaceum, Cerastites macrocephala, Peplis Portula.

PETALS.

Petala. The several pieces into which the corolla is divided.

1. *Position.*

Opposite, *Petala oppositiva, calyci opposita.* Placed before the divisions of the calyx. Berberis, Epimedium.

Interposed, alternate, *interpositiva, calyci alterna.* Alternating with the divisions of the calyx. Cruciferæ, Rosa, and most plants.

2. *Attachment.*

Clawed, *Petala unguiculata.* Attached to the other parts of the flower by a long claw. Cheiranthus and other cruciferæ, Dianthus and other caryophylleæ, Statice pulchellum.

Sessile, *sessilia.* The claw very short. Vitis, Elatine, Gypsophila.

3. *Direction.*

Bent inwards, *Petala inflexa.* Curved towards the centre of the flower. Astrantia major.

Involute, *involuta.* Bent and rolled from the top towards the centre of the flower. Anethum graveolens.

Upright, *erecta.* Placed parallel to the axis of the flower. Geum, Hermannia.

Incumbent sideways, *lateraliter incumbentia.* Covering the sides of one another. Oxalis versicolor, Hermannia.

Open, spreading, *patentia.* At right angles with the axis of the flower. Rosa, Fragaria, Geum urbanum.

Bent back, *reflexa.* Turned over from the centre of the flower. Aralia arborea.

One-sided, *unilateralia.* Inclining to one side of the flower. Cleome.

Ascending, *ascendentia.* Inclining to the top of the flower. Cleome.

4. *Form.*

Roundish, *Petala subrotunda.* Silene latifolia, Ranunculus bulbosus, Potentilla fruticosa, Fragaria vesca.

Oval, *ovalia.* Statice pulchellum, Linum usitatissimum.

Elliptic, *ellipticum.* Saxifraga decipiens.

Lanceolate, *lanceolata.* Hypericum montanum, Saxifraga sarmentosa.

Linear, *linearia.* Fraxinus Ornus, Chionanthus, Hamamelis Virginiana.

Spatulashape, *spathulata.* Dictamnus albus, Cleome pentaphylla.

Wedgeshape, *cunearia.* Linum Austriacum.

Heartshape, *cordiformia, obcordiformia.* Heartshape, the notch being at top. Parnassia palustris, Geranium Pyreniacum, Cerastium arvense, Stellaria holostea, Œnothera odorata.

Concave, *concava.* Parnassia, Tilia Europæa, Ruta graveolens.

Boatshape, *navicularia.* Cookia punctata.

Helmetshape, *galeiformia.* Hollow, arched, and open in front. Aconitum.

Cornetshape, *cuculliformia.* In the form of a cone. Delphinium, Aquilegia.

Spurred, *calcarata.* Prolonged at bottom in a hollow point, like the spur of a fowl. Viola.

Two-lipped, *bilabiata.* Tubular with a limb having two lips. Nigella, Helleborus, Isopyrum.

Mis-shapen, *difformia.* Irregular, and not to be compared to any known form. Epimedium.

Unequal, *inæqualia.* Different, either in form, or size, or in both. Anona, Viola, Pisum, and other leguminosæ.

Conjoined, *coadunata.* Joined and soldered together by their edges, but so feebly that they may be separated without any visible tear in the texture. Statice monopetala, Fissilia disparilis. This junction is sometimes by their tips, Vitis; or their base, Oxycoccus palustris.

¶ Radiating, *radiantia.* The petals next the circumference of an assemblage of flowers larger than those next the centre. Tordylium.

5. Edge.

Wavy, *Petala undulata.* Geranium phæum, Lagerstræmia.

Gnawed, *erosa.* Glaucium luteum, Frankenia lævis.

Crenated, *crenata.* Dianthus Caryophyllus, Linum usitatissimum.

Toothed, *dentata.* Dianthus barbatus, D. capitatus, Silene Lusitanica.

Fringed, *fimbriata.* Cucubalus fimbriatus.

Lashed, *ciliata.* Edged with fine jags or hairs like the eyelashes. Tropæolum, Ruta.

Notched, *emarginata.* Cheiranthus sinuatus, Geranium sanguineum, G. dissectum, Agrostemma coronaria, Dianthus prolifer, Rosa rubiginosa.

6. Division.

Jagged, *Petala laciniata.* Cut into slips. Reseda, Dianthus plumarius.

Two-cut, *bifida.* Draba verna, Cucubalus inflatus, Lychnis vespertina, L. diurna, Silene conica.

Three-cut, *trifida.* Hypecoum procumbens.

Four-cut, *quadrifida.* Lychnis plumaria.

Two-parted, *bipartita.* Silene nutans, Stellaria aquatica, S. media.

Lacinule.

Lacinula. A small claw or appendage to the petals.

Uncut, *Lacinula integra.* Astrantia, Sanicula.
Bent, *inflexa.* Œnanthe.
Hooked, *uncinata.* Torilis, Sphondylium.
Straight, *recta.*
Oblique, *obliqua.* Chærophyllum.
Linear, *linearis.* Bulbocastanum.
Linear pointed, *linearis acuta.* Æthusa tenuifolia.
Linear blunt, *linearis obtusa.* Æthusa elata.
Furrowed, *sulcata.* Tragium.
Notched, *emarginata.* Cnidium.
Streaked, *striata.* Selinum.
Channelled, *canaliculata.* Sanicula.
Waved, *undulata.* Athamanta.
Dilated, *dilata.* Athamanta.
Narrowed, *angustata.* Pimpinella minor.
Awlshape, *subulata.* Œnanthe.
Long, *longa.* As long as the petals themselves. Astrantia, Sanicula.
Crenulated, *crenulata.* Peucedanum.
Wavy-crenulated, *undulato-crenulata.* Heracleum.
Apiculate, *apiculata.* With a point. Heracleum.
Toothed, *denticulata.* Astrantia, Sanicula.
Blunt, *obtusa.* Conium, Apium.
Three-pointed, *tricuspidata.* Astrantia.

Tube.

Tubus. The lower part of a gamopetalous corolla. Pl. 8, fig. 4.

Straight, *Tubus rectilineus, rectus.* Not having any curvature. Vinca, Hamelia.
Cylindrical, *cylindricus.* Mirabilis Jalapa.
Threadlike, *gracilis, filiformis.* Plumbago rosea.
Bellied, *ventricosus, inflatus.* Erica inflata, E. ventricosa.
Clubshape, *claviformis, clavatus.* Spigelia Marylandica.
Prismatic, *prismaticus.* Hamelia.
With an internal appendage, *internè appendiculatus.* Furnished with an appendage (nectary, Linnæus) in the interior part of it. Hydrophyllum, Lithospermum tenuifolium, Cuscuta.
¶ Bent, *curvatus, arcuatus, curvus.* Martynia, Nepeta longiflora.

Compressed, *compressus*. Many of the labiatæ. Justicia quadrifida.

Bunched, *gibbus, gibbosus*. Having externally a kind of bunch, hollow like a pocket on the inside. Orontium majus, Valeriana Cornucopiæ, Martynia.

Spurred, *calcaratus*. Having a hollow elongation like the spur of a fowl. Valeriana rubra, Linaria. Pl. 9, fig. 11 a.

Split, *fissus*. The tube is split down lengthways, so that it may be spread out flat without tearing. Goodenia, Lobelia.

Throat.

Faux. The orifice of the tube.

Circular, *Faux circularis*. Phlox, Mirabilis.

Cornered, *angulata*. Having a determined number of angles. Vinca rosea.

Dilated, *dilatata*. Larger than the tube itself. Mirabilis Jalapa, Nicotiana Tabacum. Pl. 9, fig. 12 and 13.

Contracted, *contracta*. Smaller than the tube. Verbena officinalis, Scrofularia lutea, Vinca rosea.

Obstructed, *obstructa*. Furnished with hairs, lashes, glands, or other appendages that block up the entrance. Verbena multifida, Erythalia pulchella.

Villous, *villosa*. Obstructed by hairs. Verbena multifida, Thymus.

Lashed, *ciliata*. Obstructed by stiff hairs like the eyelashes. Erythalia pulchella, E. campestris.

Bunched, *gibbifera*. Obstructed by bunches; the throat, being enlarged and dilated in some parts, rises up in bunches which are hollow, and open beneath. Lycopsis arvensis, Cynoglossum officinale, Borrago, Anchusa. Pl. 9, fig. 10 a.

Horned, *corniculifera*. Obstructed by hollow horns, open beneath, like the bunches just mentioned. Symphytum tuberosum.

Flakey, *lamellifera*. Furnished with lamellar appendages. Nerium Oleander.

Naked, *nuda*. Without any hairs, bristles, bunches, or the like. Nicotiana Tabacum, Cerinthe major, Phlox.

Palate.

Palatium. An internal swelling of the throat, being the two lips of a masklike flower.—Orontium majus, Linaria.

Crown.

Cup, Corona. A cuplike appendage, placed on the throat of the flower.—Silene, Narcissus.

Orbiculus.

A circular swelling of the base of the corolla, surrounding the sexual organs.—Stapelia.

Limb.

Limbus. The upper expanded part of a gamopetalous corolla.

Folded, *Limbus plicatus.* In regular folds like a fan. Convolvulus, Pneumonanthe vulgaris.

Twisted, *tortus, contortus.* The divisions of the limb are cut obliquely, and cover one another, before the opening of the flower, by twining round the axis of the flower. Nerium Oleander, Vinca, and other Apocyneæ.

Upright, *erectus.* Parallel to the axis of the flower. Hydrophyllum, Cynoglossum officinale, Cerinthe.

Spreading, *patens.* Forming a right angle with the tube. Verbena multifida, Anchusa Italica, Nerium Oleander, Chironia, Centaurium.

Turned back, *reflexus.* Turned over outwardly. Cyclamen, Dulcamara flexuosa, Asclepias, Oxycoccus palustris.

Revolute, *revolutus.* Rolled over outwardly. Cestrum cauliflorum, C. fastigiatum, C. odontospermum.

Upper Lip.

Labium superius. The upper division of a two-lipped gamopetalous corolla.

Spread forward, *Labium superius porrectum.* Carried out in the fore-part, in the same direction as the tube. Monarda, Phlomis Leonurus, Galeopsis nodosa.

Ascending, *ascendens.* Following at first the direction of the tube, and then rising up. Nepeta longiflora, Stachys annua, Betonica officinalis. Pl. 9, fig. 13.

Turned back, *reflectum.* Turned over on the tube. Plectranthus punctatus. Pl. 9, fig. 15.

Turned in, *inflectum.* Turned inwards on the lower lip. Brunella.

Sicklelike, *falcatum.* Bent like a reaping-hook. Salvia bicolor. S. pratensis.

Arched, *fornicatum, galeatum.* Bent and hollowed within. Pedicularia palustris, Phlomis, Lamium, Galeopsis.

Compressed, *compressum.* Folded in two lengthways, and flattened sideways. Rhinanthus, Pedicularia palustris, Many salviæ, Many phlomides, Trichostema.

Flat, *planum.* Melittis grandiflora.

Uncut, *integrum.* Molucella lævis.

Notched, *emarginatum.* Lycopus.

Split, *fissum.* Euphrasia officinalis, Salvia bicolor, Nepeta longiflora.

Parted, *partitum.* Divided to the very orifice of the tube. Teucrium, Lobelia Cardinalis. L. syphilitica.

Lower Lip.

Labium inferius. The lower division of a two-lipped gamopetalous corolla.

Longer than the upper, *Labium inferius superiore longius.* Molucella lævis, Phlomis Zeylanica.

Shorter than the upper, *inferiore brevius.* Phlomis Leonurus.

Prolonged, *porrectum.* Melampyrum vulgatum, Salvia bicolor, Molucca lævis.

Fallen down, *demissum.* Eriostomum Germanicum. Pl. 9, fig. 13.

Turned back, *reflexum.* Turned over backwards upon the tube. Chelone barbata.

Turned in, *inflexum.* Bent inwards towards the orifice of the tube. Plectranthus punctatus. Pl. 9, fig, 15.

PERIGONIUM.

Perianthium, Calyx. *The integument of a flower when there is but one, and its appearance renders it doubtful whether it ought to be esteemed a calyx or a corolla.*

This admits all the various distinctions of both calyx and corolla.

Galea.

The upper hollow part of the perigonium of the orchideæ.

Lip.

Labellum. The lower spread out part of the perigonium of the orchideæ; which is sometimes divided into two dissimilar parts.

Epichilium. The upper part of the labellum.

Hypochilium. The lower part of the labellum.

Spur, *Calcar.* A hollow spur formed by an elongation of the labellum.

Perule.

Perula. A hollow part, often resembling a spur, formed of two elongated and soldered sepales. Orchideæ.

STAMENS.

Chives, Attire, Stamina,—stemon. *The male organ of the plant, usually placed next within the corolla, and immediately surrounding the pistill.*

1. *Origin.*

Hypogynous, *Stamina hypogyna, receptaculo inserta.* Exserted from the receptacle, either below the ovary, or even with its bottom. Gramineæ, Cruciferæ, Ranunculaceæ.

Perigynous, *perigyna, calyci inserta.* Exserted from the internal surface of the floral integument, above the part where it is detached from the ovary. Thymeleæ, Rosaceæ, Leguminosæ, Myrtaceæ.

Epigynous, *epigyna, pistillo inserta.* Exserted from the pistill itself. Aristolochia, Umbelliferæ.

¶ Immediate, *immediata.* Exserted from the receptacle, calyx, or pistill. Cruciferæ, Rosaceæ, Umbelliferæ.

Mediate, *mediata, epipetala.* Exserted from the corolla, and therefore judged to have the same insertion in respect to the ovary as the corolla itself. Labiatæ, Campanulaceæ, Compositæ.

2. *Number.*

Definite, *Stamina definita.* The number constant and not exceeding twelve. 1 Hippuris, 2 Syringa, 3 Iris, 4 Plantago, 5 Lonicera, 6 Lilium, 7 Æsculus, 8 Fuchsia, 9 Butomus, 10 Saxifraga, 11 not yet discovered, 12 Halesia.

Indefinite, *indefinita.* More than twelve, and not usually counted, or constant. Papaver, Ranunculus, Rosa.

3. *Connexion.*

Distinct, *Stamina distincta, discreta.* Not united together either by their filaments, or their anthers. Lilium, Ranunculus.

Conjoined, *coalita, connata.* United together, either by their filaments or their anthers. Malvaceæ, Compositæ.

¶ Adelphous, *adelphica, adelpha.* The filaments united together into an androphore.

Monadelphous, *monadelpha.* Having a single androphore in a flower, carrying several anthers. Malvaceæ, Meliaceæ.

Diadelphous, *diadelpha.* Two androphores in each flower, each carrying several anthers. Fumaria, Monniera. —But Linnæus has applied this term to the leguminosæ, in which nine of the stamens have their filaments united into an androphore, and the tenth is distinct. Pl. 10, fig. 9, a, b.

Triadelphous, *triadelpha.* Three androphores, each carrying several anthers. Hypericum Ægyptiacum. Pl. 10, fig. 15.

Pentadelphous, *pentadelpha.* Five androphores. Melaleuca hypericifolia.

Polyadelphous, *polyadelpha.* Several androphores. Melaleuca.

¶ Syngenesous, *syngenesa, syngenesica.* Several stamens joined by their anthers. Most compositæ, Lobelia, Viola. Pl. 11, fig. 27.

4. Proportion.

Equal, *Stamina æqualia.* All of the same length. Butomus, Lilium, Borrago, Ledum, Tribulus.

Unequal, *inæqualia.* Some longer than the others. Labiatæ, Cruciferæ, Oxalis, Lychnis, Silene, Gypsophila.

Didynamous, *didynama.* Four in number, two longer than the other two. Labiatæ.

Tetradynamous, *tetradynama.* Six in number, of which four are longer than the others. Cruciferæ. Pl. 10, fig. 1.

5. Disposition.

Oppositive, *Stamina oppositiva, petalis opposita.* Placed opposite to the lobes of the corolla, or of the perigonium. Lilium, Morus, Urtica, Statice, Primulaceæ, Lorantheæ, Vitis.

Interpositive, *interpositiva, petalis alterna.* Placed between the divisions of a corolla, Borragineæ, Umbelliferæ; or of a simple perigonium, Elæagnus.

¶ Distant, *distantia.* Lycopus.

Close, *approximata.* Touching the sides of one another. Solanum, Borrago.

Coherent, *coherentia.* Fastened to one another, either by crossed hairs, or by a glue. Lycopersicon esculentum, Calluna sagittæfolia, Viola.

Crowded, *conferta.* Numerous and squeezed close together.

Agglomerated, *agglomerata.* Collected together into a ball. Anona triloba.

Tiled-like, *imbricata.* Disposed in rows, one covering another like the tiles of a roof. Liriodendrum tulipifera, Magnolia.

In stages, *serialia.* Disposed in stages of circular rows. Daphne, Passerina.

6. *Length, in relation to the floral integuments.*

Exserted, *Stamina exserta.* Coming out beyond the orifice of the floral integuments. Plantago, Mentha, Lycium Europæum, Scabiosa, Fuchsia. Pl. 9, fig. 12.

Included, *inclusa, non exserta.* Shut up in the floral integuments, and not appearing outwardly. Jasminum, Syringa, Verbena officinalis, Leguminosæ. Pl. 10, fig. 8.

7. *Direction.*

Bent inwards, *Stamina inflexa.* The top bent in towards the centre of the flower. Salvia, Dictamnus, Gypsophila fastigiata.

Upright, *erecta.* Keeping of itself in the direction of the axis of the flower. Tulipa, Lilium, Nicotiana. Pl. 10, fig. 5.

Spreading, *patentia.* Standing horizontally in respect to the base of the flower. Pyrola minor, Hedera communis.

Bent back, *reflexa.* Bent outwards. Urtica, Parietaria.

Hanging down, *pendentia.* Hanging downwards through weakness. Gramineæ, Clerodendrum infortunatum.

Sidelying, *unilateralia.* Hanging on one side. Pyrola rotundifolia, Salvia, Amaryllis formosissima.

Ascending, *ascendentia.* Rising towards the upper part of the flower. Salvia, Teucrium, Phlomis, and most labiatæ.

Declining, *decumbentia, declinata.* Inclining towards the lower part of the flower. Amaryllis formosissima, Hemerocallis fulva, Æsculus Hippocastanum, Dictamnus albus.

8. *Abortion.*

Antherless, *inantherata, castrata.* The filaments being without anthers. Many filaments of sparmannia Africana, two filaments of gratiola officinalis, and the greater part of the orchideæ.

Merely rudimental, *rudimentaria.* So very imperfect, and so small, that it is only by analogy that their nature can be determined. Orchideæ, Salvia, Collinsonia Canadensis.

9. *Parts.*

Anther, Summit, *Anthera, Capitulum, Theca, Capsula, Apex, Testiculus, Testis, Spermatocystidium.* The upper part of the stamen usually at the top of it, and containing the fecundating powder, in two distinct cells. Pl. 11, fig. 15, 16, 19, and 20.

Cells, *Loculi, Thecæ.* The two cells that contain the fecundating powder. Pl. 11, fig. 20.

Lobes, *Lobi.* The cells when they are perfectly distinct and at some small distance from each other.

Connective, *Connectivum, Filamentum* Link. A fleshy part that connects the lobes; or that part of a jointed filament which is immediately next the anther.

Basillary appendages, *Setæ.* Small threads formed by the elongation of the cells in their lower part.

Fecundating powder, *Pollen.* The powder contained in the cells of the anthers, and which is composed of globules.

Globules, *Utriculi.* Small bladders appearing like dust, forming the substance of the pollen.

Fovilla. The fine substance, imperceptible to the naked eye, which the pollen discharges on the moist surface of the stigma.

Filament, Thread, *Filamenta, Pediculus, Capillamentum, Stipellus,—nema.* The footstalk raising the anther from the receptacle or corolla.

Androphore, *Androphora, Columna, Fasciculus,—adelphia.* Filaments soldered together in one or more bundles.

Antherbearing joint, *Articulus antheriferus.* That part of a jointed filament that is next to but below the anther.

Terminal appendage, *Appendix terminalis.* That part of a jointed filament that is above the anther.

Filament.

1. *Form.*

Flat, *Filamentum planum*. Allium fragrans, Kœmpferia, Fissilia, Heisteria coccinea, Hermannia denudata.

Petal-like, *petaliforme*. Broad, thin, flexible and coloured like a blossom. Kœmpferia, Maranta arundinacea, Calothamnus.

Two-edged, sword-edged, *anceps*. Canna Indica.

Awlshape, *subulatum*. Tulipa, Butomus, Acer majus.

Wedgeshape, *cuneiforme*. Thalictrum petaloideum.

Nailshape, *claviforme, clavatum*. Thalictrum atro-purpureum.

Cylindrical, *cylindricum*. The generality of plants.

Threadlike, *capillare*. Gramineæ, Plantago.

¶ Knobbed, *torulosum, nodosum*. With swellings at a small distance from one another. Sparmannia Africana.

Crenate, *crenatum*. Marked on the internal edge with wrinkles lying across, and forming creases.

Kneed, *geniculatum*. Bent like a knee or elbow joint. Mahernia pinnata.

Appendixed, *appendiculatum*. Having an appendage, which does not seem to belong to the filament, but to be an extraneous addition. Borrago, Zygophyllum.

Spiral, *spirale, tortum*. Bent like a bellspring. Hirtella.

2. *Base.*

Enlarged, *Filamentum dilatatum*. Ornithogalum pallidum, Campanula, Geranium pratense, Tamarix Gallica.

Arched, *fornicatum*. Enlarged and concave. Asphodelus, Campanula.

3. *Tip.*

Sharp, *Filamentum acutum*. Lilium, Tulipa, Scutellaria alpina, Ternstromia.

Blunt, *obtusum*. Anona triloba.

Headed, *capitatum*. Swelled into a head. Dianella, Cephalotus.

Notched, *emarginatum*. Having a re-entering angle at the tip. Allium lætum.

Two-forked, *bifurcatum*. Brunella, Crambe.

Three-pointed, *tridentatum, tricuspidatum*. Allium porraceum.

Prominent, *prominens*. Lengthened out beyond the anther. Paris quadrifolia, Anona triloba, Ternstromia elliptica.

4. *Surface.*

Velvetty, *Filamentum villosum.* Laurus Persea, Gualteria.

Bearded, *barbatum.* Hairy in some parts and not in others. Anthericum, Anagallis, Verbascum.

Glandbearing, *glanduliferum.* Dictamnus albus.

5. *Motion.*

Elastic, *Filamentum elasticum.* Springs back again after it has been forcibly bent.

Irritable, *irritabile.* Moving at the moment of fecundation without any apparent mechanical force. Berberis, Ruta, Parnassia.

Androphore.

Simple, *Androphorum simplex.* In a single body without any branches whatever.

Divided, *divisum.* Parted into several filaments at top. Hypericum Ægyptiacum, Melaleuca. Pl. 10, fig. 15; pl. 11, fig. 14.

Branched, *ramosum.* Divided and subdivided. Ricinus. Pl. 11, fig. 16.

Solid, *solidum.* In a solid mass. Hura crepitans, Stylidium.

Thick, *crassum.* Hura crepitans.

Slender, *gracile.* Typha.

Cylindrical, *cylindricum.* Stylidium, Xylophylla, Hura crepitans.

Pillarlike, *columnare.* Rising upright in the centre of the flower like a small column.

Tubular, *tubulosum.* Malvaceæ. Pl. 10, fig. 13.

Split, *fissum.* Tubular, and split lengthways. Most leguminosæ. Pl. 10, fig. 9, a; fig. 12.

Sheathing, *vaginans.* Tubular, and forming a sheath round the pistill. Malvaceæ. Pl. 10, fig. 13.

Ringlike, *annulare.* Anacardium occidentale.

Blossomlike, *corolliforme.* Gomphrena globosa, Guarea trichilioides.

Crenate, *crenatum.* Crenated on its edge. Gomphrena globosa.

Hoodlike, *cuculliferum.* Furnished with appendages in form of hoods. Asclepias.

Anther.

1. *Attachment.*

Sessile, *Anthera sessilis.* Without any filament or androphore. Aristolochia, Grevillea.

Adnate, *adnata.* Annexed to the filament throughout its whole extent, and consequently without any particular connective. Asarum, Soldanella, Podophyllum peltatum, Ranunculus. Pl. 11, fig. 18.

Jointed, *articulata.* The union of the filament and anther having some change of form, colour, shape, or other visible mark. Salvia, Scutellaria.

¶ Lateral, *lateralis.* Fastened on one side of the filament. Canna Indica.

Terminal, *terminalis.* Fastened to the end of the filament. Cyperaceæ, Datura, Raphanus, Cleome.

¶ Base-fixed, *basifixa.* Attached by one end, which is looked upon as the base of the anther. Irideæ, Compositæ.

Middle-fixed, *medifixa.* Attached by the middle. Lilium.

¶ Immoveable, *immobilis.* So solidly attached to the filament that it cannot be moved without injury. Compositæ, Limnanthes peltata.

Moveable, *mobilis.* Attached by a single point which acts like a hinge. Lilium, Limodorum.

Turning, *vacillans, versatilis.* Long, fastened by its middle, and moveable. Lilium, Tulipa, Amaryllis.

¶ Opening inwards, *adversa, antica, introrsa.* The suture of its valves turned to the centre of the flowers. Most plants.

Opening outwards, *inversa, postica, extrorsa.* The suture of its valves turned towards the circumference. Irideæ, Cucumis. Most ranunculaceæ.

2. *Direction.*

Upright, *Anthera erecta.* Long, fastened by its base, and holding itself parallel to the axis of the flower. Tulipa, Solanum, Compositæ.

Lying along, *incumbens.* Fastened by its middle, so that its lower half is close to the filament. Amaryllis formosissima, Hypopitys lutea.

Flat, *horizontalis.* Lying across the filament. Lilium.

3. Form.

Globular, *Anthera globulosa.* Mercurialis, Juniperus.

Mis-shapen, *difformis.* Of an irregular or singular form. Justicia hyssopifolia, Commelina tuberosa.

Twin, *didyma.* With two rounded lobes united by a small point. Chenopodium, Spinacia, Mercurialis, Euphorbia.

Egg-like, *ovoidea.* Fuchsia.

Oblong, *oblonga.* Ledum, Lilium, Sparganium erectum.

Lanceolate, *lanceolata.* Cerinthe major.

Linear, *linearis.* Campanula.

Awlshape, *subulata.* Borrago officinalis.

Threadlike, *filiformis.* Ternstromia.

Arrowheadlike, *sagittata.* Crocus, Limnanthes peltata.

Heartshape, *cordiformis, cordata.* Ocymum basilicum.

Kidneyshape, *reniformis.* Glechoma hederacea, Lavandula, Digitalis.

Shielded, *peltata.* Broad, and fastened to the filament by its centre.

Compressed, *compressa.* Flattened sideways. Iris.

Four-cornered, *tetragona.* Tulipa.

¶ Straight, *recta, rectilinea.* Without any windings. Tulipa, Borrago.

Bent, *arcuata.* Trollius Europæus.

Twisted, *torsa.* Bent in a spiral form. Erythræa vulgaris.

Winding, *sinuosa.* Long, linear, and zig-zag. Cucumis, Cucurbita.

¶ Truncated, *truncata.* Appearing as if its top had been cut off.

Pointed, *acuta.* Borrago, Cerinthe.

Two-cut, *bifida.* Having a fork at one or both ends. Many gramineæ, Sparganium erectum.

Two-horned, *bicornis.* Having two diverging horns formed by its pointed lobes. Arbutus, Vaccinium montanum, Pyrola, Many ericæ.

Four-horned, *quadricornis.* Gualteria procumbens.

Appendixed, *appendiculata.* Nerium Oleander, Centaurea collina, Inula grandiflora.

Awned, *aristata.* Furnished with appendages like awns. Euphrasia officinalis, Vaccinium uliginosum, Andromeda polifolia.

Crested, *cristata.* Furnished with appendages like crests. Erica triflora, E. comosa. Pl. 11, fig. 21.

Tailed, *caudata.* Furnished with appendages like a tail. Stæhelina.

Opercular, *opercularia, operculiformis.* Shutting up, like a lid, the cavity in which the pollen is contained. Serapias, Neottia, Limodorum.

4. *Proportion.*

Shorter than the filament, *Anthera filamento brevior* Lilium, Fuchsia.

As long as the filament, *filamenti longitudine.* Hermannia denudata.

Longer than the filament, *filamento longior.* Cerinthe major.

¶ Unlike, *Antheræ dissimiles.* Different in the same flower. Cassia.

5. *Surfaces.*

Smooth, *Anthera lævis.* The greatest part of flowers.

Bald, *glabra.* Orobanche major.

Downy, *pubescens.* Digitalis ferruginea.

Shaggy, *hispida, hirta.* Lathræa simplex.

Fringed, *ciliata.* Orobanche minor, Brunella, Lavandula, Galeopsis segetum.

Bearded, *barbata.* Having a tuft of hairs in some peculiar part. Pedicularis, Acanthium, Carpinus.

Glanduliferous, *glandulifera.* Having glands. Cardiaca vulgaris, Marrubium Hispanicum, Molucella levis.

6. *Lobes.*

One-lobed, *Anthera uniloba.* Pinus, Larix, Cupressus, Juniperus, Thuya.—In pinus, larix, abies, the anthers appear to be two-lobed, because, as they are fixed two together upon scales that appear like filaments, they resemble the two lobes of a single anther; but their analogy to other plants show that they are two single distinct anthers.

Two-lobed, *biloba.* The generality of plants. Pl. 11, fig. 15, 19 and 20.

Many-lobed, *multiloba.* Taxus.

7. *Cells.*

One-celled, *Anthera unilocularis.* Cycas, Larix, Cupressus, Juniperus, Thuya.

Two-celled, *bilocularis.* Orchis, Ephedra.

Four-celled, *quadrilocularis.* Most plants.

Many-celled, *multilocularis.* Taxus.

¶ Fertile, *fertilis, fecunda.* Containing pollen. Most plants.

Barren, *sterilis.* Not containing pollen. Five stamens out of the ten in musa, 3 out of 6 in cassia grandiflora, 9 out of 10 in Bauhinia, 5 out of 8 in fissilia disparilis.

8. *Opening.*

By slits, *Anthera fissuris dehiscens.* Most plants.

By pores, *poris dehiscens.* Arum, Galanthus, Solanum, Pyrola, Humulus.

One-holed, *uniforata.*

Two-holed, *biforata.* Solanum. Pl. 11, fig. 26.

By a cover, *operculo dehiscens.* Brosimum.

By valves, *valvulis dehiscens.* Berberis, Epimedium.—The number of valves is to be mentioned.

Three-valved, *trivalvis.*

Four-valved, *quadrivalvis*, &c.

On the fore part, *parte antica dehiscens.* Opening by the part looking towards the centre of the flower. The generality of anthers.

On the hind part, *parte postica dehiscens.* Opening by the part looking towards the circumference of the flower. Iris, Calycanthus.

By the tip, *apice dehiscens.* Galanthus, Solanum, Erica, Ephedra.

By the base, *basi dehiscens.* Pyrola.

Lengthways, *longitudinaliter dehiscens.* The opening of the valves parallel to the sides of the lobes. Lilium, Tulipa.

Cross-ways, *transversim dehiscens.* The opening of the valves running from one side to the other. Lavandula.—This expression is not to be taken strictly, as the appearance arises only from the divergence of the lobes.

Lobes.

Confluent, *Lobi confluentes.* Uniting so as to appear only a single lobe. Plectranthus.

Distinct, *distincti.* The contour of each being well marked. Lilium, Tradescantia Virginica.

Near together, *approximati.* Touching each other, but perfectly distinct. Lilium, Acetosa pratensis.

Parallel, *paralleli.* When they run together for some length, without altering their distance. Kœmpferia, Anona triloba.

Superimposed, *superpositi.* Placed one upon another. Monarda.

Diverging, *divergentes.* When they are nearer together at one end than at the other. Digitalis.

Distant, *remoti.* Kept at a distance from one another, either by the filament, Begonia dichotoma; or by the connective, Salvia, Melissa grandiflora.

Two-sided, *bilaterales.* Separated from one another by being placed on different sides of the filament. Kœmpferia, Begonia dichotoma, or of the filament, Tradescantia Virginica.

¶ Alike, *similes.* Not differing from one another. Most flowers.

Unlike, *dissimiles.* Most salviæ.

Connective.

Long, *Connectivum extensum.* Of a notable length. Salvia, Melastoma.

Loose, *laxum.* Separating the lobes so that they do not touch. Melissa grandiflora.

Contracted, *contractum.* Very short, and the lobes close together. Lilium.

None, *nullum.* The anther being inserted immediately upon the filament, or some part of the flower. Gramineæ, Aristolochia, Acetosa pratensis.

Pollen.

Powdery, *Pollen pulverulentum.* Composed of many distinct utricles, like a fine dust.

¶ Elastic, *elasticum.* Lengthens when pulled, and contracts itself again. Orchis, Limodorum.

Horny, *corneum.* In a hard mass, flexible like horn. Asclepias.

Grumous, *grumosum, granulatum.* Composed of many corpuscles united together, and placed on a receptacle; these corpuscles, attached to an axis, are squeezed together so as to form an ovoid mass, parted in two by a longitudinal groove. Orchis, Ophrys, Satyrium. Pl. 12, fig. 9 and 10.

Lobed, *lobatum.* The pollen mass is divided into several lobes. Limodorum.

Synstigmatic, *synstigmaticum.* The pollen mass is terminated below by a thread having at its end a corpuscle which adheres to the stigma. Many orchideæ and asclepiadeæ.

¶ Sea-green, *glaucum.* Some irides.

Whitish, *albidum.* Actæa spicata, Salvia formosa.

Yellowish, *flavescens.* Impatiens palustris.

Yellow, *flavum.* Lilium album.
Sulphur-colour, *sulphureum.* Pinus.
Orange-colour, *aurantiacum.* Lilium croceum.
Blue, *cæruleum.* Epilobium angustifolium.

Utricles.

Agglutinated, *Utriculi agglutinati.* Connected together by a moist humour. Serapias.

Tied, *ligati.* Attached by threads. Azalea viscosa, Œnothera.

¶ Smooth, *læves.* Asphodelus fistulosus, Vicia hirsuta.

Shaggy, *hispidi.* Covered with fine points. Malva miniata, Cucurbita esculenta.

Thorny, *muricati.* Covered with points, strong in proportion to their size. Hibiscus Syriacus.

¶ Globular, *sphærici.* Phleum nodosum, Malva miniata, Hibiscus Syriacus, Cucurbita esculenta.

Egglike, *ovoidei.* Impatiens Balsamina.

Oblong, *oblongi.* Anethum segetum.

Nearly cylindrical, *subcylindrici.* Cerinthe major.

Kidneyshape, *reniformes.* Commelina tuberosa.

Angular, *angulati.* Tropæolum majus.

Three-lobed, *trilobi.* Serapias longifolia.

Four-lobed, *quadrilobi.* Azalea viscosa.

Twelve-sided, *dodecaedri.* Geropogon.

Twenty-sided, *icosaedri.* Tragopogon.

Exhausted Anther.

Anthera deflorata. The state of its cells after the emission of the pollen.

PISTILL.

Pointal, Pistillum, — gyne, — gynos. *The female organ of the plant, placed in the centre of the flower.*

Parts.

Ovary, *Germen, Ovarium.* The lower part of the pistill, containing the ovules. Pl. 11, fig. 1, 4, 5, 7, 8, 10 and 12.

Ovules, *Ovula, Ova.* The rudiments of future plants, not yet impregnated. Pl. 11, fig. 4.

Podogyne, *Podogynium.* A narrow pedicell, on which the ovarium is sometimes placed. Papaver, Robinia.

Gynobasis. The bottom part of the style, when it is swelled, and distinguishable from the other. Pl. 11, fig. 2.

Style, *Stylus, Tuba, Vagina.* An elongation of the ovary supporting the stigma. Pl. 11, fig. 2, 6, 7, and 9.

Collectors, *Collectores.* Branches of the style, or hairs, serving to irritate the anthers, cause them to discharge the pollen, and at the same time to collect it.

Summit, *Stigma.* The part of the pistill which is spread out, generally on the top of the style, to receive the fecundating powder of the anthers. Pl. 11, fig. 2, 6, 7, 8, 9, and 10.

Cornua. The branches of the stigma.

Styliscus, Chorda pistillaris, Vasa adducentia auræ seminalis. Fibrelike vessels passing from the stigma to the ovules. Pl. 11, fig. 4.

Ovary.

Single, *Ovarium unicum.* Convolvuli, Cruciferæ, Papaveraceæ. Pl. 11, fig. 6 and 7.

Manifold, *multiplex.* Several in the same flower. Labiatæ, Ranunculaceæ. Pl. 11, fig. 2 and 3.

¶ Free, *calici inadherens, liberum, superum.* Not having any adhesion to the calyx or perigonium; being attached to the flower by its bottom only. Lilium, Labiatæ, Cruciferæ, Papaveraceæ, Ranunculaceæ, Leguminosæ. Pl. 10, fig. 1 and 4.

Semi-adherent, *semi-adherens.* Connected to the calyx or perigonium at bottom, but not in its upper part. Saxifraga granulata, S. cærulea.

Adherent, *adherens, inferum.* Enveloped within the calyx, or perigonium, only the limb of the calyx surmounting the whole. Narcisseæ, Irideæ, Rubiaceæ, Caprifoliaceæ, Umbelliferæ.

¶ Raised, *sublatum.* Placed on a gynophore, or narrowed into a podogyne. Most caryophylleæ, many leguminosæ.

Sessile, *sessile.* Having neither gynophore nor podogyne. Lilium, Prunus, Saururus.

¶ One-celled, *uniloculare.* The interior cavity not divided by any partition. Anagallis, Dianthus, Amygdalus, Juglans.

Celled, *pluriloculare.* The interior cavity divided into two or more cells. Lilium, Rhododendron.

¶ Two-celled, *biloculare.* Divided internally into two cells, either by a general partition, Cheiranthus, or two partial ones, Syringa, Ruellia.

Half-two-celled, *sub-biloculare.* With partitions that do not entirely join, but leave a small interval between them.

Three-celled, *triloculare.* Lilium, Tulipa, Convolvulus, Euphorbia.

Four-celled, *quadriloculare.*

Many-celled, *multiloculare.* Citrus Medica, Cassia fistula.

Gaping at top, *hiulcum.* Open at top while the plant is in flower. Parnassia, Reseda, Datisca.

¶ One-styled, *monostylum.* Having only one style. Convolvulus, Cynoglossum, Prunus, Rosa.

Two-styled, *distylum.* Apium, Dianthus, Saponaria, Gypsophila.

Three-styled, *tristylum.* Acetosa scutata, A. pratensis, Hypericum perforatum, Silene, Cucubalus, Arenaria. Pl. 11, fig. 6.

Four-styled, *tetrastylum.* Spinacia.

Five-styled, *pentastylum.* Statice pulchellum, Lychnis, Agrostemma, Cerastium, Spergula, Linum.

Many-styled, *polystylum.* Phytolacca, Illicium.

Style-less, *acephalum.* Not having any styles. Labiatæ, Ochnaceæ.

The form of the ovary admits most of the distinctions of the pericarpium.

The number of the cells, and the number or position of the ovules, are not the same in the ovary as in the ripe fruit, on account of the abortions that take place.

Style.

Single, *Stylus unicus.* When there is only one style to one ovary, Lilium, Centaurea, Compositæ, Citrus; or to many ovaries, Labiatæ, Borragineæ, Apocyneæ.

Many, *multiplex.* Many styles upon a single ovary. Phytolacca.

None, *nullus.* Pæonia, Crambe maritima.

¶ Terminal, *terminalis.* On the geometric summit of the ovary, which in this case is also the organic summit. Liliaceæ, Apocyneæ, Cruciferæ.

Lateral, *lateralis.* When the organic summit on which the style is placed is on the side in respect to the geometric summit. Thymeleæ, Rosaceæ.

Basilary, *basilaris.* The organic summit on which the style is placed is confounded with the base, and consequently opposite to the geometric summit. Artocarpus incisa, Hirtella Peruviana.

Receptacular, *receptacularis.* Placed upon the receptacle instead of the ovary. Borrago officinalis, Anchusa, Symphytum.

Gynophorian, *gynophorianus.* Growing out of a prominent receptacle or gynophore. Scutellaria, Gomphia.

¶ Very long, *longissimus.* In respect to the ovary. Zea Mays, Tamarindus. Pl. 11, fig. 9.

Very short, *brevissimus.* Asarum, Aristolochia.

Included, *inclusus, non exsertus.* Not appearing above the opening of the floral integuments. Narcissus, Verbena, Syringa.

Exserted, *exserted.* Rising above the opening of the floral integuments. Salvia bicolor, Centranthus marinus, Fuchsia. Pl. 8, fig. 4; pl. 9, fig. 9.

¶ Cylindrical, *cylindricus, teres.* Cynoglossum linifolium, Hypopitys lutea.

Hair-like, *capillaris.* Cucubalus bacciferus.

Thread-like, *filiformis.* Vicia tetrasperma, Helesia tetraptera.

Awlshape, *subulatus.* Slender, and growing narrower from the base to the tip, which ends in a point. Allium album.

Three-sided, *trigonus.* Lilium bulbiferum, L. croceum, Ornithogalum luteum, Pisum.

Swordshape, *ensiformis.* Canna.

Clubshape, *claviformis, clavatus.* Leucojum æstivum.

Conical, *conicus.* Lecythis.

Topshape, *turbinatus.* Viola Rothomagensis.

Pipey, *tubulosus.* Long and hollow along its whole length. Lilium.

Funnelshape, *infundibuliformis.* Hura crepitans.

Petal-like, *petaliformis.* Thin and coloured like a blossom. Iris.

¶ Bald, *glaber.* Lilium.

Velvetty, *villosus.* Statice pulchella, Echium vulgare.

Bearded, *barbatus.* Salvia formosa.

¶ Upright, *verticalis.* Relative to the ovary. Lilium, Nicotiana, Vinca rosea.

Straight, *rectilineus, rectus.* Without any bending. Lilium, Nicotiana, Convolvulus inflatus, Vinca rosea.

Bowed, *arcuata.* Amaryllis, Pisum, Phaseolus.

Ascending, *ascendens.* Departing in an irregular flower from the axis, and growing up towards the top. Salvia, Lamium, Scutellaria alpina, Teucrium.

Declining, *declinatus*. Growing down towards the lower side of the flower. Hemerocallis fulva, Amaryllis, Æsculus Hippocastanum, Dictamnus albus.

Spiral, *spiralis*. Bent in a spiral form. Glycine.

Bent inwards, *inflexus*, *incurvus*. Bent towards the centre of the flower. Grevillea, Vicia tetrasperma.

Bent outwards, *reflexus*. Bent from the centre of the flower.

Kneed, *geniculatus*. Bent suddenly, so as to form an angle, more or less acute. Geum urbanum.

¶ Simple, *simplex*. Without any division whatever. Cepa esculenta.

Cut, *fissus*. Divided lengthways in the upper part.

Two-cut, *bifidus*. Salicornia.

Three-cut, *trifidus*. Gladiolus communis, Ixia Chinensis, Iris.

Five-cut, *quinquefidus*. Hibiscus.

Many cut, *multifidus*. Lavatera, Malva.

Parted, *partitus*. Divided more than halfway down.

Two-parted, *bipartitus*. Limeum, Casuarina.

Three-parted, *tripartitus*, &c.

Two-forked, *dichotomus*. Forked, and each branch forked again. Cordia, Varronia.

¶ Falling off, *caducus*. Withering as soon as the fecundation is effected, and leaving no vestige on the fruit. Scilla, Prunus, Amygdalus.

Persisting, *persistens*. Not falling off as soon as the fecundation is effected. Ornithogalum, Anagallis, Pulsatilla vulgaris, Geranium, Cruciferæ, Buxus.

Increasing, *accrescens*. Persisting, and continuing to enlarge. Pulsatilla vulgaris, Clematis, Geum.

Stigma.

Single, *Stigma unicum*. Only one stigma to each style. Primula, Raphanus, Cleome.

Double, *duplex*. Two stigmas to each style. Triticum, Convolvulus sepium, Dianthus.

Triple, *triplex*. Iris, Gladiolus, Ixia, Crocus, Rheum Lapathum, Silene.

Quintuple, *quintuplex*. Hibiscus, Campanula aurea.

Sextuple, *sextuplex*. Aristolochia infesta.

Multiple, *multiplex*. Empetrum, Nigella Hispanicum, Lavatera Malva.

¶ Terminal, *terminale*. Placed at the end of the style. Lilium, Tulipa, Mirabilis Jalapa, Vinca.

Lateral, *lateralis*. Placed on the side of the style or ovary. Platanaria natans, Ranunculaceæ, Caryophyllæ, Platanus.

Opposed, *adversum*. Turned from the centre, and facing the circumference of the flower. Cucurbitaceæ.

Facing inwards, *inversum*. Several in each flower, turned to the centre. Ranunculaceæ, Saxifrageæ.

Anterior, *anterius*. In an irregular flower, facing the fore part of the floral integuments. Orchideæ.

Sessile, *sessile*. Cleome, Parnassia.

¶ Fleshy, *carnosum*. Thick, strong, and juicy. Lilium.

Blossomlike, *petaliforme*. Having the appearance of a petal. Iris.

¶ Globular, *globosum*. Mirabilis Jalappa, Primula, Hottonia, Linnæa, Limosella.

Headed, *capitatum*. Thick, more or less rounded. Atropa lethalis, Vinca.

Hemispherical, *hemisphericum*. Hyoscyamus aureus, Tournefortia mutabilis, Hibiscus Syriacus.

Conical, *conicum*. Heliotropium.

Egglike, *ovoideum*. Genipa.

Clubshape, *clavatum*, *claviforme*. Jasione montana, Cinchona, Epilobium tetragonum.

Arrowhead-like, *sagittatum*. Thalictrum elatum.

Linear, *lineare*. Sparganium erectum, Campanula, Dianthus, Silene.

Awlshape, *subulatum*. Hippuris vulgaris, Tripsacum dactyloides, Castanea vesca.

Threadlike, *filiforme*, *capillare*. Zea Mays, Casuarina.

Angular, *angulosum*. Muntingia.

Three-cornered, *trigonum*, *triquetrum*. Tulipa sylvestris, Albuca major, Peganum.

Four-cornered, *tetragonum*. Ludwigia.

Five-cornered, *pentagonum*.

Dilated, *dilatatum*. Spreading out in a plate from the centre to the circumference. Rumex scutatus, Orobanche major, Hura crepitans.

Orbicular, *orbiculare*. Round and flat. Berberis, Lythrum spicatum.

Bucklershape, *peltatum*. Fixed upon the ovary or style by its centre, and spread out into a large surface. Sibthorpia Europæa, Arbutus Unedo, Pyrola minor, Stapelia, Sarracenia, Hypopitys lutea.

Radiated, *radiatum*. Base enlarged into a buckler, limb forming rays. Papaver somniferum, P. erraticum, Nymphæa.

Starlike, *stellatum*. Cut into lobes like a star. Asarum, Pyrola uniflora, Garcinia.

Umbilicated, *umbilicatum*. Having a depression in the centre. Hura crepitans.

Funnelshape, *infundibuliforme*. Kœmpferia longa.

Perforated, *perforatum*. Pierced with a hole in the middle. Lilium, Viola Rothomagensis.

Folded, *plicatum*. Limnanthes plicata.

¶ Hooked, *uncinatum*, *hamatum*. Bent at the end like a hook. Verbena glomerata, Colutea.

Pointed, *acutum*. Leucojum æstivum, Salix viminalis.

Blunted, *obtusum*. Allium porraceum, Tulipa sylvestris, Physalis Alkekengi, Andromeda, Brassica, Crambe Tartarica.

Truncated, *truncatum*. Maranta.

Nicked, *emarginatum*. Butomus umbellatus, Lathræa simplex, Jasione montana, Cheiranthus fruticulosus, Circæa.

Halfmoonlike, *semilunatum*, *lunatum*, *lunulatum*. Fumaria lutea.

¶ Toothed, *dentatum*. Hura crepitans.

Fine-toothed, *denticulatum*. Fumaria sempervirens.

Crenated, *crenatum*, *crenulatum*. With rounded cuts. Crocus sativus, Pyrola.

Fringed, *ciliated*. Furnished with fine hairs on the edge. Acetosa scutata, Sanguisorba media.

¶ Simple, *simplex*. Not divided. Pedicularia palustris, Borrago officinalis, Centranthus marinus.

Divided, *divisum*. Divided more or less deeply.

Jagged, *laciniatum*. Xylophylla.

Two-cut, *bifidum*. Most labiatæ, Compositæ, Salix alba.

Three-cut, *trifidum*. Narcissus, Phlox, Polemonium, Cneorum.

Four-cut, *quadrifidum*. Plumbago, Heliotropium Europæum.

Many-cut, *multifidum*. Crocus multifidus, Turnera.

Two-lobed, *bilobatum*. Divided into two large segments. Glaucium luteum, Scrofularia sambucifolia.

Three-lobed, *trilobatum*. Lilium, Tulipa, Campanula.

Four-lobed, *quadrilobatum*. Parnassia, Chamænerion spicatum.

Five-lobed, *quinquelobatum*. Moneses grandiflora, Matthiola sinuata.

Parted, *partitum.* When it is difficult to determine whether the stigma be cut or lobed.

¶ Two-flaked, *bilamellatum.* Composed of two flakes. Gratiola, Iris.

Sheathing, *vaginans.* Composed of two flakes, one sheathing the other. Sideritis.

¶ With a ring of hairs, *annulo villoso instructum.* Lobelia.

With a glandular ring, *annulo glanduloso instructum.* Tournefortia mutabilis.

With a membranaceous border, *limbo membranaceo instructum.* Vinca rosea.

With a membranaceous pitcher, *urceolo membranaceo instructum.* Scævola.

¶ Upright, *erectum.* Long, and in the direction of the axis of the flower. Statice pulchella.

Oblique, *obliquum.* Not in the direction of the axis. Actæa.

Twisted, *tortum.* Bent like a corkscrew, or twisted pillar. Nigella Hispanica, Begonia.

Bent inwards, *inflexum.* Maranta, Goodenia.

Revolute, turned outwards, *reflexum, recurvum.* Bent towards the circumference of the flower. Many campanulæ, Acer majus, Chamænerion spicatum.

¶ Bald, *glabrum.* Castanea vesca.

Velvety, *velutinum.* Glaucium luteum, Hyoscyamus aureus.

Downy, *pubescens.* Acer majus, Platanus.

Villous, *villosum.* Tripsacum, Gramineæ, Myriophyllum spicatum.

Hairpencil-like, *penicilliforme.* Covered with hairs collected together like a painter's brush. Triglochin maritimum, Oxyria rotundifolia.

Bottlebrushlike, *aspergilliforme.* Hairs disposed in whirls round an axis, like a bottlebrush, holywater sprinkle, or gunbrush. Arundo vallatoria, Many other gramineæ.

Feathery, *plumosum.* Hairs placed along the sides like the vanes of a feather. Avena elatior, and many other gramineæ. Pl. 11, fig. 7.

Granular, *granulosum.* Covered with small nipplelike grains. Mirabilis Jalapa, Convolvulus inflatus, Hibiscus Rosa-Sinensis, H. Syriacus.

Viscous, *viscosum.* Nicotiana fruticosa.

Furrowed, *sulcatum.* Salix rosea, Musa.

The colour of the stigma ought also to be observed.

It is sometimes difficult to distinguish between the style and the stigma, especially when the stigma is lateral as in colutea.

GYNOSTEMIUM.

Column, Columna, Pistillum antheriferum. *A sexual organ formed by the union of those of the two sexes into one columnar mass.* Pl. 12, fig. 2, 3, 4, 6, and 8.

Parts.

Filaments, *Synema.* The part that appears to support the male organs.

Stigma, *Gynizus.* The moist and viscous surface of the female organ. Pl. 12, fig. 2 a; 4 b; 6 c; 8 d.

Rostellum. An elongation of the stigma above the gynizus, frequently covering it. Pl. 12, fig. 6 e.

Caudicle, *Caudicula.* The pedicell, or solid filament, that carries the pollen masses. Pl. 12, fig. 1 b; 5 a.

Retinacle, *Retinaculum.* The globular, viscous body to which the caudicles are attached, and by which the pollen masses are connected together. Pl. 12, fig. 1 a; 5 b.

Clinandrum. The cavity in the upper part of the gymnostemium above or behind the gynizus, in which the anthers or pollen masses are lodged. Pl. 12, fig. 2, e; 4 f.

Locellus. The particular cavity in which each anther or pollen mass is lodged. Pl. 12, fig. 2 e.

Pollen mass, Anther Linnæus, *Massa pollinica, Anthera.* The whole mass of pollen, or naked anther. Pl. 12. fig. 1 c, d; 2 e; 4 f.

Massula. The two separate pieces of which each pollen mass is composed in some genera. Pl. 12, fig. 9 and 10.

Septulum. The division between the two locelli. Pl. 12, fig. 2 f; 4 g.

Proscolla. The glandular swelling at the top or middle of the rostellum, secreting a viscous humour, which enables the pollen masses to slide down, when the clinandrium opens. Pl. 12, fig. 2 c; 5 b.

Staminodium. Appendages which appear to be abortive anthers. Pl. 12, fig. 2 d; 3 e; 4 e; 6 f g.

Bursicle, *Bursicula.* The end of the rostellum forming a hollow in which the retinacle nestles. Pl. 12, fig. 2 b; 4 a.

As this construction is found only in the orchideæ, it is needless to mention the several variations; the principal

ones will occur in the explanation of the twelfth plate.—The *Orchideæ* are the 21st family of the second series, and are described in vol. ii. p. 197 to 215.

RECEPTACLE OF THE FLOWER.

Receptaculum, Torus, Sedes floris, Thalamus, Discus, — thalamum — clinium. *The expanded point of the peduncle from which the several parts of the flower arise.*

Contracted, *Receptaculum contractum.* The dimension being small.—The limits of the receptacle are the points from whence the corolla arises, if there is one, or the sexual organs, if there is not any corolla.

Dilated, *dilatatum, latum.* Potentilla.

Flat, *planum.* Potentilla.

Hollow, *cavum.* Rosa.

Convex, *convexum.* Rubus.

Prominent, with a gynophore, *prominens, gynophoratum.* Having a prominent projection, or gynophore. Cleome, Reseda, Dianthus, Silene.

Gynophore.

Carpophore, Gynophorum, Carpophorum. *A prominency arising from the receptacle, supporting the pistill.*

One-styled, *Gynophorum monostylum.* Supporting a single ovary. Cleome, Dianthus, Silene.

Many-styled, *polystylum.* Myosurus, Ranunculus, Gomphia nitida.

Stamen-bearing, *staminiferum.* Supporting the stamens also. Thalictrum, Cleome pentaphylla, Silene, Passiflora.

Blossom-bearing, *corolliferum.* Supporting the petals also. Dianthus, Silene.

¶ Conical, *conicum.*

Cylindrical, *cylindricum.*

Hemispherical, *hemisphericum.*

It is sometimes difficult to distinguish between the gynophore and the nectary.

Disk.

Discus. A protuberance on the receptacle of the flower, from whence the petals and stamens arise. Rhamnus.

Gonophore.

Gonophorum. An elongation of the receptacle of the flower, from whence the stamens and pistills arise. Annonaceæ, Magnoliaceæ.

Anthophore.

Anthophorum. An elongation of the receptacle of the flower, arising from the bottom of the calyx, and throwing out by the petals, stamens, and pistills. Caryophylleæ, especially in Silene.

Thecaphore.

Thecaphorum, Basigynium. A gynophore from whence only one ovary arises. Phaca, Cleome.

Polyphore.

Polyphorum. A gynophore from whence several ovaries arise. Fragaria.

NECTARY.

Nectarium. *A glandular organ, situated upon the receptacle of the flower, distilling peculiar juices.*

Position.

On the receptacle, *Nectarium epiclinum.* To which belong the following variations:

Gynobasic, *gynobasicum.* Growing under the ovary, and not extending beyond it. Labiatæ, Ruta, Cneorum tricoccum.

Epigynophoric, *epigynophoricum.* Placed under the ovary, on the top of the gynophore. Cucubalus.

Contracted, *contractum.* Under the ovary, and not wider than it. Aurantiaceæ, Cneorum tricoccum.

Marginal, *marginans.* Broader than the base of the ovary. Menyanthes, Borragineæ, Rhamnus. Pl. 11. fig. 5.

Adherent, *adherens.* The edge extends along the surface of the ovary, and is united with it throughout its whole extent. Lycium, Physalis Alkekengi, Convolvulus—sometimes this nectary can only be distinguished from the ovary by its different colour, and glandular appearance.

Half-adherent, *semi-adherens.* The edge adheres only to the bottom of the ovary, and is free at the upper part. Melampyrum, Scrofularia.

Free, *liberum.* The edge not connected with the ovary. Menyanthes.

One-sided, *unilateral.* Attached to one side only of the ovary. Melampyrum arvense, Saxifraga sarmentosa.

Peristomic, *peristomicum.* Spread over the receptacle, as far as the place from whence the stamens arise. Sapindeæ, Myrteæ, Rosaceæ, Leguminosæ. — This nectary is found only in flowers whose calyces are gamosepalous and stamens perigynous, or in those which have only a single floral integument of one piece; and seems to push the stamens towards the opening of the calyx or perigonium.

Periandric, *periandricum.* Placed round the stamens. Xylophylla montana. — Found only in monadelphous flowers.

Peripetalic, *peripetalum.* Surrounding the corolla. Chironia frutescens.

¶ Epigynous, *epigynum.* Placed upon the ovary. Cornus, Rubiaceæ, Umbelliferæ, Cucurbita esculenta.

Crowning, *coronans.* Forming a crown upon the ovary. Compositæ, Astrantia.—When this nectary is situated on the junction of the ovary with the calyx, it is difficult to distinguish it from a peristomic nectary. Campanula.

Expanding, *expansum.* Extended upon the top of the ovary. Saxifraga hypnoides.

2. *Form.*

Gynophore-like, *Nectarium gynophoroideum.* Rising up the ovary, like a gynophore. Creorum tricoccum, Zygophyllum Morgsana, Corchorus hirsutus.—This is usually of a closer and more glandular texture than a true gynophore.

Disk-like, *discoideum, disciforme.* Flat, orbicular, and serving as a basis for the ovary to rest upon. Gratiola officinalis.

Ringlike, *annularium.* In form of a ring. Scrofularia sambucifolia, Cestrum, Polemonium vulgare, Chironia frutescens, Passiflora cærulea. Pl. 11, fig. 4.

Sack-like, *sacelliforme.* Forming a purse in which the ovary is placed until it is fully grown. Balanites Ægyptiaca.

Scale-like, *squamiforme.* In the form of a scale. Grevillea.

Bunched, *gibbosum.* Swelled out upon one side. Salvia.

Beaked, *rostratum.* Lengthened out in a beak upon one side. Scutellaria. Pl. 11, fig. 12.

Fine-toothed, *denticulatum.* The edge divided into small teeth. Datura, Tatula.

Sinuated, *sinuatum*. Cut into sinuses, the divisions not being very deep. Cobea scandens.

Lobed, *lobatum*. Cuts very deep.

Two-lobed, *bilobatum*.

Three-lobed, *trilobatum*. And so forth.

3. *Duration.*

Persisting, *Nectarium persistens*. Remaining after the ripening of the fruit. Cobea scandens.

Vanishing, *evanescens*. Becoming smaller as the fruit ripens, and disappearing at last. Saxifraga hypnoides.

Nectariferous Flakes.

Laminæ nectariferæ, Glandulæ nectariferæ. Small rounded flakes, performing the office of nectaries. Cotyledon and some other crassulaceæ, Crambe, Biscutella and other cruciferæ, Hypericum Ægyptiacum, Xylophylla montana, Jatropha panduræfolia.—Tilia alba.

APPENDAGES TO THE FLOWER.

Nectaria *Linnæus*, Appendicula florum. *All those anomalous integuments or organs, not included in the beforementioned parts; some of which appear to be abortive organs; others to be destined for the secretion of peculiar juices; and a third set to be formed for the sake of variety, and of affording means to distinguish the several races and families of vegetables; so that a polytheist who should consider the work of creation to be performed by subordinate agents, under the inspection of The Supreme, might reasonably infer them to be mint marks for each agent to recognize his own handywork.*

Spur, Calcar, Productum, Nectarotheca,—centhrum. A hornlike or tubular projection of one of the floral integuments; as of the calyx, Balsamine; of the corolla, Linaria; or of the perigonium, Orchideæ: it generally contains a nectariferous gland.

Bunch, *Gibbositas*. A very short and obtuse spur.

Cornet, Hood, Helmet, *Cornu, Capulum, Galea*. Broad spurs resembling the articles mentioned.

Perapetalum, Nectarilyma. Any appendages attached to the corolla or its petals. Menyanthes.

Peraphyllum. Any appendages attached to the calyx, Scutellaria; or to the perigonium, Soda.

Crown, Cup, *Corona, Scyphus, Paracorolla.* A kind of corolla placed within the real corolla, or corollalike perigonium. Narcissus.

Parapetala. Apparent petals seated within the true petals. Helleborus.—They appear to be abortive stamens.

Parastades. Barren filaments, composed of cells in divers rows, situated between the petals and the stamens. Passiflora, Sparmannia.

Nectaristigmata. Coloured spots at the base of the petals. Papaver.

Scales, *Squamæ.* Small appendages to flowers.

Periphyllia, Appendices. Scales surrounding the ovary. Gramineæ.

Lamellæ. Scales, or petal-like appendages upon the corolla. Silene, Nerium, Oleander.

Parastyli, Prosphyses. Abortive or imperfect pistills, mixed with the perfect ones.

Paracarpium. An abortive or imperfect ovary; or that part of a male flower where the ovary would be placed, if it were hermaphrodite.

Parastamina. Abortive stamina, or parts which resemble stamina, but do not perform their office.

Perisporum. Filaments surrounding the ovary. Cyperaceæa.

Lepisma. A membranaceous or slightly fleshy scale at the base of the ovary. Pæonia, Aquilegia vulgaris: these appear to be in some cases abortive stamens, in others expansions of the receptacle, which latter sometimes entirely surround the ovary. Pæonia Moutan papaveracea.

Sarcoma. A fleshy part, of various shape, either surrounding the ovary, or placed near it. Cobæa.

Urceolus, Perigynium. A small cartilaginous, or membranaceous bladder, surrounding the ovary, and open at top, to let the style pass through. Carex. Some call this a nectary, although it does not secrete a nectareous juice; others a corolla, although it is seated within the stamens; others a capsule, although it is no part of the pistill or fruit; others a lodicule.

Hood, *Stylotegium.* A hollowing out of the united filaments of the stamens, covering the ovary like a hood. Asclepiadeæ.

Saccus, Corona, Stylotegium. Filaments of the stamens united together. Stapelia.

Horns, *Cornua.* The hornlike appendages by which the stylotegium is terminated. Stapelia.

Beak, *Rostrum*. Cornu clavatum. The upright points of the horns. Stapelia.

Wing, *Ala, Appendix*. A compressed appendage on the back of the stylotegium. Stapelia.

Tongues, *Lingulæ*. Appendages from the bottom of the stylotegium, alternating with the horns, and resting upon the corolla. Stapelia.

Shield, *Scutum*. A circular disk surrounding the stylotegium. Stapelia.

FRUIT.

Fructus,—carpon. *The ovary arrived at its maturity.*

General Distinctions.

Simple, *Fructus simplex*. Coming from a single ovary. Cerasus.

Compound, *compositus, multiplex*. Arising from several ovaries, all belonging to the same flower. Rubus.

Aggregated, *aggregatus*. Arising from several ovaries originally belonging to different flowers. Morus.

¶ *Autocarpicus*. Growing without adhering to any organs, or being covered by them.

Heterocarpicus. Conjoined to other parts that alter its appearance.

Pseudocarpicus. Hidden by the surrounding parts, which appear to constitute the fruit itself.

¶ *Gymnocarpicus*. Naked, without any cover. Cerasus.

Angiocarpicus. Enclosed in a cover, either a cupule, Quercus; aggregated bracteæ, Pinus, Larix; or an involucrum, Compositæ.

Carpelle, *Carpellum, Chorion*. The separate parts of a compound fruit arising from each ovary.

Carpidium. The separate fruits, in an aggregated fruit, that arise from each flower.

Pericarp, *Pericarpium, Conceptaculum seminum*. That part of the fruit that contains the seeds.

Induviæ, Induviæ florales, Folliculi. Parts of the flowers that remain and accompany the pericarp.

PSEUDOSPERMIC FRUITS.

Naked seeds, Fructus pseudospermi, Fructus carcerulares, Semina nuda. *Simple fruits, not opening of themselves when ripe, containing only a single seed, or at most but few, and having the pericarp so exactly joined to the seed, that the latter appears to have only its own covers.*

Cariopsis.

Seed, Grain, Cerio, Cerium. *Fruit simple, dry, one-seeded, with the pericarp strictly united to the proper covers of the seed.* Gramineæ. Pl. 13, fig. 1, 2 and 3.

Globular, *Cariopsis globulosa.* Panicum Italicum.
Roundish, *subrotunda.* Zea Mays, Holcus succulentus.
Oblong, *oblonga.* Triticum.
Grooved, *canaliculata.* Hollowed out in a groove. Triticum, Secale, Avena, Hordeum.
¶ Beaked, *rostrata.* Having a kind of beak or point at top, the remains of the style. Phleum pratense.
Two-beaked, *birostrata.* Having two points or beaks at top. Briza, Ehrharta panicea.
¶ Enveloped, *induviata, glumellâ tecta.* Enveloped in a persistent glumelle. Oryza sativa.
Naked, *nuda.* Zea Mays.

Akenium.

Seed, Achæna, Achenium, Akena, Acenium, Cypsela. *Fruit simple, one-seeded, usually dry, the pericarp more or less intimately united with the proper covers of the seed, and with the tube of the calyx.* Compositæ. Pl. 13, fig. 4, 5, 6.

Egglike, *Akenium ovoideum.* Balliera.
Reverse egglike, *obovoideum.* In form of an egg, the small end being the basis. Hippophæstum vulgare, Onopordum vulgare, Polymnia.
Topshape, *turbinatum.* Galardia, Agriphyllum, Galinsaga triloba.
Three-sided, *trigonum.* Baltimora.
Compressed, *compressum.* Flattened sideways. Careopsis, Zinnia, Silphium, Bellis.
Bent, *curvatum.* Tragopogon pratense, Calendula.
Angular, *angulatum.* Sigesbeckia.
Winged, *alatum.* Having a thin, broad edge. Achillea millefolia, Ximenesia encelioides.

¶ Drupe-like, *drupeolatum*. Having a succulent sarcocarp resembling that of a drupeole, Clibadium.

¶ Pappous, *papposum*, *lanuginosum*. The edge of the top having hairs or bristles, the remains of the limb of the calyx. Taraxacum vulgare, Lactuca, Carduus, Senecio, Inula, Aster.

Awned at the tip, *apice aristatum*. Having awlshape awns at the tip. Coreopsis, Bidens.

Two-horned, *bicorne*. Having two hornlike points at top. Silphium.

Chaffy at the tip, *apice paleaceum*. Having at top small scales or chaffs, not sufficiently numerous to form a pappus. Helianthus.

Two-chaffed, *bipaleaceum*.

Three-chaffed, *tripaleaceum*.

Fringed at the tip, *apice ciliata*. With hairs like eyelashes. Echinops.

Margined at top, *apice marginatum*. Having a membranous ring round the edge of the tip. Cotula, Tanacetum Matricaria vulgaris, Anthemis tinctoria, Pyrethrum inodorum.

Notched at top, *apice emarginatum*. Silphium Encelia.

Narrow-necked, *colliferum*. Narrowed at top, and surrounded by a pappus. Taraxacum.

Bald, unarmed, *calvum*, *muticum*. Having neither pappus nor any other remains of the calyx. Lapsana communis, Hippophæstum vulgare, Tanacetum, Artemisia, Anthemis, Leucanthemum vulgare.

The calyx sometimes forms a double crown of two different kinds.

Collum.

Stipes, Pedilis. *The narrow elongated tip of the akenium, destined to support the pappus.*

Pappus.

Lanugo. *The limb of the abortive calyx that surmounts the akenium in many plants.* Pl. 13, fig. 5.

Sessile, *Pappus sessilis*. When the limb of the calyx which forms the pappus is not contracted at bottom. Hieracium, Sonchus, Centaurea, Carduus, Senecio, Erigeron Cineraria. Pl. 13, fig. 5.

Pedicelled, *pedilatus, stipitatus.* When the pappus is placed upon an ovary that is contracted and drawn out into a pedile or stipes. Taraxacum vulgare, Tragopogon, Lactuca.

Simple, *simplex, pilosus, pilaris.* The hairs which form the pappus appear to the naked eye to have neither teeth nor branches. Lactuca, Sonchus, Centaurea, Erigeron, Senecio.

Feathery, *plumosus, ramosus.* The hairs having other hairs upon them. Taraxacum vulgare, Achyrophorus radicatus, Urospermum picroides.

Silky, *sericeus.* Composed of soft, brilliant hairs, like silk. Lactuca, Sonchus.

Bristly, *setosus.* Composed of stiff hairs like hog's bristles. Hyoseris hedypnois, Arctium major.

Chaff-like, *paleaceus.* Composed of small narrow chaffs. Cyanus vulgaris, Phrygia nigra, Bidens tripartita.

Equal, *æqualis.* All the hairs are of equal length. Most pappi.

Unequal, *inæqualis.* Some of the hairs longer than the others. Picris hieracioides, Serratula tinctoria, Cyanus vulgaris, Onopordium vulgare.

Wanting, *nullus.* The calyx has no pappus. Lapsana, Tanacetum.—This is only used when the plant has a considerable analogy to those that are pappose.

Cremocarpium.

Fruit, Polakena, Polachena, Carpadelium. *Fruit simple, composed of two cells, or coques united, and shut up in the calyx, but separable lengthways when ripe.* Umbelliferæ. Pl. 13, fig. 7 and 8.

Sphærical, *Cremocarpium sphæricum.* Coriandrum sativum.

Ellipsoid, *ellipsoideum.* Carum officinale, Æthusa tenuifolia.

Egglike, *ovoideum, ovatum.* Bupleurum.

Oblong, *oblongum.* Myrrhis odorata.

Awlshape, *subulatum.* Sandix vulgaris.

Orbicular, *orbiculare.* Tordylium.

Compressed sideways, *utroque latere compressum.* Carum vulgare, Apium, Smyrnium vulgare.

Compressed on the two faces, *utráque facie compressum.* Cicuta, Smyrnium vulgare.

Angular, *angulosum.* Smyrnium vulgare, Myrrhis odorata.

Winged, *alatum.* Laserpitum triquetrum.

Crowned, *coronatum.* The limb of the calyx left and forming a crown on the summit. Œnanthe, Coriandrum sativum.

¶ Indivisible, *impartibile.* When the fruit of an umbelliferous plant is not separable into two cells—Sanicula Marylandica—A very rare case, referred here by analogy.

Two-partible, *bipartibile.* Partible into two cells. Most umbelliferæ.

Latuscules.

Latusculæ. *The external surface of the cells, or coques, opposed to that by which they are united.* Pl. 13, fig. 7 d.

Convex, *Latusculæ convexæ.* Bolax, Cachrys.

Turgid, *turgidæ.* Smyrnium.

Contracted, *contractæ.* Pimpinella, Sison.

Bent in and wrinkly, *introflexo rugulosæ.* Hasselquistia.

Flattened, *explanatæ.* Spread out into a membranaceous margin.

¶ Uncut, *integræ.* Mulinum.

Nicked, *emarginatæ.* Pastinaca, Heracleum Sphondylium.

Winged, *alatæ.* Imperatoria, Angelica.

Crenulated, *crenulatæ.* Hasselquistia.

Toothed, *denticulatæ.* Hasselquistia.

Thickened, *incrassatæ.* Tordylium.

Ringed, *annulatæ.* Cachrys dichotomum.

Sinuatedly lobed, *sinuato-lobatæ.* Artedia.

Glochidated, *glochidatæ.* Drusa.

Commissures.

Commissuræ. *The internal faces of the cells, or coques, which are next to each other, before the fruit is parted.* Pl. 13, fig. 7 c, c.

Flat, *Commissuræ planæ.* Æthusa.

Streaked, *striatæ.* Exoacantha.

Convex, *convexæ.* Angelica.

Ribbed, *costatæ.* Fischera.

Concave, *concavæ.* Hollow, with a membrane spread over it. Coriandrum sativum.

Furrowed, *sulcatæ.* Chærophyllum.

Holed, *foratæ.* Coriandrum testiculatum.

Smooth, *æquabiles.*

Transversely wrinkled, *transversim rugulosо-lamellatæ.* Artedia.

Raphe.

The line of junction of the two cells, or coques, of a cremocarpium.

Plain, *Raphe simplex.* Cachrys odontalgica.
Straight, *rectilinea.*
Narrowed, *attenuata.*
Acute, *acuta.*
Blunt, *obtusa.*
Thickened, *incrassata.*
Ribbed, *costata.* Coriandrum sativum.
Waved, *undulata.* Tordylium.
Wrinkled, *rugulosa.* Cachrys microcarpa.
Sinuatedly waved, *sinuato-undulata.* Artedia.
Toothed, *denticulata.*
Bristly, *setosa.* Scandix.
Marginal, *marginalis.* Imperatoria.
Nearly axile, *subaxilis.* The cells being contiguous to each other by their flat sides, either about the middle of the commissure or behind the axis. Mulinum.
Lateral, *lateralis.* The axis being in the narrowest part of the fruit, which is compressed sideways. Hydrocotyle, Smyrnium.

Spermapodium.

The axis that is between and supports the two cells, or coques of a cremocarpium of the umbelliferæ; usually 2-parted at top. Pl. 13, fig. 7 a.

Spermapodophore.

Spermapodophorum. *The thickened bottom part of the axis.* Pl. 13, fig. 7 f.

Vallecules.

Valleculæ. *Depressions between the ribs, striæ, &c. of the cells, or coques, of a cremocarpium.* Pl. 13, fig. 7 e.

Flat, *Valleculæ planæ.*
Convex, *convexæ.*
Acute, *acutæ.*
Obtuse, *obtusæ.*
Smooth, *æquabiles.*
Polished, *læves.*
Streaked, *striatæ.*
Wrinkled, *rugulosæ.*
Waved, *undulatæ.* Coriandrum sativum.
Scrobiculate, *scrobiculatæ.* Hydrocotyle, Solandra.

Reticulate, *reticulatæ*. Hydrocotyle, Solandra.
Warty, *verrucosæ*. Odontites, Ammi Copticum.
¶ One-vittated, *univittatæ*. With one vitta under each vallecule.
Two-vittated, *bivittatæ*.
Many-vittated, *multivittatæ*. Chærophyllum.
Without vittæ, *evittatæ*. Ægopodium.
¶ Thorny, *muricatæ*. Odontites, Ammi Copticum.
Hairy, *pilosæ*.
Roughish, *hispidulæ*. Anisum, Bubon Macedonicum.
Downy, *pubescentes*. Tragium.
Villous, *villosæ*. Libanotis.
Clothlike, *tomentosæ*. Erioclaia.
Bristly, *setosæ*. Torilis.
Prickly, *aculeatæ*. Caucalis.
Hooked, *hamosæ*. Sanicula.
Glochidated, *glochidatæ*. Daucus.
Ribbed, *costatæ*. Anisum.
Winged, *alatæ*. Laserpitium.

Vittæ.

Bands or channels filled with an aromatic resin, or oil, contained in the cells, or coques, of a cremocarpium.

In the external integument of the cells, *Vittæ integumento externo, epicarpicæ*. Physospermum, Cuminum, Anisum.
In the internal integument, *integumento interno, endocarpicæ*. Pleurospermum, Cachrys, Coriandrum sativum.
In the proper membrane of the albumen, *membranâ albumini propria, epispermio*. Agasyllis, Ferula.
In the cortical or corky substance, *substantiâ corticali vel suberosâ, mesocarpio*. Phellandrium.
¶ Dorsal, *dorsales*. In the vallecules of the latuscules. Siler, Cuminum. In which case, the cells being embossed, the vittæ have been confounded with the ribs.
Commissural, *commissurales*. In the commissures. Most umbelliferous plants; Coriandrum sativum has only these, wanting the dorsal.
¶ From the stylopodium (or calyx) to the base of the fruit, *a stylopodio (vel calyce) ad basin*. Æthusa.
From the tip of the commissure, in an acute angle, *ex apice commissurarum sub angulo acuto, conjugatæ*. Sphondylium.
From the tip of the commissure, distant bent, *ex apice commissurarum, distantes incurvæ*. Heracleum.

¶ Bowed, *arcuatæ*. Æthusa.
Elliptical, *ellipticæ*. Tordylium Syriacum.
Concentric, *concentricæ*. Tordylium Apulum.
Excentric, *excentricæ*. Ferula nodiflora.
Simple, *simplices*. Anethum.
Double, *duplices*. Athamanta.
Multiple, *multiplices*. Ferula.
Anastomosing, *anastomosantes*. Ferula Tartarica.
¶ Undivided, *integræ*.
Jointed, *articulatæ*.
Necklaceshape, *moniliformes*.
Antennæformes. Like the feelers of insects. Ammi Boeberi.
Filis succosis muscorum similes. Like the succulent threads of mosses. Ferula, Peucedanum Ruthenicum.
Partitioned, *septulis distincte*. Cuminum.
Waved, *undulatæ*. Agasyllis Caucasica, Cachris latifolia.
Linear, *lineares*.
Acute, *acutæ*.
Acuminate, *acuminatæ*. Coriandrum sativum.
Narrow, *attenuatæ*. Pastinaca.
Blunt and clubshape, *obtusæ claviformes*. Heracleum sphondylium.
Tubular, *tubulosæ*. In most umbelliferæ.
Solid threadlike, *solidæ filiformes*. Myrrhis, Caucalis.

Polakena.

Fruit, Polachena, Carpadelium. *A cremocarpium composed of more than two cells, or coques*. Araliaceæ.

Carcerule.

Carcerula. *Fruit simple, not opening, nor adhering closely to the proper coats of the seed; being neither a cariopsis nor an akenium.*

Globular, *Carcerula globulosa*. Lagetta.
Roundish, *subrotunda*. Ternstromia punctata.
Ellipsoid, *ellipsoidea*. Zostera marina.
Reniforme, *reniformis*.
Orbicular, *orbicularis*. Neurada prostrata.
Three-cornered, *trigona, triqueter, triangularis*. Fagopyrum esculentum, Rumex, Rheum.
Four-cornered, *tetragona*. Halesia tetraptera.
Compressed, *compressa*. Flattened on two opposite sides. Fraxinus, Ulmus.

Depressed, *depressa*. Flattened downwards. Neurada prostrata.

Tongueshape, *linguiformis*. Compressed and drawn out like a tongue. Fraxinus.

Winged, *alata*. Extended out into a wing.

One-winged, *monoptera, unialata*. Fraxinus.

Winged at top, *epipterata*. Fraxinus, Casuarina.

Winged all round, *peripterata*. Ulmus, Paliurus.

Three winged, *triptera*. Rheum, Polygonum emarginatum.

Four winged, *tetraptera*. Combretum laxum.

Five winged, *pentaptera*. Combretum secundum.

¶ Adhering, *adhærens*. United to the calyx. Trapa natans, Halesia tetraptera.

Free, *inadhærens*. Not united to the calyx. Rumex, Rheum Polygonum, Ternstromia.

Induviated, *induviata*. Covered by a persistent calyx. Salsola Fragus.

¶ One-celled, *unilocularis*. Scirpus, Polygonum, Salsola.

Two-celled, *bilocularis*. Circæa ovalifolia, Ternstromia punctata.

Many-celled, *multilocularis*. Punica Granatum.

¶ One-seeded, *monosperma*. Rumex, Salsola.

Two-seeded, *disperma*. Circæa ovalifolia.

Three-seeded, *trisperma*, &c.

Many-seeded, *polysperma*. Ternstromia punctata.

Cystidium.

Utriculus. *Fruit one-seeded, not adhering to the calyx, pericarp scarcely visible, umbilical cord distinct.* Amaranthaceæ. Pl. 13, fig. 9 and 10.

Sacellus.

Fruit consisting of a seed covered with a membranaceous envelope. Soda. Pl. 13, fig. 12 and 13.

Thecidion.

Thecidium. *Pericarp dry, hard, crustaceous.* Polygonum. Pl. 13, fig. 6.

Achena.

Pericarp leatherlike, not woody, not adhering to the seed. Cyperaceæ. Pl. 13, fig. 15 and 16.

Catoclesium.

Pericarp leatherlike, not woody, covered by the enlarged, but not fleshy calyx. Chenopodium. Pl. 13, fig. 18 and 19.

Sphalerocarpe.

Sphalerocarpium. *Pericarp leatherlike, not woody, covered by the calyx become fleshy.* Blitum.

Scleranthe.

Scleranthum, Dyclosium. *Fruit consisting of a seed united with the bottom part of the hardened perigonium.* Mirabilis Jalappa. Pl. 13, fig. 20 to 23.

Samara.

Pterides, Pteridium. *Fruit few-seeded, membranaceous, much compressed, one or two-celled, not opening, frequently enlarged on the edges into a wing or appendage.* Fraxinus. Pl. 13, fig. 24, 25 and 26.

Glans.

Calybion. *Fruit fleshy and feculent, one-celled, one-seeded, pericarp adhering closely to the seed, fastened by its basis into a kind of leatherlike cup,* cupule, *formed of the scales of the involucrum.*

Open, *Calybion apertum.* Pericarp not totally hidden by the cupule. Quercus longæva. Corylus sylvestris. Pl. 14, fig. 2.

Closed, *clausum.* Pericarp totally hidden. Fagus sylvestris, Castanea vesca. Pl. 14, fig. 4.

¶ One-corned, *uniglans.* Cupule containing only one pericarp. Corylus sylvestris, Quercus. Pl. 14, fig. 1.

Three-corned, *triglans.* Castanea vesca.

¶ Opening, *dehiscens.* Cupule opening by valves, like a capsule, when ripe. Castanea vesca, Fagus sylvestris.

Not opening, *indehiscens.* Cupule remaining closed when ripe. Taxus, Ephedra.

Drupelike, *drupaceum.* Cupule formed of two substances, the inner woody, the exterior juicy so as to resemble a drupe.

Cupule, when in fruit. Vide p. 119.

Sphærical, *Cupula sphærica, globosa.* Castanea vesca.

Hemispherical, *hæmisphærica.* Quercus longæva. Pl. 14, fig. 2.

Ovoid, *ovoidea*. Ephedra.

¶ Upright, *erecta*. The orifice turned towards the point opposite to the base of its support. Taxus, Ephedra.

Reversed, *resupinata*. Fixed so that the orifice faces the base of its support. Podocarpus.

For the characters of the pericarp, reference may be made to akenium.

Nucule.

Nucula, Nux. *Fruit one-celled, one-seeded, not opening when ripe, with a long covering, the pericarp only slightly, or not distinct from the seed; frequently sunk in an involucrum.* Corylus sylvestris, Corylus tubulosa. Pl. 14, fig. 4.

Xylodium.

Fruit like a nucule, but without a cupule, and borne upon a fleshy support. Anacardium. Pl. 14, fig. 7.

Carcerulus.

Bacca sicca, Capsula indehiscens. *Fruit not opening, dry, many-celled, many-seeded.* Tilia. Pl. 14, fig. 8 and 9.

Amphisarca.

Capsula indehiscens. *Fruit not opening, dry, many-celled, woody on the outside, pulpy internally.* Adansonia. Pl. 14, fig. 13.

GYNOBASIC FRUITS.

Fructus gynobasici, Cenobionares, Cenobia. *Fruits simple, but composed of four or more cells*, eremi, *so far apart that they appear like so many separate fruits; but are all borne upon a gynobasis, more or less dilated and being the base of a single style.* Pl. 14, fig. 16 to 20.

Two-celled, *Cenobium bieremum.* Cerinthe.

Four-celled, *quadri-eremum.* Labiatæ, Borragineæ.

Five-eremed, *quinque-eremum.* Gomphia nitida. Pl. 14, fig. 16.

Six-eremed, *sex-eremum*, &c.

Eremes.

Globular, *Eremi globulosi.* Collinsonia Canadensis, Salvia officinalis.

Ellipsoidal, *ellipsoidei.* Salvia Hispanica, S. bicolor.

Ovoid, *ovoidei*. Lithospermum officinale, Ægonychon arvense, Cerinthe major.

Reverse ovoid, *obovoidei*. Gomphia nitida. Pl. 14, fig. 16.

Three-sided, *trigoni*. Molucella lævis, Lamium album.

¶ Leathery, *coriacei*. Phlomis fruticosa.

Crustaceous, *crustacei*. Salvia officinalis.

Boney; stonelike, *ossei, lapidei*. Lithospermum officinale, Ægonychon arvense.

Drupe, *drupeolati*. Prasium majus.

¶ One-celled, *uniloculares*. Labiatæ, Borrago officinalis, Gomphia nitida. Pl. 14, fig. 16.

Two-celled, *biloculares*. Cerinthe major, C. minor.

¶ One-seeded, *monospermi*. Labiatæ, Gomphia. Pl. 14, fig. 16.

Two-seeded, *dispermi*. Cerinthe major, C. minor.

Sarcobasis.

Fruit formed of a very large, very fleshy gynobasis, bearing five or more eremi, which were always very distinct. Ochnaceæ, Simaroubeæ, Castela. Pl. 14, fig. 16.

Microbasis.

Exostylus, Polexostylus. *Fruit formed of a very small, slightly fleshy gynobasis, bearing four eremi, but slightly parted when in flower.* Labiatæ, Borragineæ. Pl. 14, fig. 17 to 20.

SUCCULENT FRUITS.

Fructus succulenti, Fructus carnosi. *Fruits having a soft or pulpy sarcocarp, containing also only a few seeds, and not opening when ripe.* Pl. 15.

Drupe.

Stone fruit, Drupa, Prunus. *Fruit simple, fleshy, containing a single boney or woody cell.* Pl. 15, fig. 1.

Flesh, *Caro*. The sarcocarp, or pulpy part surrounding the stone.

Stone, *Pyrena, Nucleus, Ossiculus*. The boney or woody cell, in the middle of the drupe, being the endocarp or panninterne.

Shell, *Putamen*. The boney or woody part of the stone.

Sphærical, *Drupa sphærica.* Prunus Mahaleb, Cerasus racemosa.

Rounded, *subrotunda.* Prunus spinosa, Amygdalus Persica, Juglans regia.

Ovoid, *ovoidea, ovata.* Amygdalus communis.

Three-sided, *trigona.* Cocos nucifera.

One-furrowed, *unisulcata.* Daphne florida, Amygdalus.

¶ Large, *magna.* Cocos nucifera.

Small, *parva.* Daphne florida, Rivinia.

Utricular, *utricularis.* Very small, and having only a simple, membranous pannexterne. Chenopodium.

Pulpy, *pulposa.* Sarcocarp pulpy. Cerasus hortensis.

Fleshy, *carnosa.* Sarcocarp fleshy. Amygdalus communis, Juglans.

Thready, *fibrosa.* Sarcocarp thready. Cocos nucifera.

Juiceless, dry, *carcerularis, exsucca.* Pannexterne and sarcocarp dry, so thin and closely united with the stone that they can scarcely be distinguished. Ceratophyllum cornutum, Poterium minus.

¶ Adherent, *adhærens.* Juglans.

Free, *inadhærens.* Cocos, Prunus, Amygdalus.

Pannexterne.

Persistent, *Pannexterna persistens.* Cocos nucifera.

Falling off, *caduca.* Falling off when ripe, and leaving the stone. Juglans regia.

Stone.

Globular, *Putamen globulosum, globosum.* Cerasus.

Ovoid, *ovoideum.* Cocos nuciferum.

Cylindrical, *cylindraceum.* Cornus mas.

Compressed, *compressum.* Prunus domestica.

Lobed, *lobatum.* Guettardia speciosa.

¶ Valveless, *evalve.* Olea.

Two-valved, *bivalve.* Prunus, Amygdalus, Juglans.

Three-valved, *trivalve,* &c.

Furrowed, *sulcatum.* Cornus sanguinea, C. mas.

Engraved, *scrobiculatum.* With deep furrows, Amygdalus Persica.

Dotted, *punctatum.* Amygdalus communis.

¶ One-celled, *uniloculare.* Amygdalus, Juglans.

Two-celled, *biloculare.* Cornus sanguinea, Zizyphus.

Three-celled, *triloculare.* Trixis palustris.

Four-celled, *quadriloculare.* Tectona grandis.

Six-celled, *sexloculare.* Guettarda speciosa.

¶ Boney, *osseum*. Cocos nucifera, Cornus sanguinea, Amygdalus, Mespilus.
Paperlike, *chartaceum*. Areca Faufel.
Membranaceous, *membranaceum*. Phœnix dactylifera.
¶ One-seeded, *monospermum*. Juglans.
Two-seeded, *dispermum*, &c.

Drupeole.

Drupeola. *A drupe smaller than a pea.*

Utricle.

Utricula. *An utricular drupe.* Chenopodium.

Nut.

Nux. *Fruit containing a stone, the sarcocarpe being rather leathery than fleshy.* Juglans regia, Amygdalus. Pl. 15, fig. 2.
Rind, *Naucum*. The leatherlike sarcocarpe of a nut.

Nuculane.

Nuculanium. *Fruit fleshy, not crowned by the lobes of the calyx (the ovary not adhering to it) and containing several distinct stones.*
Pips, *Pyrenæ*, *Nuculæ*. The small stones included in a nuculane.

Pome.

Pomum, Melonida, Pyridion, Melonidium, Antrum. *Fruit fleshy, crowned by the limb of the calyx, containing several cells, disposed round the axis of the fruit.* Pl. 15, fig. 12 and 13.

Spherical, *Pomum sphericum*. Pyrus aucuparia.
Roundish, *subrotundum*. Pyrus sylvestris.
Ellipsoid, *ellipsoideum*. Mespilus Oxyacantha.
Topshape, *turbinatum*. Pyrus sylvestris, P. Cydonia.
¶ Cartilaginous-celled, *loculosum*. Panninterne thin cartilaginous, with a fleshy sarcocarp. Pyrus sylvestris.
Woody-celled, *nuculosum*. Panninterne woody or boney. Mespilus Germanica, M. digyna.

Pyrenarius.

A woody-celled pome. Mespilus. Pl. 15, fig. 16.

Balausta.

Fruit adherent to the calyx, crowned by its lobes, having a hard, leatherlike bark, with rather irregular cells containing seeds like nuts. Punica Granatus. Pl. 15, fig. 17.

Malicorium. The boney seeds of the punica granatus.

Pepo.

Peponida, Peponium. *Fruit fleshy or pulpy, bearing the seeds towards the circumference, which is harder than the centre, the latter being frequently empty.* Cucurbita. Pl. 15, fig. 21.

Globular, *Pepo sphæricus, globosus.* Cucurbita esculenta, Bryonia ruderalis.

Oblong, *oblongus.* Cucumis sativus.

Bottleshape, *lageniformis.* Cucurbita lagenaria.

Spindleshape, *fusiformis.* Cucumis chate.

Reverse topshape, *obturbinatus.* Sicyos angulata.

Kidneyshape, *reniformis.* Elaterium.

Curved, *curvatus.* Cucumis flexuosus.

¶ One-celled, *unilocularis.* Sicyos angulata.

Three-celled, *trilocularis.* Bryonia ruderalis, Cucumis prophetarum.

Ten-celled, *decemlocularis.* Cucumis sativus, Cucurbita esculenta.

In general a pepo has originally six or ten radiant partitions, three or five of which, taken alternately, have placentaria; but these characters are only visible in the ovary: after the fecundation the barren partitions are absorbed, and frequently the placentarian partitions also.

Hesperidium.

Aurantium, Bacca corticata. *Fruit fleshy, divided internally into several membranaceous cells, which may be divided without any tearing, pannexterne tough, covered with vesicular glands.* Citrus, Limon. Pl. 15, fig. 23.

Berry.

Bacca. *Fruit fleshy, without any stone, not included in the preceding kinds of fruit.* Pl. 17, fig. 1, 2, 4 and 5.

True, *Bacca vera.* Cells none, seeds not disposed in any order. Atropa Mandragora. Pl. 17, fig. 11.

False, *spuria.* Divided into cells with seeds disposed in a regular order. Ribes. Pl. 17, fig. 4 and 5.

¶ Globular, *sphærica, globulosa.* Ruscus aculeatus, Asparagus officinalis, Empetrum nigrum, Vitis, Ribes rubrum.

Ellipsoid, *ellipsoidea.* Ribes alpinum, Coffea Arabica.

Topshape, *turbinata.* Psidium pyriferum.

Discoid, *discoidea.* Phytolacca.

¶ Adherent, *adhærens.* United with the calyx, Ribes; or with the perigonium, Musa.

Free, *inadhærens.* Not united to the calyx, or perigonium. Asparagus, Physalis, Vitis.

¶ Crowned by the calyx, *coronata calyci.* Bearing at top the limb of the calyx. Ribes.

Crowned by the stigma, *coronata stigmate.* Bearing at top the stigma. Nymphæa.

¶ Barked, *corticosa.* The pannexterne strong, thick, dry or but slightly succulent. Citrus, Arbutus serratifolia.

Gourdlike, *cucurbitina.* Barked, thick, round, and like a pumpkin. Crescentia Cujete.

Camare-like, *camarea.* Having, like a camare, a furrow lengthways, and on the inside a placentarium corresponding with that furrow. Actea.

¶ One-celled, *unilocularis.* Cucubalus bacciferus.

Two-celled, *bilocularis.* Ligustrum vulgare.

Three-celled, *trilocularis.* Asparagus officinalis, Androsæmum officinale.

Four-celled, *quadrilocularis.* Paris quadrifolia.

Five-celled, *quinquelocularis.* Arbutus, Cookia punctata.

Many-celled, *multilocularis.* Citrus.

¶ Nuculaneous, *nuculosa.* Contains nucules. Sambucus nigra, Ilex vulgare. Pl. 15, fig. 3 and 4.

Two-seeded, *disperma.* Berberis.

Few-seeded, *oligosperma.* Asparagus.

Many-seeded, *polysperma.* Paris quadrifolia, Solanum, Vaccinium, Citrus, Ribes, Atropa lethalis.

Acinos.

A very soft berry, full of juice, transparent, one-celled, with boney seeds. Vitis vinifera. Pl. 15, fig. 3 and 4.

Acrosarcum.

Bacca infera. *A berry crowned by the limb of the calyx.* Ribes spinosum.

CAPSULAR FRUITS.

Fructus capsulares, Fructus dehiscentes. *Fruits dry, many-seeded, and opening of themselves when ripe.*

Follicle.

Folliculus, Conceptaculum. *Fruit membranaceous, univalve, long, and opening by a longitudinal suture.* Asclepiadeæ. Pl. 17, fig. 12.—They are never found single, unless by abortion.

Cylindrical, *Folliculi cylindracei.* Ceropegia.
Bellied, *ventricosi.* Asclepias Syriaca, Plumaria.
Swollen, *inflati.* Asclepias fruticosa.
Spindleshape, *fusiformes.* Nerium Oleander. N. Zeylanicum, Asclepias niger.
¶ Upright, *erecti.* Nerium Oleander.
Spreading, *divergentes, divaricati.* Tabernæmontana, Vinca major, Cameraria, Asclepias nigra.

Camare.

Camara. *Fruit more or less membranaceous, two-valved, always several united together proceeding from a single flower, each containing one or more seeds attached to the internal suture.* Ranunculaceæ. Pl. 17, fig. 13, 14, 15, 16, 17 and 19.
Deltoid, *Camaræ deltoideæ.* Triangular, Ranunculus bulbosus.
Cod-like, *leguminiformes.* Delphinium, Aconitum.
Swollen, *turgidæ.* Pœonia.
Compressed, *compressæ.* Alisma major, Helleborus viridis.
Winged, *alatæ.* Liriodendrum tulipifera.
Beaked, *rostratæ.* Helleborus, Sempervivum.
Tailed, *caudatæ.* Clematis recta, Atragene, Dryas.
¶ Upright, *erectæ.* Aconitum, Delphinium, Sedum.
Spreading, *divergentes.* Pœonia.
In whirls, *verticillatæ.* Pœonia, Clematis, Sempervivum.
Tiled-like, *imbricatæ.* Liriodendrum, Magnolia.
Soldered together, *coadunatæ.* Rubus.
¶ Dry, *siccæ.* Ranunculus, Trollius, Aconitum.
Drupelike, *drupeolatæ.* Potamogeton, Rubus.
¶ One-seeded, *monospermæ.* Anemone, Adonis, Ranunculus, Rubus.
Many-seeded, *polyspermæ.* Delphinium, Pœonia, Aconitum, Trollius.

¶ Opening inwardly, *intus dehiscentes.* Aconitum, Trollius Europæus, Pœonia. Pl. 17, fig. 18.

Opening outwardly, *extus dehiscentes.* Magnolia.

Not opening, *indehiscentes.* Ranunculus, Liriodendrum.

Hemigyrus.

Fruit woody, opening on one side, one or two-celled, each of which are one or two-seeded. Proteaceæ.

Cod.

Legumen. *Fruit irregular, membranaceous, two-valved, rarely three or four-valved, with a pistillary cord divided into two branches running parallelly along the upper suture, so that the seeds are attached along this suture, alternately to one and the other valve.* Leguminosæ. Pl. 16, fig. 1, 2.

Ovoid, *Legumen ovoideum.* Lotus hirsutus, L. Græcus.

Halfmoonlike, *semilunatum.* Cynometra.

Sabreshape, *acinaciforme.* Bent like a sabre. Phaseolus lunatus, Dolichus ensiformis.

Oblong, *oblongum.* Ulex Europæus, Trifolium repens.

Cylindrical, *cylindricum.* Cassia Fistula.

Nearly cylindrical, *cylindraceus.* Lotus corniculatus.

Linear, *lineare.* Lathyrus gramineus, Indigofera.

Compressed, *compressum.* Pisum sativum, Lathyrus aphyllus.

Inflated, *inflatum.* Membranaceous, dilated, filled with air like a bladder. Colutea.

Swollen, *turgidum.* Swelled out, but not membranaceous, Genista Anglica, Ononis.

Bowed, *arcuatum.* Ornithopus.

Bent, *curvatum, recurvatum.* Astragalus glycyphyllus, Medicago falcata.

Spiral, *spirale.* Medicago sativa, Scorpiurus vermiculata.

Strombus-like, *cochleatum, strombuliforme.* Bent in a long spiral like the shell so called, Medicago strombulifera. M. polymorpha.

Four-sided, *tetragonum.* Dolichos tetragonolobus.

Four-winged, *tetrapterum.* Lotus siliquosus.

Top-winged, *epipterum.* Securidaca volubilis.

Reverse-crenated, *obcrenatum.* Bisserula pelecinus.

Jointed, *articulatum.* Formed of pieces, united endways to one another, each containing a single cell. Ornithopus, Scorpiurus, Hedysarum.

Knobby, *nodosum.* Swollen at certain distances. Scorpiurus.

Beadlike, *moniliforme.* Divided by contractions into small round pieces placed close together, like the beads of a necklace. Ornithopus perpusillus, Hedysarum moniliforme.

Vertebrated, *vertebratum.* Jointed, the joints parting from one another when ripe. Ornithopus scorpioides, Hedysarum Canadense. Pl. 16, fig. 6.

Carcerular, *carcerulare.* Dry, not opening, resembling a carcerule. Cassia Fistula, Securidaca volubilis.

Transversely divided, *phragmigerum.* Divided into two or more one-seeded cells by transverse partitions. Cassia Fistula. Pl. 16. fig. 1.

Drupe-like, *drupaceum.* Pannexterne succulent and fleshy, panninterne woody. Detarium, Geoffræa.

Induviated, *induviatum.* Enveloped in a persistent calyx. Trifolium repens.

Channelled, *canaliculatum.* Having two edges, that form a groove along the placentarium-bearing suture. Pisum Ochrus.

¶ One-celled, *uniloculare.* Pisum, Lathyrus, Genista.

Two-celled, *biloculare.* Astragalus.

Many-celled, *multiloculare.* Cassia Fistula. Pl. 16, fig. 1.

¶ Opening, *dehiscens.* Opening when ripe. Genista.

Keeping closed, *indehiscens.* Cassia Fistula, Securidaca volubilis. Considered as legumes by analogy. Pl. 16, fig. 1.

One-seeded, *monospermum.* Medicago lupulina, Securidaca volubilis, Pterocarpus.

Two-seeded, *dispermum.* Trifolium fragiferum. Vicia hirsuta, Arachis hypogæa.

Few-seeded, *oligospermum.* Vicia vulgaris.

Many-seeded, *polyspermum.* Lathyrus, Ornithopus perpusillus, Genista Hispanica.

Lomentum.

A legumen divided into two or more one-seeded cells by transverse joints. Hippocrepis. Pl. 16, fig. 6.

Pod.

Siliqua. *Fruit dry, two-valved, bearing the seeds on the two sides of a placentarium dilated into a longitudinal partition.* Cruciferæ. Pl. 16, fig. 8, 9 and 11.

Four-sided, *Siliqua tetragona.* Brassica orientalis, Erysimum alpinum.

Linear, *linearis.* Arabis hirsuta, Cheiranthus cuspidatus.

Nearly cylindrical, *cylindracea.* Brassica oleracea, Cheiranthus annuus.

Cylindrical, *cylindrica.* Barbarea vulgaris.

Awlshape, *subulata.* Sisymbrium officinale.

Swollen, *turgida.* Raphanus sativus.

Brawny, *torulosa.* Sinapis alba, Brassica, Raphanus, Arabis major.

Compressed on each face, *utraque facie compressa.* Flattened in the direction of the valves. Arabis major.

Beaked, *rostrata.* Terminated by a beak formed by the elongation of the partition. Sinapis alba, S. nigra, Raphanistrum vulgare. Pl. 16, fig. 9 and 11.

¶ Spurious, *spuria.* Having the seeds attached to the edges of the valves, instead of the edges of the partitions. Ruellia.

Pouch.

Silicula. *A siliqua less than four times as long as it is broad.* Thlaspi. Pl. 16, fig. 14, 15 and 16.

Carcerular, *Silicula carcerularis.* Coronopus coadunata, Crambe, Bunias.

Four-cornered, *quadrangularis.* Bunias Erucago.

Nicked, *emarginata.* Iberis, Thlaspi campestre.

Two-horned, *bicornis.* Thlaspi ceratocarpon.

Reverse-heartshape, *obcordiformis.* Teesdalia irregularis, Thlaspi perfoliatum, T. cuneatum.

Beaked, *rostrata.* Bunias Balearica.

Elliptic, *elliptica.* Draba verna, Lepidium latifolium. Pl. 16, fig. 15.

Oval, *ovalis.* Alyssum argenteum.

Orbicular, *orbiculata.* Lunaria annua, Alyssum campestre.

Twin, *didyma.* Biscutella didyma, B. lævigata, B. leiocarpa.

Globular, *globulosa.* Cochlearia officinalis, Myagrum saxatile, Crambe maritima.

Inflated, *inflata.* Camelina sativa.

Compressed sideways, *utroque latere compressa.* Thlaspi arvense, Isatis tinctoria, Coronopus coadunata.

Compressed on the faces, *utraque facie compressa.* Lunaria, Alyssum campestre.

Winged, *alata.* Bunias Erucago.

Jointed, *articulata.* Myagrum perenne.

Drupe-like, *drupeolata.* Pannexterne succulent, and panninterne woody. Crambe maritima.

Pyxis.

Pyxidium, Capsula circumscissa. *Fruit dry, globular, opening of itself into two hemispherical valves, by a transverse horizontal suture.* Pl. 16, fig. 19 and 20.

Amphora. The lower valve, attached to the peduncle.

Cover, *Operculum.* The upper valve which is detached when ripe.

Globular, *Pyxis globulosa.* Anagallis phœnicea, Centunculus minimus.

Roundish, *subrotunda.* Gomphrena globosa.

Cylindrical, *cylindrica.* Lecythis.

Ovoid, *ovoidea, ovata.* Hyoscyamus niger, Plantago.

¶ One-celled, *unilocularis.* Centunculus, Anagallis. Lecythis.

Two-celled, *bilocularis.* Hyoscyamus, Plantago.

¶ Two-seeded, *disperma.* Arnoglossum lanceolatum.

Many-seeded, *polysperma.* Plantago major, Centunculus.

Dieresile.

Dieresilis, Sinochorium, Sterigmum, Capsula dissepimentis valvaribus. *Fruits dry, capsular, regular, many-celled, cells formed of re-entering valves, and ranged round a central axis.* Malvaceæ, Galium. Pl. 16, fig. 24 and 25.

Two-celled, *Dieresilis dicocca.* Galium, Acer.

Three-celled, *tricocca.* Tropæolum majus.

Four-celled, *tetracocca.* Clerodendrum infortunatum.

Five-celled, *pentacocca.* Geranium.

Six-celled, *hexacocca.* Triglochin maritimum, Lavatera arborea.

Many-celled, *polycocca.* Alisma major.

¶ Starry, *stellata.* Cells pointed and diverging. Althæa, Damasonium Dalechampii.

Ovoid, *ovoidea.* Helicteres Baruensis.

¶ Adherent, *calyci adhærens.* Rubiaceæ.

Free, *calyci non adherens.* Lavatera arborea.

¶ Axilled, *axillata.* The cells disposed round an axis, which, when they fall off, is left standing. Geranium, Lavatera arborea, Cynoglossum.

Berrylike, *baccata.* Pannexterne succulent at first. Clerodendron infortunatum, Sapindus.

Cenobionare, *cenobionaris.* The cells, differing slightly from eremes, are attached to an axis which supports the style. Cynoglossum officinale, C. montanum.—These fruits are intermediate betwixt cenobions and dieresiles.

Coques.

Hemispherical, *Cocca hemisphærica.* Lineum Africanum.
Three-sided, *trigona.* Knoxia stricta.
Compressed, *compressa.* Alisma major.
Spiral, *spiralia.* Helicteres.
One-celled, *unilocularia.* Alisma major, Galium, Althæa, Lavatera.
Many-celled, *multilocularia.* Tribulus terrestris.
Not opening, *indehiscentia.* Tropæolum majus.
Opening, *dehiscentia.* Geranium.
Winged, *alata.* Acer.

REGMA.

Elaterium, Capsula di-, tri-, vel multi-cocca. *Fruit with sides frequently embossed, formed of several bivalve cells disposed round an axis, and not adhering to the calyx.* Pl. 17, fig. 17, 18 and 19.
Two-celled, *Regma dicoccum.* Mercurialis.
Three-celled, *tricoccum.* Euphorbia, Ricinus, Croton.
Five-celled, *pentacoccum.* Dictamnus albus.
Many-celled, *polycoccum.* Hura crepitans.
¶ Round, *rotundatum.*
Twin, *didymum.* Mercurialis.
Discoid, *discoideum.* Hura crepitans, Bradleya.
Lobed, *lobatum.* Dictamnus albus.

DYPLOTEGIA.

Capsula infera. *Fruit dehiscent, adherent to the calyx.* Campanulaceæ, Orchideæ. Pl. 16, fig. 25.

CAPSULE.

Capsula. *Fruit dry, opening when ripe, not belonging to the former kinds.* Pl. 16, fig. 24, 25, 26, 27, 29 and 30.

Podlike, *Capsula siliquæformis.* Chelidonium majus Corydalis, Hypecoum, Cleome.
Pouchlike, *siliculæformis.* Bocconia.
Brawny, *torulosa.* Chelidonium majus, Hypecoum.
Cylindrical, *cylindrica.* Silene alpina, Arenaria tenuifolia.

Nearly cylindrical, *cylindracea*, *subcylindrica*. Aloe perfoliata.

Three-sided, *trigona*. Iris, Tamarix.

Four-sided, *tetragona*. Erysimum officinale.

Five-sided, *pentagona*. Oxalis.

Six-sided, *hexagona*. Fritillaria imperialis, Yucca draconis.

Linear, *linearis*. Chelidonium majus, Glaucium luteum.

Spherical, globular, *sphærica*, *globularis*. Asphodelus luteus, Antirrhinum repens, Æsculus Hippocastanum, Stellaria holostea.

Roundish, *subrotunda*. Scrofularia aquatica, S. scorodonifolia, Buxus sempervirens.

Ovoid, *ovoidea*. Digitalis speciosa, Verbasum thapsoides, Scrofularia nodosa, Polemonium vulgare, Cucubalus inflatus.

Reverse ovoid, *obovoidea*. Anthericum annuum, Spiranthes autumnalis.

Topshape, *turbinata*. Lilium Martagon.

Reverse topshape, *obturbinata*. Digitalis purpurea.

Ellipsoid, *ellipsoidea*. Acanthus mollis, Silene latifolia, Lythrum spicatum.

Compressed, *compressa*. Rhinanthus glaber, Veronica arvensis, V. verna, Melampyrum cristatum.

Flattened, *depressa*. Illicium anisatum.

Radiating, *radians*. With many cells disposed in rays. Illicium anisatum.

¶ Reverse heartshape, *obcordiformis*, *obcordata*. Veronica officinalis, Sibthorpia Europæa.

Halfmooned, *semilunata*, *lunata*. Melampyrum cristatum.

Orbicular, *orbicularis*. Rhinanthus glaber, Sibthorpia.

Elliptic, *elliptica*. Veronica multifida.

¶ Three-winged, *triptera*. Dioscorea sativa.

Five-winged, *pentaptera*. Evonymus latifolius.

Six-winged, *hexaptera*. Fritillaria imperialis.

¶ Blunt-pointed, *obtusa*. Antirrhinum minus, Evonymus latifolius.

Pointed, *acuta*. Scrofularia aquatica, S. scorodonifolia.

Truncated, *truncata*. Nemesia.

Notched, *emarginata*. Euphrasia officinalis.

One-headed, *monocephala*. Coming from an ovary which has only one organic summit. Rhododendron, Silene.

Two-headed, beaked, *dicephala*, *birostris*. Coming from an ovary that has two organic summits. Saxifraga.

Three-headed, *tricephala*. Buxus.

Many-headed, *polycephala.* Coming from an ovary that has many organic summits. Nigella Hispanica.

Dieresilean, partible, *dieresilea, partibilis.* The cells formed of re-entering valves, separate when ripe, into many open coques, which only differ from those of the dieresiles because they do not separate completely after they have opened. Rhododendron, Kalmia, Linum perenne.

Two-parted, *bipartibilis.* Two-coqued, dieresilean. Digitalis, Scrofularia.

Three-parted, *tripartibilis*, &c.

Etairion-like, *etærionea.* Many-headed, nearly completely divisible into several camare-like lobes. Illicium anisatum, Thea viridis.

¶ One-celled, *unilocularis.* Glaucium violaceum, Papaver, Viola, Silene.

Two-celled, *bilocularis.* Veronica, Digitalis, Scrofularia, Antirrhinum, Glaucium luteum, Saxifraga, Lythrum.

Three-celled, *trilocularis.* Lilium, Tulipa, Iris, Allium, Juncus, Campanula. Pl. 16, fig. 23 and 24.

Four-celled, *quadrilocularis.* Epilobium.

Five-celled, *quinquelocularis.* Rhododendrum, Oxalis, Evonymus.

Six-celled, *sexlocularis.* Asarum, Aristolochia.

Many-celled, *multilocularis.* Nigella Hispanica, Linum.

¶ One-valved, follicleshape, *univalvis, folliculiformis.* With a single valve, whose edges being turned over form a suture, like that of a follicule. Avicennia.

Several valved, *plurivalvis.* Used in opposition to one-valved.

Two-valved, *bivalvis.* Veronica, Syringa, Ruellia.

Three-valved, *trivalvis.* Viola, Tulipa, Glaucium violaceum, Polemonium.

Four-valved, *quadrivalvis.* Epilobium.

Five-valved, *quinquevalvis.* Rhododendrum, Evonymus.

Many-valved, *multivalvis.* Nigella Hispanica, Illicium.

¶ One-seeded, *monosperma.* Plumbagineæ.

Two-seeded, *disperma.*

Three-sided, *trisperma.* Montia, Claytonia.

Four-seeded, *tetrasperma.* Melampyrum cristatum. M. arvense.

Few-seeded, *oligosperma.* Koelreuteria.

Many-seeded, *polysperma.* Lilium, Nigella, Silene, Epilobium, Saxifraga.

¶ Adherent, *adhærens, infera.* United to the calyx, or perigonium, which covers it entirely. Campanulaceæ, Iris.

Semi-adherent, *semi-adhærens.* United at bottom with the calyx. Samolus.

Free, *inadhærens, supera.* Not united with the calyx or perigonium. Lilium, Papaveraceæ, Caryophylleæ.

¶ Opening outwards, *exterius dehiscens.* Lilium, Orchis, Convolvulus, Oxalis.

Opening inwards, *interius dehiscens.* Opening in the centre, which can only take place in many-headed capsules. Nigella Hispanica, Saxifraga. Pl. 16, fig. 24.

Opening by the teeth, *dentibus dehiscens.* Statice, Primula officinalis, Silene.

Opening by cracks, *fissuris dehiscens.* Canna, Epidendron.

Opening by holes, *foraminibus dehiscens.* Antirrhinum, in which the holes are irregular, and produced by the rupture of the sides of the pericarp. Papaver, in which the holes are regular, and produced by the gaping of the upper part of the valves. Ledum, Campanula. Pl. 16, fig. 31.

Opening at top, *apice dehiscens.* Antirrhinum majus, Papaver.

Opening at bottom, *basi dehiscens.* Ledum, Campanula rigida, Fumaria bulbosa. Pl. 16, fig. 25.

Septifragal, *septifraga.* Opening opposite the partitions. Saxifraga, Ipomæa purpurea. Pl. 16, fig. 29.

Septicidal, *septicida.* Opening between the cells, the cells parting from one another, the partition splitting into two flakes, one of which remains attached to each valve. Rhododendrum Ponticum. Pl. 16, fig. 27.

Loculicidal, *loculicida.* Opening in the middle of the cells. Irideæ. Pl. 16, fig. 26.

If a one-celled capsule, having parietal placentaria, opens so as to divide the latter longitudinally, the dehiscence is analogous to the septicidal; but if it divides into two or more valves, each furnished with a parietal placentarium in its middle, the dehiscence is analogous to the loculicidal.

COMPOUND FRUITS.

Fructus etærionares, Fructus chorionares. *Fruit composed of several simple fruits united together.*

Double Follicle.

Bifolliculus. Follicula. *Fruit composed of two long membranaceous, univalve pericarpiums, each opening by a longitudinal suture.* Asclepiadeæ. Pl. 17, fig. 12.

Erythrostomum.

Syncarpa, Etærio. *Fruit composed of several small berrylike utricles, seated upon a scarcely apparent polyphore.* Rubus. Pl. 18, fig. 8.

Baccalaurius.

Fruit analogous to the erythrostome, but the pericarps are fewer, and not so close. Drymis.

Asimine.

Asimina. *Fruits analogous to the erythrostome, but the fleshy carpelles are more or less soldered together.* Anona. Pl. 18, fig. 21.

Etærion.

Etærio, Plopocarpium. *Fruit composed of several camares, united together round a real or ideal axis.* Crassulaceæ, Aconiti, Spireæ. Pl. 17, fig. 17, 18 and 19.

Sphærical, *Etærio sphæricus, globosus, capitatus.* Ranunculus bulbosus, Magnolia, Liriodendrum.

Nearly ovoid, *subovoideus.* Rubus.

Dishlike, *discoideus.* Alisma major.

Spikelike, *spiciformis.* Myosurus minimus.

Berrylike, *baccatus.* Composed of juicy camares which unite together as they ripen, and form a kind of berry by their union. Anona, Rubus.

Induviated, *induviatus.* Enclosed in the persistent calyx. Rosa.

¶ Three-camared, *tricamarus.* Veratrum album, Aconitum lycoctonum.

Four-camared, *tetracamarus.* Potamogeton natans.

Five-camared, *pentacamarus.* Pæonia, Clematis erecta, Sedum.

Many-camared, *polycamarus.* Ranunculus, Magnolia, Lyriodendrum, Rubus.

Hip.

Cynarhodon. *Fruit composed of several small utricles enclosed in the calyx, which grows fleshy after the fecundation is over.* Rosa. Pl. 18, fig. 2.

Amalthea.

Fruit similar to the hip, but the calyx does not become fleshy. Agrimoniaceæ. Pl. 18, fig. 3.

Polychlorion.

Polychlorio, Polychorionides, Polysecus. *Fruit composed of several cariopsides or akenia united together on a receptacle.* Ranunculaceæ, Dryadeæ. Pl. 18, fig. 4.

AGGREGATED FRUITS.

Fructus aggregati. *Fruits composed of many simple pericarpia united together, the form of which is concealed or altered by the floral leaves, which frequently grow larger after the fecundation, and unite with some part of the fruit.*

Sorose.

Syncarpa, Sorosus. *Fruit composed of several fleshy utricles, united together by succulent floral leaves.* Pl. 18, fig. 6, 8.

Oblong, *Sorosus oblongus.* Morus.
Oval, *ellipsoideus.* Artocarpus incisa.
Ovoid, *ovoideus.* Bromelia Ananas.

The nature of the pericarpia and the floral leaves must be noted.

Fig.

Ficus, Syconus. *Fruit composed of several carcerules or drupeoles, united upon a fleshy and succulent involucre.* Pl. 18, fig 11.

Flat, *Syconus planus.* Dorstenia.
Hemispherical, *hemisphæricus.* Ambora.
Pearshape, *pyriformis, turbinatus.* Ficus carica, Ambora.
Sphærical, *sphæricus, globosus.* Ficus.

The form and nature of the pericarpia must be noted.

Cone.

Strobile, Conus, Strobilus. *Fruit composed of many membranaceous utricles, concealed in the axillæ of very large, dry bracteæ, disposed in the form of a cone.* Pl. 18, fig. 12.

Roundish, *Strobilus subrotundus.* Cupressus sempervirens, Juniperus communis.

Conical, *conicus.* Pinus sylvestris.

Ovoid, *ovoideus.* Pinus Pinea.

Cylindrical, *cylindraceus.* Abies pectinata, Pinus Strobus.

¶ Berrylike, *baccatus.* Bracteæ juicy, and unite with one another. Juniperus communis.

Bractean, *bracteanus.* Strobile formed of bracteæ only Alnus glutinosa, Juniperus communis, Thuya.

Pedunculean, *pedunculeanus.* Strobile formed of peduncules. Pinus, Abies, Cedrus, Larix.

Cupule.

Ovoid, *Cupula ovoidea, ovata.* Pinus.

Angular, *angulosa.* Juniperus communis, Cupressus sempervirens.

¶ Woody, *lignosa.* Pinus Pinea.

Membranaceous, *membranacea.* Thuya occidentalis.

Boney, *ossea.* Schubertia disticha.

¶ Upright, *erecta.* Thuya, Cupressus, Juniperus.

Reversed, *resupinata.* Abies, Pinus, Larix, Cedrus.

¶ Winged at bottom, *hypopterata.* Pinus, Abies, Larix, Cedrus.—At first sight the cupule appears winged at top, because it is reversed, but it is enchased in a prolongation of the wing, which only grows at the bottom, and falls off.

Winged all round, *peripterata.* Thuya occidentalis.

¶ Headed, *capitata.* Limb swelled into a head. Larix.

Two-horned, *bicornis.* Limb prolonged into two small diverging horns. Pinus.

Oblique, *obliqua.* Limb oblique and jagged. Cedrus.

The form, &c. of the utricles should be remarked.

Galbule.

Nut, Nux, Pseudocarpium, Galbulus. *A kind of cone, in which the bracteæ are enlarged at top, form a sphere, and scarcely open when ripe.* Cupressus. Pl. 18, fig. 15.

Arcesthide.

Berry, Bacca, Pseudocarpium, Arcesthida. *A cone whose bracteæ are fleshy, and do not separate when ripe.* Juniperus.

PERICARP.

Pericarpium, Conceptaculum seminum. *That part of the fruit that contains the seeds.*

1. *Surface.*

Smooth, *Pericarpium lævе.* Asphodelus, Cerefolium sylvestre, Sisymbrium absinthioides, Malus.

Bald, *glaber.* Pastinaca, Coriandrum.

Shining, *lucidum, nitidum.* Lithospermum officinale, Onopordum vulgare, Isatis tinctoria.

Rough, *scabrum.* Ægonychon arvense, Cuminum.

Dotted, *punctatum.* Ceratophyllum, Citrus Medica, Mespilus Germanica.

Warted, *verrucosum.* Tragopogon undulatum, Euphorbia verrucosa.

Veiny, *venosum.* Koelreuteria, Staphylea pinnata.

Wrinkled, *rugosum.* Geranium Robertianum, Melilotus officinale.

Striated, *striatum.* Anethum graveolens.

Furrowed, *sulcatum.* Tragopogon pratense, Carum officinale, Myrrhis odorata, Meum Athamanticum.

One-furrowed, *unisulcatum.* Amygdalus communis.

Two-furrowed, *bisulcatum.* Veronica officinalis.

Three-furrowed, *trisulcatum.* Ornithogalum pyramidale.

Four-furrowed, *quadrisulcatum*, and so on.

2. *Pubescence.*

Velvetty, *Pericarpium velutinum.* Amygdalus Persica, Characias purpurea.

Downy, *pubescens.* Digitalis speciosa, Aquilegia vulgaris, Amygdalus Persica.

Hairy, *pilosum.* Geranium pratense.

Villous, *villosum.* Pæonia officinalis.

Woolly, *lanatum.* Alyssum clypeatum.

Nappy, *tomentosum.* Amygdalus communis.

3. *Arms.*

Scaled, *Pericarpium squamosum.* Sagus, Calamus Rotang.

Thorny, *muricatum.* Arbutus serratifolia, Canna Indica.

Hooked, *lappaceum.* Furnished with hooked points, like the involucrum of arctium lappa. Sanicula Europæa, Myosotis Cappula.

Spinous, *spinellosum, echinatum.* Stramonium fœtidum, Æschylus Hippocastanum, Cucumis prophetarum.

4. *Substance.*

Membranaceous, *Pericarpium membranaceum.* Salsola Tragus, Colutea.

Paperlike, *chartaceum.* Anagallis phœnicia, Cerefolium sylvestre, Coriandrum.

Leatherlike, *coriaceum.* Helianthus annuus, Trapa natans, Lupinus, Arachis hypogæa.

Crustaceous, *crustaceum.* Dry, thin, and brittle. Passerina.

Woody, *lignosum.* Lecythis, Cassia Fistula, Hymenæa Courbaril.

Corky, *suberosum, fungosum.* Æthusa cynapium, Raphanus sativus.

Pulpy, *pulposum.* Ribes, Vitis, Rubus.

Fleshy, *carnosum.* Malus.

VALVES.

Valvæ, Valvulæ. *The pieces composing the sides of some pericarps, which open when ripe, and separate.* Pl. 16, fig. 8, 14, 15 and 29.

Longitudinal, *Valvæ longitudinales.* The suture perpendicular to the base of the pericarp. Cheiranthus fruticulosus, Ruellia ovata.

Transverse, *transversæ.* The suture parallel to the base of the pericarp. Anagallis arvensis, Hyoscyamus.

Re-entering, *introflexæ.* Edges bent inwards towards the centre of the pericarp. Colchicum, Rhododendrum.

Re-entering conjointly, *conjunctim introflexæ.* The contiguous re-entering valves united together in that part which penetrates within the pericarp. Rhododendron Ponticum.

Re-entering distinctly, *distinctim-introflexæ.* The contiguous re-entering valves not united together in that part which penetrates into the pericarp. Colchicum.

Parting, *bipartibiles.* Splitting when they open into two parts lengthways. Veronica, Digitalis speciosa, Nicotiana. —These bipartible valves are evidently composed of two

valvules united by their contiguous edges; nevertheless custom compels botanists to look upon them as a single valve.

Elastic, *elasticæ*. Dentaria, Cardamine impatiens. Ricinus. Pl. 16, fig. 8.

Partition-bearing, *septiferæ*. Ruellia ovata.

Seed-bearing, *seminiferæ, placentiferæ*. Gentianeæ.

Flat, *planæ*. Lunaria, Alyssum clypeatum.

Concave, *concave*. Alyssum utriculatum.

Boatlike, *naviculares*. Keeled like a boat. Ruellia ovata, Subularia aquatica, Isatis tinctoria.

Keeled, *carinatæ*. Lepidium, Isatis tinctoria.

Cover-like, *operculares*. Like the cover of a bowl. Plantago, Anagallis, Centunculus. Pl. 16, fig. 17.

Sutures.

Suturæ. *The line of junction between two contiguous valves.*

Prominent, *Suturæ prominentes*. Placed upon an elevated surface.

Winged, *pteroideæ*. The elevations extended into wings. Evonymus latifolius.

Sunk, *recessæ*. Placed at the bottom of a channel of greater or less depth. Rhododendron.

Partitions.

Dissepimenta, Lignum intergerinum, Distinctio.—*The doublings of the panninterne of the pericarpium which divide its cavity into two or more cells.*

Longitudinal, *Dissepimenta longitudinalia*. Extending from the bottom to the top of the pericarp, parallel to the axis. Lilium, Ruellia ovata, Thlaspi, Cheiranthus.

Cross, *transversalia*. Extending from side to side, parallel to the plane of its base. Cassia Fistula.

Indeterminate, *vaga*. Without any determinate direction. Many partitions of punica granatum.

False, *spuria*. Formed only of cellular tissue. Glaucium luteum.

¶ General, *generalia*. With edges that reach the internal surface of the pericarpium all round, so that each of them divides the cavity into two parts. Plantagineæ, Cruciferæ, Astragalus, Cassia Fistula.

Partial, *partialia*. With edges that reach the internal surface of the pericarp on one side only, and on the other

side touch a placentarium, or some other partition; so that each partition, taken separately, does not divide the hollow of the pericarp into two cells. Syringa vulgaris, Citrus, Nigella Hispanica.

¶ Complete, *completa*. Dividing the cavity of the pericarp completely, by being either a general partition itself, Cheiranthus, or if partial, by touching some other partition.

Incomplete, *incompleta*. Only dividing the cavity incompletely, being partial partitions that do not touch one another, nor abut upon a placentarium. Papaver.

¶ Valvean, *valveana*. Formed by the expansion of the substance of the valves, and remaining fixed to them, when the pericarpium splits open.

Median, *mediana*, *medivalves*, *valvis contraria*, *valvis medio septiferis*. Valvean and arising from the middle of the valves. Lilium, Syringa, Acanthaceæ, Polemonium, Helianthemum.

Marginal, *marginalia*, *valvis utroque margine introflexo singulis loculum constitutentibus*, *valvares*. Valvean, and formed by the edge of the valves, which turns into the interior of the pericarp, towards a real or imaginary central axis. Antirrhinum, Rhododendrum, Astragalus.

Two-flaked, *bilamellares*. Marginal, and formed by the union of the edges of two contiguous turned-in valves, which separate when the fruit opens. Digitalis, Rhododendrum.

Placentarian, *placentariana*. Produced by the expansion of the placentarium, or its lobes, so as to reach the internal surface of the pericarpium, or its sutures, and separate when the fruit is ripe. Plantagineæ, Cruciferæ, Punica Granatum, Cucurbitaceæ.

Interposed, *interpositiva*, *valvis margine appositis angulis dissepimenti*. Several placentarian partitions diverging from the centre of a many-valved pericarpium to the sutures, so that they alternate with the valves. Convolvulaceæ.

Obsutural, *obsuturalia*. The placentarian partitions applied only to the sutures, and not fastened between the edges of the contiguous valves. Convolvulus.

Opposite, *oppositiva*, *valvis contraria*. The edges of the placentarian partitions applied to the middle of the valves. Paullinia pinnata.

Parallel, *parallelica*, *valvis parallela*. The placentarian partition expanded parallel to the valves of a bivalve peri-

carpium, and joining by its edges the two opposite sutures. Cruciferæ.

Doubtful, *ambigua.* Connected with the centre and sides of a pericarp that does not open; and whose origin, therefore, cannot be determined exactly. Citrus.

Fixed, *fixa.* Remaining immoveable, and attached as usual when ripe; which seldom takes place except in indehiscent pericarpiums, or those that open by pores or slits. Antirrhinum, Campanula, Papaver, Nigella Saxifraga.

Free, *libera.* Formed of a placentarium that becomes free by the dehiscence of the pericarpium. Plantagineæ.

Persisting, *persistentia.* Remaining in their place after the opening of the fruit. Cruciferæ.

Meeting, *obcurrentia.* Partial partitions meeting together, and dividing the cavity of the pericarpium into several cells. Acanthaceæ, Antirrhinum, Convolvulaceæ, Saxifrageæ.

Whirled, *verticillata.* Several partial partitions disposed in the pericarpium like the spokes of a wheel. Convolvulaceæ, Rhodoraceæ, Aurantiaceæ.

Seed-bearing, *seminifera, placentifera.* Carrying the seeds. Ruellia, Nymphæa, Helianthemum.

The distinctions are usually taken from their appearance after the pericarpium has split open; but this is frequently a bad guide to their original formation.

Septum.

A Partition that is longitudinal. Lilium, Cruciferæ. Pl. 16, fig. 8, 14 and 15.

Phragma.

A Partition that is transverse. Cassia Fistula. Pl. 16, fig. 1.

Placentarium.

Placenta, Trophospermum, Spermophorus, Colum, Receptaculum seminum. *That part of the pericarpium to which the seeds are attached.* Pl. 17, fig. 4, 5.

Fleshy, *Placentarium carnosum.* Vaccinium, Ruta, Saxifraga granulata.

Corky, *suberosum.* Centunculus, Anagallis, Hyoscyamus, Nicotiana, Stramonium.

Leatherlike, *coriaceum.* Papaver, Begonia.

Woody, *lignosum.* Swietenia Mahogani.

¶ Honeycombed, *alveolatum*. Centunculus, Anagallis.

Tuberculated, *tuberculatum*. Stramonium.

Villous, *villosum*. Cucubalus, Silene.

¶ Partitioning, *septiforme*. Enlarged into a partition. Plantagineæ, Cruciferæ. This is the same as the placentarian partition, but considered in another light.

Globular, *sphæricum*, *globosum*. Centunculus minimus, Anagallis phœnicea.

Cylindrical, *cylindraceum*. Lychnis, Silene, Cerastium.

Threadlike, *filiforme*. Velezia.

Awlshape, *subulatum*. Dodecatheon, Dianthus.

Three-sided, *trigonum*, *triqueter*. Polemonium vulgare, Dodonæa viscosa.

Four-sided, *tetragonum*, *tetraqueter*. Adoxa tuberosa.

Five-sided, *pentagonum*, *pentaqueter*. Swietenia Mahogani.

Lobed, *lobatum*. Forming thick projections within the cavity of the pericarp. Rhododendrum, Cucurbitaceæ.

Radiating, *radiatum*. Rhododendrum, Cucurbitaceæ.

¶ Central, *centrale*. Placed in the centre of the pericarpium. Antirrhinum, Campanula, Saxifraga.

Axile, *axile*. Growing up from the bottom to the top of the pericarpium, in the direction of its diameter. Lilium, Digitalis, Polemonium.

Apicilar, *apicilare*. Placed at the top of the cavity of the pericarpium. Umbelliferæ.

Basilary, *basilare*. Placed at the bottom of the cavity of the pericarpium. Berberis, Chrysosplenium.

Fixed at bottom, *basifixum*, *liberum*. Attached only to the bottom of the cavity of the pericarpium when ripe. Primulaceæ, Silene.

Sessile, *sessile*. Fixed at bottom without any footstalk.

Footstalked, *pedicellatum*.

Parietal, *parietale*. Attached to the sides of the cavity of the pericarpium. Ribes, Punica Granatum.—An axile placentarium in a multilocular ovary, sometimes becomes parietal in consequence of the absorption of several of the cells.

One-sided, *unilaterale*. Attached to one side only of the pericarpium. Many apocyneæ, Actæa, Leguminosæ. Pl. 16, fig. 2.

Two-sided, *bilaterale*. Ribes. Pl. 17, fig. 4 and 5.

Three-sided, *trilaterale*, and so on.

Valvular, *valvare*. Attached to the valves of a dehiscent pericarpium. Orchis, Bixa, Orellana.

Middle-valved, *medivalve*, *mediis valvis adnatum*. Fixed along the middle line of the valves. Lathræa, Parnassia.

Sutural, *obsuturale*, *suturæ applicatum*. Applied over against the sutures. Asclepias, Argemone.

Marginal, *marginale*. Fixed solidly either to the edges of the valves, or of the partitions when these latter are not themselves formed of an enlarged placentarium. Œnothera, Leguminosæ.

Partitional, *septile*. Fixed to the partitions. Ruellia, Helianthemum mutabile, Papaver, Œnothera.

Fastened, *adnatum*. Fixed throughout their whole length, either to the internal surface of the pericarpial cavity, Orchideæ, Lathræa; or to the edges of the partitions, Tulipa; or the central axis, Ixia Chinensis; or the edges of the valves, Viola.

Free, *liberum*. Totally detached from the pericarp, and not adhering to any part when it opens. Plantagineæ.

¶ Two-parted, *bipartitum*. Divided into two branches. Ribes, Bixa Orellana.

Three-parted, *tripartitum*. Orchideæ, Passiflora.

Four-parted, *quadripartitum*. Parnassia palustris.

Five-parted, *quinquepartitum*. Argemone Mexicana.

Many-parted, *multipartitum*. Papaver, Punica.—These divisions of the placentarium are usually fastened to the sides of the pericarpial cavity, but sometimes they are only attached to the pericarpium by their extremities, as in the portulaceæ.

¶ Two-parting, *bipartibile*. Splitting, when ripe, into two seed-bearing portions, which remain fixed, either to the edges of the valves, Leguminosæ; or to the partitions, Ruellia.

Three-parting, *tripartibile*. Splitting when ripe into three seed-bearing portions, which remain attached to the edge of the partitions. Lilium, Koelreuteria.

Four-parting, &c.

Remaining, *persistens*. Not splitting when ripe, but remaining whole. Digitalis, Polemonium, Rhododendrum, Swietenia Mahogani.

¶ One-ribbed, *uninerve*.

Two-ribbed, *binerve*.

Three-ribbed, *trinerve*.

Many-ribbed, *multinerve*.

The position of the placentarium may be discovered in dry pericarps when the seeds are loose, or have even been

taken out, by the scar or hollow in the panninterne, as that covering is always interrupted at the place where the placentarium is connected with the sarcocarp to which it is always united.

Ribs of the placentarium.

Collected, *Nervi colligati* Collected into a single mass by cellular tissue. Lilium, Rhododendrum, Silene.

Distinct, *distincti*. Forming separate cords. Portulaca.

Intervalvular, *intervalves*. Placed in the sutures between the valves. Cruciferæ.

Axile, *circumaxiles*. Surrounding a central axis which separates when the fruit splits open. Epilobium, Œnothera.

Umbilical Cord.

Funiculus, Funiculus umbilicalis, Podospermium. *A vascular cord, that fastens the seeds to the pericarpium.*

Threadlike, *Funiculus filiformis*. Cheiranthus, Alyssum campestre, Ribes spinosum glabrum, Cassia Fistula.

Hooked, *uncinatus*. Acanthus, Ruellia, Justicia, Barleria.

Pappus-like, *pappiformis*. Formed of silky threads united into a pappus. Asclepias Syriaca, A. nigra. Pl. 17, fig. 12.

Cells.

Loculi, Loculamenta, Thecæ. *The hollow spaces in the pericarpium formed by the doubling of the panninterne.*

Coque.

Coccum. *A cell that opens elastically by a membranaceous spring, placed at the bottom.* Euphorbiaceæ.

Retinacles.

Retinaculæ. *Crooked points growing from the placentarium, close to the seeds, but not serving to support them.* Acanthaceæ. Pl. 16, fig. 21.

Pannexterne.

Pannexterna, Epicarpium. *The external skin of the epicarpium.*

Panninterne.

Panninterna, Endocarpium. *The internal skin of the pericarpium, which in celled fruits forms the partitions by its doublings.*

Flesh.

Caro, Sarcocarpium. *The more or less fleshy substance which in some fruits is placed between the pannexterne and panninterne, and is always intimately connected with the placentarium.*

Pulp.

Pulpa. *The soft and half-liquid substance, found in the cells of some fruits, surrounding the seeds.*

Induviæ.

Induviæ florales, Folliculus. *Those parts of the flower that remain after fecundation, and accompany the fruit.*

Calycine, *Induviæ calycinæ.* Arising from the calyx. Labiatæ, Rosa.

Perigonal, *perianthianæ, perigonales.* Arising from the perigonium. Basella, Salsola tragus.

Glumellar, *glumelleanæ.* Arising from glumes. Oryza.

¶ Free, *liberæ.* Not united to the fruit. Labiatæ, Rosæ.

Adherent, *adherentes.* United with the fruit. Basella.

Induviated fruits always proceed from a single flower, whose ovary or ovaries did not adhere to the calyx; and are thus distinguished from covered or angiocarpic fruits.

SEED.

Grain, Corn, Vegetable egg, Semen, Granum, Ovum, —spermum. *The fecundated rudiment of a new plant contained in the fruit.*

1. *Situation in the fruit.*

Upright, *Semen erectum.* The hile being placed directly above the placentarium, is the lowest part of the seed in the pericarpial cavity. Ranunculus, Berberis.

Rising, *ascendens.* The hile being on a level with the placentarium, or nearly so, is situated a little above the lowest part of the seed in the pericarpial cavity. Malus, Mespilus.

Reversed, hanging, *resupinatum, pendens, pendulum.* The hile being below the placentarium, is the highest part of the seed in the pericarpial cavity. Fraxinus, Asclepias, Umbelliferæ, Myriophyllum. Pl. 13, fig. 24.

Hanging, *pendens, pendulum.* Attached to the sides of the pericarp by its funicular cord only. Ceratophyllum cornutum.

Appendent by the end, *appendens ab extremitate.* The hile being on a level with the placentarium, or nearly so, is placed below but near the uppermost part of the seed. Prunus, Amygdalus. Pl. 15, fig. 1.

Appendent by the middle, *appendens a medio.* The hile being on a level with the placentarium, or nearly so, is placed in the middle of the side. Quassia Simarouba.

Shieldlike, *peltatum.* Hanging by the middle, which is connected by a large surface to the placentarium. Ruta, Plantago stricta.

Falling, *cadens.* The hile being opposite to the upper part of the pericarpial cavity, and the placentarium seated in the lower part, the umbilical cord is forced to elongate itself to reach the level of the hile, and to pass over one of the sides of the seeds. Plumbagineæ. Pl. 13, fig. 17.

Horizontal, *horizontale.* The seed being flat, or long, is fastened to the placentarium by its edge, or one of its ends, in a plane parallel to the base of the fruit. Lilium, Cucumis prophetarum. Pl. 15, fig. 21.

Nestling, scattered, *Semina nidulantia, vaga.* Placed without any order, like eggs in a nest. Nymphæa.

Spread, *perfusa.* Spread over the whole surface, either of the valves, Butomus, Gentiana; or of the partitions, Plantagineæ, Papaver.

In rows, *serialia.* Disposed in rows. Tulipa, Lilium, Polemonium.

Tiled-like, *imbricata.* Asclepias, Cobea scandens.

Enchased, *placentario semi-inclusa.* Fixed single in the pits of an alveolar placentarium. Primulaceæ.

Footstalked, *Semen funiculatum.* Fastened by an umbilical cord. Plumbagineæ, Magnolia.

Sessile, *sessile.* Attached to the placentarium without any umbilical cord. Plantagineæ, Primulaceæ.

¶ Naked, *nudum.* The seed expanding after fecundation, and not the ovary, the latter is ruptured and the seed protrudes, Leontice; or the pericarpium opening, the seed is exserted and hangs by its umbilical cord, Magnolia.

2. *Form.*

Globular, *Semen sphæricum, globosum.* Brassica, Sinapis, Pisum sativum, Vicia sepium.

Globulous, *globulosum.* Globular, and also small.

Nearly globular, *subglobosum.*

Roundish, *subrotundum.* Asparagus officinalis, Æsculus Hippocastanum, Vicia lutea.

Cubical, *cubicum.* Vicia lathyroides.

Ellipsoid, *ellipsoideum.* Once and a half, or twice as long as broad, equally round at each end, and swelled insensibly in the middle. Quercus longæva.

Egglike, *ovoideum.* Once and a half, or twice as long as broad, round at each end, the one end sharper than the other. Nymphæa, Ribes spinosum glabrum, Aconitum, Cocos nucifera.

Tearlike, *lachrymæforme.* The small end sharper than in the egglike, and frequently compressed. Pyrus, Malus, Amygdalus, Linum.

Elliptic, *ellipticum.* Sisymbrium latifolium, Isatis tinctoria.

Oblong, *oblongum.* At least twice and a half as long as broad, and rounded at each end. Phœnix dactylifera, Lonicera Zeylanica.

Topshape, *turbinatum.* Conical with a round base; the cone at least once and a half as high as broad. Bixa.

Straight, *rectilineum, rectum.* Chærophyllum aromaticum, Hieracium glaucum.

Kidneyshape, *reniforme.* Papaver somniferum, Acer majus, Many malvaceæ, Silene, Phaseolus.

Bent, curved, *arcuatum, curvatum.* Slightly bent. Eroteum undulatum, Tournefortia mutabilis.

Much bent, *recurvum, recurvatum.* Bent so that the two ends nearly meet. Potamogeton.

Folded, *replicatum.* Folded in two, so that the two halves are close together, and even united. Alisma major, Damasonium Dalechampii, Sagittaria.

Compressed, *compressum.* Broader than thick. Fraxinus, Vicia vulgaris, Cucurbita esculenta.

Orbicular, *orbiculare.* The edge circular. Carex divulsa, Ervum lens.

Lentilshape, *lenticulare, rotundato-compressum.* Convex on both sides, with a sharp edge. Carex muricata, Amaranthus minor.

Discoid, *discoideum*. Thick, with two flat parallel faces, and a bluntly rounded edge. Dioscorea, Strychnos Nux-vomica.

Flat, *planum*. Lilium, Tulipa.

Angular, *angulosum*. Having prominent corners upon its surface. Trasus sylvaticus, Cepa esculenta, Rumex, Fagopyrum esculentum, Primula.

Three-cornered, *trigonum*, *triquetrum*. Rumex, Rheum, Fagus sylvestris.

Four-cornered, *tetragonum*, &c.

Sawdust-like, *scobiforme*. Fine, long, like sawdust. Orchideæ, Rhododendron.

Grooved, *canaliculatum*. Hollowed out into a gutter lengthways. Phœnix dactylifera.

3. *Surface.*

Bald, *Semen glabrum*. Asparagus officinalis, Nymphæa, Brassica, Æsculus Hippocastanum.

Smooth, *læve*. Nymphæa, Æsculus Hippocastanum.

Polished, *lævigatum*. Geranium Robertianum, G. molle, Melampyrum arvense.

Shining, *nitidum*, *lucidum*. Polygonum aviculare, Amaranthus minor, Nymphæa, Linum usitatissimum, Spartium scoparium, Æsculus Hippocastanum.

Streaked, *striatum*. Lysimachia stellata.

Furrowed, *sulcatum*. Digitalis speciosa, Viburnum farinosum.

Networked, *reticulatum*. Geranium rotundifolium, G. dissectum, G. columbinum.

Wrinkled, *rugosum*. Damasonium Dalechampii, Aconitum, Cymbalaria hederacea, Elatine hastata.

Pitted, *scrobiculatum*. With irregular pits. Arum Italicum, Datisca cannabina.

Honeycombed, *alveolatum*, *faveolatum*. With pits, placed regularly. Antirrhinum, Papaver.

Rough, *scabrum*. Ruta graveolens, Primula veris.

Dotted, *punctatum*. Covered either with rising points, Cyclamen vernum, Anagallis Phœnicia, Geranium columbinum; or with coloured dots, Clausena.

Tubercular, *tuberculatum*. With elevated lumps. Vicia lathyroides.

Warty, *carunculatum*. With spongy or pulpy excrescences. Chelidonium majus, Ricinus.

Furnished with an operculum, *operculatum.* Having an operculum, or embryo-cover, placed over the radicular extremity of the embryon, and falling off when the seed germinates. Phœnix dactylifera, Asparagus officinalis.

Villous, *villosum.* Roellia cristata, Murraya exotica.

Woolly, *lanatum.* Bombax, Gossypium.

Edged, *marginatum.* With a prominent narrow edge. Spergula pentandra, Matthiola sinuata.

Fringed, *ciliatum.* Edged, and the edge cut into fine jags like eyelashes. Limnanthes peltata.

Winged, *alatum.* Furnished with large thin expansions of the edges or corners.

One-winged, *uni-alatum, monopterum.*

Winged all round, *peripteratum.* Surrounded by the wing. Veratrum album, Rhinanthus glaber.

Winged at top, *epipteratum.* Banksia, Bignonia.

Two-winged, *bi-alatum, dipterum.*

Three-winged, *tri-alatum, tripterum.* Moringa, Pterospermum.

Tufted, *comatum.* With a tuft of hairs or coma, produced either by an expansion of the seed-covers, Tamarix; or by the umbilical cord drying, and splitting into fine filaments, Asclepias, Epilobium.

Bald-headed, *calvum.* Without any tuft. Vinca.

Drupelike, *drupeolatum.* Surrounded with pulp and like a stone-fruit. Ixia Chinensis, Punica Granatus.

Arilled, *arillatum.* Having an arill. Myristica, Oxalis, Evonymus.

Parts of the seed.

Seed covers, *Integumenta propria seminum, Tunicæ seminales.* The covers that grow along with the ovule, and are not very distinct until the ovary is ripened into a pericarp: they comprise the arill, the outer and the inner skin.

The kernel, *Amygdala.* The seed stripped of its covers, being either a simple embryo, or an embryo accompanied with a perisperm.

ARILL.

Arillus, Calyptra. *An appendage to the hile, usually forming an expansion round the seed, which falls off of itself, and is peculiar to a few seeds only.*

Complete, *Arillus completus.* Covering the seed entirely. Oxalis.

Incomplete, *incompletus*. Covering the seed only partially. Evonymus verrucosus, Bocconia frutescens.

¶ Cuplike, *cupularis*. In form of a hollow cup. Evonymus verrucosus, Bocconia frutescens.

Caruncular, strophiolate, *caruncularis*, *strophiolatus*. Formed of one or more caruncles. Polygala vulgaris.

Parted, *partitus*. Divided into several broad parts.

Three-parted, *tripartitus*. Polygala vulgaris.

Many-parted, *multipartitus*. Myristica.

Jagged, *laciniatus*. Divided into narrow strips. Ravenala.

Pulpy, *pulposus*. Texture cellular, very fine, full of juice. Bocconia frutescens.

Fleshy, *carnosus*. Texture thick, juicy, but firm. Myristica.

Elastic, *elasticus*. Extending as the seed enlarges, to a certain length, then tearing open, and retracting, in consequence of its tenacity. Oxalis.

Tearing, *ruptilis*. Tearing irregularly when the seed enlarges. Meliaceæ.

Pellicle.

Pellicula, Epidermis. *A very thin arill which bears the hairs that accompany some seeds.* Bombax, Gossypium.

Tuft.

Coma. *A small tuft of hairs growing at one end of some seeds.* Asclepias, Epilobium, Tamarix.

Skins of the Seed.

Spermoderme, Spermodermis, Perispermum, Episperm. *The coats of seeds in general, surrounding and covering their kernel, including the outer and inner skin, and the flesh of the seed.*

Outer Skin.

Shell, Testa, Lorica. *The smooth, scalelike, external covering of the kernel, which, notwithstanding its appearance, easily imbibes moisture.* Pl. 15, fig. 22 a.

Crustaceous, *Lorica crustacea*. Thin, dry, brittle like a snail-shell. Papaver orientale, Ricinus.

Bony, *ossea*, *lapidea*. Dry, solid, thick, and resembling a bony or stony substance in its appearance. Nymphæa alba, Nuphar luteum.

Leatherlike, *coriacea.* Camellia Japonica, Hura crepitans.

Fungous, corklike, *fungosa, suberosa.* Tulipa, Lilium, Iris.

Pulpy, *pulposa.* Juicy externally, giving the seed the appearance of a stone-fruit. Ixia Chinensis, Punica Granatus, Magnolia.

Bladdery, *vesicularis.* Membranaceous, and much larger than the parts they cover. Philadelphus coronarius.

Flesh of the Seed.

Sarcodermis. *A parenchymatous substance, placed between the outer and inner skin of the seed, frequently scarcely visible, but sometimes very apparent.* Iris fætidissima.

Inner Skin.

Tegmen, Endopleura, Tunica interior, Integumentum, Hiloferus. *A thin pellicle placed next the kernel, scarcely separable from the flesh of the seed, and which, notwithstanding its appearance, is not permeable to moisture.* Pl. 15, fig. 22 b.

Membranaceous, *Tegmen membranaceum.* Nymphæa alba, Amygdalus, Cerasus, Castanea vesca, Fagus sylvatica.

Paperlike, *chartaceum.* Dry, smooth, flexible, tough like a card or parchment. Pyrus communis.

Leatherlike, *coriaceum.* Cocos nucifera.

Crustaceous, *crustaceum.* Areca Faufel.

Cobweblike, *arachnoideum.* Ixia Chinensis.

Partition-bearing, *septiferum.* Expanding internally in the form of incomplete partitions, that divide the kernel into several lobes. Castanea vesca, Juglans regia.

Gummy, *gummatum.* Covered with a gummy substance. Pyrus Cydonia.

Distinct, *a loricâ distinctum.* Separable from the outer skin, without any tearing. Nymphæa, Hydrocharideæ.

Coherent, *loricæ cohærens.* Not separable from the outer skin without tearing. Citrus, Murraya.

Hile.

Eye of the seed, Base of the seed, Hilum, Hylus, Umbilicus, Cicatricula, Fenestra. *A scar upon the surface of the outer skin of the seed, which shows the point by which the umbilical cord fastened the seed to the mother-plant.*

The hile is frequently placed in the middle of a spot, hollow, or elevation, and in describing plants this spot, &c. is included in the signification of the word hile.

Dotlike, *Hilum punctiforme.* Cruciferæ.
Linear, *lineare.* Long, narrow, with the sides parallel. Faba.
Line-like, *lineolare.* Resembling a plain stroke. Commelina communis.
Orbicular, *orbiculare.* Æsculus.
Elliptic, *ellipticum.* Phaseolus.
Heartshape, *cordiforme.* Areca, Cardiospermum.
Convex, *convexum.* Æsculus.
Concave, *concavum.* Cyclamen vernum.
Strophiolate, *strophiolatum.* Composed of a row or rows of tubercles. Polygaleæ.
Comose, *comosum.* Woolly, Polygaleæ.
Ambiguous, *ambiguum.* Corresponding at the same time to the two ends of a bent or folded seed.

Omphalode.

Omphalodium. *A protuberant point, usually placed in the middle of the cicatrix, where the nutrimental vessels entered the seed.*

Foramen.

Micropyla. *A point near the hile, which appears to be the place where the fecundating vessels entered the seed.*

Spile.

Spilus. *A small spot under the first cover of the fruit of the gramineæ at the internal base, which appears to be the real umbilicus or point where the vessels of the pericarpium enter the spermoderme, which is closely united with the pericarp.*

Prostype.

Prostypum, Prostypum funiculare. *A slight elevation on the surface of the seed-covers, formed by the internal elongation of the vessels of the umbilical cord.*

Raphe.

Rapha. *The prominent rib of the prostype that passes from the hile to the chalaze.*

Straight, *Rapha rectilinea, recta.* Labiatæ.

Winding, *sinuosa.* Passing along in a serpentine line. Cookia.

¶ Simple, *simplex.* Passing in a single uniform line, without any ramifications. Labiatæ, Most aurantiaceæ.

Branched, *racemosa.* Throwing out branches, on each side, which usually anastomose, and form a network. Amygdala.

Chalaze.

Chalaza, Umbilicus internus. *A mark on the inner skin, showing where the umbilical cord pierces it: this point is usually directly under the hile, but sometimes at a distance, and connected with it by the raphe.*

Tubercular, *Chalaza tuberculosa.* Swelled out in bunches. Labiatæ.

Cuplike, *cupularis.* Dilated within the flesh of the seed into the form of a cup, or such like vessel. Most aurantiaceæ, especially Citrus Medica, Cookia punctata.

¶ Coloured, *colorata.* Of a different colour than that of the skin. Citrus Medica.

Not coloured, *incolor.* Phaseolus.

Kernel.

Nucleus, Amygdala. *The internal part of the seed, contained within the skins, and composed of an embryo either alone, or accompanied with a perisperm.*

Coated, *Amygdala tunicata.* Covered with skins very distinct from the inside of the ovary. Polygonum, Œnothera.

Tegmined, *tegminata.* Covered with a tegmen. Scirpus, Heisteria coccinea.

Loricated, *loricata.* Covered with a lorica. Eroteum undulatum, Œnothera.

Naked, *nuda, sine tunicâ.* Naked within the sides of the ovary. Abietideæ, Cupressideæ, Taxideæ.

¶ Free, *libera.* The surface not adhering to the covers which envelope it. Amygdalus, Phaseolus, Faba.

Adherent, *adhærens*. Adhering to its covers. Gramineæ, Umbelliferæ.—This only takes place when there is a perisperm, and in this case the true place of the hile, and consequently the base of the seed, is frequently very difficult to be ascertained.

¶ Single, *unica*. Only one kernel in a seed. Most plants.

Double, *duplex*. Two in each seed. Eriolithus.

¶ Perispermed, *perispermata, perispermica, albuminosa, endospermica*. Having a perisperm. Cyperaceæ, Gramineæ, Rubiaceæ, Umbelliferæ.

Not-perispermed, *aperispermata, exalbuminosa, epispermica, epiperispermica*. Without a perisperm. Alismaceæ, Compositæ, Faba, Phaseolus.

Tuberous, *tuberosa*. Composed of an uniform mass, with several germinating points. Aroideæ, Calladium.

Perisperm.

Perispermum, Albumen, Endospermum, Secundinæ internæ, Medulla seminis. *Cellular tissue accompanying the embryo in the kernel, but scarcely ever adhering to it, and having no vascular organization; furnishing, during germination, the first nourishment to the young plant.* Pl. 18, fig. 20 e; 22.

Central, *Perispermum centrale*. Forming a mass in the centre of the kernel, and surrounded by the embryo. Cuscuta Europæa, Silene, Nyctagineæ.

Circumferential, *periphæricum*. Surrounding the embryo, and concealing it. Abietideæ, Cupressideæ.

One-sided, *unilaterale*. Placed on one side, and the embryo on the other. Gramineæ.

¶ Dry, *siccum, aridum*. Gramineæ.

Mealy, *farinosum*. Dry, and reducible by trituration into a fine, soft powder. Triticum, Avena, Secale.

Friable, *friabile*. Dry, and crumbling by a slight rubbing, Piper nigrum, Gunnera scabra.

Oily, *oleagineum*. Greasy to the touch, and yielding oil by expression. Euphorbiaceæ, Nyssa sylvatica.

Mucilaginous, *mucilaginosum*. Having, while moist, the consistence of a gummy matter slightly wetted. Convolvulus.

Pellicular, membranaceous, *pelliculare, membranaceum*. Formed of a thin flake or pellicle. Most labiatæ, Prunus, Amygdalus.

Fleshy, *carnosum*. Euphorbiaceæ.

Horny, *corneum*. Tough, elastic, hard like horn. Palmæ, Aristolochia, Rubiaceæ.

Leathery, cartilaginous, *coriaceum*, *cartilagineum*, *dense carnosum*. Tough like leather, or a cartilage. Umbelliferæ.

Transparent, *pellucidum*. Oryza sativa.

Opake, *opacum*. Triticum.

¶ Lobed, *lobatum*.

Three-lobed, *trilobatum*. Coccoloba, Lontarus.

Five-lobed, *quinquelobatum*. Aquilicia.

Creviced, *rimosum*. Having more or less deep incisions, into which folds of the seed-covers are inserted. Uvaria, Anona.

¶ Large, *magnum*. Relatively to the embryo. Gramineæ, Umbelliferæ, Ranunculaceæ.

Thick, *crassum*. Having a notable thickness. Gramineæ, Hydrophyllum.

Thin, *tenue*. Labiatæ, Rosaceæ, Thymeleæ.

¶ White, *album*. In most plants.

Green, *viride*. Viscum album.

¶ Hollow, *cavum*. Having another internal cavity besides that containing the embryo. Cocos, Myristica.

Wrinkled, *corrugatum*, *contortuplicatum*. Folded together in different senses along with the embryo. Convolvulus.

Hile-bearing, *hiliferum*. Bearing the hile. Abietideæ, Cupressideæ, Taxideæ.

Chorion.

A pulpy liquor which appears to form the whole substance of the kernel before its fecundation, and disappears before its maturity.

Amnios.

A transparent gelatinous or emulsive liquor that is not to be seen before fecundation, in which the embryo swims, and which appears to serve for its nourishment; the concrete residuum forming the perisperm. Cocoa.

Naked, *Amnios nudum*.

Enclosed, *inclusum*. Enclosed in a sac.

Embryo.

Proper seed, Heart of the seed, Corculum, Cor seminis. *The rudiment of the new plant.* Pl. 15, fig. 22 d; pl. 18, fig. 20 f; 22 a.

Not cotyledonic, *Embrio acotyledoneus*. Without any cotyledons, and of course consisting only of a blastême. Cuscuta, Confervæ.

One-cotyledon, *monocotyledoneus*. With only one cotyledon. Gramineæ, Liliaceæ, Cyclamen Europæus, Zanichellia.

Two-cotyledon, *dicotyledoneus*. With two cotyledons. Labiatæ, Compositæ, Umbelliferæ, Cruciferæ, Rosaceæ, Leguminosæ.

Many-cotyledon, *polycotyledoneus*. With more than two cotyledons. Pinus, Abies, Larix, Cedrus, Ceratophyllum.

¶ Spherical, globular, *sphæricus*, *globulosus*.

Ellipsoid, *ellipsoideus*. Quercus longæva.

Egglike, *ovoideus*. Juncus, Corylus, Nelumbo.

Conical, *conicus*. In form of a sugar-loaf. Epilobium hirsutum.

Topshaped, *turbinatus*. Nymphæa alba, Scirpus sylvaticus.

Threadlike, *filiformis*. Slender and cylindrical like a thread. Typha, Allium, Atriplex, Damasonium Dalechampii.

Spindleshape, *fusiformis*. Long, and growing narrower at each end. Triglochin palustre.

Clubshape, *claviformis*. Hyacinthus nutans.

Mushroomshape, *fungiformis*. Having a hemispherical broad head placed upon a cylindrical stem. Musa sapientum, M. coccinea.

Heartshape, *cordiformis*. Azarum, Aristolochia, Gunnera.

Saucerlike, *patelliformis*. Flagellaria Indica.

Bucklershape, *scutelliformis*. Broad, more or less round, differs but little from the preceding. Holcus.

Cylindrical, *cylindricus*. Antirrhinum.

Sheavelike, *trochlearis*. Cylindrical, very short, narrower in the middle, like the sheave of a pulley. Commelina communis.

Lenticular, *lenticularis*. Ervum lens.

¶ Straight, *rectilineus*, *rectus*. Neither bent, nor twisted. Abietideæ, Cupressideæ, Taxideæ, Aroideæ.

Bent, *arcuatus*, *curvatus*. Vaccinium montanum. Galium uncinatum, Papaver.

Bent back, *recurvus*, *recurvatus*. Bent so that the tip of the cotyledons either touches the radicle, or approaches very close to it. Nyctagineæ, Morus.

Knee-bent, *geniculatus*. Folded so as to form an angle. Guettarda speciosa.

Folded, *replicatus*, *conduplicatus*. Folded in two, and the folds brought close together. Alisma, Sagittaria, Damasonium.

Ringlike, *annularis*. Slender, long, bent so that the cotyledon end touches the radicular. Salsola, Silene.

Pill-like, *in orbem contractus*. Bent so as to form a ball. Sinapis alba.

Spiral, *spiralis*, *cochleatus*. Bent in a spiral. Salsola tragus, Cuscuta Europæa. Pl. 13, fig. 14.

Crooked, *flexuosus*. Bent in different directions. Anguillaria Bahamensis.

¶ Enclosed, *reclusus*, *inclusus*. Shut up in the perisperm. Anagallis phœnicia, Campanula, Galium.

Axile, *axilis*. Slender, surrounded with a perisperm, and placed in a straight line from one point to that diametrically opposite. Typha, Plantagineæ, Fraxinus, Campanula, Berberis, Saxifrageæ.

Medial, *mediaris*. Spread out broad, placed in the middle of the perisperm, and dividing it into two nearly equal parts. Cassia Fistula, Ricinus, Hura crepitans.

Central, *centralis*. In the centre of the perisperm. Taxus baccata. Pl. 13, fig. 22.

Excentric, *excentricus*. Enclosed in the perisperm, but not placed in the centre. Cyclamen.

External, *exterior*. On the surface of the perisperm. Scirpus, Gramineæ, Nymphæa.

Peripheric, *periphæricus*, *albumine circumpositus*. External, and surrounding the greater part of the perisperm. Mirabilis, Silene. Very rare.

Nearly peripheric, *subperiphæricus*. The perisperm that forms the central part of the kernel throws out the embryo, which spreads in a very thin flake over its surface. Atriplices, Amaranthideæ.

Crosswise, *transversus*. Long, and nearly parallel to the hile. Asparagus officinalis, Plantagineæ, Cyclamen Europæum, Primulaceæ, Polemonium, Many boragineæ.

Oblique, *obliquus*. One end further from the axis of the seed than the other. Gramineæ.

On the side, *lateralis*. Thrust on one side. Gramineæ, Polygonum scandens, Cyclamen.

At the base, *basilaris*. Placed entirely at the bottom of the seed near the hile. Cyperaceæ, Juncus, Asarum, Aristolochia, Pedicularis, Umbelliferæ, Papaver, Aconitum, Ranunculus.

At the tip, *apicilaris*. Placed opposite the hile. Colchicum.

Vague, *vagus*. Placed in the perisperm, but neither at the bottom, top, or side of the seed.

Nestling, *nidulatus*. Placed in a sac formed by a fold of the inner skin of the seed. Commelina.

¶ White, *albus*, *lacteus*. Most embryos.

Yellowish, *lutescens*. Ribes spinosum glabrum.

Green, *viridis*. Acer majus, Pistachia Terebinthus.

Leadcolour, *plumbeus*. Æchinops.

Purplish, *purpureus*. Bidens and Zinnia when the seeds are fresh.

¶ Large-footed, *macropodius*. The radicle very large, and bulging out like a head.

Large-headed, *macrocephalus*. The cotyledons swelled out into a mass much larger than the other part.

Roots within, *endorhizus*. Radicles growing from the base of the embryo and piercing the covers.

Roots without, *exorhizus*. Radicles completely developed in the embryo, and only lengthening in germination.

Roots united, *synorhizus*. Radicle united in some degree with the perisperm.

Cotyledons.

Cotyledones, Lobi, Valvæ seminum. *The part of the kernel that forms the first leaves of the plant during germination.* Pl. 14, fig. 12; pl. 15, fig. 19, 22 c; pl. 16, fig. 13.

In one-cotyledon embryos, the cotyledon forming nearly the whole mass of the embryo, the external characters are common both to the embryo and the cotyledon, and it is indifferent whether it be said that the embryo or the cotyledon of holcus is bucklershape; but in other embryos, the cotyledons are in general very distinct.

Fleshy, *Cotyledones carnosæ*. Thick, juicy, firm, and breakable. Corylus, Faba, Amygdalus communis, A. Persica.

Leaflike, *foliaceæ*. Thin, and frequently ribbed like leaves. Nyctagineæ, Tilia, Cassia Fistula, Euphorbiaceæ. Pl. 14, fig. 12.

¶ Dotted, *punctatæ*. Surfaces with either transparent points, Aurantiaceæ; or coloured ones, Anagallis when germinating.

Ribbed, *nervatæ*. Surface ribbed. Tilia, Mirabilis Jalapa.

Ribless, *enerves*. Faba.

¶ Large, *magnæ*. Relatively to the radicle. Amygdalus, Faba, Quercus, Castanea vesca.

Middlesize, *mediocres*. Polygonum, Galium, Pinus.

Small, *parvæ*. Orontium majus, Polemonium.

Very small, *parvulæ*. Rhododendron.

Long, *longæ*. Salsola.

Short, *breves*. Hopea.

Shortened, *abbreviatæ*. Short, but broad.

Broad, *latæ*. In respect to their length. Avicennia.

Narrow, *angustæ*. Salsola, Hieracium, Pinus.

Thick, *crassæ*. Æsculus, Amygdalus, Phaseolus, Quercus, Castanea vesca.

¶ Side, *laterales*. On one side of the blasteme, which position is peculiar to the one-cotyledon embryos. Gramineæ.

Opposite, *oppositæ*. Placed at the same height on the blasteme, but diametrically opposite, as in two-cotyledon embryos. Phaseolus, Faba, Pisum.

In whirls, *verticillatæ*. Many, and placed round the blasteme at the same height. Pinus, Abies, Larix, Ceratophyllum.

Contiguous, *contiguæ*. Their internal faces closely applied to each other. Most two-cotyledon plants, Rosaceæ, Leguminosæ.

Incumbent, *incumbentes*. Contiguous and lying upon one another, the one towards the summit of the seed, the other towards the hile. Hesperis, Smyrnium.

Accumbent, *accumbentes*. Contiguous, and lying side by side. Nasturtium, Cardamine.

Wide apart, *divergentes*. Separating from one another by their tips. Delphinium puniceum, Myristica.

Turned back, *reflexæ*. Bent, and turning their tip to the tip of the radicle, Nyctagyneæ, Dorstenia; and that either by their faces, *a facicbus*, Mirabilis Jalapa; or by their side, *a lateribus*, Genista Hispanica, Cheiranthus, Helianthemum.

Rolled lengthways, *circinatæ*. Forming a spiral by their tip being rolled inwards to the bottom. Basella, Anabasis.

Rolled sideways, *convolutæ*. Forming a spiral by one of their sides being rolled inwards. Punica Granatum, Pl. 15, fig. 19.

Riding, *se invicem equitantes, obvolutæ, oppositæ*. The half of one cotyledon folded sideways receives into the fold the half of the other folded in a similar manner. Coldenia procumbens.

Folded together, *conduplicatæ*. Applied close to one another, and folded togther. Avicenna.

Folded up, *plicatæ*. In regular folds like those of a fan. Fagus sylvatica.

Rumpled, *contortuplicatæ*, *corrugatæ*. Folded irregularly, in different directions, like a rumpled stuff. Convolvulus, Malva, Gossypium.

Joined together, *coalitæ*. United after the seed ripened, and forming only a single mass. Tropæolum.

Pierced, *pertusæ*. Pierced with large holes. Menispermum fenestratum.

¶ Rounded, *orbiculares*, *subrotundæ*. More or less rounded. Acanthaceæ, Hura crepitans.

Oval, *ovales*. Resembling the longitudinal section of an egg, one end being rounder than the other. Cheiranthus Cheiri, Amygdalus communis.

Elliptic, *ellipticæ*. One third longer than broad, edge rounded, the two ends equal. Quercus longæva.

Kidneyshape, *reniformes*. Anacardium orientale.

Heartshape, *cordiformes*. Ixora, Coffæa, Phyllis Nobla.

Lanceolate, *lanceolatæ*. Two thirds longer than broad, and ending in an acute angle.

Linear, *lineares*. Flat, long, narrow, with the sides nearly parallel. Hieracium glaucum.

Long, *elongatæ*. At least twice and a half as long as broad. Salsola radiata.

Semicylindrical, *hemicylindricæ*. Long, with one face flat and the other convex. Salsola radiata.

Sickleshape, *falcatæ*. Long and bent like a reaping-hook. Ceratospermum, Hypecoum.

¶ Alike, *similares*. Equal in size and form. Faba, Amygdalus, and indeed most cotyledons.

Unlike, *dissimiles*. Differing from one another. Trapa natans, Ceratophyllum demersum.

¶ Lobed, *lobatæ*. Cut to the middle, or even deeper. Juglans, Hernandia.

Two-lobed, *bilobatæ*. Brassica oleracea.

Five-lobed, *quinquelobatæ*. Tilia alba.

Feather-cut, *pinnatifidæ*. Long, and divided on the sides. Geranium moschatum.

Uncut, *integræ*. Having neither teeth, sinuses, nor lobes. Most cotyledons.

¶ Footstalked, *petiolatæ*. Narrowed at bottom into a kind of footstalk. Mirabilis Jalapa when germinating, Æsculus Hippocastanum, Trapæolum when germinating, Dorstenia Contrayerva.

Sessile, *sessiles*. Without any petiole. Most cotyledons.

Jointed, *articulatæ*. Narrowed at bottom, and appearing as if united to the blasteme by a joint. Mespilus Germanica.

Indistinct, *confluentes*. Not narrowed at bottom, but confounded together and with the blasteme. Compositæ, Nelumbo.

¶ Hypogeous, *hypogeæ*. Remaining under ground during germination. Gramineæ, Æsculus.

Epigeous, *epigeæ*. Rising out of the ground during germination. Abietideæ, Faba, Mirabilis.

The other characters of cotyledons are to be sought for by considering them as leaves.

Primordial Leaves.

Folia primordialia. *Those small leaves which, besides the cotyledons, are sometimes visible in the seed.*

Pileole.

Pileola. *A primordial leaf, closed, and covering like an extinguisher, the other leaves of the sprouting seed.* Scirpus. Pl. 13, fig. 2 c.

Main Body.

Corpus Cotyledoneum. *The cotyledonary mass formed of cotyledons closely united together.*

Synzygia.

The place where two opposite cotyledons are united.

Lobule.

Lobula. *That cotyledon of two opposite ones which is placed farthest from the radicle.*

Coleoptile.

Coleophyllum, Coleoptila. *A small sheath formed by the cotyledons, and surrounding the base of the plumule.* Alismaceæ, Liliaceæ.

Seed Roots.

Radices seminales, Vasa mammaria. *The small vessels proceeding from the plumule into the cotyledons.*

Blasteme.

Blastema. *That part of the embryo that remains when the cotyledons are taken away.*

Lateral, *Blastema laterale.* The axis on one side relatively to the mass of the embryo. Gramineæ.

Plumule.

Plantule, Plumula. *That part of the blasteme that is destined to rise above ground and form the future plant.*

Conspicuous, *Plumula visibilis.* Visible before germination, either by the naked eye, Gramineæ, Æsculus Hippocastanum, Faba, Nelumbo, Ceratophyllum; or by the assistance of glasses. Damasonium Dalechampii, Triglochin palustre. Pl. 13, fig. 1 e.

Inconspicuous, *invisibilis, inconspicua.* Commelina, Cepa esculenta, Cyclamen Europæum.

Coleoptiled, *coleoptilata.* Enclosed in a coleoptile. Alismaceæ, Liliaceæ.

Naked, *nuda, acoleoptilata.* On the surface of the blasteme, without any coleoptile. Gramineæ, Faba.

Dotlike, *punctiformis.* So very small, that it appears like a dot only. Abies.

Tigellated, *tigellata.* Having a visible tigelle. Faba.

Leaved, *foliata.* The gemmule so far developed that small leaves may be seen in it. Faba, Ceratophyllum.

Caulicle.

Cauliculus. *That part of the plumule which is seated between the cotyledons and the radicle.*

Radicle.

Rostellum, Radicula. *That part of the blasteme that forms the future root of the plant; but is generally taken for all beneath the insertion of the cotyledons.*

Visible, *Radicula visibilis.* Faba.

Invisible, *invisibilis.* Not to be seen before the seed germinates. Commelina communis.

Coleorhized, *coleorhizata.* Enclosed in a coleorhize. Gramineæ, Tropæolum majus.

Naked, *nuda.* Not enclosed in a coleorhize. Faba, Phœnix dactylifera.

Hilebearing, *hilifera.* The kernel being naked, the radicle receives its vessels immediately from the umbilical cord. Avicennia.

Prominent, *prominens.* Prolonged below the insertion of the cotyledons. Cheiranthus, Genista.

Drawn in, *retracta*. Hidden by the cotyledons which are prolonged below their insertion on the blasteme. Acanthus, Quercus, Corylus.

¶ Slender, *gracilis*. Cheiranthus fruticulosus.

Conical, *conica*. In form of a reverse cone. Faba, Labiatæ, Cucurbitaceæ.

Roundish, *subrotunda*. Nearly globular. Viscum album, Berberis, Cassia Fistula.

Eggshape, *ovoidea*. Ribes, Castanea vesca, Glaucium luteum.

Clubshape, *clavæformis*. Rhizophora.

Flatted, *depressa*. Flattened as from top to bottom. Ægle Marmelos, Thea.

Pointed, *acuta*. Faba major.

Blunt, *obtusa*. Cassia Fistula.

Short, *brevis*. Shorter than the cotyledons. Cassia Fistula.

Long, *longa*. Longer than the cotyledons. Abies, Pinus, Symploca.

¶ Straight, *rectilinea*, *recta*. In the same direction as the axis of the cotyledons. Abietideæ, Compositæ.

Bent back, *recurvata*. Bent, so that it becomes nearer to the hile. Genista Hispanica.

Bent backwards, *regressa*. Bent, but with the tip pointing from the hile. Cornucopiæ cucullatum.

Opposite, *adversa*, *obversa*, *umbilicum spectans*. Turned towards the hile.

Directly opposed, *directe adversa*. The point of the radicle turned towards the hile. Fraxinus, Compositæ, Umbelliferæ, Genista.

Opposed sideways, *lateraliter adversa*. Radicle turning its side to the hile. Rosaceæ, Ricinus.

Inverted, *inversa*, *aversa*. Turned diametrically opposite to the hile. Polygonum scandens, Acanthus, Ceratophyllum cornutum.

Lateral, *lateralis*. Turned towards some other point than the tip or bottom of the seed. Commelina.

Superficial, *superficialis*. The seed having a perisperm, the radicle spread on the surface of the kernel. Phœnix dactylifera, Commelina.

¶ High, *alta*, *supera*. Turned towards the summit of the fruit. Borragineæ, Prunus, Amygdalus, Ricinus, Abietideæ.

Low, *demissa*. Turned towards the base of the fruit. Galium, Polemonium, Plantago stricta.

Centrifugal, *centrifuga*. Directed horizontally to the side of the fruit. Ribes, Cucurbitaceæ.

Centripetal, *centripeta*. Directed towards the centre of the fruit. Œnothera, Citrus.

Coleorhize.

Appendage to the radicle. Coleorhiza. *A fleshy sac enclosing the radicle like a sheath.* Gramineæ, Cycas, Nymphæa, Saururus, Piper.

Vitellus.

Any part adhering to the embryo, which is neither cotyledon, nor plumule, nor radicle, not extending beyond the seed, and withering during germination.

Bacillus. A fleshy part growing in the seed of hyacinthus instead of the cotyledon, from which it does not seem to differ.

Blastus. That part of an embryo with a large radicle that enlarges during germination.

Blastophore. That part that supports the blastus. This is usually the vitellus of Gærtner.

Epiblastus. An anterior appendage to the blastus of some gramineæ.

Rhiziophysis. Appendages prolonged beyond the extremities of the radicles. Nenuphar.

Tigelle.

Tigella. *That part of the plumule which lies between the collar and the gemmule.*

Visible, *Tigella visibilis*. Apparent before germination. Trophæolum, Faba, Nelumbo, Damasonium Dalechampii.

Inconspicuous, *invisibilis*. Scarcely developed before the seed germinates. Allium, Pinus.

Gemmule.

Gemmula. *The small bud that is at the end of the tigelle.*

Sessile, *Gemmula sessilis*. The tigelle being inconspicuous, the gemmule appears as if seated on the collar without any tigelle. Calla Æthiopica.

Pileolated, *pileolata*. Hidden under a pileole. Gramineæ, Scirpus.

Collar.

Collum, Coarctura, Limes communis, Fundus plantæ, Nodus vitalis. *The plane interceding between the plumule and the radicle, which afterwards becomes that between the root and the stem; or the place where the fibres commence on the one hand to rise up, and on the other hand to descend.*

Ascending, *Collum ascendens.* Rising out of the ground in germination, along with the plumule and cotyledons. Abies, Mirabilis Jalapa, Avicennia.

Descending, *descendens.* Burying itself deeper in the ground, during germination, along with the radicle. Damasonium Dalechampii.

As it is most frequently impossible to distinguish the collar while in the seed, from the radicle, it is usually comprehended under that name.

Plantule.

Plantula. *The embryo when in a state of germination.*

Acrospire, *Acrospira.* The plumule when it first bursts out of the seed covers.

Seed leaves, *Folia seminalia.* The cotyledons when expanded by germination, and rising out of the ground.

Such are the different varieties of form to be found in plants, taken in general; but a few tribes of them, such as ferns, mosses, lichens, algæ or marine plants, and mushrooms, differ so much in their structure, especially in the organs destined for reproduction, that they require peculiar terms to describe their parts.

AGAMOUS AND CRYPTOGAMOUS PLANTS.

Cormus, Anabasis, Frons. Every part of an agamous or cryptogamous plant, except the roots or holdfasts, and the organs of reproduction.

Sporangium, Perisporium. The part that immediately contains the seeds or sporæ, analogous to the fruit of phanerogamous plants.

Spore, *Spora, Sporata, Gongylus, Besimen.* The reproductive corpuscles of agamous plants, analogous to the seed of sexual plants

Ferns.

Stipes. The stem, or rather leafstalk of a fern, as it is not alike on every side. Pl. 8, fig. 8.

Sori. The groups of capsules, usually seated on the back of the frons or leaf. Pl. 19, fig. 15.

Involucrum, Indusium, Membranula, Glandulæ squamosæ. A membrane that covers the sori, when young. Pl. 19, fig. 15.

Capsule, *Capsula.* The vessel containing the sporæ, usually torn open when ripe by the force of the elastic ring. Pl. 19, fig. 15 b, 16 and 17.

Elastic ring, *Annulus elasticus, Gyrus, Gyroma.* A strong ligamentous belt surrounding the capsules. Pl. 19, fig. 16 and 17.

Lycopodiaceæ, &c.

Involucrum. The indehiscent envelope of the spori of the marsileaceæ.

Conceptacles, *Conceptacula, Nephrosta.* The coques that contain the sori of the lycopodiaceæ. Pl. 19, fig. 3, 6, 7 and 11.

Mosses.

Surculus. The stem of a moss.

Perichætium, Perocidium, Perigonium. An involucre composed of small floral leaves which surround the base of the organs of reproduction in mosses. Pl. 20, fig. 7, 11.

Perichætial leaves, *Folia perichetialia.* Imbricated, leaf-like organs surrounding the reproductive organs. Pl. 20, fig. 11 a.

Paraphyses, *Fila succulenta.* Fistular hairs divided into cells, intermixed with the organs of reproduction in the perichætia of mosses. Pl. 20, fig. 6 e, 11 b.

Urn, Capsule, *Urna, Theca, Pyxidium, Capsula, Sporangium, Anthera, Aggedula.* The fruit of the mosses. Usually dry, oblong or round, and covered with an operculum, which separates when ripe by a transverse division. Pl. 20, fig. 3, 4, 5 g, 9, 10, 12, 14, 17.

Calpa. The urn of fontinalis.

Pedicell. *Seta, Stipes, Pedicellus.* The footstalk that supports the urn. Pl. 20, fig. 4, 8 a.

Gynocidium. A small enlargement at the base of the pedicell.

Vaginule, *Vaginula.* A small membranaceous sheath that surrounds the bottom of the pedicell.

Apophysis, Stroma. A swelling at the base of the urn. Polytrichum, Splachnum.

Calyptra. The scarious or membranaceous remains of the perigonium, which is carried up with the urn when the pedicell lengthens, and which covers the operculum like a hood. Pl. 20, fig. 3.

Operculum. A cover that lies over the orifice of the urn. Pl. 20, fig. 9.

Conjunctorium. The very small operculum of the Andræa.

Peristome, *Peristoma.* The edge of the opening into the urn, which is sometimes naked, sometimes surrounded with a single or double row of teeth. Pl. 20, fig. 9, 10, 12, 14, 15, 16.

Membranula. The fine membrane that supports the teeth of the peristome.

Teeth of the peristome, *Dentes peristomatis, Blepharæ, — pogon.* The small jags that sometimes surround the peristome. Pl. 20, fig. 15, 16.

Barbula. The bearded edge of mosses, formed by the union of the teeth of the peristome. Tortula.

Epiphragme, *Epiphragma.* A membrane stretched across the peristome, which shuts up the urn. Polytrichum. Pl. 20, fig. 10.

Fringe, *Annulus, Fimbria.* An elastic toothed membrane, situated under the operculum.

Sporangidium. The panninterne of the urn. Pl. 20, fig. 5.

Columelle, *Columella, Sporangidium.* A threadlike pillar in the centre of the urn to which the seeds are attached. Pl. 20, fig. 5 c.

Prosphyses. Threads intermixed with the seeds or spores.

Hepaticæ, &c.

Capsule, *Capsula, Involucrum, Receptaculum.* The vessel containing the seeds or sporæ. Pl. 19, fig. 20, 21, 23.

Elateres, crinulæ. The elastic, membranous, twisted threads that first attach the sporæ to the capsule, and when ripe, by their elasticity, disperse them. Pl. 19, fig. 20 e.

Raphida. A kind of bivalve pericarpium containing sporæ. Anthoceros, Targionia.

Globulus. The globular capsule of the jungermanniæ.

Colesula. A small membranaceous bag, containing sporæ. Jungermanniæ, Marchantia.

Origoma. A conceptacle placed on the frond, resembling a basket. Marchantia. Pl. 19, fig. 23 b.

Lichens.

Frond, *Frons, Thallus, Receptaculum universale.* The frond or cormus of a lichen, containing sporæ or gongyli dispersed through its substance.

Fibrils, *Fibrillæ.* The rootlike holdfasts.

Cortical substance, *Substantia corticalis.* The external substance of the frond.

Medullary substance, *Substantia medullaris.* The internal substance of the frond, when it can be distinguished.

Podetium. An elevation of the thallus raising up the apothecia.

Podicellum. A very small, short podetium.

Apothecium, Thalamus, Receptaculum partiale. The partial receptacle of the gongyles either sessile or raised upon a podetium, that are placed on the frond.

Apothecia vera, Organa fœmina. The apothecia that are more constant in their appearance, and of which only one kind are found in the same individual.

Apothecia spuria, Apothecia accessoria, Organa mascula. The apothecia less constant, and of which several kinds are sometimes found on the same plant, including cephalodia, cyphellæ, pulvinuli, and perhaps soredia.

Scutellæ. Orbicular sessile apothecia surrounded by an edge similar to the thallus. Parmelia.

Patellulæ. Orbicular sessile apothecia, with a border not similar to the thallus. Lecidea.

Lirellæ. Sessile, linear, winding apothecia, opening by a longitudinal slit. Opegrapha.

Pilidia. Orbicular, hemispherical apothecia, whose surface resolves into a powder. Calycium.

Orbillæ. Apothecia placed on podetia, enlarged into a disk, fringed or radiated on the edge. Usnea.

Peltæ. Rather leatherlike apothecia, on the edge of the thallus, without any edge, or a very narrow one, and covered at first with a thin, gelatinous membrane. Physcia.

Tricæ, Gyromata. Orbicular, sessile apothecia, with rising folds in a spiral form, opening longitudinally, and emitting capsules, or elytræ, containing eight sporès each.

Mammula. Apothecia which are sessile, but are more convex than the scutellæ or patellulæ, and have neither edge or border. Coniocarpon.

Tuberculæ. Spherical apothecia, which contain within them agglomerated globular spores. Verrucaria.

Cistulæ. Globular apothecia, at first closed, and filled with spores adhering to filaments, afterwards splitting irregularly. Sphærophorus.

Cephalodia. Apothecia like the patellulæ, but with scarcely any edge, and the disk more convex. Stereocaulon.

Globules, *Globulæ.* Globular apothecia, falling off and leaving a hollow wherein it was inserted. Isidium.

Orbiculus. Flat orbicular apothecia, placed in the peridium of the nidularia.

Stroma. Irregular apothecia in which the sporæ are immersed. Sphæria.

Spherules, *Sphærulæ.* Globular receptacles, opening at top, and emitting the sporæ, mixed with a gelatinous pulp.

Cyphellæ. Tubercles on the lower surface of the thallus, from the cortical substance, and usually white or pale. Sticta.

Pulvinuli. Branched tubercles, or shapeless masses cohering together, and appearing like little shrubs or globes formed from the cortical substance of the thallus: they are usually black or dark green. Parmelia.

Soredia. Whitish powder collected in small heaps, composed apparently of unattached gongyli. Ramalina, Alectoria.

Nucleus proligerus, Lamina proligera. A cartilaginous disk, distinct from the substance of the thallus, scarcely ever split, but coming out whole from the apothecia, or sometimes dissolving into a gelatinous substance, containing sporæ or gongyli.

Perithecium. The visible cartilaginous or transparent skin containing the nucleus proligerus. Verrucaria.—It is probably present in all apothecia, but in many cannot be seen.

Thalamia. Apothecia which consist of a nucleus proligerus contained in a perithecium. Variolaria.

Gongyles, *Gongylæ, Propagines, Propagacula, Sporæ, Semina.* Opake, globular corpuscles, sometimes nestling on the surface; still more frequent in the substance, particularly the cortical, of the thallus; and constantly present, very copiously in the apothecia.

Mushrooms.

Stem, *Stipes*. The round footstalk that supports the cap of pileiferous mushrooms. Agaricus.

Cap, *Pileus*. An expansion of the stem, usually hemispherical or conical. Agaricus.

Volva. A membranaceous envelope surrounding the whole mushroom while quite young, or in the egg-state. Agaricus.

Collar, *Annulus*. A membranaceous envelope covering the cap while the plant is young, afterwards ruptured and remaining round the stipes like a collar, either fixed, Boletus annulatus; or moveable, Agaricus procerus.

Curtain, *Cortina*. A kind of thready collar, or network, which, after the rupture of it by the growth of the plant, remains attached to the edge of the cap. Agaricus araneosus, Agarici cortinarii.

Hymenium, Membrana fructificans. The part of the pileus that contains the sporæ or gongyles.

Gills, *Lamellæ, Venæ*. Thin expansions of the hymenium, either single, in pairs, or other determined number; sometimes distinct, sometimes anastomosing together. Agaricus, Merulius.

Tubes, *Tubi*. Tubular expansions of the hymenium. Boletus, Poria.

Capsule, *Peridium, Involucrum*. A dry, membranaceous hollow vessel, filled with sporæ or gongyles. Lycoperdon.

Perithecium. A hard, hollow receptacle, containing a gelatinous substance filled with thecæ.

Capellitium. Hairlike fibres, or elateres interwoven with sporæ into a globular or oval form, and contained in a peridium.

Slime, *Latex*. A mucilaginous liquid containing the sporæ floating in it. Phallus, Clathrus.

Vesicles, *Vesiculæ*. Collections of sporæ united together.

Sporidia. Conceptacles containing sporæ. Puccinia.

Flocci. Tubular threads intermixed with the sporæ.

Cisti. Very small round conceptacles containing sporæ, borne upon small footstalks. Mucor.

Cistophori. The footstalks that support the cisti. Mucor.

Seeds, *Sporæ, Sporulæ*. The reproductive corpuscles of mushrooms.

APPENDAGES.

Appendices, Appendicula. *Small accessory parts of plants added to other organs.* The following have had special names given to them.

¶ Wing, *Ala.* A membranous or leaflike appendage.

Ear, *Auricula.* A short, roundish appendage, placed on the side of any part.

Tail, *Cauda, — ura.* A long, soft, flexible appendage, placed at the end of any part, like the tail of an animal.

Wart, *Verruca.* A small, roundish protuberance, rather soft and compact.

Nipple, *Papilla.* A small, long, soft, compact protuberance.

Papule, *Papula.* A roundish, soft protuberance, containing a fluid.

Lens, *Lenticula.* A roundish or oblong spot on the smooth bark of young trees.

Pit, *Fovea.* A slight depression.

¶ Fleeciness, Villosity, *Villus.* Numerous soft hairs, placed close together.

Down, *Pubes.* Soft hairs, not very close to one another.

Rough coat, *Hirsuties.* Numerous long hairs.

Wool, Wooliness, *Lana, Lanugo, — erion.* Long, soft hairs, much interwoven together.

Cotton, *Tomentum.* Long, crisp hairs, much interwoven.

Velvet, *Velumen.* Very close, soft, short, even-topped hairs.

Fringe, *Cilium.* Rather stiff hairs, placed on the edge of any part.

Beard, *Barba, — pogon.* Hairs disposed in a tuft, or in any regular order.

Awn, *Arista, — athera.* A stiff hair, or threadlike point inserted at the end, or on the back of any part, and not arising from the lengthening out of any rib.

Bristle, *Seta, — chæta.* A stiff hair, usually attached to the end of any part, and appearing to be the prolongation of a rib.

Crine, *Crinus.* Stiff hair, like that of horses' tails, growing on any part.

Apicule, *Apiculus.* A hair, or hairlike point, not very stiff, but acute and short, placed at the end of any part.

Cusp, *Cuspis.* A long, needlike, rather stiff termination of any part.

Mucro. A stiff, straight terminal point to any part.

Hook, *Hamus, Rostellum, Uncus.* A crooked point.

Glochis. Fine, stiff hair, with branches bent back.

Sting, *Stimulus.* Fine hair, rather stiff, causing an itching when touched. Urtica.

¶ Scale, *Squama, — lepis.* A small, membranaceous, or scarious appendage to any part.

Chaff, *Paleæ.* Small scales intermixed among flowrets or seeds.

Striga. A narrow, long scale, approaching to a hair.

CHARACTERS.

The authors of the Linnæan school have introduced the uses of characters to denote terms that often occur. The following are those most usually employed, as being found in most printing-houses, and not requiring any extra expense of casting on purpose.

☉. An annual plant; because the earth takes a year to perform its motion round the sun.

♂. A biennial plant; because Mars takes nearly two years to perform its revolution.

♃. A perennial plant; because Jupiter takes several years to perform its revolution.

♄. A tree or shrub; because Saturn takes nearly thirty years to perform its revolution.

♂. A male individual among plants.

♀. A female individual.

☿. An hermaphrodite plant.

†. A plant not seen by the author, and therefore inserted with some degree of doubt.

I. II. to XII. are used to express the months in which the plants flower, beginning with January.

De Candolle has introduced a greater number of characters, but as they are not yet current among other writers, they do not require any notice to be taken of them, especially as contractions are at all times far superior to characters, and more convenient for printing.

4. *On making a Collection of dried Plants, Fruits, and Seeds.*

The most exact description, and the most accurate drawings or engravings of plants, are necessarily imperfect; and it is absolutely necessary for a botanist to see the plants themselves. And as plants soon go out of flower, and perish, it is also equally requisite to devise some method of preserving them, or at least their most important parts, so that they may be re-examined at any subsequent period, and compared together at pleasure.

For this purpose Botanists have at all times made collections of dried plants, under the name of an herbarium, or hortus siccus: and since the examination of the fruits and seeds of plants have been found of such great use in detecting the natural analogies of plants, there has been added to this collection that of fruits and seeds.

The drying of plants is a very simple operation, if the botanist is provided with plenty of paper. A plant in full flower, or if too large, a branch only, is the most necessary specimen to be kept; but if opportunity will admit, others in various stages of growth should be collected and preserved.

The specimen should be laid down flat upon a leaf of paper, and spread out so that the several parts may not cross over each other, nor be put into an unnatural and forced position. The sheet thus charged with the plant is then to be placed between several other leaves or sheets of dry paper, and slightly compressed, either by weights put upon a board placed over them, or by the screw-press, commonly used for linen. When several plants are laid down at once, a number of empty sheets, or leaves of paper, should be placed between each charged leaf; the more the better and the seldomer do they require to be changed, which must be done every day, or oftener, especially if the paper is used sparingly. When only a few specimens are dried at once, and they are not very succulent, it is sufficient to put them between the leaves of an old book of sufficient size and thickness. The great point is to prevent the colours of the flowers from changing, and this is best obtained by hastening the drying; which, when the botanist is pressed for time and convenience, is sometimes done by ironing them over with a hot smoothing iron, such as are used by laundresses, and which can be procured by the tra-

veller at most inns, the plant being covered with paper to protect it from the iron.

Some plants are so vivacious that they continue to grow, even when dried and placed upon paper; and others are apt to lose their leaves; the remedy for both these defects is to dip them for a few minutes in boiling water.

When the plants are dried, they should be placed upon leaves of paper of a proper size, either foolscap folio, or demy quarto; which last size is in general sufficient, and should a long grass occasionally require more room it may be laid down on a double leaf, and then folded. The mosses, being almost universally minute plants, require only an octavo or even duodecimo leaf. The plants are generally fastened down with paste, gum-water, isinglass-jelly, or, still better, a mixture of the two latter: other botanists sew them down, or fasten them by narrow slips of paper passed through slits made in the leaf. In the first method, it is difficult to take the plants off for re-examination and comparison, and paste is apt to attract insects; while, in the second method, the threads and ends of the slips catch hold of the plants placed on the sheet below them, and derange, if not in some measure destroy, these plants: upon the whole, the fastening of the specimens by slips of paper glued down at each end seems preferable to any other mode, and attended with the fewest inconveniences.

No more than one species of plants should be fastened upon the same leaf, and the leaf should be subscribed with its different names, or at least with that of the botanical author in most repute; to this name should be added the place and time, where and when it was gathered, or from whom procured.

Botanical writings being usually arranged either in the alphabetical order of the names as in dictionaries, or in what are called artificial systems, according to the differences observable in any particular set of organs chosen by the author, as the phanerogamous plants are arranged by Linnæus, according to the number, situation, and connexion of their sexual organs, and the cryptogamous plants by their general appearance; or, lastly, in the natural method, founded upon the analogy and relation subsisting between plants, so far as they have been discovered: so the specimens thus collected may be arranged in either. While the collection is yet in its infancy, the alphabetical order is not improper; as the student advances in the science, the artificial system adopted as a guide will be found more

convenient; but he cannot too soon endeavour to become acquainted with the natural method, and arrange his collection by it: this being the ultimate goal of the science, to which the two other arrangements are merely subordinate.

Whatever arrangement is adopted, the leaves charged with the plants of the same genus, or, in other words, which bear the same common or family name, as the various kinds of poppy, *papaver*, mint, *mentha*, &c. are to be collected together and placed between the fold of a sheet of paper, inscribed with the common name: when this common, or generic name as it is called, comprises a great number of species, as in willow, *salix*, rose, *rosa*, the genus must be divided into sections, and a sheet allotted to each section.

These genera, or first divisions, are then to be distributed into larger collections, either by their initial letters, orders, or families, and each of these grand divisions placed in a kind of port-folio, usually made of strong blue or cartridge paper, and inscribed with its proper distinction.

Lastly, these port-folios are to be placed methodically in a cabinet of a proper size, the shelves of which are either the size of the port-folios, or which will hold two or more of them. Linnæus and Withering have given sections of such cabinets, with the shelves placed at different distances, so as to hold the plants of one of their classes in the order in which they occur in their systems; but as the greater divisions of both the natural and artificial arrangements are very unequal, so that some shelves are ordered by them to be only two and others fourteen inches apart; this is very awkward, and it is far better to have the shelves at equal distances, and to mark, by appropriate labels, the contents of each shelf.

When, instead of a general collection, the botanist intends only a collection of the plants of the country in which he lives, and there exists any good systematic catalogue of them, it may be sufficient, if he procure a sufficient number of folio or quarto volumes of blue or cartridge paper, having the alternate leaves cut out within an inch of the back, as are sufficient for the large plants, and writing the names of the several species at the head of the pages, allowing one to each, fills them up as he procures the plants, and dries them: in many cases, when the plants are not succulent, they may be put at once in their place. The mosses may have a similar series of octavo or duodecimo volumes allotted for

them. In like manner medical students may proceed with respect to the plants of the materia medica.

Succulent fruits and seeds can only be preserved in spirit of wine, or saturated brine, changing it when it becomes too highly coloured: the dry fruits and seeds require no other care than to prevent the ravages of insects.

Mushrooms may be dried by being buried in very dry sand, and placed in a warm situation: but some of these are so watery, that they cannot be preserved even in this or any other known method.

To prevent the destruction of this collection by the insects, which soon begin to attack some tribes of plants, especially the acrid and pungent families of the cruciferæ and euphorbiaceæ, as also the compositæ and umbelliferæ, the best method seems to be the washing over of the specimens with a hair pencil charged with a solution of corrosive sublimate in spirit of wine, after which no insect can touch them: but as foreigners always examine plants by their taste, as well as their other characters, it will be necessary to notice this impregnation, either at the commencement of the series, or by annexing some mark to each plant thus treated.

5. *On the Names of Plants.*

The old botanists, studying things rather than words, and more engaged in finding the uses of the plants that grew the most abundantly around them, or were imported by the merchants, than in forming catalogues to comprehend all that nature or the province produced, contented themselves with the names given to the best known plants by the peasantry of the country, and which, when we can discover their true etymology, are usually strikingly significative of them, or refer to their use in medicine, economy, or the arts; and as to the less known ones, they referred them from their appearance to some of the better known plants; and if they had occasion to mention them, they added to the name of the better known plants such short phrases as they judged necessary to explain the difference. By this means each of the well known plants, the rose, rue, pea, &c. and sometimes the cultivated varieties of them, as chasselas, muscats, became, to use our modern language, the type of a genus, the species of which were distinguished by descriptive phrases, of greater or less length, as the differences were more or less distinctly marked, as the white

rose, musk-rose, garden-rue, meadow-rue. In some cases, when the smallness of the plants, as in mosses, or their common use did not require accurate discrimination, as in grasses, these genera were inconveniently long, and they required a line or two of description for their distinction, as Gramen paniculatum nemorosum, latiore folio, glabrum, panicula nutante non aristata (now called schenodorus elatior, see vol. ii. p. 115): but in justice to the old botanists it must be confessed that these long names, the plants not being of any use, were to be found only in catalogues; whilst those which frequently occurred seldom exceeded two or three words, and most commonly were designated by a single word.

The distress induced by the conquest of the South of Europe by the Northern nations having abolished the use of garlands in feasts, and of course the cultivation of flowers, there remained only the economical and medicinal uses of plants to engage persons in the study of them; hence the appellation of physic-gardens given to the oldest collections of living plants: but the conquest of Mexico by the Spaniards having introduced a taste for the cultivation of flowers from that city, and the novel appearance of the vegetation of the new Continent a similar taste for collecting rare plants, the name of physic-garden became changed into that of botanic-garden.

These new plants requiring new distinctions, they not being in many cases referrible to European types, and their native names, either unknown, or barbarous to our ears and refractory to our mode of orthography, occasioned botanists to turn their attention to the forming of a regular nomenclature. Gesner first proposed that all plants having similar flowers and fruits should be called by a common name; a rule which, in many cases, required the disuse of the old substantives, and the supplying of their place by adding distinctive phrases to those substantives that were retained. Rivinus, agreeing with Gesner in the main, first limited the accompanying discrimination to a single adjective. Linnæus adopted this restriction of what he called the trivial name, to a single word; but used, in some cases, the old substantive denoting the plant in apposition with the new one, as Triticum Spelta, Artemisia Absinthium. In a few instances he violated his own rules, and used two words for his generic or specific name, as Liquid ambar styraciflua, Ros marinus officinalis, Alisma Plantago aquatica, Amomum Granum Paradisi, Mimosa Unguis cati.

The regularity of this nomenclature was hailed as a great improvement, and as a means of fixing the names of plants; indeed, as long as the Species Plantarum of Linnæus himself was considered as the common repertory of botanists, it was such; and this advantage would have remained if he had been incapable of error, or botany remained stationary: but further researches have shown that many of his species do not agree with the generic character, and of course they have since been removed to other genera; that several are collections of a number of species, or even of several genera of plants, and of course have been divided; while new plants have been discovered which are not comprehended in his writings.

The rapidity of these alterations, and the number of the works in which they are scattered, exceeding the power of the enumerators of plants to collect together as fast as they are proposed, obliges those writers who have occasion to mention a number of plants, not only to quote once for all the repertory, or pinax, from whence the generality of the names they use are taken, whether it be the Species Plantarum of Linnæus, or of Willdenow, the Synopsis Plantarum of Persoon, the Dictionnaire de la Botanique of Lamarcke, the Systema Vegetabilium of Rœmer and Schultze, the Regni Vegetabilis Systema Naturale of De Candolle, or any other similar work; but also to annex to the other names not taken from this more common repertory, the books, and frequently the editions, from whence they are taken, as modern botanical authors often change the names they have themselves given to plants. This necessity of quoting the works from whence the names are taken, because the same name has been used by different authors, or even by the same author in different works, or editions, to denote different plants, renders the supposed advantage of what is falsely called the Linnæan nomenclature, since Rivinus was the original proposer, and which appears so brief and regular in theory, not only a mere nullity in practice, but in reality proves its inferiority to the old method of adding specific differences to the generic name, when this method is corrected by the canon of Linnæus, that the distinctions should be taken from what may be observed in the plant itself, and not from its place of growth or other extraneous circumstances, although the convenience of these being noted as accessories are acknowledged and used by all; since neither have the

majority of readers the power of referring to so many works, some probably very expensive; nor does the mere quoting of these trivial names, and the works in which they are used, give the same satisfaction to the reader, as common types with specific differences, while it is equally long in reading, although, from the contractions used in printing the titles of the books, it appears much shorter to the eye, it is not so easy to remember.

To avoid in part these inconveniences, it has lately been proposed, when plants are removed from one genus to another, to give the preference, in all cases, to the adjunct given by Linnæus himself, or the first of his followers who has mentioned the plant, unless this adjunct has been already applied to some other species in the genus into which it is removed: but the changes made by Linnæus, and still more those by his followers, have so embroiled the science, in applying the names of the older authors to far different plants than those to which they were originally applied; as melia, a name given by the ancients to a species of ash, is applied by them to an Indian shrub; bromelia, another species of Grecian ash, to an American tree; and gingidium, the name of a Greek umbelliferous plant, to a plant of the South Sea Islands; that it would appear necessary to go still further back, and to establish as a canon, that the name given to a plant by the oldest author, who has so described, or otherwise designated the plant, in the language in which we speak or write, as to render us certain of its due application to the plant of which we treat, shall be esteemed the preferable name for it, although the substantive should not be the same as the name of the genus under which it is arranged in the system that may happen to be in fashion; indeed, if this anomaly should, contrary to the opinion and practice of Ray, who always used the names of the authors whose writings were in common circulation, although the substantive might be different, be esteemed of any consequence, the method used by Boerhaave, of connecting the name of the genus when different from the substantive, by the introduction of the relative and the ellipsis of the substantive verb, in the manner by which the synonyms of Ray have been quoted, as for example, the adiantum album crispum alpinum of Schwenckfeld being placed by Ray in his genus, Filix fœmina, is thus quoted in vol. ii. p. 16, Filix fœmina quæ (est) Adiantum album, &c. By this means alone can the perma-

nence of names be secured and joined with the advantages derived from a systematic arrangement, since it appears of little consequence to retain the adjective, common perhaps, as latifolius, multiflorus, and the like, to an hundred plants, if the substantive, or original generic name, be alterable at the pleasure of every systematist.

EXPLANATION OF THE PLATES.

PLATE THE FIRST.

ANATOMY OF THE STEM.

Fig. 1. Platanus orientalis, *Salicinæ.* A transverse section of a young branch, to exhibit the organization, which is similar to that of the greater part of dicotyledon trees.

Fig. 2. A magnified representation of a portion cut out of the above section.

a to *b*. Bark.

a to *c*. Outer part of the bark, dry and disorganized.

b to *c*. The live part of the bark.

c to *d*. A part of the bark which is continually pushed to the circumference.

b to *d*. Inner part of the bark, called the *liber* or bast.

e. The origin of the medullary radii that fill up the interstices of the wood, and which are formed of the cellular tissue of the bark.

f. The extremity of the filaments that form the interstices of the wood.

b to *i*. The woody mass, composed of three zones, or layers, *b*—*g*, *g*—*h*, and *h*—*i*.

h to *i*. The oldest of the three layers.

g to *h*. The second layer.

b to *g*. The third or youngest layer.

b, *g*, and *h*. Zones which show the periods when the vegetation slackened.

i to *k*. Pith.

Fig. 3. Ptychosperma gracilis. *Palmæ.* Vertical and transverse section of the stem, to show the difference between the stems of monocotyledon plants and those of dicotyledon plants.

Fig. 4. A magnified figure of the same.

a to *b*. That part of the stem where the hardest woody fibres are the most closely collected together.

b to *c*. Fibres less numerous, less thick, less compact, and less hard.

c to *d*. Weak fibres at a greater distance from one another: in the centre of each of which there is a tube which has been filled up in the fibres *a* to *b* and *b* to *c*. The cellular tissue is evidently more considerable in this part than in the space *b* to *c*, and still more than in the space *a* to *b*, where the wood predominates.

e. The oldest fibres.

f. The fibres of a middle age.

g. The youngest fibres. This arrangement shows that the growth of the wood is entirely different from that in the stem of dicotyledon plants.

h. Union of the woody fibres as they run along the stem.

Fig. 5. Vitis vinifera. *Viniferæ*. A vertical and diametrical section of a young branch magnified.

a to *b*. Bark.

b to *c*. Wood.

c to *d*. Pith.

e. Woody fibre of the bark.

f. Medullary rays.

g. Cellular tissue, constituting the solid part of the wood.

h. Large porous or slit tubes.

i. A double trachea, or air vessel.

k. Cells of the pith.

l. Porous cells.

PLATE THE SECOND.

Roots.

Fig. 1. Orchis militaris. *Orchideæ.* Root scrotiform.

a. Old tuber, that sent up and nourished the stem of the preceding season.

b. New tuber, that sent up and nourished the present year's stem.

c. Fibrous radicles.

Fig. 2. Arum Italicum. *Aroideæ.* Root progressive, tuberous.—*a.* Turions.

Fig. 3. Neottia abortiva. *Orchideæ.* Root grumous.

Fig. 4. Gratiola officinalis. *Scrofularinæ.* Root horizontal, progressive, jointed, fibrous at the joints. This root, or rhizoma, formed by the base of the stem, is frequently kneed.

Fig. 5. Arrhenatherum elatius. *Gramineæ.* Root knotty, jointed, comose at the joints.—This root is formed by the base of the culm, the joints of which are swollen.

Fig. 6. Helianthus tuberosus. *Compositæ.* Root fibrous and tubercular.

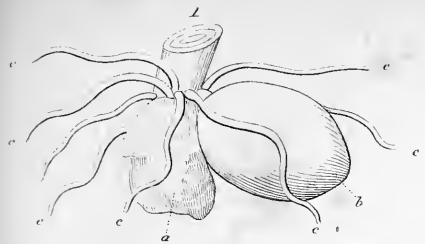
Fig. 7. Succisa Fuchsii. *Dipsaceæ.* Root bitten, and having fibrous radicles.

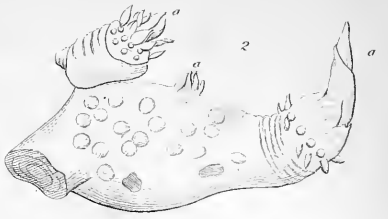
Fig. 8. Ixia polystachia. *Irideæ.* Root fibrous, bulb-bearing.—*a.* Bulb placed above, coated.

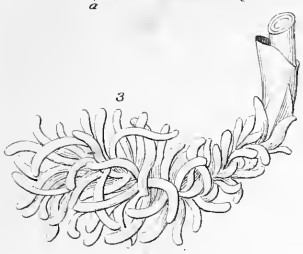
Fig. 9. Asphodelus ramosus. *Asphodeleæ.* Root fasciculate.

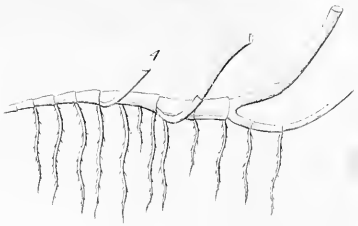
Fig. 10. Saxifraga granulata. *Saxifrageæ.* Root comose, bulbille-bearing; bulbilles scaly.

Fig. 11. Allium nutans. *Asphodeleæ.* Root progressive, bulb-bearing at *a*, seal-like at *b*, fibrous at *d*.

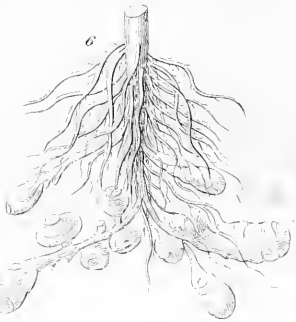




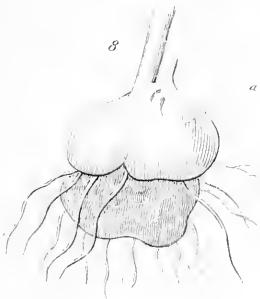






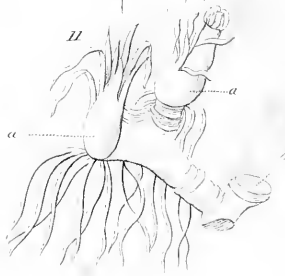






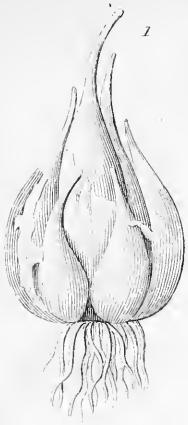




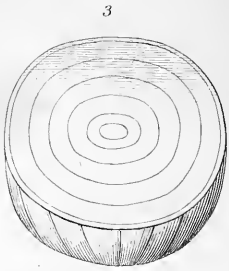


J. Storer sculp.

London, Published by Baldwin, Cradock & Joy Paternoster Row Nov.1st 1824.


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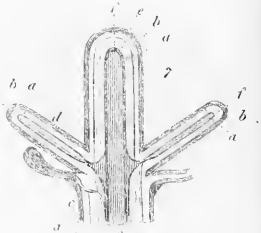

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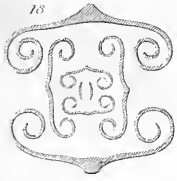

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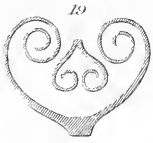

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J. Shury sculp.

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PLATE THE THIRD.

Bulbs.

Fig. 1. Allium sativum. *Asphodeleæ.* Root fibrous, bulb-bearing; bulb ovoid, rounded, compound, coated.—*a.* Cloves.

Fig. 2. Lilium candidum. *Liliaceæ.* Root fibrous, bulb-bearing; bulb ovoid, scaly.

Fig. 3. Cepa esculenta. *Asphodeleæ.* Root fibrous, bulb-bearing; bulb roundish, coated.—Cut transversely to show the fleshy coats of which it was composed.

Fig. 4. Gladiolus. *Irideæ.* Root fibrous, bulb-bearing; bulb roundish, tuberous, coated; coats fibrous.—Cut transversely to show the structure of the turion.

Fig. 5. Syringa vulgaris. *Jasmineæ.* Branch bearing buttons; buttons mixed, opposite, covered with a scaly perule.—Cut transversely to show the thyrse of flowers formed in the autumnal buttons.

Fig. 6. Daphne florida. *Thymeleæ.* Branch with flower-bearing buds on the sides, and a leaf-bearing bud at the end; perules scaly. Cut transversely to show the internal structure of the leaf-bud.

Fig. 7. Hippophae littoralis. *Elæagneæ.* Part of a young stem, cut vertically.

a. Bark.

b. The second layer of wood in the stem which becomes the first in the branches.

c. Stem.

d. Branches.

e. The first layer of wood in the stem, which being formed before the branches does not enter into them.

f. Pith.

Figs. 8 to 21. Represent various diposition of the leaves and floral covers in their buds.

Fig. 8. Convolute.
Fig. 9. Involute.
Fig. 10. Revolute.
Fig. 11. Conduplicate.
Fig. 12. Riding, oppositely.
Fig. 13. Opposite.
Fig. 14. Mutually riding.
Fig. 15. Folded.
Fig. 16. Enveloping.
Fig. 17. Riding, alternately.
Fig. 18. Involute, oppositely.
Fig. 19. Involute, alternately.
Fig. 20. Revolute, oppositely.
Fig. 21. Riding, oppositely.

PLATE THE FOURTH.

Leaves.

Fig. 1. Poa arenosa. *Gramineæ.*
a. Leaf long, linear.
b. Petiole sheathing; sheath slit.
c. Ligule scalelike.

Fig. 2. Plantago. *Plantagineæ.* Leaf oval, rounded, pointed, many-ribbed.

Fig. 3. Chamærops humilis. *Palmæ.* Leaves terminal, crowning, petioled, fanshaped, digitate, folded when young; petioles having foliolean spines.

Fig. 4. Podocarpus elongata. *Coniferæ.* Leaf linear.

Fig. 5. Pinus Strobus. *Abietideæ.* Leaves fasciculate, in fives, needlelike.

Fig. 6. Vitis-Idæa punctifolia. *Vaccinieæ.* Leaf oval, not in the least cut, dotted; edge cartilaginous.

Fig. 7. Sida rhombifolia. *Malvaceæ.* Leaf nearly rhomboid, lanceolate, toothed.

Fig. 8. Quercus longæva. *Corylideæ.* Leaf oblong, sinuated.

Fig. 9. Barbarea vulgaris. *Cruciferæ.* Leaf lyrate.

Fig. 10. Salvia officinalis. *Labiatæ.* Leaf oval, lanceolate, eared, crenulate.

Fig. 11. Taraxacum officinale. *Compositæ.* Leaf runcinate.

Fig. 12. Solanum pyracanthos. *Solaneæ.* Leaf lanceolate, nearly pinnatifid, thorny.

Fig. 13. Sonchus fruticosus. *Compositæ.* Leaf lanceolate, pinnatifid.

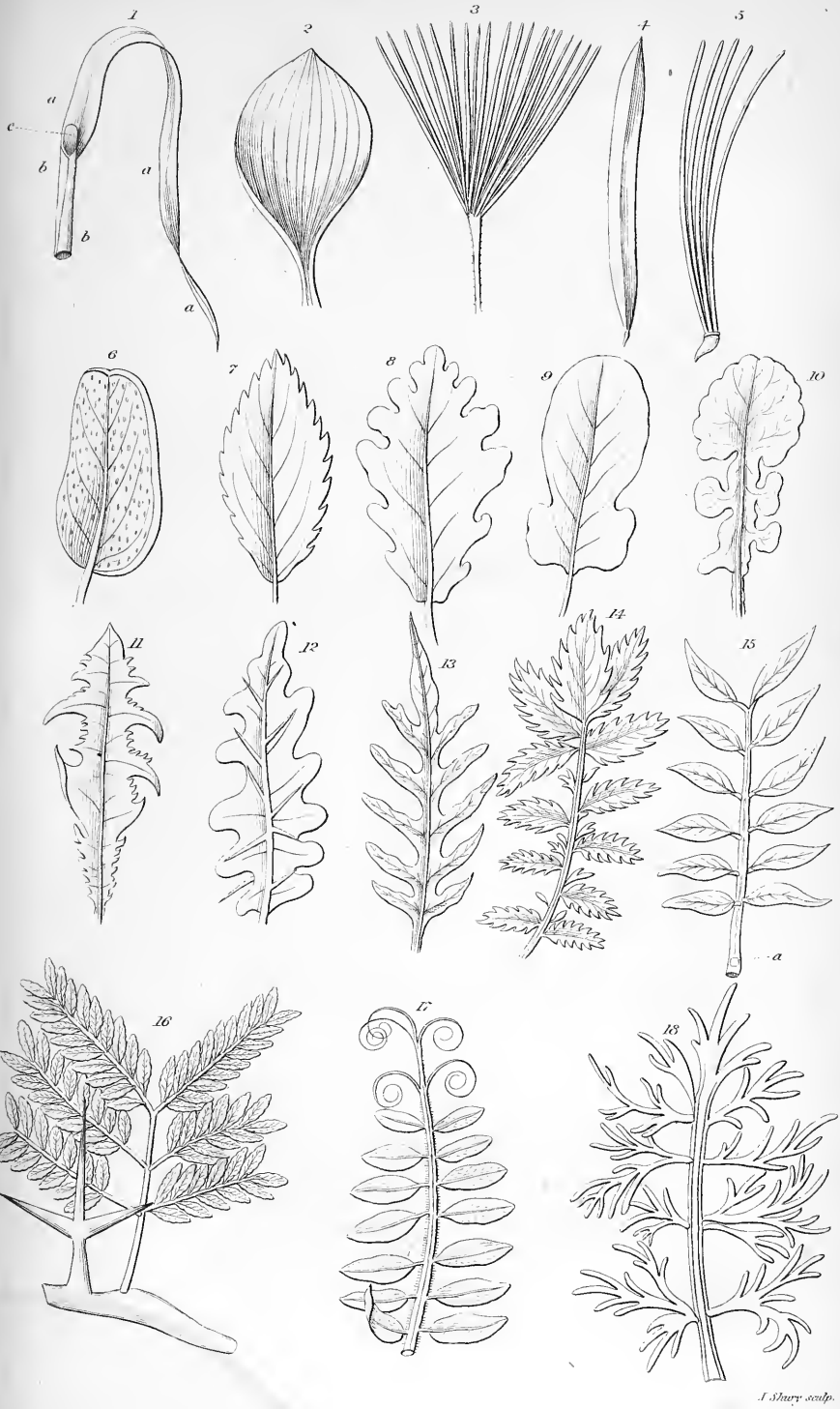
Fig. 14. Potentilla anserina. *Dryadeæ.* Leaf interruptedly pinnate, jointless.

Fig. 15. Cassia occidentalis. *Leguminosæ.* Leaf paripinnated, jointed; petiole having a cupshape gland *a* at the base.

Fig. 16. Gleditsia monosperma. *Leguminosæ.* Leaf pari-pinnate, jointed; secondary petioles three-paired; leaflets many-paired; spine super-axillary, three-forked.

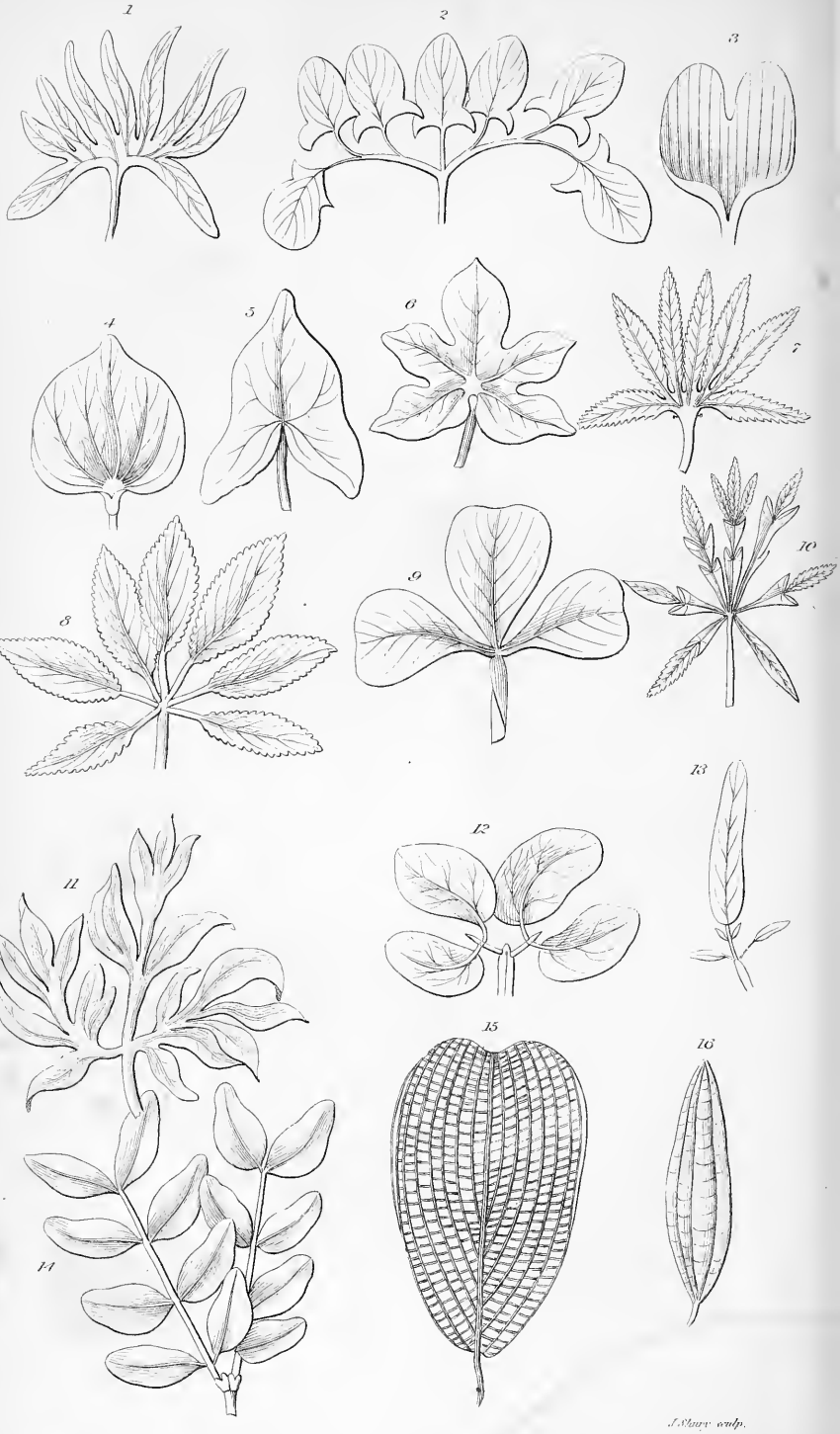
Fig. 17. Vicia. *Leguminosæ.* Leaf impari-pinnate, jointed, tendril bearing.

Fig. 18. Coreopsis ferulæfolia. *Compositæ.* Leaf bipinnate, twice compounded, jointless.



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PLATE THE FIFTH.

Leaves.

Fig. 1. Leaf pedate.

Fig. 2. Leaf compound, pedate.

Fig. 3. Leaf pedately ribbed.

Fig. 4. Cercis Canadensis. *Leguminosæ.* Leaf rounded, heartshape, pointed, wrinkled.

Fig. 5. Fagopyrum esculentum. *Polygoneæ.* Leaf heartshape, arrowshape.

Fig. 6. Sterculia platanifolia. *Sterculiaceæ.* Leaf five-lobed.

Fig. 7. Passiflora serrata. *Passifloreæ.* Leaf seven-parted, divisions lanceolate, toothed; petiole glandular; glands pedicelled.

Fig. 8. Æsculus macrostachia. *Acerineæ.* Leaf digitate, seven leafletted, jointed.

Fig. 9. Rhus glaucum. *Terebinthaceæ.* Leaf three-leafletted, jointed; leaflets reverse-heartshape.

Fig. 10. Cussonia spicata. *Araliaceæ.* Leaf digitate, seven leafletted; leaflets pinnately vertebrated.

Fig. 11. Pæonia officinalis. *Ranunculaceæ.* Leaf three-parted, twice compounded.

Fig. 12. Mimosa Unguis cati. *Leguminosæ.* Leaf bigeminate.

Fig. 13. Hedysarum gyrans. *Leguminosæ.* Leaf pinnate, three leafletted, jointed.

Fig. 14. Mimosa purpurea. *Leguminosæ.* Leaf fingered-pinnate, jointed; leaflets four-paired.

Fig. 15. Hydrogeton fenestralis. *Family unknown.* Leaf reverse oval, notched at top, multiple ribbed, veined transversely, cancellated.

Fig. 16. Melastoma elaæagnoides. *Melastomeæ.* Leaf lanceolate, three-ribbed, not in the least cut.

PLATE THE SIXTH.

Leaves.

Fig. 1. Epimedium alpinum. *Berberideæ.* Leaf thrice compounded, triternate; leaflets heartshape, fringed.

Fig. 2. Melastoma Lima. *Melastomeæ.* Leaf elliptical, pointed, toothed, bullate, rough, quintuple ribbed.

Fig. 3. Melastoma multiflora. *Melastomeæ.* Leaf lanceolate, toothed, triple ribbed.

Fig. 4. Erythroxylum cocca. *Malpighiaceæ.* Leaf lanceolate, not in the least cut, three-ribbed with veins continued over the ribs.

Fig. 5. Orobanche major. *Orobancheæ.* Leaf scalelike.

Fig. 6. Asperula odorata. *Rubiaceæ.* Leaves in whirls by nines, lanceolate.

Fig. 7. Glaucium luteum. *Papaveraceæ.* Leaves heartshape, angular, embracing.

Fig. 8. Silphium perfoliatum. *Compositæ.* Leaves trapezoid, toothed, opposite, conjoined.

Fig. 9. Hydrocotyle vulgare. *Umbelliferæ.* Leaf orbicular, deeply crenulated, peltate.

Fig. 10. Bupleurum rotundifolium. *Umbelliferæ.* Leaf oval, pointed, perfoliated.

Fig. 11. Coreopsis alata. *Compositæ.* Leaves opposite, nearly lanceolate, decurrent.

Fig. 12. Persicaria maculosa. *Polygoneæ.* Leaf oval, lanceolate.

a. Stipule sheathing.

Fig. 13. Passiflora glauca. *Passifloreæ.* Leaf three-lobed, nearly peltate; petiole glandular; stipules cauline, half-moonlike; tendrils axillary.

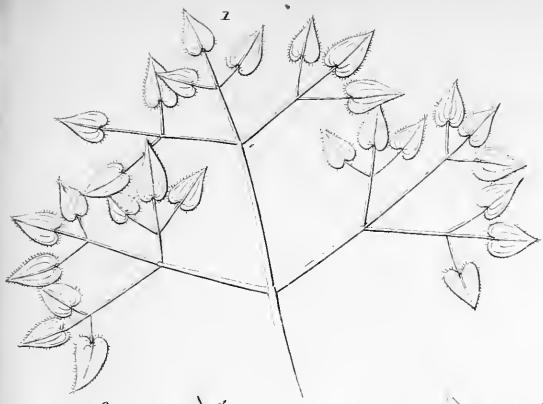
Fig. 14. Clematis orientalis. *Ranunculaceæ.* Leaves three-lobed; petioles tendril-like.

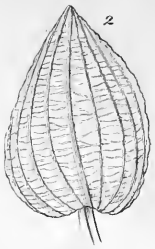
Fig. 15. Genista sagittalis. *Leguminosæ.* Branches two-winged, or three-winged; leaves oval, sharp.

Fig. 16. Ribes spinosum. *Grossulariæ.* Leaf five-lobed; spine inferaxillary, three-parted.

Fig. 17. Paliurus aculeatus. *Rhamneæ.* Prickle stipulean, reflected.

Fig. 18. Vitis Virginiana. *Viniferæ.* Leaf heart-shape, three-lobed; tendril opposite.





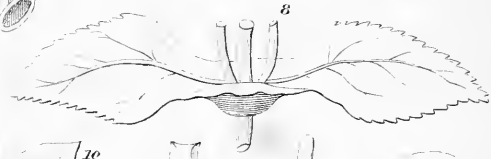






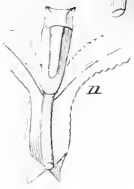








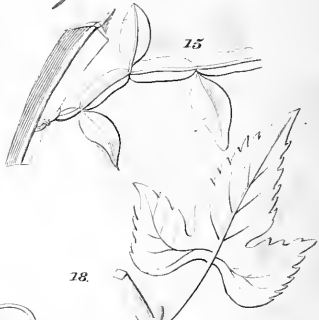






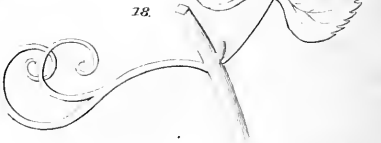






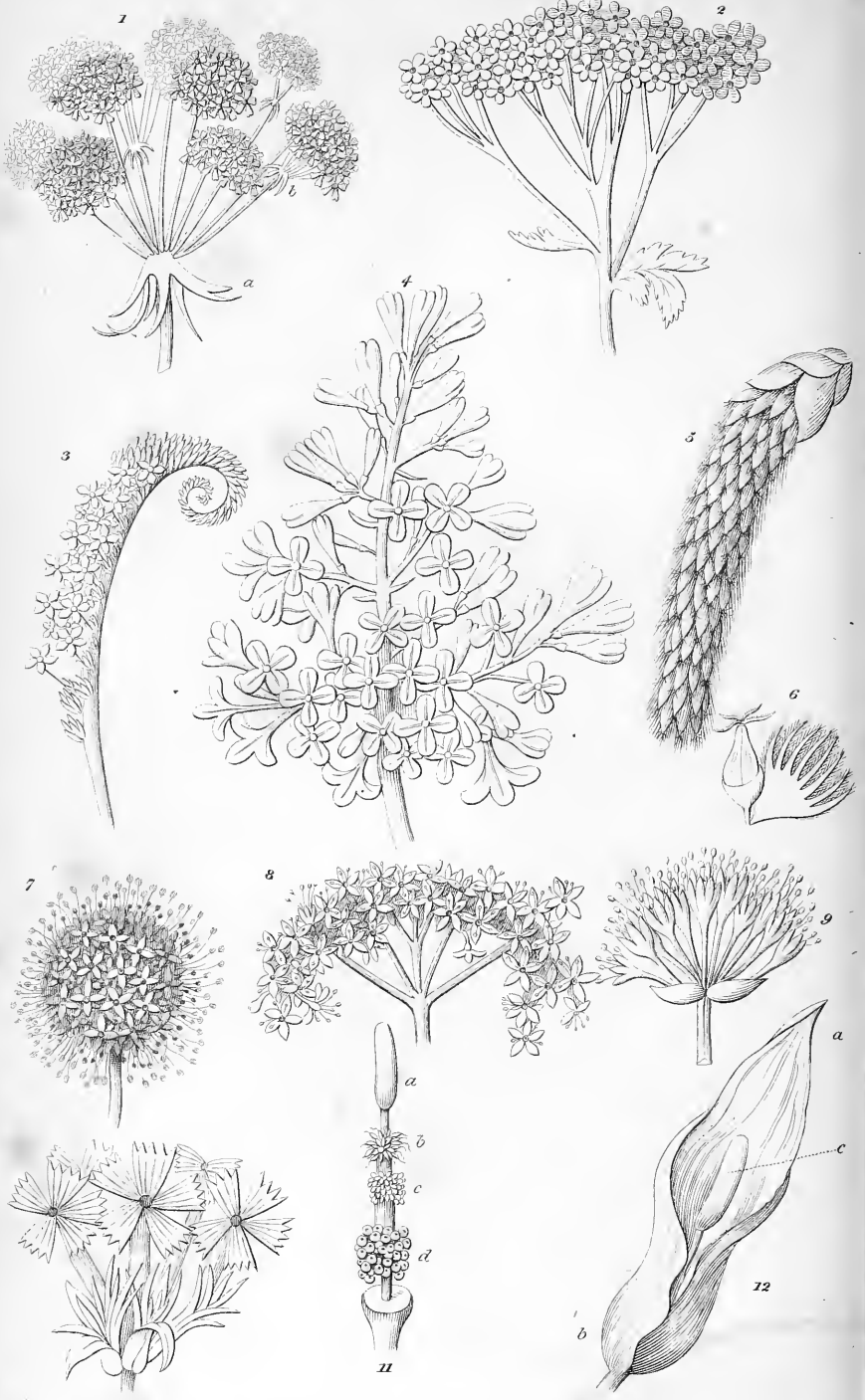






J. Sharp sculp.

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PLATE THE SEVENTH.

Inflorescence.

Fig. 1. Ammi majus. *Umbelliferæ.* Flowers in a compound umbell.

a. Involucrum.

b. Involucellum.

Fig. 2. Achillæa crithmifolia. *Compositæ.* Calathides disposed in a corymbus.

Fig. 3. Heliotropium Indicum. *Borragineæ.* Spike circinate; flowers one-sided.

Fig. 4. Syringa vulgaris. *Jasmineæ.* Flowers in a thyrse.

Fig. 5. Populus tremula. *Salicineæ.* Flowers of the female plant in a catkin.

Fig. 6. A detached flower of the same, to show the palmated, fringed bractea upon which it is supported.

Fig. 7. Cephalanthus occidentalis. *Rubiaceæ.* Flowers in a head.

Fig. 8. Sambulus humilis. *Caprifoliaceæ.* Flowers in a cyme.

Fig. 9. Allium obliquum. *Asphodeleæ.* Flowers in a simple umbell or bouquet; spathe two-valved; scape three-sided.

Fig. 10. Dianthus capitatus. *Caryophylleæ.* Flowers in a bundle.

Fig. 11. Arum maculatum. *Aroideæ.* Spadix separated from the spathe.

a. Tip clubshaped.

b. Ring of glands, about the middle, each terminated by a filament.

c. Ring of sessile anthers, below the glands.

d. Ring of sessile conglomerated ovaries, at the base.

Fig. 12. The flowers of the same, in their spathe.

a. The hoodlike spathe.

b. The lower bellying part of the spathe.

c. The spadix.

PLATE THE EIGHTH.

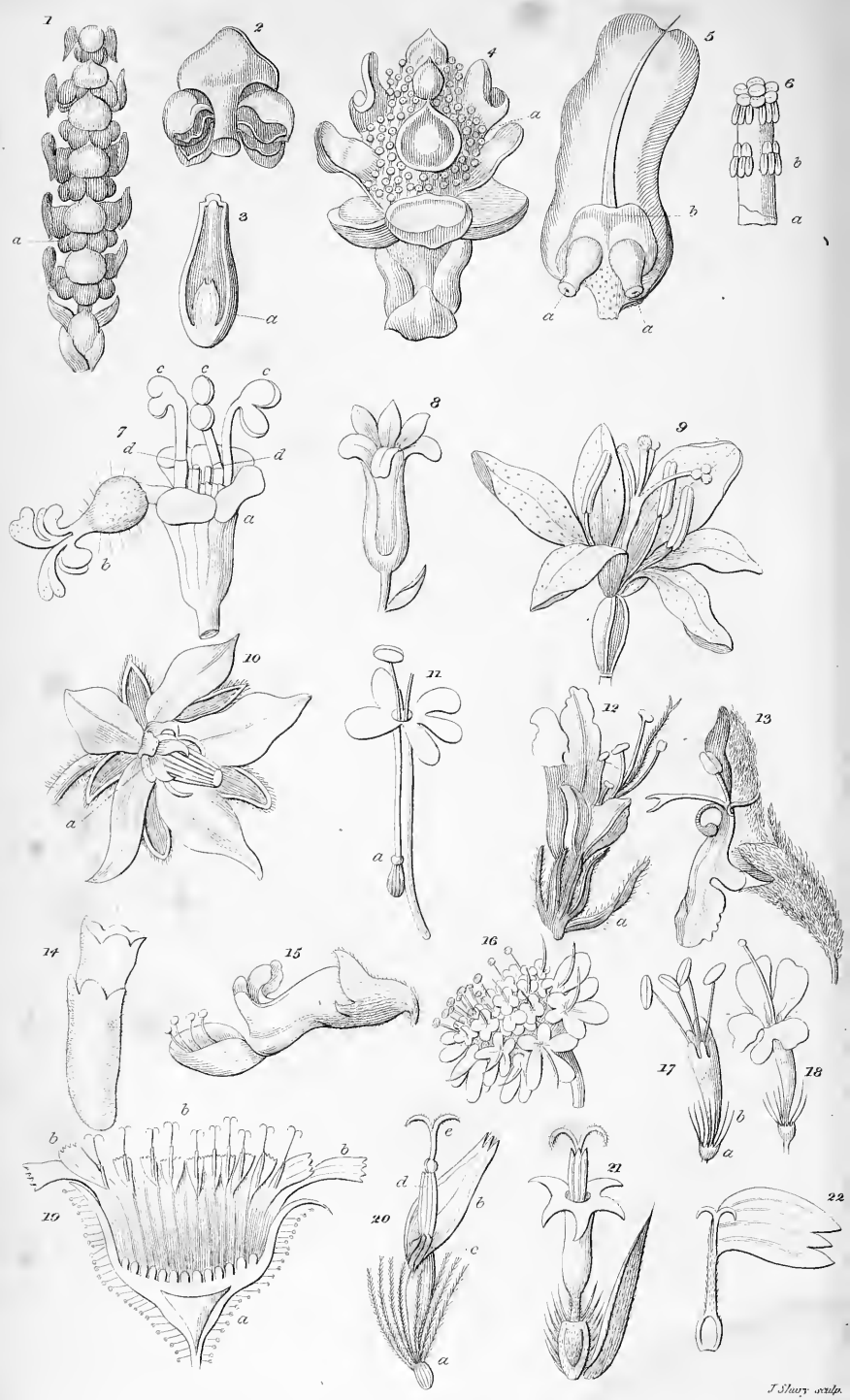
Inflorescence.

Fig. 1. Lolium perenne. *Gramineæ.* Spike spikeletted.
Fig. 2. Smilax herbacea. *Smilaceæ.*
a. Tendrills stipulean.
b. Umbell simple or bouquet, axillary, pedunculated.
c. Leaf nearly heartshape, oval, seven-ribbed.
Fig. 3. Xylophylla montana. *Euphorbiaceæ.* Flowers on the edge of the leaf; leaf lanceolate, toothed.
Fig. 4. Monarda didyma. *Labiatæ.* Whirl true, many-flowered, leafed, bracteated.
Fig. 5. Cyclamen vernum. *Primulaceæ.*
a. Root tuberous, depressed.
b. Leaves and flowers radical.
c. Scape one-flowered, spiral before the flowering.
d. Flower drooping.
Fig. 6. Cerasus racemosa. *Drupaceæ.* Raceme hanging
Fig. 7. Holcus Halepensis. *Gramineæ.* Panicle loose.
Fig. 8. Polypodium aureum. *Filices.*
a. Root progressive.
b. Leaves pinnatifid, bearing the fructification upon the lower face.
Fig. 9. Pilularia globulifera. *Marsileaceæ.*
a. Stem creeping.
b. Leaves threadlike, awlshape.
c. Involucrums globular, closed, axillary.



J. Shury sculp.

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PLATE THE NINTH.

Flowers.

Fig. 1. Cupressus sempervirens. *Cupressideæ.* Male catkin, long, composed of about twenty opposite bracteæ, dilated at top into a scale, and having at bottom four globular anthers, one-celled and sessile, as at *a.*

Fig. 2. A bractea detached from the male catkin of the same, and seen from behind, with its four anthers opened.

Fig. 3. The bottle-shape cupule of the same cut lengthways, and much magnified.

a. The female flower; perianthium simple, adherent; stigma sessile.

Fig. 4. The female catkin of the same. The orifices of the minute cupules are visible among the bracteæ.

Fig. 5. Larix Europæa. *Abietideæ.* A scale or bractea of the female catkin, having at its base two cupules.

a. The two cupules, bottleshape.

b. The scalelike peduncle supporting the cupules; these peduncles enlarge after flowering, much more than the bractea itself.

Fig. 6. Hura crepitans. *Euphorbiaceæ.* A male flower detached from the catkin.

a. The perianthium.

b. Androphore thick, cylindrical, with two rows of anthers in whirls.

Fig. 7. Euphorbia Illyrica. *Euphorbiaceæ.* The many-flowered calathide.

a. Involucrum.

b. Female flower in the centre, formed of a pedicelled ovary, with three two-lobed stigmata.

c. Male flowers several, composed of a single stamen, articulated upon a pedicell; anthers twin.

d. Filament jointed.

Fig. 8. Hyacinthus cernuus. *Asphodeleæ.* Perigonium monosepalous, six-parted.

Fig. 9. Ixia Chinensis. *Irideæ.* Perigonium adherent, lobes spreading, stamens three, style three-cut.

Fig. 10. Borrago officinalis. *Borragineæ.* Calyx five-parted, open; corolla wheel-like, five-parted, orifice of the tube having bosses, *a;* surrounding it.

Fig. 11. Centranthus marinus. *Valerianeæ.* The entire flower; calyx adherent, limb rolled inwards, which becomes a pappus after the flowering; corolla tubular, spurred, limb irregular; stamen one; style one.

Fig. 12. Echium vulgare. *Borragineæ.* Calyx five-parted; corolla irregular, tube short, orifice bellshape, limb oblique, 5-lobed, lobes unequal; stamens 5; stigma 2-cut.

a. A bractea, or floral leaf.

Fig. 13. Eriostomum Germanicum. *Labiatæ.* Corolla 2-lipped, tube short; upper lip or galea ascending, lower lip bent down.

Fig. 14. Sideritis Canariensis. *Labiatæ.* Calyx tubular, 5-toothed; corolla tubulous, 2-lipped, lips short and equal.

Fig. 15. Plectranthus punctatus. *Labiatæ.* Calyx five-toothed, upper tooth the largest; corolla two-lipped, lying down, upper lip short, turned back, 2-lobed; lower lip bent in, 3-lobed, middle lobe hollow; stamens lying down.

Fig. 16. Scabiosa agrestis. *Dipsaceæ.* Calathide floscular.

Fig. 17. A central flower of the same; calyx double, corolla tubular, limb lobed, unequal; stamens 4, exserted.

a. External calyx, bottleshape.

b. Internal calyx, divided into awns.

Fig. 18. A flower from the circumference of the same calathide; having the limb of the corolla much larger; style 1.

Fig. 19. Andryala cheiranthifolia. *Compositæ.* Calathide semifloscular, cut transversely.

a. Clinanthe hairy, supporting the ligulate flowers *b b b.*

Fig. 20. A ligulate flower of the same.

a. Fruit crowned by the calycine pappus.

b. Corolla.

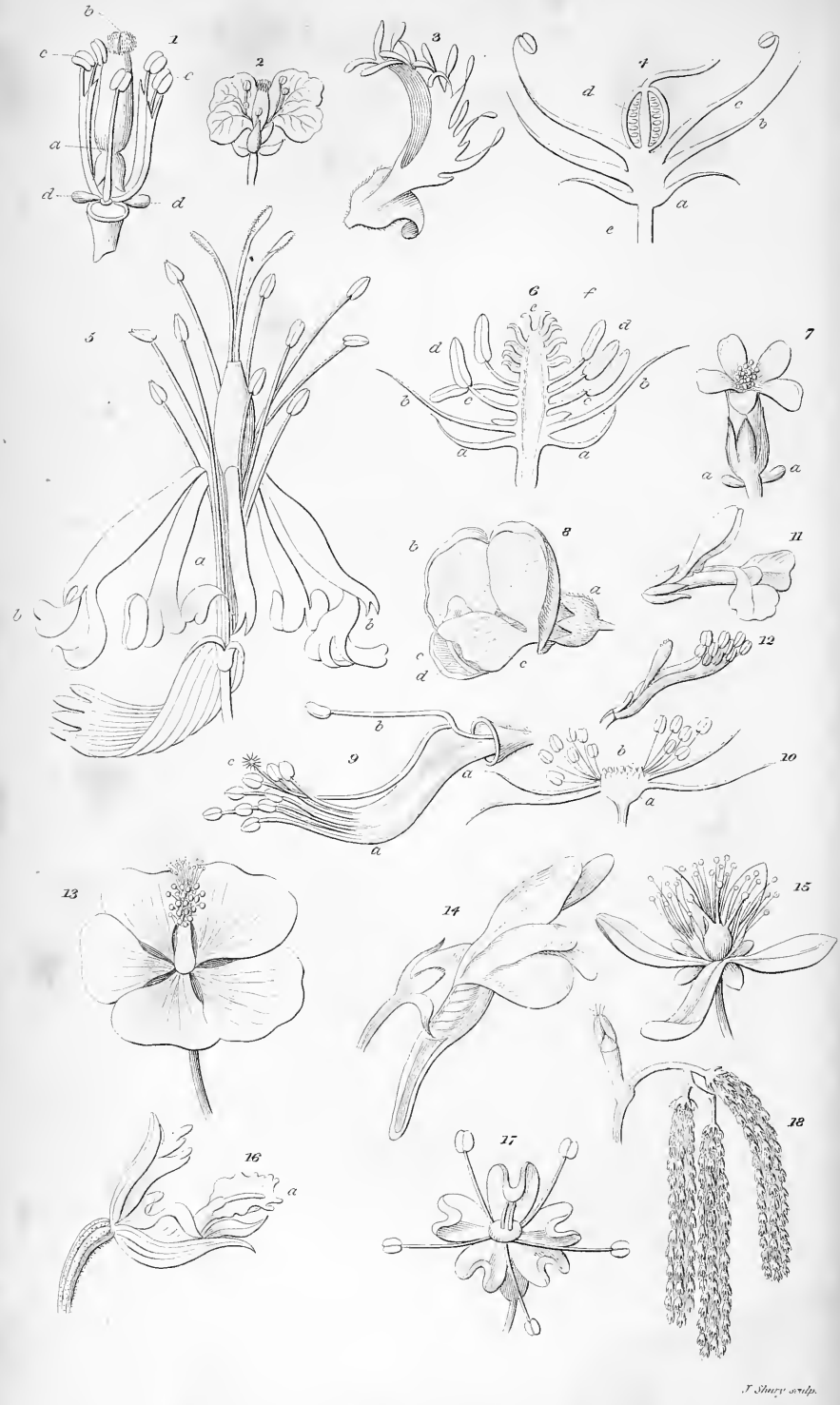
c. Filaments of the stamens.

d. Anthers united together.

e. Style single; stigma two-cut.

Fig. 21. Ximenesia encelloides. *Compositæ.* Calathide radiated; clinanthe paleaceous; akenium not pappous.—A hermaphrodite, tubular flower with the palea.

Fig. 22. A female ligulate flower of the same, magnified.



J. Sharp, sculp.

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PLATE THE TENTH.

Parts of the Flowers, especially the Sexual Organs.

Fig. 1. Crambe Tatarica. *Cruciferæ.* A flower from which the integuments have been pulled off, magnified.

a. Ovary.

b. Stigma sessile.

c. Stamens four, tetradynamous; filaments of the four longest stamens two-forked at top.

d. Nectaries, two.

Fig. 2. The entire flower of the same, of its natural size: calyx 4-sepaled, rather open; corolla 4-petaled; tetradynamous.

Fig. 3. Reseda Phyteuma. *Resedaceæ.* Petal irregular, jagged, magnified.

Fig. 4. Gypsophila fastigiata. *Caryophylleæ.* Flower magnified and cut longitudinally to show the insertion of the petals and stamens on the gynophore.

a. Calyx.

b. Corolla.

c. Stamens.

d. Ovary.

e. Gynophore.

Fig. 5. Silene bupleurifolia. *Caryophylleæ.* A flower with the tubular, 5-toothed calyx slit down, and pulled back that the insertion of the petals may be seen; petals 5, clawed, also having the limb pulled back to show the filaments.

a. Gynophore from whence grow the petals, stamens, and pistill.

b. Petals, the limb two-cut, with a claw appendiculated to their tips.

c. Stamens ten, five opposite and five alternate.

d. Ovary with three styles.

e. Calyx slit down.

Fig. 6. Ranunculus bulbosus. *Ranunculaceæ.* A vertical section of the flower to show the insertions of the different parts.

a. Calyx.

b. Corolla.

c. Nectariferous gland scalelike at the claw of each petal.

d. Stamens indefinite, hypogynous.

e. Ovary.

f. Gynophore.

Fig. 7. Hypericum Ægyptiacum. *Hypericineæ.* Calyx 5-parted, corolla 5-petaled.

a. Bracteæ two.

Fig. 8. Robinia hispida. *Leguminosæ.* Flower with a papilionaceous or butterflylike corolla.

a. Calyx four-cut, irregular.

b. The standard of the corolla.

c. The wings.

d. The keel.

Fig. 9. The same, having the calyx and corolla pulled off, to show the diadelphous stamens, and magnified.

a. The tubular androphore, split longitudinally into nine filaments at top.

b. The single free stamen.

c. Stigma velvetty.

Fig. 10. Rubus odoratus. *Dryadeæ.* Longitudinal section of the flower to show the insertions.

a. Gynophore convex.

b. Stamens indefinite, perigynous.

Fig. 11. Polygala Heisteria. *Polygaleæ.* Calyx five-parted, lobes equal; corolla monopetalous, irregular, two-lipped, split above, and rolled up into a tube at bottom.

Fig. 12. The tubular androphore, split longitudinally, embracing the pistill, and divided at top into seven short filaments, bearing the anthers.

Fig. 13. Malva fragrans. *Malvaceæ.* Flower polyandrous, monadelphous.

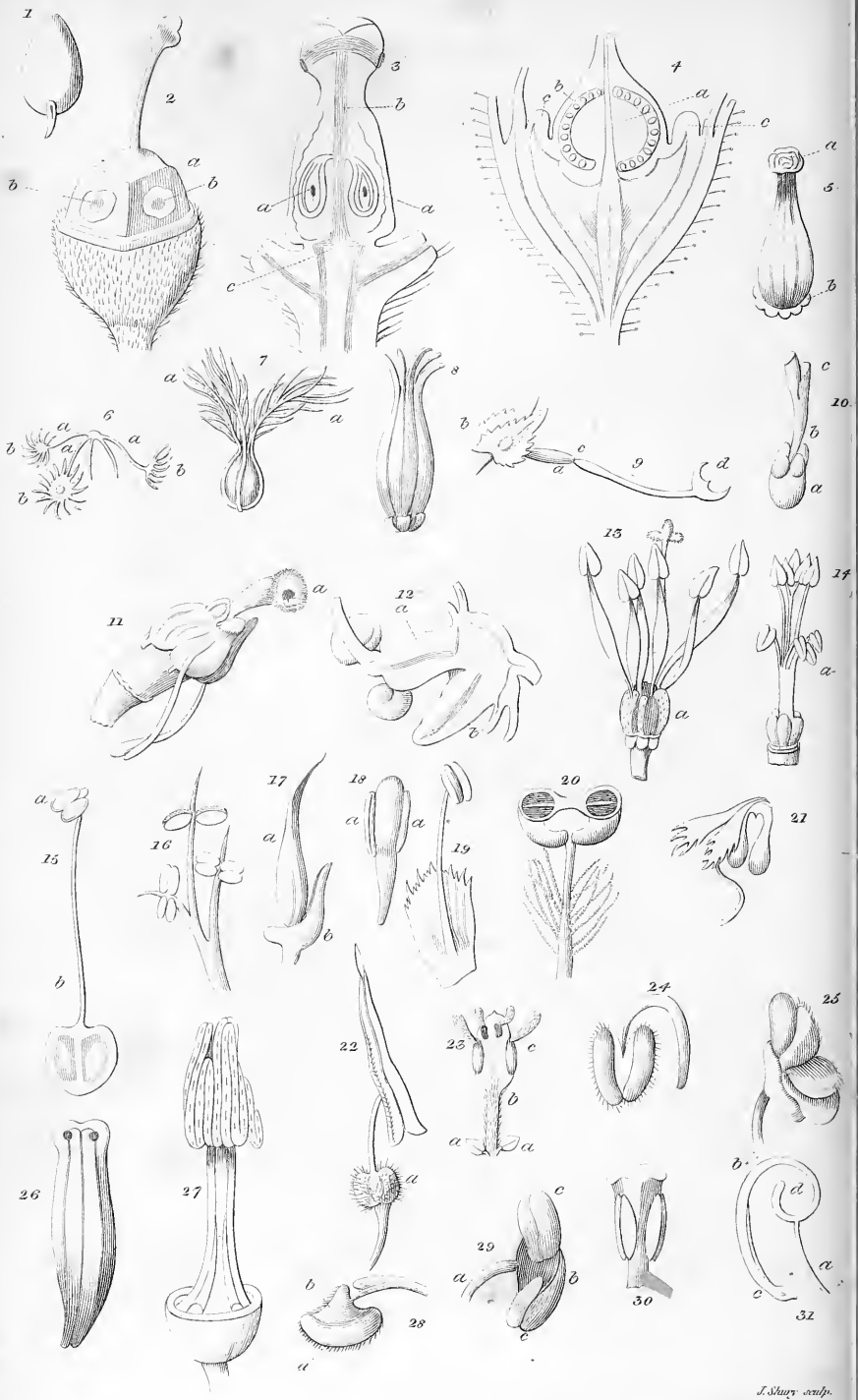
Fig. 14. Linaria. *Personatæ.* Calyx five-parted; corolla gaping, spurred at the base, limb 2-lipped; above 2-cut, turned back, below 3-lobed; palate rather prominent in the throat.

Fig. 15. Hypericum quadrangulare. *Hypericineæ.* Calyx 5-cut, lobes uncut; petals 5; stamens indefinite, on three androphores; styles three.

Fig. 16. Epipactis palustris. *Orchideæ.* Ovary pedicelled, not twisted, pubescent; perigonium spread; lip crenate, blunt, spurless, as long as the sepales, not clasping; hypochilium concavely bunched; epichilium inwardly 2-bunched at the bottom.

Fig. 17. Selinum caruifolium. *Umbelliferæ.* Flower magnified. Petals five, bent in at the tip, and appearing as if notched; stamens five, alternate; styles two.

Fig. 18. Corylus sylvestris. *Corylideæ.* Male flowers collected into a catkin.



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PLATE THE ELEVENTH.

Sexual Organs.

Fig. 1. Myosotis palustris. *Borragineæ.* An ovary separated from the gynophore, and magnified.

Fig. 2. Gynophore of the same, also magnified; and despoiled of its ovaries.

a. The gynophore supporting the style without any intermedium.

b. The places from whence the ovaries have been detached.

Fig. 3. Tournefortia mutabilis. *Borragineæ.* Pistill cut vertically.

a. The attachment of the ovaries.

b. The direction of the conducting vessels.

c. The nourishing vessels.

Fig. 4. Scrofularia sambucifolia. *Scrofularineæ.* Ovary and nectaries cut vertically.

a. Ovary.

b. Ovules.

c. Nectaries, opposite.

Fig. 5. Limnanthes peltata. *Gentianeæ.* Pistill: style nearly sessile, in folds; ovary surrounded at bottom with a lobular nectary.

Fig. 6. Acetosa scutata. *Polygoneæ.* Pistill magnified.

a. Styles three, diverging, turned back.

b. Stigmata three, dilated, fringed.

Fig. 7. Rumex spinosus. *Polygoneæ.* Pistill magnified.

a. Stigmata three featherlike.

Fig. 8. Cotyledon tuberosa. *Crassulaceæ.* Pistills five; styles five; nectary composed of five glands attached to the base of the ovary.

Fig. 9. Corydalis lutea. *Fumarideæ.* Magnified.

a. Pistill.

b. Calyx two-sepaled; sepales oval, pointed, toothed, peltate.

c. Style articulated upon the ovary.

d. Stigma halfmoonshape.

Fig. 10. Sideritis hyssopifolia. *Labiatæ.* Pistill magnified.

a. Nectary supporting four ovaries.

b. Style ascending.

c. Stigma composed of two channelled flakes, the lower serving as a sheath for the upper.

Fig. 11. Viola Rothomagensis. *Violaceæ.* Magnified. Pistill surrounded with five stamens united by fringes, two of the stamens having each a basilary appendage; style turbinate; stigma globular, perforated, operculated.

Fig. 12. Scutellaria alpina. *Labiatæ.* Pistill magnified, and cut longitudinally to show the insertion of the ovaries and style.

a. Gynophore, which supports four ovaries.

b. Nectary beaked.

c. Style cut off.

Fig. 13. Asphodelus annuus. *Asphodeleæ.* Stamens and pistills magnified. Stamens unequal, three long, three short, alternate; filaments fusiform, enlarged, and vaulted at their base.

a. Anthers heartshape; stigma three-lobed.

Fig. 14. Jatropha panduræfolia. *Euphorbiaceæ.* Stamens of the male flowers, having at the base a nectary composed of five glands.

a. Androphore divided into ten filaments, five long and five short.

Fig. 15. Tamarix Gallica. *Tamariscinæ.* Stamen magnified.

a. Anther.

b. Filament dilated at bottom.

Fig. 16. Ricinus inermis. *Euphorbiaceæ.* A part of the branched androphore, magnified.

Fig. 17. Borrago laxiflora. *Borragineæ.* Stamen magnified, as seen sideways.

a. Anther awlshape.

b. Filament appendiculated.

Fig. 18. Begonia dichotoma. *Family doubtful.* Stamen magnified, having the filament enlarged at the tip.

a. Lobes of the anther two, adnate on the side, parallel, distant.

Fig. 19. Zygophyllum Morgsana. *Rutaceæ.* Stamen magnified; filament appendiculated at the base; appendix doubly toothed; anther oval, vacillating.

Fig. 20. Tradescantia Virginica. *Commelineæ.* Stamen magnified; filament bearded at the base; anther two-lobed, lobes kidneyshape, adnate laterally, cut transversely to show the two cells of each lobe.

Fig. 21. Erica comosa. *Ericineæ.* Stamen magnified, seen sideways; anther having two basilary crests.

Fig. 22. Mahernia pinnata. *Tiliaceæ.* Stamen magnified and seen sideways; anther arrowshape; filament kneed and glandular in the middle.

Fig. 23. Laurus Persea. *Laurineæ.* Stamen magnified.
a. Glands heartshape, pedicelled.
b. Filament velvetty.
c. Anther fixed, opening by four valves, from top to bottom.

Fig. 24. Scutellaria alpina. *Labiatæ.* Stamen magnified; anther two-lobed, fringed.

Fig. 25. Galeopsis parviflora. *Labiatæ.* Stamen magnified; anthers fringed.

Fig. 26. Solanum. *Solaneæ.* Stamen magnified; anthers two-holed at the tip.

Fig. 27. Cucumis leucantha. *Cucurbitaceæ.* Stamens; filaments three, distinct at their base, united at their upper part; anthers soldered, linear, sinuated.

Fig. 28. Scutellaria galericulata. *Labiatæ.* Stamen magnified.
a. Lobe fringed, single in consequence of the abortion of the corresponding lobe.
b. Connective bearded.

Fig. 29. Thymus Patavinus. *Labiatæ.* Stamen magnified.
a. Part of the filament.
b. Connective.
c. Lobes of the anther divergent.

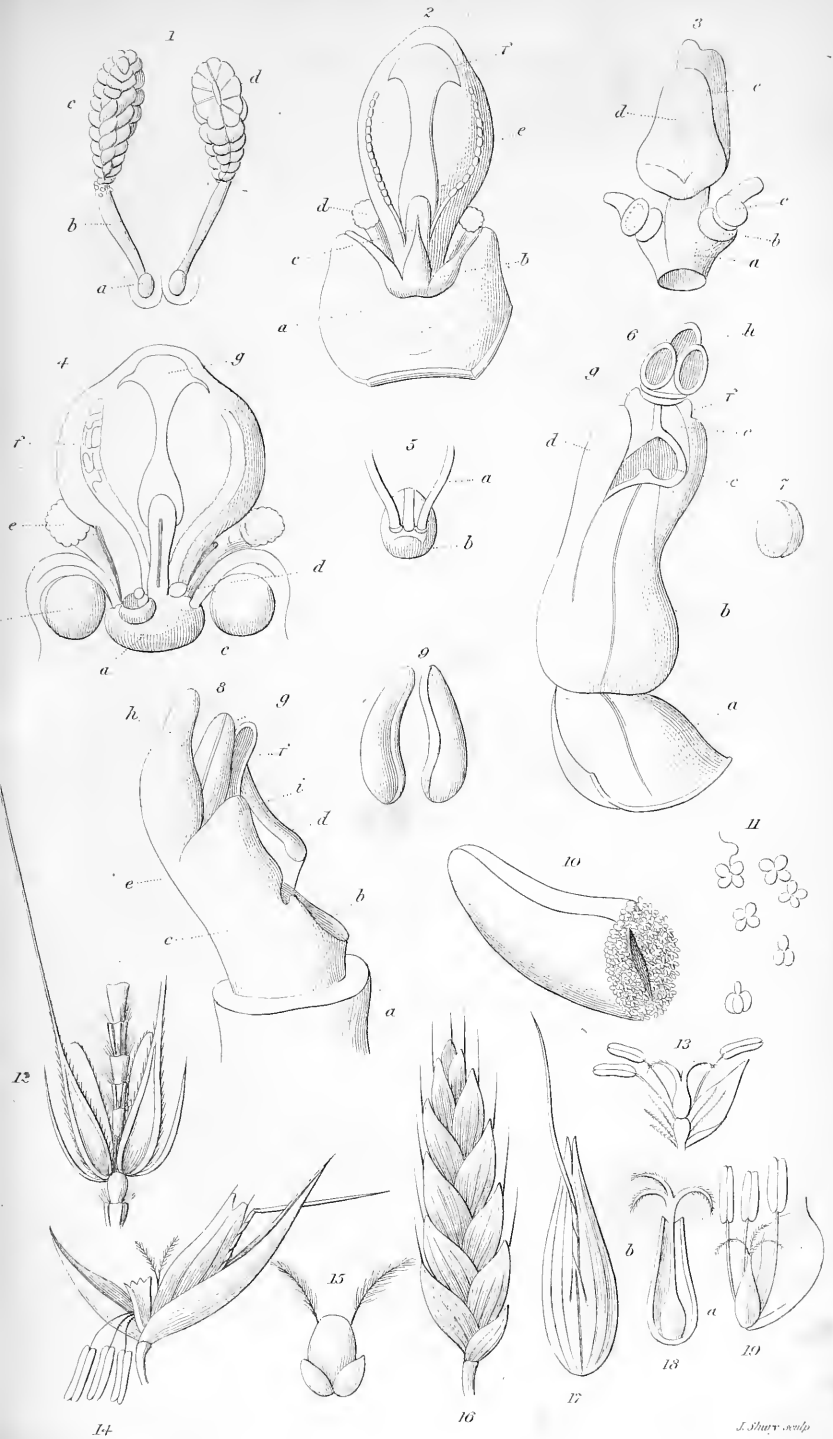
Fig. 30. Anona triloba. *Anoneæ.* Stamen magnified; filament truncated at the tip; lobes distinct, adnate, parallel.

Fig. 31. Melastoma discolor. *Melastomeæ.* Stamen.
a. Filament.
b. Connective threadlike, long.
c, *d.* Lobes distant.
c. The fertile lobe, two-holed at the tip.
d. The barren lobe, of a different form.

PLATE THE TWELFTH.

Flowers of the Orchideæ and Gramineæ.

Fig. 1. Orchis.
a. Retinacle.
b. Caudicle.
c. Pollen mass.
d. Pollen mass cut off transversely to show the septulum, cells, and grains, of which it is composed.
Fig. 2. Orchis.
a. Gynizus.
b. Bursicle.
c. Proscolla.
d. Staminodia, or imperfect anthers.
e. Clinandra filled with the pollen masses.
f. Septulum.
Fig. 3. Cypripedium.
a. Gynostemium.
b. Supports of the anthers.
c. Anthers.
d. Gynizus.
e. Staminodium.
Fig. 4. Nigritella.
a. Bursicle and rostella.
b. Gynizi.
c. Bursicle cut open.
d. Retinacles.
e. Staminodia.
f. Pollen masses in the clinandra.
g. Septulum.
Fig. 5. Loroglossum.
a. Caudicles.
b. Proscolla seated on the rostellum.
Fig. 6. Liparis.
a. Lower lip turned down, and part cut off.
b. Gynostemium.
c. Gynizus.
d. Winged edges of the gynostemium.
e. Clinandrium.
f and *g.* Staminodia.
h. Anther.
i. Pollen masses.
Fig. 7. Liparis. The solid pollen mass.



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Fig. 8. Epipactis.
a. Part of the ovary.
b. Gynizus.
c. Gynostemium.
d. Proscolla.
e. Filament.
f. Rostellum.
g. Pollen masses.
h. Anther.
i. Staminodium.

Fig. 9. Epipactis. The granular pollen masses.

Fig. 10. Epipactis. The pollen mass cut to show the granules, and magnified.

Fig. 11. Granules of pollen, magnified.

Fig. 12. Secale cereale. *Gramineæ.* Axis toothed, jointed; spathelles opposite, inserted parallelly.

Fig. 13. Eleocharis palustris. *Cyperaceæ.* Glume one-spathelled, one-flowered; glumelle bristlelike, bristles 4, denticulate; stamens three, attached under the ovary; stigmata two, featherlike.

Fig. 14. Agrostis rubra. *Gramineæ.* Spathelles alternate, lower largest, longer than the spathellules; lower spathellule 2-cut at the tip, awned below the middle, awn twisted; upper much shorter, 2-cut, toothed; stamens 3; style short, 2-parted, stigmata villous.

Fig. 15. Hordeum nigrum. *Gramineæ.* Ovary ovate; styles 2; lodicules not cut, bald.

Fig. 16. Bromus mollis. *Gramineæ.* Locusta many-flowered; awns not knee-jointed, subapicular.

Fig. 17. Avena. *Gramineæ.* The lower spathellule two-pointed; awn dorsal, twisted.

Fig. 18. Trasus vesicarius. *Cyperaceæ.* Spathellules or lodicules soldered together, persisting, cartilaginous, forming a bottleshape urceolus.
a. Ovary.
b. Style, with its three stigmata.

Fig. 19. Isolepis paniculata. *Cyperaceæ.* Spathelle 1; glumelle 0; stamens 3; ovary with two styles.

PLATE THE THIRTEENTH.

Fruits.

Fig. 1. Hordeum Zeocriton. *Gramineæ.* Cariopsis magnified, and partly uncoated.

a. Perisperm.

b. Posterior cotyledon saucerlike.

c. Root mamillæ, three, enclosed in a coleorhize.

d. Radicles two, each in a coleorhize.

e. Plumule; the gemmule having a pileolar, primordial leaf.

Fig. 2. Embryo of the same, magnified.

a. Cotyledon.

b. Root mamillæ 3, in their coleorhizes.

c. Pileolar primordial leaf.

Fig. 3. Oryza sativa. *Gramineæ.* Cariopsis cut lengthways and magnified.

a. Gemmule with its pileole, enclosed in the coleoptile.

b. Radicle in its coleorhize.

Fig. 4. Hieracium glaucum. *Compositæ.* Embryo magnified.

Fig. 5. Akenium of the same, magnified; pappus sessile, bristled, appearing simple to the naked eye: the pericarp is cut open, and the seed divided longitudinally.

Fig. 6. Polygonum scandens. *Polygoneæ.* Carcerule cut lengthways and dissected. Carcerule boney; seed coated, upright, perispermed; embryo 2-cotyledon, lateral, threadlike, bent; radicle opposite the hile, above.

Fig. 7. Chærophyllum aromaticum. *Umbelliferæ.* Cremocarpe with the two coques separated, but remaining suspended to the axis: magnified.

a. Spermapodium axile, 2-parted at top.

b. Styles persisting on the fruit.

c. Commissures, or the faces applied to each other.

d. Latuscule, or face opposite to the commissure.

e. Vallecules between the ribs of the coques.

f. Spermapodophore.

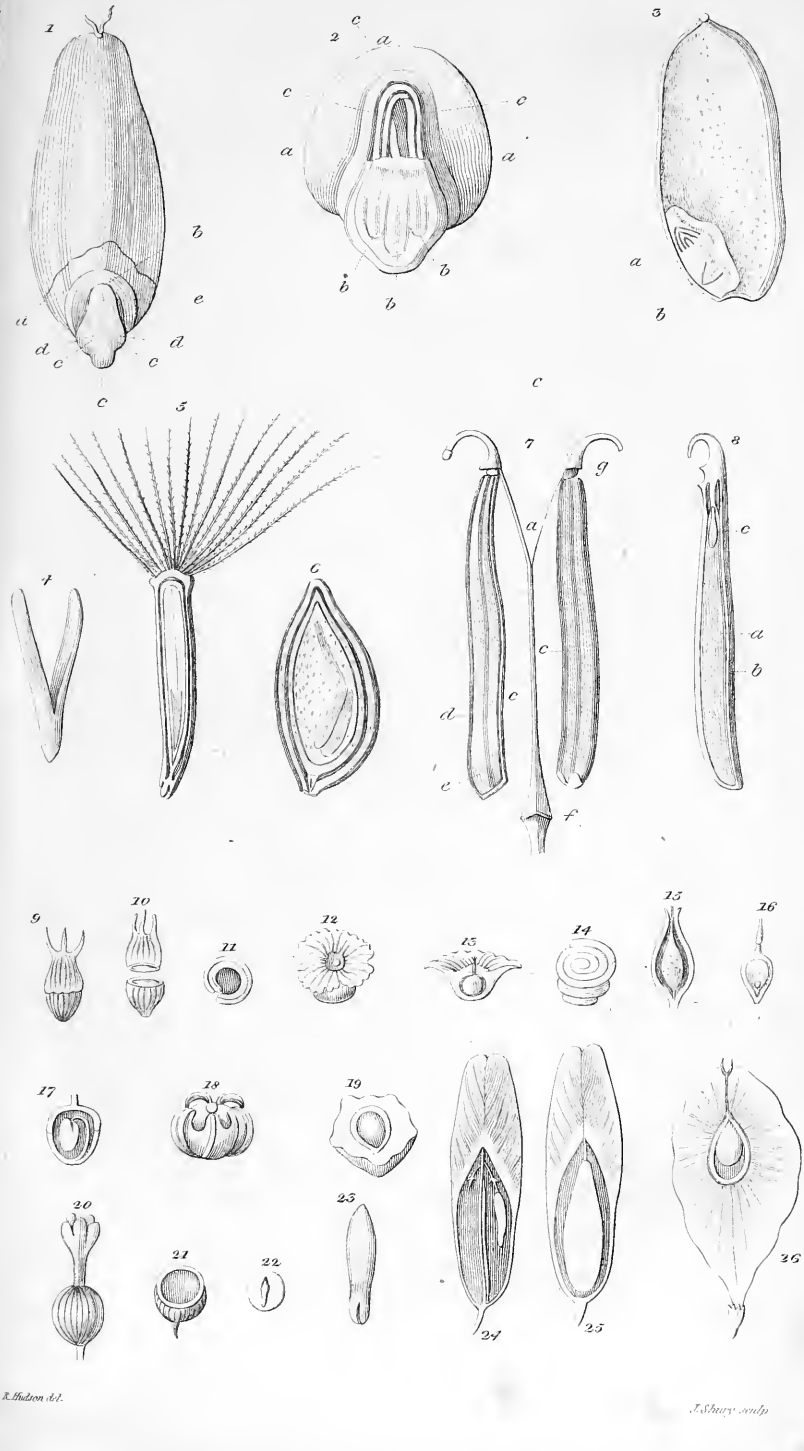
g. Stylopodium.

Fig. 8. A coque of the same cut lengthways and magnified.

a. Perisperm, horny.

b. Integument of the coque.

c. Embryo small, basilary.



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Fig. 9. Amaranthus hypochondriacus. *Amaranthideæ.* Pyxidium uncovered, and magnified, membranaceous.

Fig. 10. Valves of the same, separated.

Fig. 11. Kernel of the same magnified; perisperm central; embryo peripherical, annular; cotyledons semicylindrical, incumbent; radicle threadlike, below.

Fig. 12. Salsola decumbens. *Chenopodeæ.* Periphyllum magnified, containing the utriculus.

Fig. 13. Perigonium of the same cut vertically, and magnified, to show the seed.

Fig. 14. Embryo of the same, highly magnified; threadlike, rolled in a ball, cotyledons very long, linear; radicle nearly cylindrical, placed horizontally in the uppermost part of the seed.

Fig. 15. Carex vulpina. *Cyperaceæ.* Persistent spathellules cut longitudinally and magnified; akenium pedicelled, enclosed in the spathellules.

Fig. 16. Akenium of the same cut longitudinally and magnified; style persistent; embryo at the base of the seed.

Fig. 17. Gomphrena globosa. *Amaranthideæ.* Pyxidium cut longitudinally and magnified; style persistent; seed single, inverted, hanging by the umbilical cord, proceeding from the bottom of the pyxidium.

Fig. 18. Beta vulgaris. *Chenopodeæ.* Utriculus enclosed within the fleshy perigonium, and magnified.

Fig. 19. The utriculus of the same cut transversely and magnified; embryo annular.

Fig. 20. Thesium alpinum. *Santalaceæ.* Pericarpium magnified; crowned by the persistent perigonium.

Fig. 21. The same cut transversely.

Fig. 22. The seed of the same cut longitudinally and magnified; embryo straight, central.

Fig. 23. Embryo of the same, highly magnified.

Fig. 24. Fraxinus excelsior. *Fraxineæ.* Samara opened before it is ripe; two-celled; ovules four, hanging two side by side in each cell.

Fig. 25. The ripe samara of the same; opened; having only one seed, pendulous; the others having perished.

Fig. 26. Ulmus Americana. *Ulmaceæ.* Samara with the cell opened; seed pendent.

PLATE THE FOURTEENTH.

Fruits.

Fig. 1. Quercus longæva. *Corylideæ.* Glands cut lengthways, coriaceous, one-celled, one-seeded; seed pendent, without a perisperm; radicle adverse; cotyledons large, fleshy.

Fig. 2. The cupule of the same, with two abortive glands.

Fig. 3. Carpinus ulmoides. *Corylideæ.* Nucule, or calybion, boney, ovate, angular, with threadlike, longitudinal ribs.

Fig. 4. Corylus tubulosa. *Corylideæ.* Cupule tubular, cylindrical, jagged, toothed.

Fig. 5. Corylus sylvestris. *Corylideæ.* Nucule, or calybion, parted lengthways to show the seed; umbilical cord rising from the base and ascending; seed pendent.

Fig. 6. Cotyledon of the same, with the place in which the embryo is seated.

Fig. 7. Anacardium officinale. *Terebintaceæ.* Xylodium, or carcerule, seated upon a fleshy receptacle.

Fig. 8. Tilia parvifolia. *Tiliaceæ.* Carcerule opened; cells two-seeded.

Fig. 9. The carcerule of the same cut transversely, cells five.

Fig. 10. Asarum Europæum. *Aristolochiæ.* Carcerule cut transversely; cells six; partitions incomplete.

Fig. 11. Carcerule of the same opened, cells four-seeded, seeds ascending.

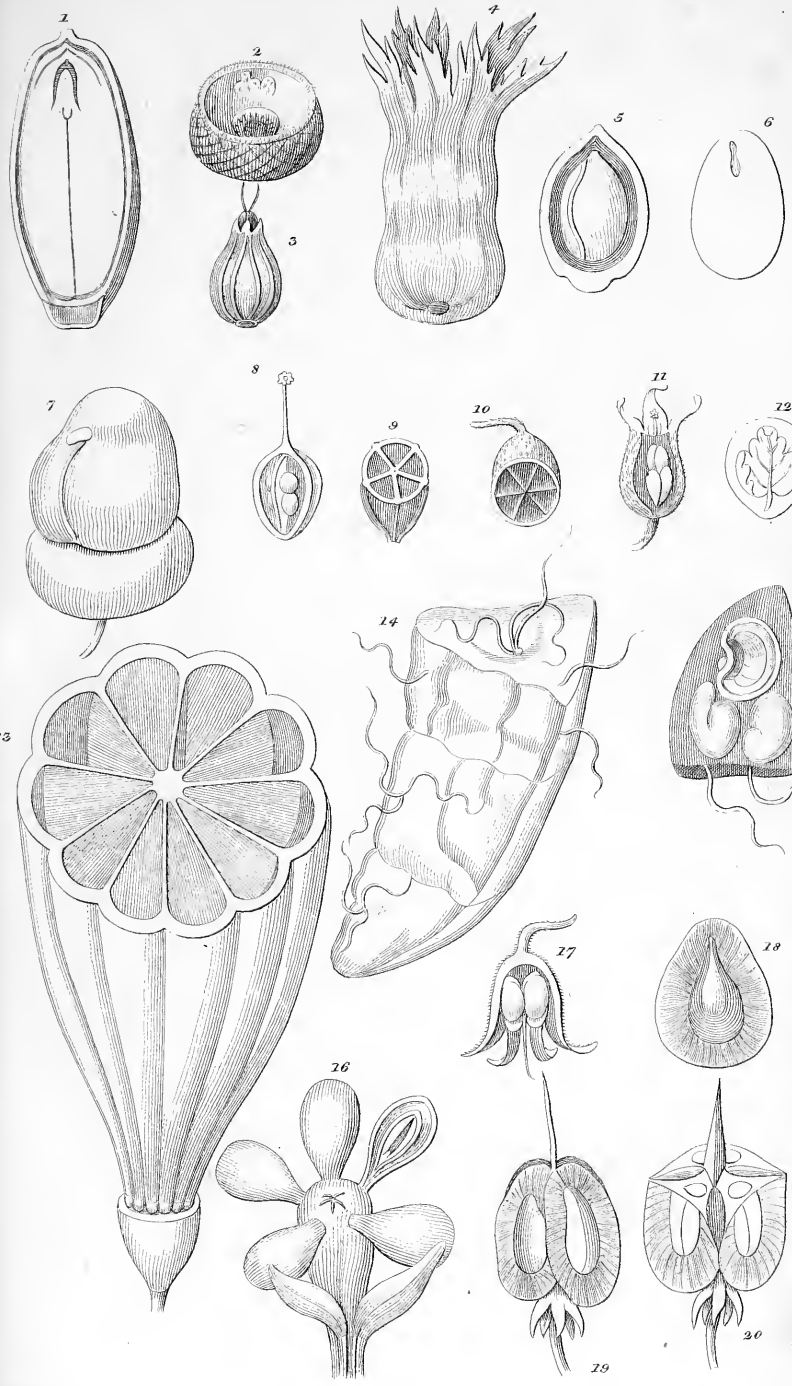
Fig. 12. Embryo of tilia parvifolia; cotyledons leaflike, three-lobed, toothed, incumbent.

Fig. 13. Adansonia Baobab. *Malvaceæ.* Amphisarca cut transversely, cells ten.

Fig. 14. A portion of the spongy, farinaceous pulp taken out of the cells of the same, interwoven with thready fibres.

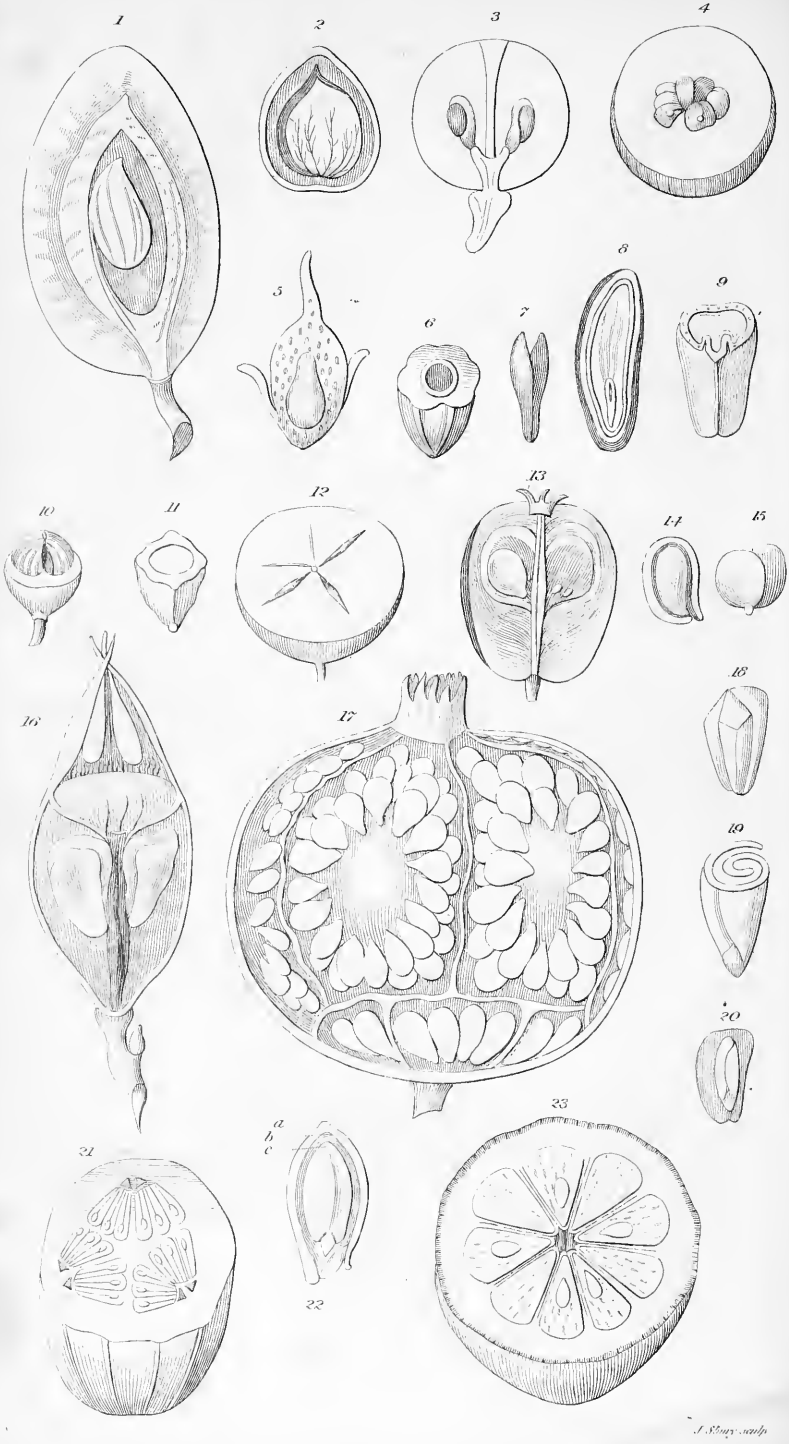
Fig. 15. The point of the pulp dissected to show the seeds, of the natural size.

Fig. 16. Gomphia nitida. *Ochnaceæ.* Sarcobasis five-eremed; gynophore ovoid; eremes one-celled, one-seeded; seed straight, coated, without a perisperm; embryo straight, radicle opposite.



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Fig. 17. Symphytum officinale. *Borragineæ.* Microbasis. Calyx five-parted, one lobe cut away; eremes, or nuts, four; style persisting.

Fig. 18. Cynoglossum lævigatum. *Borragineæ.* Internal surface of one of the cariopsides, nut lodged in the hollow part of the shield-like cariopsis, or ereme.

Fig. 19. The whole microbasis of the same.

Fig. 20. The same, with the several cariopsides cut transversely, nuts immersed in the shield-like eremes.

PLATE THE FIFTEENTH.

Fruits.

Fig. 1. Prunus domestica. *Dryadeæ.* Drupe cut lengthways: umbilical cord passing within the suture to the tip of the stone; seed pendent.

Fig. 2. Amygdalus nana. *Dryadeæ.* Stone of the drupe split open; umbilical cord passing within the suture to the tip of the stone; seed pendent, ovate rounded, acuminated at top, deeply lenticular, pale with painted veins.

Fig. 3. Vitis vinifera. *Viniferæ.* Acinos cut longitudinally sphærical, free, seeds boney.

Fig. 4. The same, cut transversely. Acinos five-seeded.

Fig. 5. Sparganium ramosum. *Typhaceæ.* Drupe juiceless, bark taken off in part to show the stone, with a small hole at the tip.

Fig. 6. The same: stone cut transversely.

Fig. 7. Vitis vinifera. *Viniferæ.* Embryo taken out of the seed.

Fig. 8. The seed cut longitudinally, coated, perispermed; embryo at the base, straight; radicle opposite.

Fig. 9. The seed cut transversely.

Fig. 10. Aquifolium spinosum. *Caprifoliaceæ.* Nuculane with part of the flesh taken away; pyrenæ four.

Fig. 11. Pyrene of the same, with the seed cut transversely.

Fig. 12. Pyrus domestica. *Pomaceæ.* Pome cut transversely; cells five, two abortive.

Fig. 13. The same cut longitudinally; cells cartilaginous; ovules in each cell always 2, the fertile cells usually one-seeded; seeds rather large.

Fig. 14. Seeds of the same; the covers cut off in part, to show the kernel.

Fig. 15. Embryo of the same: cotyledons elliptic, fleshy.

Fig. 16. Mespilus Germanica. *Pomaceæ.* Woody celled pome, or pyrenarius, cut transversely, one of the cells opened: ovules two.

Fig. 17. Punica Granatum. *Myrti.* Balausta with part of the rind taken off, crowned by the tube of the calyx; partitions indeterminate, some longitudinal, some crossways: seeds numerous, drupelike.

Fig. 18. Seeds of the same, of the natural size; drupelike, outer skin pulpy.

Fig. 19. Embryo of the same, cut transversely, and much magnified; cotyledons convolute, leaflike, very thin.

Fig. 20. Seed of the same, cut lengthways, and the embryo uncovered; embryo oblong, pointed at each end.

Fig. 21. Cucumus sativus. *Cucurbitaceæ.* Pepo cut transversely; cells three, parted; placentarium parietal.

Fig. 22. Cucurbita esculenta. *Cucurbitaceæ.* Seed cut longitudinally.

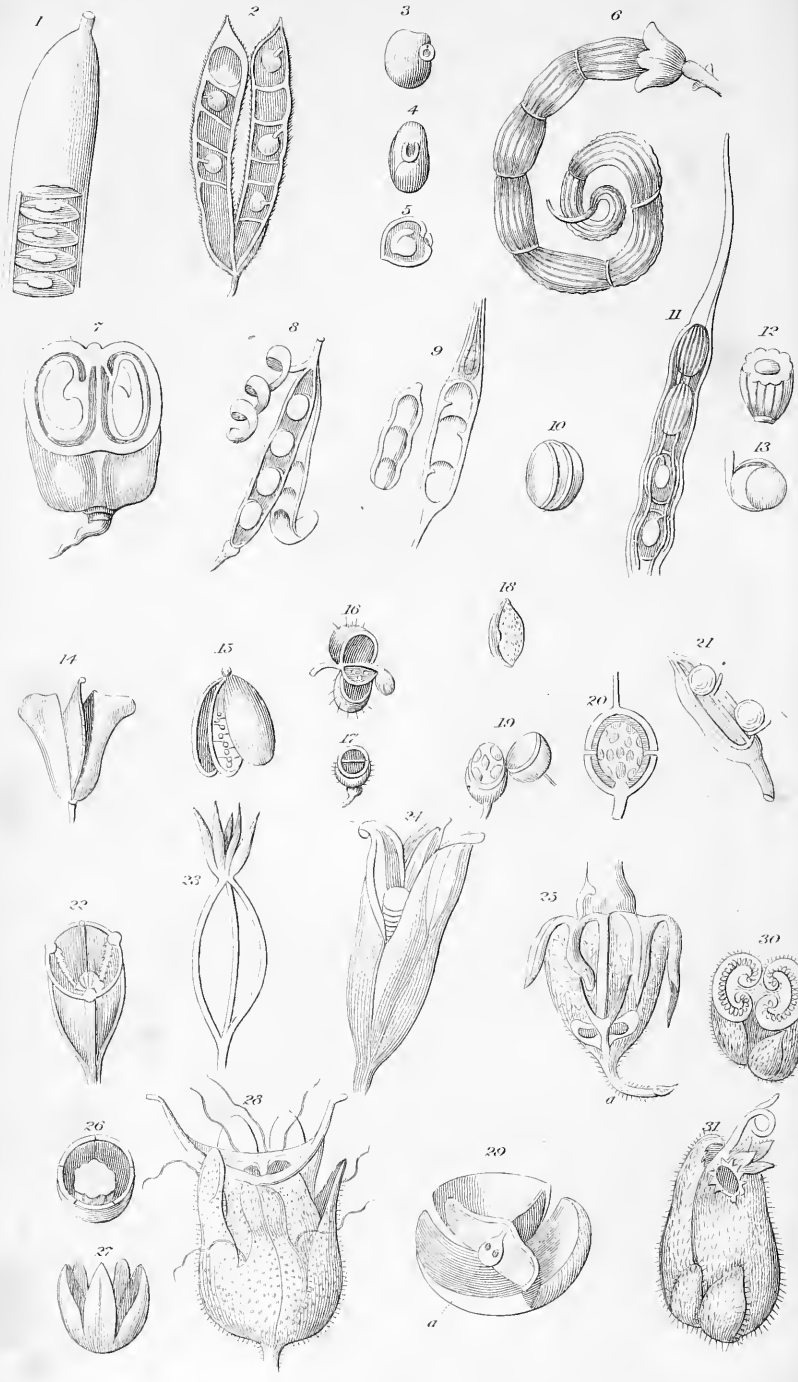
a. Outer skin leatherlike.

b. Inner skin green.

c. Cotyledon, veiny and wrinkled, on the internal face.

d. Embryo.

Fig. 23. Citrus Medica. *Aurantiaceæ.* Hesperidium ovate, cut transversely; outer bark glandular; inner bark spongy; cells nine, each lined with a fine skin, filled with a pulpy flesh.



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PLATE THE SIXTEENTH.

Fruits.

Fig. 1. Cassia Fistula. *Leguminosæ.* Tip of the legume, partly opened; legume phragmated, many-celled; cells one-seeded; placentarium unilateral; umbilical cord thread-like; seeds ovoid, compressed.

Fig. 2. Genista candicans. *Leguminosæ.* Cod, or legume, opened; legume deeply scrobiculate, nearly celled; umbilical cords short, from the convex suture, seeds affixed alternately to each valve.

Fig. 3. Seed of the same magnified; hile or umbilicus prominent.

Fig. 4. The same, with the hile facing the spectator, hile crescentlike, surrounded by a glandular prominent edge.

Fig. 5. The kernel of the same magnified; seed perispermed; embryo bent, cotyledons ovate; radicle bent, centrifugal.

Fig. 6. Scorpiurus sulcata. *Leguminosæ.* Legume jointed, nodose, furrowed, spiral.

Fig. 7. Astragalus uliginosus. *Leguminosæ.* Legume cut transversely, two-celled; partition longitudinal, valvean, marginal.

Fig. 8. Cardamine Græca. *Cruciferæ.* Siliqua, or pod, when dehiscent. Valves flat, ribless, flown back and rolled up spirally; partition very narrow, thin; seeds four in each cell; umbilical cord fixed alternately to each edge of the partition.

Fig. 9. Sinapis alba. *Cruciferæ.* Siliqua hispid, two-celled, two-valved; valves marked with three hispid ribs lengthways; upper joint valveless, sometimes containing one imperfect seed, or partition produced far beyond the valves into a swordshape beak.

Fig. 10. Embryo of the same, magnified: cotyledons rounded, nearly leaflike, the outer involving the interior; radicle lying in the furrow of the folding, centrifugal.

Fig. 11. Raphanistrum vulgare. *Cruciferæ.* Part of the siliqua; valveless, many-celled, jointed, becoming necklaceshape; cells boney, separate, in a longitudinal series, perforated at each end for the passage of the two umbilical cords, which enter all of them, each cord bearing a seed in the alternate cells; seeds one in a cell.

Fig. 12. Boney cell of the same cut transversely.

Fig. 13. Cotyledons of the same uncovered; radicle in the furrow of their fold, centrifugal.

Fig. 14. Thlaspi cuneatum. *Cruciferæ.* Silicule ovate, rounded, compressed, two-celled, two-valved; valves boat-shape; partitions opposite or contrary to the valves.

Fig. 15. Draba verna. *Cruciferæ.* Silicule oval; two-celled; valves flat; cells many-seeded; partition parallel to the valves.

Fig. 16. Vella annua. *Cruciferæ.* Silicule nearly globular, with soft bristles, two-celled, two-valved; partition parallel to the valves, transparent, bearing three or four seeds in each cell; style persistent, leaflike.

Fig. 17. Transverse section of the same.

Fig. 18. Anagallis phœnicea. *Primulaceæ.* Seed much magnified, ovate, slightly acuminate on each side, roughly dotted; hile in the middle of the belly.

Fig. 19. Pyxidium of the same when dehiscent.

Fig. 20. Pyxidium of the same magnified, and opened on one side; placentarium globular, spongy, honeycombed, free.

Fig. 21. Dianthera Malabarica. *Acanthiaceæ.* Capsule oblong, two-valved, pointed at the tip, two-celled, two-valved; partition opposite, or contrary to the valves, with retinacles close to the seeds.

Fig. 22. Serapias Helleborine. *Orchideæ.* Diplotegia cut transversely, elliptical, sphærical, one-celled, three-valved, six-ribbed; placentaria three, on the middle of the valves.

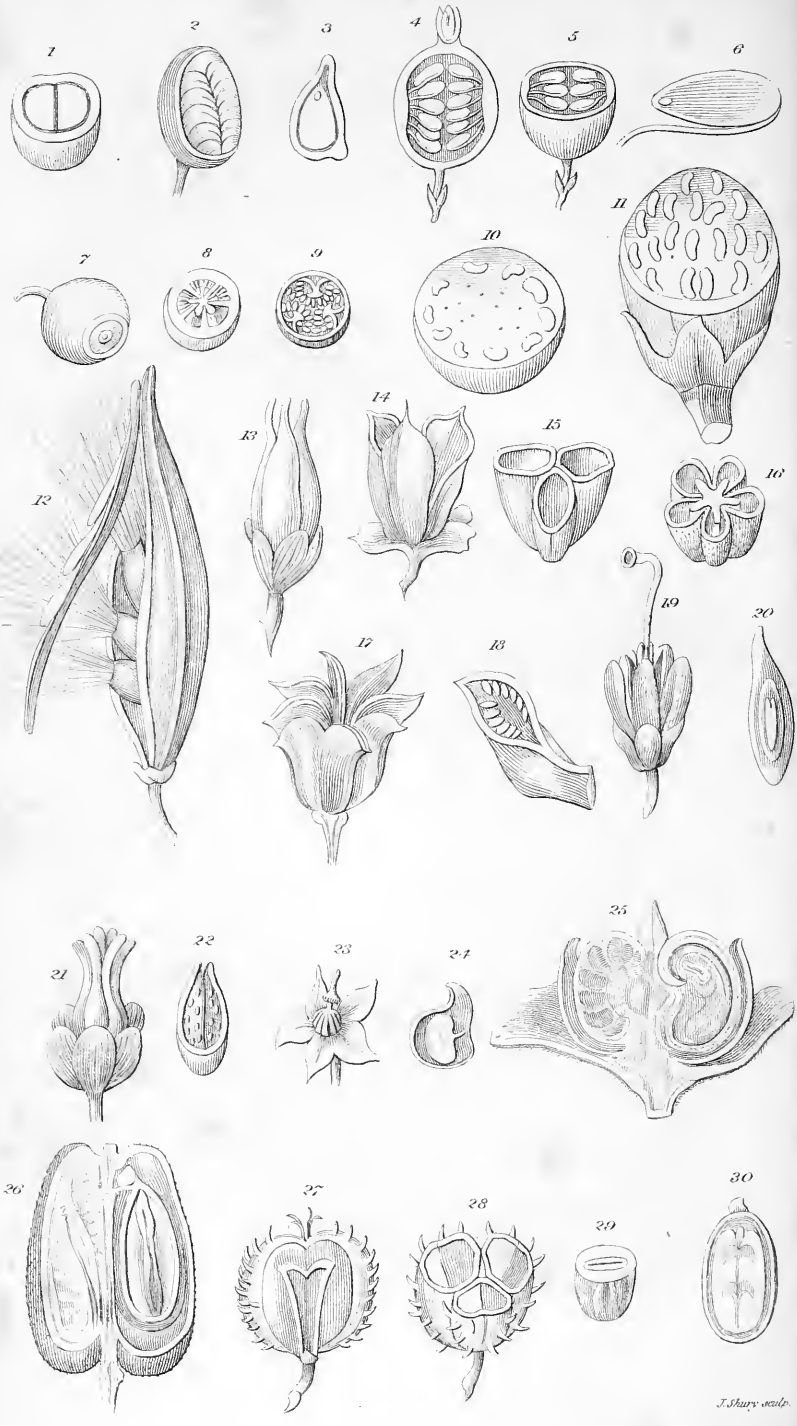
Fig. 23. The three alternate, sutural ribs of the same, remaining after the falling off of the valves.

Fig. 24. Iris Sibirica. *Irideæ.* Diplotegia when dehiscent; three-celled, three-valved, loculicidal; valves one-ribbed, rib prominent; placentarium on the internal edge of the valves, which re-enter conjointly; seeds numerous, horizontal, depressed, flat on both sides, one side straight, the other semicircular.

Fig. 25. Campanula rigida. *Campanulaceæ.* Capsule crowned with the withered corolla; calyx five-cut, segments turned back, opening by pores at the base.

Fig. 26. Lysimachia quadrifolia. *Primulaceæ.* Capsule cut transversely and magnified, one-celled, five-valved; placentarium globular, spongy, pitted, free, central.

Fig. 27. Capsule of the same when dehiscent, magnified.



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Fig. 28. Saxifraga granulata. *Saxifrageæ.* Capsule half adherent, two-headed, opening in the middle of the head; calyx.

Fig. 29. Ipomea purpurea. *Convolvulaceæ.* Capsule cut transversely, after its dehiscence, three-celled, three-valved, septicidal; partitions verticillate, interpositive, persistent; placentaria basilary.

Fig. 30. Orontium majus. *Scrofularieæ.* Capsule cut transversely; two-celled; partitions two, valvean, marginal, meeting; placentarium central, two-lobed.

Fig. 31. Capsule of the same entire, three-holed at the summit.

PLATE THE SEVENTEENTH.

Fruits.

Fig. 1. Actæa spicata. *Ranunculaceæ.* Berry cut transversely, fleshy, camarelike; seeds in two rows, nearly semicircular.

Fig. 2. The same, with part of the covering removed, to show the seeds lying over one another in two rows.

Fig. 3. The seed cut lengthways; perisperm the shape of the seed; embryo very small, nearly ovate, at the base.

Fig. 4. Ribes spinosum. *Grossulariæ.* Acrosarcum, or berry crowned with the persistent calyx, cut longitudinally; placentaria two, lateral, opposite.

Fig. 5. The same cut transversely; placentaria lateral, triple.

Fig. 6. Perisperm of the same cut longitudinally and magnified, with the umbilical cord, as it passes through the gelatinous pulp surrounding the seed: embryo very small, at the tip.

Fig. 7. Vaccinium montanum. *Vaccinieæ.* Acrosarce, or crowned berry, spherical.

Fig. 8. The same cut transversely: acrosarce five-celled; placentaria central.

Fig. 9. Androsæmum officinale. *Hypericineæ.* Berry cut transversely, one-celled; placentaria three, lateral, spongy, at first solid, but when ripe leaving a vacant space between their two divisions.

Fig. 10. Mandragora acaulis. *Solaneæ.* Berry cut transversely, globular; seeds immersed, towards the periphery, all around.

Fig. 11. The same, with the pannexterne taken off: seeds many, kidneyshape; calyx four cut.

Fig. 12. Asclepias nigra. *Apocineæ.* Follicle opened, one-celled, many-seeded, dehiscent; placentarium sutural, becoming free by the dehiscence; umbilical cord pappus-like, or seeds comose.

Fig. 13. Veratrum album. *Colchicaceæ.* Etærion three-camared, camares oblong, slightly compressed, connected at bottom, separate at top, and ending in a short style; perigonium six-lobed.

Fig. 14. Camares of the same dehiscent, and emptied of their seeds.

Fig. 15. Transverse section of the etærion, towards the bottom.

Fig. 16. Rhododendron maximum. *Rhododendra.* Capsule cut transversely, five-celled; placentarium central, radiating, lobed.

Fig. 17. Caltha palustris. *Ranunculaceæ.* Etærion eight-camared, camares compressed, spreading horizontally at top.

Fig. 18. A camare of the same opened; placentarium on the edges of the suture.

Fig. 19. The capsule of the rhododendron maximum, in dehiscence; cells five, septicidal; style persistent on the central placentarium.

Fig. 20. Seed of the same cut lengthways, and magnified; outer coat produced in a kind of beak; kernel ovate oblong, shorter than the seed; embryo straight; cotyledons very short.

Fig. 21. Butomus floridus. *Butomaceæ.* Dieresile magnified, six-coqued, ovate-beaked, connected together about half their height, membranaceous, opening inwards.

Fig. 22. One of the coques cut transversely; seeds parietal, very numerous, small, spread all over the internal surface of the coque.

Fig. 23. Napæa dioica. *Malvaceæ.* Calyx magnified, five-cut; central axis of the dieresile winged, pyramidal, furrowed.

Fig. 24. One of the ten coques of the same cut longitudinally, semicircular, tip ending in a bent-back point; umbilical cord very small; seed kidneyshape, single.

Fig. 25. Lavatera arborea. *Malvaceæ.* Fruit cut vertically and magnified: dieresile axile, compressed, 6-coqued; coques one-celled, one-seeded; seed peltate; embryo bent; cotyledons plaited; radicle basilary.

Fig. 26. Ricinus communis. *Euphorbiaceæ.* Regma cut longitudinally and magnified; three-celled, covered with a pannexterne that separates; coques one-celled, two-valved, one-seeded; placentarium under the tip; seed coated, carunculated, perispermed, hanging.

a. Perisperm.

b. Embryo two-cotyledon, straight, in the middle; cotyledons leaflike.

c. Caruncle.

d. Umbilical cord.

Fig. 27. The same, with one of the coques taken away from the two others; placentarium central, columnar, three-sided, with three blunt beaks passing into the cells, regma covered with soft spines.

Fig. 28. The same, cut transversely, showing the three coques, emptied of their seeds.

Fig. 29. The seed of the same cut across; embryo two-cotyledon.

Fig. 30. The seed cut lengthways; embryo nearly the size of the albumen.

PLATE THE EIGHTEENTH.

Fruits.

Fig. 1. Rubus Idæus. *Dryadeæ.* Fruit cut lengthways; polychlorion succulent, composed of several drupeolated akenia soldered together, one-seeded; seed coated, without a perisperm, hanging.

Fig. 2. Rosa canina. *Rosaceæ.* Hip cut longitudinally; calyx become fleshy, ovate; utricles in pits on the internal surface of the hip, the central utricles pedicelled; pedicells fleshy, yellow, rather hairy; style persisting.

Fig. 3. Agrimonia repens. *Agrimonaceæ.* The amalthæa cut transversely; calyx five-toothed, echinated; seeds three, ovate, not fleshy, slightly compressed, pointed at top, blunt at bottom.

Fig. 4. Ranunculus muricatus. *Ranunculaceæ.* The polychlorion formed of many cariopsides, prickly on both sides.

Fig. 5. Cariopsis of the same cut lengthways; embryo very small, in the base of the seed.

Fig. 6. Fragaria vesca. *Dryadeæ.* The polychlorion. Calyx ten-cut; receptacle fleshy, wider than the calyx, ovate, globular, very large; akenia numerous, small, ovate, acuminate, slightly compressed.

Fig. 7. An akenium of the same.

Fig. 8. Morus alba. *Urticeæ.* The sorose composed of several fleshy utricles, soldered with the calycine segments of the several flowers.

Fig. 9. A single utricle of the same, with the fleshy segments of its calyx displayed, magnified.

Fig. 10. An utricle of the same opened and magnified.

Fig. 11. Ambora Tamburissa. *Urticeæ.* Sycone, or fig, cut transversely, to show the several carcerules, immersed in the internal surface of the involucrum.

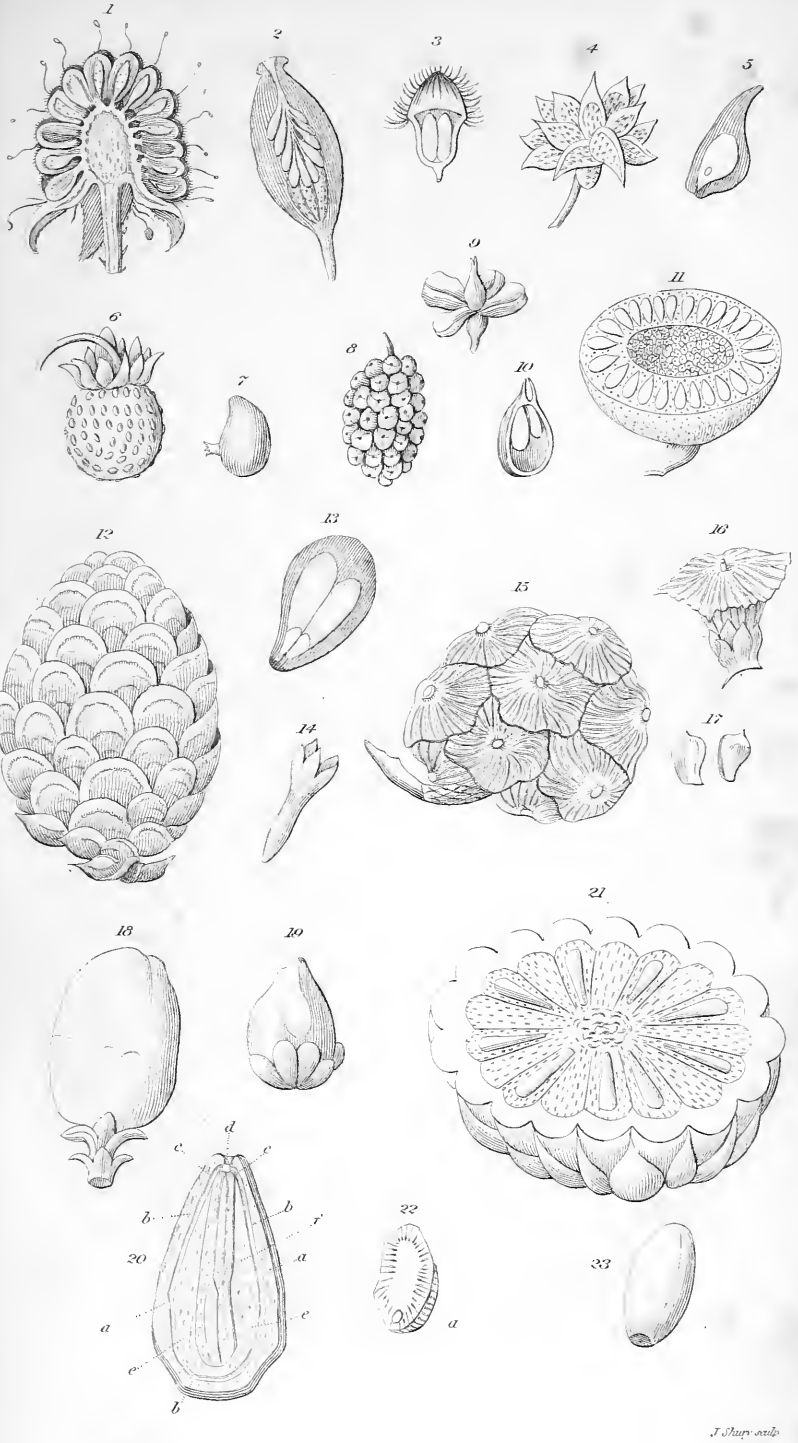
Fig. 12. Pinus Americana. *Abietideæ.* Strobile egg-shape; cupules leatherlike, thick, triangular, rounded on the outer edge.

Fig. 13. A cupule of the same; nucules two, winged upon the outward side.

Fig. 14. Embryo of the same, magnified; cotyledons four.

Fig. 15. Cupressus sempervirens. *Cupressideæ.* Galbule ovate, globular; cupule angular, upright, headed, edge of the head oblique and jagged, centre radiated.

Fig. 16. A cupule of the same.



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Fig. 17. The nucules of the same, as seen on either side, small, boney, irregularly angular.

Fig. 18. Juniperus Virginiana. *Cupressideæ.* Arcesthide magnified, ovoid, berrylike, composed of 1-seeded glandes, soldered along with succulent bracteæ: cupules woody, close.

Fig. 19. A single glans of the same, magnified, with small vesicles at the base filled with turpentine.

Fig. 20. A glans of the same cut longitudinally, and magnified.

a. Cupule.

b. Pericarpium membranaceous, crowned by the limb of the calyx.

c. Limb of the calyx.

d. Remains of the stigma.

e. Perisperm.

f. Embryo axile, two-cotyledon.

Fig. 21. Anona squamosa. *Anonæ.* Asimine cut transversely, barked, fleshy, composed of several berries; bark thick, spongy, corklike, covered all over with ovate, oblong, nipplelike, ascending tubercles; flesh pulpy, divided into as many cells as there are tubercles in the bark, so that the fresh and moist fruit may be separated into as many berry-like lobes.

Fig. 22. Perisperm of the same split lengthways, embryo very small, near the hile.

Fig. 23. Seed of the same, elliptic, slightly angular, smooth.

PLATE THE NINETEENTH.

Filices and Lycopodiaceæ.

Fig. 1. Lycopodium. *Lycopodiaceæ.* Part of a branch magnified; leaves oblong, linear, much compressed, two-rowed; stipules single, lanceolate, one-sided, tiledlike.

a. Capsular conceptacles, with bracteæ.

b. Another kind of capsular conceptacles, with bracteæ.

Fig. 2. The second kind of conceptacle, much magnified; three-lobed, two-valved, three-seeded.

Fig. 3. A seminule taken out of these conceptacles, and much magnified.

Fig. 4. The same opened.

a. The lorica.

b. The kernel.

Fig. 5. The first kind of conceptacles much magnified; kidneyshape, two-valved, many-seeded.

a. The seminules.

b. The same, very much magnified, to show they are angular.

Fig. 6. Bernhardia dichotoma. *Lycopodiaceæ.* A capsular conceptacle magnified, three-lobed, three-valved, partitions median.

Fig. 7. A branch of the same plant magnified.

a. Capsular conceptacles, with two bracteæ.

Fig. 8. *a.* Seminules magnified.

b. The same, very much magnified, to show they are angular.

Fig. 9. Tmesepteris Tannensis. *Lycopodiaceæ.* Conceptacle magnified, capsular, opening, 2-valved, 2-celled; with one of the two leaves between which it was placed.

Fig. 10. Lycopodium umbrosum. *Lycopodiaceæ.* Conceptacle magnified, capsular, kidneyshape, 2-valved, many-seeded.

a. Seminules.

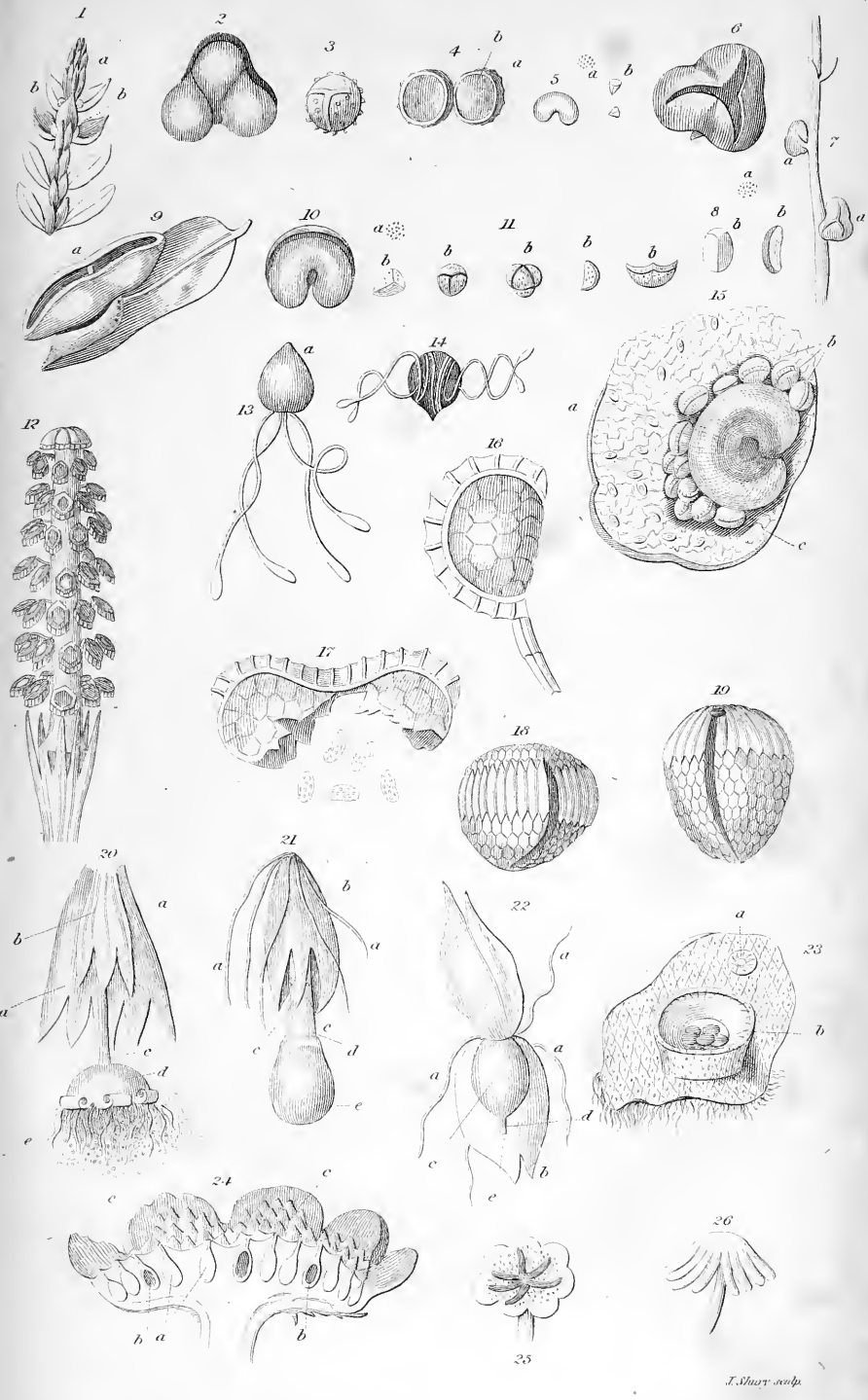
Fig. 11. The same very much magnified to show that they are angular, and collected together by threes or fours into globules.

Fig. 12. Equisetum palustre. *Equisetaceæ.* Spike magnified, with the terminal ament.

a. Involucra.

b. Conceptacles attached to the under side of the involucra.

Fig. 13. A seed? of the same much magnified, with the hygrometrical threads.



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Fig. 14. The same, with the threads rolled spirally around it.

Fig. 15. Aspidium nemorale. *Filices.* A portion of the leaf magnified, with a single indusium.

a. Miliary glands.

b. Conceptacles each girt with its elastic, incomplete, perispheric ring.

c. Indusium kidneyshape, umbilicated, opened on the sides.

Fig. 16. A conceptacle of the same much magnified, with its elastic ring and peduncle.

Fig. 17. A conceptacle of the same torn open by the force of the elastic ring when ripe, and throwing out the seminules.

Fig. 18. Gleichena circinata. *Filices.* A conceptacle very much magnified, having an elastic ring completely surrounding it.

Fig. 19. Schizea dichotoma. *Filices.* A conceptacle much magnified, having an elastic ring surrounding it at the tip.

Fig. 20. Marchantia polymorpha. *Hepaticæ.* Fructification when ripe, and much magnified.

a. Perichætium split lengthways.

b. Sheath.

c. Pedicell.

d. Capsule opened, valves or teeth turned back.

e. Elastic threads dispersing the seminules.

Fig. 21. A globule or capsule of the same not quite ripe, and much magnified.

a. Paraphyses.

b. Perichætium.

c. Sheath, being in fact the detached pannexterne.

d. Pedicell.

e. Capsule or globule.

Fig. 22. A fructification of the same, in its early stage, and much magnified.

a. Paraphyses.

b. The jaggs of the perichætium.

c. The ovary, according to some authors.

d. The style of the same.

e. The stigma of the same.

Fig. 23. A part of the frond of the same magnified, having two origomes.

a. An origome beginning to show itself.

b. Another entirely developed, with lenticular bulbilles.

20 Patellaria reclusa Conoth. p. 459
21.22. Isidium corallinum Conoth. p. 412
23 Coryneye hyxidata Conoth. p. 419

Fig. 24. Umbell of what is called the male plant of the same, cut vertically and magnified.

a. The stamens according to some authors, entire, ovoid, and sunk into the substance of the umbell.

b. Other stamens cut vertically, to show their cavity.

c. Small vascular threads of the stamen, each of which abut on a mamilla, or nipplelike eminence, on the surface of the umbell.

Fig. 25. The umbell of what is considered by some as the male plant of the same; the upper surface slightly concave, with nipplelike eminences.

Fig. 26. The umbell of what is considered by some as the female plant of the same; many-lobed, having the fructifications, fig. 20, 21 or 22, beneath.

PLATE THE TWENTIETH.

Mosses and Lichens.

Fig. 1. Tortula muralis. *Musci.* Entire plant magnified; the female flower just beginning to appear; surcule short, leaves oval lanceolate, terminated with a long hair; perichætium 0; bristle terminal; urn upright, cylindrical.

a. Ovary, according to some authors.

b. Style.

c. Stigma.

Fig. 2. Fruit of the same, yet young, and magnified.

a. Calyptra.

b. Vaginule.

c. Pedicell beginning to lengthen and separate them.

Fig. 3. Fruit of the same, more advanced in its growth, the calyptra split lengthways, and ready to fall off.

Fig. 4. Entire plant of the same, when the pedicell has acquired its full growth, magnified.

Fig. 5. Urn of the same when ripe, split longitudinally and highly magnified.

a. The urn whose sides are composed of two flakes, the external one called sporangium, the internal, sporangidium.

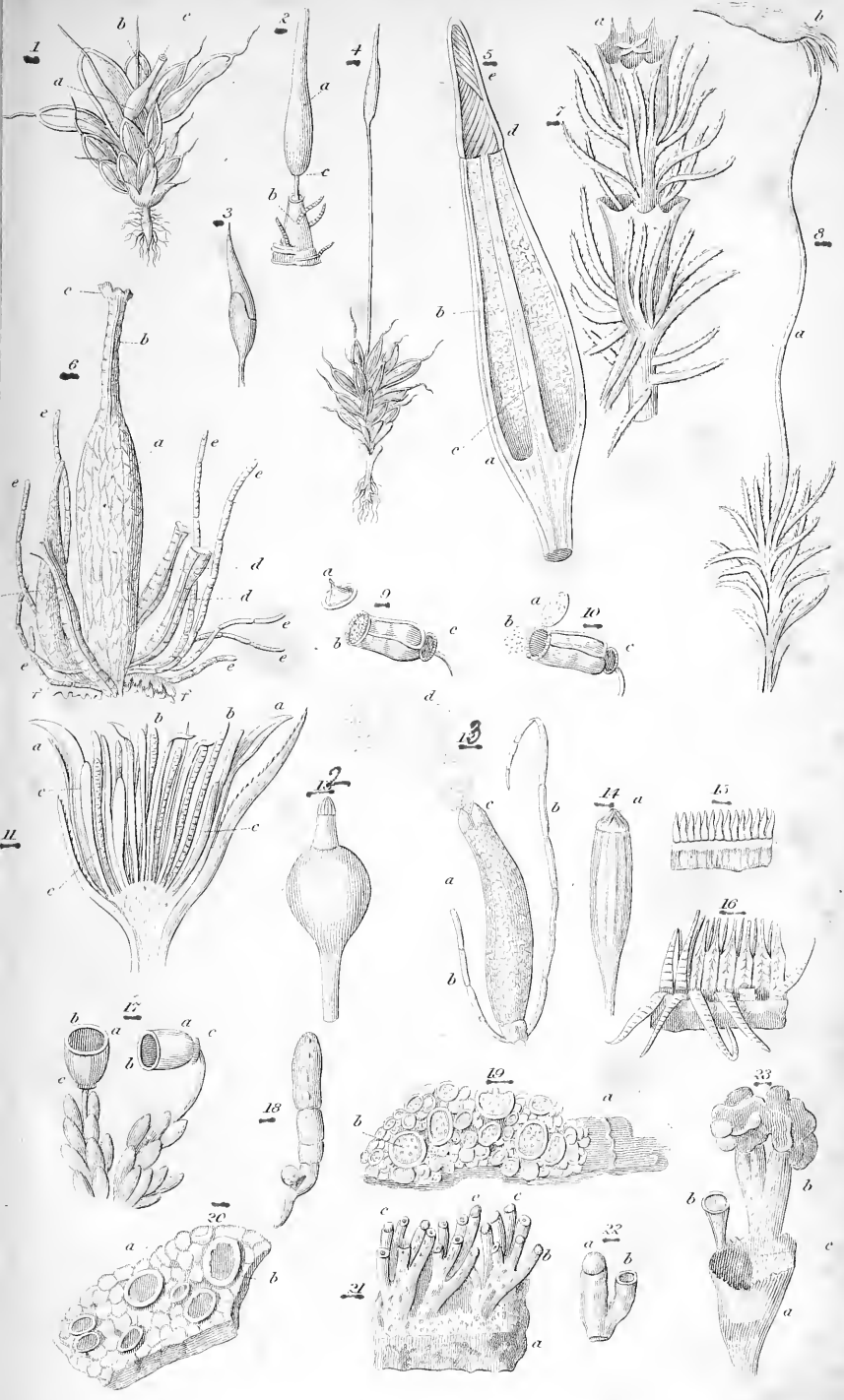
b. Seminules contained in the cavity of the urn.

c. Columella.

d. Operculum of the urn.

e. Teeth of the peristome twisted spirally.

Fig. 1. 2. 3. 4. 5. 6 Tortula muralis
7. 8. 9. 10. 11. 13 Polytrichum commune
12 Splachnum ampullaceum
14. 15 Grimmia apocarpa
16 Hypnum cupressiforme
17 Sphagnum palustre



J. Sowy. sculp.

London, Published by Baldwin, Cradock & Joy, Paternoster Row. Nov. 1st 1821.

Fig. 6. The female flower of the same, stripped of the perichætium, and very much magnified.

a. Ovary.
b. Style.
c. Stigma.
d. Abortive female flowers.
e. Paraphyses.
f. Clinanthe.

Fig. 7. Polytrichum commune. *Musci.* Proliferous stem magnified.

a. Bracteæ united into bellshaped perichætia containing male flowers.

Fig. 8. Stem of the same, bearing the fruit, showing the pedicell, and urn covered with its hairy calyptra.

Fig. 9. Urn of the same, with the operculum taken off: the whole magnified.

a. Operculum.
b. Peristome with its epiphragm.

Fig. 10. Urn of the same, the calyptra, the operculum, and the epiphragm taken off; the whole magnified.

a. Epiphragm.
b. Seminules dispersing.

Fig. 11. A male perichætium of the same cut vertically, and very much magnified.

a. The bracteoles.
b. Paraphyses.
c. Stamens.

Fig. 12. Splachnum ampullaceum. *Musci.* Fruit magnified.

a. Urn, with the calyptra and operculum taken off.
b. Apophysis very large, cruetlike.
c. Peristome simple, eight-toothed.

Fig. 13. A stamen of polytrichum commune, with two paraphyses placed on water, and very much magnified.

a. The stamen.
b. Paraphyses.
c. The beak-like opening at the tip of the stamen.
d. The fecundating fluid discharged through the beak, and floating on the water.

Fig. 14. Grimmia apocarpa. *Musci.* Fruit, the calyptra and operculum being taken off, magnified.

a. Peristome.

Fig. 15. Peristome of the same detached from the urn, spread out and much magnified, to show the sixteen teeth

Fig. 16. Hypnum cupressiforme. *Musci.* Peristome split, laid open, and magnified, to show the fringe and teeth.—Peristome double; teeth 16, lanceolate; ciliæ 16, opposite, membranaceous, united at bottom; bristles 16, interposed.

Fig. 17. Sphagnum palustre. *Musci.* Part of the plant magnified; surcule branched, leaves oval, blunt, concave, tiled-like; pedicell short; urn ovoid, upon a disk-like apophysis; peristome 0.

a. Urn, the calyptra and operculum being taken off.

b. Orifice naked.

c. Apophysis.

Fig. 18. Gymnostomum pyriforme. *Musci.* Germination of its seminule, as observed by Hedwig, very much magnified; showing the seminule throwing out a radicle, and a succulent thread, considered as a cotyledon, which appears to be jointed, and having nipples which elongate into branches.

Fig. 19. Variolaria tumida. *Lichenes.* Entire plant magnified.

a. Thallus thin, crustlike, growing upon trees.

b. Patellules whitish, convex at first, slightly concave afterwards.

Fig. 20. Patellaria ocellata. *Lichenes.* Entire plant magnified.

a. Thallus adherent to stones, solid, crustlike, wrinkled, areolated, greyish white.

b. Scutelles black, concave; edge elevated, of the colour of the thallus.

Fig. 21. Isidium corallinum. *Lichenes.* Entire plant magnified.

a. Thallus.

b. Podetia solid, cylindrical, branched, crowded, whitish.

c. Terminal globules.

Fig. 22. Tips of the podetia of the same.

a. A globule still adhering to the podetia.

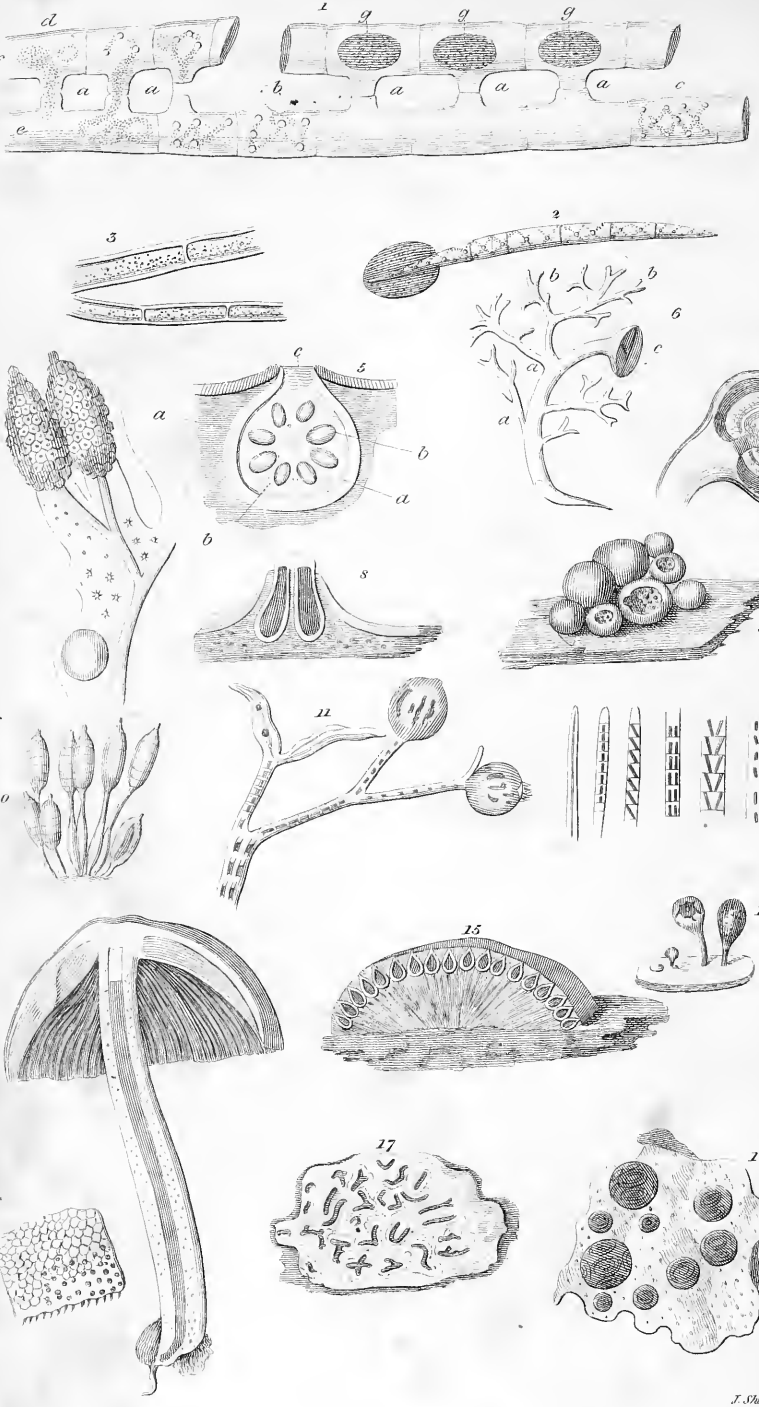
b. Pitt remaining after the globules have fallen off.

Fig. 23. Cenomyce pyxidata. *Lichenes.* Entire plant.

a. Podetium proliferous, fistular, funnelshape at top.

b. Podetia growing on the edge of the lower podetium.

c. Cephalodium thick, irregular, sinuous, brown.



J. Sharp sculp.

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PLATE THE TWENTY-FIRST.

Asphyllous Plants.

Fig. 1. Conjugata decimina. *Hydrophytæ.* Two plants coupled together, and very much magnified.

a. The several cells that are coupled together.

b. A cell throwing out a tube to meet that of the opposite cell, of the other plant.

c. Cells in which small grains are to be perceived, disposed in a spiral form, as they appear before the coupling of the plants.

d. Grains passing out of the cell of one plant into the conjoined cell of the other plant.

e. The cell that is being emptied.

f. The cell into which the grains are passing.

g. Seminules that have arisen from the union of the grains of the two plants.

Fig. 2. A seminule of the same, which has ruptured its cell, and is in a state of germination.

Fig. 3. Conferva rivularis. *Hydrophytæ.* Part of the plant very much magnified, as it floats in rivulets: the cells filled with an immense number of small grains, appearing to be seminules, which by enlarging rupture the mother plant and disperse.

Fig. 4. Fucus vesiculosus. *Thalassiophytæ.* Part of the frond.

a. Tubercles terminal, containing a great number of ostiolated conceptacles.

b. Mouths, or ostioles of the conceptacles.

c. Starlike hairs sprinkled over the surface of the frond, called stamens by Reaumur, and considered by him as excretory organs.

d. Bladders, globular, frequently in pairs.

Fig. 5. A part of a tubercle of the same, containing a conceptacle cut through vertically, and very highly magnified.

a. The conceptacle.

b. Elytræ ovoid, floating in a mucilage.

c. Ostiole, or mouth of the conceptacle.

Fig. 6. Sphærophoron coralloides. *Idiothalameæ.* A part of the plant magnified.

a. Podetium solid, cylindrical, branched.

b. Branches divaricated.

c. A cistule.

Fig. 7. A cistule of the same, cut transversely, and very much magnified.

a. Fibrous fungosity, supporting the seminules.

b. Seminules escaped from the cistule.

Fig. 8. Sphæria stigma. *Sarcothalameæ.* Cut vertically as it grows within the bark of the hazel-nut-tree, and very much magnified.

a. Partition dividing the sphærule into two cells.

Fig. 9. Physarum. *Fungi.* Several plants as they grow on dead timber, magnified.

a. Peridium cracked at top, showing the internal cells containing the seminules.

Fig. 10. Puccinia rosæ. *Protomyci.* A group of plants as they grow on the under surface of the leaves of the rose-tree; very much magnified.

a. Pedicell transparent, swelled out at bottom.

b. Peridium black, oblong, pointed, many-celled, partitions transverse.

c. A very young plant.

d. An old plant, the peridium of which is torn, and the seminules have escaped.

Fig. 11. Ceramium polymorphum. *Thalassiophytæ.* Extremity of a branch very much magnified.

a. Conceptacles globular, solitary, sessile, just under the tip.

b. Small pappus on the tip of the conceptacles.

c. Extremity of a branch, extending beyond the conceptacle.

d. Barren branch, terminated by two small lanceolate frondilles.

Fig. 12. Girardia atropurpurea. *Hydrophytæ.* Parts of the plants, as they float in water, very much magnified.

a. A young filament, having only a dark line, without any appearance of cells.

b. A filament in a more advanced state of growth, in which the partitions begin to be visible, with a small rectangular seminule in each.

c. A filament still more advanced in growth, in which the seminules have changed their position.

d. A filament containing two seminules in each cell.

e. A filament in which the two seminules have changed position.

f. A filament in which the cells are become obliterated, and being ruptured, let the seminules escape.

Fig. 13. Agaricus coprophilus. *Hymenotheceæ.* Plant cut vertically.

a. Stem pipelike.

b. Pileus lamellar beneath; gills radiated, scytheshape, unequal.

c. Umbilicus.

Fig. 14. Part of a gill of the same, very much magnified.

a. Seminules.

b. Fringed edge, taken by Micheli for stamens, and by Hedwig for stigmata.

c. Seminules separated from the gill, which served them as a placentarium.

Fig. 15. Sphæria. *Sarcothalameæ.* A part of the plant cut vertically, and magnified.

a. Spherules ovoid, enchased in the stroma.

b. Strome upon the bark of a tree.

Fig. 16. Calycium sphærocephalum. *Idiothalameæ.* Entire plant magnified.

a. Thallus adherent on bark of old trees, very thin, scarcely visible.

b. Podetion simple, upright, black.

c. Pileus topshape, black.

Fig. 17. Opegrapha. *Idiothalameæ.* Entire plant magnified.

a. Thallus adherent on the bark of trees, crustlike, flaky, thin, split, irregular, whitish.

b. Lirelles branchy, black.

Fig. 18. Umbilicaria murina. *Cœnothalameæ.* Entire plant magnified.

a. Thallus free, membranaceous, leatherlike, wavy, brown.

b. Gyromes sessile, hemispherical, black.

THE

NATURAL ARRANGEMENT

OF

BRITISH PLANTS.

PLANTS.

NATURAL BODIES formed of dissimilar parts, of an organic structure, and although entirely destitute of the power of voluntarily moving from place to place, or of any organs of sensation, yet possessed of a living principle by which they grow and increase, acquiring nourishment, not by the ingestion of their food into an internal organ, *i. e.* a stomach, the assimilation of one part and the rejection of the remainder, but by the intus-susception of liquid matters through a portion of their external surface, generally by the part, *root*, buried in the ground: capable of producing other individuals similar to themselves, either by the thrusting forth and subsequent spontaneous separation of sporæ, gongyli, or turiones, organized from the first similarly to themselves, and expanding without fecundation, or by the formation and dispersion of a kind of eggs, *seeds*, produced in one set of reproductive organs, the *pistills*, fecundated and rendered capable of expansion into a plant similar to its parent by the intromission of a fluid secreted by a different set of organs, the *stamens*, placed either upon another individual, more commonly on the same but separate, and still more commonly within the same covers, or *flowers*. These reproductive organs, when present, are rarely solitary, usually numerous, in each individual, and enclosed in two covers, the inner cover, or *bloom*, of a gay and lively colour, seldom uncovered. The

seed-bearing, or female organs of Linnæus, usually occupying the centre of the flower, and single; the fecundating, or male organs of Linnæus, generally more numerous, mostly five, surrounding the females in a circle: neither of these organs serving for more than a single fecundation and production of seeds, but withering and falling off, although new organs of the same kind are frequently produced on the same plant in the following years. The fecundation effected by the motion of the atmosphere, or the passage of insects, either carrying the fecundating liquid from the one organ to the other, or occasioning the approach of the two organs, and the moisture of the one then causing the rupture of the other, and the consequent emission of the fecundating fluid. The seeds sometimes growing until they become similar to their parent before they fall off and are dispersed.

PLANTS are primarily divided into three series.

1. PLANTÆ CELLULOSÆ.

Structure cellular; *embryo* 0, reproduced by sporæ.

2. PLANTÆ ENDOGENÆ.

Structure vascular; *trunk* cylindrical, homogeneous, the centre youngest; *embryo* undivided; cotyledon 1; plumule extra-axile.

3. PLANTÆ EXOGENÆ.

Structure vascular; *trunk* conical, composed of wood covered with bark, the outer part of the wood youngest; *embryo* divided; cotyledons 2 or many; plumule axile.

Series I. PLANTÆ CELLULOSÆ.

PLANTS composed entirely of cellular texture, having neither lymphatic, spiral, nor proper vessels, nor any cortical pores. *Corculum* simple; *cotyledons* 0; *propagation* mostly gemmaceous.

Divided into two subseries: A, aphylleæ; B, foliaceæ.

Subseries I. A. PLANTÆ CELLULOSÆ APHYLLEÆ.

Fungi and *Algæ*, Linnæus. *Gynœciæ*, Stokes. *Anandræ*, Link.

Plants similar in all their parts, formed into an universal receptacle, *thallus*, or several partial receptacles, *thecæ* either loose, or fastened to the place of growth by peltate or fibrous holdfasts; absorbing their nutriment by their whole surface. *Propagation* by budlike spores, which are generally enclosed in sporidia, and these sporidia placed in or upon the receptacles.

FAMILIES.

1. *Aquatic or marine: thallus filamentous, or membranaceous, often green.* Algæ.

Thallus tubular; *plants* aquatic, greenish;
sporidia in the tubes ..... HYDROPHYTÆ. 1.
Thallus fibrous, or netted; *plants* marine;
sporidia in thecæ or in the thallus
THALASSIOPHYTÆ. 2.

2. *Terrestrial or parasitical: thallus crustaceous, or leatherlike, green when wet, and grazed; sporidia enclosed in apothecia of various construction.* Lichenes.

Thallus corklike or fleshy;
apothecia dissimilar, covered SARCOTHALAMEÆ. 3.
Thallus crustaceous or leatherlike;
apothecia dissimilar, covered .. IDIOTHALAMEÆ. 4.
Thallus crustaceous or leatherlike;
apothecia dissimilar, naked .. CŒNOTHALAMEÆ. 5.
Thallus leatherlike or cartilaginous;
apothecia similar ..... HOMOTHALAMEÆ. 6.

3. *Terrestrial or parasitical: thallus threadlike or fleshy, not green, sometimes wanting.* Fungi.

Thallus 0; *sporidia* free, naked, or in
a simple theca ..... PROTOMYCEÆ. 7.
Thallus threadlike, sometimes jointed;
sporidia attached, naked ..... NEMATOMYCEÆ. 8.
Thallus 0; *sporidia* scattered in
a bladder-like theca ..... GASTEROMYCEÆ. 9.

Thallus solid, fleshy; covering membranaceous; *sporidia* scattered within the substance ..... SARCOTHECEÆ. 10.

Thallus cellular, fleshy; *sporidia* in oblong thecæ on the membranaceous covering ..... HYMENOTHECEÆ. 11.

Thallus fleshy; *sporidia* in longitudinal thecæ on the deliquescent covering ..... LYTOTHECEÆ. 12.

Fam. I. 1. HYDROPHYTÆ. *Algarum pars*, Linnæus and Jussieu.

Thallus tubular, membranaceous, leatherlike or gelatinous, continuous or jointed; tubes filled with sporidia; *sporidia* globose or elliptical; *plant* aquatic, rarely marine.

A. *Thallus not jointed; sporidia transverse, in a single longitudinal row, within the tube.* Oscillatorideæ.

Threads gelatinous, simple, several together enclosed in a cylindrical sheath ... VAGINARIA. 1.

Threads gelatinous, simple, decumbent, upon a gelatinous stratum ..... OSCILLATORIA. 2.

Threads gelatinous, simple, decumbent, free, tranquil ..... HUMIDA. 4.

Threads gelatinous, tufted, upright, free, tranquil ..... ELISA. 4.

Threads gelatinous, upright from a common centre, forming a mass ..... RIVULARIA. 5.

Threads leatherlike, free ..... SCYTONEMA. 6.

B. *Thallus not jointed; sporidia in many transverse annular series.* Bangideæ.

Sporidia globular ..... GIRARDIA. 7.

C. *Thallus not jointed; sporidia in tufts, on the inside of the tube.* Lemanideæ.

Threads torulose; *sporidia* elliptical ..... LEMANIA. 8.

D. *Thallus not jointed; sporidia scattered in the tube and branches.* Vaucherideæ.

Thallus pinnate; *branches* linear ..... BRYOPSIS. 9.

Thallus mostly branched; *branches* bladdery ..... VAUCHERIA. 10.
Thallus entangled, in a determinate form; *branches* clublike ..... CODIUM. 11.

E. *Thallus jointed, filamentous; filaments flat, brittle.* Diatomideæ.

Joints not banded; *sporidia* in transverse lines ..... FRAGILARIA. 12.
Joints banded transversely, with a central spot ..... BIDDULPHIA. 13.
Joints banded longitudinally ..... DIATOMA. 14.

F. *Thallus jointed, filamentous; filaments cylindrical, coupling.* Conjugatideæ.

Filaments parallel; *granules* spiral ... CONJUGATA. 15.
Fil. parallel; *granules* 2-dotted ..... ZYGNEMA. 16.
Fil. bent; *granules* scattered; *sporæ* elliptical, in the joint ..... CHOASPES. 17.
Fil. bent; *granules* scattered; *sporæ* cruciform, in the contracted joint ... AGARDIA. 18.
Fil. bent; *granules* scattered; *sporæ* round, in the transverse tubes ... SERPENTINA. 19.

G. *Thallus cylindrical, anastomosing, netlike.* Hydrodictyanideæ.

Filaments anastomosing; *sporæ* netlike HYDRODICTYON. 20.

H. *Thallus cylindrical, simple, or branched, not coupling, nor anastomosing.* Confervideæ.

Thallus from a common base; *branches* pointed, pellucid ..... MYRIODACTYLON. 22.
Thallus from a common base; *branches* obtuse, clublike ..... LEATHESIA. 23.
Thallus from a common axis ..... CHÆTOPHORA. 21.
Thallus uniform, simple or branched .. CONFERVA. 25.
Thallus difform; *branches* pencil-shaped, jointed ..... DRAPARNÂLDIA. 24.

A. OSCILLATORIDEÆ. *Thallus* cylindrical, tubular, jointless, membranaceous, gelatinous, or rather leatherlike, mostly unbranched; *sporidia* ringlike, often becoming globular, in a single, parallel, transverse series within the tube, so that the tube appears annulated, with a pellucid border and interstices.

Gen. I. 1. VAGINARIA. *Sheath-moss.*

Threads simple, gelatinous, parallel, decumbent, enclosed several together in a slippery membranaceous sheath; ends exserted, radiating, oscillating—Green.

Vaginaria vulgaris. *Common sheath-moss.*

Sheath simple or branched, glaucous green, slippery; *threads* equal, rings weak.

Oscillatoria vaginata, *Vaucher*, 202.
Conferva vaginata, *Dillwyn Syn.* 40; *Engl. Bot.* 1995.
Oscillatoria autumnalis vaginata, *Agardh Syn.* 107.
Oscillatoria chthonoplastes β, *Lyngbye Hydr. Dan.* 92.

Damp gravel-walks, garden-pots.

Tuft blackish or bluish green; *sheath* twining, attenuated; when cut or pressed, it divides into smaller plants of the same kind, these interior plants being thrust out at the end or bursten sides gives it a branched appearance; grows very quickly.—Another species of this genus grows at the bottom of the sea, where, by fixing the sand, it favours the deposition of mud.

II. 2. OSCILLATORIA, Vaucher. *Quick-moss.*

Threads simple, membranaceous, gelatinous, straight, decumbent on a gelatinous, slimy bed; oscillating.—*Plant* aquatic.

1. *Oscillatoria limosa.* *Mud quick-moss.*

Bed blackish green, slippery, very compact; *threads* radiating, very long, stiff, straight, bluish green.

Conferva limosa, *Roth Catal.* 3, 197.
Conferva fontinalis, *Dillwyn*, 64, partly.
Oscillatoria Adansonia, *Vauch.* 194.
Oscillatoria limosa, *Agardh Disp. Alg.* 33.

Bottom of still waters; becoming free in the spring.

Threads entangled; *radii* an inch long, blunt, oscillate very lively; *rings* very close.

2. *Oscillatoria nigra.* *Black quick-moss.*

Bed black, slippery; *threads* radiating, very long, stiff, straight, grayish yellow.

Oscillatoria nigra, *Vauch.* 192.
Conferva fontinalis, *Dillwyn*, 64, fig. and partly the description.

Bottom of running waters; becoming free in the spring.

Threads entangled; *radii* about an inch long, blunt, oscillating very lively; *rings* rather distant.

3. *Oscillatoria tenuis.* *Slender quick-moss.*

Bed green, slippery; *threads* radiating, short, rather stiff, straight, light green.

Conferva gelatinosa, omnium tenerrima et minima, aquarum limo innascens, *Dillen in Raii Syn.* 477.
Oscillatoria viridis, *Vaucher* 195.
Conferva fontinalis, *Roth Catal.* 3, 195.
Conferva limosa, *Dillwyn Syn.* 30; *Engl. Bot.* 2058.
Oscillatoria tenuis, *Agardh Decad.* 2, 17.

Still waters on mud; Summer.

Threads half an inch long, very slender; *rings* very close.

4. *Oscillatoria tenuissima.* *Very-slender quick-moss.*

Bed velvetty, shaggy, dark green; *threads* crowded in ascending tufts, straight, rather stiff, pellucid, very slender.

Conferva tenuissima, *Engl. Bot.* 2584.
Oscillatoria tenuissima, *Agardh Disp. ed.* 2, 33.

Warm springs, as at Bath.

Beds very irregular; *threads* about one-hundredth of an inch in diameter.

5. *Oscillatoria? ochracea.* *Ochry quick-moss.*

Bed thick, ochre brown, brittle; *threads* very slender, yellowish green, incumbent.

Conferva ochracea, *Roth Cat.* 1, 165; *Dillw.* 162.
Oscillatoria ochracea, *Lyngbye Hydr. D.* 89.

In chalybeate springs.

Bed thick, slippery, drying to an ochry powder; *threads* slightly bent; *rings* very close, intermixed with distant ones.

III. 3. HUMIDA. *Humida.*

Threads simple, membranaceous, bent, entangled, decumbent, free, not oscillating, nor lengthening.—Damp, shady places.

1. *Humida muralis.* *Wall humida.*

Threads green, rather stiff, bent, twining, rather thick, entangled so as to form a close green matt.

Conferva muralis, *Roth Cat.* 3, 187; *Dillw.* 7; *Engl. Bot.* 1554.
Conferva rigida, *Roth. Cat.* 1, 166.
Oscillatoria parietina, *Vauch.* 196.
Oscillatoria muralis, *Agardh Disp.* 1, 27.

Garden-walls, damp areas; all winter.

2. *Humida decorticans.* *Slip-coat humida.*

Threads very slender, bluish green, bent, entangled into a very close green mat.

Conferva muscosa confragosa rivulis innascens, *Dillen. Musc.* 15.
Conferva confragosa, *Lightf. Scot.* 976.
Conferva violacea, *Hudson Fl. Angl.* 592.
Conferva decorticans, *Dillwyn*, 26.
Oscillatoria decorticans, *Lyngbye Hydr. Dan.* 95.

Damp woods and bark of trees; summer.

Threads three times as slender as those of humida muralis.

3. *Humida cyanea.* *Sky-blue humida.*

Threads very slender, glaucous blue, covered with a deciduous coat, entangled into a close sky-blue mat.

Conferva cyanea, *Engl. Bot.* 2578.
Oscillatoria cyanea, *Agardh Disp. ed.* 2, 33.

Damp walls and stones.

IV. 4. ELISA. *Elisa.*

Threads simple, rarely adhering to one another, as if branched, membranaceous, gelatinous, upright, tufted, free, not oscillating, nor lengthening.

1. *Elisa fontinalis.* *Spring elisa.*

Fresh water; threads simple, very slender, nearly hyaline, rather stiff, upright, short, forming a dark green mat.

Conferva fontinalis fusca omnium minima mollis, *Dillen in Raii Syn.* 58.
Conferva fontinalis, *Fl. Dan.* 651; *Engl. Bot.* 2054.
Oscillatoria fontinalis, *Agardh Syn.* 110.

Stones and posts in water; summer.

Tufts very small, dark or light green; *threads* aggregated, a quarter of an inch long, straight; adheres to paper.

2. *Elisa bicolor.* *Two-coloured elisa.*

Fresh water; threads simple, slender, bright green, weak, very long, forming a bright green fluctuating mat.

Conferva bicolor, *Engl. Bot.* 2288.

Stones in rapid rivulets.

Rings close, rounded off at each end, leaving pellucid intervals here and there.

3. *Elisa distorta.* *Mis-shapen elisa.*

Fresh water; threads branched, bluish green, rather stiff, upright, tufted.

Conferva distorta, *Engl. Bot.* 2577.
Oscillatoria distorta, *Agardh Disp. ed.* 1, 37.

Decayed grass in boggy pools.

Tufts thick, short; *threads* equal, entangled; *branches* rather distant.

4. *Elisa mirabilis.* *Wonderful elisa.*

Fresh water; threads rather short, stiff, bluish green, bending and uniting side by side at the bend, entangled into a close mat.

Conferva mirabilis, *Dillwyn* 96.

Fresh waters.

Rings very close.

5. *Elisa genuflexa.* *Kneebent elisa.*

Marine; threads rather short, stiff, pale blue, bending and uniting side by side at the bend, entangled into a close mat.

Conferva mirabilis, *Engl. Bot.* 2219.

On marine plants.

Tufts half an inch high, uniting and divaricating, then uniting again; covered with a rather horny coat; *sporangia* as long as broad.

6. *Elisa majuscula.* *Largish elisa.*

Marine; threads very long, yellowish, entangled into a very dense, cylindrical, oblong, fluctuating mat.

Oscillatoria majuscula, *Jurin Alg. Dec.* 4, 7.
Oscillatoria æruginosa violacea, *Agardh Syn.* 109.

Floating in the sea and on zostera marina.

Tufts four inches long and three broad, blunt, brown or blackish; *threads* equal; *rings* very close.

β. *ramosa. Filaments* uniting as if branched, either by the end, or side by side.

Conferva majuscula, *Dillwyn Syn.* 40, 15.

7. *Elisa scopulorum.* *Rocky-shore elisa.*

Marine; threads green, rather stiff, twining, pointed, very short, forming an upright, close, blackish green mat.

Conferva scopulorum, *Weber et Mohr Suec.* 195; *Engl. Bot.* 2171.
Oscillatoria scopulorum, *Agardh Disp. ed.* 1, 37.

Rocks, planks, and large marine plants.

Tufts very close, very thin; *threads* not branched, agglutinated at bottom; *rings* very close.

8. *Elisa confervicola.* *Conferva elisa.*

Marine; threads simple, verdigris green, rather stiff, upright, attenuated, short, slightly bundled together.

Conferva marina, parasitica tenuissima et brevissima glauca, *Dillen Musc.* 552.
Conferva confervicola, *Roth Cat.* 3, 193; *Dillw.* 8.
Oscillatoria confervicola, *Agardh Disp. ed.* 1, 37.

On cylindrical marine plants; summer.

Threads a line long, in scattered minute tufts, upright, often hyaline, free at bottom.

9. *Elisa zostericola.* *Glasswrack elisa.*

Marine; threads simple, brown, rather stiff, upright, attenuated, very short, in tufts.

Conferva zostericola, *Fl. Dan.* 1599, 1.
Oscillatoria Mucor, *Agardh Disp.* 3, 27.
Oscillatoria zostericola, *Lyngbye Hydr. Dan.* 94.

On zostera marina.

Tufts brownish, about a quarter of an inch long; *threads* very slender.

V. 5. RIVULARIA. Agardh. *Rivulet-moss.*

Filaments gelatinous, membranaceous, not branched, straight, attenuated, not oscillating, arising from a common centre, forming a gelatinous, globular or elongated blackish green mass.

1. *Rivularia atra.* *Deep-black rivulet-moss.*

Marine; tufts hemispherical, solid, very hard, shining; *threads* straight, pointed, agglutinated at bottom, free at top, hyaline, greenish.

Tremella hemispherica, *Linn. Syst. Nat.* 2, 714.
Fucus Tremella hemispherica, *Gmel. Hist. Fuc.* 225.
Batrachospermum hemisphericum, *De Cand. Fl. Fr.* 2, 591.
Chætophora atra, *Agardh Disp. ed.* 1, 43.
Rivularia atra, *Roth Cat.* 3, 340; *Engl. Bot.* 1798.
Linckia hemispherica, *Schumach. Enum.* 2, 114.
Linckia atra, *Lyngbye Hydr. Dan.* 195.

Stones and posts in the sea, also on fuci.

Tufts 1 or 2-tenths of an inch in diameter, mostly single.

2. *Rivularia natans.* *Floating rivulet-moss.*

Fresh-water; tufts globular, hollow; *threads* stiff, not branched, attenuated; *sporidia* nearly globular.

Tremella utriculata, *Huds. Fl. Angl.* 564.
Tremella natans, *Hedwig Theor. gen.* 2, 218.
Rivularia angulosa, *Roth Cat.* 3, 340.
Ulva pruniformis, *Eng. Bot.* 968, not of Linnæus.

Boggy ditches and ponds.

Tufts of various sizes, brownish or greenish; *threads* very stiff, attenuated; *sheath* thin, transparent at the base of the threads.

3. *Rivularia dura.* *Hard rivulet-moss.*

Fresh-water; tufts globular, solid, hard, green; *threads* not branched, straight, agglutinated together at bottom, free above, awlshape; *rings* inconspicuous.

Tremella globulosa, *Roth Fl. Germ.* 3, 551.
Tremella verrucosa, *Roth Fl. Germ.* 3, 554.
Rivularia dura, *Roth Cat.* 3, 338.

On aquatic plants; annual; summer.

Tufts the size of a large pin's head.

4. *Rivularia nitida.* *Shining rivulet-moss.*

Fresh-water; tufts hemispherical, solid, hard, shining, black-green; *threads* very close, equal, very slender, light green.

Rivularia calcarea, *Engl. Bot.* 1799.
Rivularia nitida, *Agardh Disp. ed.* 1, 44.

Inundated places and sides of rivers.

Tufts about a quarter of an inch in diameter, often uniting and forming an uneven bed.

VI. 6. SCYTONEMA. Agardh. *Leather-thread.*

Threads nearly leatherlike, free, not gelatinous, simple or branched, orange-colour in dark and blackish tufts.—Inundated places; appearing like lichens, and being perhaps the young state of some of their families.

a. *Branches given out at right angles.*

1. *Scytonema myochrous.* *Mouseskin leather-thread.*

Threads olive yellow, very closely entangled into a blackish brown mat; *branches* in pairs, simple, facing one way; *sporidia* ringlike.

Conferva myochrous, var. *Dillw. Syn.* 37; *Engl. Bot.* 1555.
Scytonema myochrous, *Agardh Disp. ed.* 1, 38.

Caves and sides of rocks.

Tufts green when dry; *threads* olive-yellow, rather weak, slightly attenuated, branches coming out at right angles; *sporidia* black, rarely globular.

2. *Scytonema seriatum.* *Rowed leather-thread.*

Tufts very thickly entangled, blackish brown; *threads* slender, purplish brown; *branches* in pairs, facing one way; *sporidia* roundish.

Conferva myochrous, *Dillw.* 19; *Engl. Bot.* 1555.
Conferva seriata, *Wahl Fl. Lap.* 984.
Scytonema myochrous inundatum, *Agardh Disp. ed.* 1, 39.

Alpine inundated places.

Tufts a quarter of an inch thick, wool-like; *threads* twice as long.

β. *simplex.* *Tufts* brown-green; *thread* simple, very rarely emitting branches.

Scytonema myochrous simplex, *Agardh Disp. ed.* 1, 38.

3. *Scytonema ocellatum.* *Eyed leather-thread.*

Tufts very dense, blackish; *threads* very slender, orange, weak; *branches* facing one way, simple; *sporidia* beadlike.

Conferva ocellata, *Dillw. Syn.* 60; *Engl. Bot.* 2530.
Scytonema myochrous ocellatum, *Agardh Disp. ed.* 1, 38.
Scytonema ocellatum, *Lyngbye Hydr. Dan.* 97.

Floating wood and fresh-water plants in alpine lakes.

Threads slightly bent; *branches* sometimes solitary.

b. *Branches rodlike.*

4. *Scytonema comoides.* *Wiglike leather-thread.*

Tufts loose, iron black; *threads* bent, hair-brown; *branches* single, rather distant, ascending, truncated at the tip.

Conferva rufa, *Roth Cat.* 3, 280?
Conferva araneosa, *Mohr in Schrad. Journ.* 1806, 196.
Conferva comoides, *Dillw.* 27; *Engl. Bot.* 1700.
Scytonema comoides, *Agardh Syn.* 112.

Stones on the shores, and marine plants.

Tufts oblong; *threads* much branched, an inch long; *sporidia* beadlike.

5. *Scytonema radicans.* *Rooting leather-thread.*

Tufts dark olive-brown, loose; *threads* creeping, straight, rather stiff; *branches* single, simple, scattered, upright, blunt, thinner at bottom.

Conferva radicans, *Dillw. Syn.* 57; *Engl. Bot.* 2138.

Rocks covered by the sea; August.

Tufts an inch thick; *sporidia* globular.

B. BANGIDEÆ. *Thallus* tubular, cylindrical, not jointed, membranaceous, leatherlike, simple or branched; *sporidia* elliptical, globular, in several parallel transverse series, afterwards free, in the tubes.

VII. 7. GIRARDIA. *Girard.*

Sporidia spherical.

1. *Girardia atrovirens.* *Blackish-green girard.*

Threads branched, stiff; *branches* coriaceous, scattered, divaricated; *sporidia* 3 or 4, in each transverse series.

Lichen pubescens? *Linn. Fl. Suec.* 1126.
Conferva atrovirens, *Dillw.* 25.
Scytonema atrovirens, *Agardh Disp. ed.* 1, 39.
Cornicularia pubescens, *Acharius Syn. Lich.* 302.
Bangia atrovirens, *Lyngbye Hydr. Dan.* 85.

Rocks.

Tufts 3 inches long, black; *threads* aggregated, upright at bottom, then decumbent, very much branched; *branches* thinner at both ends, spreading.

β. *prolifera.* *Threads* hispid, spinulose.

Scytonema atrovirens prolifera, *Agardh Disp. ed.* 1, 39.
Cornicularia pubescens hispidula, *Acharius Syn. Lich.* 302.

2. *Girardia fuscopurpurea.* *Brownish-purple girard.*

Threads simple, straight, unequally torulose; *sporidia* many in each transverse series.

Conferva fusco-purpurea, *Dillw.* 92.
Oscillatoria fusco-purpurea, *Agardh Disp. ed.* 1, 34.
Bangia fusco-purpurea, *Lyngbye Hydr. Dan.* 83.

Piles and stones in the sea.

Tufts pendulous; *threads* aggregate, a quarter of an inch long, elastic, blunt; *sporidia* 4 to 10 in each series.

β. *atropurpurea.* *Threads* blackish purple.

Conferva atropurpurea, *Dillw.* 103.
Conferva trichodes, *Ducluz. Essai*, 30.
Oscillatoria atropurpurea, *Agardh Syn.* 109.
Bangia fuscopurpurea β, *Lyngbye Hydr. Dan.* 83.

On piles, just below the surface of the sea.

Holdfasts fibrous.

C. LEMANIDEÆ. *Thallus* tubular, cylindrical, not jointed, torulose, inflated at intervals, cartilaginous, membranaceous, regularly cellular; *sporidia* in branched, beaded filaments in pencilshaped tufts, scattered on the inner surface of the tube, afterwards free and filling the tube.

VIII. 8. LEMANIA. B. de St. Vincent. *Leman.*

Thallus simple or branched, olive green, papillose on the outside; *sporidia* elliptical.—Fresh-water.

1. *Lemania fluviatilis.* *River leman.*

Threads olive-colour; *internodes* cylindrical, 5 times as long as broad; papillæ mostly 3 together; *branches* and second branches narrower at both ends.

Conferva fluviatilis lubrica setosa equiseti facie, *Dillen Musc.* 7, 47.
Conferva fluviatilis, *Lin. S. P.* 1635; *Engl. Bot.* 1763.
Polyspermum fluviatilis, *Vaucher*, 99.
Chantransia fluviatilis, *De Candolle Fl. Gall.* 2, 50.
Lemania corallina, *Bory in Berl. Mag.* 1809, 277.
Nodularia, *Link in Schrad. Journ.* 1809, 9.
Lemania fluviatilis, *Agardh Syn.* 70.
Nodularia fluviatilis, *Lyngbye Hydr. Dan.* 99.

On stones in rapid rivers; summer.

Holdfasts callous, blackish; *threads* numerous, simple or branched, 6 inches long, each knot is composed of 2 or 3 papillæ, brittle when dry.

2. *Lemania torulosa.* *Swollen leman.*

Threads mostly simple, narrower at bottom, generally thicker at top, olive-colour; *internode* about 3 times as long as broad.

Conferva fluviatilis nodosa, fucum æmulans, *Dillen Musc.* 39.
Conferva torulosa, *Mohr in Schrad. Journ.* 1801, 324.
Conferva fluviatilis β, *Engl. Bot.* 1763.
Lemania torulosa, *Agardh Disp.* 28.

In mountain-streams.—A doubtful species.

D. VAUCHERIDEÆ. *Thallus* threadlike, tubular, not jointed, mostly branched, cartilaginous, membranaceous, regularly cellular; *branches* vesicular, clubshape or linear; *sporidia* globose, scattered in the tubes of the thallus, or in the branches or ends of the thallus.

IX. 9. BRYOPSIS. Lamouroux. *Moss-weed.*

Thallus pinnate, tubular, not jointed, membranaceous, gelatinous, cellular; *branches* linear; *sporidia* globose, green, scattered in the stem and branches.—Marine.

Bryopsis arbuscula. *Shrublike moss-weed.*

Thallus rather compressed, bright green, branched; *branches* naked at bottom, pinnate at top; lobes numerous, long, parallel, linear, opposite.

Ulva plumosa, *Hudson Fl. Angl.* 571; *Engl. Bot.* 2375.
Bryopsis arbuscula, *Lamour. Journ. Bot.* 1809, 134.
Fucus arbusculus, *De Cand. Fl. Fr.* 2, 35.

On stones and rocks on the coast.

Thallus 2 inches long; *sporidia* clustering towards the circumference leaving the centre pellucid.

X. 10. VAUCHERIA. De Candolle. *Vaucher.*

Thallus threadlike, tubular, mostly branched above, not jointed, rather stiff, mostly cut, angled; membrane of the threads hyaline; *sporidia* green, minute, globose, scattered in the tube; side-branches vesicular, single or aggregate, elongating into new individuals, or barren incurved.

a. *Vesicles single.*

1. *Vaucheria dichotoma.* *Twoforked vaucher.*

Fresh-water; threads large, tufted, upright, forked at top; *branches* long; *vesicles* globose, scattered, sessile.

Conferva dichotoma, *Lin. Sp. Pl.* 1635; *Dillw.* 15; *Engl. Bot.* 932.
Ceramium dichotomum, *Roth Cat.* 3, 119.
Ceramium cæspitosum maximum, *Roth Cat.* 3, 120.
Vaucheria dichotoma, *Agardh Syn.* 47.

Stagnant waters and ditches; April to August.

Tufts angular, cut, blackish; *threads* angular at bottom, slippery, a foot long.

2. *Vaucheria ovata.* *Ovate vaucher.*

Fresh-water; threads hairlike, rather forked, tessular, peduncled, single, globose; *peduncles* naked, curved.

Ectosperma ovata, *Vaucher*, 25.
Vaucheria ovata, *De Candolle Fl. Fr.* 2, 63.
Conferva bursata, *Muller Nov. Act. Petr.* 3, 96.
Vaucheria bursata, *Agardh Disp. ed.* 1, 21.

Ditches and stagnant waters; April.

Tufts very dense, floating on water; *threads* 9 inches long, simple at bottom, twice as long as the vesicles.

3. *Vaucheria hamata.* *Hooked vaucher.*

Fresh-water; threads hairlike; branches vague; *vesicles* peduncled, solitary, globose; *peduncles* with a barren hook, turned back.

Ectosperma hamata, *Vaucher*, 26.
Vaucheria hamata, *De Cand. Fl. Fr.* 2, 63.

Ditches; April.

Tufts very dense, floating in water; *peduncles* mostly facing one way, 4 times as long as the vesicle.

4. *Vaucheria terrestris.* *Land vaucher.*

Land; threads hairlike, ascending, branched; *ramuli* very short, facing one way; *vesicles* sessile, single, globose.

Ectosperma terrestris, *Vaucher*, 27.
Vaucheria terrestris, *De Cand. Fl. Fr.* 2, 62.

Naked ground, damp shady places; April and August.

Tufts entangled, very dense; upper branches spreading, short; *vesicles* in the fork, or at the side of the branches.

5. *Vaucheria Dillwynii.* *Dillwyn's vaucher.*

Land; threads hairlike, flexuous, branched; *vesicles* nearly sessile, single, globose.

Riccia arachnoidea, *Flor. Dan.* 1, 890.
Ceramium Dillwynii, *Roth Cat.* 3, 117.
Conferva frigida, *Dillw.* 16.
Conferva Dillwynii, *Weber and Mohr, in Dillw.* 16.
Vaucheria Dillwynii, *Fl. Dan.* 1595, 1.

Damp shady places.

Tufts very close; *threads* decumbent, entangled; *vesicles* rarely peduncled; *peduncles* very slight.

6. *Vaucheria granulata.* *Granulated vaucher.*

Land; threads branched, creeping, or buried in the ground; *vesicles* solitary, globular, terminal.

Ulva granulata, *Lin. S. P.* 1633.
Tremella granulata, *Hudson Fl. Angl.* 560; *Engl. Bot.* 324.
Linkia granulata, *Wigg Prim. Fl. Hols.* 94.
Ulva radicata, *Retz. Prodr.* 303.
Vaucheria radicata, *Agardh Disp. ed.* 1, 22.
Vaucheria granulata, *Lyngbye Hydr. Dan.* 78.

Dried-up ditches on clay; ephemeral; autumn.

Threads very short, green above; *vesicles* globular, about the size of mustard-seeds, cracking under the feet.

7. *Vaucheria clavata.* *Clubbed vaucher.*

Marine; threads hairlike, branched at the tip; *vesicles* solitary, in the clublike tips of the reflex branches.

Ectosperma clavata, *Vaucher*, 34.
Vaucheria clavata, *De Candolle Fl. Fr.* 2, 60.
Conferva dilatata, *Roth Cat.* 3, 183.
Conferva vesicata, *Muller N. Act. Petr.* 3, 95.

Salt-water ditches; annual; April and September.

Tufts very densely entangled, an ell long, floating; *branches* divaricating.

8. *Vaucheria ornithocephala.* *Birds-head vaucher.*

Fresh-water; threads branched; *branches* scattered; *vesicles* ovate, obliquely beaked; *peduncles* perpendicular.

Conferva vesicata, *Dillw.* 74.
Vaucheria ornithocephala, *Agardh Syn.* 49.

Ditches; autumn.

Tufts entangled, floating; *threads* scattered, rather straight; *vesicles* 2 or 4 together, 1-sided, resembling a bird's head; *peduncles* very short.

b. *Vesicles in pairs, with a barren branch between them.*

9. *Vaucheria sessilis.* *Sessile vaucher.*

Fresh-water; threads hairlike, branched; *vesicles* sessile, mostly in pairs, ovate, intermediate barren branch turned back.

Ectosperma sessilis, *Vaucher*, 31.
Vaucheria sessilis, *De Candolle Fl. Fr.* 2, 63; *Engl. Bot.* 1765.

Stagnant waters and ditches; April.

Tufts very dense, floating; *vesicles* sometimes solitary.

10. *Vaucheria geminata.* *Doubled vaucher.*

Fresh-water; threads hairlike, forked; *vesicles* in pairs, globose, opposite, on a common horned peduncle; *horn* intermediate, straight.

Ectosperma geminata, *Vaucher*, 29.
Vaucheria geminata, *De Candolle Fl. Fr.* 2, 62; *Engl. Bot.* 1766.

Stagnant ditches; February.

Tufts very close, floating; *peduncles* 3 times as long as broad, horizontal ending in a slightly jointed, barren, straight point.

11. *Vaucheria cæspitosa.* *Turf vaucher.*

Fresh-water; threads hairlike, tufted, forked, branched; *last branches* horizontal, facing one way, vesicle-bearing; *vesicles* in pairs, sessile, terminal, with a short, straight, intermediate point.

Conferva canalicularis, *Lin. S. P.* 1634.
Conferva fontinalis, *Blumenbach in Goett. Mag.* 1781, 80.
Ectosperma cæspitosa, *Vaucher*, 28.
Vaucheria cæspitosa, *Agardh Syn.* 48.

Springs, in clayey soils; April.

Tufts very close, blackish green; *threads* light green, bent at bottom, lying down, above upright; *last branches* horizontal, spreading.

c. *Vesicles numerous.*

12. *Vaucheria racemosa.* *Bunch vaucher.*

Fresh-water; threads hairlike, forked; *vesicles* crowded, peduncled, in racemes.

Ectosperma racemosa, *Vaucher*, 32.
Vaucheria racemosa, *De Candolle Fl. Fr.* 2, 61.

Stagnant ditches; annual; April.

Tufts close, entangled, floating; *threads* bent, branched; *peduncles* coming out at right angles, short, racemose; *vesicles* 4, or many, crowded together.

13. *Vaucheria multicapsularis.* *Many-fruited vaucher.*

Land; threads very minute, creeping, much branched; *branches* upright, simple, thicker at the tip; *vesicles* on the branches, spherical, crowded.

Conferva multicapsularis, *Dillwyn*, 71.
Vaucheria multicapsularis, *Lyngbye Hydr. Dan.* 89.

Damp shady places, among mosses.

Tufts small, entangled, irregular; *threads* appearing as if stoloniferous; *branches* sometimes forked; *vesicles* stuffed with sporidia, sometimes solitary; *sporidia* greenish, cylindrical, oblong.

XI. 11. CODIUM. Stackhouse. *Codium.*

Thallus threadlike, tubular, continuous, very closely entangled into a forked, spherical, or flat dark green spongelike mass; *branches* horizontal, sometimes clublike at the tip, or divided, all pointing to the surface of the mat; *sporidia* granular, green, in the tubes and branches. — *Marine*, dark green becoming white by exposure to the air.

1. *Codium subglobosum.* *Globular codium.*

Mass spherical, hollow.

Bursa marina, *Raii Syn.* 31, 3.
Alcyonium Bursa, *Lin. Syst. Nat.*
Spongidium Bursa, *Lamarcux Essai.*
Fucus subglobosus, *Clementi* in MSS.
Fucus Bursa, *Turner Hist.* 3, 6; *Engl. Bot.* 2183.
Codium Bursa, *Agardh Disp.* 24.

Sea coasts.

2. *Codium dichotomum.* *Two-forked codium.*
Mass nearly cylindrical, threadlike, forked.

Spongia dichotomos teretifolia, viridis, *Raii Syn.* 29, 3.
Spongia dichotomos compressa ex viride splendens, *Raii Syn.* 29, 4.
Fucus tomentosus, *Hudson Fl. Angl.* 584; *Engl. Bot.* 717.
Fucus fungosus, *Des Font. Fl. Atl.* 2, 428.
Spongidium dichotomum, *Lamouroux Essai.*
Codium tomentosum, *Stackh. in Agardh Disp.*

South-west coast; perennial; June and July.
Trunks from a dilated base, many, 6 inches long; fork obtuse-angled; *branches* even-topped, blunt at the tip.

β. *marginifer.* *Mass* two-forked, beset all over with short, horizontal, forked segments.

E. DIATOMIDEÆ. *Thallus* threadlike, tubular, flat, jointed, sometimes united parallelly through their whole length; *joints* often separating but still cohering at the angles; *spordia* granular, enclosed in the joints—often parasitic on marine plants, forming when dry a shining white crystalline crust.

XII. 12. FRAGILARIA. Lyngbye. *Breaking-up.*
Thallus threadlike, jointed, flat, not branched, very brittle; *joints* without any band, separating but cohering by one of their corners; *sporidia* granular, enclosed in the joints.

1. *Fragilaria striatula.* *Streaked breaking-up.*
Threads yellowish green, compressed, even; *joints* shorter than broad, in pairs, regularly streaked tranversely.

Conferva striatula, *Engl. Bot.* 1928.
Fragilaria striatula, *Lyngbye Hydr Dan.* 183.

On rocks and marine plants; April.
Threads about a tenth of an inch long.

2. *Fragilaria tæniæformis.* *Tapeworm breaking-up.*
Threads compressed, pale green, even; *joints* three times broader than long, obscurely variegated.

Conferva tæniæformis, *Engl. Bot.* 1883.
Diatoma? tæniæformis, *Agardh Disp.* 35.

On marine plants; February.
Tufts a twelfth of an inch long.

3. *Fragilaria pectinalis.* *Finlike breaking-up.*

Threads simple, flat, stiff, narrow, very brittle, growing narrower; *joints* three times broader than long, pellucid in the middle.

Conferva pectinalis, *Muller in N. Act. Petr.* 3, 91; *Engl. Bot.* 1611.
Conferva branchialis, *Roth Cat.* 1, 186.
Diatoma pectinalis, *Agardh Disp.* 35.

On decaying leaves in ditches; March.

XIII. 13. BIDDULPHIA. *Biddulph.*

Thallus threadlike, jointed, compressed; *joints* numerous, formed of several longitudinal filaments united together by a transverse pellucid band; *sporidia* granular, purplish, forming a spot under the tranverse band.—Marine plants, green or white.

1. *Biddulphia pulchella.* *Pretty biddulph.*

Threads simple, pale green; *joints* nearly as long as broad, four-cornered, granular, reddish.

Conferva Biddulphiana, *Engl. Bot.* 1762.

On marine plants; November and December.

Threads half an inch long; *sporidia* reddish, scattered; *joints* appearing as if furrowed longitudinally, crenate where they join.

2. *Biddulphia obliquata.* *Crooked biddulph.*

Threads nearly simple, in tufts, brownish white; *joints* aggregated, obliquely four-cornered, connected with the next by one corner.

Conferva obliquata, *Engl. Bot.* 1869, left-hand fig.
Diatoma obliquata, *Lyngbye Hydr. Dan.* 181.

On marine plants.

Joints about as broad as long; *granules* red or brownish.

β. *longa.* *Joints* nearly twice as long as broad.

Conferva obliquata, *Engl. Bot.* 1869, right-hand fig.

3. *Biddulphia stipitata.* *Stipitated biddulph.*

Threads simple, few-jointed, inserted laterally on a long, hairlike stipes; *joints* twice as broad as long.

Conferva stipitata, *Engl. Bot.* 2488.

Covering marine plants.

Tufts golden yellow, when dry greyish; *threads* composed of 3 to 5 joints, twice or thrice as long as broad, rather bent upwards.

XIV. 14. DIATOMA. De Candolle. *Diatome.*

Threads jointed, flat, simple, coupled throughout their whole length; *joints* separating, but remaining adherent by their alternate angles, with a longitudinal band formed by the coupling together of the threads.

1. *Diatoma Swartzii.* *Swartz's diatome.*

Fresh water; threads light-green; *joints* half as long as broad, crenately notched on both edges, when uncoupled triangular.

Diatoma Swartzii, *Agardh Syn.* 118.

Ditches and stagnant waters, among confervæ.

Threads very brittle, slimy, when coupled separating suddenly into joints on the least touch.

2. *Diatoma flocculosum.* *Flocculent diatome.*

Fresh-water; threads hyaline, forming brownish tufts; *joints* rather broader than long, transversely streaked; *band* longitudinal, pellucid.

Conferva flocculosa, *Roth Cat.* 1, 192; *Engl. Bot.* 1761.
Diatoma flocculosa, *Agardh Disp. ed.* 1, 35.

Tuft small; *threads* very minute; *joints* 4-cornered, edge even.

3. *Diatoma tenue.* *Slender diatome.*

Fresh-water; threads very small, reddish and brownish; *joints* 3 times as long as broad, transversely streaked; *band* longitudinal, pellucid.

Conferva flocculosa, *Fl. Dan.* 1487.
Diatoma tenuis, *Agardh Decad,* 10.
Diatoma flocculosa β, *Agardh Syn.* 120.

In ditches, on confervæ.

Threads very minute, stiff, hyaline.

4. *Diatoma marinum.* *Sea diatome.*

Marine; threads simple, in tufts, yellowish; *joints* half as long again as broad, with ovate, transverse granules.

Diatoma flocculosum? *De Candolle Fl. Fr.* 2, 48.
Diatoma marinum, *Lyngbye Hydr. Dan.* 180.

On marine plants; summer.

Tufts small, brownish; *threads* very slender; *joints* as long or twice as long as broad.

F. CONJUGATIDEÆ. *Thallus* cylindrical, threadlike, tubular, jointed; coupling laterally, either by pushing out a transverse tube from the middle of the joint, or by uniting at the angles; *spore* one in each joint.—Fresh-water, green.

XV. 15. ZYGNEMA. Agardh. *Zygneme.*

Thallus threadlike, simple, tubular; jointed; coupling parallelly by a short traverse tube emitted from the middle of each joint, through which the granules in the joints of one plant pass into the opposite joint of the other plant, and there form a single spherical spore; *granules* forming spots in each joint.

1. *Zygnema pectinatum.* *Comblike zygneme.*

Threads shining, rather longer than broad; *spots* two, oblong or 3-toothed in each joint.

Conjugata pectinata, *Vaucher*, 77.
Zygnema pectinatum, *Agardh Syn.* 102.
Conferva pectinata, *De Candolle Fl. Fr.* 2, 56; *Engl. Bot.* 1610.

On stones, or floating in running waters.

Tufts light green, growing blackish; *sporæ* spherical, lodged in the transverse tube, according to Agardh.

β. *confluens.* *Joints* as long as broad; *spots* dense and nearly confluent.

Conferva bipunctata, *Dillw.* 2.

2. *Zygnema bipunctatum.* *Two-dotted zygneme.*

Threads shining, twice as long as broad; *spots* 2, stellate.

Conferva bipunctata, *Roth Cat.* 2, 204; not of Engl. Bot.
Conferva Stellina, *Muller in N. Act. Petr.* 3, 93.
Conferva cruciata, *De Candolle Fl. Fr.* 2, 56.
Conjugata stellina, *Vaucher*, 75.
Conjugata cruciata, *Vaucher*, 76.
Zygnema cruciatum, *Agardh Syn.* 102.

Ditches and stagnant waters.

Tufts entangled, floating; *spots* starlike, radiated or angular.

β. *gracile.* *Joints* three times as long as broad; *spots* 2, roundish.

Conjugata gracilis, *Vaucher*, 73.
Conferva gracilis, *De Candolle Fl. Fr.* 2, 55.
Zygnema gracilis? *Agardh Syn.* 103.

γ. *unipunctatum.* *Joints* as long as broad; *spot* 1, roundish.

XVI. 16. CONJUGATA. Vaucher. *Conjugate.*

Thallus threadlike, simple, tubular, jointed; coupling parallelly, by a traverse tube, exserted from the middle of the joints, through which the granules in the joints of one plant pass into the opposite joint of the other plant, and there form an ovate spore; *granules* forming spiral lines in each joint.

a. *Granules in a single spiral line.*

1. *Conjugata quinina.* *Roman-five conjugate.*

Threads equal, slippery, coupling; *joints* three times as long as broad; *granules* in a single, very close spiral line.

Conferva quinina, *Muller N. Act. Petr.* 3, 94.
Conferva spiralis, *Roth Cat. Bot.* 2, 202; *Engl. Bot.* 1636.
Conjugata quinina, *Agardh Disp. ed.* 1, 27.
Zygnema quininum, *Agardh Decad.* 2, 26.

Ditches and pools.

Tufts dark green; *joints* from once and an half to four times as long as broad; *spiral angles* acute, like the letter V often repeated.

β. *porticalis.* *Spire* bent like an arched gateway.

Conferva porticalis, *Muller, ut supra.*
Conjugata porticalis, *Vaucher*, 66.
Zygnema quininum porticale, *Lyngbye Hydr. Dan.* 173.

γ. *monstrosa.* *Tube* proceeding from the joints uniting with the tube proceeding from the next joint of the same plant.

2. *Conjugata inflata.* *Blown conjugate.*

Threads here and there inflated; *granules* in a single open spire.

Conjugata inflata, *Vaucher*, 68.
Conferva sordida, *Roth Fl. Germ.* 3, 504.
Conferva inflata, *Engl. Bot.* 2376.
Zygnema inflatum, *Agardh Syn.* 101.

Ditches.

Tufts cloudlike, yellowish green; *threads* very slender; *joints* three times as long as broad, thicker in the middle; spot rarely obsolete.

3. *Conjugata longata.* *Long conjugate.*

Threads equal, slippery; *joints* 6 to 12 times as long as broad; *granules* in a simple, very open spire, forming very blunt angles.

Conjugata longata, *Vaucher*, 71.
Conferva longata, *Dillwyn Syn.* 49.
Conjugata quinina longata, *Agardh Disp. ed.* 1, 27.
Zygnema longatum, *Agardh Syn.* 101.

Ditches and stagnant waters.

Tufts yellowish green; *threads* very slender.

4. *Conjugata tumidula.* *Swollen conjugate.*

Threads here and there swollen; *granules* .....

Conferva tumidula, *Engl. Bot.* 1670.

Ditches and marshes.

Threads very slender, about one 700th of an inch diameter; *joints* 3 times as long as broad; *spore* elliptical.—Perhaps a variety of c. inflata.

b. *Spiral lines two in each joint.*

5. *Conjugata condensata.* *Condensed conjugate.*

Threads equal; *joints* about as long as broad; *spiral lines* very close, two in each joint.

Conjugata condensata, *Vaucher*, 67.
Zygnema condensatum, *Agardh Syn.* 100.

Ditches.

Threads crisp, brittle, harsh; *spore* spherical.

6. *Conjugata decimina.* *Roman-ten conjugate.*

Threads equal; *joints* 2 or 3 times as long as broad; *spiral lines* open, 2 in each joint, crossing each other.

Conferva decimina, *Muller N. Act. Petr.* 3, 94.
Conferva nitida, *Dillwyn*, 4.
Conferva jugalis, *Dillwyn*, 5.
Conferva setiformis lubrica, *Roth Cat.* 3, 267.
Conjugata decimina, *Agardh Disp. ed.* 1, 26.
Zygnema deciminum, *Agardh Syn.* 99.

Stagnant waters.

Threads light green, slenderer than in c. nitida; *spiral lines* like X many times repeated.

7. *Conjugata nitida.* *Shining conjugate.*

Threads equal; *joints* about as long as broad; *spiral lines* very open, many in each joint.

Conjugata Princeps, *Vaucher*, 64.
Conferva nitida, *Fl. Dan.* 819; *Engl. Bot.* 2357.
Conferva jugalis, *Fl. Dan.* 883.
Conferva scalaris, *Roth Cat.* 2, 196.
Conferva setiformis conjugata, *Roth Cat.* 3, 266.
Conferva multistriata, *Roth Cat.* 3, 271.
Conjugata nitida, *Agardh Disp ed.* 1, 26.
Zygnema nitidum, *Agardh Decad.* 3, 25.

Ponds; August.

Tufts thick, dark green, floating; *threads* as thick as a horse-hair; *transverse tubes* very short.

XVII. 17. CHOASPIS. *Choaspis.*

Thallus threadlike, simple, tubular, jointed, kneebent; coupling at the bend, by a perforation in each joint, which transmits the granules from one plant to the other, where they form an elliptic spore; *granules* scattered. — Not slippery.

Choaspis serpentina. *Serpentine choaspis.*

Threads slender, stiff, here and there slightly bent, and coupling; *joints* four times as long as broad; *granules* in a triple irregular series.

Conferva stictica, *Engl. Bot.* 2463.

Ditches.

Tufts floating, pale yellowish green above, blackish green beneath; *joints* when young pale green.

XVIII. 18. AGARDHIA. *Agardh.*

Thallus threadlike, simple, tubular, jointed, bent, approximating and uniting here and there with others, the coupled joints becoming shortened; *granules* in a single line, *spore* formed in the shortened coupled joints, cross-shape.—Bluish green.

Agardhia cærulescens. *Bluish agardh.*

Threads slender, bent, light purplish blue; *joints* 6 times as long as broad; *granules* and spores greenish.

Conferva cærulescens, *Engl. Bot.* 2457.
Conferva conjugata, *Agardh Syn.* 96.
Conferva Agardhiana, *Wallm. in Liljebl. Sv. Fl. ed.* 3.
Zygnema? cærulescens, *Agardh Disp. ed.* 2, 32.

Boggy pools; July.

Joints pellucid with a central, slightly spiral, dotted line of green granules.

XIX. 19. SERPENTINARIA. *Serpentinare.*

Thallus threadlike, simple, tubular, jointed, knee-bent, coupling at the bend, by a short transverse tube coming from the middle of the joints, which receives the granules from each plant, and thus forms a globular spore remaining in the middle of the transverse tube; *granules* scattered. —Slippery.

1. *Serpentinaria compressa.* *Compressed serpentinare.*

Threads brittle, bent, coupling; *joints* three times as long as broad; *granules* in a compressed mass.

Conferva serpentina, *Muller N. Act. Petr.* 3.
Conjugata serpentina, *Vaucher*, 81.
Conferva genuflexa, *Dillwyn Iatr.* 18.
Zygnema compressum, *Lyngbye Hydr. Dan.* 171.

Stagnant waters.

Threads as fine as human hair, very brittle; *spore* globular, in the transverse tube.

2. *Serpentina genuflexa.* *Knee-bent serpentinare.*

Threads brittle, knee-bent, coupling; *joints* four times as long as broad, half filled with granules.

Conjugata angulata, *Vaucher*, 79.
Conferva genuflexa, *Roth Cat.* 2, 199; *Engl. Bot.* 1914.
Conferva serpentina, *Muller N. Act. Petr.* 3, 92.
Conjugata genuflexa, *Agardh Disp. ed.* 1, 28.
Zygnema genuflexum, *Agardh Syn.* 98.

Ditches and stagnant waters; spring and autumn.

Tufts dense, floating; *threads* as thick as human hair, slightly curved or knee-bent; *granules* entirely or half filling the joints; *spore* globular, in the transverse tube.

G. HYDRODICTYONIDEÆ. *Thallus* cylindrical, thread-shape, tubular, jointed, anastomosing like a net; *meshes* many-sided, each side formed of a single joint; *spore?* or *embrio?* like the parent, reticulated, contained with the joints.

XX. 20. HYDRODICTYON. Roth. *Water-net.*

Threads jointed, membranaceous, woven into the form of a purse-net; *spore?* same form as the parent plant, enclosed in each joint.—Fresh-water; green.

Hydrodictyon utriculatum. *Bottle water-net.*

Threads united into a tubular net.

Conferva reticulata, *Raii Syn.* 59, 10; *Lin. Sp. Pl.* 1635; *Engl. Bot.* 1687.
Hydrodictyon utriculatum, *Roth Fl. Germ.* 3, 531.
Hydrodictyon pentagonum, *Vaucher*, 88.
Hydrodictyon majus, *Roth Cat.* 2, 238.
Hydrodictyon tenellum, *Roth Cat.* 2, 239.

Stagnant, or slightly flowing waters; annual.

Plant forms a dense stratum, floating, from 2 inches to 2 feet long; *meshes* mostly 5-sided, rarely 4 or 6-sided.

H. CONFERVOIDEÆ. *Thallus* cylindrical, threadlike, tubular, jointed, simple or branched, uniform or biform; *joints* pellucid; *sporæ* granular, green, scattered in the joints; *fruit* external, but the granules often grow in the joints themselves.

XXI. 21. CHÆTOPHORA. Schrank. *Chætophore.*

Mass threadlike, branched; *threads* springing from the axis, jointed, branched, growing slenderer, and ending in a long transparent hair extended beyond the surface of the mass; *granules* in the joints, sometimes growing while still in the mass.—Reddish.

Chætophora rubra. *Red chætophore.*

Mass cylindrical, threadlike, forked; *threads* branched, jointed, red.

Ulva rubra, *Hudson Fl. Angl.* 571; *Engl. Bot.* 1627.
Rivularia multifida, *Weber and Mohr. Reise*, 3, 193.
Chætophora rubra, *Agardh Disp. ed.* 1, 42.
Chordaria multifida, *Lyngbye Hydr. Dan.* 51.

Rocks on the sea-shore; annual; August and September.

Mass crowded, 3 to 6 inches long, from a callous base; *tip* of the branches rather blunt.

XXII. 22. LEATHESIA. *Leathes.*

Mass globular, leatherlike, gelatinous, brownish; *threads* branched, jointed, springing from a common basis; *branches* clubshape, blunt; *spores* scattered in the swollen joints.—Marine.

Leathesia tuberiformis. *Tuberous leathes.*

Mass globular, rather leatherlike, hollow; outer surface smooth, brown; *threads* very close, forked, branched; *branches* level at the top; *tips* clubshaped.

Tremella difformis, *Lin. Sp. Pl.* 1626.
Rivularia tuberiformis, *Engl. Bot.* 1956.
Nostoc marinum, *Agardh Disp. ed.* 1, 45.
Chætophora marina, *Lyngbye Hydr. Dan.* 193.

On marine plants; annual; summer.

XXIII. 23. MYRIODACTYLON. Des Vaux. *Myriodactyle.*

Mass elongated or globular, gelatinous, light green; *threads* branched, jointed, springing from a common basis; *branches* growing finer and ending in a long, hyaline filament; *knots* pellucid.

1. *Myriodactylon endivifolium. Endive-leaf myriodactyle.*
Fresh-water; mass light green, long, flattish, solid, palmate, many-cut; lobes roundish, blunt; *threads* very much branched; *branches* even-topped, spreading.

Tremella palustris gelatinosa, damæ cornuum facie, *Dillen Musc.* 51.
Conferva gelatinosa, damæ cornua repræsentans, *Dill. in Raii Syn.* 60, 17.
Ulva incrassata, *Hudson Fl. Angl.* 572; *Engl. Bot.* 967.
Batrachospermum fasciculatum, *Vaucher*, 116.
Rivularia cornudamæ, *Roth Cat.* 3, 332.
Rivularia endivifolia, *Roth Cat.* 3, 334.
Chætophora endivifolia, *Agardh Disp. ed.* 1, 42.

Ditches; annual; summer.
Mass tufted, 2 inches long; *threads* nearly parallel; branches rather one-rowed, closer above; *lower joints* five times as long as broad, upper equal.

2. *Myriodactylon planum. Flat myriodactyle.*
Mass flat, orbiculate, centre brown, edge greenish; *threads* concentric, slender, crowded, green.

Tremella adnata, *Lin. S. P.* 1672?
Chætophora plana, *Agardh Disp. ed.* 1, 43.

Rocks and stones in the sea; May.
Mass one inch in diameter, pressed close to the rocks having the habit of a lichen.

XXIV. 24. DRAPARNALDIA. St. Vinc. *Draparnaud.*

Thallus gelatinous, composed of two kinds of threads; *primary thread* equal, jointed; joints having a transverse zone; *secondary threads* pencilshape, in bundles, jointed, ending in a long, pellucid hair; *spores* granular, green.

1. *Draparnaldia glomerata. Conglomerated draparnaud.*
Threads much branched; *branches* in bundles, many-cut, pencilshape, pencils mostly alternate, ovate, blunt, spreading; *joints* twice as long as broad.

Conferva gelatinosa β, *Hudson Fl. Angl.* 598.
Cunferva Chara, *Roth Cat.* 3, 285.
Batrachospermum glomeratum, *Vaucher*, 114.
Draparnaldia mutabilis, *St. Vincent. Ann de Mus.* 12, 402.
Draparnaldia glomerata, *Agardh Disp. ed.* 1, 41.

In rivers; annual; winter and spring.
Tufts four inches long, appearing like a green gelatinous jelly; *threads* slender, vaguely branched; *joints* with a transverse spore in the middle.

2. *Draparnaldia plumosa.* *Feathery draparnaud.*
Threads very much branched; *branches* in bundles, many-cut, pencilshape, mostly opposite, lanceolate, acute, upright; *joints* rather longer than broad, with a transverse band.

Batrachospermum plumosum, *Vaucher*, 113.
Conferva mutabilis, *Roth Cat.* 1, 197.
Draparnaldia hypnosa, *St. Vincent. Ann. Mus.* 12, 405.
Draparnaldia plumosa, *Agardh Disp. ed.* 1, 42.

On woods and stones in rivers; annual; summer.
Tufts three inches long; last division of the branches much the longest.

XXV. 25. CONFERVA. Pliny. *Crowsilk.*
Threads uniform, simple or branched, greenish, jointed; *knots* pellucid; *spores* granular, enclosed in the joints.

a. *Plant greenish, sunk, branched.*

1. *Conferva lubrica.* *Slippery crowsilk.*
Threads very much branched, very slender, minute, gelatinous, slippery, green; *branches* divaricating, scattered, close, awlshape; tip long, transparent; *joints* 2 or 3 times as long as broad, with a central, transverse band.

Conferva lubrica, *Dillwyn*, 57; *Engl. Bot.* 2087.
Draparnaldia tenuis, *Agardh Decad.* 3, 30.

On wood and stones in rivers or stagnant waters; summer.
Tufts glaucous green, dense, 1 or 2 inches long; *threads* weak, flaccid, attenuated.

β. *exigua.* *Threads* less than a quarter of an inch long; *joints* about as long as broad.

Conferva exigua, *Dillwyn Syn.* 62.

2. *Conferva protensa.* *Extended crowsilk.*
Threads branched, slippery, green; *branches* diffused, very long, attenuated; tip pellucid; *joints* rather longer than broad.

Conferva protensa, *Dillwyn*, 67.

3. *Conferva nigricans.* *Blackish crowsilk.*
Threads forked, rather stiff, straight, thick, equal; *branches* distant, long, spreading at bottom; *joints* 4 times as long as broad.

Conferva nigricans, *Roth. Cat.* 3, 277; *Dillwyn*, 63.
Ponds.

Threads in tufts, 3 or 4 inches long; *small branches* short, scattered, greenish black, does not adhere in drying to either glass or paper, becomes blackish; *joints* sometimes contracted alternately,

4. *Conferva crispata.* *Crisped crowsilk.*

Fresh-water; threads branched, crisped, dark green; *branches* alternate, very remote; *joints* cylindrical, four or six times as long as broad, when dried alternately compressed.

Conferva crispata, *Roth Cat.* 1, 178; *Engl. Bot.* 2350.
Conferva rivularis crispata, *Agardh Syn.* 86.

Stagnant pools; July.

Tufts very dense, about 2 feet long; *threads* very closely entangled.

5. *Conferva flavescens.* *Yellowish crowsilk.*

Fresh-water; threads very much branched, bent; branches alternate, divaricating; *lateral twigs* short, spreading horizontally; *joints* cylindrical, 8 or 10 times as long as broad.

Conferva flavescens, *Roth Cat.* 2, 224; *Eng. Bot.* 2088.
Conferva pennatula, *Dillwyn Syn.* 64?

Fresh-water ditches; summer.

Tufts very thick; *threads* entangled, very slender, 9 inches long; *branches* attenuated, blunt.

6. *Conferva fracta.* *Broken crowsilk.*

Threads much branched, hairlike, stiff, bent; *branches* and twigs divaricating, mostly alternate; *joints* 4 to 8 times as long as broad, becoming oblong.

Conferva bullosa, *Lin. Sp. Pl.* 1637.
Conferva vagabunda, *Hudson Fl. Angl.* 601; *Dillw.* 5.
Conferva divaricata, *Roth Cat.* 1, 179.
Conferva fracta, *Fl. Dan.* 946; *Dillw.* 14; *Engl. Bot.* 2338.

Ditches and pools.

Tufts expanded, very thick, floating, bullated; *threads* 2 to 4 inches long; *branches* attenuated, tip acute.

β. *hirta.* *Knots* obsolete, by reason of the echinellæ parasitic upon them.

Conferva hirta, *Fl. Dan.* 947.
Conferva fracta hirta, *Lyngbye Hydr. Dan.* 152.

γ. *elongata.* *Marine threads* straight; *upper branches* very long, simple.

Conferva divaricata elongata, *Roth Cat.* 1, 181.
Conferva fracta elongata, *Lyngbye Hydr. Dan.* 152.

δ. *marina.* *Threads* thicker, greenish yellow.

Conferva fracta marina, *Roth Cat.* 3, 234.
Conferva vagabunda, *Roth Fl. Germ.* 3, 465.
Conferva refracta, *Roth Cat.* 2, 193.

7. *Conferva flexuosa.* *Bent crowsilk.*

Threads very much branched, rather stiff, dark green; *branches* bent, twigs mostly simple, alternately 2-ranked, spreading; *joints* 2 or 3 times as long as broad.

Conferva flexuosa, *Fl. Dan.* 882; *Dillwyn*, 10; *Engl. Bot.* 1944.
Conferva rupestris flexuosa, *Lyngbye Hydr. Dan.* 156.

Salt-water ditches, at the bottom; April.

Threads entangled, main threads once or twice branched; *knots* dark.

8. *Conferva rupestris.* *Rock crowsilk.*

Threads very much branched, in bundles, stiff, slender, dull green; *branches* adpressed, nearly 3-forked, blunt; *joints* cylindrical, 4 times as long as broad; *knots* pellucid.

Conferva marina trichoides, seu muscus marinus virens tenuifolius, *Dillen in Raii Syn.* 60.
Conferva rupestris, *Lin. Sp. Pl.* 1637; *Engl. Bot.* 1699.
Conferva glauca, *Roth Cat.* 2, 208.
Conferva virgata, *Roth Cat.* 1, 195.
Ceramium asperum, *Roth Cat.* 2, 180.
Ceramium rupestre, *De Candolle Fl. Fr.* 2, 42.

Rocks by the sea; annual.

Threads verdigris green, in very thick bundles, repeatedly branched from base to tip; *joints*, when dry, alternately compressed.

9. *Conferva diffusa.* *Diffuse crowsilk.*

Threads forked, branched, rather zigzag, stiff, green; *branches* diffuse, remote; *twigs* short, approximate, blunt, joints cylindrical, four times as long as broad; *knots* pellucid.

Conferva diffusa, *Roth Cat.* 2, 207; *Engl. Bot.* 2289.

Sea-shore.

Base callous; *tufts* dull green, loosely entangled, 2 to 6 inches long; *threads* branched from the base, spreading.

10. *Conferva glomerata.* *Glomerated crowsilk.*

Threads much branched, rather stiff, green; *branches* alternate; twigs short, rather bundled, pencilshape, rather blunt; *joints* 4 times as long as broad.

Alga sive Conferva fontinalis trichoides, *Park.* 1261, 1.
Conferva fontinalis ramosissima, glomeratim confesta, *Dillen in Raii Syn.* 59, 8.
Conferva glomerata, *Lin. Sp. Pl.* 1637; *Engl. Bot.* 2192.
Conferva cristata, *Roth Cat.* 1, 193.
Conferva canaliculatis, *Girod Chantr. Conf.* 173.
Polysperma glomerata, *Vaucher*, 99.
Chantransia glomerata, *De Candolle Fl. Fr.* 2, 51.

Stones in running waters; summer.

Threads aggregate, 3 inches long, crowded, attenuated; *branches* bundled towards the tip, stiff.

11. *Conferva lætevirens.* *Light-green crowsilk.*

Threads very much branched, rather stiff, bent like a bow, light green; *branches* approximate, pointed, twigs short, alternately, facing one way; *joints* 5 times as long as broad.

Conferva lætevirens, *Dillwyn*, 48; *Engl. Bot.* 1854.
Conferva glomerata marina, *Lyngbye Hydr. Dan.* 154.

Stones on the sea-shores.

Tufts bushy, light green; *twigs* pointing many together all on one side, then several together all to the other.

12. *Conferva albida.* *Whitish crowsilk.*

Threads very much branched, in close tufts, greenish white, rather opake; *branches* clustered about 4 together; twigs opposite, zigzag, the smallest nearly parallel; *joints* 4 times as long as broad.

Conferva marina tomentosa, tenerior et albicans, *Dillen in Raii Syn.* 59, 13.
Conferva albida, *Hudson Fl. Angl.* 595; *Engl. Bot.* 2327.

Sea-coasts; June and July.

Tufts dull, opake, cottonlike, whitish; *threads* 3 inches long, densely interwoven; *twigs* nearly horizontal.

β. *protensa.* *Threads* 7 or 8 inches long, rather bushy, twigs spreading, mostly opposite, straight.

13. *Conferva pellucida.* *Transparent crowsilk.*

Threads very much branched, stiff, light green; *branches* mostly three together, blunt; *joints* 4 or 6 times as long as broad.

Conferva pellucida, *Hudson Fl. Angl.* 601; *Engl. Bot.* 1716.

Sea-shore.

Tufts large, green, shining, pellucid, 6 inches long; *threads* naked below, repeatedly branched above, cylindrical.

14. *Conferva riparia.* *Bankside crowfoot.*

Threads nearly simple below, branched above, yellow green; *branches* remote, divaricating, long, mostly simple, coming out at a rounded angle; *joints* twice as long as broad; *knots* pellucid.

Conferva riparia, *Dillwyn Syn.* 69; *Engl. Bot.* 2100.
Conferva obtusangula, *Lyngbye Hydr. Dan.* 159.

Sea-shore, or banks of salt pools.

Tufts thickly entangled; *joints* divided in the fork, rounded.

15. *Conferva lanosa.* *Woolly crowfoot.*

Threads branched, very slender, straight, clustered, yellowish green; twigs remote, long; *joints* lower twice, upper 5 or 6 times as long as broad.

Conferva lanosa, *Roth Cat.* 3, 291; *Engl. Bot.* 2099.

Rocks near the sea; summer.

Tufts very close, roundish; *threads* about three quarters of an inch long; *joints* rather bellied, upper much the longest.

β. *zosteræ.* *Threads* light green, shining.
On marine plants.

16. *Conferva arcta.* *Contracted crowsilk.*

Threads branched, stiff, bluish green; *branches* rather spreading; twigs scattered, adpressed; *knots* pellucid, contracted; *joints*, lower as long, upper 8 or 10 times as long as broad.

Conferva arcta, *Dillwyn*, 67; *Engl. Bot.* 2090.

Sea shores, or on rocks.

Tufts very close, 2 or 3 inches long; *branches* nearly parallel.

17. *Conferva æruginosa.* *Coppery crowsilk.*

Threads branched, bent, short, verdigris green; *branches* scattered, spreading, blunt; *joints* rather longer than broad.

Conferva marina capillacea brevis, viridissima mollis, *Dillen Musc.* 4, 20.
Conferva æruginosa, *Hudson Fl. Angl.* 595.

On other marine plants.

Threads about half an inch long.

18. *Conferva Hutchinsia.* *Hutchins' crowsilk.*

Threads very much branched, bent, rather cartilaginous, brittle, glaucous green; *branches* and twigs scattered, smallest 1-rowed, adpressed; *joints* torulose, twice as long as broad.

Conferva Hutchinsia, *Dillwyn*, 65.
Conferva centralis, *Lyngbye Hydr. Dan.* 161?

Sea-shores; spring.

19. *Conferva nana.* *Dwarf crowsilk.*

Threads pale reddish green, branched, very minute, in tufts; *branches* and twigs alternate, pointed, remote; *joints* 2 or 3 times as long as broad; *knots* obscure.

Conferva nana, *Dillwyn*, 30.

On fontinalis antipyretica, in alpine rivers.

Tufts about half an inch long, pale reddish.

20. *Conferva vini.* *Wine crowsilk.*

Tufts brownish yellow; *threads* hyaline, much branched, entangled; *branches* attenuated, acute, twice as long as broad.

Conferva vini, *Agardh Syn.* 72.

In Madeira wine.

Tufts cloudlike, floating, an inch broad, brownish yellow; *threads* very slender indeed.

21. *Conferva stellaris.* *Starry crowsilk.*

Threads hyaline, arising parallelly from an orbicular basis, very minute, equal.

Conferva stellaris, *Fl. Dan.* 660.

On the inside of glass bottles.

Shoots green, about a line in diameter, edges stellate; *threads* about an inch long, branched; *branches* remote, alternate; *joints* 4 or 5 times as long as broad.

22. *Conferva ægagropilaris.* *Hairball crowsilk.*

Threads arising from a common centre, forming a globe, much branched; *branches* rather crowded, blunt; *joints* 4 times as long as broad; rather swollen above.

Conferva Ægagropila, *Lin. Sp. Pl.* 1637; *Engl. Bot.* 1377.
Moor balls.

Bottom of alpine lakes.

Balls dark green, from the size of a pea to 3 inches diameter, exactly spherical, hollow; *branches* rather spreading; *knots* pellucid, when dry contracted.

23. *Conferva Brownii.* *Brown's crowsilk.*

Tufts close; *threads* much branched, rather stiff, short, green; *branches* slightly 1-rowed, blunt; *joints* 4 times as long as broad, rather thicker above.

Conferva Brownii, *Dillwyn*, 58.

On wet rocks in caves.

Tuft flat or convex; *threads* upright, about the eighth of an inch long, rather thick, resembling those of c. ægagropilaris.

24. *Conferva velutina.* *Velvetty crowsilk.*

Tuft close, green, velvetty; *threads* branched, bent, entangled at bottom, rooting, hyaline, at top blunt; *joints* longer than broad.

Byssus tenerrima viridis, velutum referens, *Dillen in Raii Syn.* 56, 1.
Byssus velutina, *Lin. Sp. Pl.* 1638.
Conferva varia, *Roth Cat.* 3, 301.
Conferva velutina, *Dillwyn*, 77; *Engl. Bot.* 1556.

On the ground in damp places.

Tufts very close; *branches* alternate, bent, lower distant, twigs nearly one-rowed, short, bent, blunt, diffuses a sweet fragrance not only when growing, but also for some time after being dried.

25. *Conferva cryptarum.* *Cave crowsilk.*

Threads green, entangled, much branched; branches forked, divaricating, pointed; *joints* twice as long as broad, rather gibbous.

Conferva cryptarum, *Dillwyn*, 59; *Engl. Bot.* 2588.
Conferva muscicola cryptarum, *Agardh Syn.* 73.

Caves and caverns.

Branches recurved, entangled; when dry rather stiff, elastic, pellucid.

26. *Conferva umbrosa.* *Shade crowsilk.*

Tuft blackish green, velvetty; *threads* entangled, branched, brittle, branches upright, blunt; *joints* longer than broad; those of the tips inflated, as long as broad.

Conferva umbrosa, *Roth Cat.* 1, 191.
Conferva arenaria, *Roth Cat.* 2, 217.

Damp shady places; summer.

Tufts very close; *threads* short; *branches* rather crowded.

b. *Threads greenish, simple.*

27. *Conferva? echinulata.* *Hedgehog-like crowsilk.*
Threads simple, very short, blunt, spreading every way from a centre, and forming a globe, glaucous green; *joints* as long as broad.

Rivularia echinulata, *Engl. Bot.* 1378.

Floating on lakes.
Threads rather clubshape; *joints* about 5 or 6.

28. *Conferva sordida.* *Dirty crowsilk.*
Threads simple, very slender, cobweblike, tenacious, yellow green; *joints* 4 times longer than broad; *knots* pellucid.

Conferva sordida, *Roth Cat.* 1, 171; *Engl. Bot.* 2303.
Conferva calycina, *Agardh Syn.* 78?

Stagnant water adhering to grass; April to July.
Mass cloudlike, yellowish green; *threads* shining, curved; hyaline, equal.

β. *fuscata.* *Threads* very slender, very closely entangled into a light brownish cloud.

γ. *utriculata.* *Threads* very slender; *granules* collapsed into several, distinct, oblong globules in each joint; *knots* here and there contracted.

29. *Conferva floccosa.* *Flocklike crowsilk.*
Threads simple, very slender; *joints* about twice as long as broad, hyaline with a pellucid, globular spot in the centre.

Prolifera floccosa, *Vaucher*, 131.
Conferva floccosa, *Agardh Dispos.* 29.

Ditches and running water.
Tufts straight, 2 or 3 inches long.

30. *Conferva fugacissima.* *Fugacious crowsilk.*
Threads simple, very slender, slimy, rather straight; *joints* rather longer than broad, with a granular band in the middle.

Conferva fugacissima, *Roth Cat.* 3, 176.

Ditches adhering to grasses.

31. *Conferva oscillatorioides.* *Oscillatoria crowsilk.*
Threads simple, cobweblike, very slender, very long; *joints* longer than broad, with a granular band in the middle.

Conferva oscillatorioides, *Agardh Disp, ed.* 1, 29.
Conferva fugacissima oscillatorioides, *Lyngbye Hydr. Dan.* 137.

Ditches, adhering to grass.

32. *Conferva punctalis.* *Dot crowsilk.*

Threads simple, very slender, rather slimy, long; *joints* about twice as long as broad; *granules* collapsing into a solitary globule.

Conferva punctalis, *Dillwyn*, 51.
Conferva brevi-articulata, *Mohr in Schrader Journ.* 1801, 475.

Ditches and running water.

Tufts about an inch long; *threads* twice as thick as c. floccosa, pale yellowish green.

33. *Conferva zonata.* *Girded crowsilk.*

Threads simple, slender, slimy; *joints* as long as broad; *granules* in a transverse band.

Conferva zonata, *Roth Cat.* 2, 269.
Conferva lucens, *Dillwyn*, 47; *Engl. Bot.* 1655.

Lakes and rapid streams.

Tufts gelatinous; *threads* 2 to 4 inches long, tapering, acute.

34. *Conferva dissiliens.* *Parting crowsilk.*

Threads simple, slender, equal, straight, slimy, brittle; *joints* half as long as broad; at length separating from one another.

Conferva dissiliens, *Dillwyn*, 63; *Engl. Bot.* 4464.
Diatoma? dissiliens, *Agardh Disp. ed.* 1, 34.

Ditches.

Tufts floating; *joints* hyaline, with a transverse or ovate spot in the centre.

35. *Conferva mucosa.* *Mucous crowsilk.*

Threads simple, very slender, slimy, yellowish green; *joints* rather torose, about as long as broad.

Conferva mucosa, *Dillwyn*, 46.

Stagnant pools.

Tufts floating; *threads* straight, 3 inches long, very slimy.

36. *Conferva vesicata.* *Bladdered crowsilk.*

Threads simple, slender; *joints* here and there inflated, and proliferous, rather longer than broad.

Prolifera vesicata, *Vaucher*, 132.
Conferva vesicata, *Agardh Disp. ed.* 1, 30.
Conferva alternata, *Dillwyn*, 43; *Engl. Bot.* 2304.
Chantransia vesicata, *De Candolle Fl. Fr.* 2, 52.

Floating in ditches and rivulets.

Tufts closely entangled; *threads* 6 or 8 inches long; *joints* sometimes alternately green and brownish.

β. *fusca. Threads* brownish.

Conferva alternata β, *Dillwyn.*

37. *Conferva capillaris.* *Hair crowsilk.*

Threads simple, slender, crisp, proliferous, entangled; *joints* even, about twice as long as broad, alternately compressed when dry; *spores* scattered, or in an oblong spot.

Conferva fluitans filamentis geniculatis, *Dillen Musc.* 26.
Conferva capillaris, *Lin. S. P.* 1636.
Conferva crispa, *Dillwyn*, 46.
Chantransia crispa, *De Candolle Fl. Fr.* 2, 52.

Stones in rapid rivers.

Threads 8 to 20 feet long, slimy, rough and brittle when dry.

β. *ramosa. Threads* proliferous.

Conferva capillaris, *Engl. Bot.* 2364.
Prolifera crispa, *Vaucher*, 130.

38. *Conferva rivularis.* *Rivulet crowsilk.*

Threads simple, slender, straight, very long, dark green; *joints* about 3 times as long as broad, alternately compressed when dry; *knots* pellucid.

Conferva Plinii, *Ger. em.* 1570, 2; *Park.* 1261, 2; *Raii Syn.* 58, 1.
Conferva fluviatilis sericea vulgaris et fluitans, *Dillen Musc.* 12.
Conferva rivularis, *Lin. Sp. Pl.* 1633.
Prolifera rivularis, *Vaucher*, 130.
Conferva funiformis. *Roth Cat.* 1, 169.
Crow-silk. Hairy river-weed.

Running waters: June to September.

Tufts 1 to 2 feet long, fluctuating, loosely entangled; *threads* rather stiff.

β. *aculeata. Branches* many, very short, acute.

39. *Conferva compacta.* *Compact crowsilk.*

Threads simple, slender, compactly entangled, dark green; *joints* rather longer than broad; alternately compressed when dry.

Conferva compacta, *Roth Fl. Germ.* 497.
Conferva rivularis, *Dillwyn*, 39; *Engl. Bot.* 1654.

Rivers and rivulets; June and July.
Threads about 100th of an inch thick, sometimes less.

40. *Conferva bipartita.* *Two-parted crowsilk.*
Threads simple, slender, very long, densely compacted, yellow green; *joints* 2 or 3 times as long as broad; *granules* forming 2 transverse bands in each joint.

Conferva bipartita, *Dillwyn*, 105; *Engl. Bot.* 2302?
Conferva semistriangulata, *Roth.*

Salt ditches; July.
Joints vary from as long as broad, Eng. Bot. to 3 times as long as broad, as in Dillwyn.

41. *Conferva linoides.* *Flaxlike crowsilk.*
Threads simple, very long, rather thick and stiff, curled, brittle, loosely entangled, green; *joints* as long as broad; when dry cylindrical.

Conferva palustris seu Filum marinum Anglicum, *Raii Syn.* 60, 16.
Conferva filamentis longis geniculatis simplicibus, *Dillen Musc.* 25.
Conferva capillaris, *Hudson Fl. Angl.* 598.
Conferva Linum, *Fl. Dan.* 771; *Engl. Bot.* 2364.
Conferva Melagonium, *Fl. Dan.* 1438.
Marsh thread.

Stagnant salt-ponds, and in the sea.
Threads dull green, elastic, slimy, rather even; *knots* pellucid.

β. *minor.* *Threads* 3 times slenderer.
Inland ditches.

42. *Conferva ærea.* *Brazen crowsilk.*
Threads simple, stiff, rather thick, straight, light green; *joints* broader than long; *knots* pellucid.

Conferva ærea, *Dillwyn*, 80; *Engl. Bot.* 1929.

Sea-coasts on wood or stones.
Tufts bright verdigris green, 3 to 5 inches long, fluctuating; *granules* forming two bands.

β. *lubrica.* *Threads* very soft, slippery, glossy.

43. *Conferva Melagonalis.* *Blacksided crowsilk.*
Threads simple, stiff, rather thick, straight, dark green; *joints* cylindrical, 3 times as long as broad.

Conferva Melag^{o}nium, *Weber et Mohr. Reise*, 194.
Conferva ærea, var. *Dillwyn Descript.* 80.

Sea-coasts on wood.

Threads 6 to 9 inches long, appearing like polished iron when in the sea, when dry dark green; *lower joints* short, alternately compressed when dry; *granules* contracting in drying, and forming a black line on each side of the knot.

44. *Conferva tortuosa.* *Winding crowsilk.*

Threads simple, slender, rather stiff, curled, twisted, loosely entangled, dark green; *joints* cylindrical, 3 times as long as broad.

Conferva tortuosa, *Dillwyn*, 46; *Engl. Bot.* 2220.

Sea-shore, or salt-water ditches.

Tufts rather elastic; *knots* pellucid.

β. *ramosa.* *Threads* with open lateral branches.

45. *Conferva ramosa.* *Branched conferva.*

Threads simple, very slender, curled, entangled, even soft, dark lurid green; *joints* even, rather longer than broad.

Conferva implexa, *Dillwyn*, 46.
Bangia viridis, *Fl. Dan.* 1601.

Rocks, salt-water ditches, and on marine plants.

Tufts closely entangled; *threads* rather silky not stiff; *knots* and edges hyaline; *spores* ovate.

46. *Conferva nummuloides.* *Money crowsilk.*

Threads simple, slender, brittle, yellowish brown; *joints* shorter than broad, becoming close, beadlike, and nearly oval.

Conferva nummuloides, *Dillwyn*, 44.
Fragilaria nummuloides, *Lyngbye Hydr. Dan.* 184.

Leaves of fresh-water plants.

47. *Conferva Youngana.* *Young's crowsilk.*

Threads simple, slender, bristlelike, in tufts, weak, blunt, equal, light green; *joints* as long as broad; *knots* contracted.

Conferva Youngana, *Dillwyn*, 102.
Conferva isogona, *Engl. Bot.* 1930.

Sea-shores, on wood and marine plants.

Tufts yellowish green, half an inch long; *threads* rather stiff, not attenuated.

48. *Conferva flacca.* *Flagging crowsilk.*

Threads simple, slender, bristlelike, very minute, flaccid; *joints* rather shorter than broad; *knots* pellucid, contracted.

Conferva flacca, *Dillwyn*, 49.

On stones, or wood in the sea, and on marine plants.

c. *Coloured, brownish, marine.*

49. *Conferva curta.* *Short crowsilk.*

Threads simple, in bundles, nearly cartilaginous, short, attenuated below, olive brown; *joints* rather longer than broad; *knots* pellucid, contracted.

Conferva curta, *Dillwyn*, 76; *Engl. Bot.* 2084.

On marine plants.

Threads nearly upright, light brown.

50. *Conferva flaccida.* *Flaccid crowsilk.*

Threads simple, in bundles, short, flaccid, straight, broader at bottom, attenuated at the tip, light brown; *lower joints* shorter than they are broad; upper longer.

Conferva flaccida, *Dillwyn*, 6.

On marine plants.

Tufts half an inch long; *threads* rather cartilaginous.

51. *Conferva fucicola.* *Fucus crowsilk.*

Threads simple, slender, tufted, straight, short, blunt, iron-brown; *joints* twice as long as broad; *knots* pellucid.

Conferva fucicola, *Velley Marine*, *Pl.* 4; *Dillwyn*, 66.
Conferva ferruginea, *Roth Cat.* 3, 274.
Conferva fucorum, *Roth Cat.* 3, 273.

On marine plants.

Tufts half an inch long; *threads* from a shieldlike base, tip attenuated, blunt.

52. *Conferva scutellata.* *Saucer crowsilk.*

Tufts depressed, peltate, closely entangled, rooted in the centre; *threads* branched at the bottom; *joints* as long as broad.

Conferva scutellata, *Engl. Bot.* 2311.

Parasitical on the apothecia of himanthalia loreus.

Threads above simple, long; below having a few short alternate branches, entangled into a dense, viscid, pale apparently homogeneous mass.

e. *Coloured, simple, brittle.* Chantransia.

53. *Conferva fasciata.* *Banded crowsilk.*

Threads simple, slender, slimy, purplish brown; *joints* as long as broad, with a narrow, central, transverse band.

Conferva fasciata, *Dillwyn*, 23.

On decayed sticks and leaves, in fresh water.

Threads about half an inch long.

54. *Conferva lineata.* *Lined crowsilk.*

Threads simple, slender, brittle, brown; *joints* two or three times as long as broad, with one or two transverse lines at uncertain distances from each other; *knots* contracted.

Conferva lineata, *Dillwyn*, 44.
Fragilaria lineata, *Lyngbye Hydr. Dan.* 184.

Leaves of fresh-water plants.

55. *Conferva Borreri.* *Borrer's crowsilk.*

Threads simple, slender, brittle, palish brown; *joints* rather shorter than broad, combined in pairs; *spores* in the centre of each joint.

Conferva nummuloides, *Engl. Bot.* 2287.

On marine plants.

Threads short, tortuous, cylindrical, dirty white.—These three last species, as also c. dissiliens, might be formed into a very natural genus, bordering upon the diatomideæ, from which they differ by the threads being cylindrical and solitary.

Fam. II. 2. THALASSIOPHYTÆ. Lamouroux.
Algarum pars, Linnæus and Jussieu.

Thallus coriaceous, membranaceous, or fleshy; continuous or jointed; fibrous or cellular; *sporidia* enclosed in thecæ, or immersed in the substance of the thallus.—Plants mostly marine, olive green or red, absorbing water by their surface in the immersed part, but not transmitting it to other parts; emit oxygen gas by the action of light.

A. *Thallus jointed, membranaceous, tubular; joints formed of a simple tube; sporidia enclosed in thecæ.* Ceramideæ.

Thallus olive-green, gelatinous,
from a common axis ..... MESOGLOJA. 26.
Thallus green; secondary branches
simple, bristlelike, swollen at bottom .. BULBOCHÆTE. 27.
Thallus brownish;
branches jointed; *thecæ* naked ..... ECTOCARPUS. 28.
Thallus red; *knots* pellucid;
thecæ naked ... . CALLITHAMNION. 29.
Thallus red; *knots* coloured;
thecæ involucrated ..... CERAMIUM. 30.
Thallus red; *knots* pellucid;
sporidia involucrated ..... GRIFFITSIA. 31.
Thallus red, gelatinous;
branches in whirls; *thecæ* naked ..... BORRICHIUS. 32.
Thallus green, gelatinous;
branches in whirls; *thecæ* naked BATRACHOSPEMUM. 33.

B. *Thallus jointed, coriaceous, or membranaceous; main stem solid, or compoundly jointed; sporidia enclosed in thecæ.* Hutchinsideæ.

Thallus olive-green;
branches in whirls; *joints* simple .... CLADOSTEPHUS. 34.
Thallus olive-green;
branches 2-rowed; *joints* compound .. SPHACELARIA. 35.
Thallus red;
branches scattered; *joints* simple; ..... ELLISIUS. 36.
Thallus red;
branches scattered; *joints* compound ... HUTCHINSIA. 37.
Thallus red, pervaded by a
central, jointed axis ..... VERTEBRATA. 38.

C. *Thallus with a continued fibrous axis; bark chalklike, jointed.* Corallideæ.

Thallus forked; *joints* cylindrical ..... JANIA. 39.
Thallus three-forked; *joints* wedgelike CORALLINA. 40.

D. *Thallus continuous green or reddish; fibres parallel, diverging from the base; bark chalklike or hairy.* Zonarideæ.

Thallus ribless, fanshaped ..... ZONARIA. 41.
Thallus ribless, forked ..... DICTYOTA. 42.
Thallus ribbed, forked ..... DICTYOPTERIS. 43.

E. *Thallus continuous, cellular, green becoming white; bark smooth; sporidia scattered, immersed.* Ulvoideæ.

Thallus compressed; *sporidia* prominent
ASPEROCOCCUS. 44.
Thallus membranaceous, flat; *sporid.* immersed ULVA. 45.
Thallus tubular; *sporidia* immersed SCYTOSIPHON. 46.
Thallus threadlike, solid ..... PALMELLA. 47.
Thallus flat, fleshy..... MERRETTIA. 48.
Thalli globular or ovate, aggregated ..... OLIVIA. 49.

F. *Thallus continuous, gelatinous, fleshy, cellular; sporidia in many immersed beaded filaments.* Linkideæ.

Thallus long; *sporidia* elliptic..... CARRODORUS. 51.
Thallus bullated; *sporidia* globular ..... NOSTOC. 50.

G. *Thallus continuous, gelatinous, cellular, smooth, olive becoming black; sporidia scattered, immersed.* Alcyonideæ.

Cells 6-edral, long; marine ..... ALCYONIDIUM. 52.
Cells long, regular, radiating ..... EPHIDATIA. 53.
Cells irregular; marsh..... SPONGILLA. 54.

H. *Thallus continuous, spongy, gelatinous, formed of interlaced fibres or spicula yellowish; sporidia scattered, immersed.* Spongidiæ.

Thallus branched, solid; *fibres* entangled .. TUPHA. 55.
Thallus tubular; *fibres* entangled ..... SCYPHA. 56.
Thallus not branched; *fibres* entangled .. SPONGIA. 57.
Thallus orbicular; *fibres* radiated ..... TETHYA. 58.

I. *Thallus continued, fibrous, membranaceous or leatherlike, purple or red; sporidia immersed or in thecæ.* Florideæ.

Thallus flat, membranaceous, veined;
sporidia immersed and in tubercles .... DELESSERIA. 59.
Thallus flat, membranaceous, veined;
thecæ podshaped, axillary ..... ODONTHALIA. 60.
Thallus flat, membranaceous, ribless;
thecæ tubercular ..... SPHÆROCOCCUS. 61.
Thallus linear, compressed or round,
much branched; *thecæ* tubercular ..... GIGARTINA. 62.
Thallus linear, round or compressed;
sporidia immersed and in thecæ ..... GASTRIDIUM. 63.

K. *Thallus continuous, woody, fibrous, coriaceous; olivebrown becoming black; sporidia in thecæ or immersed.* Fucoidea.

Ka. *Sporidia superficial among gelatinous fibres.*

Thallus membranaceous, flat;
fruit scattered; *holdfasts* peltate ..... FASCIA. 64.
Thallus leatherlike, flat;
fruit scattered; *holdfasts* fibrous ..... LAMINARIA. 65.
Thallus leatherlike, flat;
fruit on the stirps; *holdfasts* fibrous.... PHASGONON. 66.
Thallus threadlike, tubular, supple;
sporidia scattered on the surface ..... CHORDA. 67.
Thallus threadlike, solid, branched;
sporidia scattered on the whole surface.. CHORDARIA. 68.

Kb. *Sporidia in scattered, immersed thecæ.*

Thallus threadlike, cartilaginous .... SPOROCHNUS. 69.
Thallus compressed, membranaceous DESMARESTIA. 70.

Kc. *Sporidia in a terminal theca.*

Thallus shrubby, compressed ..... LYCHINA. 71.

Kd. *Sporidia in thecæ, immersed on an apothecium.*

Thallus cupshaped; *vesicles* 0;
apothecia compressed, forked ..... HIMANTHALIA. 72.
Thallus round, forked, ribless;
vesicles 0; *apothecia* terminal ..... CERVINA. 73.

Thallus confluent, flat, ribbed, forked;
vesicles innate or 0; *apothecia* terminal ..... Fucus. 74.
Thallus confluent, compressed, ribless;
vesicles innate; *apothecia* pedicelled ..... Halidrys. 75.
Thallus leaflike, branched;
vesicles innate; *apothecia* terminal ..... Mackaia. 76.
Thallus leaflike, branched;
vesicles pedicelled, globular ..... Baccalaria. 77.
Thallus confluent; *vesicles* pedicelled,
podshape; *apothecia* lateral ..... Siliquaria. 78.

Ke. *Sporidia scattered in the swollen tips of the branches.*

Thallus threadlike, forked ..... Furcellaria. 79.

A. Ceramideæ. *Thallus* threadlike, membranaceous, or leatherlike, tubular, jointed; *joints* all formed of a single tube; *knots* generally pellucid; *sporidia* enclosed in a naked, or involucrated capsular theca.—Generally rose-red, rarely brown or green, mostly marine.

I. 26. MESOGLOJA. Agardh. *Slime-gut.*

Thallus threadlike, jointed, forked; branches springing horizontally from an imaginary central axis; the whole forming a branched, threadlike, olive, gelatinous mass; inner part very compact, outer looser; *thecæ* ovate at the end of the threads, surrounded by the swollen beadlike branches.—Marine.

Mesogloja vermiculata. *Wormlike slime-gut.*

Mass much branched, cylindrical; branches scattered, crooked, attenuated, mostly divided; *thallus* branched; branches alternate; *joints* rather longer than broad; *knots* contracted.

Rivularia vermiculata, *Engl. Bot.* 1818.

Sea-shores; July and August.

Mass 4 to 9 inches long, olive-brown, very unequally branched. It differs from the M. vermicularis of Agardh, Syn. 126, and Lyngbye Hydr. Dan. 165, by the lower joints being 3 or four times as long as broad, and the mass not being so much branched.

II. 27. BULBOCHÆTE. Agardh. *Bristle-weed.*

Thallus green, membranaceous, much branched, jointed; *branches* bristlelike, continuous, bulbous at the bottom, from the end of the joints; *thecæ* ovate, capsular, sessile, lateral, alternating with the branches.

Bulbochæte Rothii. *Roth's bristle-weed.*

Thallus branched, flexuous, yellowish-green; *branches* bulbous at the base; *joints* 3 times as long as broad.

Conferva vivipara, *Dillwyn*, 59.
Conferva setigera, *Roth Cat.* 3, 238.
Bulbochæte setigera, *Agardh Syn.* 71.

Fresh-water plants.

Tufts half an inch long, upright, weak; stem forked; *branches* very slender, simple, straight, very long.

III. 28. ECTOCARPUS. Lyngbye. *Brown-weed.*

Thallus threadshape, jointed, membranaceous, very much branched, brown; *joints* all simple; *knots* pellucid; *thecæ* ovate or podshape, on the side or ends of the twigs. —Mostly marine; threads entangled into a branched tuft.

1. *Ectocarpus tomentosus.* *Woollike brown-weed.*

Thallus very slender, very closely entangled into a ropelike, spongy mass, very much branched; *branches* vague, divaricated; *joints* 4 times as long as broad.

Conferva marina tomentosa minus tenera et ferruginea, *Dillen in Raii Syn.* 59, 15.
Conferva tomentosa, *Dillwyn Conf.* 56.
Ceramium tomentosum, *Agardh Syn.* 64.
Ectocarpus tomentosus, *Lyngbye Hydr. Dan.* 132.

Sea-shores.

Tufts 2 or 3 inches long, very much branched, pale green; *threads* equal; *branches* spreading; *thecæ* capsular, lateral, podshaped terminal.

2. *Ectocarpus littoralis.* *Shore brown-weed.*

Thallus ropelike; threads very slender, entangled; *branches* upright, opposite and alternate; *joints* as long as broad.

Conferva marina capillacea longa ramosissima mollis, *Dillen in Raii Syn.* 59, 9.
Conferva littoralis, *Dillwyn*, 31; *Engl. Bot.* 2290.
Ceramium tomentosum, *Roth Cat.* 3, 147.

Sea-shores on rocks, shells, or other sea-plants.

Thallus pale green, not spongy, less densely entangled.

3. *Ectocarpus granulosus.* *Granular brown-weed.*

Threads slender, free; *branches* scattered, compound, spreading, with pellucid, taper points; *joints* as long as broad, becoming tumid, terminal joints the longest.

Conferva granulosa, *Engl. Bot.* 2351.

Sea-shores; July.

Tufts olive-green, flaccid; *branches* various, spreading; *thecæ* lateral, scattered, sessile, reverse-ovate.

4. *Ectocarpus siliculosus.* *Pouch brown-weed.*

Threads very slender, free; *branches* numerous, upright, alternate, awlshape; *joints* rather longer than broad.

Conferva siliculosa, *Dillwyn*, 69; *Engl. Bot.* 2319.
Ceramium confervoides, *Roth Cat.* 3, 148.
Ceramium siliculosum, *Agardh Disp.* 18.

Sea-shores.

Tufts greenish or yellowish brown, 3 to 6 inches high, flaccid; *threads* membranaceous, not entangled; *branches* alternate, nearly upright.

5. *Ectocarpus brachiatus.* *Cross-armed brown-weed.*

Threads slender, wavy, entangled; *branches* very numerous, opposite, crossing each other, widely spread, taper, pointed; *joints* cylindrical, about as broad as long.

Conferva brachiata, *Engl. Bot.* 2571.
Ceramium brachiatum, *Agardh Syn.* 67?

Salt-marshes and the sea-shore.

Light yellowish-brown, woolly, very soft.

6. *Ectocarpus chalybeus.* *Steel brown-weed.*

Threads crowded; branches stiff, ascending; *joints* three times as long as broad; *thecæ* ovate, racemose.

Conferva chalybea, *Roth Cat.* 3, 286; *Dillw.* 91.
Conferva corymbifera, *Engl. Bot.* 1996.
Ceramium chalybeum, *Agardh Disp.* 19.
Ceramium pulchellum chalybeum, *Agardh Syn.* 69.

Fresh-water.

Tufts small, close, 2 or 3 lines broad; *threads* irregularly branched; *branches* pressed close.

IV. 29. CALLITHAMNION. Lyngbye. *Pretty-weed.*

Thallus rose-red, threadlike, jointed, very much branched; *joints* formed of a single longitudinal tube; *knots* pellucid; *thecæ* ovate-globular, capsular, naked, nearly sessile, on the side of the twigs at the tips of the joints.—Marine.

1. *Callith. purpurascens.* *Purplish pretty-weed.*

Threads thrice pinnately divided, very slender, membranaceous, purplish red; *branches* and *twigs* spreading; *knots* contracted; *joints* 3 times as long as broad.

Conferva marina nodosa, coralloidis montani instar ramosa, *Dillen Musc.* 36.
Conferva purpurascens, *Huds. Fl. Angl.* 600; *Engl. Bot.* 2465.
Conferva rosea, *Dillwyn Conf.* 17.
Ceramium roseum, *Roth Cat.* 2, 182.
Callithamnion roseum, *Lyngbye Hydr. Dan.* 126.

Sea-shore, on stones or marine plants.

Thallus tufted, 2 or 3 inches long; *branches* many, alternate; twigs very numerous; *capsules* on the upper side of the twigs.

β. *rosea.* *Tuft* closer, rose red.

Conferva rosea, *Engl. Bot.* 966.

2. *Callithamnion corymbosum.* *Corymbus pretty-weed.*

Thallus branched like network, corymbose, slender, tufted, rose-colour; *branches* alternate, many-cut, in bundles; apex 2-cut; *joints* slightly dilated above, about twice as long as broad; *knots* pellucid; *thecæ* ovate, scattered, peduncled; *peduncles* very short.

Conferva corymbosa, *Engl. Bot.* 2352.
Ceramium pedicellatum, *Fl. Dan.* 1596.
Callithamnion corymbosum, *Lyngbye Hydr. Dan.* 125.

Sea-shores.

Thallus outline round.

3. *Callithamnion Borreri.* *Borrer's pretty-weed.*

Thallus repeatedly branched, hairlike, bright red; *branches* all alternate, spreading in 2 directions, zigzag, level-topped; *joints* cylindrical, about twice as long as broad.

Conferva Borreri, *Engl. Bot.* 1741.

Sea-shore; October.

Thallus tufted, about 2 inches high, becomes orange-yellow by weathering, very slender; *twigs* corymbose; *knots* slightly contracted.

4. *Callith. thujoides.* *Arbor-vitæ pretty-weed.*

Thallus repeatedly branched, very slender, tufted; *branches* alternate, zizgag; *side-shoots* alternate, compound; *joints* very short, cylindrical.

Conferva thujoides, *Engl. Bot.* 2205.

Sea-coast; September, October.

Thallus tufted, 1 or 2 inches long; *joints* of the stem 4 to 6 times as long as broad, of the twigs only as long.

5. *Callith. tetragonum.* *Four-sided pretty-weed.*

Thallus much-branched, red; *twigs* bundled, short, spreading horizontally attenuated at bottom, pointed at the tip; *joints* ovate-cylindrical, twice as long as broad.

Conferva tetragona, *Withering Bot.* 4, 405; *Engl. Bot.* 1690.

Sea-shore, or parasitical on other sea-plants.

Thallus tufted, 2 or 3 inches long; *branches* 4-sided, sides hollowed; *joints* of the twigs about as long as broad; *thecæ* globular.

6. *Callithamnion tetricum.* *Dirty pretty-weed.*

Thallus several times pinnated, brown red, lurid; segments and lobes alternate; points rather curved; *joints* about 3 times as long as broad; *thecæ* single, slightly pedicelled.

Conferva tetrica, *Dillwyn Conf.* 81; *Engl. Bot.* 1915.

Sea-shore, on stones and marine plants.

Stems many, tufted, 6 or 8 inches high, alternately doubly pinnate; *twigs* pinnate; *joints* equal.

7. *Callithamnion Hookeri.* *Hooker's pretty-weed.*

Thallus very much branched; *stem* thick, not visibly jointed, pale reddish-brown; *twigs* crowded, short, pinnate; *lobes* alternate, jointed; *joints* rather longer than broad.

Conferva Hookeri, *Dillw. Conf.* 106.

Sea-shore.

8. *Callithamnion floccosum.* *Flock pretty-weed.*

Thallus branched, rose-colour; *branches* alternately pinnated; *segments* opposite, pectinated, horizontally recurved; *lobes* pointing one way; *joints* about 3 times as long as broad.

Conferva Turneri, *Engl. Bot.* 1637.
Conferva Plumula, *Ellis Ph. Tr.* 57, 425; *Dillw. Conf.* 50.
Conferva floccosa, *Fl. Dan.* 828.
Ceramium floccosum, *Roth Cat.* 2, 185.
Ceramium Plumula, *Agardh Syn.* 62.

Sea-shore; May to July.

Thecæ sessile, globular, on the lobes.

9. *Callithamnion Turneri.* *Turner's pretty-weed.*

Thallus pinnated, rose-colour; *lobes* opposite, simple, or rather pinnate; *joints* 3 times as long as broad.

Conferva Turneri, *Dillw. Conf.* 100.
Ceramium Turneri, *Roth Cat.* 3, 128.

Sea-shore, on sea-plants.

Thallus closely tufted, an inch high, upright, linear, lanceolate.

10. *Callithamnion repens.* *Creeping pretty-weed.*

Thallus creeping, closely entangled, branched, minute, light rose-red; *branches* and *twigs* mostly pointing one way; *knots* slightly contracted; *joints* 3 times longer than broad.

Conferva repens, *Dillw. Conf.* 13; *Engl. Bot.* 1608.
Ceramium repens, *Agardh Syn.* 63.
Callithamnion repens, *Lyngbye Hydr. Dan.* 128.

Sea-shore on shells and marine plants; Autumn.

Tufts rather stiff, brownish red; *stem* creeping; *branches* upright, mostly divided; *twigs* spreading.

β. *tenellum. Thallus* light rose-red, flaccid, very slender; *branches* simple.

Conferva tenella, *Dillw. Syn.* 72.
Callithamnion repens tenellum, *Lyngbye Hydr. Dan.* 128.

11. *Callithamnion plumosum.* *Feather pretty-weed.*

Thallus creeping, branched, minute, deep rose-colour; *branches* upright, below rather naked, above pinnated; *segments* opposite, close; *joints* twice as long as broad.

Conferva Pluma, *Dillw. Syn.* 72.

Parasitic on larger marine plants.

Thecæ globose, mostly terminal.

12. *Callithamnion Daviesii.* *Davies's pretty-weed.*

Thallus branched, tufted, upright, very minute, free, rose-red; *branches* and *twigs* alternate, scattered, pointed; *joints* 3 times as long as broad.

Conferva Daviesii, *Dillw. Syn.* 73; *Engl. Bot.* 2329.
Callithamnion Daviesii, *Lyngbye Hydr. Dan.* 129.

Sea; on marine plants.

Thallus rarely more than a quarter of an inch long, not entangled; *thecæ* placed in rows along the upper side of the twigs.

13. *Callithamnion Rothii.* *Roth's pretty-weed.*

Thallus forked, branched, tufted, upright, short; tuft close, scarlet; *branches* and *twigs* alternate; *joints* about 3 times as long as broad.

Conferva phœnicia, *R. Brown MSS. With Bot.* 4, 165.
Conferva Rothii, *Turton's Syst. Nat.* 6, 1806; *Dillw. Conf.* 73; *Engl. Bot.* 1702.
Conferva violacea, *Roth Cat.* 1, 190.
Callithamnion Rothii, *Lyngbye Hydr. Dan.* 129.

Sea-shore.

Tufts oblong, bright red, when dry crimson or purplish; *thallus* about half an inch high; *branches* below distant, above crowded.

14. *Callithamnion lanuginosum.* *Woolly pretty-weed.*

Thallus short, slender, mostly branched, light reddish; *branches* simple, upright, scattered, going out horizontally.

Conferva lanuginosa, *Dillw. Conf.*
Callithamnion lanuginosum, *Lyngbye Hydr. Dan.* 131.

On marine plants.

Threads very minute, coming out horizontally from the base, simple or branched above.

15. *Callith. floridulum.* *Smallflowered pretty-weed.*

Thallus short, slender, tufted, entangled, mostly branched, very light rose-red; *branches* scattered, mostly simple, remote, placed towards the apex; *joints* about 3 times as long as broad.

Conferva floridula, *Dillw. Syn.* 73.

Rocks on the sea-shore.

Threads very fine, about half an inch long; becomes dull reddish green when dry.

16. *Callith. interruptum.* *Interrupted pretty-weed.*

Thallus branched, short, purplish; *branches* and *twigs* alternate; *joints* dilated above, truncated, about four times as long as broad; *thecæ* lateral, elliptical, with a transverse separation, on short pedicells.

Conferva interrupta, *Engl. Bot.* 1838.

On marine plants.

Thallus dull rose-red, about an inch high.

17. *Callith. pedicellatum.* *Pedicelled pretty-weed.*

Thallus much branched, forked, hairlike, red; *twigs* many-cut; *joints* slightly dilated above, 5 or 6 times as

long as broad; *thecæ* reverse ovate, pedicelled, solitary; *pedicells* short, in the forks.

Conferva pedicellata, *Engl. Bot.* 1817; *Dillw. Conf.* 108.

Sea-shores.

Thallus 2 inches high, forming straight, stiff tufts of a very pale dull rose-colour.

V. 30. CERAMIUM. Agardh. *Horn-weed.*

Thallus rose-red, threadlike, jointed, forked, branched; *joints* (solid?) when magnified coloured in fine network; *thecæ* ovate, lateral, involucrated with the short branches.

1. *Ceramium rubrum.* *Red horn-weed.*

Threads very much branched, red, cartilaginous; *twigs* bristlelike, forked at the tip; *joints* ovate, about as long as broad; *knots* contracted.

Conferva marina geniculata ramosissima lubrica, longis sparsisve ramulis, *Dillen in Raii Syn.* 61, 23.
Conferva rubra, *Huds. Fl. Angl.* 600; *Dillw. Conf.* 34.
Conferva nodulosa, *Lightf. Scot.* 994.
Conferva flosculosa, *Ellis Phil. Tr.* 57, 425.
Ceramium virgatum, *Roth Cat.* 1.
Ceramium elongatum, *Roth Cat.* 2, 178.
Ceramium rubrum, *Agardh Syn.* 60.
Ceramium diaphanum purpureum, *Roth Cat.* 2, 228.
Fucus Lagasca, *Clem. Ens.* 315.

Parasitic on other sea-plants.

Tufts dark red, becoming yellow by decay; joint pellucid in the centre.

β. maculatum. *Thallus* small, thin; *joints* with a dark central spot.

2. *Ceramium diaphanum.* *Transparent horn-weed.*

Thallus threadlike, very much branched, rather membranaceous, variegated with transparent and purple; *twigs* forcepshape at the tip; *joints* cylindrical, hyaline; *knots* elevated, coloured.

Conferva marina nodosa lubrica ramosissima et elegantissima rubens, *Dillen in Raii Syn.* 62, 25.
Conferva diaphana, *Lightf. Scot.* 996; *Engl. Bot.* 1742.
Conferva nodulosa, *Huds. Fl. Angl.* 600.
Conferva elegans, *Roth Cat.* 1.
Conferva fastigiata, *Roth Cat.* 2, 224.
Conferva globulosa, *Roth Cat.* 2, 233.
Conferva moniliformis, *Roth Cat.* 2, 236.
Ceramium diaphanum, *Roth Cat.* 3, 154.
Ceramium forficatum glabellum, *De Cand. Fl. Fr.* 2, 46.

Sea-coasts on rocks and large marine plants.

Threads divaricated; *joints* vary in length; *sporidia* immersed in the joints.

3. *Ceramium ciliatum.* *Fringed horn-weed.*

Thallus threadlike, forked, slender, very much branched, variegated, transparent, and pale red; *twigs* forcepshape at the tip; *joints* cylindrical, hyaline, scarcely longer than broad; *knots* fringed, in a single whirl.

Conferva ciliata, *Ellis Ph. Tr.* 57, 425; *Dillw. Conf.* 53; *Engl. Bot.* 2428.

Ceramium ciliatum, *Lyngbye Hydr. Dan.* 121.

Conferva pilosa, *Roth Cat.* 2, 225.

Ceramium forcipatum ciliatum, *De Cand. Fl. Fr.* 2, 46.

Sea-shore, on stones and sea-plants.

Thallus tufted; *knots* red, fringed with short, white, spreading, pellucid spines; *theccæ* aggregated.

VI. 31. GRIFFITSIA. Agardh. *Griffiths.*

Thallus rose-red, threadlike, branched; *branches* forked, whirled, or scattered; *joints* pearshaped, composed of a single tube; *knots* pellucid; *thecæ* lateral, appearing like a young shoot, surrounded by many jointless threads; *sporidia* roundish.—Marine.

1. *Griffitsia setacea.* *Bristle griffiths.*

Thallus forked, branched, rodlike, stiff, deep rose-colour, shining; *branches* long; *joints* nearly cylindrical, five times as long as broad.

Corallina confervoides gelatinosa rubens, ramulis et geniculis perangustis, *Dillen in Raii Syn.* 34, 8.

Conferva marina gelatinosa corallinæ instar geniculata tenuior, *Dillen Musc.* 33.

Conferva setacea, *Huds. Fl. Angl.* 599; *Eng. Bot.* 1689; *Dillw. Conf.* 82.

Griffitsia setacea, *Agardh Disp.* 28.

Sea-shores; June to September.

Thallus very bushy, becoming orange-coloured by exposure to the air; *branches* rather obtuse; *fruit* pedunculed.

2. *Griffitsia corallina.* *Coralline griffiths.*

Thallus forked, shining, fine golden-red; *joints* thickened above, 4 times as long as broad.

Corallina confervoides gelatinosa alba, geniculis crassiusculis pellucidis, *Dillen in Raii Syn.* 34, 8.
Conferva marina, gelatinosa, corallinæ instar geniculata crassior, *Dillen Musc.* 33.
Conferva geniculata, *Ellis Ph. Tr.* 57, 425.
Conferva coralloides, *Lin. S. P.* 1636.
Conferva corallina, *Lin. Syst. Veg.* 973; *Dillwyn Conf.* 98; *Engl. Bot.* 1815.
Callithamnion corallinum, *Lyngbye Hydr. Dan.* 126.

Sea-shore; July.
Thallus 2 or 3 inches high; *thecæ* sessile.

3. *Griffitsia barbata.* *Bearded griffiths.*
Thallus forked, branched, pale crimson, fibrous at the tip; *twigs* opposite, many-cut, very slender; *joints* thickened above, 5 times as long as broad.

Conferva florifera, *Ellis Ph. Tr.* 57, 425.
Conferva barbata, *Engl. Bot.* 1814; *Dillw. Syn.* 75.
Griffitsia barbata, *Agardh Disp.* 28.

Sea-shores; July.
Thallus 2 or 3 inches high; *lower branches* divaricating; *thecæ* lateral, often sessile.

4. *Griffitsia multifida.* *Many-cut griffiths.*
Thallus branched, red; *twigs* opposite or ternate, distant, many-cut; *joints* cylindrical, 4 or 5 times as long as broad.

Conferva multifida, *Engl. Bot.* 1818, not of Hudson; *Dillw. Syn.* 75.
Griffitsia multifida, *Agardh Disp.* 28.

Thalli several, 3 to 5 inches high, fugacious rose-colour; *branches* unequal.

5. *Griffitsia equisetifolia.* *Horsetail griffiths.*
Thallus very much branched, thick, purplish red; *branches* attenuated at both ends; *twigs* in whirls, tiledlike, short, many-cut, covering the stem entirely; *joints* 3 to 5 times as long as broad.

Conferva imbricata, *Huds. Fl. Angl.* 603.
Conferva multifida, *Huds. Fl. Angl.* 603.
Conferva equisetifolia, *Lightf. Scot.* 984; *Engl. Bot.* 1479; *Dillw. Conf.* 54.

Sea-shore.
Thallus 3 or 4 inches long, branched, bright red when young; purplish brown when older; *branches* cylindrical, alternate.

VII. 32. BORRICHIUS. *Borrichius.*

Thallus rose-red, threadshape; *branches* forked, verticillate; *joints* cylindrical, composed of a single tube; *knots* pellucid; *thecæ* ovate, naked, on the side of the twigs.—Gelatinous, marine.

Borrichius gelatinosus. *Gelatinous borrichius.*

Thallus cylindrical, much branched, very gelatinous, very pale pink; *branches* alternate, very numerous, cylindrical, blunt, recurved.

Rivularia verticillata, *With. Bot. Arr.* 4, 127; *Engl. Bot.* 2466.

Sea-coasts; July and August.

VIII. 33. BATRACHOSPERMUM. B. de St. Vincent. *Knotweed.*

Thallus green or brown, threadlike, branched; *twigs* forked, in whirls; *joints* cylindrical, composed of a single tube; knots pellucid; *thecæ* ovate, naked, on the side of the twigs.—Very gelatinous, beadlike, appearing like a dotted picture when dry, in marshes.

1. *Batrachospermum moniliforme.* *Necklace knot-weed.*

Thallus much branched, forming tufts, attenuated; *branches* alternate, spreading; *twigs* in whirls, forked, very close; *joints* ovate, necklacelike.

Conferva fontana nodosa, spermatis ranarum instar lubrica, major et fusca, *Dillen in Raii Syn.* 62, 26.

Chara batrachosperma, *Weiss Crypt. Gott.* 33, 1.

Chara gelatinosa, *Roth Cat.* 125.

Conferva gelatinosa, *Lin. Syst. Nat.* 2, 720; *Dillw. Conf.* 32: *Engl. Bot.* 689.

Batrachosperma ludibunda, *B. de S. Vinc. Ann. Mus.* 12, 310.

Batrachospermum moniliforme, *Roth Germ.* 3, 480.

In clear rivulets and springs, on pebbles.

Thallus 1 to 3 inches long; *lower joints* very long, upper shorter.

β. *purpurascens.* *Branches* more pointed; *thallus* purplish blue.

γ. *detersum.* *Twigs* wanting; *thallus* appearing like naked, knotted threads.

Conferva fontana nodosa, lubrica; filamentis tenuissimis nigris, *Dillen Musc.* 39.

Conferva atra, *Huds. Angl.* 597; *Dillw. Conf.* 11; *Engl. Bot.* 690.

Ceramium nodulosum, *Agardh Dec.* 23.

Batrachospermum moniliforme detersum, *Agardh Syn.* 122.

2. *Batrachospermum vagum.* *Vague knot-weed.*

Thallus forked, round, equal; *branches* spreading; *twigs* in whirls, forked, very close; *joints* ovate, beadlike.

Conferva alpina lubrica, filamentis nodosis cæruleis, *Dillen Musc.*
Conferva gelatinosa β, *Huds. Fl. Angl.* 598.
Chara gelatinosa vaga, *Roth Germ.* 1, 127.
Conferva gelatinosa cærulescens, *Wahl*, 510.
Batrachosperma turfosa, *B. de St. Vinc. Ann Mus.* 12, 310.
Batrachospermum moniliforme vagum, *Roth Cat.* 3, 482.
Batrachospermum vagum, *Agardh Syn.* 123.

Ponds in boggy soils.

Thallus less slimy, stiffer and more slender than the preceding; not appearing like a row of beads.

B. HUTCHINSIDEÆ. *Thallus* threadlike, main stem solid, continuous, jointed or with an internal jointed axis; *joints* composed of many veins or tubes; *twigs* jointed, joints simple or compound; *knots* mostly coloured; *sporidia* enclosed in a capsule-like theca. — Reddish or greenish; mostly marine.

IX. 34. CLADOSTEPHUS. Agardh. *Bottlebrush-weed.*

Thallus olive, branched; *main filament* solid, jointed; *twigs* jointed, in whirls, mostly simple; *joints* simple; *thecæ* ovate, peduncled, on the side of the twigs.

1. *Cladostephus verticillatus.* *Whirl bottlebrush-weed.*

Thallus forked, branched, brownish olive; *twigs* mostly 2-cut, incurved, in regular whirls, short, tiledlike; *joints* broader than long; *thecæ* elliptical, oblong.

Conferva verticillata, *Lightf. Scot.* 984; *Dillw. Conf.* 55; *Engl. Bot* 1718.
Conferva myriophyllum, *Roth Cat.* 3, 212.
Cladostephus verticillatus, *Agardh Disp.* 26.
Ceramium verticillatum, *De Cand. Fl. Fr.* 39.
Fucus verticillatus, *Wulf. Crypt. Gott.* 15.

Sea-coasts.

Main stem very thick, spreading; *thecæ* on the twigs of the old main stem.

2. *Cladostephus spongiosus.* *Spongy bottlebrush-weed.*

Thallus branched, olive-green; *twigs* simple, bent inwards, scattered, tiledlike; *joints* little longer than broad; *thecæ* reverse-ovate.

Fucus teretifolius spongiosus pilosissimus, *Raii Syn.* 46.
Fucus hirsutus, *Lin. Mant.* 134.
Conferva spongiosa, *Huds. Fl. Angl.* 596; *Dillw. Conf.* 42.
Cladostephus spongiosus, *Agardh Disp.* 26.

Sea-shore.

Thecæ on the shorter twigs of the branches.

3. *Cladostephus niveus.* *White bottlebrush-weed.*

Thallus branched; branches slender, rather stiff, white; *twigs* in obscure whirls; *joints* as long as broad, dark.

Conferva nivea, *Dillwyn Syn.* 54; *Engl. Bot.* 2529; *Agardh Disp.* 30.
Byssus lanuginosus, *Willan Sulph. Wat.* 10.

Roots and dead leaves in sulphureous springs.

Thalli very slender; *branches* very numerous, ringed with black, mostly covered with a white crust. Perhaps a thorea; but it is very imperfectly described by authors.

X. 35. SPHACELARIA. Lyngbye. *Rust-weed.*

Thallus olive-branched, jointed; *branches* 2-rowed; *joints* all compound; *sporidia* enclosed in the tip of the branches which become sphacellated and open, rarely in lateral, ovate, capsular thecæ.

1. *Sphacelaria pennata.* *Pinnate rust-weed.*

Thallus much branched, slender; *branches* alternate, rather bipinnate, lobes 2-rowed, alternate and opposite; *joints* as long as broad.

Conferva cirrhosa, *Roth Cat.* 3, 294.
Conferva pennata, *Huds. Fl. Angl.* 604; *Dillw. Conf.* 86; *Engl. Bot.* 2330.
Ceramium cirrhosum, *Agardh Disp.* 21.
Sphacelaria pennata, *Lyngbye Hydr. Dan.* 195.

Sea-shore, on rocks, corallines, and sea-plants.

Tufts bushy, from one-half to two inches high; *threads* olive-brown.

2. *Sphacelaria scoparia.* *Shore rust-weed.*

Thallus much branched, stiff; *branches* in bundles, alternate, nearly bipinnate, crowded; *lobes* short, alternate, 2-rowed, pressed close, pointed; *joints* as long as broad.

Muscus marinus rubens, *Ger. emac.* 1571; *Park.* 1296.
Conferva marina pinnata, *Dillen in Raii Syn.* 59, 14.
Conferva scoparia, *Lin. S. P.* 1655; *Engl. Bot.* 1552; *Dillw. Conf.* 52.
Ceramium scoparium, *Roth Cat.* 2, 141.
Sphacelaria scoparia, *Lyngbye Hydr. Dan.* 104, 3.

Sea-shores, on shells and pebbles; all the year.

Thallus dull, olive-brown, 3 to 6 inches high; *stems* many, clothed with entangled jointed threads or twigs clustered.

3. *Sphacelaria Mertensii.* *Merten's rust-weed.*
Thallus branched, yellowish brown; *branches* pinnate; *lobes* mostly opposite, short; *joints* half as long as broad.

Conferva Mertensii, *Engl. Bot.* 999; *Dillw. Syn.* 79.

Tufts 3 inches high; *stems* many, cylindrical, pinnate; branches short, opposite, 2-rowed, from the base of the stem; pellucid.

4. *Sphacelaria cæspitula.* *Small-tufted rust-weed.*
Thallus tufted, very small; *branches* mostly simple, alternate, long, blunt.

Conferva olivacea, *Dillw. Syn.* 57.
Sphacelaria cæspitula, *Lyngbye Hydr. Dan.* 106.

On other sea-plants.
Threads about a line high, aggregated, yellowish green.

5. *Sphacelaria fusca.* *Brown rust-weed.*
Thallus threadlike; *branches* distant, mostly alternate; *twigs* spreading, clublike; *joints* transversely banded in the middle, as long as broad.

Conferva fusca, *Huds. Fl. Angl.* 602; *Dillw. Conf.* 95.

Stones and rocks in the sea.
Threads 3 or 4 inches long.

XI. 36. ELLISIUS. *Ellis.*

Thallus rose-red, branched; *main stem* solid, continuous, or slightly jointed; *branches* and *twigs* scattered, jointed; joints of the twigs simple, composed of one tube; *thecæ* ovate, lateral, or immersed in the tip of the branches. — Marine.

1. *Ellisius glaber.* *Bald ellis.*
Threads much branched, red; *stem* thick, jointless, netlike, naked below, very much branched above; *twigs* crowded, nearly in whirls, short, alternately branched, jointed; *joints* as long as broad.

Conferva Arbuscula, *Dillw. Conf.* 85; *Engl. Bot.* 1916.

Sea-shore.
Thallus tufted, 2 inches high.

2. *Ellisius coccineus.* *Scarlet ellis.*

Threads much branched, scarlet; *stem* thick, shaggy, obscurely jointed; *branches* alternately doubly pinnate; *lobes* many-cut, tufted, jointed; *joints* rather shorter than broad.

Conferva coccinea, *Huds. Fl. Angl.* 603; *Engl. Bot.* 1055; *Dillw. Conf.* 3.
Conferva plumosa, *Lightf. Scot.* 966.

Sea-shore.

Main stem rough; *younger branches* bright scarlet; *thecæ* ovate and lanceolate.

β. *tenuior.* *Threads* slender, twigs short, and less feathered.

XII. 37. HUTCHINSIA. Agardh. *Hutchins.*

Thallus rose-red, branched, jointed; *joints* with a central tube, all compound, streaked, or composed of many parallel longitudinal lines; *thecæ* external, ovate, lateral, or immersed in the tips of the branches.—Marine.

a. *Threads pervaded by 4 tubes, veined in network; branches long, bristlelike.*

1. *Hutchinsia elongata.* *Long hutchins.*

Threads much branched, cartilaginous, purple; *branches* and *twigs* bristlelike, long, very slender, stiff; *joints* half as long as broad; lower joints obsolete, veined in network.

Conferva elongata, *Dillw. Conf.* 33; *Engl. Bot.* 4229.
Ceramium elongatum, *Roth Cat.* 3, 128.
Hutchinsia elongata, *Agardh Syn.* 54.
Lobster-horn conferva.

Sea-shore; October.

Thallus spreading, 3 to 12 inches high, purplish brown; *branches* and *twigs* narrower at both ends; *joints* veiny, rather straight, angles of the branches rounded.

2. *Hutchinsia brachygona.* *Short-jointed hutchins.*

Thallus diffused, vaguely branched; *branches* rather remote, spreading; *twigs* mostly simple, attenuated; *joints* half as long as broad, veined in network.

Fucus diffusus, *Huds. Fl. Angl.* 589.
Ceramium brachygonum, *Lyngbye Hydr. Dan.* 118.

Sea-shore, on the rocks; annual; spring and summer.

Thallus red, when dry blackish, stiff.

b. *Thallus tubular, solid; joints streaked lengthways.*

3. *Hutchinsia fucoides.* *Wracklike hutchins.*

Threads very much branched, diffused, rather cartilaginous, brownish-black; *twigs* horizontally spreading, forked; last twigs alternate, bent inwards, pointed; *joints* rather longer than broad.

Conferva fucoides, *Huds. Fl. Angl.* 608; *Dillw. Conf.* 75; *Engl. Bot.* 1743.
Ceramium violaceum, *Roth Cat.* 1, 150.
Hutchinsia violacea, *Agardh Syn.* 54?

Sea-shore; July to September.

Thallus very bushy, 3 to 12 inches high; *outline* orbicular, blackish brown when dry, elastic; *joints* composed of a simple series of small oblique veins.

4. *Hutchinsia nigrescens.* *Blackish hutchins.*

Threads very much branched, stiff, rather cartilaginous, brownish black; *twigs* upright, forked, pointed; *joints* rather longer than broad.

Conferva nigrescens, *Huds. Fl. Angl.* 602? *Engl. Bot.* 1717.

Sea-coasts.

Thallus closely tufted, 4 to 6 inches high, outline narrow wedgeshape; *main filament* very thick; *branches* and twigs straight, upright.

5. *Hutchinsia fibrata.* *Threaded hutchins.*

Threads branched, reddish purple; *branches* forked; *twigs* rather bundled; *tips* furnished with pellucid jointed fibres; *joints* of the stem long, of the twigs as long as broad.

Conferva fibrata, *Dillw. Syn.* 159; *Engl. Bot.* 2139.

Sea-shore, on marine plants.

Thallus closely tufted, 2 or 3 inches high; end of the twigs often pellucid, colourless, fringed with many long, slender, forked, transparent fibres.

6. *Hutchinsia urceolata.* *Pitcher hutchins.*

Threads much branched, diffuse, reddish brown; *twigs* spreading, short; *joints* of the stem longer, of the twigs shorter than broad; *veins* few; *thecæ* pitchershape.

Conferva nigrescens, *Huds. Fl. Angl.* 602?
Conferva urceolata, *Dillw. Syn.* 156; *Engl. Bot.* 2365.

Sea-shores on rocks, or marine plants.

Thallus slender, bushy, rich red brown, when dry dull black; *joints* of 4 or 6 veins, long near the root but become gradually shorter.

7. *Hutchinsia badia.* *Bay hutchins.*

Threads branched, stiff, reddish black; *branches* long; *twigs* short, distant, mostly simple; *joints* rather longer than broad.

Conferva badia, *Dillw. Syn.* 85, not of Agardh?

Sea-shore.

8. *Hutchinsia stricta.* *Stiff hutchins.*

Threads branched, stiff, equal, level-topped, tender, scarlet; *branches* forked, nearly upright; *joints* about three times as long as broad.

Conferva stricta, *Dillw. Conf.* 40.
Hutchinsia stricta, *Agardh Syn.* 56.

Sea-coasts.

Thallus tufted; outline wedgeshape; glossy red when dried; *threads* of nearly equal thickness throughout.

β. *diffusa.* *Threads* diffused; *outline* nearly orbicular, dull dirty brown when dry.

9. *Hutchinsia patens.* *Spreading hutchins.*

Threads branched, slightly diffused, rose-red; *branches* scattered, rather spreading; *joints* about twice as long as broad.

Conferva patens, *Dillw. Syn.* 83.

Sea-coast; on marine plants.

Thallus tufted, diffuse; *branches* lateral; *twigs* short, numerous.

10. *Hutchinsia fibrillosa.* *Fibrillous hutchins.*

Threads much branched, red; *branches* scattered, rather truncated, ending in a close pencil and fibres; *lower joints* longer than broad, the upper shorter.

Conferva fibrillosa, *Dillw. Syn.* 86.
Hutchinsia fibrillosa, *Agardh Syn.* 57.

Sea-shores.

Thallus tufted, spreading, irregularly branched; *twigs* many; *fibres* simple, tubular, appearing as if jointed; *joints* much longer than broad; *thecæ* slightly pedicelled.

11. *Hutchinsia nigra.* *Black hutchins.*

Threads branched, reddish black; *branches* long; *twigs* short, awlshape, distant, generally many-cut, nearly pencilshape; *joints* of the stem longer than broad, of the twigs as long.

Conferva nigra, *Huds. Fl. Angl.* 595; *Engl. Bot.* 2340; *Dillw. Syn.* 86.
Conferva atrorubescens, *Dillw. Conf.* 70.
Hutchinsia atrorubescens, *Agardh Syn.* 58.

Sea-coasts; July.

Plant black when dry; *joints* composed of 8 or 10 veins; *thecæ* ovate, sometimes pedicelled.

12. *Hutchinsia denudata.* *Naked hutchinsia.*

Threads very much branched, spreading, brownish; *branches* scattered, divaricating, long, distant; *joints* rather longer than broad.

Conferva denudata, *Dillw. Syn.* 85.
Hutchinsia divaricata, *Agardh Syn.* 59?

Sea-shore.

Thallus 2 to 4 inches long; *threads* repeatedly branched; *branches* issue almost at right angles; *twigs* pointed, very long, slender.

13. *Hutchinsia Griffithsiana.* *Griffiths' hutchins.*

Threads repeatedly branched, pale red; *branches* spreading; *twigs* solitary or clustered, very short, simple, awlshape; *joints* as long as broad; *thecæ* on the twigs, sometimes aggregate.

Conferva Griffithsiana, *Engl. Bot.* 2312.

Sea-shores; March.

Thallus 3 or 4 inches high, when dry dark brownish green, when in decay light green.

14. *Hutchinsia byssoides.* *Byssus hutchins.*

Threads more than twice pinnated, weak, red; *segments* and lobes alternate; *lobes* gradually smaller, many-cut, pencilshape; *lower joints* long, upper short; *thecæ* sessile.

Fucus byssoides, *Tr. Lin. Soc.* 3, 229.
Conferva byssoides, *Engl. Bot.* 347; *Dillw.* 58.
Ceramium molle, *Roth Cat.* 3, 138.
Ceramium byssoides, *Agardh Disp.* 20.
Hutchinsia byssoides, *Agardh Syn.* 60.

Sea-shore; August.

Main thread obscurely jointed, composed of many parallel veins; *twigs* in bundles, short, rose-red.

15. *Hutchinsia parasitica.* *Parasitic hutchins.*

Threads doubly pinnate, rather stiff, brownish red; *segments* and lobes alternate; *joints* not quite so long as broad.

Conferva parasitica, *Huds. Fl Angl.* 604; *Engl. Bot.* 1429; *Dillw.* 87.
Hutchinsia Mostingii, *Lyngbye Hydr. Dan.* 116?

Sea-shore; on marine plants.

Thallus 1 or 2 inches long, slender; *twigs* pointed, gradually smaller; *thecæ* oblong, axillary, pedicelled.

16. *Hutchinsia Brodiæi.* *Brodie's hutchins.*

Threads very much branched, purplish black; *branches* long; *twigs* scattered, spreading, many-cut, in bundles; *joints* of the branches obsolete, of the twigs rather longer than broad.

Conferva Brodiæi, *Dillw. Conf.* 107; *Engl. Bot.* 2589.

Thallus 1 or 2 feet long, repeatedly and finely branched; *thecæ* lateral or axillary.

17. *Hutchinsia pulchella.* *Pretty hutchins.*

Thallus much branched, round; *branches* and *twigs* ascending, alternate, close, pointed, simple or 2-cut; *joints* shorter than broad.

Fucus cristatus γ, *Turner Hist. Fuc.* 48.
Fucus cristatus, *Engl. Bot.* 1925.

Sea-shores.

Thallus 2 or 3 inches high, compressed, repeatedly alternately branched.

XIII. 38. VERTEBRATA. *Backbone.*

Thallus round, forked, branched, smooth; *axis* central, jointed; *joints* composed of many tubes, with a central opake spot; *thecæ* ovate, lateral, or in the tip of the twigs.

Vertebrata fastigiata. *Even-topped backbone.*

Threads forked, even-topped; *joints* half as long as broad, with a central black spot.

Conferva marina geniculata ramosissima lubrica, brevibus et palmatim congestis ramulis, *Dillen in Raii Syn.* 61, 24.
Conferva marina, nigra palmata, *Dillen Musc.* 32.
Conferva polymorpha, *Lin. S. P.* 1636; *Engl. Bot.* 1764; *Dillw.* 44.
Fucus lanosus, *Lin. Syst. Veg. ed.* 13, 815.
Ceramium fastigiatum, *Roth Cat.* 2, 175.
Hutchinsia fastigiata, *Agardh Syn.* 53.

Sea and mouths of rivers; parasitic on fuci.

Tufts stiff, close, blackish brown, 2 or 3 inches high, not adhering to paper; *joints* composed of an internal annular series of interrupted cells.

C. CORALLIDEÆ. *Thallus* threadshape, jointed; *axis* membranaceous, fibrous, continuous; *bark* cellular, cretaceous, jointed; *thecæ* terminal or lateral.—Marine.

XIV. 39. JANIA. Lamarck. *Jania.*

Thallus threadlike, hairlike, forked, jointed; *joints* cylindrical; *axis* horny; *bark* thin, chalky.

1. *Jania rubens.* *Reddish jania.*

Joints of the stem roundish, of the forks clubbed; *thecæ* polymorphous, appendiculated, or naked.

Jania rubra, *Lamouroux Zooph.* 272.

Sea-shores.

β. *communis.* *Branches* long; *thecæ* 0.

Corallina rubra, *Ellis Corall.* 64.

δ. *cristata.* *Thecæ* appendiculated; *appendix* truncated.

Corallina cristata, *Ellis Corall.* 65.

ζ. *spermatophoros.* *Thecæ* very numerous, broad; *appendix* long, bristlelike.

Corallina spermatophoros, *Ellis Corall.* 66.

2. *Jania corniculata.* *Horned jania.*

Joints of the stem and branches roundish, rather compressed in the upper part, 2-horned.

Corallina corniculata, *Ellis Zooph.* 121; *Corall.* 65.

Sea-shore, and on marine plants.

Appendices or horns at the top of the joints vary much in length, and are sometimes jointed.

XV. 40. CORALLINA. Pliny. *Coralline.*

Thallus threadlike, jointed; *branches* three-forked; *axis* fibrous, horny; *bark* chalklike, thick, cellular.

1. *Corallina officinalis.* *Shop coralline.*

Three-forked, greenish; *branches* pinnate; pinnules two-rowed; *joints* of the stem rather compressed, wedgeshaped, of the twigs cylindrical; *thecæ* terminal, capitate.

Corallina, *Raii Syn.* 33, 1.
Corallina Anglica, *Ger. em.* 1379.
Corallina officinalis, *Ellis Zooph.* 110; *Corall.* 24.

Rocks and shells in the sea.

2. *Corallina elongata.* *Long coralline.*
Three-forked; joints of the stem roundish, wedgeshape, of the branches cylindrical; *thecæ* terminal, obtuse or headed.

Corallina elongata, *Ellis Zooph.* 119.
Corallina, &c. *Ellis Corall.* 63, 4.

Sea-shore.

3. *Corallina squamata.* *Scaled coralline.*
Three-forked; joints of the stem round, compressed, wedgeshape, of the twigs compressed, flat; *thecæ* terminal, flattened, edge acute.

Corallina squamata, *Ellis Zooph.* 117; *Corall.* 63.
Corallina abietina, *Lamouroux Hist.*

Rocks in the sea.

D. DICTYOTIDEÆ. *Thallus* continuous, membranaceous or rather leatherlike, flat, fanshaped or forked; fibres parallel from the base to the tip, finely reticulated by concentric parallel lines; bark chalklike, hairy, conferva-like; sporidia scattered; colour green or reddish, permanent.

XVI. 41. ZONARIA. Draparnaud. *Girdleweed.*
Thallus flat, fanshaped, ribless; base villous; *sporidia* solitary in immersed, concentric lines.—Brownish.

1. *Zonaria pavonia.* *Peacock girdleweed.*
Thallus flat, leatherlike, fanshaped, simple or lobed, streaked; streaks crossing each other.

Fucus maritimus gallopavonis pennas referens, *Raii Syn.* 43, 14; *Ellis Corall.* 88.
Ulva pavonia, *Lin. Syst. Nat. ed.* 12, 2, 719.
Frattinickia pavonia, *Web. and Mohr. Ind. Mus.*
Zonaria pavonia, *Agardh Disp.* 20.
Dictyota (Padina) pavonia, *Lamouroux Diss.*

Rock on sea-shore.
Thalli several together from a central base, spreading circularly.

2. *Zonaria atomaria.* *Speckled girdleweed.*

Thallus flat, dilated above, fanshaped, palmate; lobes linear, slightly divided.

Ulva atomaria, *Woodward in Tr. Lin. Soc.* 3, 53; *Engl. Bot.* 419.
Dictyota zonata, *Lamouroux Diss.* 25, 1.
Zonaria zonata, *Agardh Dispos.* 20.

Sea-coasts.

Thallus yellowish brown, edge not cut.

β. *ciliata.* *Lobes* slender; edge fringed, serrated.

Dictyota ciliata, *Lamouroux Diss.*
Ulva atomaria, *Engl. Bot.* the lower fig.
Ulva serrata, *De Cand. Fl. Gall. Syn.* 3.

XVII. 42. DICTYOTA. Lamouroux. *Dictyote.*

Thallus flat, membranaceous, ribless, mostly forked, much branched; *sporidia* immersed in interrupted series, or scattered.

1. *Dictyota dichotoma.* *Two-forked dictyote.*

Thallus olive, yellowish, membranaceous, forked; lobes linear, not cut.

Fucus membranaceus dichotomus graminicus, *Raii Syn.* 45, 2.
Ulva dichotoma, *Lightf. Scot.* 975; *Engl. Bot.* 774.
Dictyota dichotoma, *Lamouroux Diss.*
Zonaria dichotoma, *Agardh Disp.* 22.

Sea-coast.

β. *inequalis.* *Last lobes* 3 or 4 times narrower than the primary ones.

γ. *implexa.* *Thallus* small, lobes very slender, linear, entangled.

Ulva dichotoma, *Engl. Bot.* 775, lower fig.
Dictyota implexa, *Lamouroux Diss.*

2. *Dictyota ligulata.* *Tonguelike dictyote.*

Thallus flat, membranaceous, reddish, branched; *branches* dilated, rather forked with obtuse angles, terminating with straplike fringed segments.

Ulva ligulata, *Woodward Tr. Lin. Soc.* 3, 54; *Engl. Bot.* 420.
Zonaria? ligulata, *Agardh Disp.* 21.

Sea-shores.

XVIII. 43. DICTYOPTERIS. Lamouroux. *Dictyoptere.*

Thallus flat, membranaceous, midribbed, olive-green, forked, branched; *sporidia* in clusters; clusters prominent, scattered, in a line on each side of the midrib.

Dictyopteris elongata. *Long dictyoptere.*

Thallus linear, membranaceous, pellucid, greenish brown; midrib slightly prominent, here and there proliferous; edge not in the least cut; *branches* long.

Fucus membranaceus, *Stackh. Nereis*, 13; *Engl. Bot.* 1758.
Dictyopteris elongata, *Lamouroux Essai.*

Sea-shore.

Holdfasts callous; *thallus* woolly, very thin, when dry transparent, greenish.

E. Ulvoideæ. *Thallus* continuous, membranaceous, leatherlike or gelatinous, regularly cellular; *integuments* smooth, membranaceous; *sporidia* scattered in the substance of the thallus, or in prominent spots.—Greenish, either permanent, or becoming whitish.

XIX. 44. ASPEROCOCCUS. Lamour. *Roughfruit.*

Thallus leatherlike, compressed, tubular? branched, brownish; *sporidia* peduncled, in scattered groups on the surface of the thallus; *holdfasts* shieldlike.

Asperococcus multifida. *Many-cut roughfruit.*

Thallus cartilaginous, brownish, repeatedly branched, rather palmate; *lobes* spreading, linear, various in length and breadth.

Ulva multifida, *Engl. Bot.* 1913.

Sea-shore.

Holdfasts shieldlike; *thallus* 4 or 5 inches long.

XX. 45. ULVA. Linnæus. *Laver.*

Thallus membranaceous, flat, nerveless, mostly green, rarely purplish; *stirps* none; *holdfasts* shieldlike; *sporidia* 4 together, immersed in the substance of the thallus.

1. *Ulva lactucæfolia.* *Lettuce-leaf laver.*

Thallus bright green, aggregate, oblong, undulated, bullated, below attenuated, above dilated, lobed, crisped.

Ulva marina lactucæ similis, *Raii Syn.* 62, 1.
Tremella marina vulgaris lactucæ similis, *Dillen. Musc.* 42.
Ulva Lactuca, *Lin. S. P.* 1682; *Engl. Bot.* 1551.
Green laver. Oyster green.

Stones and shells in the sea; annual.

Thallus pale green, very tender, thin, flaccid.—Salt and bitterish, eaten stewed with lemon-juice as an antiscorbutic, but acts strongly upon the bowels.

2. *Ulva latissima.* *Broadest laver.*

Thallus yellow-green, solitary, oblong, very broad, flat, edge waved.

Ulva latissima, *Lin. S. P.* 1632.

Sea-shores.

Thallus 2 or 3 feet long, nearly a foot broad, edge waved, base not narrower.

3. *Ulva bullosa.* *Bullate laver.*

Thallus dark green, dilated, at first tubular, then flattened, sinuous, rather plaited, slippery.

Ulva palustris lactucæ marinæ similis, sed multo minor et tenerior, *Dillen in Raii Syn.* 63, 6.

Tremella palustris, vulgari similis, sed minor et tenerior, *Dillen Musc.* 44.

Ulla bullosa, *Roth Cat.* 3, 329.

Ulva Lactuca β, *Hudson Fl. Angl.* 567.

On aquatic plants in ditches; annual; Sept. to May.

Thallus solitary or aggregate.

4. *Ulva lanceolata.* *Lance laver.*

Thallus pale green, ovate, spearshape.

Ulva lanceolata, *Lin. S. P.*

Rocks on the sea-shore.

Thallus 9 inches to a foot long.

5. *Ulva fasciata.* *Banded laver.*

Thallus green, aggregate, lanceolate, not cut, narrower at both ends, flat; edge flexuous.

Ulva Linza, *Lin. S. P.* 1633.

Tremella marina fasciata, *Dillen in Raii Syn.* 62, 3; *Musc.* 46.

Thallus 6 to 12 inches long, an inch broad.

6. *Ulva plicata.* *Folded laver.*

Thallus dark green, connate at bottom, imbricate, plaited, ovate, blunt.

Lichen marinus, *Tabernæm. Icon.* 814.

Bryon lactucæfolium, *Lobel*, 2, 247.

Ulva plicata, *Flor. Dan.* 829.

Rocks and the sea-shore.

Thalli many, aggregate, umbilicated at bottom, in the centre.

7. *Ulva terrestris.* *Land laver.*

Thallus dark green, aggregate, ovate, crowded, slender, decumbent, plaited, crisped.

Ulva terrestris, *Roth Cat.* 211.
Ulva crispa, *Lightfoot Fl. Scot.* 972.
Ulva Lactuca, γ, *Huds. Fl. Angl.* 567.

Damp, shady places.

Thalli many, aggregated, in a crisp and bullated bed.

8. *Ulva umbilicata.* *Umbilicated laver.*

Thallus reddish brown, flat, tiled-like, gregarious, nearly orbiculate, umbilicated, sessile, longitudinally plaited.

Ulva marina umbilicata, *Dillen in Raii Syn.* 63, 3.
Tremella marina umbilicata, *Dillen Musc.* 45.
Ulva umbilicalis, *Lin. S. P.* 1633; *Engl. Bot.* 2286.
Fucus Tremella umbilicata, *Gmel.* 219.
Ulva purpurea umbilicata, *Agardh Syn.* 41.

On stones, on the sea-shore.

9. *Ulva purpurea.* *Purple laver.*

Thallus purple, flat, solitary, lanceolate; *edge* not cut, wavey, crisp.

Ulva purpurea, *Roth Cat.* 1, 209.
Ulva umbilicalis β, *Wahl. Lapp.* 967.

Rock on the sea-shores.

Thallus rounded and contracted at bottom.

10. *Ulva edulis.* *Eatable laver.*

Thallus very dark red, nearly opake, wedgeshape, not in the least cut, rounded at the tip, narrowed at bottom.

Fucus Scoticus, latissimus edulis dulcis, *Raii Syn.* 46, 30.
Ulva edulis, *De Candolle Fl. Gall.* 2, 12.
Fucus edulis, *Stackh. Nereis Brit.* 12; *Engl. Bot.* 1307.
Fucus dulcis, *Gmelin*, 189.
Fucus Lactuca, *Esper*, 64.
Fucus carnosus, *Esper*, 76.
Fucus palmatus β, *Lightf. Scot.* 934.
Halymenia edulis, *Agardh Syn.* 35.
Dulse.

Sea-shores.

Odour like tea; eaten raw before dinner.

11. *Ulva palmata.* *Palmate laver.*

Thallus purplish red, pellucid, palmate, not in the least cut; *lobes* oblong, mostly simple.

Fucus membranaceus ceranoides, *Raii Syn.* 46, 29.
Ulva palmata, *De Cand. Fl. Gall.* 2, 12.
Halymenia palmata, *Agardh Syn.* 35.
Fucus palmatus, *Lin. S. P.* 1630; *Turner Hist.* 115; *Engl. Bot.* 1306.
Fucus ovinus, *Fl. Norv.* 96.
Fucus caprinus, *Fl. Dan.* 1128.
Fucus bullatus, *Fl. Dan.* 770.
Fucus rubens, *Esper*, 75.

Rocks on the sea-shore.

Thalli gregarious, slenderer at bottom, 2-forked or palmate with 2 or 3 lobes.

β. *marginifer*. *Thallus* oblong, mostly simple, edge proliferous.

Ulva caprina, *Fl. Norv.* 2, 126.

γ. *laciniata*. *Thallus* finely jagged; lobes linear.

Ulva delicatula, *Gunn Fl. Norv.* 8.
Fucus delicatula, *Fl. Dan.* 1190.
Fucus laciniatus, *Wahl.* 497.

12. *Ulva sobolifera*. *Young-bearing laver.*

Thallus rose-red, membranaceous, flat, palmately lobed; *edge* proliferous; *lobes* dilated, tip many-cut, toothed.

Fucus soboliferus, *Fl. Dan.* 1065; *Engl. Bot.* 2133; *Turner Hist.* 1, 97.
Halymenia sobolifera, *Agardh Syn.* 36.
Ulva sobolifera, *Lyngbye Hydr. Dan.* 27.

Sea-shores.

Thallus 3 to 6 inches long, branched.

XXI. 46. SCYTOSIPHON. Lyngbye. *Leathernpipe.*

Thallus round, tubular, continuous, even, branched or simple, leatherlike, membranaceous; *sporidia* solitary or crowded, scattered over the whole surface of the thallus; *stirps* 0.

a. *Thallus green, membranaceous.*

1. *Scytosiphon intestinalis*. *Gut leathernpipe.*

Thallus light green, membranaceous; *tube* simple, bent, wavey, puckered.

Ulva marina tubulosa, intestinorum figuram referens, *Raii Syn.* 62, 4.
Ulva intestinalis, *Lin. S. P.* 1632.
Conferva intestinalis, *Roth Cat.* 1, 159.
Scytosiphon intestinalis, *Lyngbye Hydr. Dan.* 67.

Stagnant fresh-waters, and the sea-shore.

Thalli aggregate, resembles the intestines of animals as it floats on the water.

β. *crispus*. *Thallus* compressed, wrinkled and crisp.

Ulva intestinalis, *Roth Cat.* 1, 159.

Thallus olive green, leatherlike.

2. *Scytosiphon compressus*. *Compressed leathernpipe.*

Thallus dark green, membranaceous, round, threadlike, tubular, branched, compressed; *branches* scattered, simple, decumbent.

Ulva compressa, *Lin. S. P.* 1632; *Engl. Bot.* 1739.
Ulva marina tenuissima et compressa, *Raii Syn.* 63, 5.
Tremella marina tenuissima et compressa, *Dillen Musc.* 48.
Conferva compressa, *Roth Cat.* 1, 163.
Conferva crinita, *Roth Cat.* 2, 191.
Scytosiphon compressus, *Lyngbye Hydr. Dan.* 64.

Sea-shore.

Thallus polymorphous, narrower at bottom, simple or branched; *branches* narrower at bottom, mostly simple.

b. Clathrata. *Thallus green, branched, veined in squares like casement-windows; sporidia in each cell.*

3. *Scytosiphon ramulosus.* *Small-branched leathernpipe.*

Thallus green, membranaceous, tubular, much branched, rather compressed; *branches* thickest above; *twigs* scattered, very numerous, pointed.

Ulva ramulosa, *Engl. Bot.* 2137.

Sea-shore.

Thalli numerous, aggregated, 2 inches high; *branches* awlshaped.

4. *Scytosiphon Templetoni.* *Templeton's leathernpipe.*

Thallus pale green, tubular, hairlike, repeatedly branched; *branches* and *twigs* alternate, pressed to the stem, attenuated, acute.

Conferva paradoxa, *Dillw. Syn.* 70; *Engl. Bot.* 2328.

Sea-shore.

Thallus closely tufted, 4 or 5 inches long, slippery.—It appears to differ from S. erecta of *Lyngbye Hydr. Dan.* 15.

5. *Scytosiphon clathratus.* *Window leathernpipe.*

Thallus pale green, round, hairlike, tubular, repeatedly branched; *branches* and *twigs* alternate, spreading, diverging, lying down, pointed.

Conferva clathrata, *Roth Cat.* 175.
Ulva clathrata, *Agardh Syn.* 46.

Sea-shores.

c. *Thallus olive, leatherlike; sporidia scattered, solitary.*

6. *Scytosiphon fœniculaceus.* *Fennel leathernpipe.*

Thallus olivaceous, leatherlike, round, threadlike, much branched; *branches* and *twigs* vague, bent, very closely entangled, attenuated, hairlike.

Conferva fœniculacea, *Hudson Fl. Angl.* 594.
Ceramium inflexum, *Roth Cat.* 3, 131.
Hippuris setaceus, *Barrelier Icon.* 1123.
Fucus subtilis, *Turner Hist.* 2, 34.
Scytosiphon fœniculaceus, *Fl. Dan.* 1595, 1.
Halymenia fœniculacea, *Agardh Syn.* 38.
Hutchinsia inflexa, *Agardh Syn.* 58.

Sea-shores; annual; spring.

Thalli aggregate, 6 or 9 inches high, pale yellow or olive.

7. *Scytosiphon fistulosus.* *Fistular leathernpipe.*

Thallus olive, leatherlike, round, threadshaped, simple, narrower at both ends.

Ulva fistulosa, *Hudson Fl. Angl.* 569; *Engl. Bot.* 642.
Conferva fistulosa, *Roth Cat.* 3, 169.
Chordaria Filum β, *Agardh Syn.* 14.
Scytosiphon fistulosus, *Agardh Disp.* 24.

Sea-shores attached to rocks.

Thalli numerous, flexuous, gelatinous; *sporidia* four together, disposed longitudinally.

d. *Thallus olive; sporidia clustered.*

8. *Scytosiphon filiformis.* *Threadlike leathernpipe.*

Thallus reddish brown, gelatinous, soft, round or compressed; *branches* scattered, mostly simple, long.

Conferva filiformis, *Fl. Dan.* 1480.
Ulva filiformis, *Hudson Fl. Angl.* 570.
Ulva purpurascens, *Engl. Bot.* 641, not of Hudson.
Ulva compressa purpurea, *Agardh Syn.* 45.

Sea-shores; annual; spring and summer.

Thallus 6 inches high; *branches* alternate, rarely slightly branched.

9. *Scytosiphon Turneri.* *Turner's leathernpipe.*

Thallus yellowish brown, membranaceous, finely reticulated, round, threadshape, simple, attenuated at bottom, very obtuse at top.

Ulva Turneri, *Dillw. in Engl. Bot.* 2570.
Gastridium Opuntia, *Lyngbye Hydr. Dan.* 71.

Sea-shores on rocks and plants; annual; summer.

Thalli aggregate, 1 to 6 inches long, rarely globose; *sporidia* in clusters.

XXII. 47. PALMELLA. Lyngbye. *Trembler.*

Thallus cylindrical, simple or branched, solid; integument membranaceous; inside gelatinous, cellular; *sporidia* globular, immersed in the thallus.—Marine.

1. *Palmella defracta.* *Broken trembler.*

Thallus threadlike, simple, twisted, elastic, viscid, pellucid; *sporidia* globular, pale red.

Ulva defracta, *With. Bot. Arr.* 4, 124; *Engl. Bot.* 1626.

On sea-plants.

Thallus 2 to 12 inches long, 1-8th inch in diameter.

2. *Palmella elminthoides.* *Wormlike trembler.*

Thallus threadlike, mostly simple, opake, slippery, rather blunt; *central line* dark, parenchymatous; *sporidia* very minute, opake.

Ulva elminthoides, *With. Bot. Arr.* 4, 141.

Rocks in the sea; July.

Thalli aggregated, 4 to 7 inches long, twisted.

XXIII. 48. MERRETTIA. *Merrett.*

Thallus flat, diversely shaped, solid; integuments membranaceous; inside cellular, gelatinous; *sporidia* scattered, immersed.

1. *Merrettia adnata.* *Adnate merrett.*

Thallus diversely shaped, gelatinous, wrinkled, brownish yellow; *sporidia* globular, brown.

Tremella adnata, *Hudson Fl. Angl.* 565.
Palmella adnata, *Lyngbye Hydr. Dan.* 205.

On rocks between high and low water in the sea.

Thallus wrinkled, 3 to 6 inches in diameter, less than a quarter thick.

2. *Merrettia coriacea.* *Leathery merrett.*

Thallus flat, adnate, very wide, indeterminate, smooth, slippery, dull red; *sporidia* globular,

Ulva rupestris, *Engl. Bot.* 2194.

Upright faces of fells over which water trickles.

Thallus 2 or 3 feet wide, resembles a spread-out piece of very wet reddish or greenish brown washed leather, but is not so tenacious; has been mistaken for flesh.

3. *Merrettia alpicola.* *Alp-loving merrett.*

Thallus not uniform, lobes numerous, rounded, wrinkled, soft, reddish; *sporidia* very small, reddish.

Ulva montana, *Lightf. Scot.* 973; *Engl. Bot.* 2193.
Palmella alpicola, *Lyngbye Hydr. Dan.* 296.
Mountain dulse.

Sides of mountains, among grass and moss.

Thallus deep blood-red or dull green; lobes several, flattish, rounded, ascending, imbricate, rather leatherlike, pulpy.—Used to purge calves.

4. *Merrettia protuberans.* *Protuberant merrett.*

Thallus thick, gelatinous, fleshy, angular, pellucid, green; *sporidia* large, elliptical, growing protuberant, green.

Ulva protuberans, *Engl. Bot.* 2533.

Shady wet places, among mosses; September.

Thallus composed of thick, fleshy, juicy, wrinkled, rough lobes; *sporidia* the size of poppy seeds.

XXIV. 49. OLIVIA. *Olivi.*

Thallus ovate or globular, solid, aggregated into a gelatinous or powdery crust; *sporidia* globular, immersed, scattered.

1. *Olivia botryoides.* *Bunch-of-grapes olivi.*

Thalli minute, globular, pellucid, green, aggregated into a greenish crust.

Byssus botryoides saturate virens, *Dillen in Raii Syn.* 56, 5.
Byssus botryoides, *Lin. S. P.* 1639.
Lichen botryoides, *Acharius Prod.* 10.
Tremella botryoides, *Schreber Spicil.* 141.
Nostoc botryoides, *Agardh Syn.* 135.
Palmella botryoides, *Lyngbye Hydr. Dan.* 205.
Lepraria botryoides, *Engl. Bot.* 2148.

On the ground, or bark of trees, in damp places.

Thalli the size of maw-seed, solid; stain the fingers when touched.

2. *Olivia ochracea.* *Okery olivi.*

Thalli minute, ovate, oker yellow, aggregated into thin, scattered, powdery patches.

Lepraria ochracea, *Turn. and Bor. Lich. Brit.* 1, 8; *Engl. Bot.* 2408.

Trunk of old trees and on moss.

3. *Olivia cinerea.* *Ashcoloured olivi.*

Thalli very minute, roundish, ash-grey, aggregated into a powder crust.

Byssus saxatilis, *Withering Bot. Arr. ed.* 2.
Lichen cinereus, *With. Bot. Arr. ed.* 4.

Limestone-rocks and stones.

4. *Olivia nigra.* *Black olivi.*

Thalli very minute, roundish, dull black; aggregated into a black powdery crust.

Byssus antiquitatis, *Lin. S. P.* ?
Lepraria nigra, *Turn. and Borr. Lich. Brit.* 1, 21; *Eng. Bot.* 2409.

Tops of oak-posts and old wood.

5. *Olivia violacea.* *Violet olivi.*

Thalli minute, ovate, dull red, aggregated into a reddish crust.

Byssus Iolithus, *Lin. S. P.* 1638.
Lichen Iolithus, *With. Bot. Arr.* 4, 3.
Lichen rubens, *Acharius Meth. Lich.* 6.
Lepraria Iolithus, *Achar. Meth.* 8; *Engl. Bot.* 2471.
St. Winifred's blood, in the Holy-well, Cheshire.

Bark of trees, rocks and stones in springs.

Crust dull crimson, smells like violets, or orrice-roots.

6. *Olivia cruenta.* *Bloody olivi.*

Thalli minute, ovate, red, aggregated into a dark red, gelatinous crust.

Tremella cruenta, *Engl. Bot.*

Bottom of walls in damp places.

F. Linckideæ. *Thallus* continuous; integuments membranaceous, smooth; inside fleshy, cellular, slippery; *sporidia* in beadlike filaments sunk in the substance of the thallus.—Green or brownish, not becoming black.

XXV. 50. CARRODORUS. *Carrodori.*

Thallus long, branched, brownish; *sporidia* elliptical, in anastomosing lines.—Marine, fœtid, slippery.

Carrodorus fœtidus. *Stinking carrodori.*

Thallus pale olive, branched; branches crowded, acute.

Conferva fœtida, *Villars Dauph.* 3, 1010; *Dillw. Conf.* 104; *Engl. Bot.* 2101.
Ulva fœtida, *Vaucher Conf.* 285.

Salt marshes and the sea-shore.
Thallus slippery, flaccid, 2 inches high.

XXVI. 51. NOSTOC. Paracelsus. *Nostoch.*

Thallus not uniform or globular, vesicular, greenish, gelatinous; *sporidia* globose, in curved, beadlike threads.—This genus has much affinity with oscillatoria, but the threads of that genus radiate, and have no integument over them.

1. *Nostoc commune.* *Common nostoch.*

Terrestrial; thallus not uniform, solid, plated, wavey; *threads* loosely interwoven.

Ulva terrestris pinguis et fugax, *Dillen in Raii Syn.* 64, 11.
Linckia terrestris gelatinosa membranacea vulgatissima, ex pallida et virescente fulva, *Micheli Nov. Gen. Pl.* 126, 1.
Tremella Nostoc, *Lin. S. P.* 1625; *Engl. Bot.* 461.
Fucus Tremella Nostoc, *Gmel. Hist. Fuc.* 222.
Nostoc commune, *Vaucher*, 222.
Nostoc vulgare, *Wahl. Fl. Lapp.* 992.
Linckia terrestris, *Roth Cat.* 3, 345.
Alcyonidium Nostoc, *Lamouroux Thal. Ess.* 71.
Star-shoot. Star-slough.

Damp, shady, gravelly places; summer and autumn.
Thallus lobed, 2 or 3 inches in diameter; pale green, mostly seen after rain.

2. *Nostoc verrucosum.* *Warty nostoch.*

Thallus rather globose, rather leatherlike, hollow, plaited; *threads* very closely interwoven.

Linckia palustris gelatinosa, saxis adnascens, ex obscuro fulva, et concava vesicam referens, *Micheli Nov. Gen. Pl.* 126, 2.
Nostoc verrucosum, *Vaucher*, 225.
Tremella fluviatilis, *Dillen Mus.* 10.
Tremella verrucosa, *Lin. S. P.* 1625; *Hudson Fl. Angl.* 565.
Tremella utriculata, *Huds. Fl. Angl.* 564?
Fucus Tremella verrucosa, *Gmel. Fuc.* 227.
Linckia verrucosa, *Roth Cat.* 3, 345.

Rocks and stones in rivers, often floating.
Thalli aggregated; when young solid, smooth, opake, when old, hollow, yellowish green.

3. *Nostoc muscorum.* *Moss nostoch.*

Thallus 2-formed, papillose, tuberculate, rather leatherlike.

Nostoc muscorum, *Agardh Syn.* 132.
Tremella intestinalis, *Fl. Dan.* 885.

Damp mossy places.
Blackish green, harder and smaller than n. commune.

4. *Nostoc pruniforme.* *Plumshape nostoch.*

Thallus blackish, globose, solitary, solid, leatherlike, gelatinous, smooth.

Ulva pruniformis, *Lin. S. P.* 1633.
Tremella pruniformis, *Roth Germ.* 548.
Linckia pruniformis, *Roth Cat.* 3, 343.
Nostoc pruniforme, *Agardh Syn.* 134.

Adhering to trees, or floating in lakes; summer.

Thallus gelatinous on the inside, coriaceous on the outside.

5. *Nostoc sphæricum.* *Sphærical nostoch.*

Thallus black green, globose, solid, smooth, aggregated.

Ulva pruniformis, *Hudson Fl. Angl.* 572, not of Eng. Bot.
Conferva Pyrum, *Fl. Dan.* 660, not of Linnæus.
Nostoc sphæricum, *Vaucher*, 223.
Linkia granulata, *Roth Cat.* 3, 342.

Lakes and stagnant waters.

Thallus hardish, gelatinous, mostly aggregated, the size of peas.

6. *Nostoc cæruleum.* *Blue nostoch.*

Thallus small, globose, solid, solitary, smooth, pale blue, shining, pellucid.

Nostoc cæruleum, *Lyngbye Hydr. Dan.* 201.

Ditches and pools on hypni; summer.

Thallus hard, slippery, about a quarter of an inch in diameter.

7. *Nostoc papyraceum.* *Paper nostoch.*

Thallus frothy, gelatinous, slippery, easily parted, bluish.

Byssus latissima papyri instar super aquam sparsa, *Dillen in Raii Syn.* 57, 12; *Dillen Musc.* 21.
Byssus Flos aquæ, *Lin. S. P.* 1637.
Nostoc Flos aquæ, *Lyngbye Hydr. Dan.* 201.

Stagnant waters, floating; spring and summer.

Thallus pale bluish green; when it covers ponds, they are said to be in flower.

G. Alcyonideæ. *Thallus* continuous, gelatinous, olive green becoming black, cellular; cells membranaceous, long, hexaedral; *sporidia* elliptical, scattered in the cells.

XXVII. 52. ALCYONIDIUM. Lamour. *Halcyonide.*

Thallus roundish, long, gelatinous, branched, olive-green; *inner cells* large, hexaedral, outer cells slender, closed. —Marine.

Alcyonidium diaphanum. *Transparent halcyonide.*
Thallus nearly round, branched; branches short.

Fucus spongiosus nodosus, *Raii Syn.* 49, 42; *Ger. em.* 1570.
Spongia ramosa altera Anglica, *Park.* 1304.
Alcyonium gelatinosum, *Lin. Syst. Nat.* 1, 1295.
Ulva diaphana, *Huds. Fl. Angl.* 570; *Engl. Bot.* 363.
Alcyonidium diaphanum, *Lamour. Thal.* 71.
Sea ragged staff.

Thallus 6 to 12 inches long; branches irregular, rather acute; sporidia large, yellowish.

β. *flavescens.* *Branches* obtuse.
Ulva flavescens, *Huds. Fl. Angl.* 570.

XXVIII. 53. EPHIDATIA. Lamouroux. *Ephidate.*
Thallus sessile, orbicular, lobed, gelatinous, cellular, greenish; cells long, pentagonal, radiating from a common point, open at top; *sporidia* elliptical, enclosed in the cells. —Fresh-water.

Ephidatia Gibbsii. *Gibbs' ephidate.*
Thallus sessile, thick, slightly lobed, more or less orbicular, fetid.
Bottom of the reservoir in the Green Park, Mr. Gibbs.
Thallus orbicular or oblong.—This may be the following species, but Lamarck describes the cells of spongilla as irregular; or it may be an alcyonella; I could not, however, perceive any polypi in it, but plenty of sporidia.

XXIX. 54. SPONGILLA. Lamarck. *Spongille.*
Thallus sessile, polymorphous, irregular, cellular and lacunose; *cells* unequal, formed of membranaceous laminæ, scattered without any order; *sporidia* free, in the cells.

1. *Spongilla pulvinata.* *Cushion spongille.*
Thallus rather incrusting, sessile, thick, convex, slightly lobed; *lacunæ* longish, scattered.

Spongilla pulvinata, *Lam. Hist.* 2, 100.
Ephidatia fluviatilis, *Lamour. Pol.* 6.

Bottom of rivers.

2. *Spongilla ramosa.* *Branched spongille.*
Thallus sessile, branched; branches long, roundish, unequal, rather lobed.

Spongia ramosa fluviatilis, *Raii Syn.* 30, 5.
Spongilla ramosa, *Lam. Hist.* 2, 100.
Spongia lacustris, *Lin. Syst. Nat.* 1, 1299.
Ephidatia lacustris, *Lamour. Pol.* 6.

Bottoms of lakes and ponds.

β. *digitata.* *Thallus* digitate, slightly branched.

Spongia fluviatilis ramosa fragilis, *Raii Syn.* 30, 6.

γ. *gracilis.* *Thallus* and *branches* slender, branched.

Spongia canalium, *Gmel. Syst. Nat.* 1, 3826.
Ephidatia canalium, *Lamouroux*, 6.

H. Spongidiæ. *Thallus* continuous, gelatinous, formed of interlaced, flexuous, horny fibres or asbestine spiculæ, very porous, absorbing much water; *sporidia* scattered in the jelly of the thallus.—Yellow or brown, becoming white; when dry tough and flexible.

XXX. 55. TUPHA. *Tuphe.*

Thallus fixed, roundish, solid, very porous, leaflike; branches simple or compound; formed of interwoven, bent, horny, reticulated fibres, without any chalklike matter.

a. *Branched, branches simple or compound.*

1. *Tupha oculata.* *Eyelet tuphe.*

Thallus much branched, soft; branches roundish, blunt, dotted with marginal pores.

Spongia oculata, *Ellis Corall.* 80.

Sea-shore.

Thallus 9 inches high, bottom naked, tough, woody; above branched.

β. *elegans.* *Thallus* pale brown; branches divaricating and closing together at top; *tips* blunt, 4 or 5-cut.

2. *Tupha stuposa.* *Towlike tuphe.*

Thallus branched; branches towlike, round, covered with pointed hairs.

Spongia stuposa, *Ellis Zooph.* 186.
Spongia cervicornis, *Pallas?*

Sea-shore.

β. *gracilis.* *Thallus* very slender, beautifully white; branches ascending, very hairy.

γ. *damicormis.* *Thallus* palmate, divaricating, like the antlers of a buck.

3. *Tupha palmata.* *Palmate tuphe.*

Thallus palmate, with fingerlike divisions on the edge, and small prominent pores irregularly disposed.

Spongia palmata, *Ellis Zooph.* 189.

Sea-shore.

Texture similar to that of t. oculata, but not so soft when dry; *pores* more numerous, disposed over the whole surface.

4. *Tupha coalita.* *Coalescent tuphe.*

Thallus much branched, corky, brittle; branches irregular, distorted, rather compressed.

Spongia coalita, *Gmelin Syst. Nat.* 1, 3825.
Spongia Lycopodium, *Esper*, 2, 269.

Sea-shore.

5. *Tupha hispida.* *Hispid tuphe.*

Thallus branched; branches long, slender, round, two-forked, covered with stiff hairs.

Spongia hispida, *Montague in Wern. Tr.* 2, 81.

Sea-shore.

Thallus a foot long, or more.

β. *furcata.* *Thallus* with short forked tips.

6. *Tupha dichotoma.* *Two-forked tuphe.*

Thallus branched, upright, nearly cylindric, tomentose, covered with small pores.

Spongia dichotoma, *Ellis Zooph.* 187; *Lin. Syst. Nat.* 1, 1299.

Sea-shore.

Thallus brown, long, two-forked, straight, tapering, becoming compressed at the fork, but not so much as t. oculata; branches longer and straighter, texture firmer and less woody.

7. *Tupha digitata.* *Finger tuphe.*

Thallus branched; branches very slender, two-forked, fingerlike at their tip; *surface* granulated.

Spongia digitata, *Montague Wern. Tr.* 2, 84.

Bottom of the sea.

Thallus iron-brown at bottom, above pale yellow, not so thick as a straw, slightly compressed, tough, flexible.

8. *Tupha ramosa.* *Branched tuphe.*

Thallus palmated and fingered round the top.

Spongia ramosa, *Montague Wern. Tr.* 2, 84.

Sea-shore.
Thallus 5 inches long, stiff, slightly elastic.

b. *Thallus branched; branches leaflike, on the sides or tips.*

9. *Tupha conica.* *Conical tuphe.*
Branches numerous, short, flattish, from the sides.
Spongia Conus, *Montague Wern. Trans.* 2, 85.
Sea-shore.
Thallus when dry dark yellowish brown; *texture* rather coarse; outside covered with short bristles.

10. *Tupha lobata.* *Lobed tuphe.*
Branches ovate, clustered.
Spongia lobata, *Montague Wern. Tr.* 2, 85.
Sea-shore.
Thallus yellowish brown, 2 inches high; branches ovate or oblong, from an irregular kind of stem.

11. *Tupha perlævis.* *Very-light tuphe.*
Thallus indeterminate; texture close; surface covered with blunt nipplelike prominences.
Spongia perlævis, *Montague Wern. Tr.* 2, 86.
Sea-shore.
Thallus yellow, when dry light brown; texture similar to that of t. tomentosa, equally light, not so soft or crumbly, or so pale; *nipples* 1-8th of an inch long.

12. *Tupha aurea.* *Golden tuphe.*
Thallus broad, flat, slightly divided at the tip.
Spongia aurea, *Montague Wern. Tr.* 2, 86.
Sea-shore, covering the stones at low water.
Thallus 2 inches high, 2 or 3 broad, orange-colour, when dry brown; not so much divided as Ellis's spongia prolifera.

13. *Tupha rigida.* *Stiff tuphe.*
Thallus blunt, rather flat, spreading, irregular, arising from a basis, generally a short stalk.
Spongia rigida, *Montague Wern. Tr.* 2, 87.
Sea-shore.
Thallus about an inch high, orange-colour, which it partly retains on drying if tolerably freed from the parenchyme; *texture* as coarse as that of common sponge.

β. *minor. Smaller branches* more numerous and distinct, spreading from a shorter pedicell.

XXXI. 56. SCYPHA. *Scyphe.*

Thallus shooting into tubular processes, either simple or compound, very porous, formed of interwoven, bent, reticulated horny fibres, without any chalklike matter.

1. *Scypha coronata.* *Crowned scyphe.*

Tube solitary; *tip* crowned with radiating spines.

Spongia coronata, *Ellis Zooph.* 190.

On fuci and other marine bodies.

Thallus above an inch long, yellowish sometimes a shining, silvery white, not always crowned but covered with spiculæ.

2. *Scypha botryoides.* *Bunch-of-grapes scyphe.*

Thallus minute, ovate, tubular, in bunches covered with radiated spines.

Spongia botryoides, *Ellis Zooph.* 190.

Sea-shore.

Thallus composed of minute branches, oval like grapes, each open at the tip, as if tubular.—The spines are the asterias radiata of Walker.

3. *Scypha papillaris.* *Nipple scyphe.*

Thallus sessile, flat, spreading with scattered tubular tubercles.

Spongia papillaris, *Gmel. Syst. Nat.* 1, 3824.

Rocks rarely left uncovered by the sea.

Thallus soft, yellow; tubercles sometimes tipped with blue; when dry less soft, brown or gray; surface like gauze.

β. *Sowerbeii. Tubercles* longer and more numerous.

Spongia compacta, *Brit. Miscell.* 1, 42.

Bottom of the sea?

4. *Scypha tubulosa.* *Tubular scyphe.*

Thallus tubular, branched, tough; tubes erect, slightly tapering.

Spongia tubulosa, *Ellis Zooph.* 188.
Spongia fastigiata, *Pallas Zooph.* 392.

Sea-shore at very low water, and bottom of the sea.

Thallus 3 inches high and 4 or 5 wide, yellow, when dry pale brown or dirty white.

5. *Scypha foliacea.* *Leafy scyphe.*

Thallus tubular, much compressed; texture fine, inside finely reticulated.

Spongia compressa, *Fabricius Faun. Greenl.* 448.

Sea-shore.

Thallus an inch long, dull yellow, pendent; from its thinness it may be mistaken for a flustra.

6. *Scypha lævigata.* *Smooth scyphe.*

Thallus soft, compressible, elastic; texture extremely fine and reticulated.

Spongia lævigata, *Montague Wern. Tr.* 2, 95.

Bottom of the sea?

Texture extremely fine, equal to that of the internal spongy part of some kinds of puff-ball.

7. *Scypha ovata.* *Ovate scyphe.*

Thallus ovate, wrinkled, tubular; summit crowned with spines surrounding the aperture.

Spongia Ananas, *Montague Wern. Tr.* 2, 96.

Sea-shores.

Thallus minute.

β. *tomentosa.* *Thallus* clothlike.

Upon cellaria scruposa.

8. *Scypha complicata.* *Complicated scyphe.*

Thallus tubular; branches numerous, most intricately interwoven, and frequently anastomosing.

Spongia complicata, *Montague Wern. Tr.* 2, 97.

On fuci.

9. *Scypha cancellata.* *Railwork scyphe.*

Fibres in network, inosculations tuberous, with a pore.

Spongia cancellata, *Brit. Misc.* 131, not of Gmelin.

Thallus yellowish; fibres horny in railwork with large interstices.

XXXII. 57. SPONGIA. Aristotle. *Sponge*

Thallus sessile or pedicelled, of a compact or slightly lobed indeterminate form, composed of interwoven, bent, reticulated horny fibres, without any chalklike matter.

a. *Thallus peduncled, concave, funnelshape.*

1. *Spongia infundibuliformis.* *Funnelshape sponge.*

Thallus funnelshape, flexible; surface rather rough, irregular.

Spongia infundibuliformis, *Lin. Syst. Nat.* 1296.
Spongia crateriformis, *Pallas Zooph.* 386.

Sea-shores.

2. *Spongia foliascens.* *Leaflike sponge.*

Thallus stiff, but not woody, arising from a corky base and spreading into a cup; edge slightly cut and indented; pores fine.

Spongia foliascens, *Pallas Zooph.* 395.
Spongia Scypha, *Montague Wern. Tr.* 2, 107.

Sea-shores.

Thallus about 2 inches and a half high; bowl 2 inches deep, and as wide at top, bottom half an inch wide, pale brown, impervious to light.

b. *Thallus peduncled, flat, funnelshape, simple or lobed.*

3. *Spongia cristata.* *Crested sponge.*

Thallus flat, upright, tender, resembling a cockscomb, pores in rows, small, slightly projecting, along the top.

Spongia cristata, *Ellis Zooph.* 186.
Cocks comb sponge, Phil. Tr. 55, 288.

Sea-shore.

Thallus said by Mr. Ellis to have a visible systole of the water in and out of its pores.

4. *Spongia ventilabriformis.* *Fanshape sponge.*

Thallus fanshaped; fibres reticulated, woody; covered with large spongy pores.

Spongia Ventilabrum, *Lin. Syst. Nat.* 1, 1296.
Sea-fan sponge, Phil. Tr. 55, 289.

Sea-shore.

Thallus 10 inches high, a quarter of an inch thick in the widest part, may be seen through if held pretty close to the eye.

5. *Spongia pulchella.* *Pretty sponge.*

Thallus generally compressed and bald; reticulations fine, smooth, soft.

Spongia pulchella, *Brit. Misc.* 87.

Sea-shore.

Thallus fanshaped, palmated, or digitate; fibres in delicate network, pale brown changing to yellowish or reddish brown, coarser and stiffer than common sponge.

c. *Thallus sessile, simple or lobed, often erect.*

6. *Spongia limbata.* *Lobed sponge.*
Fibres formed into circular pores resembling lace.

Spongia limbata, *Montague Wern. Tr.* 2, 111.

Sea-shore.
Thallus whitish, firm, elastic, pores very large, circular, fibres smooth.

7. *Spongia fruticosa.* *Shrublike sponge.*
Thallus tough, elastic, in network; fibres smooth, slightly connected, distant.

Spongia lichenoides, *Pallas Zooph.* 378.
Spongia fruticosa, *Montague Wern. Tr.* 2, 112.

Sea-shore.
Thallus 6 or 7 inches long, and half as wide, irregular, very light, elegant; *fibres* distant; *network* very irregular.

8. *Spongia fragilis.* *Brittle sponge.*
Thallus brittle, friable, in coarse network; *fibres* wrinkled as if covered with minute sand.

Spongia friabilis, *Montague Wern. Tr.* 2, 114.

Sea-shores.
Thallus brown, breaking between the fingers and soon rubbing into a powder like sand with a micaceous lustre.

9. *Spongia parasitica.* *Parasitic sponge.*
Thallus coarse; form indefinite, determined by the body upon which it creeps; fibres imbricated.

Spongia parasitica, *Montague Wern. Tr.* 2, 114.

On sertulariæ.

10. *Spongia fava.* *Honeycomb sponge.*
Thallus irregular, rather hard, brittle, extremely porous.

Spongia fava, *Montague Wern. Tr.* 2, 115.

Sea-shore.
Thallus 3 inches long, 2 broad, and half an inch thick, resembling a piece of old worm-eaten cork.

11. *Spongia plumosa.* *Feathery sponge.*

Thallus irregular, rather soft, tough when deprived of its jelly.

Spongia plumosa, *Montague Wern. Tr.* 2, 116.

Sea-shores.

Thallus 3 inches high, 2 inches broad, paler than common sponge, not so compressible or elastic, resembles compressed tow.

d. *Thallus sessile, simple, irregular, creeping on other bodies.*

12. *Spongia coriacea.* *Leathery sponge.*

Thallus indefinite, wrinkled, cavernous.

Spongia coriacea, *Montague Wern. Tr.* 2, 116.

Thallus 4 inches long, 2 broad, not unlike a piece of burnt leather.

13. *Spongia tomentosa.* *Clothlike sponge.*

Thallus irregular, soft, brittle, full of pores, interwoven with minute spines.

Alcyonium ramosum molle, medullæ panis intus simile, *Raii Syn.* 31, 1.
Spongia tomentosa, *Lin. Syst. Nat.* 1, 1299.
Spongia urens, *Ellis Zooph.* 187.
Spongia panicea, *Pallas Zooph.* 308.
Sponge like crumb of bread, Ellis Corall. 80.

Sea-shores and adhering to fuci.

Thallus orange-colour, soft; when dry white, extremely light, and brittle; when broken resembles crumb of bread, and causes a stinging pain like cowage.

14. *Spongia suberosa.* *Corky sponge.*

Thallus crustaceous, compact, tough, without visible pores externally.

Spongia suberosa, *Montague Wern. Tr.* 2, 100.

On old univalve shells, covering them and filling up the aperture.

Thallus indefinite, orange-brown turning brown when dry.

XXXIII. 58. TETHYA. Lamarck. *Tethya.*

Thallus tubercular, orbicular, inside fibrous; *fibres* in bundles, stiff, asbestine, radiating from the centre to the circumference, scarcely gelatinous.

1. *Tethya verrucosa.* *Warted tethya.*

Thallus globose, externally warted, internally fibrous; *fibrous* in bundles, stiff, asbestine, radiating.

Alcyonium Lyncurium, *Lin. Syst. Nat.* 1, 1295?
Alcyonium Aurantium, *Pallas Zooph.* 357?
Spongia verrucosa, *Montague Wern. Tr.* 2, 117.
Tethya Lyncurium, *Lamarck Hist.* 2, 386?

Sea-shore.

Thallus more than an inch in diameter, yellowish, slightly compressed, uncoated at bottom where it adheres to the rock, by which the asbestine spiculæ are shown.

2. *Tethya pilosa.* *Hairy tethya.*

Thallus globose, fleshy, covered with short, thick-set hair, internally fibrous; *fibres* in bundles, stiff, asbestine, radiating.

Tethya pulvinata, *Lamarck Hist.* 2, 386.
Spongia pilosa, *Montague Wern. Tr.* 2, 119.

Sea-shore.

Thallus not quite an inch diameter.

3. *Tethya? penicilliformis.* *Pencil-like tethya.*

Thallus yellowish, spreading horizontally; surface tube-bearing; *tubes* upright, white, flexible, fibrous; fibres entangled.

Spongia Penicillus, *Montague Wern. Tr.* 2, 95.

Sea-shore.

Perhaps only a species of tethya enwrapping a tubular sponge.

I. FLORIDEÆ. *Thallus* continuous, leatherlike or membranaceous, formed of interwoven longitudinal fibres, rose-red, sometimes growing white in the air; *sporidia* either immersed in the substance of the thallus, or in capsular or tubercular thecæ, rarely intermixed with jointed fibres.

XXXIV. 59. DELESSERIA. Lamouroux. *Delesser.*

Thallus flat, membranaceous, regularly veined; *sporidia* immersed, scattered in the marginal processes of the ribs and in roundish spots in the thallus.

1. *Delesseria sanguinea.* *Blood-red delesser.*

Thallus round at bottom, branched; *lobes* distinct, oblong, ovate, simple, not in the least cut.

Fucus sive Alga folio membranaceo purpureo lapathe sanguinei figura et magnitudine, *Raii Syn.* 47, 35.
Fucus sanguineus, *Lin. Mant.* 136; *Engl. Bot.* 1041.
Delesseria sanguinea, *Lamouroux Thal.*

Sea-shore.

2. *Delesseria sinuosa.* *Sinuous delesser.*

Thallus round at bottom, branched; *lobes* distinct, oblong, sinuated, pinnatifid; *edge* crenated or fringed.

Fucus membranaceus purpureus latifolius pinnatus, *Dillen in Raii Syn.* 47, 34.
Fucus rubens, *Huds. Fl. Angl.* 578.
Fucus sinuosa, *Turner Hist.* 35; *Engl. Bot.* 822.
Fucus roseus, *Flor. Dan.* 652.
Fucus crenatus, *Gmel. Fuci*, 184.
Fucus Palmella, var. *Esper.* 42.
Delesseria sinuosa, *Lamour. Thal.*

Sea-coasts.

Thallus pale uniform red.

β. *incrassata.* *Thallus* rather cartilaginous; *ciliæ* reverse-ovate.

γ. *quercifolia.* *Thallus lobes* rounded; *edge* naked, without ciliæ.

3. *Delesseria ruscifolia.* *Knee-holly delesser.*

Thallus branched, winged; *lobes* distinct, oblong, ovate, blunt, flat; *edge* not cut; *midrib* proliferous; *veins* pellucid, chainlike.

Fucus ruscifolius, *Turner Lin. Tr.* 6, 127; *Engl. Bot.* 1395.
Delesseria ruscifolia, *Agardh Disp.* 14.

Sea-shore; perennial; Jan. and Feb.

Thallus about 4 inches long, and a quarter of an inch wide.

β. *minor.* *Thallus* ovate, lanceolate, about an inch and a half long.

3. *Delesseria ligulata.* *Strap delesser.*

Thallus branched below, winged; *lobes* distinct, linear, lanceolate, pointed, flat, simple, not cut, reticulated; *midrib* proliferous.

Fucus Hypoglossum, *Woodward Linn. Tr.* 2, 30; *Engl. Bot.* 1396.
Delesseria Hypoglossum, *Lamour. Thal.*
Fucus ligulatus, *Solander in MS.*

Sea-shore; annual; June and July.

Thallus 3 inches long and a quarter wide.

β. *minor*. *Thallus* very narrow.

Fucus hypoglossoides, *Stackh. Ner. Brit.* 176.

γ. *incrassifolia*. *Thallus* narrow, linear; network scarcely visible.

4. *Delesseria alata*. *Winged delesser.*

Thallus winged, repeatedly and alternately branched; *lobes* confluent, decurrent, alternately branched.

Fucus dichotomus parvus costatus et membranaceus, *Dillen in Raii Syn.* 44, 20.
Fucus alatus, *Lin. Mant.* 135; *Engl. Bot.* 1837.
Delesseria alata, *Lamour. Thal.*

Sea-shore; perennial.

β. *dilatata*. *Thallus* broad; *wings* broad, waved.

γ. *angustissima*. *Thallus* very slender; *wings* very narrow, scarcely any.

XXXV. 60. ODONTHALIA. Lyngbye. *Sea-tooth.*

Thallus flat, membranaceous, confluent, reddish; midrib slightly prominent; edge toothed; *sporidia* in two lines on solitary or clustered lanceolate marginal processes; *thecæ?* pedicelled, wine-glass-shape. The thecæ are by some thought to be parasitic animals.

Odonthalia pinnatifida. *Pinnatifid sea-tooth.*

Thallus branched, alternately pinnatifid; *twigs* alternate, toothed at the tip, teeth short.

Fucus dentatus, *Lin. Mant.* 135.
Fucus pinnatifidus, *Fl. Dan.* 354.
Delesseria dentata, *Lamour. Thal.* 36.
Sphærococcus dentatus, *Agardh Syn.* 22.
Odonthalia dentata, *Lyngbye Hydr. Dan.* 9.

Sea-shore; perennial; autumn.

Thallus solitary, about 4 inches long.

XXXVI. 61. SPHÆROCOCCUS. Stackh. *Roundfruit.*

Thallus flat, membranaceous or coriaceous, confluent, ribless; *sporidia* in roundish tubercles; *thecæ* scattered on the surface, or on the edge.

a. Dromius. *Thallus membranaceous, ribless, tubercles flat on the surface.*

1. *Sphærococcus punctatus*. *Dotted roundfruit.*

Thallus very thin, membranaceous, palmate, two-forked, lobes linear, tip two-cut, blunt, edge flat, tubercles oblong.

Ulva punctata, *Stackhouse, Lin. Tr.* 3, 236.
Fucus punctatus, *With. Bot. Arr.* 4, 405; *Engl. Bot.* 1573; *Turn. Hist.* 71.
Delesseria punctata, *Agardh Disp.* 14.

On marine plants.
Thallus delicate pale pink; *sporidia* dark red.

2. *Sphærococcus ulvoides.* *Ulva roundfruit.*
Thallus membranaceous lobed; lobes blunt, pinnatifid, edges not cut; *tubercles* hemispherical.

Fucus ulvoides, *Turner Hist.* 80; *Engl. Bot.* 2154.
Delesseria ulvoides, *Agardh Disp.* 14.

Sea-coasts.

b. Sphærococcus. *Thallus slightly ribbed lengthways at the base, proliferous; tubercles flat on the surface.*

3. *Sphærococcus rubens.* *Reddish roundfruit.*
Thallus rather membranaceous, slightly ribbed lengthways at the bottom, mostly two forked; *lobes* linear, elliptical, tip round; *edge* jagged, wavy; *surface* proliferous; *tubercles* hemispherical.

Fucus membranaceus purpureus varie ramosus, *Dillen in Raii Syn.* 47, 36.
Fucus rubens, *Lin. S. P.* 1630; *Engl. Bot.* 1053; *Turn. Hist.* 42.
Fucus epiphyllus, *Fl. Dan.* 708.
Fucus prolifer, *Lightf. Scot.* 2.
Fucus laciniatus, *Gmel.* 182.
Fucus crispus, *Huds. Fl. Angl.* 580.
Delesseria rubens, *Lamour Essai.*
Sphærococcus rubens, *Agardh Syn.* 23.
Chondrus rubens, *Lyngbye Hydr. Dan.* 18.

Sea-shore; perennial.
Mid-rib visible at the base of the thallus, but is afterwards lost in its substance.

4. *Sphærococcus laceratus.* *Torn roundfruit.*
Thallus membranaceous, tender, slightly veined, mostly forked; *lobes* linear; *tip* rounded; *edge* waved and torn; *tubercles* hemispherical; *sporidia* solitary, scattered.

Fucus laceratus, *Gmel. Fuci*, 179; *Turn. Hist.* 68; *Engl. Bot.* 1067.
Fucus crispatus, *Lin. Syst. Nat.* 2, 718.
Fucus cristatus, *With. Bot. Arr.* 4, 103.
Fucus laciniatus 1, *With. Bot. Arr.* 4, 102.
Fucus endivifolia, *Light. Scot.* 948.

Rocks and stones on the sea-coast; autumn.

β. *papyraceus.* *Segments* and *lobes* linear.

γ. *granatinus.* *Thallus* roundish; *segments* widen upwards mostly simple, lobed at the end.

δ. *fimbriatus.* *Segments* linear, proliferous at the edge.

ε. *elegans.* *Thallus* roundish; *segments* widening upwards; *tip* repeatedly divided, sinuated.

ζ. *uncinatus.* *Segments* linear; *tip* forked, hooked and cartilaginous.

η. *ligulatus.* *Segments* widening upwards; *tip* palmate; *lobes* simple, oblong, lanceolate.

θ. *multifidus.* *Segments* linear, repeatedly divided; *extreme lobes* very numerous, narrow, long, branched.

ι. *incrassatus.* *Segments* linear, flattish; *tip* forked; *lobes* linear, lanceolate, spreading, acute.

c. *Thallus ribless, leatherlike; edge proliferous; tubercles flat, on the surface.*

5. *Sphærococcus Sarniensis.* *Guernsey roundfruit.*
Thallus membranaceous, cartilaginous, nerveless, palmately divided; edge proliferous; segments linear; *tubercles* immersed.

Fucus Sarniensis, *Turn. Hist.* 95; *Engl. Bot.* 2132.
Sphærococcus Sarniensis, *Agardh Syn.* 16.

Sea-shores.
Thallus purplish red, becoming brown when dry.

6. *Sphærococcus reniformis.* *Kidneyshape roundfruit.*
Thallus membranaceous, cartilaginous; branches threadlike; segments dilated, kidneyshape or orbicular; *tubercles* hemispherical, immersed.

Fucus reniformis, *Turn. Hist.* 109; *Engl. Bot.* 2116.
Sphærococcus reniformis, *Agardh Disp.* 16.

Sea-coast.
Thallus thin at the base, compressed, irregularly divided; *segments* suddenly expanding, thin.

β. *tenuis.* *Thallus* slightly expanded at bottom, edge irregularly ciliated.

d. *Thallus ribless, leatherlike, forked; tubercles on the surface, flat.*

7. *Sphærococcus Norvegicus.* *Norway roundfruit.*

Thallus cartilaginous, forked, veinless; segments linear; edge not cut; tip blunt; *tubercles* hemispherical.

Fucus Norvegicus, *Turn. Syn.* 222; *Engl. Bot.* 1080.
Fucus crenulatus β, *Turn. Tr. Lin. Soc.* 17, 131.
Fucus polymorphus, var. *Lamour Diss.*
Sphærococcus Norvegicus, *Agardh Disp.* 15.
Chondrus Norvegicus, *Lyngbye Hydr. Dan.* 16.

Sea-shore; perennial; March.

8. *Sphærococcus crispus.* *Crisp roundfruit.*

Thallus cartilaginous, forked, crisp, palmate; segments dilated; edge not cut; *tubercles* solitary, immersed in the tip of the thallus.

Fucus membranaceus, ceranoides varie dissectus, *Raii Syn.* 44, 16.
Fucus membranaceus ceranoides ramosus, per siccitatem obsolete virescens, *Dillen in Raii Syn.* 44, 17.
Fucus crispus, *Lin. Mant.* 134.
Fucus ceranoides, *Huds. Fl. Angl.* 582.
Fucus polymorphus, *Lam. Essai.*
Sphærococcus crispus, *Agardh Syn.* 24.
Ulva crispa, *De Candolle Fl. Tr.* 2, 15.

Sea-shores; perennial; October to May.

β. *virens.* *Thallus* rather membranaceous; *segments* widening at top, flattish; *lobes* long, pointed.

γ. *stellatus.* *Thallus* rather leatherlike; *segments* widening at top; *tip* divided into many short, clustered lobes.

Fucus stellatus, *Stackh. Ner. Brit.* 53.

δ. *æqualis.* *Thallus* cartilaginous, thick; *segments* all equal, linear; *lobes* blunt.

Fucus crispatus, *Fl. Dan.* 326.
Fucus crispus, *Stackh. Ner. Brit.* 12.
Fucus foliifer, *Esper*, 106.

ε. *filiformis.* *Thallus* cartilaginous, compressed; *segments* linear, flat; *lobes* long, acute.

Fucus filiformis, *Huds. Fl. Angl.* 585.
Fucus ceranoides albidus, ramulorum apicibus stellatis, *Dillen in Raii Syn.* 44, 18.

ζ. *patens.* *Thallus* rather cartilaginous, linear, here and there channelled; *angles* of the forks spreading.

Fucus patens, *Lin. Trans.* 3, 173.

η. *lacerus.* *Thallus* cartilaginous, compressed; *tip* very narrow, long, lobed.

Fucus lacerus, *Stackh. Ner. Brit.* 11.

θ. *Sarniensis.* *Thallus* leatherlike, cartilaginous; *segments* here and there rather channelled, dilated; *tip* rounded, nicked.

ι. *planus.* *Thallus* leatherlike, flat, broad; *segments* linear; *tip* blunt.

e. Mammillaris. *Thallus leatherlike, channelled, forked; tubercles on the surface and edge, nipplelike.*

9. *Sphærococcus mamillosus.* *Nipple roundfruit.*
Thallus cartilaginous, forked, long, wedgeshape, channelled above; *segments* dilated; edge not cut; *thecæ* nipplelike, pedicelled on the surface and edge of the thallus; *pedicells* short.

Fucus mamillosus, *Good. Tr. Lin. Soc.* 6, 174; *Turn. Hist.* 122; *Engl. Bot.* 1054.
Fucus canaliculatus β, *Huds. Fl. Angl.* 583.
Fucus ceranoides ε, *Lightf. Scot.* 916.
Fucus ceranoides, *With. Bot. Arr.* 4, 99.
Fucus alveolatus, *Esper*, 139.
Fucus ceranoides δ, *Gmel.* 115.
Spærococcus mamillosus, *Agardh Disp.* 16.

Sea-shores; perennial.

β. *linearis.* *Thallus* slender, linear; *tip* blunt, naked.

γ. *proliferus.* *Thallus* proliferous on the surface and edge, wrinkled; *tubercles* numerous, crowded, oblong, nipplelike.

δ. *echinatus.* *Segments* widening upwards, nearly naked on one side.

Fucus echinatus, *Stackh. Ner. Brit.* 65.

ε. *incurvatus.* *Thallus* nearly linear, tips rounded; *tubercles* nearly terminal; *peduncles* bent inwards.

f. Chondrus. *Thallus threadlike at bottom, wedgeshape at the tip; tubercles on the edge.*

10. *Sphæroc. membranifolius.* *Membraneleaved roundfruit.*
Thallus threadlike at bottom and compressed; tip expanded, wedgeshape; *segments* 2-lobed, forked; *tubercles* globose, peduncled on the base of the thallus.

Fucus membranifolius, *Esper*, 115; *Turn. Hist.* 74; *Engl. Bot.* 1965.
Fucus rubens, *Fl. Dan.* 827.
Fucus Palmetta, *Gmelin*, 22.
Sphærococcus membranifolius, *Agardh Syn.* 26.
Delesseria membranifolia, *Lamour. Thal.*

Sea-shore; perennial; winter.

β. *lacerus.* *Segments* forked; *lobes* linear; *tip* acute.

Fucus parvus cauliculis teretibus, summitatibus membranaceis dilatatis et laceratis, *Raii Syn.* 44, 19, excluding Morison's synonym.
Fucus ceranoides γ, *Huds. Fl. Angl.* 583.
Fucus pseudoceranoides, *Gmelin*, 119.

γ. *stellatus.* *Segments* very numerous; *tips* finely divided.

δ. *fimbriatus.* *Segments* fringed.

Fucus fimbriatus, *Huds. Fl. Angl.* 574.
Fucus ceranoides δ, *Lightf. Scot.* 916.

ε. *latifolius.* *Segments* membranaceous, nearly orbicular, many-cut, palmate; *lobes* short; *tip* rounded.

ζ. *roseus.* *Thallus* simple; *tip* expanded, oblong, simple.

11. *Sphærococcus Brodiæi.* *Brodie's roundfruit.*

Thallus bottom threadshape, round, branched; *tip* expanded, oblong, simple or forked; *edge* proliferous; *tubercles* spherical, sessile or nearly sessile on the tip of the segments.

Fucus Brodiæi, *Turn. Hist.* 72; *Engl. Bot.* 1966.
Fucus membranifolius, *Lamour. Ess.* 21.
Delesseria Brodiæi, *Lamour, Thal.* 37.
Sphærococcus Brodiæi, *Agardh Disp.* 27.

Sea-shores; perennial; March.

Thallus aggregate; *tubercles* solitary or in pairs.

12. *Sphærococcus palmatus.* *Palmlike roundfruit.*

Thallus round at bottom, mostly simple; *tip* expanded, wedgeshape, palmated; *tubercles* hemispherical, sessile, mostly on the edge of the lobes.

Fucus Palmetta, *Esper*, 40; *Turn. Hist.* 73; *Engl. Bot.* 1120, not of Gmelin.
Fucus Palmetta β, *Lamour. Essai*, 19.
Delesseria Palmetta, *Lamour. Thal.*
Sphærococcus Palmetta, *Agardh Disp.* 16.

Sea-shores, on stones or marine plants.

Thallus 2 or 3 inches long; *edge* not in the least cut; *tubercles* superficial, without interwoven fibres.

β. *bifidus.* *Thallus* simple; tip expanded, wedgeshape, simple or 2-cut.

Fucus bifidus, *Huds. Fl. Angl.* 581.

γ. *crassiusculus.* *Thallus* linear, much and irregularly divided; *tip* pointed.

δ. *linearis.* *Thallus* linear; *segments* long, simple or forked; *tip* rounded.

13. *Sphærococcus bifidus.* *Two-cut roundfruit.*

Thallus flat, membranaceous, linear, forked; *segments* divaricating; *edges* here and there united together by very

short scattered ciliæ; *tubercles* hemispherical, immersed in the thallus near the edge.

Fucus bifidus, *Huds. Fl. Angl.* 581; *Turn. Hist.* 154; *Engl. Bot.* 773.
Sphærococcus bifidus, *Agardh Disp.* 16.
Delesseria bifida, *Lamour. Thal.*

Rocks and plants in the sea; perennial; Sept. to Jan.

β. *ciliatus.* *Thallus* linear, fringed along the edge; *fringe* minute, toothlike; *tip* lanceolate, pointed.

γ. *decipiens.* *Thallus* irregularly divided; *edge* here and there fringed; *tip* oval and pointed.

δ. *subpalmatus.* *Thallus* linear, nearly palmate, rounded at the tip.

ε. *sinuosus.* *Thallus* somewhat dilated, slightly sinuated towards the tip.

ζ. *stipitatus.* *Thallus* nearly cylindrical; *tips* either dilated and blunt, or narrow and pointed, proliferous at the edge.

g. *Thallus flat, forked or palmate, fringed; tubercles on the edge.*

14. *Sphærococcus laciniatus.* *Jagged roundfruit.*
Thallus flat, leatherlike, lobed; *segments* dilated upwards; *tip* palmate, blunt; *edge* crenated, proliferous; *sporidia* in the thickened edge, or marginal fringe.

Fucus laciniatus, *Huds. Fl. Angl.* 579; *Turn. Hist.* 69; *Engl. Bot.* 1068.
Fucus miniatus, *Fl. Dan.* 769.
Fucus ciliatus, *Gmel.* 176.
Fucus crispus, *Esper.* 18.
Fucus crispatus, *Stackh. Ner. Brit.* 15.
Fucus laceratus γ, *Linn. Tr.* 3, 156.

On rocks and stones in the sea; February to May.
Thallus aggregated, smaller at bottom.

β. *ovalifolius.* *Thallus* proliferous on the edge; *marginal processes* elliptical roundish, simple, on short petioles.

h. *Thallus flat, pinnately lobed, fringed; tubercles on the edge.*

15. *Sphærococcus ciliatus.* *Fringed roundfruit.*
Thallus flat, membranaceous, cartilaginous, lanceolate, pinnately divided; *surface* and edge fringed; fringe mostly simple, awlshape, spread; *tubercles* on the edge.

Fucus membranaceus rubens angustifolius, marginibus ligulis armatis, *Raii Syn.* 47, 33.
Fucus ciliatus, *Lin. Mant.* 436; *Turn. Hist.* 70; *Engl. Bot.* 1069.
Fucus holosetaceus, *Gmel.* 177.
Fucus ligulatus, *Gmel.* 178.
Ulva ciliata, *De Cand. Fl. Fr.* 2, 13.
Sphærococcus ciliatus, *Agardh Syn.* 28.
Delesseria ciliata, *Lamour. Thal.*
Dulesh.

Sea-shore; perennial; winter.

Thallus 3 or 4 inches long; eaten as a salad either alone or after being sprinkled before drying with a little alkaline salt.

β. *pinnatifidus.* *Thallus* lanceolate, pinnately divided; *segments* long, lanceolate, simple.

γ. *palmatus.* *Thallus* lanceolate, rather naked, undivided or palmate.

δ. *jubatus.* *Fringes* branched.

Fucus jubatus, *Linn. Trans.* 3, 162.

ε. *lanceolatus.* *Thallus* linear, lanceolate, very much divided; *fringes* divided.

Fucus lanceolatus, *With. Bot. Arr.* 4, 104.

ζ. *angustus.* *Thallus* linear, very much divided; *segments* nearly hairlike, very slender, compressed.

η. *spinosus.* *Thallus* linear, compressed, much and irregularly divided, entirely covered with short, simple, awlshape ciliæ.

XXXVII. 62. GIGARTINA. *Plum-weed.*

Thallus linear, compressed or cylindrical, very much branched, nearly of equal thickness throughout; *sporidia* in roundish tubercles, either lateral or terminal.

a. Gelidium. *Thallus toothed on the edge, fringed; tubercles roundish, on the marginal ciliæ.*

1. *Gigartinus pistillatus.* *Pistilled plum-weed.*

Thallus cartilaginous, linear, compressed, irregularly two-forked; *twigs* awlshape, rather two-rowed, horizontal; *tubercles* on the twigs, globose.

Fucus gigartinus, *Lin. Syst. Veg.* 816; *Turn. Hist.* 28; *Engl. Bot.* 908, not of Fl. Dan.
Fucus pistillatus, *Gmel.* 156.
Fucus Oederi, *Esper*, 135.
Ceramium gigartinum, *Roth Cat.* 3, 109.
Gigartina pistillata, *Lamour. Thal.* 46.
Gelidium gigartinus, *Lyngbye Hydr. Dan.* 41.
Sphærococcus gigartinus, *Agardh Disp.* 16.

Sea-shore; perennial.

Thallus aggregate; *forks* spreading.

2. *Gigartinus coronopifolia. Swines-cress-leaf plum-weed.*

Thallus cartilaginous, flattish, compressed, much and irregularly branched; *twigs* two-forked, spreading, alternate, cylindrical; *tubercles* spherical, on the short horizontal two-rowed ciliæ.

Fucus coronopi facie, *Dillen in Raii Syn.* 45, 23.
Fucus coronopifolius, *Lin. Tr.* 3, 185; *Turn. Hist.* 122; *Engl. Bot.* 1478.
Fucus cartilagineus, *Huds. Fl. Angl.* 586.
Sphærococcus coronopifolius, *Agardh Syn.* 30, not the synonyms.

Sea-shores; perennial; October.

Thallus deep transparent red, flexuous; *lobes* slightly veined and dilated, when barren palmate.

b. Hypnea. *Thallus compressed, branched; tubercles immersed in the lanceolate compressed twigs.*

3. *Gigartina cartilaginea. Gristlelike plum-weed.*

Thallus cartilaginous, flat or compressed, naked below, repeatedly pinnate above; *segments* horizontal, mostly alternate, linear; ultimate segments very short, blunt; fruit-bearing segments ovate, lanceolate, sharp-pointed.

Fucus cartilagineus, *Lin. Syst. Veg.* 816; *Turn. Hist.* 124; *Engl. Bot.* 1477.
Fucus Capensis, *Gmel.* 157.
Fucus versicolor, *Gmel.* 158.

Sea-coast; perennial.

Thallus red, purple, greenish, brownish or tawny.

4. *Gigartina cornea. Hornlike plum-weed.*

Thallus cartilaginous, horny, compressed, irregularly branched; *branches* linear, narrowed at each end; pinnate or bipinnate; *segments* opposite, spreading, rather blunt.

Fucus flavicans teretifolius ramulis pennatim enascentibus, *Dillen in Raii Syn.* 50, 49.
Fucus corneus, *Huds. Fl. Angl.* 585; *Turn. Hist.* 257; *Engl. Bot.* 1970.
Fucus sericeus, *Gmel.* 149.
Fucus spinosus, *Gmel.* 161.
Fucus pumilus, *Stackh. Ner. Brit.* 16, 16?

Sea-coasts; perennial; May to October.

β. *filicinus.* *Thallus* very slender; *lobes* horizontal, dilated, very blunt.

Fucus filicinus, *Huds. Fl. Angl.* 586.
Fucus nereideus, *Lightf.* 956.

γ. *pinnatus.* *Thallus* narrow, tri-pinnate; *lobes* nearly linear, rather blunt.

Fucus pinnatus, *Huds. Fl. Angl.* 586.
Fucus sericeus, *Gmel.* 149.

δ. *reniformis.* *Branches* and *twigs* spreading, scattered, narrow at bottom, tip blunt.

ε. *capillaceus.* *Thallus* slender; upper lobes crowded, bristlelike, nearly upright.

Fucus capillaceus, *Gmel.* 146.

ζ. *deformis.* *Thallus* twisted, irregularly pinnated; *lobes* divaricated, oblong, very short, not divided.

η. *pulchellus.* *Thallus* hairlike, compressed, tripinnate; *lobes* linear, clublike, blunt.

θ. *claviferus.* *Thallus* cylindrical, hairlike, irregularly divided; *twigs* reverse ovate; *edge* with minute scattered teeth.

ι. *coronatus.* *Thallus* compressed, irregularly branched, naked below; having in the middle a few, simple, scattered lobes, and at top clusters of short twigs bent back.

5. *Gigartina Wigghii.* *Wiggh's plum-weed.*

Thallus slightly gelatinous, cylindrical, threadlike, much and irregularly branched; *twigs* very numerous, on all parts, bristlelike, mostly simple, scattered; fruitbearing twigs lanceolate, compressed.

Fucus Wigghii, *Turn. in Lin. Tr.* 6, 11; *Turn. Hist.* 102; *Engl. Bot.* 1165.
Sphærococcus Wigghii, *Agardh Disp.* 17.
Hypnea Wigghii, *Lamour. Thal.*

Sea-shore; annual; Midsummer.

c. *Thallus roundish, branched; twigs threadlike; thecæ globular, on the end of the twigs.*

6. *Gigartina asparagoides.* *Asparagus plum-weed.*

Thallus slightly gelatinous, cylindrical, threadlike, much and irregularly branched; *twigs* simple, spreading horizontally, bristlelike, 2-rowed, opposite, ending alternately in a spherical theca.

Fucus asparagoides, *Woodw. in Tr. Lin. Soc.* 2, 29.
Sphærococcus asparagoides, *Agardh Disp.* 17.
Plocamium asparagoides, *Lamour. Thal.*

Sea-shore.

d. *Thallus threadlike, equal; tubercles lateral, wartlike, formed of jointed threads.*

7. *Gigartina fastigiata.* *Even-topped plum-weed.*

Thallus cartilaginous, threadlike, 2-forked, level-topped, angle of the fork bluntish, tip acute; *tubercles* irregular, hemispherical, sessile, lateral.

Fucus rotundus, *Gmel. Fuci*, 110; *Engl. Bot.* 1739; *Turn. Hist.* 5.
Fucus radiatus, *Gooden. Tr. Lin. Soc.* 3, 202.
Fucus fastigiatus, *Stackh. Ner. Brit.* 15.
Fucus caprinus, *Fl. Norv.* 1, 96.
Chordaria rotunda, *Agardh Syn.* 12.
Furcellaria rotunda, *Lyngbye Hydr. Dan.* 49.
Furcellaria fastigiata, *Lamour. Thal.*

Sea-shore; perennial; September to February.

Thallus deep brownish purple, white when exposed to the weather; *tips* rather blunt.

β. *tenuior.* *Thallus* with the extreme segments long and linear; tips bluntish.

γ. *fastigiata.* *Thallus* very slender, about 2 inches high.
Fucus fastigiatus, *Lin. S. P.* 1631.

8. *Gigartina plicata.* *Pleated plum-weed.*

Thallus horny, cylindrical, uniform, very much branched; *branches* mostly simple, clustered, entangled, horizontal, slightly one-sided; *tips* blunt; *tubercles* irregular, hemispherical, sessile.

Fucus trichoides nostras aurei coloris, ramulorum apicibus furcatis, *Raii Syn.* 45, 26.
Fucus coralloides erectus, *Raii Syn.* 51, 57.
Fucus plicatus, *Huds. Fl. Angl.* 589; *Turn. Hist.* 180; *Engl. Bot.* 1088, not of Esper.
Fucus albus, *Fl. Dan.* 408.
Ceramium plicatum, *Roth Cat.* 2, 162.
Gigartina plicata, *Lamour. Thal.* 48.
Sphærococcus plicatus, *Agardh Disp.* 17.

Sea-coast; perennial; October to April.

Thallus tufted, stiff, wirelike, entangled.

β. *elongata.* *Thallus* rather forked; branches long, straight, level-topped.

Fucus longissimus, *Esper*, 44.

9. *Gigartina Griffitsiæ.* *Griffith's plum-weed.*

Thallus cartilaginous, cylindrical, threadlike, forked, level-topped; *tubercles* lateral, oblong, embracing the thallus.

Fucus Griffitsiæ, *Turn. Hist.* 126; *Engl. Bot.* 1926.
Sphærococcus Griffitsiæ, *Agardh Disp.*
Gigartina Griffitsiæ, *Lyngbye Hydr. Dan.* 43.

Sea-shores; October to December.

Thallus 2 or 3 inches high, purplish; *tubercles* composed of horizontally radiating filaments.

10. *Gigartina acicularis.* *Needlelike plum-weed.*

Thallus rather cartilaginous, soft, threadlike, irregularly dichotomous; *branches* spreading, pointed; *twigs* scattered, short, spearshape, horizontal.

Fucus acicularis, *Turn. Hist.* 126.
Sphærococcus acicularis, *Agardh Disp.* 11.

Sea-shores; winter.

Thallus 2 or 3 inches long; above slightly flattened.

11. *Gigartina confervoides.* *Conferva plum-weed.*

Thallus threadlike, much and irregularly branched; branches long, mostly simple; *twigs* scattered, bristlelike, narrower at each end; *tubercles* hemispherical, scattered.

Fucus marinus purpurascens parvus, caule et ramulis seu foliolis teretibus, *Raii Syn.* 50, 50.
Fucus confervoides, *Lin. S. P.* 1629; *Engl. Bot.* 1669; *Turn. Hist.* 84.
Fucus elongatus, *Fl. Norv.* 2, 143.
Fucus verrucosus, *Huds. Fl. Angl.* 583.
Fucus acerosus, *Esper*, 103.
Fucus longissimus, *Gmel.* 134.
Gigartina confervoides, *Lamour. Thal.* 48.
Sphærococcus confervoides, *Agardh Syn.* 35.

Sea-shores; perennial; September and December.

β. *procerrima.* *Branches* very long, mostly simple, rather naked.

Fucus teres rubens minus ramosus in longum protensus, *Dillen in Raii Syn.* 51, 53.
Fucus procerrimus, *Esper*, 133.
Fucus longissimus, *Wolf. Jacq. Coll.* 1, 361.
Ceramium longissimum, *Roth Cat.* 3, 116.

γ. *amplexa.* *Thallus* entangled; *branches* and *twigs* very numerous, crowded, twisted.

δ. *gracilis.* *Thallus* threadlike; *tubercles* lateral, clustered, minute, flaccid towards the tips.

Fucus gracilis, *Stackh. Ner. Brit.* 100.

ε. *albida.* *Thallus* rather compressed, slightly forked; twigs awlshape.

Fucus albidus, *Huds. Fl. Angl.* 582.
Fucus verrucosus, *Gmel.* 136.

ζ. *inflata.* *Thallus* bent in, near the tip swollen here and there with lanceolate, podshape tumours.

η. *geniculata.* *Thallus* bent as if broken at the tubercles.

12. *Gigartina Turneri.* *Turner's plum-weed.*

Thallus threadlike, pale reddish brown, hairlike, uneven, much and very irregularly branched; twigs scattered; *tubercles* hemispherical, sessile, scattered.

Conferva verrucosa, Turnerii, *Engl. Bot.* 1688.

Sea-shores; annual; summer.

Thallus 3 inches long.

13. *Gigartina viridis.* *Green plum-weed.*

Thallus cartilaginous, threadlike, repeatedly and continually pinnate; branches and twigs opposite; *tubercles* hemispherical, sessile.

Fucus viridis, *Fl. Dan.* 886; *Engl. Bot.* 1669; *Turner Hist.* 97.
Desmaretia viridis, *Lam. Thal.* 25.
Chordaria? viridis, *Agardh Syn.* 14.
Gigartina viridis, *Lyngbye Hydr. Dan.* 44.

Sea-shore; annual; spring and summer.

Thallus 1 or 2 feet long, fine orange, growing verdigris green.

e. Gigartina. *Thallus threadlike, equal; tubercles round, immersed in the twigs.*

14. *Gigartina lycopodioides.* *Wolfs-claw plum-weed.*

Thallus threadlike, mostly simple, entirely covered with threadlike twigs, closely imbricated and slightly forked at the tip.

Fucus lycopodioides, *Lin. Syst. Nat.* 717; *Turn. Hist.* 12; *Engl. Bot.* 1163.
Conferva squarrosa, *Fl. Dan.* 367.
Fucus Lycopodium, *Stackh. Ner. Brit.* 107.
Furcellaria lycopodioides, *Agardh. Syn.* 11.
Gigartina lycopodioides, *Lyngbye Hydr. Dan.* 43.

Sea-shore.

Thalli aggregate, naked at bottom, above densely imbricated with simple or pinnated twigs, brownish red growing black.

15. *Gigartina subfusca.* *Brownish plum-weed.*

Thallus threadlike; *branches* irregular, many, alternate, awlshape, spreading; *twigs* pencilshape, in bundles; *tubercles* unevenly pinnate, on the tip of the twigs.

Fucus subfuscus, *Woodward Lin. Tr.* 1, 131; *Turn. Hist.* 10; *Engl. Bot.* 1164.
Fucus setaceus, *Wulff. Cryptog.* 40.
Fucus variabilis, *Gooden in Lin. Trans.* 3, 222.
Gigartina subfusca, *Lamour. Thalas.* 48.
Sphærococcus subfuscus, *Agardh Syn.* 32.

Sea-shore; perennial; spring.

Thallus very variable in form; twigs often appearing as if jointed.

16. *Gigartina purpurascens.* *Purplish plum-weed.*

Thallus threadlike, soft, cartilaginous, much and irregularly branched; twigs bristlelike, scattered; *tubercles* spherical, solitary, immersed in the twigs.

Fucus teres albus tenuissime divisis, *Raii Syn.* 50, 51.
Fucus purpurascens, *Huds. Fl. Angl.* 588; *Engl. Bot.* 1243; *Turn. Hist.* 9.
Fucus tuberculatus, *Lightf. Scot.* 926.
Fucus corallinus, *Fl. Dan.* 709.
Fucus capillaceus, *Esper*, 35.
Fucus acicularis, *Esper*, 91.
Gigartina purpurea, *Lamour. Thal.* 48.
Sphærococcus purpurascens, *Agardh Syn.* 31.

Sea-coast; perennial; summer and autumn.

Thallus 1 foot long, light red, fleshy.

β. *cirrhosa.* *Tips* of the twigs twisted spirally.

17. *Gigartina capillaris.* *Hair plum-weed.*

Thallus rather gelatinous, threadlike, much and irregularly branched; twigs awlshape, pointed; *tubercles* solitary, imbedded in the twigs.

Fucus capillaris, *Huds. Fl. Angl.* 591; *Turn. Hist.* 31; *Engl. Bot.* 2191.
Sphærococcus capillaris, *Agardh Disp.* 18.
Gigartina capillaris, *Lamour. Thal.* 48.

Sea-shore; perennial; April, October.

Thallus 6 to 8 inches long, pale pink or crimson.

18. *Gigartina furfuracea.* *Branny plum-weed.*

Thallus gelatinous, fleshy, reddish, round; repeatedly forked; twigs rather flattened, lanceolate, cloven; *tubercles* scattered, imbedded in the twigs.

Ulva furfuracea, *Turn. in Schrad. Journ.* 2, 301; *Engl. Bot.* 1891.
Chondria furfuracea, *Agardh Disp.* 18.

Sea-shore, or submarine stones or rocks.

Thallus 1 to 3 inches high, more or less compressed, flattened.

XXXVIII. 63. GASTRIDIUM. Lyngbye. *Belly-weed.*

Thallus threadlike, round, tubular, gelatinous, cartilaginous; *tubercles* roundish, lateral or terminal; *sporidia* in the tubercles and also on the twigs.

a. Laurentia. *Thallus compressed; tubercles terminating the twigs.*

1. *Gastridium pinnatifidum.* *Feather-cut belly-weed.*

Thallus compressed, cartilaginous, branched; branches mostly alternate, doubly pinnatifid; twigs blunt, callous.

Fucus Dealensis pedicularis rubri folio, *Dillen in Raii Syn.* 48, 37.
Fucus ramosus piperis sapore, *Dillen in Raii Syn.* 51, 55.
Fucus pinnatifidus, *Huds. Fl. Angl.* 581; *Engl. Bot.* 1202; *Turn. Hist.* 20.
Fucus multifidus, *Hudson*, 581.
Fucus corymbifer, *Wulff. Crypt.* 32.
Fucus corymbiferus, *Esper*, 94.
Laurentia pinnatifida, *Lamour. Thall.*
Chondria pinnatifida, *Agardh Syn.* 35.
Gelidium pinnatifidium, *Lyngbye Hydr. Dan.* 40.
Pepper dulse. *Faminkiren*, Ireland.

Sea-shore; annual; autumn.

Thalli aggregate, yellowish red, diaphanous; *taste* hot, acrid.

β. *filicinum.* *Thallus* roundish; *twigs* cylindrical, thickened upwards, clustered, mostly simple.

Fucus Osmunda, *Nereis Brit.* 46.
Fucus filicinus, *Lightf. Scot.* 954, not of Hudson.

γ. *angustum.* *Thallus* compressed; twigs clublike, crowded, mostly simple.

δ. *tenuissimum.* *Thallus* compressed; twigs divaricated, branches very slender.

2. *Gastridium obtusum.* *Blunt belly-weed.*

Thallus cartilaginous, cylindrical, threadlike, repeatedly pinnated; branches generally opposite; twigs cylindrical, short, spreading, blunt.

Fucus obtusus, *Huds. Fl. Angl.* 586; *Engl. Bot.* 1201; *Turn. Hist.* 21.
Fucus spinosus, *Wulf. in Jacq. Coll.* 3, 156.
Laurentia obtusa, *Lamour. Thal.*
Chondria obtusa, *Agardh Diss.* 18.

Sea-shores; annual; summer.

Thallus 6 to 12 inches long, twice or thrice pinnate.

β. *hybridum.* *Thallus* almost cylindrical, rather cartilaginous; twigs slightly attenuated at the bottom, and rounded at the tip.

b. Gastridium. *Thallus even, or unequally contracted into apparent joints; tubercles on the sides.*

3. *Gastridium ovale.* *Oval belly-weed.*

Thallus nearly cylindrical, threadlike, irregularly two-forked, below naked, covered above on all sides with simple elliptical twigs.

Fucus ovalis, *Huds. Fl. Angl.* 573; *Engl. Bot.* 711; *Turn. Hist.* 81.
Fucus sedoides, *Stackh. Ner. Brit.* 67.
Fucus vermicularis, *Lightf. Scot.* 958.
Gigartina ovalis, *Lamour. Thal.*
Chondria ovalis, *Agardh Disp.* 18.

Submarine rocks; annual; summer.

Thallus 3 or 4 inches high; pale reddish brown.

β. *botryoides.* *Twigs* short, nearly globular.

Fucus botryoides, *Wulf. in Jacq. Collect.* 3, 146.

γ. *subarticulatum.* *Twigs* long, linear, contracted as if jointed.

4. *Gastridium tenuissimum.* *Very thin belly-weed.*

Thallus gelatinous, threadlike, cylindrical, pinnately branched; branches alternate, spreading, mostly simple; twigs cylindrical, simple, scattered.

Fucus tenuissimus, *Gooden. in Tr. Lin. Soc.* 3, 215; *Engl. Bot.* 1682; *Turn. Hist.* 100.
Ulva capillaris, *Huds.* 571.
Gigartina tenuissima, *Agardh Disp.* 18.

Sea-shore, or on other marine plants; annual; summer.

Thallus pale flesh-colour, tender, 6 to 10 inches long.

5. *Gastridium purpurascens.* *Purplish belly-weed.*

Thallus threadlike, branched; *branches* and *twigs* two-rowed, nearly opposite; last ones pinnate; segments small, opposite.

Ulva purpurascens, *Huds. Fl. Angl.* 569.
Gastridium purpurascens, *Lyngbye Hydr. Dan.* 69.

Sea-shore; annual; summer.

Thallus 6 to 9 inches high, attenuated at bottom, tubular, apex acute; *branches* smaller at each end, spreading; segments lanceolate.

6. *Gastridium dasyphyllum.* *Thickleaved belly-weed.*

Thallus gelatinous, threadlike; *branches* irregularly pinnate, spreading, mostly simple; *twigs* cylindrical, scattered, narrower at bottom, proliferous.

Fucus dasyphyllus, *Woodw. Tr. Lin. Soc.* 3, 239; *Engl. Bot.* 847; *Turn. Hist.* 22.
Gigartina dasyphylla, *Lamour. Thal.*
Chondria dasyphylla, *Agardh Disp.* 18.

Sea-shore; annual; summer.

Thallus 3 to 6 inches high, pale red or reddish green.

β. *articulatum.* *Thallus* jointed.

7. *Gastridium clavellosum.* *Twiggy belly-weed.*

Thallus threadlike, cylindrical; *branches* many, irregular, mostly alternate, 2-rowed.

Fucus clavellosus, *Turn. in Lin. Trans.* 4, 10; *Hist.* 30; *Engl. Bot.* 1203.
Gastridium clavellosum, *Lyngbye Hydr. Dan.* 70.
Chondria clavellosa, *Agardh Disp.* 18.

Sea-shores, or parasitic; annual; summer.

β. *sedifolium.* *Twigs* oblong, oval, crowded, undivided.

8. *Gastridium kaliforme.* *Kali-like belly-weed.*

Thallus threadlike; *branches* many, irregular, generally in whorls, contracted as if jointed.

Fucus kaliformis, *Woodw. in Lin. Tr.* 3, 206; *Turn. Hist.* 29; *Engl. Bot.* 640.
Fucus verticillatus, *Lightf. Scot.* 962.
Gigartina kaliformis, *Lamour. Thal.* 49.
Ceramium tubulosum, *Roth Cat.* 3, 124.
Chondria kaliformis, *Agardh Disp.* 18.
Gastridium kaliforme, *Lyngbye Hydr. Dan.* 70.

Sea-shore; annual; summer.

Thallus solitary; *branches* opposite, alternate, or in whorls, slender at bottom, blunt at top.

β. *diaphanum.* *Thallus* roundish; *twigs* long, generally simple; *contractions* very slight.

γ. *nanum.* *Threads* long, jointed; *branches* and *twigs* horizontal.

9. *Gastridium pusillum.* *Dwarf belly-weed.*

Thallus cartilaginous, compressed, threadlike, contracted as if jointed; *branches* many, irregular; *twigs* horizontal; bottom slenderest; tips dilated, roundish.

Fucus pusillus, *Stackh. Ner. Brit.* 16; *Turn. Hist.* 108.
Sphærococcus pusillus, *Agardh Disp.* 17.

Sea-shores; annual; summer.

10. *Gastridium repens.* *Creeping belly-weed.*
Thallus nearly cylindrical, threadlike, solid, contracted as if jointed, branched, with a network of internal fibres; *branches* horizontal, pointed; *joints* lanceolate, obsolete.

Tremella marina cæspitosa, segmentis tenuibus, *Dillen Hist. Musc.* 50.
Fucus repens, *Lightf. Scot.* 961.
Ulva articulata β, *Huds. Fl. Angl.* 569.
Fucus Opuntia, *Gooden. Tr. Lin. Soc.* 3, 219; *Turn. Hist.* 107.
Rivularia Opuntia, *Engl. Bot.* 1868.

Sea-shores; annual; summer.

β. *cæspitosum.* *Thallus* entangled, half an inch high; tip clublike.

Fucus cæspitosus, *Stackh. Ner. Brit.* 39.
Gigartina pilosa, *Lamour. Thal.*

c. Lomentaria. *Thallus regularly contracted, appearing as if jointed; branches verticillate; tubercles lateral.*

11. *Gastridium articulatum.* *Jointed belly-weed.*
Thallus cylindrical, threadlike, tubular, contracted throughout as if jointed; *branches* level-topped, 2-forked or whirled; *joints* nearly cylindrical, pitchershape.

Corallina lenta purpurea compressa, *Raii Syn.* 34, 9.
Ulva articulata, *Huds. Fl. Angl.* 560.
Fucus articulatus, *Lightf. Scot.* 959.
Fucus sericeus, var. *Esper*, 82.
Gigartina articulata, *Lamour. Thal.* 49.
Cæramium torulosum, *Roth Cat.* 6, 125.

Sea-shores; annual; June and July.

β. *reptans.* *Thallus* slender, creeping, shining.

Conferva reptans, *Roth Cat.* 1, 186.

d. Plocamium. *Thallus compressed, membranaceous, mostly pinnate; tubercles lateral.*

12. *Gastridium glandulosum.* *Glandular belly-weed.*
Thallus membranaceous, linear, compressed (tubular Engl. Bot.) branched; *branches* alternate, decumbent; *twigs* 2-cut, bent inwards.

Fucus glandulosus, *Turn. Hist.* 38; *Engl. Bot.* 2135.
Delesseria glandulosa, *Agardh Disp.* 14.

Thallus 1 or 2 inches long, creeping, variously and repeatedly branched; *sporidia* immersed in the oblong, swollen twigs.

13. *Gastridium amphibium.* *Amphibious belly-weed.*
Thallus cylindrical, hairlike, twice or thrice pinnate; *branches* and *twigs* horizontal, alternate, uppermost lanceolate, rolled inwards at the tip.

Fucoides erectum fruticuli specie, summitatibus inflexis, *Dillen in Raii Syn.* 38, 4.
Fucus scorpioides, *Huds. Fl. Angl. ed.* 1, 471.
Fucus amphibius, *Huds. ed.* 2, 590; *Turn. Hist.* 101; *Engl. Bot.* 1428.
Chondria amphibia, *Agardh Disp.* 18.
Plocamium amphibium, *Lamour. Thal.*

Sea-shores; perennial; summer.

14. *Gastridium coccineum.* *Scarlet belly-weed.*
Thallus compressed; *branches* many, irregular; *twigs* awlshape, pectinate, on one side.

Muscus marinus rubens pennatus, *Raii Syn. ed.* 2, 8.
Fucus Plocamium, *Gmelin.* 16.
Fucus coccineus, *Huds. Fl. Angl.* 586.
Fucus cartilagineus, *Œder Enum.* 2, 131.
Ceramium Plocamium, *Roth Cat.* 3, 107.
Plocamium vulgare, *Lamour. Thal.* 50.
Delesseria coccinea, *Agardh Disp.* 14.
Plocamium coccineus, *Lyngbye Hydr. Dan.* 39.

e. Rytiphlæa. *Thallus threadshape; branches 2-rowed; twigs slightly jointed, incurved; tubercles lateral.*

15. *Gastridium pinastroides.* *Pinasterlike belly-weed.*
Thallus threadlike; *branches* numerous; tip rolled inwards; *twigs* mostly simple, awlshape, scattered, facing one way.

Fucus pinastroides, *Gmelin*, 127; *Turn. Hist.* 11; *Engl. Bot.* 1042.
Fucus incurvus, *Huds. Fl. Angl.* 590.
Ceramium incurvum, *De Candolle Fl. Gall.* 2, 43.
Rytiphæa pinastroides, *Agardh Disp.* 25.
Gigartina pinastroides, *Lyngbye Hort. Dan.* 45.

Sea-shores; annual; summer.
Thallus 3 to 6 inches high, naked below; *twigs* very dense, tiledlike.

f. Ptilota. *Thallus cartilaginous, compressed, pinnate; sporidia in a globe surrounded with bristlelike involucra.*

16. *Gastridium plumosum.* *Feathery belly-weed.*
Thallus much and irregularly branched; *branches* pinnate; segments opposite, pectinate.

Fucoides purpureum eleganter plumosum, *Dillen in Raii Syn.* 38, 2.
Fucus plumosus, *Lin. Sp. Pl. Turn. Hist.* 60; *Engl. Bot.* 1303.
Fucus pectinatus, *Fl. Norv.* 2, 132.
Fucus ptilotus, *Fl. Norv.* 2, 135.
Ceramium plumosum, *Roth Cat.* 3, 135.
Plocamium plumosum, *Lamour. Thal.* 50.
Ptilota plumosa, *Agardh Syn.* 39.

Sea-shores; perennial; June, October.

Thallus 9 to 12 inches long; branches 2-rowed; lobes close together, plumose, reddish growing purplish.

β. capillare. Thallus very narrow, nearly cylindrical, jointed.

Fucus plumosus, *Stackh. Ner. Brit.* 105.

K. Fucoideæ. *Thallus* continuous, leatherlike, cartilaginous, formed of longitudinally entangled fibres; colour olivaceous, growing black, flat or threadlike; often inflated into vesicles; *holdfasts* fibrous or shieldlike; *sporidia* scattered, in the substance of the thallus, or among confervalike threads either on the surface or in thecæ immersed in the thallus.

XXXIX. 64. FASCIATA. *Ribband-weed.*

Thallus flat, membranaceous, ribless; *stirps* 0; *holdfasts* peltate; *sporidia* immersed in superficial mucilaginous warts, formed of jointed fibres.

1. *Fasciata plantaginea. Plantain ribband-weed.*

Thallus membranaceous, aggregate, narrow at bottom, lanceolate, blunt; *edge* flat.

Tremella marina calendulæ folio, *Dillen Musc.* 46.
Ulva plantaginifolia, *Wulf. Aquat.* 23.
Ulva plantaginea, *Roth Cat.* 3, 326; *Engl. Bot.* 2136.
Laminaria plantaginea, *Agardh Syn.* 20.

Sea-shores, parasitic on zostera marina; annual; spring

Thallus 3 to 6 inches high; *edge* mostly uncut, seldom toothed.

2. *Fasciata attenuata. Narrowed ribband-weed.*

Thallus membranaceous, linear, narrower at both ends, waved, not cut.

Fucus Fascia, *Fl. Dan.* 768; *Turn. Syn.* 187.
Laminaria Fascia, *Agardh Syn.* 19.

Sea-shores; annual; spring.

Thalli aggregated, 6 to 9 inches high, waved or spirally twisted.

XL. 65. LAMINARIA. *Flake-weed.*

Thallus flat, leatherlike, ribless; *stirps* roundish; *holdfasts* fibrous; *sporidia* placed horizontally in superficial mucilaginous warts, formed of jointed filaments.

1. *Laminaria membranacea.* *Membranaceous flake-weed.*

Stirps roundish, compressed; *thallus* flat, linear, lanceolate, narrower at both ends; edge cut.

Fucus Phyllitis, *Esper*, 149; *Turn. Hist.* 164; *Engl. Bot.* 1331.
Ulva Phyllitis, *De Candolle Fl. Fr.* 2, 15.
Laminaria Phyllitis, *Lamour. Thal.* 22.

Sea-shore; parasitical; annual.

Thalli mostly aggregate; *edge* not cut.

2. *Laminaria saccharina.* *Sugar flake-weed.*

Stirps roundish; *thallus* flat, linear, lanceolate, edge not divided.

Fucus longissimo, latissimo, crassoque folio, *Dillen in Raii Syn.* 39, 1.
Fucus saccharinus, *Lin. S. P.* 1630.
Ulva saccharina, *De Cand. Fl. Fr.* 2, 15.
Phasgonon balteiformis, *Walk.*
Laminaria saccharina, *Lamour. Thal.* 22.

Sea-shores; perennial; summer.

β. *bullata.* *Thallus* bullated; edge waved.

Fucus latissimus et longissimus, oris crispus, *Dillen in Raii Syn.* 39, 1.
Fucus folio singulari, longissimo, lato, in medio rugoso, qui balteiformis dici potest, *Raii Syn.* 39, 1.
Ulva latissima, *Lin. Syst. Nat.* 719.
Fucus saccharinus, *Fl. Dan.* 416; *Engl. Bot.* 1376.
Ulva mesenteriformis, *Roth Cat.* 1, 210.

γ. *longissima.* *Thallus* oblong, membranaceous, pointed.

Ulva longissima, *Fl. Norv.* 2, 128.

3. *Laminaria latissima.* *Broadest flake-weed.*

Stirps short, roundish; *thallus* expanded, flat, ribless, elliptical, orbicular, mucilaginous.

Ulva maxima, *Fl. Norv.* 2, 7.
Fucus saccharinus latissimus, *Turn. Hist.* 163.
Laminaria saccharina latissima, *Agardh Syn.* 18.

Sea-shore.

Thalli gregarious, yellowish, nearly as broad as long.

3. *Laminaria digitata.* *Fingered flake-weed.*

Stirps roundish; *thallus* expanded into an oval, heart-shape, cut in many short, shallow lobes; *edge* not cut.

Fucus arboreus polyschides edulis, *Raii Syn.* 46, 31; *Park.* 1292, 2.
Fucus digitatus, *Lin. Mant.* 134; *Turn. Hist.* 162; *Engl. Bot.* 2274.
Fucus hyperboreus, *Fl. Norv.* 2, 61.
Fucus bifurcatus, *Fl. Norv.* 1, 96.
Ulva digitata, *De Cand. Fl. Fr.* 2, 16.
Laminaria digitata, *Lamour. Thal.* 22.
Phasgonon esculentum, *Walker.*

Sea-shores; perennial.
Thalli gregarious.—Eaten as a salad.

XLI. 66. PHASGONON. Walker. *Phasgone.*

Thallus flat, leatherlike, often ribbed; *stirps* roundish; *holdfasts* fibrous; *sporidia* placed horizontally in superficial mucilaginous warts, formed of jointed filaments, placed in appendages attached to the stirps.

1. *Phasgonon bulbosum.* *Bulbous phasgone.*
Stirps flat, edge waved; *thallus* expanded, flat, cut in many swordshape lobes; *edges* not cut.

Fucus bulbosus, *Esper.* 123; *Engl. Bot.* 1760; *Turn. Hist.* 161.
Fucus polyschides, *Lightf. Scot.* 936.
Fucus palmatus, *Gmelin*, 30.
Ulva bulbosa, *De Cand. Fl. Gall.* 2, 16.
Phasgonon Mariæ, *Walker.*
Laminaria bulbosa, *Lamour. Thal.* 22.
St. Mary's Thistle.

Sea-shores.
Holdfasts tuberous, globose, hollow; outside fibrous.

2. *Phasgonon esculentum.* *Eatable phasgone.*
Stirps roundish; *middle* compressed, pinnately lobed; lobes many, lanceolate; *thallus* expanded, flat, swordshape, undivided, midribbed.

Fucus Scoticus latissimus edulis dulcis, *Raii Syn.* 46, 30.
Fucus esculentus, *Lin. Mant.* 135; *Turn. Hist.* 117; *Engl. Bot.* 1759.
Fucus fimbriatus, *Gmel.* 200.
Fucus tetragonus, *Woodw. in Lin. Tr.* 3, 110.
Fucus pinnatus, *Fl. Norv.* 1, 96.
Phasgonon Scoticum, *Walker.*
Laminaria esculenta, *Lamour. Thal.* 22.

Sea-shores.
Thalli gregarious; *holdfasts* fibrous.

β. *minus.* *Thallus* narrower at bottom.

Fucus teres, *Woodw. in Lin. Tr.* 3, 140.

XLII. 67. CHORDA. Lamouroux. *Rope-weed.*

Thallus round, tubular, not branched; *holdfasts* shield-like; *sporidia* in clublike threads, scattered on the surface of the thallus.

1. *Chorda filiformis.* *Threadlike rope-weed.*

Thallus round, not in the least branched, narrower at each end; when old twisted up spirally.

Fucus chordam referens teres prælongus, *Raii Syn.* 40, 3.
Fucus Filum, *Lin. S. P.* 1631; *Turn. Hist.* 86; *Engl. Bot.* 2487.
Fucus Tendo, *Exper*, 22.
Ceramium Filum, *Roth Cat.* 1, 147.
Chorda Filum, *Stackh. Ner. Brit. Introd.* 24; *Lamour. Thal.* 27.
Chordaria, *Link in Schrad. Journ.* 1809, 8.
Chordaria Filum, *Agardh Syn.* 13.
Flagellaria Filum, *Ner. Brit. ed.* 2. *Intr.* 9.
Sea-laces.

Sea-shore; annual.

Thalli aggregate, from 1 to 20 feet long, often spirally twisted; *tubes* divided on the inside; *sporidia* pearshaped.

2. *Chorda tomentosa.* *Woolly rope-weed.*

Thallus cylindrical, not branched, naked at the bottom, in all other parts covered with a very manifest slippery downiness, formed of jointed fibres.

Chorda tomentosa, *Lyngbye Hydr. Dan.* 74.
Fucus Filum, var. *Engl. Bot.* 2487.

Sea-shore.

XLIII. 68. CHORDARIA. Link. *Thong-weed.*

Thallus solid, round, threadlike, branched; *sporidia* scattered in clublike threads on the surface of the thallus.

Chordaria flagelliformis. *Whiplike thong-weed.*

Thallus slender, slippery; *branches* numerous, slightly 2-rowed, very long, simple or forked, blunt.

Fucus flagelliformis, *Fl. Dan.* 650; *Turn. Hist.* 85; *Engl. Bot.* 1222.
Conferva dichotoma, *Fl. Dan.* 358.
Ceramium longissimum, *Schum. Enum.* 2, 111.
Gigartina flagelliformis, *Lamour. Thal.* 48.
Chordaria flagelliformis, *Agardh Disp.* 12.

Sea-shores.

Thalli aggregate, 6 to 9 inches long.

β. *tortilis.* *Thallus* small, slender; branches pinnate; twigs spreading, clawlike, not branched, close.

Conferva, 1172; *Lin. Suec.* 4, 36.
Chordaria flagelliformis minor. *Agardh Syn.* 13.
Fucus flagelliformis tortilis, *Turn. Hist.* 85.

XLIV. 69. SPOROCHNUS. Agardh. *Sporochnus.*

Thallus threadlike, cartilaginous; *branches* pinnate; *sporidia* scattered in the ovate or globular ends of the twigs which end in jointed radiating filaments.

1. *Sporochnus pedunculatus.* *Footstalked sporochnus.*

Thallus cartilaginous, threadlike; *branches* irregularly pinnated, mostly alternate, elliptical.

Fucus pedunculatus, *Huds. Fl. Angl.* 587; *Turn. Hist.* 188; *Engl. Bot.* 545.
Fucus Gærtneri, *Gmelin*, 164.
Gigartina pedunculata, *Lamour. Thal.*
Sporochnus pedunculatus, *Agardh Disp.* 12.

Sea-shores.

2. *Sporochnus villosus.* *Villous sporochnus.*

Thallus cartilaginous, threadlike; *branches* opposite, distant, pinnate, spreading; *twigs* elliptical.

Conferva villosa, *Huds. Fl. Angl.* 603; *Engl. Bot.* 546; *Dillw.* 37?
Chordaria? villosa, *Agardh Syn.* 14.

Sea-shores; annual.

XLV. 70. DESMARESTIA. Lamouroux. *Desmarest.*

Thallus compressed, pinnately branched; *twigs* slenderest at bottom; edges serrate; *holdfasts* shieldlike; *sporidia* along with jointed threads from the serrated edges of the twigs.

1. *Desmarestia aculeata.* *Prickly desmarest.*

Thallus woody at the bottom, cylindrical, very much branched; *branches* flat, cartilaginous, linear, ribless, repeatedly branched; *twigs* pinnate; edges spinose; *spines* upright.

Fucus angustifolius, foliis dentatis, *Raii Syn.* 48, 38.
Fucus aculeatus, *Lin. S. P.* 1632; *Turn. Hist.* 187; *Engl. Bot.* 2445.
Fucus muscoides, *Gmelin*, 130.
Fucus virgatus, *Fl. Norv.* 45.
Fucus contortus, *Esper*, 43.
Fucus usneoides, *Oeder Enum.* 113.
Desmarestia aculeata, *Lamour. Thal.* 25.
Sporochnus aculeatus, *Agardh Syn.* 10.
Desmia ligulata, *Lyngbye Hydr. Dan.* 34.

Sea-shores; perennial; winter.

Thallus obsoletely contracted, olive-green becoming black.

2. *Desmarestia ligulata.* *Straplike desmarest.*

Thallus flat, nearly ribless, doubly pinnate; *branches* 2-rowed, opposite, membranaceous, linear, lanceolate; *edge* serrate with spinous teeth.

Fucus ligulatus, *Lightf. Scot.* 949; *Turn. Hist.* 98; *Engl. Bot.* 1636.
Fucus herbaceus, *Huds. Fl. Angl.* 582.
Desmarestia ligulata, *Lamour. Thal.* 25.
Laminaria ligulata, *Agardh Disp.* 13.
Desmia ligulata, *Lyngbye Hydr. Dan.* 34.

Sea-shores; perennial; summer.

Thallus 2 to 3 feet high, delicate, yellow, becomes pale green, when exposed to the air.

β. *angustior. Thallus* narrow, trebly pinnate; *twigs* scarcely cut on the edges.

γ. *dilatata. Twigs* nearly elliptical, narrowest at bottom.

XLVI. 71. LICHINA. Agardh. *Lichen-weed.*

Thallus cartilaginous, roundish or angular, branched, shrublike; *sporidia* ovate, intermixed with jointed fibres, in the ovate thecæ immersed in the swollen apex of the twigs, leaving a hole at the top, then dilating and becoming concave.—Has the appearance of a lichen.

1. *Lichina pygmea.* *Pigmy lichen-weed.*

Thallus compressed; branches very short, divaricating, dilated; *tubercles* globose.

Fucus pygmæus, *Lightf. Scot.* 964; *Turn. Hist.* 258; *Engl. Bot.* 1322.
Fucus pumillus, *Huds. Fl. Ang.* 584.
Fucus lichenoides, *Gooden. in Linn. Tr.* 3, 192.
Gigartina pygmæa, *Lamour. Thal.* 49.
Lichina pygmæa, *Agardh Syn.* 9.
Gelidium pygmæum, *Lyngbye Hydr. Dan.* 41.

Rocks below low water; perennial.

Thallus forming very thick tufts, upright, a quarter of an inch high.

2. *Lichina pumila.* *Dwarf lichen-weed.*

Thallus roundish; *branches* long, nearly cylindrical; *tubercles* elliptical, at the ends of the branches.

Fucus pygmæus β, *Turn. Hist.* 4, 17.
Lichen confinis, *Achar. Prod.* 208; *Engl. Bot.* 2573.
Stereocaulon confinis, *Achar. Meth.* 317.
Lichina pygmæa minor, *Agardh Syn.* 10.

On rocks in the sea.

Thallus tufted, upright.

XLVII. 72. HIMANTHALIA. Lyngbye. *Sea-strap.*

Thallus egglike, becoming shieldlike, stipitated; *holdfasts* shieldlike; *apothecia* forked, compressed, arising from the centre of the thallus; *sporidia* intermixed with jointed fibres in thecæ immersed in the apothecia.

Himanthalia elongata. *Long sea-strap.*

Fucus longo angusto crassoque folio, *Raii Syn.* 43, 11.
Fucus fungis affinis, *Raii Syn.* 43, 15.
Fucus loreus, *Fl. Dan.* 710; *Turn. Hist.* 196; *Engl. Bot.* 569.
Fucus elongatus, *Lin. S. P.* 1627.
Ulva pruniformis, *Fl. Norveg.* 2, 89.

Sea-shore.

Thallus 2 or 3 inches high; *apothecia* solitary or aggregate, 1 to 10 feet long; *angles* of the forks and tips acute.

β. *inequalis.* *Receptacles* irregular in breadth; *angles* of the fork and tips blunt.

XLVIII. 73. CERVINA. *Horn-weed.*

Thallus roundish, forked, with a small black longitudinal line in the centre; *vesicles* 0; *holdfasts* shieldlike; *sporidia* intermixed with jointed fibres in thecæ immersed in terminal apothecia.

Cervina tuberculata. *Tubercled horn-weed.*

Thallus leatherlike, cartilaginous, threadlike, irregularly two-forked; *angles* of the forks rounded; *apothecia* oblong, cylindrical, blunt.

Fucus kali geniculato similis, non tamen geniculatus, *Raii Syn.* 43, 13.
Fucus tuberculatus, *Huds. Fl. Angl.* 588.
Fucus bifurcatus, *Withering Bot. Arr.* 4, 109.

Sea-shore; perennial; June to October.

XLIX. 74. FUCUS. Theophrastus. *Wrack.*

Thallus flat, confluent, forked, mid-ribbed; *vesicles* 0 or innate; *holdfasts* shieldlike; *sporidia* intermixed with jointed fibres, in roundish thecæ, immersed in terminal apothecia.

1. *Fucus serratus.* *Serrated wrack.*

Thallus flat, mid-ribbed, linear, forked; edge serrated, toothed; *apothecia* flat, linear, slightly pointed.

Fucus sive alga latifolia major dentata, *Raii Syn.* 42, 7.
Fucus serratus, *Lin. S. P.* 1626.

Sea-shore; perennial; winter and spring.

β. *latifolius.* *Upper lobes* ovate, lanceolate, widening upwards.

γ. *integer.* *Edges* scarcely serrate.

2. *Fucus ceranoides.* *Horn wrack.*

Thallus flat, mid-ribbed, slightly forked; edge not cut; *side branches* slender; *apothecia* compressed, linear, pointed.

Fucus ceranoides, *Lin. S. P.* 1626; *Turn. Hist.* 89; *Engl. Bot.* 215.
Fucus distichus, *Esper*, 139.

Sea-shore; perennial; winter.

3. *Fucus vesiculosus.* *Bladdery wrack.*

Thallus flat, mid-ribbed, linear, forked; edge not cut; *vesicles* spherical, innate; *apothecia* compressed, elliptical.

Fucus sive alga marina latifolia vulgatissima, *Raii Syn.* 40, 4.
Fucus vesiculosus, *Lin. S. P.* 1626.
Fucus manillaris, *Esper*, 118.
Fucus quercus marina, *Gmelin*, 60.
Fucus divaricatus, *Lin. S. P.* 1627.

Sea-shore; perennial; winter.

β. *inflatus.* *Thallus* inflated at the tip; *vesicles* long.

Fucus inflatus, *Lin. S. P.* 1637.

γ. *spiralis.* *Thallus* twisted, spiral; *vesicles* 0; *apothecia* roundish.

Fucus spiralis maritimus major, *Raii Syn.* 41, 5.
Fucus spiralis, *Lin. S. P.* 1627; *Engl. Bot.* 1685.

δ. *volubilis.* *Thallus* twisted; *vesicles* 0; *tips* long, pointed.

ε. *acutus.* *Thallus* narrow; *vesicles* innate; *tips* long, lanceolate, pointed.

ζ. *angustifolius.* *Thallus* narrow; *vesicles* 0; *apothecia* slightly pedicelled, linear, lanceolate, pointed.

Fucus angustifolius, *Withering Bot. Arr.* 92.

η. *Sherardi.* *Thallus* narrow, small; *vesicles* 0; *apothecia* short, oblong.

Fucus Sherardii, *Stackh. Ner. Brit.* 72.

θ. *linearis.* *Thallus* narrow, small; *vesicles* 0; *apothecia* long, linear, lanceolate.

Fucus linearis, *Huds. Fl. Angl.* 578.
Fucus distichus, *Lightf. Fl. Scot.* 912.

L. 75. HALIDRYS. Lyngbye. *Sea-oak.*

Thallus compressed, confluent, forked, ribless; *vesicles* 0, or innate; *holdfasts* shieldlike; *sporidia* intermixed with jointed fibres in roundish thecæ immersed in pedicelled, lateral apothecia.

1. *Halidrys nodosa.* *Knobbed sea-oak.*

Thallus pinnately branched.

Fucus maritimus nodosus, *Raii Syn.* 48, 41.
Fucus nodosus, *Lin. S. P.* 1628; *Engl. Bot.* 570; *Turn. Hist.* 91.
Halidrys nodosa, *Lyngbye Hydr. Dan.* 37.

Sea-shore; perennial; winter.

Thallus 3 or 4 feet long, flat; *apothecia* roundish, mostly solitary.

β. *minor.* *Apothecia* ovate, hardly wider than the peduncle.

γ. *siliquatus.* *Apothecia* linear, lanceolate.

2. *Halidrys canaliculata.* *Channelled sea-oak.*

Thallus compressed, ribless, linear, grooved on one side, level-topped; edge not cut; tip 2-cut; *apothecia* oblong, 2-cut, turned.

Fucus pumilus dichotomus, segmentis ex una parte gibbosis, ex altera excavatis, *Raii Syn.* 43, 12.
Fucus canaliculatus, *Linn. Syst. Nat.* 716; *Engl. Bot.* 823; *Turn. Hist.* 3.
Fucus excisus, *Lin. S. P.* 1627.
Fucus rotundus, *Esper*, 17.

Sea-shore; perennial.

Thalli aggregate, 2 to 4 inches long.

3. *Halidrys Mackaii.* *Mackay's sea-oak.*

Thallus leatherlike, cylindrical, threadlike, forked, level-topped; *tips* blunt; *vesicles* scattered, innate, elliptical, solitary, wider than the thallus.

Fucus Mackaii, *Turn. Hist.* 52; *Engl. Bot.* 1927.

Sea-shore; perennial; winter.

Thallus 6 to 12 inches high, lower part compressed; *angles* of the fork roundish.

LI. 71. MACKAIA. *Mackay.*

Thallus cartilaginous, rod-like, shrubby; upper part branched, narrow, roundish compressed, below compressed, broad, leaflike; *holdfasts* shieldlike; *vesicles* 0, or innate in the branches; *sporidia* in roundish thecæ intermixed with jointed fibres, or in terminal apothecia.

1. *Mackaia abrotanifolia.* *Southern-wood mackay.*

Thallus threadlike, compressed, bipinnate; lobes alternately forked, threadlike, spreading, edge not cut; *vesicles* innate; *apothecia* terminal, many cleft.

Fucus abrotanifolius, *Lin. S. P.* 1629; *Turn. Hist.* 252; *Engl. Bot.* 2130.

Sea-shore; perennial; winter.

Thallus 12 to 18 inches long; rough at the base.

2. *Mackaia discors.* *Discordant mackay.*

Thallus round, branched; branches alternately pinnate; lower branches winged, serrated; upper branches linear; *apothecia* terminal, oblong.

Fucus discors, *Lin. Syst. Nat.* 2, 717; *Turn. Hist.* 252; *Engl. Bot.* 2131.

Sea-shore; perennial; summer.

Thalli many, crowded, rough.—According to Mrs. Griffiths is the young state of the preceding species.

3. *Mackaia barbata.* *Bearded mackay.*

Thallus round, very much branched; *branches* alternate, threadlike; *apothecia* oblong, acute, terminal.

Fucus barbatus, *Woodw. Tr. Lin. Soc.* 3, 128; *Turn. Hist.* 250; *Engl. Bot.* 2170.

Fucus fœniculaceus, *Gmel.* 86.

Sea-shores; perennial; summer.

β. *granulata.* *Apothecia* linear, tubercular.

Fucus granulatus, *Woodw. Tr. Lin. Soc.* 3, 131.

4. *Mackaia fibrosa.* *Fibrous mackay.*

Thallus compressed and woody at the base; *branches* 2-rowed, long, variously divided; upper branches with bristlelike twigs, lower branches naked; *vesicles* roundish, innate; *apothecia* cylindrical.

Fucus radicibus arborum fibrosis similis, *Raii Syn.* 49, 45.
Fucus fibrosus, *Huds. Fl. Angl.* 575; *Eng. Bot.* 1969; *Turn. Hist.* 209.
Fucus setaceus, *Huds. Fl. Angl.* 575.
Fucus barbatus, *Gmelin*, 90.

Sea-shores; perennial; Feb. and August.

Thallus 1 to 3 feet high.

5. *Mackaia mucronata.* *Stiff-pointed mackay.*

Thallus round, warty, very much branched; *branches* threadlike, spinous; young branches linear, flat, not cut, mid-ribbed; *tip* stiff pointed; *apothecia* cylindrical.

Fucus granulatus, *Lin. S. P.* 1629; *Engl. Bot.* 2169.
Fucus mucronatus, *Turn. Syn.* 73; *Hist.* 251.
Fucus radicaulis, *Wither. Bot. Arr.* 4, 111.

Sea-shore; perennial; Feb. and August.

6. *Mackaia ericoides.* *Heathlike mackay.*
Thallus cylindrical and naked at bottom; branched at the tip; *branches* variously divided, long; *twigs* mostly simple, awlshape, imbricate, spreading; *vesicles* roundish.

Fucus foliis ericæ seu tamarisci, *Raii Syn.* 49, 44.
Fucus ericoides, *Lin. S. P.* 1631; *Engl. Bot.* 1968; *Turn. Hist.* 191.
Fucus tamariscifolius, *Huds. Fl. Angl.* 576.
Fucus Erica marina, *Gmel.* 128.
Fucus selaginoides, *Lin. Mant.* 134.

Sea-shore; perennial; summer.
Thallus reflects bright tints when in a growing state.

LII. 77. BACCALARIA. *Gulf-weed.*

Thallus distinct as to its parts; *holdfasts* shieldlike; *stirps* threadlike, much branched; *branches* mid-ribbed, membranaceous, often pierced with holes, dilated at the tip, edges serrate; *vesicles* spherical, peduncled, awnless or ending in a round or dilated awn; *sporidia* in roundish thecæ intermixed with jointed fibres immersed in axillary, solitary or racemous apothecia.

1. *Baccalaria natans.* *Floating gulf-weed.*
Thallus compressed, bipinnated; branches alternate, simple; twigs linear, lanceolate, serrated; *vesicles* spherical; peduncles flat; *apothecia* cylindrical, racemose.

Fucus natans, *Lin. S. P.* 1628; *Engl. Bot.* 2114; *Turn. Hist.* 46.

Sea-shores; perennial; summer.
Thallus alternately bipinnate, twigs blunt, smooth.

2. *Baccalaria teres.* *Cylindrical gulf-weed.*
Thallus cylindrical, threadlike, bipinnate; branches alternate, mostly simple; twigs linear, serrated; *vesicles* spherical; peduncles cylindrical.

Fucus natans, *Huds. Fl. Angl.* 572.
Fucus bacciferus, *Turn. Syn.* 55; *Hist.* 27; *Engl. Bot.* 1967.

Sea, floating in large masses; perennial; winter.

β. oblongifolius. *Twigs* oblong, blunt, large toothed.

LIII. 78. SILIQUARIA. *Podweed.*

Thallus compressed, ribless, branched; *vesicles* pedicelled, lanceolate, jointed; *sporidia* intermixed with jointed fibres in roundish thecæ in terminal lanceolate podshaped apothecia.

Siliquaria angustifolia. *Narrow-leaved podweed.*

Thallus branched; branches alternate, 2-rowed; *vesicles* beaked.

Fucus angustifolius vesiculis longis siliquarum æmulis, *Raii Syn.* 49, 39.
Fucus siliquosus, *Lin. S. P.* 1629; *Engl. Bot.* 474; *Turn. Hist.* 159.
Halymenia siliquosa, *Lyngbye Hydr. Dan.* 37.

Sea-shore; perennial; winter.

β. *minor.* *Thallus* not more than 6 or 9 inches long.

Fucus siliquosus, *Stackh. Ner. Brit.*

γ. *denudata.* *Thallus* long, much branched; *vesicles* 0.

LIV. 79. FURCELLARIA. Lamouroux. *Fork-weed.*

Thallus threadlike, forked, level-topped; *sporidia* immersed in regular lines in the swollen tips of the twigs.

Flagellaria lubricalis. *Slippery fork-weed.*

Thallus threadlike, forked, angles acute, tips blunt.

Fucus parvus segmentis prælongis teretibus acutis, *Raii Syn.* 45, 24.
Fucus lubricalis, *Gmelin*, 108; *Engl. Bot.* 824; *Turn. Hist.* 6.
Fucus fastigiatus, *Stackh. Ner. Brit.* 15.
Fucus furcellatus, *Huds. Fl. Angl.* 589.
Furcellaria lubricalis, *Lamour. Thal.*

Sea-shore; perennial; Nov. Feb.

β. *fastigiata.* *Twigs* compressed, transparent, ovate, lanceolate, short, pointed.

Fucus sive alga exigua dichotoma, foliorum segmentis longiusculis, crassis et subrotundis, *Raii Syn.* 45, 25.
Fucus fastigiatus, *Huds. Fl. Angl.* 588.
Furcellaria fastigiata, *Lamour. Thal.*

Fam. III. 3. HOMOTHALAMEÆ. *Lichenes homothalami.* Acharius.

Thallus leatherlike, cartilaginous or shrubby; *sporidia* scattered, innate throughout the whole thallus, or in apothecia of the same colour and substance as the thallus without any proligerous skin or central nucleus.—*Terrestrial* or parasitic, perennial, greenish or becoming so when grazed, absorbing water at the surface and transmitting it to every part.

A. *Thallus gelatinous, when dry cartilaginous;* Collematideæ.

Thallus crustlike, slightly figured or uniform ..... PLACYNTHIUM. 80.
Thallus pleated tile-wise, roundish; *lobes* minute, thick, turgid ..... ENCHYLIUM. 81.
Thallus rather leaflike, irregular; *lobes* thick, naked, turgid ..... SCYTENIUM. 82.
Thallus leaflike; *lobes* rounded, downy beneath ..... MALLOTIUM. 83.
Thallus leaflike; *lobes* naked, rather membranaceous, blackish green LATHAGRIUM. 84.
Thallus leaflike; *lobes* naked, membranaceous, greyish ..... LEPTOGIUM. 85.
Thallus very finely torn and branched ..... POLYCHIDIUM. 86.

B. *Thallus with a fibrous axis, bark crustlike.* Usneadeæ.

Apothecia shieldlike, terminal, edgeless .... USNEA. 87.

C. *Thallus cartilaginous, inside tow-like.* Ramalinideæ.

Apothecia shieldlike, terminal, nearly marginless ..... CORNICULARIA. 88.
Apothecia saucerlike, edged, slightly pedicelled; *thallus* nearly solid ..... RAMALINA. 89.
Apothecia saucerlike, edged, not pedicelled; *thallus* rather pipey ..... ALECTORIA. 90.

A. COLLEMATIDEÆ. *Thallus* entirely gelatinous, homogeneous; when dry hard, cartilaginous, crustlike, leaflike, or branched; *apothecia* shieldlike, sessile or slightly pedicelled, sometimes when dry coloured in the centre. These ought to be moistened before they are examined, as many of them have their apothecia of a different colour when dry.

I. 80. PLACYNTHIUM. Acharius. *Placynthe.*
Thallus crustlike, slightly irregular or uniform.

Placynthium nigrum. *Black placynthe.*
Thallus crustlike, nearly orbicular, brown-black; *marginal lobes* deeply crenate; central lobes seedlike, slightly branched; *apothecia* at length convex, black, edged.

Lichen niger, *Hudson Fl. Angl.* 524; *Engl. Bot.* 1161.
Lecidea corallinoides, *Florke, Berl. Mag.* 1809, 5.
Lecidea nigra, *Achar. Meth. Lich.* 76.
Stereocaulon corallinoides, *Hoffm. Fl. Germ.* 129.
Collema nigrum, *Achar. Lichen. Univ.* 628.

On rocks, espcially limestone.

II. 81. ENCHYLIUM. Acharius. *Enchyle.*

Thallus plaited tilewise, nearly orbicular, composed of minute lobes, when moist turgid, very thick.

1. *Enchylium microphyllum.* *Small-leaved enchyle.*

Thallus slightly spreading, tilewise, blackish green; *lobes* thick, minute, crowded, deeply crenate; *apothecia* sessile, crowded, pitchershape, hollow, colour of the thallus, edge not in the least cut, contracted.

Collema microphyllum, *Achar. Lich. Univ.* 630.

On the bark of old trees.

2. *Enchylium fragrans.* *Sweet-scented enchyle.*

Thallus nearly orbicular; *lobes* round, expanded, naked, edge thick, crenate, ascending; *apothecia* scattered, minute, hollow, dark yellowish brown; *edge* swollen outwardly, uneven.

Lichen fragrans, *Engl. Bot.* 19, 12.

Trunks of trees.

When moistened has a sweet odour.

3. *Enchylium crispum.* *Crisp enchyle.*

Thallus nearly orbicular; *central lobes* rather upright, granular; lobes of the circumference depressed, large, blunt, crenate; *apothecia* scattered, slightly concave, reddish, edge granular.

Lichenoides gelatinosum atrovirens, crispum et rugosum, *Dillen Musc.* 139.
Lichen crispus, *Engl. Bot.* 834.
Lichen pulposus β, *Bernh. in Schrad. Journ.* 1799.
Parmelia crispa, *Achar. Meth. Lich.* 254.
Collema crispum, *Hoffm. Fl. Germ.* 100.
Collema crenulatum, *Hoffm. Fl. Germ.* 103.
Collema glaucescens, *Hoffm. Fl. Germ.* 105.
Collema pulposum crispum, *Achar. Lich. Univ.* 652.

On the ground among mosses, and on mountains.

4. *Enchylium turgidum.* *Swollen enchyle.*

Thallus irregularly expanded, depressed, slightly lobed and tiledlike; *lobes* raised, thick, wartlike, wrinkled, gra-

nulated; *apothecia* sessile, pitchershape, dark brown; edge slightly swollen; outside wrinkled-granular.

Collema turgidum, *Achar. Lich. Univ.* 634.

On rocks among mosses.

5. *Enchylium tenax.* *Tough enchyle.*

Thallus nearly orbicular, tilewise; *lobes* rather thick, flat, lying down, nearly round, deeply cut and crenate; *apothecia* scattered, immersed in the lobes, concave, reddish, edge scarcely cut.

Lichen tenax, *Swartz in N. Act. Ups.* 4, 249.
Parmelia tenax, *Achar. Meth. Lich.* 231.
Collema tenax? *Hoffm. Fl. Germ.* 105.
Collema tenax, *Achar. Lich. Univ.* 635.

Among mosses on rocks, adhering strongly to them.

6. *Enchylium plicatile.* *Folding echyle.*

Thallus round, tilewise; *lobes* thick, roundish, pleated in circles, wavey, rather upright, not cut; *apothecia* scattered, sessile, hollow, colour of the thallus, edge not cut.

Lichen plicatis, *Achar. in N. Act. Stoch.* 16, 11.
Parmelia plicatilis, *Achar. Meth. Lich.* 240.
Collema plicatile, *Achar. Lich. Univ.* 655.

On rocks.

7. *Enchylium fluviale.* *River enchyle.*

Thallus slightly cushion-like; *lobes* thick, crowded, blunt, complicately wavey, deeply cut; *apothecia* near the edge, slightly globular, colour of the thallus, centre pitchershape; edge nearly double.

Lichenoides gelatinosum opuntoides, *Dillen in Raii Syn.* 72, 58.
Lichen fluviatilis, *Huds. Fl. Angl.* 536.
Parmelia fluviatilis, *Achar. Meth. Lich.* 249.
Collema fluviale, *Achar. Lichen. Univ.* 636.

On stones under water in rivulets.

8. *Enchylium marginale.* *Marginal enchyle.*

Thallus orbicular, rather stellate, tiledlike; *lobes* deeply jagged, narrow, many-cut, winding, rather flat, crenate; *apothecia* marginal and scattered, blackish-brown, edge not in the least cut.

Lichenoides gelatinosum fuscum, jacobææ maritimæ divisurâ, *Dillen. Musc.* 140.
Lichen marginalis, *Huds. Fl. Angl.* 534; *Engl. Bot.* 1924.
Parmelia melæna marginalis, *Achar. Meth. Lich.* 241.
Collema laciniatum, *Hoffm. Fl. Germ.* 100.
Collema melænum marginale, *Achar. Lich. Univ.* 637.

On limestone rocks, occasionally overflowed.

9. *Enchylium fasciculare.* *Bundled enchyle.*

Thallus nearly orbicular, folded tilewise; *central folds* upright, winding, anastomosing; folds in the circumference rounded, deeply crenate; *apothecia* marginal, topshape, bundled; centre rather convex, reddish.

Lichenoides gelatinosum palmatum, tuberculis conglomeratis, *Dill. Musc.* 141.
Lichen fascicularis, *Lin. Mant.* 133; *Engl. Bot.* 1162.
Parmelia fascicularis, *Achar. Meth. Lich.* 239.
Collema fasciculare, *Achar. Lich. Univ.* 639.

On rocks, mountains, and trunks of trees.

β. *aggregatum. Marginal lobes* very small; central lobes obliterated by the crowded apothecia.

Lichen fascicularis β, *Bern. in Schrad. Journ.* 1799.
Collema polycarpon, *Hoffm. Fl. Germ.* 102.
Collema fasciculare aggregatum, *Achar. Lich. Un.* 640.

10. *Enchylium corrugatum.* *Pursed-up enchyle.*

Thallus thick, blackish green, with raised gutlike convolutions.

Lichen corrugatus, *Dickson Pl. Crypt. Brit.* 4.
Parmelia plocina, *Achar. Meth. Lichen.* 247.
Collema corrugatum, *Achar. Lich. Univ.* 642.

Mountains and rocks in the sea.

11. *Enchylium cretaceum.* *Chalky enchyle.*

Thallus lobed starwise, blackish green; *apothecium* central, raised, brownish flesh-colour, edge paler, not cut.

Lichen cretaceus, *Engl. Bot.* 738.
Parmelia cretacea, *Achar. Meth. Lich.* 248.
Collema cretaceum, *Achar. Lich. Univ.* 642.

Chalk-pits.

III. 82. SCYTENIUM. Acharius. *Scytene.*

Thallus irregular, nearly leaflike; *lobes* separate, spreading, thick, swollen, naked.

Scytenium palmatum. *Palmate scytene.*

Thallus nearly leaflike, brownish blue green; *lobes* thick, crowded, palmately cut, jags nearly linear, round; *apothecia* reddish brown.

Lichenoides gelatinosum tenerius laciniatum, ex fusco purpurascens, *Raii Syn.* 72, 54.
Lichen palmatus, *Huds. Fl. Angl.* 535.
Parmelia palmata, *Achar. Meth. Lich.* 242.
Collema palmatum, *Achar. Lich. Univ.* 643.

Upon muddy ground and trunks of trees.

IV. 83. MALLOTIUM. Acharius. *Mallote.*

Thallus leaflike; *lobes* rounded, underneath woolly or with small fibres.

1. *Mallotium Saturninum.* *Saturnine mallote.*

Thallus leaflike, blackish green, beneath sea-green, rather woolly; *lobes* oblong, rounded, wavey, not cut; *apothecia* lateral, raised, flat, red, edge not cut.

Lichen Saturninus, *Dickson Pl. Crypt. Bot.* 2, 21; *Engl. Bot.* 1980.
Lichen myochrous, *Erhh. Pl. Crypt. Dec.* 29, 236.
Lichen discolor, *Achar. in Nov. Act. Stockh.* 16, 16.
Parmelia Saturnina, *Achar. Meth. Lich.* 221.
Collema tomentosum, *Hoffm. Fl. Germ.* 99.
Collema Saturninum, *Achar. Lich. Univ.* 644.

Trunks of trees and rocks.

2. *Mallotium Burgessii.* *Burgess' mallote.*

Thallus leaflike, slightly tiledwise, brownish sea-green, underneath grows spongy, villous; *lobes* rounded, jagged, crenular, crisp; *apothecia* depressed, flattish, brown; edge crisp, leaflike.

Lichen ornatus, *Lin. Suppl. Pl.*
Lichen Burgessii, *Lightf. Fl. Scot.* 827.
Parmelia Burgessii, *Achar. Meth. Lich.* 251.
Collema Burgessii, *Achar. Lich. Univ.* 645.

On trunks of trees.

V. 84. LATHAGRIUM. Acharius. *Lathagrium.*

Thallus leaflike; *lobes* nearly membranaceous, weak, naked, blackish green.

1. *Lathagrium nigrescens.* *Blackish lathagrium.*

Thallus leaflike, membranaceous, nearly one-leafed, orbicular, depressed, radiately plaited, round-lobed, blackish green; *apothecia* central, crowded, at length convex, reddish brown, edge not in the least cut.

Lichenoides saxatile membranaceum gelatinosum, tenue nigrescens, *Dillen in Raii Syn.* 72, 53.
Lichen nigrescens, *Huds. Fl. Angl.* 537.
Lichen vespertilio, *Lightf. Fl. Scot.* 840.
Lichen papyraceus, *Wulf. in Jacq. Coll.* 3, 154.
Parmelia nigrescens, *Achar. Meth. Lich.* 227.
Collema vespertilio, *Hoffm. Fl. Germ.* 98.
Collema nigrescens, *Achar. Lich. Univ.* 646.

On the trunks of trees, rocks, and stones.

2. *Lathagrium flaccidum.* *Flaccid lathagrium.*

Thallus leaflike, membranaceous, smooth, blackish green; *lobes* separate, reverse ovate, bluntly divided, not jagged, weak, flexible; *apothecia* scattered, few, rather flat, reddish; edge thin, not cut.

Lichen nigrescens, *Ehrh. Pl. Cr.* 10, 98.
Lichen rupestris, *Swartz Meth. Musc.* 37.
Lichen flaccidus, *Achar. N. A. Stockh.* 16, 14.
Parmelia flaccida, *Achar. Meth. Lich.* 229.
Collema flaccidum, *Achar. Lich. Univ.* 647.

Among mosses on rocks exposed to the drip of water.

3. *Lathagrium furvum.* *Dusky lathagrium.*

Thallus leaflike, membranaceous, rather wrinkled, folded, blackish green, granular on both sides; *lobes* rounded irregularly, frequently wavey-crisped, not cut; *apothecia* scattered, flat, blackish brown, edge not cut.

Lichen granulosus, *Fl. Dan.* 462.
Lichen furvus, *Achar. N. A. Stockh.* 22, 164.
Parmelia furva, *Achar. Meth. Lich.* 230.
Collema granulosum, *Hoffm. Fl. Germ.* 99.
Collema furvum, *Achar. Lich. Univ.* 650.

On the bark of old trees, rocks, walls, and wooden roofs.

4. *Lathagrium sinuatum.* *Jagged lathagrium.*

Thallus leaflike, membranaceous, tiledlike, congregated, naked, black; *lobes* deeply jagged, crisp, toothed; *apothecia* scattered, sessile, colour of the thallus, edge not cut.

Lichenoides tenue crispum, foliis parvis depressis, *Dillen. Musc.* 145.
Lichen sinuatus, *Huds. Fl. Angl.* 509; *Engl. Bot.* 772.
Collema sinuatum, *Hoffm. Fl. Germ. Add.*
Parmelia scotina sinuata, *Achar. Meth. Lich.* 257.
Collema scotinum sinuatum, *Achar. Lich. Univ.* 652.

Among grass and moss on the ground.

VI. 85. LEPTOGIUM. Acharus. *Leptogium.*

Thallus leaflike; lobes rounded, membranaceous, very tender, naked, greyish green, nearly transparent; *apothecia* on very short pedicells.

1. *Leptogium tremelloides.* *Tremella leptogium.*

Thallus leaflike, membranaceous, very tender, nearly transparent, lead colour, slightly wrinkled and hollow dotted; *lobes* oblong, rounded, cut, smooth-edged; *apothecia* scattered, with short pedicells, flat, reddish brown, afterwards black, edge pale.

Lichen tremelloides, *Lin. Suppl. Pl.* 450.
Parmelia tremelloides, *Achar. Meth. Lich.* 224.
Collema plicatum, *Hoffm. Pl. Lich.* 2, 41.
Collema tremelloides, *Achar. Lich. Univ.* 655.

On trunks of trees and among mosses.

2. *Leptogium marginellum.* *Edged leptogium.*

Thallus leaflike, membranaceous, nearly transparent, slightly wrinkled, sea-green; *lobes* rather long; edges wavey, pleated, crisp; *apothecia* minute, marginal, iron-brown; edge pale.

Lichen marginellus, *Bern. in Schrad. J. Bot.* 1799, 21.
Parmelia marginella, *Achar. Meth. Lich.* 225.
Collema marginale, *Hoffm. Pl. Lich.* 2, 47.
Collema marginellum, *Achar. Lich. Univ.* 696.

Upon mosses.

3. *Leptogium lacerum.* *Torn leptogium.*

Thallus leaflike, membranaceous, nearly transparent, slightly wrinkled in network, sea-green; *lobes* small, rather tiledlike, irregularly jagged, toothed, fringed; *apothecia* scattered, slightly concave, red, edge pale.

Lichenoides saxatile tenue rufescens, *Dillen in Raii Syn.* 77, 89.
Tremella lichenoides, *Lin. S. P.* 1625.
Lichen tremelloides, *Huds. Fl. Angl.* 537.
Lichen Tremella, *Roth Fl. Germ.* 503.
Lichen lacer, *Engl. Bot.* 1982; *Achar. Prod.* 135.
Parmelia laciniata, *Achar. Meth. Lich.* 225.
Collema lacerum, *Achar. Lich. Univ.* 657.

On the ground among mosses.

VII. 86. POLYCHIDIUM. Acharius. *Polychide.*

Thallus very finely jagged and branched.

1. *Polychidium subtile.* *Fine polychide.*

Thallus slightly starlike, jaggs very narrow, linear, pressed close, subdivided, blunt, radiating, edge smooth; *apothecia* central, rather flat, colour of the thallus, edge thin, not cut.

Lichen subtilis, *Schrad. Spic.* 95; *Dicks. Crypt.* 4, 25; *Engl. Bot.* 1008.
Parmelia subtilis, *Achar. Meth. Lich.* 243.
Collema subtile, *Achar. Lich. Univ.* 659.

On clay and limestone.

Scarcely visible to the naked eye, but grows in patches.

2. *Polychidium tenuissimum.* *Thinnest polychide.*

Thallus rather tiledlike; *jaggs* minute, linear, many-cut, unequal, granular, rather pointed, very crowded: *apothecia* scattered, rather flat, reddish, edged.

Lichen byssinus, *Wahl. Fl. Lapp.* 442.
Lichen tenuissimus, *Dickson Crypt.* 1, 12.
Parmelia tenuissima, *Achar. Meth. Lich.* 244.
Collema byssinum, *Hoffm. Germ.* 105.
Collema tenuissimum, *Achar. Lich. Univ.* 659.

On gravel-banks, walls, and mosses.

3. *Polychidium Schraderi.* *Schrader's polychide.*
Thallus rather tufted; *jaggs* linear, flat, irregularly undivided, wrinkled, blunt; edges turned over, slightly crenate; *apothecia* scattered, colour of the thallus.

Lichen Schraderi, *Bern. in Schrad. Journ.* 1799, 22.
Parmelia Schraderi, *Achar. Meth. Lich.* 243.
Collema Schraderi, *Achar. Lich. Univ.* 658.

On rocks among mosses.

4. *Polychidium muscicolum.* *Moss polychide.*
Thallus shrublike, cushioned, brownish; *branches* cylindrical, rather upright, bent, knotted, nearly even-topped, bluntish; *apothecia* nearly terminal, flat, brown, edged.

Lichen Muscicola, *Swartz in N. Act. Ups.* 4, 248; *Dicks. Crypt.* 2, 8.
Parmelia muscicola, *Achar. Meth. Lich.* 244.
Collema Muscicola, *Achar. Lich. Univ.* 660.

On the ground, and mountains among moss.

5. *Polychidium velutinum.* *Velvet polychide.*
Thallus cushioned, black; *jaggs* cylindrical, very tender, scarcely branched, bent, interwoven, even-topped; *apothecia* rather concave, minute, colour of the thallus, pressed close, edged.

Lichen exilis, *Lightf. Scot.* 894.
Lichen velutinus, *Achar. Prod.* 218.
Parmelia pannosa, *Achar. Meth. Lich.* 246.
Conferva pannosa, *Web. et Mohr Reise*, 105.
Collema nigrum? *Hoffm. Germ.* 103.
Collema pannosum, *Achar. Lich. Univ.* 660, not of Hoffman.

On rocks and mountains among mosses.

6. *Polychidium spongiosum.* *Spongy polychide.*
Thallus dark green; *jaggs* aggregated, branched, granular, cylindrical, blunt; *apothecia* scattered, hollow, brown; outside spongy, pale; edge upright, thin.

Lichen spongiosus, *Engl. Bot.* 1374.
Collema spongiosum, *Achar. Lichen. Univ.* 661.

Durham; perennial.

B. USNEADEÆ. *Thallus* slightly crustlike, penetrated by an elastic, central bundle of ducts; *apothecia* regular, shieldlike, pedicelled, sometimes proliferous from the edge; pedicels central, accompanied with cephalodia and sorediæ.

VIII. 87. USNEA. Dillenius. *Usnea.*

Thallus slightly crustlike, rather cylindrical, branched, mostly hanging down, enclosing a transparent, central, elastic, threadlike bundle of ducts; *apothecia* orbiculate, terminal, shieldlike, entirely formed of the thallus, and covered in every part with its cortical substance, keeping nearly the same colour, circumference without any defined edge, generally fringed.

1. *Usnea florida.* *Florid usnea.*

Thallus rather upright, rough, pale grey; *holdfasts* slender, horizontal; *branches* very much spread, scarcely branched; *apothecia* flat, very broad, whitish, fringed; fringe radiating, long.

Lichenoides quod Muscus arboreus cum orbiculis, *Raii Syn.* 65, 6.
Lichen floridus, *Lin. S. P.* 1624; *Engl. Bot.* 872.
Usnea florida, *Achar. Meth. Lich.* 307; *Lich. Un.* 620.

On trunks of old trees and palings.

β. *rigida.* *Thallus* long, stiff, straight, very slender, rather hanging, rough; *branches* rather long, bent, branched, twiggy.

γ. *rubiginea.* *Thallus* rather hairy, rusty red; *apothecia* of the same colour.

2. *Usnea plicata.* *Folded usnea.*

Thallus hanging, smooth, pale; *branches* weak, very much divided, the last twigs hairlike; *apothecia* flat, broad, fringed; *fringe* very fine, very long.

Lichenoides quod Muscus arboreus, Usnea officinarum, *Raii Syn.* 64, 1.
Lichen plicatus, *Lin. S. P.* 1622; *Engl. Bot.* 257.
Usnea plicata, *Achar. Lich. Univ.* 622.
Hairy tree-moss.

From the trunks and branches of trees.

β. *comosa.* *Thallus* slightly upright, shrublike, pale white; *side branches* very much spread, diffuse, smooth, much divided; *last twigs* fibrelike, rather rough, slightly nodding; *cephalodia* pale flesh-colour, growing brown.

Lichen comosus, *Achar. N. Act. Stockh.* 16, 209.
Usnea plicata comosa, *Achar. Meth. Lich.* 311; *Lich. Univ.* 623.

γ. *hirta.* *Thallus* slightly upright, rather shrublike, yellowish grey, much branched, rather powdery, roughish; *branches* much divided, bent, intricate, slender, fibrelike.

3. *Usnea barbata.* *Bearded usnea.*

Thallus hanging, smooth, round, rather thick, pale greenish grey; *branches* diverging, frequently fibrelike, hairlike at the tip, beneath jointed.

Lichen barbatus, *Lin. Sp. Pl.* 1622; *Engl. Bot.* 258, fig. 2.
Usnea barbata, *Achar. Meth. Lich.* 315; *Lich. Univ.* 624.

On the branches of old trees.

β. *articulata.* *Thallus* bald, grey, branches long, forked, branched, jointed; joints bellied, separate; last twigs hairlike, fibrelike.

Lichenoides quod Muscus arboreus nodosus, *Raii Syn.* 65, 4.
Usnea barbata articulata, *Achar. Lich. Univ.* 605.
Lichen articulatus, *Lin. S. P.* 1623; *Engl. Bot.* 258, fig. 1.

C. RAMALINIDEÆ. *Thallus* cartilaginous, branched; inside stuffed with fibres like tow; *apothecia* same colour as the thallus, formed entirely from it.

IX. 88. CORNICULARIA. *Horn-moss.*

Thallus cartilaginous, rather solid inside, towlike, branched, shrublike; *apothecia* orbiculate, terminal, oblique, shieldlike, entirely formed of the thallus, similar to its outer surface, become convex and rather inflated; edge scarcely distinct, slightly toothed, at length turned back, slightly altered in colour.

1. *Cornicularia tristis.* *Dull horn-moss.*

Thallus pitch-black, compressed, cylindrical, rather smooth, 2-rowed, 2-forked; branches even-topped, black above; *apothecia* plano-convex, brownish black, slightly margined, edge not toothed, not cut.

Coralloides corniculatum, fuci tenuioris facie, *Dillen Musc.* 118.
Lichen radiatus, *Huds. Fl. Angl.* 559; *Dicks. Crypt.* 9, 25.
Lichen fucoides, *Wulf. in Jacq. Coll.* 3.
Lichen corniculatus, *Lightf. Fl. Scot.* 385.
Lichen rigidus, *Wulf. in Jacq. Coll.* 2.
Lichen tristis, *Engl. Bot.* 720.
Lobaria rigida, *Hoffm. Germ.* 142.
Cornicularia tristis, *Achar. Meth. Lich.* 300; *Lich. Univ.* 610.

On rocks.

Apothecia sometimes radiately toothed, and the branches tuberculated, toothed.

2. *Cornicularia aculeata.* *Prickly horn-moss.*

Thallus bald, chestnut-brown, rather cylindrical, angularly compressed, nakedish; branches and twigs divaricated, bent, prickly; *apothecia* reddish, edge slightly toothed, turned back.

Lichen aculeatus, *Achar. Prod.* 215.
Cornicularia aculeata, *Achar. Meth. Lich.* 502; *Lich. Univ.* 612.

On dry, sunny mountains.

3. *Cornicularia spadicea.* *Chestnut horn-moss.*

Thallus bald, dark bay-colour, flatly compressed, rather indented; edges toothed; *branches* and *twigs* short, spreading, narrow; *apothecia* spinous, radiated, reddish brown.

Lichenoides non tubulosum ramosissimum fruticuli specie, rufo-nigrescens, *Raii Syn.* 66, 10.
Lichen Islandicus γ, *Huds. Angl.* 539.
Lichen hispidus, *Lightf. Scot.* 883; *Engl. Bot.* 452.
Lichen spadiceus, *Roth in Uster Ann.*
Lobaria aculeata, *Hoffm. Germ.* 142.
Cornicularia spadicea, *Achar. Meth. Lich.* 301; *Lich. Univ.* 611.

On open places on rocks covered with earth.

4. *Cornicularia bicolor.* *Two-coloured horn-moss.*

Thallus roughish, black, cylindrical, nearly upright, branched, fibrous; *branches* very short, scattered, spreading; *tips* nodding, greyish brown.

Lichen bicolor, *Ehrh. Beytr.*
Usnea bicolor, *Hoffm. Germ.* 155.
Cornicularia bicolor, *Achar. Meth. Lich.* 504; *Lich. Univ.* 615.

Upon rocks among mosses.

5. *Cornicularia lanata.* *Woolly horn-moss.*

Thallus lying down, cylindrical, smoothish, forked, greyish black; *branches* and *twigs* variously bent, interwoven, forked at the tip; *apothecia* slightly edged, flat, edge naked, granular.

Lichenoides quod Muscus coralloides, lanæ nigræ instar saxis adhærens, *Dillen in Raii Syn.* 65, 3.
Lichens pubescens, *Huds. Angl.* 562.
Lichen laneus, *Ehrh. Pl. Crypt.* 7, 70.
Lichen lanatus, *Lin. S. P.* 1623; *Engl. Bot.* 846.
Usnea lanea, *Hoffm. Germ.* 135.
Usnea lanata, *Hoffm. Germ.* 135.
Usnea pubescens, *Hoffm. Germ.* 136.
Cornicularia lanata, *Achar. Meth. Lich.* 504; *Lich. Univ.* 615.

On dry barren places upon mountains.

6. *Cornicularia? pubescens.* *Downy horn-moss.*

Thallus lying down, cylindrical, wrinkled, roughish, black; *branches* interwoven, hairlike, twigs not branched; *apothecia* same colour as the thallus, edge not cut.

Lichen lanatus, *Wulf. in Jacq. Misc.* 2.
Lichen intricatus, *Ehrh. Crypt.* 8, 80.
Lichen pubescens, *Lin. S. P.* 1623.
Usnea intricata, *Hoffm. Germ.* 136.
Cornicularia pubescens, *Achar. Meth. Lich.* 505; *Lich. Univ.* 616.
Conferva? atrovirens, *Dillw. Conf.* 25.
Scytonema? atrovirens, *Agardh Disp.* 39.

On rocks and fells where water drips.

Thalli aggregate, very similar to the preceding; *apothecia* rarely to be found; so that it is doubtful whether this and girardia atrovirens be one species or two.

β. *hispidula. Thallus* rather stellate, brownish black, proliferous in whirls, hispid, branchy; *branches* slightly radiating, depressed, interwoven, very thin; *apothecia* crenate, dark brown.

Scytonema atrovirens prolifera, *Agardh Disp.* 39.
Cornicularia hispidula, *Achar. Lich. Univ.* 617.

X. 89. RAMALINA. Acharius. *Branch-moss.*

Thallus cartilaginous, inside like tow, rather solid, branched, jagged, rather shrublike, mostly with soredia; *apothecia* saucershape, thickish, footstalked, somewhat shieldlike, flat, edged, entirely formed of the thallus, covered with a similarly coloured cortical substance.

1. *Ramalina fastigiata.* *Even-topped branch-moss.*

Thallus compressed, cylindrical, smooth, pitted, branched, light sea-green; *branches* thicker at top, even-topped; *apothecia* terminal, shieldlike, sessile, whitish.

Lichen populinus, *Ehrh. Crypt.* 276.
Lichen fastigiatus, *Engl. Bot.* 890.
Lobaria populina, *Hoffm. Germ.* 140.
Parmelia fastigiata, *Achar. Meth. Lich.* 260.
Ramalina fastigiata, *Achar. Lich. Univ.* 603.

On the trunks of old trees.

2. *Ramalina scopulorum.* *Sea-shore branch-moss.*

Thallus compressed, smooth, slightly pitted, branched, pale grey; *branches* linear, slender; *apothecia* pedicelled, of the same colour.

Lichen calicaris, *Lin. S. P.* 1613; *Engl. Bot.* 688.
Lichen scopulorum, *Dicks. Crypt.* 3, 18.
Parmelia scopulorum, *Achar. Meth. Lich.* 261.
Ramalina scopulorum, *Achar. Lich. Univ.* 604.

On rocks by the sea-side.

β. *cornuata.* *Branches* cylindrical, compressed, seldom divided, bent, knobbed, rather pipey, interwoven.

Coralloides fasciculare verrucosum et veluti siliquosum, *Dillen Musc.* 119.
Lichen siliquosus, *Huds. Fl. Angl.* 559.
Parmelia siliquosa, *Achr. Meth. Lich.* 262.
Ramalina scopulorum, cornuata, *Achar. Lich. Univ.* 605.

On insulated rocks scattered on plains, as the Grey wethers on Salisbury Plain.

3. *Ramalina farinacea.* *Floury branch-moss.*

Thallus cylindrical, compressed, bald, slightly pitted, stiff, branched, whitish grey, with soredia; *branches* linear, slender; *apothecia* scattered, pedicelled, flat, scarcely bordered, whitish.

Lichenoides segmentis angustioribus ad margines verrucosis et pulverulentis, *Dillen Musc.* 172.
Lichen farinaceus, *Lin. S. P.* 1613; *Engl. Bot.* 889.
Lobaria farinacea, *Hoffm. Germ.* 139.
Parmelia farinacea, *Achar. Meth. Lich.* 263.
Ramalina farinacea, *Achar. Lich. Univ.* 606.

On the trunks and branches of trees.

Branches simple or divided, sometimes fringed and slightly proliferous; sometimes short and slender, or long and strong, sometimes hanging; naked or covered with rather elliptic soredia; *apothecia* rarely occurring.

4. *Ramalina pollinaria.* *Powdery branch-moss.*

Thallus flat, slightly membranaceous, bald, rather pitted, white, slightly hoary, jagged; *soredia* dilated, flat, powdery; *apothecia* nearly terminal, growing dilated, very large, sea-green beneath; centre flesh-colour; edge raised, slightly bent inwards.

Lichen pollinarius, *Achar in N. Act. Stockh.* 18, 263.
Lichen squarrosus, *Persoon in Uster Ann. Bot.* 14, 35.
Lobaria squarrosa, *Hoffm. Germ.* 139.
Lobaria dilacerata, *Hoffm. Germ.* 140.
Parmelia pollinaria, *Achar. Meth. Lich.* 264.
Ramalina pollinaria, *Achar. Lich. Univ.* 608.

On rocks and stones, old timber-work and trees.

XI. 90. ALECTORIA. Acharius. *Cockscomb-moss.*

Thallus cartilaginous, nearly threadlike, inside towlike, branched, prostrate or hanging; *apothecia* saucerlike, thick, sessile, rather flat, bordered, convex, entirely formed of the thallus, of the same colour and substance.

1. *Alectoria jubata.* *Mane cockscomb-moss.*

Thallus cylindrical, slightly shining, livid brown and black, compressed at the joints; *apothecia* of the same colour, growing convex, border not in the least cut.

Lichenoides quod Muscus corallinus saxatilis fœniculaceus, *Raii Syn.* 65, 7.
Usnea jubata nigricans, *Dill. Musc.* 64.
Lichen jubatus, *Lin. S. P.* 1622; *Engl. Bot.* 1880.
Usnea jubata, *Hoffm. Germ.* 134.
Parmelia jubata, *Achar. Meth. Lich.* 272.
Alectoria jubata, *Achar. Lich. Univ.* 592.

On the trunks and branches of old trees.

2. *Alectoria chalybeiformis.* *Iron-wire cockscomb-moss.*

Thallus and *branches* rather simple, bent, straggling, tufted, stiffish, lead black, lying down.

Lichenoides quod Muscus caule rigido instar fili chalybei, *Raii Syn.* 65, 2.
Lichen chalybeiformis, *Lin. S. P.* 1623.
Lichen jubatus β, *Engl. Bot.* 1880.
Usnea implexa, *Hoffm. Germ.* 134.
Usnea chalybeiformis, *Hoffm. Germ.* 135.
Parmelia jubata δ, *Achar. Meth. Lich.* 273.
Alectoria jubata chalybeiformis, *Achar. Lich. Univ.* 595.

On banks, palings, trees, and rocks.

3. *Alectoria sarmentosa.* *Runner cockscomb-moss.*

Thallus rather cylindrical, angularly pitted, two-forked, pale whitish, tips much branched, weak, very slender; *apothecia* slightly concave, livid, hoary, afterwards spread out flat.

Usnea loris longis dichotomis, extremitatibus tenuioribus, *Dillen Musc.* 59.
Lichen sarmentosus, *Achar. Prod.* 180; *Engl. Bot.* 2040.
Lichen dichotomus, *Achar. Prodr.* 181.
Usnea dichotoma, *Hoffm. Germ.* 134.
Parmelia sarmentosa, *Achar. Meth. Lich.* 271.
Ramalina sarmentosa, *Achar. Lich. Univ.* 595.

On the trunks and branches of trees, and on rocks.

Fam. IV. 4. CENOTHALAMEÆ. *Lichenes cenothalami*, Acharius. *Algarum pars*, Linnæus. *Lichenum pars*, Jussieu.

Thallus crustaceous or leatherlike; *sporidia* scattered, innate in the substance, and in a naked proligerous flake of a different colour placed upon the thallus, without any internal nucleus or perithecium.—*Thallus* perennial, terrestrial or parasitic, greenish or becoming so when wetted; absorbing water by the surface, and transmitting it to all parts.

A. *Apothecia nearly globose, not bordered, terminating a solid podetium.* Bæmycideæ.

Thallus shrublike, branched, cartilaginous; *bark* crustaceous, unequal ..... STEREOCAULON. 91.
Thallus rather crustaceous, uniform, lying close; *apothecia* at first bordered .... ISIDIUM. 92.
Thallus crustaceous, uniform, close; *podetia* soft; *apothecia* large ..... BÆMYCES. 93.

B. *Apothecia nearly globose, not bordered, terminating a hollow, cylindrical thallus or podetium.* Cenomycideæ.

Thallus cylindrical, soft, awlshape; *axillæ* not perforated ..... CERANIA. 94.
Thallus leaflike, very small; *podetia* cartilaginous, stiff, awlshape; *axillæ* mostly perforated ..... CLADONIA. 95.
Thallus leaflike; *podetia* cylindrical; apex fringed, radiated, rays fertile ..... HELOPODIA. 96.
Thallus leaflike; *podetia* dilated above, cuplike, cup open ..... SCHASMARIA. 97.
Thallus leaflike; *podetia* dilated above, cuplike, cup closed ..... SCYPHOPHORA. 98.
Thallus crustlike, uniform; *podetia* hollow, short ..... PYCNOTHELIA. 99.

C. *Apothecia shieldlike, bordered, lateral; thallus nearly crustaceous, branched.* Evernideæ.

Thallus compressed, inside towlike; *apothecia* sessile, circumference raised .... EVERNIA. 100.

D. *Apothecia shieldlike, bordered; thallus leatherlike, cartilaginous, leafy.* Peltideæ.

Apoth. adnate, terminal, ascending; *thallus* leaflike, lobed, expanded ..... PELTIDEA. 103.
Apoth. adnate, terminal, resupinate; *thallus* leaflike, lobed, expanded ..... NEPHROMA. 102.
Apoth. adnate, subcentral, discoid; *thallus* leaflike, lobed, expanded ..... SOLORINA. 104.
Apothecia sessile, lateral; *thallus* branched, inside towlike ..... ROCELLA. 101.

Apoth. sessile, oblique, marginal;
thallus leaflike, smooth ..... CETRARIA. 106.
Apoth. rather pedicelled, free;
thallus cartilaginous; lobes fringed ..... BORRERIA. 107.
Apothecia nearly sessile, edge free;
thal. leaflike, interspersed with soredia ..... STICTA. 105.
Apothecia nearly sessile, edge free;
thal. leaflike, tips inflated; *soredia* 0. ..... PHYSCIA. 108.
Apothecia nearly sessile, edge free;
thallus leaflike, tips equal; *soredia* 0 .... PARMELIA. 109.

E. *Apothecia shieldlike, bordered; thallus crustaceous, adnate.* Lecideadeæ.

Thallus figured, scaly, tiled-like,
raised high around the apothecia ..... PSOROMA. 110.
Thallus figured, lobed, raised
high around the apothecia ..... PLACODIUM. 111.
Thallus uniform, raised high
around the apothecia ..... RINODINA. 112.
Thallus uniform, elevated around
the immersed apothecia ..... URCEOLARIA. 113.
Thallus figured or leaflike;
apothecia not sunk in the thallus ..... LEPIDOMA. 114.
Thallus uniform; *apothecia* not sunk in LECIDEA. 115.

F. *Apothecia flattish, plaited, bordered; thallus shieldlike, free underneath.* Gyrophorideæ.

Thallus leatherlike;
apoth. meandering plaited ..... GYROPHORA. 116.

G. *Apothecia flattish, difform, not bordered; thallus crustaceous, flat, adnate.* Spilomideæ.

Apothecia round, black, solid ..... ARTHONIA. 117.
Apothecia coloured, powdery ..... SPILOMA. 118.

H. *Apothecia cupshaped, bordered; thallus crustaceous, or very thin.* Calicideæ.

Apothecia nearly sessile ..... ACOLIUM. 119.
Apothecia stipitate, border prominent PHACOTIUM. 120.
Apothecia stipitate, centre swollen;
border 0 ..... STRONGYLIUM. 121.

A. Bæomycideæ. *Apothecia* nearly round, not bordered, placed upon a solid podetium.

I. 91. STEREOCAULON. Schreber. *Stereocaulon.*

Thallus cartilaginous, rather woody, branched, shrub-like, bark unequal; *apothecia* topshape, sessile, solid, flat at top, bordered, becomes hemispherically convex; *proligerous flake* thick, covering the apothecium at top, flat, girt nearly equally with a border formed of the thallus, then dilated, convex, covering the border, turning over, coloured; inside similar, slightly streaked.

1. *Stereocaulon paschale.* *Easter stereocaulon.*

Thallus greyish green, branched, granulated, fibrilled; *branches* crowded, much divided, short; *apothecia* scattered, terminal, becoming convex, conglomerated, blackish brown.

Lichenoides non tubulosum cinereum ramosum totum crustaceum, *Raii Syn.* 66, 11.
Lichen paschalis, *Lin. S. P.* 1621; *Engl. Bot.* 282.
Bæomyces paschalis, *Wahlenb. Lapp.* 450.
Corallinoides paschale, *Hoffm. Lich.* 25.
Stereocaulon paschale, *Achar. Meth.* 315; *Lich.* 581.

On dry hills and rocks on mica or lava.

2. *Stereocaulon nanum.* *Dwarf stereocaulon.*

Thallus white, greyish, very slender, thread, branched; *branches* nearly even-topped, flocky, powdery; *apothecia* lateral, crowded, convex, black brown.

Lichen quisquiliaris, *Leers Fl. Herborn.* 993.
Lichen nanus, *Achar. Prod.* 206.
Stereocaulon quisquilare, *Hoffm. Germ.* 150.
Stereocaulon nanum, *Achar. Meth.* 315; *Lichen.* 582.

On the ground, in rocky countries.
Tufts a quarter of an inch high.

II. 92. ISIDIUM. Acharius. *Isis-lichen.*

Thallus crustlike, flat, expanded, adnate, uniform; *podetia* solid, fertile, rather short; *apothecia* round, convex, growing nearly globular, solid, sessile on the top of the podetia; *proligerous flake* included in the tip of the podetia, girt with a border formed of them, convex above, flat beneath, coloured, afterwards prominent, bordered, hemispherical; inside similar.

1. *Isidium corallinum.* *Coral isis-lichen.*

Crust tartarlike, afterwards cracked rather chequerlike, white, rather greyish; *podetia* become longish, cylindrical, simple or branched; *flake* of the apothecia brownish grey.

Lichen corallinus, *Lin. Mant.* 131; *Engl. Bot.* 1541.
Stereocaulon madreporiforme, *Hoffm. Germ.* 129.
Stereocaulon corallinum, *Schrad. Germ.*
Isidium corallinum, *Achar. Meth.* 153; *Lichen.* 575.

On rocks and stones.

2. *Isidium Westringii.* *Westring's isis-lichen.*

Crust tartarlike, chequered, cracked, unequal, greyish; *podetia* nearly globular, afterwards long, cylindrical, simple or branched; *flake* of the apothecia brown.

Lichen punctatus, *Dickson Crypt. Brit.* 3, 15.
Lichen Westringii, *Achar. Prodr.* 88.
Isidium Westringii, *Achar. Meth.* 138; *Lich.* 577.

On rocks and stones.

3. *Isidium coccodes.* *Lady-bird isis-lichen.*

Crust cracked, rather powdery, hoary; *podetia* nearly globular, nippleshape, very crowded; *flake* of the apothecia brown, greyish hoary.

Lichen coccodes, *Achar. Prod.* 10.
Lepra obscura, *Ehrh. Crypt.*
Isidium coccodes, *Achar. Meth.* 139; *Lich.* 578.

On the old bark of trees.

III. 93. BÆOMYCES. Ehrhart. *Mushroom-lichen.*

Thallus crustlike, flat, expanded, adnate; *podetia* soft, solid, fertile; *apothecia* headed, not bordered, solid, sessile on the top of the podetia; *proligerous flake* covering the entire apothecium, adnate to it, convex, turned back, rather thick, coloured; inside similar.

1. *Bœomyces roseus.* *Rose mushroom-lichen.*

Crust uniform, warty, hoary; *podetia* very short; *apothecia* nearly globular, pale flesh-colour.

Lichenoides fungiforme, crusta leprosa candida capitulis et pediculis incarnatis, *Dillen in Raii Syn.* 70, 40.
Lichen ericetorum, *Lin. S. P.* 1608; *Engl. Bot.* 572.
Bæomyces roseus, *Achar. Lich. Univ.* 572.

On dry clays.

2. *Bæomyces rufus.* *Red mushroom-lichen.*

Crust uniform, wrinkled, granular, powdery, white, greyish, greenish; *podetia* short, slightly compressed; *apothecia* slightly convex, growing conglomerate, reddish brown.

Lichenoides fungiforme terrestre, capitulis fuscis, *Dillen in Raii Syn.* 70, 39.
Lichen byssoides, *Lin. Mant*, 135.
Lichen peltifer, *Wulf. in Jacq. Coll.* 3.
Lichen fungiformis, *Weber. Fl. Germ.* 196.
Lichen rufus, *Huds. Fl. Angl.* 527.
Bæomyces rupestris, *Pers. in Usler Ann.* 7, 19; *Achar. Lich.* 573.
Bæomyces rufus, *Wahlenb. Lapp.* 449.

On gravelly soils, and in the chinks of rocks.

3. *Bæomyces lignorum.* *Wood mushroom-lichen.*

Crust dark grey; *podetia* white, broadest at top; *apothecia* nearly simple, sessile on the crust or on podetia, not uniform, brown black.

Bæomyces rupestris *β*, *Achar. Lich.* 573; *Meth.* 522.

B. CENOMYCIDEÆ. *Apothecia* nearly round, not bordered, either terminating hollow podetia, or the branches of the tubular thallus itself.

IV. 94. CERANIA. Acharius. *Horn-lichen.*

Thallus scarcely any, crustaceous; *podetia* soft, nearly solid, slightly branched, branches barren, axillæ not perforated; *apothecia* round, not bordered, growing convex and like a head, underneath hollow, attached by the edge to the podetia, terminal; *proligerous flake* forming the upper part of the apothecia, rather thick, coloured, inside similar, convex turned over the edge and affixed, clothed beneath by the flocklike skin of the thallus.

Cerania vermicularis. *Wormlike horn-lichen.*

Podetia awlshaped, seldom branched, small, very white, slightly pipey, bent, lying down.

Lichenoides tubulatus, nivei ferè candoris, ramosus, apicibus recurvis acutis, *Dill. Musc.* 91.
Lichen vermicularis, *Swart. in Lin. Meth. Musc.* 37; *Dicks. Crypt.* 2.
Lichen subuliformis, *Ehrh.* 3, 82.
Cladonia subuliformis, *Hoffm. Lich.* 29.
Bæomyces vermicularis, *Achar. Meth.* 359.
Cenomyce vermicularis, *Achar. Lich.* 566.

On the ground, among mosses and grasses, mostly of alpine hills.

V. 95. CLADONIA. Schreber. *Cladonia.*

Thallus leaflike, scarcely any; *podetia* cartilaginous, stiff, pipey, all pointed and awlshape, branched axillæ mostly perforated; *apothecia* round, not bordered, growing convex and headlike, underneath hollow, terminal, fixed by the edge to the podetia; *proligerous flake* forming the upper part of the apothecium, rather thick, coloured, inside similar, convex, turned over the edge and fastened, covered beneath the flocklike skin of the thallus.

1. *Cladonia racemosa.* *Bunched cladonia.*

Podetia long, smooth, growing scaly, greenish white, at length inflated, curved, branched; *branches* weak, rather one-rowed; tips diverging, slightly spinous; *fertile branches* with pale brown apothecia.

Lichenoides tubulosum ramosum rigidus, majus et crassus, cinereo-fuscum, *Raii Syn.* 67, 16.
Muscus coralloides saxatilis, *Park.* 1310, 1311.
Lichen spinosus, *Huds. Fl. Angl.* 556.
Cladonia racemosa, *Hoffm. Germ.* 114.
Cladonia spinosa, *Hoffm. Germ.* 114.
Cladonia spinescens, *Hoffm. Germ.* 115.
Bæomyces spinosus, *Achar. Meth.* 568.
Bæomyces racemosus, *Wahl. Lapp.* 457.
Cenomyce furcata, *Achar. Lich.* 562.

On the ground, and the trunks of rotten trees.

Thallus variously formed, so as to be scarcely recognisable.

2. *Cladonia furcata.* *Forked cladonia.*

Podetia long, smooth, livid inclining to bay, two-forked, axillæ not perforated; *branches* needlelike, bent; tips forked, diverging; fertile branches with brown apothecia.

Lichenoides tubulosum cinereum, ramosus et crustaceum, *Raii Syn.* 67, 18.
Lichen furcatus, *Huds. Fl. Angl.* 556.
Coralloides furcata, *Bory. Voy.* 3.
Cladonia furcata, *Hoffm. Germ.* 115.
Bæomyces furcatus, *Achar. Meth.* 557.
Cenomyce furcata, *Achar. Lich.* 560.

On the ground, in woody heaths.

3. *Cladonia subulata.* *Awlshape cladonia*

Podetia long, slender, seldom branched; *branches* rather erect; fertile branches headed with brown apothecia.

Lichenoides tubulosum cinereum, minus crustaceum minusque ramosum, *Raii Syn.* 67, 17.
Muscus corniculatus, *Ger. em.* 1560; *Park.* 1308.
Lichen subulatus, *Lin. S. P.* 1620.
Bæomyces subulatus, *Achar. Meth.* 357.
Cenomyce ecmocyna subulata, *Achar. Lich.* 550.

On the ground, on heaths.

4. *Cladonia uncialis.* *Inch cladonia.*

Podetia long, bald, pale, two-forked, axillæ perforated, open; tips of the branches spreading, short, stiff; *apothecia* terminal, brownish.

Lichenoides tubulosum, cauliculis mollioribus et crassioribus, minus, *Dillen in Raii Syn.* 67, 21.
Lichen uncialis, *Lin. S. P.* 1621; *Lightf. Scot.* 880.
Cladonia uncialis, *Hoffm. Germ.* 117.
Bæomyces uncialis, *Achar. Method.* 352.
Cenomyce uncialis, *Achar. Lich.* 558.

On the ground in fields and hills.

β. *aduncа.* *Podetia* pale or hoary, two-forked, branched; axillæ perforated; tips of the branches radiately spined, spines hooked; *apothecia* headlike, pale brown.

Cladonia uncinata, *Hoffm. Germ.* 116.
Cladonia biuncialis, *Hoffm. Germ.* 116.
Cladonia ceranoides, *Hoffm. Germ.* 116.
Cenomyce aduncа, *Achar. Lich. Univ.* 559.

5. *Cladonia rangiferina.* *Rein-deer cladonia.*

Podetia long, cylindrical, upright, roughish, greyish, branched; axillæ frequently perforated, branches scattered, slightly twigged; twigs nearly radiate, tips nodding; *apothecia* nearly globular, aggregated, brown.

Lichenoides tubulosum ramosissimum fruticuli specie candicans, *Raii Syn.* 66, 14.
Coralloides montanum, fruticuli specie ubique candicans, *Dill. Musc.* 107.
Lichen rangiferinus, *Lin. S. P.* 1620; *Engl. Bot.* 173.
Cladonia rangiferina, *Hoffm. Germ.* 114.
Bæomyces rangiferinus, *Achar. Meth.* 355.
Cenomyce rangiferina, *Achar. Lich.* 564.

On the ground on high hills.

6. *Cladonia pungens.* *Stinging cladonia.*

Podetia grey, two-forked branched, rather stiff, forming a cushionlike tuft; *axillæ* imperforated; *tips* of the twigs armed, diverging, brownish.

Lichen pungens, *Achar. Prod.* 202.
Cladonia rangiformis, *Hoffm. Germ.* 114.
Bæomyces rangiferinus pungens, *Wahl. Lapp.* 458.
Bæomyces pungens, *Achar. Meth.* 354.
Cenomyce furcata pungens, *Achar. Lich.* 562.

On the ground on high hills.
Podetia rather bald, slightly warty, sometimes scaly.

VI. 96. HELOPODIUM. Michaux. *Helopodium.*

Thallus leaflike; *podetia* rather pipey, cylindrical, simple; tips split, or radiated, nearly fingerlike, all the rays fertile; *apothecia* round, not bordered, grows convex, headlike, beneath hollow, fixed by the edge to the podetia, terminal; *proligerous flake* forming the upper part of the apothecium, rather thick, coloured, inside similar, convex, edge turned over and affixed, clothed beneath with flocklike skin of the thallus.

1. *Helopodium delicatum.* *Delicate helopodium.*

Thallus leaflike; lobes minute, gnawed, jagged, granular; *podetia* bald, granular, pale, divided at the tip; branches very short; *apothecia* conglomerate, brownish black.

Lichen parasiticus, *Hoffm. Lich.* 39.
Lichen delicatus, *Ehrh. Crypt.* 25, 247.
Bæomyces quercinus, *Persoon in Uster Ann.* 7, 19.
Bæomyces delicatus, *Achar. Meth.* 327.
Cenomyce delicata, *Achar. Lich. Univ.* 569.

On the bark and rotten trunks of trees; also on the ground.

2. *Helopodium leptophyllum.* *Scale-leaf helopodium.*

Thallus leaflike; lobes very small, roundish, not cut and crenate intermixed; *podetia* scarcely branched, rather bald, pale greenish; *apothecium* terminal, usually single, reddish.

Cenomyce leptophylla, *Achar. Lichen. Univ.* 563.

On the ground.

VII. 97. SCHASMARIA. Acharius. *Schasmar.*

Thallus leaflike; *podetia* pipey, dilated at top, cupshaped, cups open; *apothecia* round, not bordered, grow convex, headlike, inflated or hollow beneath, fixed by the edge to the podetia, terminal; *proligerous flake* forming the top of the apothecium, rather thick, coloured, inside similar, convex turned over the edge and affixed; clothed beneath with the flocklike skin of the thallus.

Schasmaria sparassa. *Sprinkled schasmar.*

Thallus leaflike, small, lobed, crenate; *podetia* long, rather bellied, granulated, warty, scaly, cupbearing, *cups*

rather saucershaped, irregular, open, toothed; prolific teeth radiated; *apothecia* on the podetia; pale brown.

Lichenoides tubulosum cinereum, valde crustaceum, ramulis brevioribus, et crebrioribus ex acetabulis enascentibus, *Dillen in Raii Syn.* 68, 26.
Lichen cæspitosus, *Lamarck Encycl.*
Lichen ventricosus, *Hudson Angl.* 554.
Lichen squamulosus, *Schrader Kr. Saml.*
Cladonia squamosa, *Hoffm. Germ.* 125.
Cladonia coronata, *Hoffm. Germ.* 125.
Bæomyces squamosus, *Wahl. Lapp.* 456.
Bæomyces sparassus α, β, γ, *Achar. Meth.* 346.
Cenomyce gonoregæ blastica, *Achar. Lich.* 552.
Cenomyce allotropa sparassa, *Achar. Lich.* 556.

On the trunks of rotten trees.

Podetia rather bald, pale, made rough by numerous granules and leafy scales; in summer very different, greyish almost black, with cups at the beginning scarcely cut, and very small.

VIII. 98. SCYPHOPHORA. Acharius. *Cup-moss.*

Thallus leaflike; *podetia* pipey, dilated at top, cup-bearing, or slender, awlshape; cups closed with a midriff; *apothecia* round, bordered, growing convex, headlike, hollow underneath; fixed by the edge to the podetia; *proligerous* flake forming the upper surface of the apothecium, rather thick, coloured, inside similar, convex, turned over the edge and affixed, clothed underneath with the flocklike integument of the thallus.

a. *Apothecia brown or pale.*

1. *Scyphophora cæspiticia.* *Tuft cup-moss.*

Thallus leaflike, small; jaggs pinnatifid, torn, crisp; *podetia* very small, smooth, slightly bordered, toplike, cupshape, regular; *apothecia* growing convex, conglomerate, nearly sessile in the lobes of the thallus.

Lichen symphycarpus, *Ehrh. Crypt.* 267.
Lichen epiphyllus, *Achar. Prodr.* 185.
Bæomyces epiphyllus, *Achar. Meth.* 525.
Bæomyces epiphyllus, *Persoon in Uster Ann.* 7, 255.
Cladonia fusca, *Hoffm. Germ.* 127.
Capitularia cæspiticia, *Florke in Weber*, 2, 277.
Cenomyce epiphylla, *Achar. Lichen. Univ.* 527.

On the ground and rotten trees, also among mosses, and upon rocks.

2. *Scyphophora alcicornis.* *Elk-horn cup-moss.*

Thallus leaflike, large, pale, greenish; jags slightly palmate, ascending, repand, toothed, blunt, bent inwards, with bundles of hairs on the edge; *podetia* long, toplike, all cup-bearing, smooth; cups regular, crenate; edge becoming leafy, and proliferous; *apothecia* brown.

Lichenoides cartilaginosum, tubulis et pyxidulis exiguis, *Dillen in Raii Syn.* 70, 38.
Lichen foliaceus, *Huds. Fl. Angl. ed.* 1, 457.
Lichen pyxidatus foliaceus, *Huds. Angl. ed.* 2, 552.
Lichen alcicornis, *Lightf. Scot.* 372.
Cladonia foliacea, *Hoffm. Germ.* 123.
Cladonia phyllophora, *Hoffm. Germ.* 123.
Cladonia cornucopioides, *Hoffm. Germ.* 123.
Capitularia alcicornis, *Florke in Weber*, 2, 336.
Bæomyces alcicornis, *Achar. Meth.* 349.
Cenomyce damæcornis, *Achar. Lich. Univ.* 530.
Cenomyce alcicornis, *Achar. Lich. Univ.* 529.

On the ground on heaths and mountainous places.

3. *Scyphophora endiviæfolia.* *Endive-leaf cup-moss.*

Thallus leaflike, large, sea-greenish; jags many-cut, bent, crenate, crisp; *podetia* toplike, cupshape, seldom branched; *apothecia* reddish.

Lichen endivifolius, *Dickson Crypt. Br.* 3, 17.
Bæomyces endivifolius, *Achar. Meth.* 351.
Cenomyces endivifolia, *Achar. Lich.* 528.

On the ground, on barren heaths.

4. *Scyphophora cervicornis.* *Stags-horn cup-moss.*

Thallus leaflike, greyish green; jags upright, many-cut, narrow, slightly toothed, repand; *podetia* cylindrical, short, bald, livid, afterwards black, all cupbearing; cups small, regular, dilated, not in the least cut, flattish; proliferous from the centre; *apothecia* marginal, sessile, brownish black,

Lichen cervicornis, *Achar. in Act. Stockh.* 22, 342.
Bæomyces cervicornis, *Achar. Method.* 336.
Cenomyce cervicornis, *Achar. Lich.* 531.

Upon the ground, on rocks and among mosses.

Cups sometimes simple, sometimes proliferous from the centre of the midriff; *podetia* when old leafy.

5. *Scyphophora verticillata.* *Whirl cup-moss.*

Thallus leaflike; jags rather upright, crisp, crenately cut; *podetia* cylindrical, rather bald, livid greenish, all cup-bearing; cups regular, toothed, flattish, then rising up from the centre, and becoming repeatedly and aggregatedly proliferous; *apothecia* marginal, brown.

Lichen pyxidatus, *Ehrh. Saml. Kr.*
Capitularia verticillata, *Florke in Weber.* 2, 285.
Cladonia cristata, *Hoffm. Germ.* 124.
Cladonia pyxidata, *Hoffm. Germ.* 122.
Cladonia dilatata, *Hoffm. Germ.* 126.
Pyxidaria nigrescens, *Bory Voyag.* 3.
Pyxidaria diploca, *Bory Voyag.* 3.
Scyphophorus verticillaris, *Michaux Fl. Amer. Supp.*
Bæomyces verticillatus, *Wahlenb. Lapp.*
Bæomyces pyxidatus apolictus, *Achar. Meth.* 338.
Bæomyces turbinatus verticillatus, *Achar. Meth.* 340.
Cenomyce allotropa verticillata, *Achar. Lich.* 555.

Upon the ground in rocky, woody, and sunny places.

6. *Scyphophora pyxidata.* *Box cup-moss.*

Thallus leaflike; jags crenate, ascending; *podetia* all toplike cupbearing, bald, afterwards granular, warty, rough, greenish grey; cup regular; edge frequently spread and proliferous; *apothecia* brown.

Lichenoides tubulosum pyxidatum cinereum, *Raii Syn.* 68, 28.
Muscus pyxidatus, *Ger. em.* 1560; *Park.* 1308.
Lichen pyxidatus, *Lin. S. P.* 1619.
Capitularia neglecta, *Florke in Weber*, 2, 506.
Bæomyces neglectus, *Wahlenb. Lapp.* 454.
Bæomyces pyxidatus, *Achar. Meth.* 357.
Cenomyce pyxidata, *Achar. Lich. Univ.* 534.
Cup-moss. Chalice-moss.

On the ground in heaths, and on rocks.

Podetia various, sometimes pale or lead-grey, when old the edge of the cups becomes powdery.—Emetic in infusion, used as a specific in hooping cough.

7. *Scyphophora fimbriata.* *Fringed cup-moss.*

Thallus leaflike; jags small, crenate; *podetia* long, cylindrical, cupbearing, some awlshape, dusty, white; cups wineglass-shape, regular; edge sometimes not cut, sometimes crenate, at last proliferous; *apothecia* brown.

Coralloides scyphiforme gracile, marginibus serratis, *Dillen Musc.* 84.
Licheu fimbriatus, *Lin. S. P.* 1619.
Lichenoides tubulosum proliferum, marginibus serratis, *Dillen in Raii Syn.* 69, 30.
Capitularia pyxidata longipes fimbriata, *Florke in Weber*, 2, 290.
Cladonia fimbriata, *Hoffm. Germ.* 122.
Bæomyces fimbriatus, *Achar. Meth.* 341.
Bæomyces pyxidatus, *Wahlenb. Lapp.* 455.
Cenomyce pyxidata fimbriata, *Achar. Lich.* 535.

Upon rotten trees, and the ground on rocks and mountains.

β. *radiata.* *Podetia* long, powdery, white, cupbearing; *cups* radiated on the edge, rays awlshape, mostly fertile; *apothecia* brown.

Lichenoides tubulosum cinereum, pulverulentum et crustaceum, ramulis ex acetabulis enascentibus minus copiosis, *Dillen in Raii Syn.* 68, 25.
Lichen radiatus, *Schreb. Germ.*
Lichen ventricosus, *Hudson Fl. Angl.* 554.
Capitularia pyxidata longipes radiata, *Florke in Weber*, 2, 300.
Cladonia radiata polyceras, *Hoffm. Germ.* 120.
Cladonia radiata furcellato-radiata, *Hoffm. Germ.* 120.
Bæomyces radiatus, *Achar. Lich. Univ.* 542.
Cenomyce radiata, *Achar. Lich. Univ.* 547.

γ. *abortiva.* *Podetia* long, powdery, white; tips blunt, or slightly cupbearing; cups slightly crenate, barren or fertile; *apothecia* small, nearly sessile, brown.

Lichenoides tubulosum cinereum non ramosum, *Raii Syn.* 68, 27.
Capitularia pyxidata longipes abortiva, *Florke in Weber*, 2, 294.
Cladonia cornuta, *Hoffm. Germ.* 119.
Bæomyces cornutus proboscidalis, *Achar. Meth.* 344.
Cenomyce cornuta proboscidalis, *Achar. Lich.* 546.
Cenomyce radiata holoschista, *Achar. Lich.* 547.

δ. *fibularia.* *Podetia* long, nearly cylindrical, powdery, white; cups narrow or 0; *apothecia* sessile, heaped, or slightly pedicelled, brown.

Lichen Fibula, *Achar. Prod.* 194.
Capitularia pyxidata longipes Fibula, *Florke in Weber*, 2, 295.
Cladonia macilenta, Fibula, *Hoffm. Germ.* 127.
Bæomyces turbinatus, Fibula, *Achar. Meth.* 340.
Bæomyces bacillaris apolepta, *Achar. Meth.* 350.
Cenomyce bacillaris apolepta, *Achar. Lich.* 542.
Cenomyce allotropa, Fibula, *Achar. Lich.* 554.

ε. *prolifera.* *Podetia* powdery, white, cupbearing; *cups* proliferous on the edge.

Lichenoides tubulosum pyxidatum, tuberculis fusconigris, proliferum, *Dillen in Raii Syn.* 69, 34.
Capitularia pyxidata longipes prolifera, *Florke in Weber*, 302.
Cladonia pyxidata prolifera, *Hoffm. Germ.* 122.
Cenomyce allotropa lomagona, *Achar. Lich. Un.* 555.

ζ. *nemoxyna.* *Podetia* long, branched, powdery, white, branches divided, awlshape, barren or fertile; *apothecia* terminal, solitary or conglomerated, brown.

Lichenoides tubulosum pyxidatum, tuberculis fusconigris, *Dillen Musc.* 81.
Capitularia pyxidata longipes cladocarpa, *Florke in Weber*, 293.
Bæomyces radiatus nemoxynus, *Achar. Meth.* 342.
Cenomyce radiata nemoxyna, *Achar. Lich.* 548.
Cenomyce radiata contortuplicata, *Achar. Lich.* 548.

η. *cornuta.* *Podetia* long, awlshape, simple or branched, powdery, white, sometimes barren.

Coralloides vix ramosum, scyphis obscuris, *Dillen Musc.* 90.
Coralloides scyphiforme cornutum, *Dillen Musc.* 92.
Lichen cornutus, *Lin. S. P.* 1620.
Capitularia pyxidata longipes cornuta, *Florke in Weber*, 293.
Cladonia cornuta, *Hoffm. Germ.* 119.
Bæomyces cornutus, *Achar. Meth.* 345.
Cenomyce cornuta chordalis, *Achar. Lich.* 545.

8. *Scyphophora conista.* *Cone cup-moss.*

Podetia nearly topshape, powdery, greenish grey; cups wineglass-shape, simple, edge rarely cut; *apothecia* marginal, nearly sessile, small, brown.

Capitularia pyxidata, *Florke in Weber*, 287.

On the ground, and rotten trunks of trees.

β. *exilis.* *Lobes* of the thallus small, crenate, cut or somewhat seedlike; *podetia* short, greyish green; cups crenate or not cut; *apothecia* very few, nearly sessile, brown.

Coralloides scyphis humilibus intus fuscis, *Dillen Musc.* 14, 11.
Lichen exiguus, *Huds. Fl. Angl.* 552.
Capitularia pyxidata exilis, *Florke in Weber*, 289.
Cladonia pyxidata exilis, *Hoffm. Germ.* 121.
Bæomyces pyxidatus exilis, *Achar. Meth.* 358.
Cenomyce pyxidata exilis, *Achar. Lich.* 555.

9. *Scyphophora ecmocyna.* *Long-stemmed cup-moss.*

Thallus leaflike, jags small, crenate; *podetia* long, awlshape, barren, cupbearing, smooth, livid, brownish; cups glass-shape, edge fine-toothed, frequently proliferous; *apothecia* brown.

Cenomyce ecmocyna, *Achar. Lich. Un.* 549.

On the ground, and rotten trunks of trees.

β. *gracilis.* *Podetia* longish, threadshape, very simple, few, cupbearing; cups narrow, edge small-toothed; *apothecia* small, sometimes both sessile and podicilled.

Lichenoides pyxidatum cinereum elatius, ramulis pyxidatum desinentibus, *Dillen in Raii Syn.* 69, 32.
Lichen gracilis, *Lin. S. P.* 1619.
Capitularia gracilis chordalis, *Florke in Weber*, 2, 524.
Cladonia gracilis, *Hoffm. Germ.* 119.
Bæomyces gracilis, *Achar. Meth.* 344.
Cenomyce cornuta chordalis, *Achar. Lich.* 545.
Cenomyce ecmocyna gracilis, *Achar. Lich.* 550.

10. *Scyphophora oxyceras.* *Sharp-horned cup-moss.*

Thallus leaflike, scarcely any; *podetia* long, cylindrical, curved, lying down, cupbearing; prolification branched, awlshape, bald, pale, milky, tips brownish black; *cups* narrow, oblique, edge toothed, radiated and proliferous; *apothecia* small, brown.

Capitularia amaurocræa, *Florke in Weber*, 2, 334.
Bæomyces amaurocræus, *Wahlenb. Lapp.* 455.
Cenomyce uncialis bolaciua, *Achar. Lich.* 559.
Cenomyce oxycera, *Achar. Lich.* 557.

On the ground, on mountains.

β. *cladonioides.* *Podetia* upright, slender, straw-whitish, slightly forked, branched, bald, unarmed and spinous; *cups* narrow, edge black, radiated and proliferous.

Capitularia amaurocræa cladonioides, *Florke in Weber*, 335.
Bæomyces gracilis cladonioides, *Achar. Meth.* 545.

b. *Apothecia scarlet, or dark red.*

11. *Scyphophora bacillaris.* *Stick cup-moss.*

Thallus leaflike, small; jags deeply lobed, crenate, rather naked below; *podetia* cylindrical, simple or slightly branched at the tip, greyish white, granular powdery, very rarely cupbearing; cups narrow, becoming radiated; *apothecia* scarlet.

Lichenoides tubulosum pyxidatum exiguum, fuscovirens, *Raii Syn.* 70, 37.
Lichen macilentus, *Ehrh. Crypt.* 27, 267.
Lichen tubiformis, *Lightf. Scot.* 871.
Lichen filiformis, *Huds. Fl. Angl.* 552; *Engl. Bot.* 2028.
Capitularia macilenta, *Florke in Berl. Mag.* 1808, 214.
Bæomyces macilentus, *Wahlenb. Lapp.* 452.
Bæomyces bacillaris, *Achar. Meth.* 529.
Cenomyce bacillare, *Achar. Lich.* 542.

12. *Scyphophora digitata.* *Fingered cup-moss.*

Thallus leaflike, small; jags expanded, rounded, crenate, greenish yellow, powdery; *podetia* cylindrical, cupbearing, same colour as the thallus, also powdery; cups narrow, edge rather bent in, proliferous, growing large, with difform prolifications; *apothecia* scarlet.

Capitularia digitata, *Florke in Berl. Mag.* 1808, 216.
Cladonia digitata, *Hoffm. Germ.* 124.
Bæomyces digitatus, *Achar. Meth.* 333.
Cenomyce deformis digitata, *Achar. Lich.* 539.

On the trunks of trees, and rotten wood.

β. *montrosa.* *Podetia* with branched, fingered, sometimes barren prolifications of the irregular and extremely small cups.

Lichenoides coralliforme, apicibus coccineis, *Raii Syn.* 68, 24.
Lichen digitatus, *Lin. S. P.* 1620.
Scarlet-headed moss.

13. *Scyphophora deformis.* *Deformed cup-moss.*

Thallus leaflike, small; jags rather broad, deeply crenate, naked underneath; *podetia* longish thick, rather bel-

lied, sulphur-coloured, dusty, cupbearing; cups narrow, crenately toothed, afterwards dilated and torn; *apothecia* sessile and podicilled, scarlet.

Lichenoides tubulosum minus ramosum, cauliculis crassioribus difformibus, *Raii Syn.* 68, 22.
Lichenoides tubulosum magis ramosum, maxime difforme, *Dillen in Raii Syn.* 68, 23.
Lichen deformis, *Lin. S. P.* 1620.
Capitularia crenulata, *Florke in Berl. Mag.* 1808, 219.
Cladonia deformis, *Hoffm. Germ.* 120.
Bæomyces deformis, *Achar. Meth.* 334.
Cenomyce deformis, *Achar. Lich.* 538.

Upon the ground in mountain woods.

14. *Scyphophora coccifera.* *Ladybird cup-moss.*

Thallus leaflike, small; jags rounded, crenate, naked beneath; *podetia* long, topshape, naked, warty, rough, pale yellowish and greyish, all cupbearing; cups glass-shape; edge pushed out, fertile; *apothecia* rather large, growing podicilled, scarlet.

Lichenoides tubulosum pyxidatum, tuberculis amœne coccineis, *Raii Syn.* 69, 35.
Lichen cocciferus, *Lin. S. P.* 1618.
Capitularia extensa, *Florke in Berl. Mag.* 1808, 222.
Cladonia coccinea, *Hoffm. Germ.* 123.
Cladonia extensa, *Hoffm. Germ.* 123.
Bæomyces cocciferus, *Achar. Meth.* 331.
Cenomyce coccifera, *Achar. Lich.* 537.

On the ground on mountains, and sunny, woody hills.

15. *Scyphophora asotea.* *Leafless cup-moss.*

Thallus leaflike, small, jags rounded, crenate, naked beneath; *podetia* reverse-conical, cupshape, naked, afterwards warty, rough, grey or greenish yellow; cups regular, glass-shape, proliferous in heaps from the centre of the midriff; *apothecia* of the edges small, sessile, grow slightly podicilled, large, scarlet.

Capitularia asotea, *Florke in Berl. Mag.* 1808, 225.
Bæomyces coccifera asotea, *Achar. Meth.* 332.
Bæomyces coccifera polycephala, *Achar. Meth.* 332.
Cenomyce coccifera asotea, *Achar. Lich.* 537.

On the ground, with the preceding.

β. *cornucopioides.* *Podetia* short, cupshape; cups dilated, from the midriff, edge crisp, leaflike; *apothecia* slightly podicilled, scarlet, crowned, growing proliferous.

Lichenoides pyxidatum, marginibus eleganter foliatis, *Dillen in Raii Syn.* 69, 33.
Lichen cornucopioides, *Lin. S. P.* 1619.
Bæomyces cornucopioides, *Achar. Meth.* 533.
Cenomyce coccifera cornucopioides, *Achar. Lich.* 538.

16. *Scyphophora pleurota.* *Swollenside cup-moss.*

Thallus leaflike, small; jags deeply crenate, naked beneath; *podetia* reverse conical, cupshape, powdery, white, pale greenish; cups enlarged, grow swollen, slightly ribbed; edge scarcely cut, afterwards sinuated and radiated; *apothecia* slightly podicilled, scarlet.

Capitularia pleurota, *Florke in Berl. Mag.* 1808, 218.
Cladonia incana, *Hoffm. Germ.* 121.
Bæomyces pleurotus, *Wahlenb. Lapp.* 452.
Bæomyces pyxidatus macroscyphus, *Achar. Meth.* 338.

On sunny ground, and rotten wood.

17. *Scyphophora bellidiflora.* *Daisy-flower cup-moss.*

Thallus leaflike, small; jags deeply crenate, naked below; *podetia* long, cylindrical, stiff, bald, leaflike-scaly, pale, all cupbearing; cups narrow, edge fertile and proliferous; *apothecia* very crowded, conglomerate, scarlet.

Lichen bellidiflorus, *Achar. N. Act. Stockh.* 22, 218.
Capitularia bellidiflora, *Florke Berl. Mag.* 1808, 224.
Bæomyces bellidiflorus, *Achar. Meth.* 335.
Cenomyce coccocephala bellidiflora, *Achar. Lich.* 540.

On the ground in hilly and mountainous places.

IX. 99. PYCNOTHELIA. Acharius. *Pycnothelia.*

Thallus nearly crustlike, uniform; *podetia* hollow; *apothecia* round, not bordered, convex, headlike, hollow beneath, fixed by the edge, terminal; *proligerous* flake forming the upper part of the apothecium, rather thick, coloured, inside similar, convex, turned over the edge and fastened, clothed beneath with the flocklike integument of the thallus.

Pycnothelia papillaria. *Papillary pycnothelia.*

Thallus nearly crustlike, uniform, granulated, grey; *podetia* bellied, bald, white, simple and branched; branches short, confluent, nearly equal-topped; *apothecia* small, reddish brown.

Lichen papillaria, *Ehrh.* 2, 105.
Cladonia papillaris, *Hoffm. Germ.* 117.
Cladonia molariformis, *Hoffm. Germ.* 117.
Bæomyces papillaris, *Achar. Meth.* 324.
Bæomyces papillaris molariformis, *Achar. Meth.* 325.
Cenomyce papillaria, *Achar. Lich.* 571.
Cenomyce papillaria molariformis, *Achar. Lich.* 571.

On the ground upon muddy and dry ground.

C. EVERNIDEÆ. *Thallus* nearly crustaceous, branched; *apothecia* shieldshape, bordered, lateral.

X. 100. EVERNIA. Acharius. *Evernia.*

Thallus nearly crustaceous, branched, jagged, angular or compressed, flat; rather upright or pendulous, inside towlike; *apothecia* saucershape, sessile, raised up around; *proligerous flake* forming the centre, thin, concave, coloured, inside similar, bent in, with a thalloid border exceeding it.

Evernia prunastri. *Plum-tree evernia.*

Thallus palish white; jags two-forked, many-cut, ascending almost upright, linear, narrow, flat, wrinkled, hollow; underneath very white, slightly grooved; *apothecia* reddish in the centre.

Lichenoides arboreum ramosum majus et mollius, colore candicante, *Raii Syn.* 75, 80.
Lichen arborum, *Ger. em.* 1377, fig. only.
Lichen prunastri, *Lin. S. P.* 1614; *Engl. Bot.* 859.
Lichen stictaceros, *Engl. Bot.* 1355.
Lichen corniculatus, *Relh. Cantab.*
Lobaria prunastri, *Hoffm. Germ.* 140.
Parmelia prunastri, *Achar. Meth.* 257.
Evernia prunastri, *Achar. Lich.* 442.

On the trunks of trees, and wooden palings.

Cephalodia black, sometimes occur in the tips of the jags, and scattered; *soredia* white, also found in very old plants.

D. PELTIDEÆ. *Thallus* leatherlike, cartilaginous or leaflike; *apothecia* shieldlike, bordered.

XI. 101. ROCCELLA. Imperati. *Rock-moss.*

Thallus leatherlike, cartilaginous, branched, jagged, cylindrical or flat, erect or pendulous, inside towlike; *apothecia* saucershape, thick, innate in the thallus; *proligerous flake* forming the centre, plano-convex, coloured, cartilaginous; inside transparent, similar, girt with a thalloid border, at last prominent, sessile, and even with the centre, covering a black, compact, powdery rather lentilshape mass hidden within the substance of the thallus.

1. *Roccella tinctoria.* *Dyeing rock-moss.*

Thallus cylindrical, sea-greenish, rather upright, branched; *apothecia* scattered, raised; centre flat, greyish, hoary, even with the thalloid border.

Coralloides corniculatum fasciculare tinctorium fuci teretis facie, *Dillen Musc.* 130.
Lichen Roccella, *Lin. S. P.* 1622; *Engl. Bot.* 211.
Parmelia Roccella, *Achar. Meth.* 274.
Roccella tinctoria, *Achar. Lich. Univ.* 439.

On rocks by the sea-side.

Thallus used in dyeing, when moistened with urine or volatile alkali, to dye a beautiful but perishable purple, and to give a fine bloom to other colours.

2. *Roccella phycopsis.* *Tanglike rock-moss.*

Thallus cylindrical, compressed, rather angular, grey greenish, very much branched; *branches* and twigs nearly even-topped; *apothecia* scattered, centre hoary, flat, at last naked, black; *thalloid border* slightly irregular, very small.

Lichen fucoides, *Dickson Crypt. Brit.* 2, 22.
Roccella phycopsis, *Achar. Lich.* 440.

On rocks by the sea-side.

3. *Roccella fuciformis.* *Wracklike rockmoss.*

Thallus flat, grey, greenish, two-forked, jagged; jags narrow; *apothecia* marginal.

Lichenoides fuciforme tinctorium, corniculis longioribus et acutioribus, *Dillen Musc.* 168.
Lichen fuciformis, *Lin. S. P.* 1614; *Engl. Bot.* 728.
Parmelia fuciformis, *Achar. Meth.* 258.
Roccella fuciformis, *Achar. Lich.* 440.

On rocks by the sea.

XII. 102. NEPHROMA. Acharius. *Kidney-moss.*

Thallus leaflike, leatherlike, membranaceous, expanded, lobed; underneath free, naked or slightly villous; *apothecia* resupinate, formed above from the lobes of the thallus, produced, ascending; *proligerous flake* kidneyshape, adnate to the thallus on its under surface, coloured, flat; inside cellularly streaked; *thalloid edge* bent inwards, outwardly close to the apothecia, inwardly more remote, rather raised.

1. *Nephroma resupinatum.* *Down-lying kidney-moss.*

Thallus chestnut colour, livid, rather pale, downy, granular; fertile lobes short; *flake* of the apothecia red.

Lichenoides saxatile fuscum, peltis in aversa foliorum superficie locatis, *Raii Syn.* 77, 91.
Lichen resupinatus, *Lin. S. N.* 1615.
Peltigera tomentosa, *Hoffm. Germ.* 103.
Peltidea resupinata, *Achar. Meth.* 289.
Nephroma resupinata, *Achar. Lich.* 522.

On the ground among roots of trees and on hills.

2. *Nephroma parile.* *Equal kidney-moss.*

Thallus livid, brown; beneath naked, rather wrinkled, blackish; fertile lobes short; *flake* of the apothecia brownish.

Lichen parilis, *Achar. Prod.* 164.
Peltidea parilis, *Achar. Meth.* 289.
Nephroma parilis, *Achar. Lich. Univ.* 522.

Upon mosses, on hills.

XIII. 103. PELTIDEA. Acharius. *Shield-moss.*

Thallus leaflike, leatherlike, expanded, nearly adnate, lobed; underneath woolly, veiny; *apothecia* formed underneath from the ascending, lengthened, proper lobes of the thallus; *proligerous flake* round, adnate throughout, rather oblique to the thallus; the inward segment slightly elevated, coloured, flat, inside cellular, streaked; *thalloid border* thin, elevated, close all round.

1. *Peltidea venosa.* *Veiny shield-moss.*

Thallus gray, green, underneath veined; veins branched, running about, grey brown; lobes rounded, very slightly cut; *apothecia* marginal, flat, round, tumid, dark brown, rather crenate.

Lichen venosus, *Lin. S. V.* 1615; *Engl. Bot.* 887.
Peltigera venosa, *Hoffm. Germ.* 107.
Peltidea venosa, *Achar. Meth.* 282; *Lich.* 514.

On the ground, on the edges of paths and ditches.

2. *Peltidea scutata.* *Buckler shield-moss.*

Thallus greyish, underneath whiter, veinless; *lobes* rounded; sinuately cut, crenate, crisp; fertile lobes very short; *apothecia* round, ascending, rather flattish, brown, scarcely cut.

Lichen scutatus, *Dickson Crypt. Bot.* 3, 18.
Peltidea scutata, *Achar. Meth.* 285; *Lich.* 515.

On the mossy trunks of trees.

3. *Peltidea horizontalis.* *Horizontal shield-moss.*

Thallus sea-green, brown, and greenish, bald; underneath very white, networked with black veins; *fertile lobes* very short; *apothecia* terminal, flat, horizontal, transversely oblong, bay-colour, not in the least cut.

Lichenoides subfuscum, peltis horizontalibus, *Dillen Musc.* 205.
Lichen horizontalis, *Lin. Mant.* 1, 132; *Engl Bot.* 888.
Peltigera horizontalis, *Hoff. Germ.* 107.
Peltidea horizontalis, *Achar. Meth.* 288; *Lich.* 515.

Among mosses on stones in mountain woods.

4. *Peltidea aphthosa.* *Thrush shield-moss.*

Thallus livid greenish, smooth; underneath networked with black veins; *cephalodia* wartshape, scattered; *fertile lobes* rather long, narrow in the middle, edge turned over; *apothecia* terminal, large, ascending, red; *thalloid border* turned in, rather torn.

Lichenoides digitatum læte virens; verrucis nigris notatum, *Dillen Musc.* 207.
Lichen verrucosus, *Weber Fl. Germ.* 275.
Lichen aphthosus, *Lin. S. P.* 1616; *Engl. Bot.* 1119.
Peltigera aphthosa, *Hoffm. Germ.* 107.
Peltidea aphthosa, *Achar. Meth.* 287; *Lichen.* 516.

On the ground and mosses in thick woods.

5. *Peltidea canina.* *Mad-dog shield-moss.*

Thallus grey, greenish, rather downy; underneath networked with grey-brown veins; *fertile lobes* rather long, edge turned over; *apothecia* terminal, rather upright, rolled outwards, reddish; *thalloid border* thin, slightly crenulated.

Lichenoides peltatum terrestre cinereum majus, foliis divisis, *Raii Syn.* 76, 87.
Lichen caninus, *Lin. S. P.* 1616.
Peltigera canina, *Hoffm. Germ.* 106.
Peltidea spuria, *Achar. Meth.* 283.
Peltidea canina, *Achar. Lich.* 517.
Ashcolour ground-liverwort.

On the ground in woody mountainous places.

Recommended by Dr. Mead as a specific for the bite of a mad dog, mixed with an equal weight of pepper.

6. *Peltidea crispa.* *Crisp shield-moss.*

Thallus many-leaved, grey, brown, reddish, rather downy; lobes deeply sinuately-jagged; *jags* narrow, edge raised, crisp; *fertile lobes* very rare, short; *apothecia* hooded, rolled over.

Lichenoides peltatum terrestre rufescens, *Raii Syn.* 76, 88.
Lichen rufescens, *Necker. Meth.* 79.
Peltigera rufescens, *Hoffm. Germ.* 107.
Peltidea rufescens, *Achar. Meth.* 285.
Peltidea canina crispa, *Achar. Lich. Univ.* 519.

On the ground among and on stones.

7. *Peltidea polydactyla.* *Many-fingered shield-moss.*

Thallus sea-greenish, naked, bald; underneath networked with brown veins; *fertile lobes* very numerous, long; *apothecia* terminal, dark brown; edge hooded, rolled over.

Lichenoides cinereum polydactylon, *Dillen Musc.* 207.
Lichen caninus γ, *Huds. Fl. Angl.* 547.
Lichen polydactylus, *Neck. Meth.* 85.
Peltigera polydactyla, *Hoffm. Germ.* 106.
Peltidea polydactyla, *Achar. Meth.* 286; *Lich.* 519.

On the ground, in woods and coppices.

8. *Peltidea pellucida.* *Transparent shield-moss.*

Thallus membranaceous, nearly transparent; *fertile lobes* long, ascending, doubled.

Lichenoides membranaceum pellucidum, peltis digitatis geminatis, *Dillen Musc.* 208.
Lichen caninus 2, *Huds. Fl. Angl.* 547.
Lichen caninus pellucidus, *Web. Fl. Germ.* 270.
Peltidea polydactyla pellucida, *Achar. Meth.* 287; *Lich.* 520.

On the ground, in woods.

XIV. 104. SOLORINA. Acharius. *Buckler-moss.*

Thallus leaflike, leatherlike, expanded, lobed; underneath free, veined or fibrillous; *apothecia* adnate, round, covered with a coloured thin membrane; inside solid, with vesicular cells; *thalloid border* 0.

1. *Solorina crocea.* *Saffron buckler-moss.*

Thallus lobed, cinnamon coloured, underneath yellow, veined; *apothecia* swollen, chestnut-colour.

Lichenoides subtus croceum, peltis appressis, *Dillen Musc.* 211.
Lichen croceus, *Lin. S. P.* 1616; *Engl. Bot.* 493.
Peltidea crocea, *Achar. Meth.* 290.
Solorina crocea, *Achar. Lich.* 149.

On the ground, on rocks and dry, naked, alpine places.

2. *Solorina saccata.* *Bogged buckler-moss.*

Thallus lobed, grey, greenish; underneath whiter, fibrilled; *apothecia* at last pitted, rather brownish.

Lichenoides lichen facie, peltis acetabulis immersis, *Dillen Musc.* 221.
Lichen sacchatus, *Lin. S. P.* 1616; *Engl. Bot.* 285.
Peltidea sacchata, *Achar. Meth.* 291.
Solorina saccata, *Achar. Lich.* 149.

On shady rocks, and on mosses at the roots of trees.

XV. 105. STICTA. Schreber. *Dot-moss.*

Thallus leaflike, leatherlike, cartilaginous, expanded, lobed; underneath free, villous, interspersed with cyphells, sorediæ, and spots; *apothecia* bucklershape, lower part formed of the thallus, affixed and pressed to it by a central point; *proligerous flake* forming the centre, coloured, flat, internally cellularly streaked; *thalloid border* exceeding.

1. *Sticta crocata.* *Saffron dot-moss.*

Thallus pale red brownish, slightly hollowed, large, underneath downy; sorediæ minute, lemon yellow; jags torn, lobed; edges powdery, yellow; *apothecia* scattered, centre brown black; *thalloid border* not in the least cut.

Lichen crocatus, *Lin. Mant.* 310; *Engl. Bot.* 2110.
Pulmonaria aurigera, *Bory Voy.* 3.
Sticta crocata, *Achar. Meth.* 277; *Lich.* 447.

On rocks, and the trunks of trees.

2. *Sticta aurata.* *Gilt dot-moss.*

Thallus green shining, very broad, underneath downy; sorediæ very small, yellow; jags rounded, sinuated, cut; edges waved, crisp, bent in, yellow, powdery.

Lichenoides lacunosum rutilum, marginibus flavis, *Dillen Musc.* 549.
Platisma crocatum, *Hoffm. Lich.* 2, 52.
Sticta aurata, *Achar. Meth.* 277; *Lich.* 448.

On trees?

3. *Sticta pulmonacea.* *Lung dot-moss.*

Thallus fallow, olive, netlike hollowed; underneath villous; papulæ naked pale; jags sinuated, lobed, bluntly truncated; *apothecia* nearly marginal; centre flattish, red; *thalloid border* slightly wrinkled.

Lichenoides peltatum arboreum maximum, *Raii Syn.* 76, 86.
Muscus pulmonarius, sive Lichen arborum, *Park.* 1311, desc.
Lichen sive hepatica vulgaris, *Park.* 1315, fig.
Hepatica terrestris, *Ger. em.* 1566.
Lichen pulmonarius, *Lin. S. P.* 1612; *Engl. Bot.* 572.
Lobaria pulmonaria, *Hoff. Germ.* 146.
Parmelia pulmonacea, *Achar. Meth. Lich.* 220.
Sticta pulmonacea, *Achar. Lich. Univ.* 449.
Lung-wort.

On the trunks of trees, especially on oaks.

Thallus astringent, used in infusion to cure wounds and ulcers, and esteemed a specific in spitting of blood and consumption; as a native plant it was despised by the regular faculty, and the cetraria Islandica, as long as it was esteemed a foreigner, usurped its place; but that being now found to be a native, has fallen into the like disrepute.

4. *Sticta scrobiculata.* *Pitted dot-moss.*

Thallus nearly orbicular, lead grey, very broad, smooth, pitted, underneath ash-colour, woolly, with white naked spots; *jags* rounded, lobed, irregular, and very slightly cut; *apothecia* scattered, centre rather flat, reddish; *thalloid border* slightly crenate.

Lichenoides arboreum foliosum cinereum et sinuatum, inferne scabrum, *Dillen in Raii Syn.* 75, 77.
Lichen plumbens, *Roth Bot. Mag.* 2.
Lichen verrucosus, *Huds. Fl. Angl.* 545.
Lichen scrobiculatus, *Scop. Carn.* 1591; *Engl. Bot.* 497.
Lobaria verrucosa, *Hoffm. Germ.* 146.
Parmelia scrobiculata, *Achar. Meth.* 219.
Sticta scrobiculata, *Achar. Lich.* 453.

On the ground amongst mosses, on rocks and the trunks of trees.

5. *Sticta herbacea.* *Herbaceous sticta.*

Thallus nearly round, slightly membranaceous, smooth, herbaceous, underneath paler, brown, woolly; spots few, naked; jags sinuated, cut, rounded, spreading, slightly crenate; *apothecia* scattered, centre slightly concave, red; *thalloid border* wrinkled, crenulate.

Lichenoides arboreum cinerea virens tenue et læve ubique, scutellis minoribus, *Raii Syn.* 73, 64.
Lichen herbaceus, *Huds. Fl. Angl.* 544.
Lobaria herbacea, *Hoffm. Germ.* 147.
Parmelia herbacea, *Achar. Meth.* 218; *Lich.* 459.

On trunks of trees, also among mosses, and on rocks.

6. *Sticta limbata.* *Bordered dot-moss.*

Thallus round, sea-green, brownish; lobes round; *sorediæ* nearly marginal, grey; underneath villous; *cyphels* hollow, whitish; *apothecia* with a rust-colour centre.

Lichen limbatus, *Engl. Bot.* 1104.
Sticta limbata, *Achar. Meth.* 280; *Lich.* 453.

On mossy rocks and the roots of trees.

7. *Sticta fuliginosa.* *Sooty dot-moss.*

Thallus round, sea-green, lurid, rough with brown granules; underneath greyish, villous; *cyphels* plano-concave, whitish; jags round-lobed, very slightly cut; *apothecia* scattered; centre rust-coloured and black; *thalloid border* elevated, not in the least cut.

Lichen ambavillarius, *Bory Voy.* 3, 100.
Lichen fuliginosus, *Dicks. Crypt. Brit.* 1, 13; *Engl. Bot.* 1103.
Sticta ambavillaria, *Achar. Lich.* 455.
Sticta fuliginosa, *Achar. Meth.* 281; *Lich.* 454.

On the stems of trees and shrubs.

8. *Sticta sylvatica.* *Wood dot-moss.*

Thallus large, light brown, rather naked, slightly pitted; underneath brown, villous; *cyphels* hollowed, white, palish white; *jags* deeply cut; lobes turned back, crenate; *apothecia* marginal, centre brown.

Lichenoides polyschides villosum et scabrum, peltis parvis, *Dill. Musc.* 199.
Lichen sylvaticus, *Engl. Bot.* 2298.
Peltigera sylvatica, *Hoffm. Germ.* 109.
Sticta sylvatica, *Achar. Meth.* 231; *Lich.* 454.

On the roots of trees in forests, or among mosses.

XVI. 106. CETRARIA. Acharius. *Cetraria.*

Thallus cartilaginous, membranaceous, ascending or expanding, lobed, cut; on both sides naked, and smooth; *apothecia* shieldlike, obliquely adnate to the edge of the thallus; lower segment free, upper sessile; *proligerous flake* forming the centre, coloured, plano-concave, inside similar or cellularly streaked; *thalloid border* exceeding.

1. *Cetraria juniperina.* *Juniper cetraria.*

Thallus pale yellow, underneath very yellow; jags flat, ascending, torn crenate, crisp; *apothecia* elevated, centre bay colour; *thalloid border* crenulate.

Lichen juniperinus, *Lin. S. P.* 1614.
Lobaria juniperina, *Hoffm. Germ.* 145.
Cetraria juniperina, *Achar. Meth.* 298; *Lich.* 506.

On the stems and branches of shrubs, especially of juniper.

2. *Cetraria pinastri.* *Pinaster cetraria.*

Thallus pale yellow, underneath very yellow; jags depressed, round lobed, crenate: edges crisp, powdery, very yellow.

Lichen pinastri, *Scopoli Carn.* 1387.
Lobaria pinastri, *Hoffm. Germ.* 146.
Cetraria juniperina pinastri, *Achar. Meth.* 298; *Lich.* 506.

On the trunks of pines, near the ground.

3. *Cetraria sæpincola.* *Hedge cetraria.*

Thallus chestnut-colour, underneath livid; jags flat, ascending, lobed, wavey, slightly crenate; *apothecia* elevated, similarly coloured; *thalloid border* wrinkled, crenulate.

Lichen Sæpincola, *Ehrh. Hanov. Mag.* 206.
Lobaria sæpincola, *Hoffm. Germ.* 145.
Cetraria sæpincola, *Achar. Meth.* 297; *Lich.* 507.

On the stem and branches of shrubs in hedges.

4. *Cetraria glauca.* *Sea-green cetraria.*

Thallus sea-green, rather shining, underneath brownish black, sinuately lobed; jags deeply cut, torn, complicated, ascending; *apothecia* elevated, bright bay; *thalloid border* wrinkled.

Lichenoides endiviæ foliis crispis splendentibus, subtus nigricantibus, *Dillen Musc.* 192.
Lichen glaucus, *Lin. S. P.* 1615.
Lobaria glauca, *Hoffm. Germ.* 149.
Cetraria glauca, *Achar. Meth.* 296; *Lich.* 509.

On the trunks of trees, and rocks.

β. *fallax.* *Thallus* white on both sides, underneath frequently spotted with black.

Lichen glaucus, *Wulf. in Jacq. Coll.* 4.
Lichen fallax, *Weber Fl. Germ.* 244.
Lobaria fallax, *Hoffm. Germ.* 149.
Cetraria fallax, *Achar. Meth.* 296.
Cetraria glauca fallax, *Achar. Lich.* 509.

5. *Cetraria nivalis.* *Snow cetraria.*

Thallus white, yellowish at bottom, net-worked in holes; jags rather upright, flattish, deeply and many-cut, torn, crisp, crenately toothed; *apothecia* pale flesh-colour; *thalloid border* crenulated.

Lichenoides lacunosum candidum glabrum, endiviæ crispæ facie, *Dillen Musc.* 162?
Lichen nivalis, *Lin. S. P.* 1612.
Lobaria nivalis, *Hoffm. Germ.* 145.
Cetraria nivalis, *Achar. Meth.* 294; *Lich.* 510.

On dry, gravelly, barren soils, especially if alpine.

6. *Cetraria Islandica.* *Iceland cetraria.*

Thallus olive-chestnut colour, whitish blood-colour at bottom, underneath whiter; jags rather upright, nearly linear, many-cut, grooved, toothed, fringed; fertile jags dilated; *apothecia* pressed close, flat, similarly coloured; *thalloid border* elevated, not in the least cut.

Lichenoides rigidum, eryngii foliis referens, *Raii Syn.* 77, 90.
Lichen Islandicus, *Lin. S. P.* 1611; *Engl. Bot.* 1530.
Physcia Islandica, *Michaux Fl. Bav. Amer.* 2, 326.
Lobaria Islandica, *Hoffm. Germ.* 143.
Cetraria Islandica, *Achar. Meth.* 293; *Lich.* 512.
Iceland moss.

On the ground in dry soils, and mountain woods.

Thallus bitter, but when soaked in water to get rid of this bitterness, it yields a nutritive farina, forming a jelly on being boiled in water, recommended in phthisis; forms the principal vegetable food of the Icelanders.

XVII. 107. BORRERA. Acharius. *Borrer.*

Thallus cartilaginous, jagged-branched; jags free, underneath mostly grooved, edge fringed; *apothecia* shield-like, thick, formed underneath from the thallus, podicilled; *proligerous flake*, forming the centre, coloured, inside similar or vesicled; *thalloid border* elevated, bent inwards, exceeding.

1. *Borrera ciliaris.* *Fringe borrer.*

Thallus greenish brown; jags linear, branched, narrowed, tips fringed; underneath whitish, grooved; *apothecia* nearly terminal; centre hollow, then flat, black brown and grey; *thalloid border* crenated and fimbriated.

Lichenoides arboreum foliosum cinereum, scutellis nigris, foliorum extremitatibus hispidis et pilosis, *Raii Syn.* 73, 67.
Lichen ciliaris, *Lin. S. P.* 1611; *Engl. Bot.* 1352.
Lobaria ciliaris, *Hoffm. Germ.* 144.
Parmelia ciliaris, *Achar. Meth.* 255.
Borrera ciliaris, *Achar. Lich.* 496.

On the trunks of trees, and on rocks.

2. *Borrera tenella.* *Tender borrer.*

Thallus greyish white; both sides naked, similarly coloured, rather starlike, jags pinnately cut; tips ascending, dilated, arched, fringed; *apothecia* scattered, centre flat, blackish grey; *thalloid border* not in the least cut.

Lichen hispidus, *Schreb. Fl. Germ.* 126.
Lichen tenellus, *Scop. Carn.* 1406; *Engl. Bot.* 1351.
Lobaria hispida, *Hoffm. Germ.* 151.
Parmelia tenella, *Achar. Meth.* 250.
Borrera tenella, *Achar. Lich.* 493.

On the trunks and branches of trees, and on palings.

3. *Borrera leucomela.* *Pied borrer.*

Thallus palish; jags upright, linear, many-cut, narrowed, fringed; underneath very white, rather powdery, slightly grooved; *centre* of the apothecia flat, black grey; *thalloid border* fringed.

Lichen comosus, *Bory Voy.*
Lichen leucomelas, *Lin. S. P.* 1613.
Physcia leucomelos, *Michaux Amer.* 526.
Parmelia leucomela, *Achar. Meth.* 256.
Borrera leucomela, *Achar. Lich.* 499.

On the trunks of trees.

4. *Borrera furfuracea.* *Branny borrer.*

Thallus grey, floury; jags linear, narrow, branched, underneath grooved, naked, wrinkled, violet, blackish; *apothecia* nearly marginal, cupshape, centre red; *thalloid border* thin, slightly bent in.

Lichenoides cornutum amarum, superne cinereum, inferne nigrum, *Dillen Musc.* 157.
Lichen furfuraceus, *Lin. S. P.* 1612.
Lobaria furfuracea, *Hoffm. Germ.* 143.
Parmelia furfuracea, *Achar. Meth.* 254.
Borrera furfuracea, *Achar. Lich.* 500.

On rocks, and the trunks of trees.

5. *Borrera Atlantica.* *Atlantic borrer.*

Thallus pale reddish, downy; jags divaricated, twisted linear, narrow; underneath grooved; *apothecia* scattered, centre brownish black; *thalloid border* thin, not in the least cut.

Lichen intricatus, *Desfont. Fl. Atlant.* 2, 420.
Parmelia Atlantica, *Achar. Meth. Suppl.* 50.
Borrera Atlantica, *Achar. Lich.* 502.

On the bark of trees.

6. *Borrera chrysophthalma.* *Gold-eye borrer.*

Thallus yellow, yelklike; both sides naked, alike coloured; jags linear, flattish, pinnately branched; tips fibrillous; *apothecia* nearly terminal, centre orange; *thalloid border* fibrilled, fringed.

Lichen chrysophthalmus, *Engl. Bot.* 1083.
Platisma armatum, *Hoffm. Lich.* 2, 43.
Parmelia chrysophthalma, *Achar. Meth.* 267.
Borrera chrysophthalma, *Achar. Lich.* 502.

On the trunks and branches of trees.

7. *Borrera læta.* *Pleasant borrer.*

Thallus very yellow, jags thin, vaguely branched, complicated, fibrilled, cirrous; *apothecia* scattered, centre flat, red; *thalloid border* not cut, naked.

Lichenoides quod Muscus aureus tenuissimus, *Dillen in Raii Syn.* 65, 8.
Lichen vulpinus, *Lin. S. P.* 1623.
Physcia flavicans, *De Candolle Voy. Bot.* 25.
Borrera flavicans læta, *Achar. Syn. Lich.* 225.

On the trunks of trees.

XVIII. 108. PHYSCIA. Achard. *Physcia.*

Thallus leaflike, leatherlike, slightly membranaceous, flat, expanded, pressed close, round starlike lobed or many-jagged; underneath fibrillous, jags slightly inflated

at the tip; *apothecia* shieldlike, slightly membranaceous, formed underneath from the thallus, free, affixed to the same by the centre; *proligerous flake* forming the centre, hollow, coloured, covering the apothecia entirely above; inside similar, streaked, with a few cellules; *thalloid border* bent inwards.

1. *Physcia physodes.* *Wracklike physcia.*

Thallus slightly stellate, sea-greenish white; jags tiled-like, sinuate, many-cut, slightly convex, bald; tips inflated, ascending; underneath blackish brown, naked; *apothecia* red, edge not cut.

Lichenoides ceratophyllon obtusius et minus ramosum, *Raii Syn.* 76, 85.
Lichen physodes, *Lin. S. P.* 1610; *Engl. Bot.* 126.
Lobaria physodes, *Hoffm. Germ.* 150.
Parmelia physodes, *Achar. Meth.* 250; *Lich.* 492.

On palings, trunks of trees, and rocks.

2. *Physcia diatrypa.* *Pierced physcia.*

Thallus slightly stellate, greenish white; jags sinuated, many-cut, flattish, smooth, perforated and with sorediæ; tips inflated; underneath wrinkled, folded, black; interstices white; *apothecia* pale red; edge not cut.

Lichen pertusus, *Schrad. Fl. Germ.* 96.
Lichen diatrypus, *Achar. Prod.* 116; *Engl. Bot.* 1248.
Lobaria terebrata, *Hoffm. Germ.* 151.
Parmelia diatrypa, *Achar. Meth.* 251; *Lich.* 493.

On the bark of trees.

XIX. 109. PARMELIA. Acharius. *Border-moss.*

Thallus leaflike, leatherlike, slightly membranaceous, flat, spread out, pressed out, round and stellately lobed or many-cut, jagged; underneath fibrillous; jags all equal at their tips; *apothecia* shieldlike, slightly membranaceous, formed underneath from the thallus, free, connected only by a central point; *proligerous flake* forming the centre, hollow, coloured, covering the apothecia entirely at top; inside similar, streaked, with a few cellules; *thalloid border* bent inwards.

1. *Parmelia glomulifera.* *Ballbearing border-moss.*

Thallus cartilaginous, stiff, round, livid, smooth, interspersed with blackish green pulvinuli; underneath ochry white, downy; lobes sinuately jagged; jags angular and bordered; *apothecia* reddish chestnut, *border* wrinkled.

Lichenoides subglaucum cumatile, foliis tenacibus, eleganter laciniatis, *Dillen Musc.* 197.
Lichen laciniatus, *Hudson Fl. Angl.* 544.
Lichen mutabilis, *Ehrh. Crypt.* 5, 50.
Lichen glomuliferus, *Lightf. Scot.* 853.
Lobaria glomulifera, *Hoffm. Germ.* 148.
Parmelia glomulifera, *Achar. Meth.* 218; *Lich.* 456.

On the roots and trunks of trees.

2. *Parmelia caperata.* *Caper border-moss.*

Thallus round, pale yellow, greenish, wrinkled, growing granulated; underneath black, hispid; lobes folded, sinuated, jagged, rounded, slightly cut; *apothecia* scattered, rather brown; *border* bent, not cut, at length powdery.

Lichenoides crusta foliosa, ex cinereo et luteo virescente, inferne nigra et lævi, *Raii Syn.* 73, 62.
Lichen caperatus, *Lin. S. P.* 1614; *Engl. Bot.* 654.
Lobaria caperata, *Hoffm. Germ.* 148.
Parmelia caperata, *Achar. Meth.* 216; *Lich.* 457.

On rocks and the trunks of trees.

3. *Parmelia Borreri.* *Borrer's border-moss.*

Thallus round, grey, interspersed with grey-bordered sorediæ; underneath brownish, spongy, fibrilled; lobes concreted, folded; outer lobes rounded, deeply crenate; *apothecia* red; *border* swollen, bent inwards.

Lichen Borreri, *Engl. Bot.* 1780.
Parmelia Borreri, *Turner in Lin. Tr.* 9, 148; *Achar. Lich. Univ.* 461.

On the bark of trees.

4. *Parmelia perlata.* *Pearl border-moss.*

Thallus round, greenish white, naked; underneath blackish brown, rather naked or villous; lobes rounded, cut, flat, edge slightly folded, not cut; *apothecia* red; *border* thin, not in the least cut.

Lichenoides glaucum perlatum, subtus nigrum et cirrosum, *Dillen Musc.* 147.
Lichen perlatus, *Huds. Fl. Angl.* 543.
Parmelia perlata, *Achar. Meth.* 216; *Lich.* 458.

On the trunks of trees, and rocks.

5. *Parmelia perforata.* *Perforated border-moss.*

Thallus round, rather sea-green, naked; underneath black, fibrilled; lobes rounded, cut, flat; edge folded, crenate, fringed; *apothecia* red, growing perforated; *border* not in the least cut.

Lichen melanoleucus, *Willd. Bot. Mag.* 4, 9.
Lichen perforatus, *Jacq. Coll.* 1, 116.
Platisma perforatum, *Hoffm. Lich.* 13, 1.
Parmelia perforata, *Achar. Meth.* 217; *Lich.* 459.

On the trunks of trees.

6. *Parmelia tiliacea.* *Lime-tree border-moss.*

Thallus round, membranaceous, greyish sea-green, rather hoary; underneath blackish brown; fibrils black; lobes sinuated, jagged; outer lobes rounded, crenate; *apothecia* brownish; *border* not cut.

Lichen quercifolius, *Wulf. in Jacq. Coll.* 3, 127.
Lichen quercinus, *Willd. Fl. Berol.* 7, 15.
Lichen tiliaceus, *Hoffm. Lich.* 96; *Engl. Bot.* 700.
Lobaria tiliacea, *Hoffm. Germ.* 149.
Parmelia tiliacea, *Achar. Meth.* 215; *Lich.* 460.

On the bark of trees.

7. *Parmelia corrugata.* *Wrinkled border-moss.*

Thallus round, membranaceous, very thin, wrinkled, sea-greenish; underneath black, brown, fibrilled; lobes cut, rounded, loose, folded, winding, not cut; *apothecia* winding, red; *border* crenulate.

Lobaria Acetabulum, *Hoffm. Germ.* 147.
Lichen Acetabulum, *Neck. Delic. et Meth.*
Lichen corrugatus, *Smith in Lin. Tr.* 1, 83.
Parmelia corrugata, *Achar. Meth.* 215; *Lich.* 462.

On the bark of old trees.

8. *Parmelia olivacea.* *Olive border-moss.*

Thallus round, olive umber, wrinkled, raised, dotted; underneath paler, brownish, rough, slightly fibrilled; lobes radiating, pressed close, flat, dilated, rounded, crenate; *apothecia* flattish, nearly the same colour as the thallus; *border* crenulate.

Lichenoides crusta foliosa scutellata, pullum, *Raii Syn.* 72, 60.
Lichen olivaceus, *Lin. S. P.* 1610.
Lobaria olivacea, *Hoffm. Germ.* 150.
Parmelia olivacea, *Achar. Meth.* 215; *Lich.* 462.

On the trunks of trees, and wooden palings.

9. *Parmelia parietina.* *Wall border-moss.*

Thallus round, very yellow; underneath paler, slightly fibrilled; lobes radiating, pressed close, flat, dilated at the tip, rounded, crenate, crisp; *apothecia* similar in colour; *border* not in the least cut.

Lichenoides crusta foliosa scutellata, flavescens, *Raii Syn.* 59.
Lichen parietinus, *Lin. S. P.* 1610.
Lobaria parietina, *Hoffm. Germ.* 158.
Parmelia parietina, *Achar. Meth.* 213; *Lich.* 465.

On walls, trunks of wood and stones.

10. *Parmelia elæina.* *Olive-brown border-moss.*

Thallus round, nearly membranaceous, contiguous, folded, radiated, olive-brown; circumference lobed, lobes deeply crenated, flat, nearly truncated; *apothecia* dark umber; *border* not in the least cut.

Lichen elæinus, *Wahlenb. Fl. Lapp.* 425.
Lecanora elæina, *Achar. Lich.* 429.
Parmelia elæina, *Wahlenb. in Achar. Meth. Suppl.* 45.

On rocks.

11. *Parmelia pityrea.* *Pine border-moss.*

Thallus round, grey, powdery; underneath white; fibrils black; central jags folded, torn, crisp, edge powdery; outward jags flat, rounded, crenate, hoary; *apothecia* concave, black brown, hoary; *border* not in the least cut.

Lichen lanuginosus, *Hoffm. Lich.* 32.
Lichen pityreus, *Achar. Prod.* 124; *Engl. Bot.* 2064.
Lobaria pulveracea, *Hoffm. Germ.* 153.
Parmelia pityrea, *Achar. Lich. Univ.* 483.

On the bark of the trunks of trees.

12. *Parmelia Clementiana.* *Clement border-moss.*

Thallus round, greyish white, granularly powdery; underneath the same colour; fibrils very small, blackish; jags of the circumference flat, deeply crenate, rather naked; *apothecia* pressed close, flat, brown black; *border* not in the least cut.

Parmelia Clementiana, *Turner in Trans. Lin. Soc.* 9, 146.
Lichen Clementi, *Engl. Bot.*

On the bark of oak-trees.

13. *Parmelia lanuginosa.* *Woolly border-moss.*

Thallus round, white, slightly brimstone-yellow, powdery; underneath black, bluish, woolly; lobes tiledlike, flat, rounded, very finely crenated; *apothecia* red; *border* powdery.

Lichen membranaceus, *Dickson Crypt.* 2, 21.
Lichen lanuginosus, *Achar. Prod.* 120.
Parmelia lanuginosa, *Achar. Meth.* 207; *Lich.* 465.

On the ground, and mosses on moist shady hills.

7. *Psoroma muscorum.* *Moss psorome.*

Crust scalelike, brownish livid; lobes irregularly and deeply torn jagged; *apothecia* thick; centre flat, obscurely blackish red, even with the thalloid border, which afterwards becomes very small.

Lichen carnosus, *Dicks. Crypt.* 2, 21; *Engl. Bot.* 1684.
Lichen hypnorum, *Achar. Prod.* 93.
Parmelia hypnorum, *Achar. Meth.* 185.
Lecanora hypnorum, *Achar. Lich.* 417.

Among and upon rather rotten mosses.

8. *Psoroma brunneum.* *Brown psorome.*

Crust tiledlike, granulatedly lobed, liver-grey; *apothecia* innate in the crust, very crowded, not uniform; centre rather convex, brown red; *thalloid border* raised, crenulate, persistent.

Lichen pezizoides, *Dicks. Crypt.* 1, 10.
Lichen multiflorus, *Ehrh. Crypt.* 156.
Lichen brunneus, *Swartz Nov. Act. Upsal.* 4, 247; *Engl. Bot.* 1246.
Psora nebulosa, *Hoffm. Germ.* 166.
Psora brunnea, *Hoffm. Germ.* 166.
Parmelia brunnea, *Achar. Meth.* 186.
Lecanora brunnea, *Achar. Lich.* 419.

On the ground, and upon rotten mosses.

XXI. 111. PLACODIUM. Acharius. *Placodium.*

Thallus crustaceous, flat, expanded, adnate, uniform, the circumference figured, radiated, stellate, and slightly lobed; *apothecia* saucershape, thick, adnate, sessile; *proligerous flake* forming the centre, plano-convex, coloured, covering the apothecium above; inside cellularly striated; *border* rather thick, formed of the thallus and the same colour, nearly free.

1. *Placodium epigeum.* *Ground placodium.*

Crust plaited, wrinkled, whitish; circumference smooth, lobed; *apothecia* blackish brown, growing rather convex in the centre; *thalloid border* thin, not in the least cut.

Lichen candicans, *Dicks. Crypt.* 3, 15; *Engl. Bot.* 1778.
Lichen epigeus, *Persoon in Ust. Ann.* 7, 25.
Parmelia epigea, *Achar. Meth.* 191.
Lecanora epigea, *Achar. Lich.* 422.

On the ground among the mosses on rocks.

2. *Placodium lentigerum.* *Lentil placodium.*

Crust slightly tiledlike, white; lobes rather concave, bent, deeply crenate; *apothecia* flattish in the centre, reddish yellow; *thalloid border* raised, tumid, bent in, slightly crenate.

Lichen lentigerus, *Web. Goett.* 192; *Engl. Bot.* 871.
Psora lentigera, *Hoffm. Germ.* 164.
Parmelia lentigera, *Achar. Meth.* 192.
Lecanora lentigera, *Achar. Lich.* 425.

On the ground and mosses on mountains.

3. *Placodium saxicolum.* *Rock placodium.*

Crust slightly tiledlike, scaly, wrinkled, unequal, pale greenish; circumference rayed, lobed; *apothecia* very crowded, centre flat, yellowish, pale red, rather ochry; *thalloid border* becomes bent, crenate.

Lichen ochroleucus, *Wulf. in Jacq. Coll.* 2.
Lichen saxicola, *Pollich Palat.* 225; *Engl. Bot.* 1695.
Lichen muralis, *Dicks. Crypt.* 1, 11.
Psora muralis, *Hoffm. Germ.* 157.
Parmelia saxicola, *Achar. Meth.* 157.
Lecanora saxicola, *Achar. Lich.* 451.

On stones, walls, and timber-buildings.

4. *Placodium murorum.* *Wall placodium.*

Crust plaited, wrinkled, cracked, yelk of egg yellow; surface powdery, hoary; circumference rayed, plaited; jags linear, convex, cut; *apothecia* crowded, centre growing convex, darker; *thalloid border* not cut, bent.

Lichen candelarius, *Lin. S. P.* 1608.
Lichen murorum, *Hoffm. Lich.* 63.
Lobaria saxicola, *Hoffm. Germ.* 158.
Parmelia murorum, *Achar. Meth.* 198.
Lecanora murorum, *Achar. Lich.* 455.

On stones and walls.

5. *Placodium fulgens.* *Shining-yellow placodium.*

Crust almost contiguous, pale-yellowish; circumference plaited, slightly lobed; lobes bent, flat; *apothecia* scattered, centre very red, plano-convex; *thalloid border* at length bent and crenate, very small.

Lichen fulgens, *Swartz in Nov. Act. Ups.* 4, 246.
Lichen citrinus, *Ehrhart.*
Psora citrina, *Hoffm. Germ.* 165.
Parmelia fulgens, *Achar. Meth.* 192.
Lecanora fulgens, *Achar. Lich.* 457.

On the ground on limestone rocks.

22. *Parmelia recurva.* *Bent-back border-moss.*

Thallus stellate, pale, slightly greenish, bearing soredia; underneath black, fibrilled, spongy; jags in the circumference many-cut, very narrow, convex, nearly cylindrical; *apothecia* reddish brown; *border* scarcely cut.

Lichen multifidus, *Dickson Crypt.* 3, 16.
Lichen incurvus, *Persoon in Uster Ann.* 7, 24.
Parmelia recurva, *Achar. Meth.* 201; *Lich.* 490.

On stones and hills.

23. *Parmelia sinuosa.* *Jagged border-moss.*

Thallus stellate, pale grey, smooth; underneath black, fibrilled; jags linear, broader outwardly, sinuately pinnatifid, sinuses broad, circular; *apothecia* flattish, brown; *border* thin, not cut.

Lichen sinuosus, *Engl. Bot.* 2050.

On walls, rocks, and trunks of trees.

24. *Parmelia diffusa.* *Spread border-moss.*

Thallus round, contiguous, wrinkled, folded, pale, greyish, powdery; underneath the same colour, black, fibrilled; jags in the circumference separate, flat, rounded, wavey, deeply crenate; *apothecia* flat, brownish black; *border* at length crenulate, powdery.

Lichen diffusus, *Dicks. Crypt.* 3, 7.
Lichen aleurites, *Achar. Prod.* 117; *Engl. Bot.* 858.
Lobaria diffusa, *Hoffm. Germ.* 156.
Parmelia aleurites, *Achar. Meth.* 208; *Lich.* 484.

On joists, planks, and palings.

25. *Parmelia conspersa.* *Sprinkled border-moss.*

Thallus round, pale, livid, smooth, dotted with black; underneath brownish, fibrilled; jags sinuated, lobed, rounded, crenate, flattish; *apothecia* central, chestnut; *border* very slightly cut.

Lichenoides imbricatum viridans, scutellis badus, *Dillen Musc.* 180.
Lichen centrifugus, *Lin. S. P.* 1609.
Lichen conspersus, *Achar. Prod.* 118.
Lobaria centrifuga, *Hoffm. Germ.* 154.
Parmelia conspersa, *Achar. Meth.* 205; *Lich.* 486.

On stones and rocks.

26. *Parmelia speciosa.* *Handsome border-moss.*

Thallus stellate, bald, white, rather greyish; underneath milky, softish; fibrils dark, marginal; jags tiledlike, flat, cut, branched, crenate, divisions ascending, powdery; *apothecia* central, brownish; *border* bent in, swollen, at length wrinkled, crenate.

Lichen speciosus, *Wulf in Jacq. Coll.* 3, 119.
Lobaria speciosa, *Hoffm. Germ.* 153.
Parmelia speciosa, *Achar. Meth.* 198; *Lich.* 480.

On the trunks of trees and rocks.

27. *Parmelia lævigata.* *Smooth border-moss.*

Thallus stellate, smooth, greyish white; underneath black, fibrilled; jags many-cut, linear, broader outwardly cut, divaricated, pointed, frequently having soredia in the circumference; *apothecia* concave, chestnut; *border* not cut.

Lichen lævigatus, *Engl. Bot.* 1852.

On rocks.

28. *Parmelia farrea.* *Floury border-moss.*

Thallus round, greenish, grey, powdery; underneath whitish, fibrils brown-black; jags short, deeply crenate, tiledlike, edges raised, granulated, powdery; *apothecia* black, grey, and hoary; *border* bent in, swollen, slightly hollowed.

Parmelia farrea, *Achar. Lich. Univ.* 475.

On the ground, on trees, and rocks.

29. *Parmelia pulverulenta.* *Powdery border-moss.*

Thallus stellate, greyish white, hoary; underneath black, woolly, hispid; jags linear, many-cut, separate in the circumference, flat, pressed close, wavey; tips blunt; *apothecia* grey; *border* not in the least cut, bent.

Lichenoides arboreum et saxatile, crusta foliosa tenui, fusco-virenti in segmenta latiora plerumque divisa, *Dillen in Rai Syn.* 74, 74.
Lichenoides arboreum, crusta foliosa informi, scutellis subnigris, limbo cinereo crispo cinctis, *Dillen in Raii Syn.* 75, 75.
Lichen stellaris β et γ, *Huds. Fl. Angl.* 534.
Lichen allochrous, *Ehrh. Crypt.* 19, 187.
Lichen pulverulentus, *Schreber Germ.* 1123; *Engl. Bot.* 2063.
Lobaria pulverulenta, *Hoffm. Germ.* 152.
Parmelia pulverulenta, *Achar. Meth.* 210; *Lich.* 475.

On the bark of trees.

30. *Parmelia cæsia.* *Grey border-moss.*

Thallus starlike, greyish white or grey, bearing soredia; underneath grey; fibrils black; jags linear, many-cut, deep, slightly convex, the last jags flat; *apothecia* slightly concave, black; *border* rather bent inwards.

Lichen pulchellus, *Wulf in Jacq. Coll.* 2.
Lichen cæsius, *Hoffm. Lich.* 12, 1; *Engl. Bot.* 1052.
Lichen Psora, *Dicks. Crypt.* 3, 17.
Lobaria cæsia, *Hoffm. Germ.* 156.
Parmelia cæsia, *Achar. Meth.* 197; *Lich.* 479.

On rocks, wood, mosses, and the trunks of trees.

31. *Parmelia cycloselis.* *Circular border-moss.*

Thallus round, livid grey; underneath black, fibrilled, spongy; jags grown together, tiledlike, rather flat, fingerlike, many-cut, crenately torn, slightly fringed; edges at length raised up, crisp rather powdery; *apothecia* scattered, black, brown; *border* raised, not in the least cut.

Lichen subtilis, *Persoon*, according to Achar Syn. Lich. 217.
Lichen dentatus, *Persoon*, according to Acharius l. c.
Lichen orbicularis, *Neckar Meth.* 88.
Lichen cycloselis, *Achar. Prod.* 115; *Engl. Bot.* 1942.
Lobaria orbicularis, *Hoffm. Germ.* 155.
Parmelia cycloselis, *Achar. Meth.* 199; *Lich.* 482.

On the trunks of trees.

E. LECIDEÆ. *Thallus* crustaceous, adnate; *apothecia* shieldlike, bordered.

XX. 110. PSOROMA. Acharius. *Psorome.*

Thallus crustaceous, flat, expanded, adnate, uniform, indeterminately figured, scaly or tiledlike; *apothecia* saucershape, thick, sessile, adnate; *proligerous flake* forming the centre, plano-convex, coloured, covering the apothecium above; inside cellular, streaked; *border* thickish, formed of the thallus and similar in colour, nearly free.

1. *Psoroma cervinum.* *Stags-horn psorome.*

Crust in beds, figured, scaly, rather lobed, chestnut-colour; *apothecia* immersed, flattish, brownish black; *thalloid border* at length prominent.

Lichen squamulosus, *Achar. Prod.* 230; *Engl. Bot.* 2011.
Lichen cervinus, *Persoon.*
Parmelia peliscypha, *Wahlenb. in Achar. Meth. Suppl.* 41.
Parmelia squamulosa, *Achar. Meth.* 181.
Lecanora halophæa, *Achar. Lich. Univ.* 408.
Lecanora badia, *Achar. Lich. Univ.* 407.

On walls and rocks, especially limestone.

2. *Psoroma crassum.* *Thick psorome.*

Crust scalelike, greenish white and brown; lobes tiledlike, deeply crenate, waved, irregular; *apothecia* flat, swollen, brownish red, afterwards blackish brown; *thalloid border* thin, not cut, at last very small.

Lichen laqueatus, *Wulf in Jacq. Coll.* 3.
Lichen cartilagineus, *Lightf. Scot.* 815.
Lichen crassus, *Hudson Fl. Angl.* 659.
Parmelia crassa, *Achar. Meth. Lich.* 185.
Lecanora crassa, *Achar. Lich. Univ.* 191.

On the ground on mountains.

3. *Psoroma tribacium.* *Torn psorome.*

Crust scalelike, silvery, greyish white; lobes irregular, differently shaped, torn crenate, tiledlike; underneath the same colour, slightly fibrilled; *apothecia* pressed close, centre flat, pale circumference at length crenated and lobed; *thalloid border* raised, persistent.

Lecanora tribacia, *Achar. Lich. Univ.* 415.

On the trunks of trees and rocks.

4. *Psoroma candelarium.* *Candle psorome.*

Crust scalelike, yellow; lobes very crowded, torn-jagged, tiledlike; edges granulated, powdery; *apothecia* flattish, similar in colour; *thalloid border* raised, not cut.

Lichenoides crustosum orbiculis et scutellis flavis, *Dillen Musc.* 236; *Engl. Bot.* 1794.
Lichen candelarius, *Lin. S. P.* 1608.
Lichen concolor, *Dickson Crypt.* 3, 18.
Parmelia candelaria, *Achar. Meth.* 187.
Lecanora candelaria, *Achar. Lich.* 416.

On the trunks of trees, palings, rocks, and walls.

5. *Psoroma polycarpum.* *Many-fruited psorome.*

Crust composed of conglomerated, granulated, lemon-yellow lobes; *apothecia* crowded, bent; centre flat, dilated, similarly coloured, afterwards pale-red; *thalloid border* at length crenulated.

Lichen polycarpus, *Ehrh. Crypt.* 14, 136.
Verrucaria fulva, *Hoffm. Germ.* 193.
Parmelia citrina, *Achar. Meth. Lich.* 179.
Lecanora candelaria, *Achar. Lich. Univ.* 416.

On old wood and the trunks of trees.

6. *Psoroma hypnorum.* *Hypnum psorome.*

Crust scalelike, brownish yellow, flame-colour; lobes small, roundish, dissimilar, edge granular, crenulate; *apothecia* slightly membranaceous; centre concave, at length flat, dilated, bay and black; *thalloid edge* raised, bent in, crenate.

Lychen hypnorum, *Fl. Dan.* 956; *Engl. Bot.* 740.
Psora hypnorum, *Hoffm. Germ.* 166.
Parmelia lepidora, *Achar. Meth.* 185.
Lecanora lepidora, *Achar. Lich.* 418.

On the ground, and on rotten moss.

7. *Psoroma muscorum.* *Moss psorome.*

Crust scalelike, brownish livid; lobes irregularly and deeply torn jagged; *apothecia* thick; centre flat, obscurely blackish red, even with the thalloid border, which afterwards becomes very small.

Lichen carnosus, *Dicks. Crypt.* 2, 21; *Engl. Bot.* 1684.
Lichen hypnorum, *Achar. Prod.* 93.
Parmelia hypnorum, *Achar. Meth.* 185.
Lecanora hypnorum, *Achar. Lich.* 417.

Among and upon rather rotten mosses.

8. *Psoroma brunneum.* *Brown psorome.*

Crust tiledlike, granulatedly lobed, liver-grey; *apothecia* innate in the crust, very crowded, not uniform; centre rather convex, brown red; *thalloid border* raised, crenulate, persistent.

Lichen pezizoides, *Dicks. Crypt.* 1, 10.
Lichen multiflorus, *Ehrh. Crypt.* 156.
Lichen brunneus, *Swartz Nov. Act. Upsal.* 4, 247; *Engl. Bot.* 1246.
Psora nebulosa, *Hoffm. Germ.* 166.
Psora brunnea, *Hoffm. Germ.* 166.
Parmelia brunnea, *Achar. Meth.* 186.
Lecanora brunnea, *Achar. Lich.* 419.

On the ground, and upon rotten mosses.

XXI. 111. PLACODIUM. Acharius. *Placodium.*

Thallus crustaceous, flat, expanded, adnate, uniform, the circumference figured, radiated, stellate, and slightly lobed; *apothecia* saucershape, thick, adnate, sessile; *proligerous flake* forming the centre, plano-convex, coloured, covering the apothecium above; inside cellularly striated; *border* rather thick, formed of the thallus and the same colour, nearly free.

1. *Placodium epigeum.* *Ground placodium.*

Crust plaited, wrinkled, whitish; circumference smooth, lobed; *apothecia* blackish brown, growing rather convex in the centre; *thalloid border* thin, not in the least cut.

Lichen candicans, *Dicks. Crypt.* 3, 15; *Engl. Bot.* 1778.
Lichen epigeus, *Persoon in Ulst. Ann.* 7, 25.
Parmelia epigea, *Achar. Meth.* 191.
Lecanora epigea, *Achar. Lich.* 422.

On the ground among the mosses on rocks.

2. *Placodium lentigerum.* *Lentil placodium.*

Crust slightly tiledlike, white; lobes rather concave, bent, deeply crenate; *apothecia* flattish in the centre, reddish yellow; *thalloid border* raised, tumid, bent in, slightly crenate.

Lichen lentigerus, *Web. Goett.* 192; *Engl. Bot.* 871.
Psora lentigera, *Hoffm. Germ.* 164.
Parmelia lentigera, *Achar. Meth.* 192.
Lecanora lentigera, *Achar. Lich.* 425.

On the ground and mosses on mountains.

3. *Placodium saxicolum.* *Rock placodium.*

Crust slightly tiledlike, scaly, wrinkled, unequal, pale greenish; circumference rayed, lobed; *apothecia* very crowded, centre flat, yellowish, pale red, rather ochry; *thalloid border* becomes bent, crenate.

Lichen ochroleucus, *Wulf. in Jacq. Coll.* 2.
Lichen saxicola, *Pollich Palat.* 225; *Engl. Bot.* 1695.
Lichen muralis, *Dicks. Crypt.* 1, 11.
Psora muralis, *Hoffm. Germ.* 157.
Parmelia saxicola, *Achar. Meth.* 157.
Lecanora saxicola, *Achar. Lich.* 451.

On stones, walls, and timber-buildings.

4. *Placodium murorum.* *Wall placodium.*

Crust plaited, wrinkled, cracked, yelk of egg yellow; surface powdery, hoary; circumference rayed, plaited; jags linear, convex, cut; *apothecia* crowded, centre growing convex, darker; *thalloid border* not cut, bent.

Lichen candelarius, *Lin. S. P.* 1608.
Lichen murorum, *Hoffm. Lich.* 63.
Lobaria saxicola, *Hoffm. Germ.* 158.
Parmelia murorum, *Achar. Meth.* 198.
Lecanora murorum, *Achar. Lich.* 455.

On stones and walls.

5. *Placodium fulgens.* *Shining-yellow placodium.*

Crust almost contiguous, pale-yellowish; circumference plaited, slightly lobed; lobes bent, flat; *apothecia* scattered, centre very red, plano-convex; *thalloid border* at length bent and crenate, very small.

Lichen fulgens, *Swartz in Nov. Act. Ups.* 4, 246.
Lichen citrinus, *Ehrhart.*
Psora citrina, *Hoffm. Germ.* 165.
Parmelia fulgens, *Achar. Meth.* 192.
Lecanora fulgens, *Achar. Lich.* 457.

On the ground on limestone rocks.

6. *Placodium circinatum.* *Compass placodium.*

Crust cracked in beds, greyish white; circumference rayed, plaited, linear, jagged; *apothecia* very crowded, at length angular; centre with innate beds, flat, brown-black; *thalloid edge* nearly even.

Lichen radiosus, *Hoffm. Lich.* 4, 6.
Lichen circinatus, *Persoon in Usler Ann.* 7, 25; *Engl. Bot.* 1941.
Lichen subimbricatus, *Relhan Cant.* 459.
Lobaria radiosa, *Hoffm. Germ.* 157.
Parmelia circinata, *Achar. Meth.* 189.
Lecanora circinata, *Achar. Lich.* 425.

On limestone.

7. *Placodium gelidum.* *Cold placodium.*

Crust cracked, flesh-grey; circumference rayed, jagged; *central wart* brown, radiately wrinkled; *apothecia* depressed in the centre, red; *thalloid border* thick, raised, not cut.

Lichen gelidus, *Lin. Mant.* 133; *Engl. Bot.* 699.
Lichen Heclæ, *Fl. Dan.* 470.
Parmelia gelida, *Achar. Meth.* 188.
Lecanora gelida, *Achar. Lich.* 428.

On rocks.

Thalloid wart in the centre very singular, it probably should form a separate genus.

8. *Placodium dispersum.* *Dispersed placodium.*

Crust dispersed, granulated, unequal, nearly grey, sometimes very small; *apothecia* scattered; centre flattish, pale brown-grey, and black; *thalloid border* raised, thin, crenulated.

Lichen crenulatus, *Dicks. Crypt.* 5, 9; *Engl. Bot.* 930.
Lichen dispersus, *Persoon in Ulst. Ann.* 7, 27.
Parmelia dispersa, *Achar. Meth.* 169.
Lecanora galactina dispersa, *Achar. Lich.* 424.

On walls, stones, and limestone rocks.

XXII. 112. RINODINA. Acharius. *Rinodine.*

Thallus crustaceous, flat, expanded, adnate, uniform; *apothecia* saucershape, thick, adnate, sessile; *proligerous flake* forming the centre, plano-convex, coloured, covering the apothecium above; inside cellular, streaked; *thalloid border* rather thick, colour of the thallus, nearly free.

a. *Apothecia naked, black.*

1. *Rinodina atra.* *Black rinodine.*

Crust indeterminately formed, cracked, granular, warty, greyish white; *apothecia* flat in the centre, afterwards slightly swollen, black; *thalloid border* raised, free, at length bent and crenulated.

Lichenoides crustaceum et leprosum, scutellis nigricantibus majoribus et minoribus, *Dillen Musc.* 133.
Lichen tephromelas, *Ehrh. Crypt.*
Lichen ater, *Hudson Fl. Angl.* 530; *Engl. Bot.* 949.
Parmelia atra, *Achar. Meth.* 154.
Lecanora atra, *Achar. Lich.* 344.

On stones, rocks, and the bark of trees.

Thallus sometimes whiter, sometimes greyer; *apothecia* either very crowded, flat and then convex with the border not cut; or varying in size, with the border crenate and bent.

2. *Rinodina oculata.* *Eyed rinodine.*

Crust bald, nippled, branchbearing, black; *apothecia* sessile, scattered, some slightly podicelled; centre rather concave, black, their proper edge at length bent; *thalloid border* swollen.

Lichen dactylinus, *Wahl. Lapp.* 414.
Lichen oculatus, *Dicks. Crypt. Brit.* 2, 17.
Isidium oculatum, *Achar. Meth.* 140; *Lich.* 576.

Forming a crust on alpine mosses.

3. *Rinodina coarctata.* *Contracted rinodine.*

Crust diffuse, thin, cracked, slightly wrinkled, unequal, greyish; *apothecia* black, centre sunk, then raised, flat; *thalloid border* raised, bent in, irregular, contracted, powdery.

Lichen coarctatus, *Engl. Bot.* 534.
Parmelia coarctata, *Achar. Meth. Lich.* 158.
Parmelia elacista, *Achar. Meth. Lich.* 159.
Lecanora coarctata, *Achar. Lich. Univ.* 352.

On stones and brick walls.

4. *Rinodina periclea.* *Shielded rinodine.*

Crust thin, nearly leprous and dispersed, whitish; *apothecia* plano-convex in the centre, black, transparent, rough; *thalloid border* at the base, very small, powdery, becoming imperceptible.

Verrucaria abietina pilularis, *Hoffm. Germ.* 193.
Parmelia periclea, *Achar. Meth. Lich.* 156.
Lecanora periclea, *Achar. Lich. Univ.* 355.
Lichen pericleus, *Achar. Prod.* 78; *Engl. Bot.* 1850.
Lichen abietinus, *Ehrh. Crypt.* 166.

On the bark of fir-trees, and on old posts or palings.

5. *Rinodina exigua.* *Diminutive rinodine.*

Crust unequal, dark, blackish grey; *apothecia* very small, aggregate, flat, afterwards slightly convex; *thalloid border* white, crenulate, growing brownish and disappearing.

Lichen exiguus, *Achar. Prodr.* 69; *Engl. Bot.* 1849.
Parmelia exigua, *Achar. Meth.* 154.
Lecanora periclea exigua, *Achar. Lich.* 356.

On old timber-work, and on the bark of oak-trees.

6. *Rinodina privigna.* *Starved rinodine.*

Crust dispersed, pitch-black; *apothecia* flattish, centre grows nippled; *thalloid border* raised, very slightly cut.

Lichen simplex, *Davies.*
Lecidea privigna, *Achar. Meth.* 149.
Lecanora milvina privigna, *Achar. Lich.* 359.

On sand-stone rocks.

b. *Apothecia naked, black, when moistened brown.*

7. *Lecanora sophodes.* *Grave rinodine.*

Crust rather determinately formed, warty granular, grey, greenish brown; *apothecia* aggregated; centre flat, at length convex, black, when moistened brown; *thalloid border* swollen, slightly bent, not in the least cut.

Lichen sophodes, *Achar. Prod.* 67; *Engl. Bot.* 1791.
Parmelia sophodes, *Achar. Meth.* 155.
Lecanora sophodes, *Achar. Lich.* 356.

On the bark of trees, rotten wood and mosses.

c. *Apothecia naked, centre black, brown or brownish.*

8. *Rinodina badia.* *Bay rinodine.*

Crust spreading, unequal and rather scaly, warty, olive brown, bald; *apothecia* pressed close; centre flat at length slightly convex, brownish black, rather shining; *thalloid border* persisting.

Lichen fuscatus, *Schrad. Germ.* 83.
Lichen piceus, *Dicks. Crypt. Brit.* 4, 12.
Lichen badius, *Achar. Prodr.* 67.
Verrucaria badia, *Hoffm. Germ.* 182.
Lecidea picina, *Achar. Meth.* 51.
Parmelia squamulosa amaura, *Achar. Meth.* 182.
Parmelia fuscata, *Achar. Meth.* 189.
Lecanora badia fuscata, *Achar. Lich.* 407.
Lecanora badia amaura, *Achar. Lich.* 408.

On stones and rocks almost everywhere.

9. *Rinodina ventosa.* *Blown-up rinodine.*

Crust cracked in beds, rather pale; beds convex, plaited, warted; *apothecia* pressed close, at length irregular; centre flat, swelling, brownish red; *thalloid border* thin, not cut, lower than the centre.

Lichenoides tartareum lividum, scutellis rufis; margine exili, *Dillen Musc.* 133.
Lichen ventosus, *Lin. S. P.* 1607.
Lichen gelidus, *Hudson Fl. Angl.* 528.
Lichen flavescens, *Jacq. Misc.* 2, 79.
Lichen cruentus, *Weber Goett.* 1.
Lichen scopulorum, *Fl. Dan.* 712.
Verrucaria ventosa, *Hoffm. Lich.* 27.
Parmelia ventosa, *Achar. Meth.* 166.
Lecanora ventosa, *Achar. Lich.* 399.

On stones and rocks.

10. *Rinodina frustulosa.* *Broken rinodine.*

Crust tartarlike, much cracked, variegated black and white; *apothecia* flat, pale brown; *thalloid border* white, growing convex, blackish brown.

Lichen frustulosus, *Dickson Crypt. Br.* 3, 13; *Engl. Bot.* 2273.
Parmelia frustulosa, *Achar. Meth.* 172.
Lecanora frustulosa, *Achar. Lich.* 405.

On rocks.

11. *Rinodina effusa.* *Spread rinodine.*

Crust spread, thin, rather powdery, grey, brassy; *apothecia* small, pressed close, centre flat afterwards convex, pale reddish brown; *thalloid border* thin, soon disappearing.

Lichen salignus, *Schrad. Germ.* 84.
Lichen effusus, *Persoon.*
Verrucaria effusa, *Hoffm. Germ.* 174.
Parmelia effusa, *Achar. Meth.* 174.
Lecanora effusa, *Achar. Lich.* 386.

On the hollow trunks of willows.

12. *Rinodina varia.* *Variable rinodine.*

Crust unequal, granulated, rather warty, pale greenish; *apothecia* crowded; centre flat, pale, brownish and variegated; *thalloid border* raised, rather bent in, afterwards bent, slightly crenulate.

Lichen varius, *Ehrh. Crypt.* 7, 68; *Engl. Bot.* 1666.
Verrucaria varia, *Hoffm. Germ.* 196.
Parmelia varia, *Achar. Meth.* 178.
Lecanora varia, *Achar. Lich.* 377.

On planks, palings, and wooden buildings.

13. *Rinodina apochroea.* *Different-coloured rinodine.*

Crust scarcely any; *apothecia* thickly scattered in a very thin coat, smooth, sea-green white, naked, frequently with soredia, centre flattish, pale, yellow, livid brown or black; *thalloid border* thin, rather crenulate, pale yellowish, even with the centre.

Parmelia sulphureo-nigricans, *Florke in Berl. Mag.* 1809, 197.
Spiloma vitiligo, *Achar. Lich.* 138.
Spiloma sorediatum, *Achar. Lich.* 139.
Parmelia cerina ravida, *Achar. Meth.* 175.
Lecanora varia, *Achar. Lich.* 378.

On timber-work.

14. *Rinodina rubricosa.* *Ruddle rinodine.*

Crust cracked in beds, slightly granular, whitish; *apothecia* with the centre flat, rust-colour, afterwards brown; *thalloid border* white or yellowish, at last bent.

Lichen cæsio-rufus, *Schrad. Germ.* 80; *Engl. Bot.* 1040.
Patellaria arenaria? *Hoffm. Lich.* 58, 1.
Lichen arenarius, *Dickson Crypt. Brit.* 4, 23.
Parmelia craspedia, *Achar. Meth.* 172.
Lecanora craspedia, *Achar. Lich.* 391.
Lecanora rubricosa, *Achar. Lich.* 386.

On stones and rocks, especially sandstone.

d. *Apothecia always hoary; centre greyish black, sea-green, or variously coloured.*

15. *Rinodina tuberculosa.* *Tubercular rinodine.*

Crust greyish green, granulated with nearly globular warts, circumference fibrous, radiated; *apothecia* intermixed; centre rather concave, at last flat, sea-green black, hoary; *thalloid border* raised, thick.

Lichen tuberculosus, *Engl. Bot.* 1733.
Lecanora (Rinodina) tuberculosa, *Achar. Syn.* 164.

On flint stones.

16. *Rinodina glaucoma.* *Wall-eyed rinodine.*

Crust tartarlike, cracked in beds, even, greyish white; *apothecia* sunk in the crust; centre flat, afterwards convex nearly globular, sea-green, hoary, at length becomes naked and black; *thalloid border* not in the least cut, and when old disappears.

Lichen rupicola, *Lin. Mant.* 132.
Lichen compositus, *Wither. Bot. Arr.* 4, 14.
Lichen glaucoma, *Engl. Bot.* 2156.
Lichen varians, *Davies in Lin. Trans.* 2, 18.
Lichen albido cæsius, *Schrad. Germ.* 87.
Lichen sordidus, *Persoon in Uster Ann.* 7, 26.
Urceolaria tessulata composita, *Achar. Meth.* 143.
Parmelia glaucoma, *Achar. Meth.* 161, except var. *β.*
Lecanora glaucoma, *Achar. Lich.* 362, except var. *β.*

On whinstone and other rocks.

17. *Rinodina lutescens.* *Yellowish rinodine.*

Crust spreading, thin, membranaceous, warty, pale, sprinkled over with a pale yellowish green powder; *apothecia* scattered; centre plano-convex, slightly bordered, hoary, upon a flesh-colour, reddish yellow or grey ground; *thalloid border* bent.

Verrucaria lutescens, *Hoffm. Germ.* 195.
Parmelia lutescens, *Florke, Berl. Mag.* 1807.
Lecanora elatina, *Achar. Lich.* 387.
Lecanora lutescens, *Achar. Lich.* 367.

On the bark of fir and other trees.

18. *Rinodina albella.* *Whiting rinodine.*

Crust thin, cartilaginous, smooth, milky white; *apothecia* scattered; centre slightly concave, pale flesh-colour, afterwards convex, grey, hoary; *thalloid border* swollen, not in the least cut.

Lichen albellus, *Persoon in Ust. Ann.* 11, 18; *Engl. Bot.* 2154.
Verrucaria umbilicata, *Hoffm. Germ.* 171.
Parmelia albella, *Achar. Meth.* 163.
Lecanora albella, *Achar. Lich.* 369.

On the smooth bark of young trees.

e. *Apothecia with the centre slightly flesh-colour, pale, pearly, yellowish, wax-colour or inclining to orange.*

19. *Rinodina parella.* *Archel rinodine.*

Crust cracked, plaited, warty, very white; *apothecia* thick, crowded, mis-shapen by squeezing; centre slightly concave; *thalloid border* turgid, not cut, nearly the same colour as the centre.

Lichenoides crustaceum et leprosum, scutellare, cinereum, *Raii Syn.* 70, 42.
Lichen Parellus, *Lin. Mant.* 132; *Engl. Bot.* 727.
Verrucaria parella, *Hoffm. Germ.* 169.
Parmelia parella, *Achar. Meth.* 164.
Lecanora parella, *Achar. Lich.* 370.
Orchal. Perelle. French Rock-moss.

Thallus used in dyeing, giving every tinge of purple and crimson.

20. *Lichen Upsaliensis.* *Upsal rinodine.*

Crust extremely thin, membranaceous, even, greenish white; *centre* of the regular apothecia growing dilated, flat, pale yellowish.

Lichen Upsaliensis, *Lin. S. P.* 1609; *Engl. Bot.* 1634.
Lichen parellus Upsaliensis, *Wahlenb. Lapp.* 403.
Psora Upsaliensis, *Hoffm. Germ.* 168.
Lecanora parella Upsaliensis, *Achar. Meth.* 165: *Lich.* 371.

On the ground, and encrusting mosses.

21. *Rinodina Turneri.* *Turner's rinodine.*

Crust leprous, granular, powdery, white, greenish grey; *apothecia* scattered, thick, powdery; centre slightly concave, pale flesh-coloured; *thalloid border* swollen, not cut, bent inwards.

Lichen Turneri, *Engl. Bot.* 857.
Parmelia Turneri, *Achar. Meth.* 165.
Lecanora Turneri, *Achar. Lich.* 373.

On the bark of old oak and other trees.

22. *Rinodina carneo-lutea.* *Yellow-flesh-colour rinodine.*

Crust thin, smooth, grey-white; *apothecia* at first concealed in the crust; centre flat, yellowish flesh-colour; *thalloid border* thin, slightly bent in, crenated.

Parmelia carneo-lutea, *Turner in Lin. Tr.* 9, 145.
Lichen carneo-luteus, *Engl. Bot.* 2010.
Lecanora carneo-lutea, *Achar. Lich.* 374.

On the bark of trees.

23. *Rinodina conizea.* *Cone-tree rinodine.*

Crust leprous, powdery, pale grey; *apothecia* sessile, centre flat, afterwards convex, pale brownish; *thalloid border* swelling, raised, powdery, at length nearly obliterated.

Lichen expallens conizea, *Achar. Lich.* 374.

On the bark of fir-trees, and on oak timber.

24. *Rinodina tartarea.* *Tartar rinodine.*

Crust tartarlike, granular, glomerated, greyish white, *apothecia* scattered; centre flat but very slightly convex, wrinkled, pale pearly; *thalloid border* bent in, afterwards wrinkled.

Lichenoides crustaceum et leprosum, acetabilis majoribus luteis, limbis argenteis, *Dillen in Raii Syn.* 71, 46.
Lichen tartareus, *Lin. S. P.* 1608; *Engl. Bot.* 156.
Lichen saxorum, *Fl. Dan.* 710.
Verrucaria tartarea, *Hoffm. Germ.* 173.
Parmelia tartarea, *Achar. Meth.* 165.
Lecanora tartarea, *Achar. Lich.* 371.
Cuthbert. Cudbear.

On rocks.

Thallus collected for the dyers, the rocks being scraped once in five years; when prepared by grinding and the addition of ammonia and alum used to dye woollen yarn, or give a bloom to other colours.

25. *Rinodina grandinosa.* *Hailstone rinodine.*

Crust cartilaginous, warty granular; warts rather globular, bald; *apothecia* with the centre concave, smooth, yellowish flesh-colour.

Lecanora tartarea grandinosa, *Achar. Lich.* 372.

On the stems of broom.

26. *Rinodina frigida.* *Cold rinodine.*

Crust tartarlike, granular, glomerate, greenish white, forming nipples and thornlike branches; *apothecia* scattered; centre slightly convex, wrinkled, pale pearl-colour; *thalloid border* bent in, at length wrinkled.

Lichen frigidus, *Swartz Meth. Musc.* 36; *Engl. Bot.* 1879.
Lichen tartareus frigidus, *Wahlen. Lapp.* 403.
Lecanora tartarea frigida, *Achar. Lich.* 372.

Incrusting mosses, on the highest mountains, near the line of perpetual snow.

27. *Rinodina Stonei.* *Stone's rinodine.*

Crust leprous, tartarlike, granulated, powdery, dirty whitish; *apothecia* scattered, centre wax-colour, half-concealed, afterwards dilated, rather convex; *thalloid border* nearly covering the centre of the apothecium, powdery, bent in.

Lichen hæmatomma, *Ehrh. Beytr.* 2, 157; *Engl. Bot.* 486.
Lecidea Stonei, *Achar. Meth.* 65.
Lecanora Stonei, *Achar. Lich.* 373.

On brick walls and the bark of trees.

28. *Rinodina cerina.* *Wax-colour rinodine.*

Crust slightly granular, grey; *apothecia* flat in the centre, then convex, wax-yellow; *thalloid border* raised, bent in, hoary white, at length black.

Lichen cerinus, *Dickson Crypt.* 3, 14; *Engl. Bot.* 627.
Verrucaria cerina, *Hoffm. Germ.* 179.
Parmelia cerina, *Achar. Meth.* 175.
Lecanora cerina, *Achar. Lich.* 390.

On the bark of trees and palings.

29. *Rinodina stillicidiorum.* *Icicle rinodine.*

Crust granulated rathery powdery, greyish white, greenish; *apothecia* with the centre slightly concave, wax-yellow; *thalloid border* bent in, rather crenated, powdery.

Lichen varius, *Dicks. Crypt.*
Lichen stillicidiorum, *Fl. Dan.* 1063.
Lichen cerinus stillicidiorum, *Wahlen. Lapp.* 404.
Verrucaria stillicidiorum, *Hoffm. Germ.* 179.
Lecanora cerina stillicidiorum, *Achar. Meth.* 176; *Lich.* 390.

On the ground, and overlaying rotten mosses.

30. *Rinodina salicina.* *Willow rinodine.*

Crust granulated, unequal, dirty yellowish; *apothecia* with the centre flat, afterwards convex, slightly orange-colour; *thalloid border* thin, slightly crenulated, at length even, bent.

Lichen salicinus, *Schrad. Germ.* 82; *Engl. Bot.* 1305.
Verrucaria salicina, *Hoffm. Germ.* 197.
Parmelia salicina, *Achar. Meth.* 173.
Lecanora salicina, *Achar. Lich.* 400.

On the bark of willow and other trees.

Thallus when moist smells strongly of saffron.

β. microthelia. *Crust* bald, plaited, warted, nipply yellowish; nipples nearly globular ending in apothecia.

31. *Rinodina erythrella.* *Reddish rinodine.*

Crust cracked in beds, rather wrinkled, yellowish slightly greenish; *apothecia* at length nearly globular, orange-red, shining; *thalloid border* not in the least cut, at last lost under the increased centre of the apothecia.

Lichen flavovirescens, *Wulf. in Jacq. Coll.* 2, 25.
Verrucaria viridi-rufa, *Hoffm. Germ.* 179.
Lichen erythrellus, *Achar. Prod.* 43; *Engl. Bot.* 1993.
Parmelia erythrella, *Achar. Meth.* 174.
Lecanora erythrella, *Achar. Lich.* 401.

On walls.

f. *Apothecia with the centre red, scarlet, or purple and blood-colour.*

32. *Rinodina rubra.* *Red rinodine.*

Crust nearly membranaceous, smooth, becoming unequal, granulated, powdery, white; *apothecia* crowded, centre concave, red; *thalloid border* swollen, bent in, crenulated.

Lichen ulmi, *Swartz in N. Act. Upsal.* 4, 247; *Engl. Bot.* 2218.
Verrucaria rubra, *Hoffm. Germ.* 175.
Parmelia rubra, *Achar. Meth.* 170.
Lecanora rubra, *Achar. Lich.* 389.

On the bark of trees, and running over mosses.

33. *Rinodina hæmatomma.* *Blood-spotted rinodine.*

Crust tartarlike, glebose, in beds, powdery, brimstone-colour; *apothecia* innate, scattered and confluent; centre very red, slightly bordered, rather convex; *thalloid border* powdery, nearly over-run.

Lichen coccineus, *Persoon in Ust. Ann.* 11, 17.
Verrucaria hæmatomma, *Hoffm. Germ.* 198.
Verrucaria frondosa, *Hoffm. Germ.* 199.
Lecidea hæmatomma, *Achar. Meth.* 63.
Lecanora hæmatomma, *Achar. Lich.* 388.

On stones, and the trunks of oaks.

34. *Rinodina porphyria.* *Scarlet rinodine.*

Crust tartarlike, rather solid, granular, powdery, white and pale; *apothecia* sessile; centre flat, deep blood-red; *thalloid border* raised, thick, wrinkled, crenulate, remaining.

Lichen coccineus, *Dickson Crypt.* 1, 8.
Lichen Vahlii, *Fl. Dan.* 1185.
Lichen porphyrius, *Persoon in Uster Ann.* 11, 17.
Lichen hæmatomma, *Wahlenb. Lapp.* 406.
Verrucaria porphyria, *Hoffm. Germ.* 199.
Lecanora hæmatomma porphyria, *Achar. Meth.* 65; *Lich.* 389.

On stones and the bark of oak-trees.

XXIII. 113. URCEOLARIA. Acharius. *Pitcher-moss.*

Thallus crustaceous, flat, expanded, adnate, uniform; *apothecia* bucklershape; *proligerous flake* concave, coloured, immersed in the crust, inside streaked, cellular; *thalloid edge* same colour, sessile, raised.

1. *Urseolaria Acharii.* *Acharius' pitcher-moss.*

Crust slightly regular, smooth, very thin, cracked, pale pearl-colour; *proligerous flake* red; *thalloid border* swollen.

Lichen Acharii, *Wahlenb. Lapp.* 405; *Engl. Bot.* 1087.
Lichen lacustris, *Withe. Bot. Arr.* 4, 21.
Urceolaria Acharii, *Achar. Meth.* 150; *Lich.* 331.

On stones inundated in winter.

Thallus varies in colour, red, yellowish, or rust-colour; *apothecia* flattish in the centre, rising up when old.

2. *Urceolaria cyrtaspis.* *Short-shielded pitcher-moss.*

Crust regular, smooth, very thin, cracked in beds, reddish, at last whitish; *apothecia* becoming elevated; centre slightly convex, reddish brown; *thalloid border* even with the centre.

Lichen punctatus, *Fl. Dan.* 468, 2; *Engl. Bot.* 450.
Lichen Acharii cyrtaspis, *Wahlen. Lapp.* 405.
Urceolaria Acharii cyrtaspis, *Achar. Meth.* 151.
Lecanora cyrtaspis, *Achar. Lich.* 597.

On stones.

Thallus with a black border.

3. *Urceolaria diamarta.* *Rusty pitcher-moss.*

Crust nearly regular, cracked in beds, slightly wartlike, red ochre-colour; *proligerous flake* rather concave, black; *thalloid border* raised, at last bent.

Lichen Sinopicus, *Engl. Bot.* 1776.
Lichen diamartus, *Wahlen. Lapp.* 414.
Urceolaria diamarta, *Achar. Meth.* 151; *Lich.* 331.

On rocks and stones.

Confounded with endocarpon Sinopicum.

4. *Urceolaria gibbosa.* *Bunched pitcher-moss.*

Crust nipply warted, smooth, whitish, slightly greyish; *proligerous flake* sunk in the tip of the warts, rather concave, black; *thalloid border* contracted, protuberant, crenate.

Urceolaria gibbosa, *Achar. Meth.* 144; *Lich.* 334.

On stones and mountains.

Warts conoid, bald; *border* of the apothecia rather sharp, afterwards thicker, wrinkled.

β. *fimbriata.* *Thallus* black, radiated, fringed, covered with grey warts.

Lichen fibrosus, *Engl. Bot.* 1732.
Urceolaria fimbriata, *Achar. Meth.* 145.
Urceolaria gibbosa fimbriata, *Achar. Lich.* 335.

5. *Urceolaria cinerea.* *Grey pitcher-moss.*

Crust cracked in wartlike beds, grey, divided by black; *proligerous flake* immersed in the warts, slightly concave, black, afterwards elevated; *thalloid border* prominent, rather thick, not divided.

Lichen cinereus, *Lin. Mant.* 132; *Engl. Bot.* 1751, not 820.
Verrucaria ocellata, *Hoffm. Germ.* 183.
Urceolaria ocellata, *Florke in Berl. Mag.* 1810, 317.
Urceolaria cinerea, *Achar. Meth.* 143; *Lich.* 336.
Patellaria ocellata. Fig. 20 pl. 20 this work
On stones and mountains.

Thallus sometimes white, sometimes smoke-grey; *beds* flat or convex; *apothecia* few, or very numerous, when old elevated, sometimes with a very small border.

6. *Urceolaria scruposa.* *Rugged pitcher-moss.*

Crust wrinkled, plaited, granulated, greyish white; *proligerous flake* pitchershape, black; *thalloid border* swollen, bent in, rather wrinkled, drawn over the centre.

Lichenoides crustaceum et leprosum, scutellis nigricantibus majoribus et minoribus, var. β, *Dillen Musc.* 133.
Lichen scruposus, *Schreb. Germ.* 1133; *Engl. Bot.* 266.
Lichen excavatus, *Relhan Cant.* 426.
Patellaria scruposa, *Hoffm. Germ.* 186.
Urceolaria scruposa, *Achar. Meth.* 147; *Lich.* 338.

On the ground, and on stones and rocks.
Proligerous flake has a border of its own.

7. *Urceolaria calcarea.* *Calcareous pitcher-moss.*

Crust determinately figured, very thin, rather cracked, slightly powdery, very white, at last greyish; *proligerous flake* minute, rather concave, black, with a little hoary whiteness; *thalloid border* slightly prominent, discoid, thin, at length separate, not cut.

Lichen calcareus, *Lin. Syst. Nat. ed.* 12, 2, 709.
Verrucaria contorta, *Hoffm. Germ.* 186.
Urceolaria contorta nivea, *Florke in Berl. Mag.* 1810.
Urceolaria cinerea, *Fl. Dan.* 1432.
Urceolaria calcarea, *Achar. Meth.* 142; *Lich.* 340.

Thallus very variable; *proligerous flake* with a border of its own.

8. *Urceolaria Hoffmanni.* *Hoffmann's pitcher-moss.*

Crust thin, cracked in beds, smooth, dirty greyish; *fertile beds* raised in the middle, lead-white; *proligerous flake* slightly concave, black, with a greyish hoar; *thalloid border* wrinkled, powdery, whiter.

Lichen rupicola, *Hoffm. Lich.* 1, 97.
Urceolaria contorta, *Florke in Berl. Mag.* 1810.
Urceolaria Hoffmanni, *Achar. Meth.* 145; *Lich.* 353.

On stones and rocks of different kinds.

9. *Urceolaria tessellata.* *Chequered pitcher-moss.*

Crust divided into very crowded beds, flattened, running together, at last cracked in chequers, rather bald, greyish white, those in the middle fertile; *proligerous flake* rather loose, black, with a greyish hoar; *thalloid border* raised, angular, whitish.

Lichen tesselatus, *Engl. Bot.* 533.
Verrucaria tessellata, *Hoffm. Germ.* 185.
Urceolaria contorta tessellata, *Florke in Berl. Mag.*
Urceolaria tessulata, *Achar. Meth.* 142.
Urceolaria cinerea tessulata, *Achar. Lich.* 337.

On rocks and brick walls.

XXIV. 114. LEPIDOMA. Acharius. *Lepidome.*

Thallus crustaceous, expanded, adnate, figured, leaflike, towlike; *apothecia* saucerlike, sessile, entirely covered with a cartilaginous membrane, including a similar, rather solid parenchyme, centre even, bordered.

1. *Lepidoma candidum.* *White lepidome.*

Crust nearly tiledlike, white, hoary; lobes crenate, complicated, turned back, swollen; *apothecia* pressed close, black, greenish hoary; edge at length waved.

Psora candida, *Hoffm. Germ.* 164.
Lichen candidus, *Weber Germ.* 193; *Engl. Bot.* 1138.
Lecidea candida, *Achar. Meth.* 79; *Lich.* 212.

On rocks and rotten mosses.

2. *Lepidoma vesiculare.* *Bladdery lepidome.*

Crust nearly tiledlike, brown-black, with a slightish grey hoariness; lobes not cut, folded, reverse-ovate, bullate; *apothecia* black, naked; at last hemispherical, not bordered.

Lichen cæruleo-nigricans, *Lightf. Scot.* 805; *Engl. Bot.* 1139.
Lichen versicularis, *Achar. Prod.* 94.
Lichen paradoxus, *Ehrh. Crypt.* 206
Patellaria vesicularis, *Hoffm. Lich.* 32, 3.
Psora vesicularis, *Hoffm. Germ.* 163.
Psora paradoxa, *Hoffm. Germ.* 163.
Lichen graniformis, *Ehrh. Crypt.*
Lecidea paradoxa, *Achar. Meth.* 82; *Lich.* 214.
Lecidea vesicularis, *Achar. Meth.* 78; *Lich.* 212.

On the ground in mountainous places.

3. *Lepidoma luridum.* *Lurid lepidome.*

Crust tiledlike, greenish brown; lobes round, crenate, paler underneath; *apothecia* flat, at last slightly convex, black.

Lichenoides pulmonarius saxatilis viridis, foliis vix conspicuis squamatim sibi incumbentibus, receptaculis florum nigris, *Dill. Musc.* 228.
Lichen luridus, *Achar. Prod.* 95; *Engl. Bot.* 1329.
Lecidea lurida, *Achar. Meth.* 77; *Lich.* 213.

On rocks.

4. *Lepidoma atrorufum.* *Reddish black lepidome.*

Crust nearly of one piece, lobed in beds and tiledlike, dark brownish grey; lobes at last bent, deeply crenate; *apothecia* pressed close, with scarce any border, flattish, at length running into one another, blackish brown.

Lichen luridus, *Vahl. Fl. Dan.*
Lichen atrorufus, *Dickson Crypt.* 4, 22; *Engl. Bot.* 1102.
Lecidea atrorufa, *Achar. Meth.* 74; *Lich.* 200.

On rotten mosses on the ground.

5. *Lepidoma testaceum.* *Pearly lepidome.*

Crust nearly tiledlike, greyish; lobes thick, crenate turned back; *apothecia* marginal, convex, red.

Lichen saxifragus, *Smith Lin. Tr.* 2.
Psora testacea, *Hoffm. Germ.* 162.
Lecidea testacea, *Achar. Meth.* 80.
Lecanora testacea, *Achar. Lich.* 409.

On stones, and limestone-rocks.

6. *Lepidoma scalare.* *Step lepidome.*

Crust nearly tiledlike, pale fawn-colour; lobes slightly distinct, kidneyshape, rather erect, powder beneath and on the edge; *apothecia* flat, bordered, greenish black.

Lichen leucophæus, *Dicks. Crypt.* 2, 20.
Psora ostreata, *Hoffm. Germ.* 163.
Lichen scalaris, *Achar. N. Act. Stockh.* 16.
Lecidea scalaris, *Achar. Meth.* 78: *Lich.* 214.

On the bark of old sapless pines and juniper-trees, and on the slight coating of earth on rocks.

7. *Lepidoma rubiformis.* *Raspberry lepidome.*

Crust nearly tiledlike, lobes rounded, crenate, brownish livid, underneath white; *apothecia* hemispherical, conglomerate, dark brown, not bordered.

Bæomyces rubiformis, *Achar. Meth.* 324.
Lichen rubiformis, *Engl. Bot.* 2112.
Cenomyce rubiformis, *Achar. Lich.* 56.
Lecidea rubiformis, *Wahlemb. Lapp.* 479.

On turfy earth.

8. *Lepidoma decipiens.* *Deceiving lepidome.*

Crust nearly tiledlike; lobes separate, slightly shieldlike, roundish, flesh-colour and brownish, underneath wnitish; *apothecia* marginal, convex, nearly globular, black, hardly bordered.

Psora decipiens, *Hoffm. Germ.* 162.
Lichen decipiens, *Ehrh. Crypt.*; *Engl. Bot.* 870.
Lichen incarnatus, *Thunb. Cap.* 176.
Lichen stellatus, *Relhan Cant.* 430.
Lecidea incarnata, *Achar. Meth.* 58; *Lich.* 199.
Lecidea decipens, *Achar. Meth.* 80.

On the ground upon limestone-rocks.

9. *Lepidoma glebulosum.* *Clodded lepidome.*

Crust tiledlike, greenish white; lobes small, rounded, convex; *apothecia* convex, brown-red, at least blackish; edge thin, not cut.

Lecidea testacea, *Winch Guide*, 2, 42.
Lichen glebulosus, *Engl. Bot.* 1955.
Lecidea pholidiota, *Achar. Syn. Lich.* 53.

On quartz-rocks.

10. *Lepidoma triptophyllum.* *Jagged-leaf lepidome.*

Thallus greyish fawn; lobes near the centre pressed close, flattish, irregularly jagged; afterwards rising up in cylindrical branches, coral-like, very much crowded; *apothecia* convex, brownish red.

Lichen microphyllus, *Schrad. Germ.* 97; *Engl. Bot.* 2128.
Lecidea microphylla corallinoides, *Achar. Meth.* 76.
Lecidea thriptophylla, *Achar. Lich.* 215.

On old bark of trees.

11. *Lepidoma canescens.* *Grey lepidome.*

Crust round, wrinkled, folded, white; circumference lobed, plaited; *apothecia* central, plano-convex, black.

Lichenoides cinereum, mere crustaceum, eleganter expansum, *Dillen in Raii Syn.* 71, 47.
Lichen canescens, *Dicks. Crypt.* 1, 10; *Engl. Bot.* 582.
Lichen incanus, *Relhan Cant.* 424.
Lecidea canescens, *Achar. Meth.* 84; *Lich.* 216.

On walls and trunks of trees.

XXV. 115. LECIDEA. Acharius. *Lecidea.*

Thallus variable, crustaceous, expanded, adnate, uniform, towlike; *apothecia* shieldshape, sessile, entirely covered with a cartilaginous membrane, including an uniform, nearly solid parenchyme; centre even, bordered.

a. *Apothecia always black, naked.*

1. *Lecidea atro-alba.* *Pied lecidea.*

Crust spreading, very thin, cracked, black; beds tubercular, whitish; *apothecia* plano-convexish, black; inside of the same colour.

Lichen atro-albus, *Lin. S. P.* 1607; *Engl Bot.* 2336.
Verrucaria atro-alba, *Hoffm. Germ.* 182.
Lecidea atro-alba, *Achar. Meth.* 45; *Lich.* 162.

On stones.

Thallus sometimes fringed on the edge.

2. *Lecidea fusco-atra.* *Brown-black lecidea.*

Crust very thin, black; *beds* chestnut, flat, bordered, shining; *apothecia* slightly convex, black, bordered; internally whitish.

Lichen fusco-ater, *Lin. S. P.* 1607.
Lichen dendriticus, *Achar. Prod.* 77; *Engl. Bot.* 1734.
Verrucaria fusco-ater, *Hoffm. Germ.* 181.
Psora dendritica, *Hoffm. Germ.* 168.
Lecidea fusco-atra, *Achar. Meth.* 44.
Lecanora fusco-atra, *Achar. Lich.* 359.

On stones and exposed mountains.

Thallus sometimes fringed, black.

3. *Lecidea fumosa.* *Smoky lecidea.*

Crust rather cartilaginous, cracked in beds, smooth, grey, brownish; *apothecia* sunk in the crust, flat, bordered, afterwards convex and conglomerated, not bordered, black; inside blackish grey.

Lichen arthroocarpus, *Achar. Prod.* 77; *Engl. Bot.* 1829.
Lichen gibbosus, *Dicks. Crypt.* 2, 6.
Verrucaria fumosa, *Hoffm. Germ.* 190.
Lecida cecumena, *Achar. Meth.* 42; *Lich.* 157.
Lecidea fumosa, *Achar. Lich.* 157.

On stones, and dry, exposed rocks.

4. *Lecidea petræa.* *Rock lecidea.*

Crust thin, round, very finely cracked, nearly powdery, white; *apothecia* innate in the crust, thick, protuberant, nearly concentric, black; inside same colour; centre sunk in, edge swollen, raised, rather squeezed up.

Lichen concentricus, *Davies Lin. Tr.* 2, 284; *Engl. Bot.* 246.
Lichen petræus, *Wulf. in Jacq. Coll.* 3, 116.
Verrucaria petræa, *Hoffm. Germ.* 184.
Lecidæa petræa, *Achar. Meth.* 37; *Lich.* 155.

On stones and rocks.

5. *Lecidea confluens.* *Confluent lecidea.*

Crust tartarlike, rather spreading, cracked in beds, even, smoke-grey; *apothecia* sessile, growing irregular, convex, nearly globular, confluent, black, not bordered; inside the same colour, with a thin, grey bed under the centre.

Lichen confluens, *Weber Germ.* 130; *Engl. Bot.* 1964.
Verrucaria confluens, *Hoffm. Germ.* 184.
Lecidea confluens, *Achar. Meth.* 40; *Lich.* 174, except δ.

On stones and rocks.

Thallus sometimes 0; sometimes coloured ochre yellow.

6. *Lecidea limitata.* *Bordered lecidea.*

Crust thin, rather membranaceous, white, greyish, bordered with black, grows spreading, slightly granular; *apothecia* flattish, sessile, bordered, black; inside blackish.

Lichenoides leprosum, crusta cinereo-virescente, tuberculis nigerrimis, *Dillen in Raii Syn.* 71, 52.
Lichen sanguinarius, *Lightf. Scot.* 803, not of Linnæus.
Lichen parasemus, *Achar. Prod.* 64; *Engl. Bot.* 1450.
Lichen limitatus, *Scopoli. Carn.*
Lecidea parasema, *Achar. Meth.* 35; *Lich.* 175, except β.

On the bark of trees, and on timber-work.

7. *Lecidea aromatica.* *Spicy lecidea.*

Crust rather cartilaginous, scaly, granular, greyish, glaucous; granules flattish, frequently rather tiledlike, crenate; *apothecia* sessile, plano-concave, bordered, growing bent, aggregated, black; inside solid, similarly coloured.

Lecidea aromatica, *Turner in Linn. Tr.* 5, 2.
Lichen aromaticus, *Engl. Bot.* 1777.

On concreted sandy earth, or old flint walls.

Thallus when rubbed emits a highly powerful and fragrant scent.

8. *Lecidea sanguinaria.* *Bloody lecidea.*

Crust wrinkly warted, whitish grey; *apothecia* growing convex, hemispheric, slightly tubercular, black; inside horny, black, with a lower blood-coloured stratum.

Lichen sanguinarius, *Lin. S. P.* 1607; *Engl. Bot.* 155.
Verrucaria sanguinaria, *Hoffm. Germ.* 194.
Lecidea sanguinaria, *Achar. Meth.* 59; *Lich.* 170.

On timber, dry branches, and rocks.

9. *Lecidea geochroa.* *Earth-colour lecidea.*

Crust spread, granulated, slightly coherent, whitish, grey or brownish grey; *apothecia* hemispherical, nearly globular, often crowded, conglomerated, slightly shining.

Lichen muscorum, *Lin. Meth. Musc.* 36; *Engl. Bot.* 626.
Lecidea muscorum geochroa, *Achar. Lich.* 179.
Lecidea sabuletorum syncomista, *Florke in Berl. Mag.* 1808, 309.

On verdant and healthy tufts of mosses.

10. *Lecidea miscella.* *Mixed lecidea.*

Crust tartarlike, broken, cracked; beds wartlike, bald, wrinkled, cracked, greyish; *apothecia* deeply sunk, convex, aggregated, conglomerated, very slightly bordered, black; inside similar.

Lichen miscellus, *Achar. Prod.* 62; *Engl. Bot.* 1831.
Lecidea miscella, *Achar. Meth.* 62; *Lich.* 167.
Lichen escharoides? *Ehrh. Crypt.* 313; *Engl. Bot.* 1247.

On rocks and turfy ground.

11. *Lecidea atro-virens.* *Greenish-black lecidea.*

Crust spread, thin, black; beds flattish, nearly contiguous, deep yellow; *apothecia* plano-concave, black; inside the same colour.

Lichen atrovirens, *Lin. S. P.* 1607.
Verrucaria atrovirens, *Hoffm. Germ.* 200.
Lecidea atrovirens, *Achar. Meth.* 45; *Lich.* 163.

On rocks and stones.

β. *geographica.* Beds yellowish, flat, angular, half covering a blackish underlayer, intersected with black lines, and with a black border.

Lichenoides nigroflavum, tabulæ geographicæ instar pictum, *Dill. Musc.* 126.
Lichen geographicus, *Lin. S. P.* 1607; *Engl. Bot.* 245.
Verrucaria geographica, *Hoffm. Germ.* 199.
Lecidea atrovirens geographicus, *Achar. Meth.* 46; *Lich.* 163.

12. *Lecidea silacea.* *Ochre lecidea.*

Crust tartarlike, winding, warted, very red; *apothecia* sessile, flat, growing convex, difform, confluent, black; inside horny, black.

Lichen silaceus, *Achar. Prod.* 66; *Engl. Bot.* 1118.
Verrucaria silacea, *Hoffm. Germ.* 187.
Lichen Oederi, *Weber Germ.* 182.
Lecidea silacea, *Achar. Meth.* 48; *Lich.* 164.

On rocks.

13. *Lecidea Oederi.* *Oeder's lecidea.*

Crust bedded, granular, slightly powdery, ochry rust-colour; *apothecia* minute, raised; edge swollen, centre depressed, powdery, black; inside similarly coloured.

Lichen leprosus ruber, tuberculis nigris, *Oeder in Fl. Dan.* 470.
Lichen Oederi, *Achar. Prod.* 66; *Engl. Bot.* 1117.
Lichen cæsius? *Dicks. Crypt.* 2, 19.
Lichen Dicksoni, *Wither. Bot. Arr.* 4, 20.
Lecidea Oederi, *Achar. Meth.* 49.
Lecidea Dicksonii, *Achar. Lich.* 165.

On stones.

14. *Lecidea flavicunda.* *Yellow-stained lecidea.*

Crust very thin, cracked, pale-yellowish ochry, beds flat; *apothecia* half sunk in the thallus, flat, scattered, black, slightly hoary, inside black, with a transparent horny stratum under the centre.

Lichen cæsius? *Dicks. Crypt.* 2, 19.
Lecidea flavicunda, *Achar. Lich.* 166.

On rocks.

15. *Lecidea alba.* *White lecidea.*

Crust indeterminate, membranaceous, rather cracked, whitish, sprinkled over with a grey or greenish white conglomerated powder; *apothecia* minute, pressed close, flat, black.

Byssus candidissima calcis instar muscos vestiens, *Dillen Musc.* 2.
Byssus lactea, *Lin. S. P.* 1639.
Lichen lacteus, *Schreber Spic.*
Lichen albus, *Achar. Prod.* 7.
Lepraria alba, *Achar. Meth.* 3; *Engl. Bot.* 1349.
Lecidea alba, *Achar. Lich.* 185.

On the trunks of trees.

16. *Lecidea citrinella.* *Citron-yellow lecidea.*

Crust leprous, granularly powdery, greenish yellow; *apothecia* sessile, bordered becoming convex, black; inside similarly coloured.

Lichen citrinellus, *Achar. Prod.* 64.
Lichen flavo-virescens, *Dicks. Crypt.* 3, 13.
Lecidea citrinella, *Achar. Meth.* 47.

On rotten mosses, and the cracks in walls.

17. *Lecidea scabrosa.* *Rough lecidea.*

Crust in warty clots, powdery, yellowish grey; *apothecia* convex, rough.

Lichen flavo-virescens, *Dickson Crypt.* 3, 13.
Lecidea scabrosa, *Achar. Meth.* 48.
Lecidea citrinella β, *Achar. Lich.* 180.

On naked gravelly soils.

18. *Lecidea uliginosa.* *Bog lecidea.*

Crust granulated, rather gelatinous, brownish green; *apothecia* pressed close, bordered, at last hemispherical, crowded, black; inside similarly coloured.

Lichen uliginosus, *Schrader Spicil.* 88; *Engl. Bot.* 1466.
Lichen humosus, *Ehrh. Crypt.* 135.
Verrucaria uliginosa, *Hoffm. Germ.* 190.
Verrucaria humosimilis, *Hoffm. Germ.* 190.
Lecidea uliginosa, *Achar. Meth.* 43; *Lich.* 180.

On the ground in turfy, boggy places.

b. *Apothecia black, naked, when moistened reddish or brownish.*

19. *Lecidea immersa.* *Sunk lecidea.*

Crust spreading, thin, scarcely lobed, whitish; *apothecia* plano-concave, sunk even into the stone, bordered, black; centre rather hoary, when moistened very dark blood-red, at last slightly convex, inside whitish.

Lichen immersus, *Schrad. Spicil.* 1; *Engl. Bot.* 193.
Lichen calcivorus, *Ehrh. Crypt.* 244.
Verrucaria atrosanguinea, *Hoffm. Germ.* 192.
Verrucaria immersa? *Hoffm. Lich.* 12.
Lecidea immersa, *Achar. Meth.* 34; *Lich.* 153.

On limestone.

Thallus almost as hard as the stone itself, although perfectly distinct; *apothecia* fall out in time, leaving their cavities in the thallus, which is very permanent.

20. *Lecidea rivulosa.* *Rivulet lecidea.*

Crust cracked in beds, brownish grey divided by black lines; *apothecia* sessile, flat, growing convex, bordered, irregular, black; inside whitish; when moistened brown.

Lecidea rivulosa, *Achar. Meth.* 38.
Lichen rivulosus, *Engl. Bot.* 1737.
Lecanora falsaria rivulosa, *Achar. Lich.* 350.

On quartz rocks.

Thallus when moistened umber-brown; *apothecia* when moistened brown in the centre, border keeps its own colour; small apothecia are scattered amongst the others.

c. *Apothecia black, greenish, grey, hoary.*

21. *Lecidea albo-cærulescens.* *Bluish-white lecidea.*

Crust tartarlike, contiguous, even, when old cracked, whitish; *apothecia* sessile and elevated, flat, black, with a bluish bloom; border free, bent, naked, black.

Lichen pruinosus, *Achar. Prod.* 77; *Engl. Bot.* 2244.
Lichen pruinatus, *Dickson Crypt.* 3, 15.
Verrucaria albo cærulescens, *Hoffm. Germ.* 189.
Lecidea pruinosa, *Achar. Meth.* 55.
Lecidea albo-cærulescens, *Achar. Lich.* 188.

On rocks and stones.

Thallus varies according to the age of the plant, cracked, smooth, powdery, or even 0; and in colour white, grey or rust-colour.

22. *Lecidea abietina.* *Fir lecidea.*

Crust spreading, very thin, smooth, greenish grey; *apothecia* nearly sessile, flat, black, grey hoary; edge raised, swollen.

Lichen abietinus, *Achar. Prod.* 57; *Engl. Bot.* 1682.
Lecidea abietina, *Achar. Lich.* 188.

On the bark of fir-trees, and the dead wood.

23. *Lecidea speirea.* *Veiled lecidea.*

Crust tartarlike, not broken, very white; *apothecia* sessile, thick, black with a white hoariness, bordered, afterwards convex, naked, frequently surrounded with a thalloid base inside black with a greyish bed under the centre.

Verrucaria calcarea? *Hoffm. Germ.* 135.
Lichen rimosus, *Dickson Crypt.* 1, 12; *Engl. Bot.* 1736.
Lichen speireus? *Engl. Bot.* 1542.
Lecidea amylacea speirea, *Wahlenb. Lapp.* 476.
Lecidea speirea, *Achar. Meth.* 52; *Lich.* 184, excl. var. β.

On stones and rocks.

24. *Lecidea margaritacea.* *Pearly lecidea.*

Crust tartarlike, not broken, whitish green marked with black; *apothecia* minute, sunk then rising up, sessile, thick, with a white hoariness, inside black; border swollen.

Lecidea margaritacea, *Achar. Lich.* 135.

On rocks.

25. *Lecidea epipolia.* *Wall lecidea.*

Crust tartarlike, spread regularly, cracked in beds, white; beds swollen, rough; *apothecia* sessile, hemispherical, greyish hoary; inside black, edge of the base thin, persistent.

Lichen niveo-ater, *Dickson Crypt.* 4.
Lichen epipolius, *Engl. Bot.* 1137.
Lecidea epipolia, *Achar. Meth.* 65; *Lich.* 186.

On walls and stones.

26. *Lecidea corticola.* *Bark lecidea.*

Crust rather tartarlike, granularly bedded, rough, very white; *apothecia* small, slightly sunk, grey hoary, growing globular, not bordered, naked, black; inside greyish.

Lichen corticola, *Achar. Prod.* 57; *Engl. Bot.* 1892.
Lichen albo-ater, *Ehrh. Crypt.* 176.
Lichen amylaceus, *Ehrh. Crypt.* 303.
Verrucaria albo-atra, *Hoffm Germ.* 193.
Lecidea corticola, *Achar. Meth.* 53; *Lich.* 186.

On the bark and trunks of trees.

d. *Apothecia brown-black, brownish, or inclining to brown.*

27. *Lecidea Lightfootii.* *Lightfoot's lecidea.*

Crust rather spreading, granulated, greenish grey; *apothecia* pressed close, flat, brown black, inside dirty white; edges thin, winding, paler than the center.

Lichen Lightfootii, *Engl Bot.* 1451.
Lecidea Lightfootii, *Achar. Lich.* 177.

On the bark of birch trees.

28. *Lecidea fuscata.* *Embrowned lecidea.*

Crust leprous, rather powdery, blackish brown; *apothecia* bordered, dark red, when old blackish.

Lichen fuscatus, *Lamarck Encycl.*
Lecidea obscura, *Achar. Meth.* 75.
Lecidea fuscata, *Achar. Lich.* 211.

On stones.

29. *Lecidea quernea.* *Oak lecidea.*

Crust leprous, granular powdery, pale yellowish brown; *apothecia* rather sunk, afterwards convex, not bordered, brown and black.

Lichen querneus, *Dickson Crypt.* 1, 9; *Engl. Bot.* 485.
Lecidea quernea, *Achar. Meth.* 62; *Lich.* 202.

On the clefts of the bark of old oaks, and on other lichens.

30. *Lecidea viridescens.* *Greenish lecidea.*

Crust thin, granulated floury, coppery green; *apothecia* convex, wrinkled, irregular, confluent, brown-black.

Lichen viridescens, *Schrad. Germ.* 1, 88; *Engl. Bot.* 2217.
Lecidea viridescens, *Achar. Meth.* 62; *Lich.* 200.
Lecidea hypnophyla, *Winch* 2, 37.

On ruins, and decayed mosses.

31. *Lecidea incana.* *Silver-grey lecidea.*

Crust spreading, leprous floury, soft, uneven light greenish grey; *apothecia* scattered, sessile, brownish; border not cut, paler.

Byssus pulverulenta incana, farinæ instar strata, *Dillen in Raii Syn.* 56, 2.
Byssus incana, *Lin. S. P.* 1639.
Lichen incanus, *Achar. Prod.* 7; *Engl. Bot.* 1683.
Pulveraria incana, *Florke in Berl. Mag.* 1807, 7.
Lepraria incana, *Achar. Meth.* 4; *Lich.* 665.

On the bark of trees, on mosses and the ground.

32. *Lecidea vernalis.* *Springtide lecidea.*

Crust very thin, greenish white; *apothecia* slightly bordered, afterwards nearly globular, crowded, conglomerated, rusty flesh-colour.

Lichen vernalis, *Lin. Syst. Nat. ed.* 12, 3, 234; *Engl. Bot.* 845.
Lecidea vernalis, *Achar. Meth.* 68; *Lich.* 198, excl. var. *β.*

On mosses, which it encrusts.

33. *Lecidea sulphurea.* *Brimstone lecidea.*

Crust tartarlike, cracked, broken, uneven, smooth, pale brimstone-colour; *apothecia* adnate, flat, scarcely bordered, brown and hoary, paler in the circumference, grow irregular and convex.

Lichen sulphureus, *Achar. Prod.* 58; *Engl. Bot.* 1186.
Verrucaria sulphurea, *Hoffm. Germ.* 196.
Lecidea sulphurea, *Wahlenb. Lapp.* 477.
Parmelia sulphurea, *Achar. Meth.* 159.
Lecanora sulphurea, *Achar. Lich.* 399.

On rocks and stones.

34. *Lecidea orosthea.* *Mountain lecidea.*

Crust cracked in beds, uneven, rather powdery, brimstone yellow; *apothecia* small, sessile, slightly convex, not bordered, nearly the same colour, grow hemispherical, pale brownish, paler towards the bottom.

Lichen orostheus, *Achar. Prod.* 38; *Engl. Bot.* 1549.
Lecidea orosthea, *Achar. Meth.* 72.
Lecanora orosthea, *Achar. Lich.* 400.

On rocks.

35. *Lecidea decolorans.* *Bleached lecidea.*

Crust granular, greyish white, granules falling into powder; *apothecia* flattish, vermillion-red, flesh-grey, livid and brown, border raised, paler, grows bent.

Lichen muscorum, *Weber Spic.* 183.
Variolaria tenella, *Achar. Lich.* 326, the crust only.
Verrucaria decolorans, *Hoffm. Germ.* 177.
Lecanora minutula, *Achar. Lich.* 385.
Lecanora granulosa, *Achar. Lich.* 384.
Lecidea jungermanniæ, *Achar. Meth.* 7.
Lecidea granulosa, *Achar. Lich.* 65.
Lecidea decolorans, *Florke in Berl. Mag.* 1809, 193.

On rotten moss and wood, and on the ground.

36. *Lecidea granulosa.* *Granular lecidea.*

Crust solid, granular, rather nipply; *apothecia* grow hemispherical, wrinkled, blackish brown and black, confluent.

Lichen quadricolor, *Dickson Crypt.* 3, 15; *Engl. Bot.* 1185.
Lichen escharoides, *Ehrh. Crypt.* 313; *Engl. Bot.* 1247.
Lichen granulosus, *Ehrh. Crypt.* 145; *Dicks. Cr.?*
Verrucaria escharoides, *Hoffm. Germ.* 194.
Verrucaria granulosa, *Hoffm. Lich.* 2, 21.
Lecidea granulosa, *Achar. Meth.* 67.
Lecanora granulosa aporetica, *Achar. Lich.* 384.
Lecidea desertorum, *Achar. Lich.* 168.
Lecidea escharoides, *Achar. Lich.* 167.

On the ground, in heathy sandy places.

37. *Lecidea anomala.* *Anomalous lecidea.*

Crust rather cartilaginous, cracked, smoothish, grows uneven, wartlike, greyish white; *apothecia* pale flesh-colour, brown and black, flattish afterwards convex; border paler and at length disappears.

Lichen tricolor, *Withering Bot. Arr.* 4, 20.
Lichen ferruginosus, *Turner in Lin. Tr.* 7.
Lecidea hamadryus, *Achar. Lich.* 672.
Lecanora anomala ferruginosa, *Achar. Lich.* 381.
Lecanora anomala tenebricosa, *Achar. Lich.* 382.

On the bark and trunk of trees.

Thallus very variable, and still more the apothecia.

38. *Lecidea cyrtella.* *Convex lecidea.*

Crust thin, nearly membranaceous, smooth, whitish; *apothecia* crowded, small, convex and nearly globular, pale brown, afterwards blackish brown; edge when young thin, whitish, similarly coloured or disappearing.

Lecidea cyrtella, *Achar. Meth.* 67.
Lichen cyrtellus, *Engl. Bot.* 2155.
Lecanora anomala cyrtella, *Achar. Lich.* 382.

On the bark of trees.

39. *Lecidea rupestris.* *Rock lecidea.*

Crust thin, tartarlike, not broken, greyish white; *apothecia* sunk, flat, bordered, when old convex, border sometimes disappearing, bald, brownish red, inside the same colour.

Lichen rupestris, *Scopoli Carn.* 1372.
Lichen calvus, *Dickson Crypt.* 2, 18; *Engl. Bot.* 948.
Verrucaria rufescens? *Hoffm. Germ.* 173.
Lecidea rupestris calva, *Achar. Meth.* 70.
Lecidea rupestris, *Achar. Lich.* 206, exc. var. β.

On rocks, especially lime-stone.

40. *Lecidea luteola.* *Yellowish lecidea.*

Crust thin, whitish, granules nearly globular, pale becoming dirty grey; *apothecia* sessile afterwards convex, brownish yellow.

Lichen vernalis, *Hoffm. Lich.* 5, 1; *Engl. Bot.* 845.
Lichen luteolus, *Schrad. Germ.* 85.
Lichen porriginosus, *Turner in Linn. Trans.* 7, 94.
Lichen rubellus, *Ehrh. Crypt.* 14, 136.
Verrucaria rubella, *Hoffm. Germ.* 174.
Verrucaria vernalis, *Hoffm. Germ.* 175.
Lecidea luteola, *Achar. Meth.* 60; *Lich.* 195, α, β, γ, δ, ε, ζ, excluding δ, ι.

On the bark of trees.

41. *Lecidea carneola.* *Flesh-red lecidea.*

Crust thin, membranaceous, grey, at length granular, nearly powdery; *apothecia* sessile, concave, thick, swollen, brownish flesh-colour, border similarly coloured, when old convex.

Lichen corneus, *Withering Bot. Arr.* 4, 20; *Engl. Bot.* 965.
Lecidea cornea, *Achar. Meth.* 56.
Lecidea carneola, *Achar. Lich.* 194.

On the scaly bark of trees.

42. *Lecidea arcentina.* *Whitish lecidea.*

Crust very thin, naked, whitish; *apothecia* flattish, slightly bordered, purplish wax-colour, brown and black.

Lichen Griffithsii, *Engl Bot.* 1735.
Lichen corneus, *Withering Bot. Arr.* 4, 20.
Lecidea luteola δ and ι, *Achar. Lich.* 197.

On oak-trees.

43. *Lecidea fusco-lutea.* *Yellow-brown lecidea.*

Crust spread, very thin, membranaceous, whitish and grey, rather shining, slightly granular; *apothecia* superficial, flat, brownish yellow, growing reddish brown; edge paler, raised, at length bent.

Lichen fusco-luteus, *Dickson Crypt.* 2, 18; *Engl. Bot.* 1007.
Patellaria fusco-lutea, *Hoffm. Lich.* 3, 10.
Parmelia fusco-lutea, *Achar. Lich.* 180.
Lecidea cinæreo-fusca jungermanniæ, *Achar. Lich.* 203.
Lecidea fusco-lutea, *Achar. Lich.* 198.

On decayed mosses.

Thallus envelopes the mosses so completely as to appear branched.

44. *Lecidea cæsio-rufa.* *Reddish-grey lecidea.*

Crust cracked in beds, wrinkled, greenish grey; *apothecia* flat, rusty red, edge at last crenated, grows convex, scarcely bordered, reddish black.

Lichen ferrugineus, *Huds. Angl.* 526.
Lichen crenularius, *Wither. Bot. Arr.* 4, 23.
Lecidea crenulata, *Achar. Meth.* 71.
Lecidea cæsio rufa, *Achar. Meth.* 71; *Lich.* 203.

On stones and mountains.

45. *Lecidea icmadophila.* *Wet-loving lecidea.*

Crust leprous, uneven, slightly granular, greenish-white; *apothecia* nearly sessile, flat, flesh-colour, afterwards bent, centre wrinkled; edge thin, scarcely any.

Lichen ericetorum, *Lin. S. P.* 1608; *Engl. Bot.* 372.
Lichen æruginosus, *Scopoli Carn.* 2, 361.
Lichen icmadophila, *Lin. Suppl.* 450.
Lichen elveloides, *Weber Gott.* 186.
Lecidea icmadophila α, β, γ, *Achar. Meth.* 58; α, β, *Lich.* 191.

On the ground, on mosses, trunks of trees and rotten wood.

46. *Lecidea marmorea.* *Marble lecidea.*

Crust thin, greyish-white; *apothecia* nearly globular, afterwards pitchershape, white, centre flesh-colour, edge swollen, not cut.

Lichen marmoreus, *Scop. Carn.* 1579; *Engl. Bot.* 739.
Parmelia marmorea, *Achar. Meth.* 170.
Lecidea marmorea, *Achar. Lich.* 192.

On decayed mosses.

47. *Lecidea cupularis.* *Cup lecidea.*

Crust rather tartarlike, scarcely divided, greenish-white; *apothecia* superficial, pitchershape, white, centre pale brick-red, externally frequently powdery.

Lichen marmoreus, *Withering Bot. Arr.* 4, 24.
Lichen cupularis, *Dickson Crypt.* 2, 58; *Wither. B. Arr.* 4, 23.
Lecidea cupularis, *Achar. Meth.* 56.
Lecidea marmorea cupularis, *Achar. Lich.* 193.

On slaty and limestone rocks.

48. *Lecidea alabastrina.* *Alabaster lecidea.*

Crust thin, smooth, slightly hoary, rather greenish-white; *apothecia* plano-convex, not cut, similarly coloured, centre rosy-white.

Lichen albo-incarnatus, *Wulf. in Jacq. Coll.* 3, 107.
Lichen glabratus, *Dickson.*
Lecidea alabastrina, *Achar. Lich.* 190.

On the bark of old trees.

49. *Lecidea sphæroides.* *Spherical lecidea.*

Crust thin, rather powdery, greenish white; *apothecia* not bordered, growing nearly globular, conglomerate, pale flesh-colour.

Lichen sphæroides, *Dickson Crypt.* 1, 9.
Verrucaria conglomerata, *Hoffm. Germ.* 174.
Lecidea vernalis sphæroides, *Achar. Meth.* 68; *Lich.* 199.

On the bark of old trees.

50. *Lecidea rosella.* *Rose lecidea.*

Crust nearly cartilaginous, broken, cracked, frequently granular and leprous, greenish grey; *apothecia* plano-convex, rosy flesh-colour, afterwards brownish, edge paler.

Lichen rosellus, *Persoon in Uster Ann.* 7, 75.
Lecidea rosella, *Achar. Meth.* 57.
Lecidea alabastrina β and γ, *Achar. Lich.* 199.

On the bark of old trees.

e. *Apothecia pale, yellowish, wax-colour, and nearly orange.*

51. *Lecidea melizea.* *Honey-yellow lecidea.*

Crust thin, white, powdery; *apothecia* plano-concave, bordered, pale yellow.

Lichen luteus, *Dickson Crypt.* 1, 11.
Lecidea melizea, *Achar. Lich.* 194.

On the mossy trunk of trees.

52. *Lecidea Ehrhartiana.* *Ehrhart lecidea.*

Crust cartilaginous, cracked, wrinkled plaited, granular, white, rather greenish; *apothecia* nearly sessile, flat, afterwards slightly convex, bent, irregular, conglomerated, pale yellowish.

Lichen Ehrhartianus, *Achar. Prod.* 39; *Engl. Bot.* 1136.
Lecidea Ehrartiana, *Achar. Meth.* 73; *Lich.* 191.

On the bark and wood of trees.

53. *Lecidea polytropa.* *Many-coloured lecidea.*

Crust nearly tartarlike, cracked in beds; *apothecia* flattish, lobed, bent, conglomerated, growing nearly globular, not bordered, yellowish flesh-colour.

Lichen atro-virens, *Wolf in Jacq. Coll.* 2.
Verrucaria polytropa, *Hoffm. Germ.* 196.
Lichen varius maculiformis, *Wahlenb. Lapp.* 403.
Lichen polytropus, *Ehrh. Crypt.* 294; *Engl. Bot.* 1264.
Lecanora varia illusoria, *Achar. Lich.* 380.
Lecidea Ehrhartiana polytropa, *Achar. Lich.* 192.
Lecidea polytropa, *Achar. Meth.* 72.

54. *Lecidea lucida.* *Shining lecidea.*

Crust leprous, flocky powdery, lemon-coloured; *apothecia* plano-convex, slightly bordered, pale yellowish.

Lichen lucidus, *Achar. Prodr.* 39; *Engl. Bot.* 1550.
Lecidea lucida, *Achar. Meth.* 74; *Lich.* 209.
Lepraria Florkeana, *Achar. Lich.* 663.
Pulveraria albo-flava, *Florke in Berl. Mag.* 1807, 10.

On stones and sand-stone rocks.

55. *Lecidea atro-flava.* *Black-and-yellow lecidea.*

Crust thin, spread, slightly granular, black; *apothecia* small, crowded, flat, yellow, border raised, not cut, paler.

Lecidea atro-flava, *Turner in Lin. Tr.* 9, 142: *Achar. Syn.* 49.
Lichen atro-flavus, *Engl. Bot.* 2009.

On flint stones.

56. *Lecidea luteo-alba.* *Yellow-and-white lecidea.*

Crust thin, smooth, white; *apothecia* crowded, growing convex, hemispherical, bordered, yelk-colour, inside white.

Lichen luteo-albus, *Turner in Lin. Tr.* 7, 92.
Lecidea cinereo-fusca luteo-alba, *Achar. Meth. Suppl.* 12.
Lecidea luteo-alba, *Achar. Lich.* 207.

On the dead bark of trees, rarely on stones.

57. *Lecidea pyracea.* *Pear lecidea.*

Crust greyish, uneven, afterwards black; *apothecia* crowded, at last convex, scarcely bordered, yelk-yellow.

Lichen aurantiacus, *Lightfoot Scot.* 810.
Verrucaria byssina, *Hoffm. Germ.* 197.
Verrucaria aurantiaca, *Hoffm. Germ.* 198.
Parmelia cerina pyracea, *Achar. Meth.* 176.
Parmelia vitellina byssina, *Achar. Meth.* 177.
Lecidea luteo-alba papyracea, *Achar. Lich.* 207.

On the roofs of houses, and lime-stone rocks.

58. *Lecidea aurantiaca.* *Orange lecidea.*

Crust cartilaginous, determinately figured, smooth, uneven, widely cracked, whitish; *apothecia* crowded, growing convex, hemispherical, orange-yellow; border thin, paler, not cut, at length nearly disappearing.

Lecidea aurantiaca, *Achar. Meth.* 69; *Lich.* 204.

On the trunk of the trembling poplar.

F. GYROPHORIDEÆ. *Thallus* shieldlike, free underneath; *apothecia* flattish, plaited, bordered.

XXVI. 116. GYROPHORA. Acharius. *Brain-moss.*

Thallus leaflike, leatherlike, cartilaginous, shieldlike, one-leaved, when luxuriant many-leaved, underneath free; *apothecia* nearly saucerlike, sessile, adnate, covered with a black cartilaginous membrane, including a similar, slightly solid parenchyme; centre warty or meanderingly plaited in circles, and bordered.

1. *Gyrophora glabra.* *Bald brain-moss.*

Thallus nearly bald, greenish black, underneath naked, smooth, very black; *apothecia* grow convex, wrinkly folded.

Lichenoides tenue pullum, foliis utrinque glabris, *Dillen Musc.* 225.
Lichen glaber, *Achar. Prodr.* 114.
Lichen anthracinus, *Jacquin Miscell.* 2.
Umbilicaria anthracina, *Hoffm. Germ.* 111.
Gyrophora anthracina, *Achar. Meth.* 102.
Gyrophora heteroides α and γ, *Achar. Lich.* 218.
Gyrophora, *Achar. Meth.* 101.

On stones and mountains.

β. *polyphylla.* *Thallus* many-leaved, folded, greenish-black, underneath black; both sides naked, very smooth.

Lichen polyphyllus, *Lin. S. P.* 1618; *Engl. Bot.* 1282.
Umbilicaria polyphylla, *Hoffm. Germ.* 109.
Gyromium polyphyllum, *Wahlenb. Lapp.* 434.
Gyrophora heteroides β, *Achar. Lich.* 219.
Gyrophora glabra polyphylla, *Achar. Meth.* 101.

2. *Gyrophora proboscidea.* *Proboscis brain-moss.*

Thallus membranaceous, wrinkled in network, afterwards rough scaly, olive-grey; underneath smooth, paler slightly fibrilled; *apothecia* topshape, afterwards convex, meanderingly plaited.

Lichen proboscideus, *Lin. S. P.* 1617.
Lichen deustus, *Lightf. Scot.* 861.
Lichen exasperatus, *Gun. Norv.*
Lichen mesenteriformis, *Ehrh. Crypt.* 89.
Umbilicaria mesenterica, *Schrad. Germ.* 103.
Umbilicaria corrugata, *Hoffm. Germ.* 112.
Gyromium proboscideum, *Wahlenb. Lapp.* 483.
Gyrophora Jacquinia, *Achar. Meth.* 104.
Gyrophora proboscidea α, β, and γ, *Achar. Meth.* 105; *Lich.* 220.

Upon rocks.

3. *Gyrophora arctica.* *Arctic brain-moss.*

Thallus thick, hard, stiff, with raised dots, wrinkled, brown-olive afterwards blackish; underneath naked, bald, pale ochre-yellow, blackish in the middle: *apothecia* nearly globular, very much wrinkled.

Gyrophora arctica α and β, *Achar. Meth.* 106; *Lich.* 221.
Gyromium proboscideum arcticum, *Wahlenb. Lapp.* 483.

On alpine rocks.

4. *Gyrophora cylindrica.* *Cylindrical brain-moss.*

Thallus rather naked, livid grey, plaited and lobed, fringed; underneath smooth, pale with branched fibrils; *apothecia* raised, flattish, circularly and meanderingly plaited.

Lichen cylindricus, *Lin. Amæn. Acad.*
Lichen crinitus, *Lightf. Scot.* 360.
Lichen proboscideus, *Hedwig Crypt.* 1; *Engl. Bot.* 522.
Umbilicaria crinita, *Hoffm. Germ.* 112.
Gyromium cylindricum, *Wahlenb. Lapp.* 483.
Gyrophora cylindrica, *Achar. Meth.* 107; *Lich.* 223.

Upon mountains and rocks.

β. *fimbriata. Thallus* many-leaved, folded up, lobes round, underneath fibrilled, edge with very close, short, branched fringe; *apothecia* saucershape, nearly plain.

Gyrophora cylindrica fimbriata, *Achar. Lich.* 224.

5. *Gyrophora erosa.* *Torn brain-moss.*

Thallus wrinkled, olive-brown; circumference perforated, sivelike, irregularly jagged; underneath greyish, bald, rather granular, slightly fibrilled; *apothecia* rather convex, meanderingly plaited.

Lichenoides rugosum durum pullum, peltis atris verrucosis, *Dillen Musc.* 220.
Lichen torrefactus, *Lightf. Scot.* 862.
Lichen erosus, *Weber Golt.* 259.
Umbilicaria torrefacta, *Schrad. Germ.* 1, 104.
Umbilicaria erosa, *Hoffm. Germ.* 111.
Gyromium erosum, *Wahlenb. Lapp.* 482.
Gyrophora erosa, *Achar. Meth.* 103; *Lich.* 224; *Engl. Bot.* 2066.

On mountains.
Fibrils flat like shavings of wood.

6. *Gyrophora deusta.* *Burnt brain-moss.*
Thallus rather rough, olive-brown, sprinkled with a sooty powder; underneath smooth, hollow dotted, pitted, naked, similarly coloured; *apothecia* flat, plaited in circles, afterwards convex, very meandering.

Lichen flocculosus, *Wulf. in Jacq. Coll.* 3, 99.
Lichen deustus, *Lin. S. P.* 1618.
Umbilicaria flocculosa, *Hoffm. Germ.* 110.
Gyrophora deusta, *Achar. Meth.* 102; *Lich.* 225; *Engl. Bot.* 2483.

On stones and rocks.

7. *Gyrophora pustulata.* *Blistered brain-moss.*
Thallus nipply, greenish-grey; underneath deeply pitted, smooth, naked, pale brownish; *apothecia* few, flat, bordered; centre rather even, nipply and plaited.

Lichenoides pustulosum cinereum et veluti ambustum, *Dillen Musc.* 226.
Lichen pustulatus, *Lin. S. P.* 1617; *Engl. Bot.* 1285.
Lecidea pustulata, *Achar. Meth.* 85.
Umbilicaria pustulata, *Hoffm. Germ.* 111.
Gyrophora pustulata, *Achar. Lich.* 226.

On stones and mountains.

8. *Gyrophora pellita.* *Fleecy brain-moss.*
Thallus smooth, sinuately lobed, brassy-brown; underneath black, fibrilled and clothlike; *apothecia* sessile, at length nearly globular, meanderingly plaited.

Lichenoides pullum superne et glabrum, inferne nigrum et cirrhosum, *Dillen Musc.* 226.
Lichen scalopodora, *Ehrh. Crypt.*
Lichen pellitus, *Achar. Prod.* 149; *Engl. Bot.* 931.
Umbilicaria vellea, *Hoffm. Germ.* 113.
Gyrophora pellita, *Achar. Meth.* 103; *Lich.* 228.

On stones and rocks.
Thallus generally many-leaved, sometimes naked beneath.

9. *Gyrophora murina.* *Mouse brain-moss.*
Thallus rather stiff, mouse-colour, underneath brown-black, rough with raised paler spots; *apothecia* slightly convex, circularly and meanderingly plaited.

Lichen griseus, *Achar. in Act. Holm.* 1794, 91.
Lichen murinus, *Achar. Prod.* 143.
Gyrophora murina, *Achar. Meth.* 110; *Lich.* 251.

On rocks and mountains.

G. SPILOMIDEÆ. *Thallus* crustlike, flat, adnate; *apothecia* flattish, irregular, not bordered.

XXVII. 117. ARTHONIA. Acharius. *Sprinkled-moss.*

Thallus crustlike, flat, expanded, adnate, uniform; *apothecia* innate, sessile, roundish, not regular, not bordered, deep black, covered with a rather cartilaginous membrane; *parenchyme* similar, solid.

1. *Arthonia Swartziana.* *Swartz sprinkled-moss.*

Crust cartilaginous, membranaceous, whitish; *apothecia* sessile, rather broad, slightly tumid, roundish, turned back, irregular, confluent, raised, dotlike, deep black.

Arthonia Swartziana, *Achar. in Schrader's Journ.* 1, 3, 13; *Engl. Bot.* 2079.

On the bark of trees.

2. *Arthonia astroidea.* *Starred sprinkled-moss.*

Crust membranaceous, white, greenish-grey; *apothecia* pressed to the thallus, flat, angular, rather starlike, irregular, deep black.

Lichen astroites, *Achar. Prod.* 24.
Opegrapha radiata, *Persoon in Ulster. Ann.* 7, 29.
Opegrapha astroidea, *Achar. Meth.* 25; *Engl. Bot.* 1847.
Arthonia radiata astroidea, *Achar. Lich.* 144.

On the smooth bark of trees.

3. *Arthonia obscura.* *Dark sprinkled-moss.*

Crust membranaceous, rather olive-colour; *apothecia* small, flat, slightly concave, rather membranaceous, oval, elliptic, and kidneyshape, slightly sunk, wrinkled, deep black.

Lichen obscurus, *Achar. Prod.* 20; *Engl. Bot.* 1752.
Opegrapha obscura, *Achar. Meth.* 22.
Opegrapha reniformis, *Achar. Meth.* 23.
Arthonia obscura α and β, *Achar. Lich.* 146.

On the bark of trees.

4. *Arthonia lyncea.* *Lynx sprinkled-moss.*

Crust thin, rather tartarlike, even, rather cracked, white; *apothecia* crowded, flat, slightly sunk, roundish oblong and bent, black with a grey hoar.

Lichen lynceus, *Engl. Bot.* 809.
Lecidea lyncea, *Achar. Meth.* 52.
Arthonia lyncea, *Achar. Lich.* 147.

On the bark of old trees.

5. *Arthona pruinosa.* *Hoary sprinkled-moss.*

Crust thin, rather tartarlike, uneven, smooth, cracked white; *apothecia* flat, sunk, roundish, many-sided, confluent, dark brown, with a greenish-white hoar.

Lichen impolitus, *Ehrh. Crypt.*; *Engl. Bot.* 981.
Verrucaria impolita, *Hoffm. Germ.* 172.
Parmelia impolita, *Achar. Meth.* 160.
Arthonia pruinosa, *Achar. Lich.* 147.

On the bark of trees, especially oaks.

XXVIII. 118. SPILOMA. Acharius. *Spotted-moss.*

Thallus crustlike, flat, expanded, adnate, uniform; *apothecia* composed of aggregated corpuscules; mass compact, homogeneous, rather mealy, naked, irregular.—Differ from the nematomyceæ by the presence of the thallus, and by having no flocky threads mingled with the sporæ.

1. *Spiloma tumidulum.* *Swollen spotted-moss.*

Crust rather cartilaginous, whitish; *apothecia* crowded, swollen, oblong, irregular, rough, reddish afterwards blackish-brown and slightly hoary.

Sphæria gregaria, *Dicks. Crypt.* 1, 22.
Arthonia tumidula, *Achar. in Schrad. Journ.* 1, 3, 11.
Spiloma fallax, *Achar. Meth.* 10.
Spiloma tumidulum α and β, *Achar. Lich.* 136.

On the bark of trees.

2. *Spiloma versicolor.* *Changeable spotted-moss.*

Crust rather cartilaginous, powdery, cracked, greyish and yellow; *apothecia* sunk, superficial, roundish, flat, afterwards rather convex, confluent, rough, deep black.

Arthonia versicolor, *Achar. in Schrad. Journ.* 1, 39.
Spiloma versicolor, *Achar. Lich.* 138; *Engl. Bot.* 2076.

On the bark of trees.

β. *variolosum.* *Crust* leprous, powdery, greyish, rather warty; *apothecia* hemispherical, crowded, rather confluent, deep black.

Spiloma variolosum, *Engl. Bot.* 2077.
Spiloma versicolor variolosum, *Achar. Lich.* 138.

3. *Spiloma tricolor.* *Three-colour spotted-moss.*

Crust rather tartarlike, cracked, powdery, white; *apothecia* roundish, convex, aggregated, confluent, red, when rubbed yellowish rust-colour.

Spiloma tuberculosum, *Engl. Bot.* 2556.
Spiloma tricolor, *Achar. Lich.* 137.

On stones and the trunks of trees.

4. *Spiloma microclonium.* *Fine-branched spotted-moss.*
Crust very thin, greenish; *apothecia* bursting forth, small, convex, crowded and confluent, slightly branched, deep black.

Spiloma microclonium, *Achar. Meth. Suppl.* 5; *Engl. Bot.* 2150.

On old wood.

5. *Spiloma microscopicum.* *Microscopic spotted-moss.*
Crust spreading, very thin, membranaceous, greyish; *apothecia* very minute, dotlike, black, lead-colour when dry.

Spiloma microscopium, *Turner and Borrer in Engl. Bot.* 2396.

On timber-work exposed to the air.

Thallus scarcely conspicuous, except by the bluish colour it gives to the wood; *apothecia* only discernible by a powerful microscope, yet stain the fingers black.

6. *Spiloma dispersum.* *Scattered spotted-moss.*
Crust very thin, film-like, greenish grey; *apothecia* dispersed, hemispherical, sooty, internally yellowish-green.

Spiloma dispersum, *Turner and Borrer in Engl. Bot.* 2398.

On old rails, like a greenish stain.

7. *Spiloma decolorans.* *Staining spotted-moss.*
Crust spreading, very thin, membranaceous, greyish white, when rubbed yellowish-green; *apothecia* minute, flat, confluent, purplish-grey.

Spiloma decolorans, *Turner and Borrer in Engl. Bot.* 2399.

On the bark of oak, on boarded buildings and pales.

8. *Spiloma punctatum.* *Dotted spotted-moss.*
Crust thin, rather powdery, white; *apothecia* scattered, minute, dotlike, solid, black, with dark-brown hoar.

Spiloma punctatum, *Turner and Borrer in Engl. Bot.* 2472.

On old oaks.

G. Calicidiæ. *Thallus* crustlike or very thin, uniform; *apothecia* cupshape, bordered, podicilled, including a naked powdery mass forming a flat or convex centre, rather solid internally; *sporidia* very crowded, among the powdery mass, accompanied with many twin vesicles, or scattered, nestling in the consolidated parenchyme of the swollen centre.—Differ from protomyceæ by the presence of a thallus and apothecia; in very young plants the apothecia are covered with a membrane which soon disappears.

XXIX. 119. ACOLIUM. Acharius. *Acolium.*

Thallus crustlike, flat, expanded, adnate, uniform; *apothecia* cuplike, nearly sessile, cartilaginous, composed of a compact powdery mass forming a naked centre, the upper part flat or nearly globular.

1. *Acolium tigillare.* *Rafter acolium.*

Crust in beds, wartlike, rather bald, lemon-yellow; *apothecia* sessile, deep black, opake, centre flat, border swollen.

Lichen tigillaris, *Achar. Prod.* 67; *Engl. Bot.* 1530.
Lecidea tigillaris, *Achar. Meth.* 46; *Lich.* 164.

On old timber-work.

2. *Acolium tympanellum.* *Little-drum acolium.*

Crust cartilaginous, smooth, afterwards rather warty, uneven, gray; *apothecia* sessile, black, centre flat, with a greyish hoar; border thin, even with the centre.

Lichen inquinans, *Engl. Bot.* 810.
Calicium tympanellum, *Achar. Meth.* 89; *Lich.* 233.

On timber-work.

When touched stains the fingers black.

3. *Acolium stigonellum.* *Dimpled acolium.*

Crust scarcely cracked, uneven, whitish, or 0; *apothecia* sessile, nearly globular, black, bald; centre dotlike, afterwards flattish, opake; border thin, naked.

Lichen gelasinatus, *Withering Bot. Arr.* 4.
Lecidea gelasinata, *Achar. Meth.* 33.
Sphærocarpus sessilis, *Ehrh. Crypt.* 320.
Sphæria sphincterica, *Sowerby Brit. Fungi*, 386, 1.
Calicium sessile, *Persoon Tent. Fung. Suppl.* 59.
Calicium stigonellum, *Achar. Meth.* 88; *Lich.* 232.

On the bark of oak-trees, and on the crust of porina pertusa.

XXX. 120. PHACOTRUM. Acharius. *Phacotrum.*

Thallus crustlike, flat, expanded, adnate, uniform; *apothecia* podicilled, centre powdery, flat or globular, border prominent.—The centre of the apothecia sometimes falling out, they are left hollow.

1. *Phacotrum microcephalum.* *Small-headed phacotrum.*

Crust rather tartarlike, not broken, wrinkled, olive-colour; *apothecia* nearly globular, black, shining; centre depressed, opake; *podicils* short, similar in colour.

Lichen microcephalus, *Engl. Bot.* 1865.
Calicium microcephalum, *Achar. Syn. Lich.* 57, 8.

On oak-wood.

2. *Phacotrum claviculare.* *Nail-head phacotrum.*

Crust spreading, granular, slightly powdery, greyish; *apothecia* nearly globular, afterwards lentilshape, greyish-black; *podicils* cylindrical, thickish, black.

Lichen clavicularis, *Engl. Bot.* 1465.
Calicium salicinum, *Persoon in Ust. Ann.* 7, 20.
Calicium claviculare, *Achar. Meth.* 90; *Lich.* 234.

On beams, rafters, and the bark of old trees.

3. *Phacotrum sphærocephalum.* *Round-head phacotrum.*

Crust very thin, smooth, greyish; *apothecia* nearly lentilshape; centre brownish, edge greyish; *podicils* threadlike, black.

Coralloides fungiforme arboreum nigrum, vix crustosum, *Dillen Musc.* 78.
Mucor lichenoides, *Lin. S. P.* 1655.
Lichen sphærocephalus, *Swart. N. Act. Ups.* 4; *Engl. Bot.* 414.
Trichia lichenoides, *Sibth. Oxon.* 406.
Clathrus cinereus, *Huds. Fl. Angl.* 631.
Calicium claviculare sphærocephalum, *Achar. Lich.* 255.
Calicium sphærocephalum, *Achar. Meth.* 91.

On palings.

4. *Phacotrum hispidulum.* *Roughish phacotrum.*

Crust thin, greenish; *apothecia* cupshape, as well as the centre roughish with a flocklike rust-coloured powder.

Calicium trachelinum hispidulum, *Achar. Lich.* 237.

On the bark of trees.

5. *Phacotrum hyperellum.* *Bark phacotrum.*

Crust cartilaginous, wrinkled in beds, bald, greenish-yellow; *apothecia* lentilshape, rust-colour, powdery; *podicils* thick, cylindrical, pitch-black, thickest at bottom.

Lichen hyperellum, *Achar. Prod.* 85; *Engl. Bot.* 1832.
Calicium hyperellum, *Achar. Meth.* 93; *Lich.* 237.

On the bark of trees.
Sporidia combined in pairs.

β. *roscidum.* *Crust* granularly wrinkled, greenish or greyish; *apothecia* lentilshape, with a rust-colour powder, underneath greyish, afterwards irregular, conglomerated; *podicils* thick, short, black.

Lichen graniformis, *Dickson Crypt.* 1, 10; *Engl. Bot.* 1464.
Calicium claviculare roscidum, *Achar. Meth.* 90.
Calicium hyperellum roscidum, *Achar. Lich.* 238.

On the bark of trees, and timber-work.

6. *Phacotrum chrysocephalum.* *Gold-head phacotrum.*

Crust granular, conglomerated, lemon-yellow; *apothecia* nearly topshape; centre convex, umber-brown; border yellow, powdery; underneath naked, black, shining; *podicils* threadlike, brassy, powdery.

Lichen chrysocephalus, *Turner in Lin. Tr.* 7, 88; *Engl. Bot.* 2501.
Calicium chlorellum elatinum, *Achar. Meth.* 95.
Calicium chrysocephalum α and β, *Achar. Meth. Suppl.* 15; *Lich.* 239.

On old wood, walls, and the bark of trees.

7. *Phacotrum trabinellum.* *Board phacotrum.*

Crust thin, greyish-white; *apothecia* at last lentilshape, centre black-brown, with a grey hoar; border yellow-green.

Calicium trabinellum, *Achar. Meth. Suppl.* 15.
Lichen trabinellus, *Engl. Bot.* 1540.
Calicium claviculare β and γ, *Achar. Lich.* 255.
Calicium xylonellum trabinellum, *Achar. Meth.* 95.
Calicium chlorellum trabinellum, *Wahl. Lapp.* 487.

On boarded buildings.

8. *Phacotrum cantherellum.* *Beam phacotrum.*

Crust thin, whitish, rather powdery; *apothecia* lentil-shape; centre flesh-colour afterwards reddish, with a white hoar; *podicils* threadlike, naked, pale, growing brownish and black.

Lichen cantherellus, *Achar. Prod.* 85.
Calicium pallidum, *Persoon in Ust. Ann.* 7, 20.
Calicium cantherellum, *Achar. Meth.* 96; *Engl. Bot.* 2557.
Calicium peronellum, *Achar. Meth.* 96.
Calicium cantharellum α and β, *Achar. Lich.* 240.

On rotten wood and the bark of old trees.

9. *Phacotrum ferrugineum.* *Rust-colour phacotrum.*

Crust thin, granular, tartarlike, rusty-white; *apothecia* thick, black, often conglomerate; centre pale rust-colour; *podicils* short.

Calicium ferrugineum, *Engl. Bot.* 2473.

On pales.

10. *Phacotrum æruginosum.* *Verdigris phacotrum.*

Crust thin, tartarlike, rather granulated, verdigris-grey; *apothecia* black, hemispherical, centre very convex, brownish-black; *podicils* slender black.

Calicium æruginosum, *Engl. Bot.* 2502.

On old boards.

11. *Phacotrum curtum.* *Short phacotrum.*

Crust very thin, filmlike, whitish; *apothecia* reverse egg-shape or hemispherical, black; centre covered with black, loose, powdery; *podicils* thick, black.

Calicium curtum, *Turn. and Borr. in Engl. Bot.* 2503.

On decaying wood in shady places.

XXXI. 121. STRONGYLIUM. Acharius. *Strongyle.*

Thallus crustlike, flat, adnate, uniform; *apothecia* cup-shape, podicilled, cartilaginous; centre swollen, nearly globular, running over the edge, formed of a compact powdery mass.

1. *Strongylium capitellatum.* *Headed strongyle.*

Crust spreading, powdery, yellowish-green; *apothecia* globular; *podicils* threadlike, very long, bent, greenish-yellow.

Mucor furfuraceus, *Lin. S. P.* 1655.
Lichen capitatus, *Achar. Prod.* 86; *Engl. Bot.* 1639.
Calicium sulphureum, *Schrad. Krypt.*
Calicium furfuraceum, *Persoon Tent. Fung. Suppl.* 60.
Clathrus virescens, *Hudson Fl. Angl.* 632.
Trichia furfuracea, *Withering Bot. Arr.* 4, 398.
Calicium capitellatum, *Achar. Meth.* 98; *Lich.* 241.

On stones, the ground, and rotten roots of plants.

2. *Strongylium aciculare.* *Pin strongyle.*

Crust leprous, powdery, pale greenish-yellow; *apothecia* hemispherical globular, brown, powdery; *podicils* slender at bottom.

Mucor fulvus, *Lin. S. P.* 1655.
Lichen fulvus, *Schwartz in N. Act. Ups.* 4.
Lichen acicularis, *Achar. Prod.* 85; *Engl. Prod.* 2385.
Calicium aciculare, *Achar. Meth.* 98; *Lich.* 242.

On the bark of dry roots and dead branches.

3. *Strongylium debile.* *Weak strongyle.*

Crust membranaceous, very thin, white; *apothecia* black, convex; edge turned back; *podicils* long, slender, wavy, black.

Coralloides fungiforme arboreum nigrum, vix crustosum, *Dillen Musc.* 78.
Calicium debile, *Turner and Borrer in Engl. Bot.* 2462.

On old timber, especially under thatched roofs.

Fam. V. 5. IDIOTHALAMEÆ. *Algarum pars*, Linn. *Lichenum pars*, Jussieu, Acharius.

Thallus crustlike or leatherlike; *sporidia* scattered, innate in the substance, and in a nucleus or proligerous flake covered by the thallus, or by a single or double perithecium.--*Thallus* perennial, terrestrial, or parasitical; greenish or becoming so when wetted; absorbing water by the surface, and transmitting it to all parts.

A. *Thallus leatherlike, shrublike; apothecia tubercular; perithecium* 0. Rhizomorphidæ.

Thallus crustlike, cartilaginous, branched, shrublike, upright ..... SPHÆROPHORON. 122.
Thallus crustlike, membranaceous, branched, creeping, prostrate ..... RHIZOMORPHA. 123.

B. *Thallus crustlike; apothecia wartlike; perithecium distinct.* Variolaridæ.

Thallus crustlike ..... VARIOLARIA. 124.

C. *Thallus crustlike; apothecia wartlike; perithecium distinct.* Porinidæ.

Nucleus single; *perithecium* simple, black ..... PYRENULA. 125.
Nucleus simple; *perithecium* double, first thick, second membranaceous... THELOTREMA. 126.
Nucleus mostly single, covered; *perithecium* simple ..... PORINA. 127.

D. *Thallus crustlike; apothecia round, not bordered; perithecium distinct.* Verrucaridæ.

Thallus cartilaginous, membranaceous, *perithecium* double ..... LEJOPHLEA. 128.
Thallus crustlike, cracked in beds, or powdery; *perithecium* double ..... LITHOCIA. 129.
Thallus soft, towlike, spongy or cobwebby; *perithecium* double ..... INODERMA. 130.
Thallus leaflike or shieldlike; *perithecium* single ..... ENDOCARPON. 131.

E. *Thallus crustlike; apothecia flat, bordered, linear.* Opegraphidæ.

Perithecium simple ..... GRAPHIS. 132.
Apothecia hollow, grooved or flat; edges open; *perithecium* 0 ..... ALEXORIA. 133.
Apothecia slitlike; edges swollen; *perithecium* 0 ..... HYSTERINA. 134.

A. RHIZOMORPHIDÆ. *Thallus* leatherlike, shrubby; *apothecia* tubercular; *perithecium* 0.

I. 122. SPHÆROPHORON. Persoon. *Ball-moss.*

Thallus crustlike, cartilaginous, branched, shrublike; inside towlike, rather solid; *apothecia* nearly globular, sessile, terminating the branches of the thallus, and formed of it, which tearing open shows a black, powdery, globular mass included with it.

1. *Sphærophoron coralloides.* *Coral-like ball-moss.*

Thallus pale chestnut, scarcely divided; branches lateral, long, weak, divaricated, forked, pointed, fibrilled; *apothecia* nearly globular, smooth.

Lichenoides non tubulosum, ramulis scutellis nigris terminatis, *Dillen in Raii Syn.* 66, 13.
Lichen globiferus, *Lin. Mant.* 133.
Lichen globosus, *Huds. Fl. Angl. ed.* 1, 460.
Lichen fragilis β, *Huds. Fl. Angl.* 558.
Stereocaulon globiferum, *Hoffm. Germ.* 151.
Sphærophoron coralloides, *Achar. Meth.* 134; *Lich.* 585.

On mountain-heaths, and on the roots of fir-trees.

2. *Spærophoron fragile.* *Brittle ball-moss.*

Thallus greyish, branched; branches forked, short, crowded, eventopped, naked, cylindrical, bluntish; *apothecia* globular topshape, rather warty.

Lichen fragilis, *Lin. S. P.* 1621.
Lichen cæspitosum, *Roth Tent.*
Coralloides fragile, *Hoffm. Lich.* 2, 34.
Stereocaulon fragile, *Hoffm. Germ.* 131.
Sphærophoron fragile, *Achar. Meth.* 135; *Lich.* 585; *Engl. Bot.* 2474.

On stones, and mountains among mosses.

3. *Sphærophoron compressum.* *Compressed ball-moss.*

Thallus whitish, branched; branches compressed, twigged, rather fibrilled, naked; *apothecia* nearly globular, rather depressed above, smooth.

Lichenoides non tubulosum ramosissimum, fruticuli specie, cinereo-fuscum, *Raii Syn.* 65, 10.
Lichen fragilis, *Lin. S. P.* 1621; *Engl. Bot.* 114.
Lichen melanocarpos, *Swartz Ind. Occid.* 147.
Sphærophoron compressum, *Achar. Meth.* 135; *Lich.* 586.

On rocks and heaths in mountainous places.

II. 123. RHIZOMORPHA. *Root-moss.*

Thallus cartilaginous, membranaceous, cylindrical, branched repeatedly, creeping, prostrate, inside towlike fibrous; *apothecia* globular, sessile, frequently conglomerated, formed of the cortical part of the thallus, opening irregularly, filled with powder.

1. *Rhizomorpha subcorticalis.* *Bark root-moss.*

Thallus compressed, blackish-brown, shining; branches scattered, anastomosing in a network; *apothecia* conglomerate.

Fungoides q. Fungus niger compressus, varie divaricatus et implexus, inter lignum et corticem, *Raii Syn.* 15, 9.
Lichen aidælus, *Humboldt Fl. Frib.* 33.
Clavaria phosphorea, *Sowerby Fungi*, 100.
Rhizomorpha fragilis, *Roth Cat. Bot.* 1, 252.
Rhizomorpha subcorticalis, *Persoon Syn. Fung.* 704.

On the trunks of dead trees, especially firs; also in cellars.

Thallus luminous in the dark, at the ends of the branches.

β. *patens.* *Thallus* dilated, broad, compressed.

Rhizomorpha patens, *Sowerby Engl. Fungi*, 392, 1 and 2.

2. *Rhizomorpha spinosa.* *Thorny root-moss.*

Thallus cylindrical, slightly compressed, spinous, dull-brown; branches scattered, frequently anastomosing.

Clavaria hypoxylon, *Withering Bot. Arr.* 4, 404.
Rhizomorpha spinosa, *Achar. Lich.* 588; *Sowerby Fungi*, 299.

In lead-mines.

3. *Rhizomorpha subterranea.* *Underground root-moss.*

Thallus cylindrical, bald, black, very much branched; branches and twigs crowded, pointed, free.

Lichen radiciformis, *Lin. Syst. Nat. ed.* 2, 964.
Usnea radiciformis, *Scopoli Diss.* 1, 95.
Rhizomorpha subterranea, *Achar. Lich.* 588.

On half-rotten wood and stones in mines.

4. *Rhizomorpha dichotoma.* *Forked root-moss.*

Thallus cylindrical, greenish-brown; branches forked, spreading, long, cylindrical, naked, free.

Clavaria hypoxylon 2, *Withering Bot. Arr.* 4, 404.
Rhizomorpha dichotoma, *Achar. Lich.* 589; *Sowerby Fungi*, 298.

In mines.

5. *Rhizomorpha setiformis.* *Bristlelike root-moss.*

Thallus cylindrical, very slender, black, shining, scarcely branched, tips divided.

Lichen hippotrichoides, *Weber Germ.* 231.
Usnea hippotrichoides, *Hoffm. Germ.* 137.
Rhizomorpha setiformis, *Achar. Lich.* 589; *Persoon Syn. Fung.* 705.

On dead fallen fir-leaves.

6. *Rhizomorpha tuberculosa.* *Tubercular root-moss.*

Thallus threadlike, slightly compressed, not branched; *apothecia* scattered, globular, acuminated, deep black.

Lichen setosus, *Leyser Fl. Halens.* 1171.
Hypoxylum loculiferum ? *Bulliard Herb.*
Rhizomorpha setiformis tuberculata, *Achar. Lich.* 589.

On wood long kept in cellars.

7. *Rhizomorpha Stokesii.* *Stokes' root-moss.*

Thallus dull foxy-brown, compressed; branches divaricated, rounded, blunt.

Rhizomorpha Stokesii, *Sowerby Engl. Fungi*, 430.

On chalk-pits.

Thallus flat, netlike, entangled, sometimes covered with the chalk.

8. *Rhizomorpha Harrimanni.* *Harriman's root-moss.*

Thallus dull-brown; main stems irregularly angular, brittle; covering cracking transversely; branches long, wavy.

Rhizomorpha Harrimanni, *Sowerby Eng. Fungi*, 431, 1.

In mines.

Thallus resembles bugle-trimming; inside white, cottony, tough.

9. *Rhizomorpha variegata.* *Variegated root-moss.*

Thallus long, round, nearly of uniform thickness; branches in bundles, lighter coloured; twigs still lighter, silky.

Rhizomorpha variegata, *Sowerby Engl. Fungi*, 431, 2.

Under ground.

Thallus crowded; pith scarcely any.

10. *Rhizomorpha Martini.* *Martin's root-moss.*
Thallus brown, brittle, woody, in round threads branching in all directions, serpentine, hairlike and matted.
Rhizomorpha Martini, *Sowerby Engl. Fungi*, 431, 3.
In mines.

11. *Rhizomorpha medullaris.* *Pith root-moss.*
Thallus cylindrical, very much branched, inside snow-white; cellules yellowish.
Rhizomorpha medullaris, *Smith in Lin. Tr.* 12.
In an old well upon boards.

B. VARIOLARIDÆ. *Thallus* crustlike; *apothecia* wartlike; *perithecium* 0.

III. 124. VARIOLARIA. Persoon. *Smallpox-moss.*
Thallus crustlike, flat, expanded, uniform; *apothecia* wartlike, formed of the thallus, most commonly soredium-like, slightly bordered, white; *nucleus* naked and without a perithecium, compressed, cellular, hidden in the substance of the wart, and usually covered with the thallus, sometimes becomes uncovered.—*Soredia* very numerous.

1. *Variolaria velata.* *Veiled smallpox-moss.*
Crust regular, rather cartilaginous, bald, very white, nearly radiately plaited; *apothecia* smooth, compressed, swollen; *nucleus* rather lentilshape, covered above with a thin powdery veil.
Parmelia velata, *Turner in Lin. Tr.* 9, 143.
Lichen velatus, *Engl. Bot.* 2062.
Variolaria velata, *Achar. Lich.* 319.
On the bark of trees.

2. *Variolaria multipuncta.* *Dotted smallpox-moss.*
Crust rather cartilaginous, cracked in beds, granular, greyish; *apothecia* convex, crowded, granulated; *nucleus* lentilshape, enclosed.
Variolaria multipuncta, *Turner in Lin. Tr.* 9, 137; *Achar. Lich.* 321.
Lichen multipunctus, *Engl. Bot.* 2061.
On the bark of trees.

3. *Variolaria globulifera.* *Globule smallpox-moss.*
Crust rather cartilaginous, greyish, sprinkled irregularly with granules and soredia, uneven; *apothecia* nearly globular, bald, becoming depressed above, bearing soredia; *nucleus* concave, enclosed.

Variolaria globulifera, *Turner in Lin. Tr.* 9, 139; *Achar. Lich.* 322.
Lichen globuliferus, *Engl. Bot.* 2008.

On the bark of trees.

4. *Variolaria communis.* *Common smallpox-moss.*

Crust cartilaginous, smooth, whitish, growing uneven and grey, sprinkled with white, unbordered soredia; *apothecia* sphæroid, powdery; *nucleus* rather membranaceous, flattish, pale, at length becoming naked.

Variolaria communis, *Achar. Lich.* 322.

On the bark of trees, old wood and stones.

Thallus nearly insipid, varying from white to grey according to the age; *soredia* nearly globular, convex or flat.

β. *orbiculata.* *Crust* thin, granular, rather radiately cracked, marked with zones, grayish-white; *soredia* central and scattered, flattish, scarcely bordered, similar in colour.

Verrucaria orbiculata, *Hoffm. Germ.* 170.
Lichen pallescens? *Wulf. in Jacq. Coll.* 3.
Variolaria orbiculata, *Achar. Meth.* 13.
Variolaria communis orbiculata, *Achar. Lich.* 323.

On wood and barked trees.

γ. *faginea.* *Crust* rather spreading, bald, wrinkled and cracked, whitish; *soredia* hemispherical, scattered, not bordered, rather solid, powdery, very white.

Lichen fagineus, *Lin. S. P.* 1608.
Variolaria faginea, *Persoon in Ustcr Ann.* 7; *Achar. Meth.* 12.
Verrucaria tubercularia, *Hoffm. Germ.* 170.
Variolaria communis faginea, *Achar. Lich.* 323.

On the bark of trees, especially on beech, also on stones.

δ. *aspergilla.* *Crust* tartarlike, cartilaginous, regular, greenish; circumference smooth, cracked in rays; *soredia* scattered, superficial, flat, very slightly bordered, whiter than the thallus.

Variolaria aspergilla, *Achar. Meth.* 13; *Lich.* 325; *Engl. Bot.* 2401.

On rocks and stones.

5. *Variolaria amara.* *Bitter smallpox-moss.*

Crust wrinkled, cracked, uneven, rather powdery white, slightly greyish; *apothecia* pressed close, plano-concave, bordered, bearing soredia, similar in colour to the thallus.

Lichen fagineus, *Engl. Bot.* 1713.
Variolaria amara, *Achar. Lich.* 324.

On the bark of trees.

Thallus very bitter, like Peruvian bark, not immediately perceptible, but extremely permanent; nucleus not yet found.

β. *discoidea*. *Crust* powdery, whitish then greyish, naked; *soredia* very crowded, then dilated, wavy, plano-concave; border raised, swollen.

Lichenoides candidum et farinaceum, scutellis fere planis, *Dillen Musc.* 131.
Lichen discoideus, *Engl. Bot.* 1714.
Variolaria discoideus, *Achar. Meth.* 14.
Lichen albescens, *Huds. Fl. Angl.* 529.
Lichen carpineus, *Lightf. Scot.* 809.
Variolaria amara discoidea, *Achar. Lich.* 325.

On the bark of trees.

6. *Variolaria lactea*. *Milky smallpox-moss.*

Crust tartarlike, regular, cracked in beds, smooth, milky, circumference slightly radiated and crenately lobed; *apothecia* crowded, bordered; above very white, powdery.

Lichen lacteus, *Lin. Mant.* 132; *Engl. Bot.* 2410.
Variolaria lactea, *Persoon in Ust. Ann.* 7; *Achar. Meth.* 14; *Lich.* 321.

On rocks and stones.

Nucleus not yet discovered.

7. *Variolaria corallina*. *Coralline smallpox-moss.*

Crust tartarlike, cracked, white, frequently nipply, branched; *apothecia* hemispherical, rather depressed at top; *nucleus* lentilshape, covered above with a thin powdery veil.

Lichen dealbatus, *Achar. Prod.* 29.
Isidium corallinum, *Achar. Meth.* 138.
Variolaria dealbata, *De Cand. Fl. Fr.* 2, 525; *Engl. Bot.* 2519.
Variolaria corallina, *Achar. Lich.* 319.

On stones and rocks.

Barren apothecia whiter and more convex, contain no nucleus.

8. *Variolaria griseo-virens*. *Greyish-green smallpox-moss.*

Crust elliptical, thin, slightly tartarlike, rugged, grey, scarcely limited; *apothecia* roundish, narrow-bordered; *soredia* greenish.

Variolaria griseo-virens, *Turner and Borrer in Engl. Bot.* 2400.

On the bark of birch and cherry trees.

9. *Variolaria cinerea.* *Grey smallpox-moss.*
Crust round, tartarlike, thin, ash-colour, cracked; circumference indeterminate; *apothecia* orbicular, very small, white, edge raised, soredia white.

Variolaria cinerea, *Engl. Bot.* 2411.

On whinstone.

C. PORIDÆ. *Thallus* crustlike; *apothecia* wartshape; *perithecium* distinct.

IV. 125. PYRENULA. Acharius. *Nut-moss.*
Thallus crustlike, flat, expanded, adnate, uniform; *apothecia* wartshape, formed of the thallus, enclosing or surrounding at the base a single thalamium, with a simple, thick, black, nippled perithecium covering a globular, cell-bearing throughout nucleus.

a. *Apothecia open at the mouth, or surrounding a naked thalamium.*

1. *Pyrenula umbonata.* *Button nut-moss.*
Crust tartarlike, regular, very finely cracked, greyish-red; *apothecia* bald, reddish, rather depressed above, slightly surrounding the rather prominent, nipplelike opening of the thalamium.

Verrucaria thelostoma, *Achar. in Winch. Bot. Guide*, 2, 44.
Lichen thelostomus, *Engl. Bot.* 2153.
Pyrenula umbonata, *Achar. Lich.* 316.

On whinstone.

b. *Apothecia closed, strictly surrounding the prominent nipple, or thalamium, but without forming a border.*

2. *Pyrenula tessellata.* *Tessellated nut-moss.*
Crust tartarlike, uneven, cracked in beds, yellowish-grey; *apothecia* enlarged at bottom, depressed, closed, strictly surrounding the prominent part of the thalamium, which is terminated above by a slightly bordered mouth.

Lichen tessellatus, *Engl. Bot.* 533.
Verrucaria fuscella viridula, *Achar. Lich.* 290.
Verrucaria tessellata, *Achar. Meth.* 115; *Lich.* 289.
Pyrenula tessellata, *Achar. Syn.* 126.

On brick-walls and stones.

3. *Pyrenula nigrescens.* *Blackish nut-moss.*

Crust tartarlike, slightly cracked, uneven, brownish-black; *apothecia* enlarged at bottom, depressed, rather wrinkled, closed, strictly surrounding the greatest part of the prominent, nipplelike thalamium.

Lichen umbrinus, *Achar. Prod.* 14; *Engl. Bot.* 1499.
Verrucaria umbrina, *Achar. Meth.* 122.
Verrucaria antiquitatis, *Florke in Berl. Mag.* 1807, 1, 17.
Pyrenula nigrescens, *Achar. Syn.* 126.

On stones.

V. 126. THELOTREMA. Acharius. *Open-wart-moss.*

Thallus crustlike, cartilaginous, flat, expanded, adnate, uniform; *apothecia* wartshape, formed of the thallus, open, bordered; *thalamium* single, enclosed in the wart; *perithecia* double; one halved above, thick, black, seldom wanting; the other very thin, membranaceous, sometimes alone, or broken above; surrounding a compressed, cellular, slightly streaked nucleus, placed in the bottom of the wart.

1. *Thelotrema lepadinum.* *Barnacle open-wart-moss.*

Crust smooth, whitish; *apothecia* smooth, nearly conoid, *edge* of the opening thin, simple, rather bent inwards, contracted; *bottom* covered with a membrane which becomes torn.

Lichen inclusus, *Engl. Bot.* 678.
Lichen lepadinus, *Achar. Prod.* 30.
Thelotrema lepadinum, *Achar. Meth.* 132; *Lich.* 312.

On the bark of trees.

2. *Thel. exanthematicum.* *Eruptive open-wart-moss.*

Crust rather tartarlike, thin, not cracked, greyish; *apothecia* convex, half sunk, whiter; opening half closed, radiately cracked, becomes gaping; bottom veiled, yellowish flesh-colour.

Lichen volvatus, *Villars Delph.* 55.
Lichen exanthematicus, *Smith in Lin. Tr.* 1, 81; *Engl. Bot.* 1184.
Urceolaria exanthematica, *Achar. Meth.* 146.
Thelotrema exanthematica, *Achar. Lich.* 313.

On rocks, especially limestone.

Habit peculiar, but seems most referable to this genus.

3. *Thelotrema agelæum.* *Inelegant open-wart-moss.*

Crust white, rather powdery, or sprinkled with very small granules or soredia; *apothecia* pressed close, few, slightly sunk in the crust.

Lichen argenus, *Achar. Prod.* 8.
Lichen agelæus, *Achar. Prod.* 30; *Engl. Bot.* 1923.
Urceolaria agelæa, *Achar. Meth.* 150.
Lecidea argena, *Achar. Meth.* 74.
Lecanora verrucosa β and γ, *Achar. Lich.* 355.
Thelotrema variolarioides agelæum, *Achar. in Act. Stockh.* 33, 149.

On the bark of old poplars and firs.

VI. 127. PORINA. Acharius. *Callus-moss.*

Thallus crustlike, cartilaginous, flat, expanded, adnate, uniform; *apothecia* wartlike, formed of the thallus, not bordered; *thalamium* one or more, hidden within the substance of the wart; *perithecium* simple, very thin, membranaceous, transparent; *opening* on the surface of the wart, coloured, thick; *nucleus* nearly globular, cellular, vesicle-bearing.

1. *Porina pertusa.* *Pierced callus-moss.*

Crust smooth, even, greyish white; *apothecia* nearly globular, openings many, depressed, black.

Lichenoides verrucosum et rugosum, cinereum, glabrum, *Dillen Musc.* 128.
Lichen pertusus, *Lin. Mant.* 131; *Engl. Bot.* 677.
Endocarpon pertusum, *Wahlenb. Lapp.* 459.
Sphæria melanostoma, *Bern. in Romer Archiv.* 4, 10.
Thelotrema pertusum, *Achar. Meth.* 131.
Porina pertusa, *Achar. Lich.* 308.

On the bark of the trunks of trees.

2. *Porina hymenea.* *Maidenhead callus-moss.*

Crust greyish, growing uneven; *apothecia* hemispherical, at length irregular, angular; *openings* many, cracked, widening.

Lichen pertusus, *Wulf. in Jacq. Coll.* 2, 181.
Lichen hymeneus, *Achar. Prod.* 80; *Engl. Bot.* 1731.
Thelotrema hymeneum, *Achar. Meth.* 133.
Porina lejoplaca hymenea, *Achar. Lich.* 310.
Porina fallax hymenea, *Achar. Syn.* 120.

On the bark of old oak-trees.

D. Verrucaridæ. *Thallus* crustlike; *apothecia* round, without any border; *perithecium* distinct.

VII. 128. LEJOPHLEA. Acharius. *Smooth-moss.*

Thallus crustlike, flat, expanded, adnate, uniform, cartilaginous, membranaceous, not cracked, smooth; *apothecia* with a nearly globular hemispherical thalamium, innate at

bottom in the thallus; *perithecia* double; the exterior rather cartilaginous, thick, hard, halved, with a nipple or opening above; the interior very thin, membranaceous, entirely enclosing a nearly globular, vesicular, cellular nucleus.

1. *Lejophlea punctiformis.* *Dotlike smooth-moss.*
Crust very thin, rather regular, smooth, brownish; *apothecia* small, hemispherical, nearly globular; mouths scarcely open; *nucleus* globular, white.

Lichen punctiformis, *Achar. Prod.* 18; *Engl. Bot.* 2412.
Verrucaria punctiformis, *Achar. Meth.* 119: *Lich.* 274.

On smooth barks of trees.

2. *Lejophlea analepta.* *Strengthening smooth-moss.*
Crust membranaceous, rather irregular, shining, olive; *apothecia* nearly sessile, scattered, hemispherical, conoid, nipplelike; *nucleus* compressed, nearly membranaceous, white.

Lichen analeptus, *Achar. Prod.* 15; *Engl. Bot.* 1848.
Verrucaria olivacea, *Persoon in Uster Ann.* 7, 28.
Verrucaria analepta, *Achar. Meth.* 119; *Lich.* 275.

On bark of trees, especially beeches.

3. *Lejophlea stigmatella.* *Small-dot smooth-moss.*
Crust thin, cartilaginous, membranaceous, smooth, growing cracked, whitish; *apothecia* small, hemispherical, crowded, nearly confluent; *mouths* extremely small; *nucleus* globular, greyish.

Lichen stigmatellus, *Achar. Prod.* 15; *Engl. Bot.* 1891.
Verrucaria cinerea, *Persoon in Ust. Ann.* 7, 28.
Verrucaria stigmatella, *Achar. Meth.* 117; *Lich.* 276.

On the smooth bark of trees.

4. *Lejophlea gemmata.* *Gemmed smooth-moss.*
Crust spreading, thin, smooth, silvery white; *apothecia* scattered, hemispherical, nipplelike, shining; *nucleus* globular, transparent.

Lichen melaleucus, *Engl. Bot.* 246.
Verrucaria alba, *Schrad. Germ.* 109.
Verrucaria melaleuca, *Achar. Meth.* 117.
Verrucaria gemmata, *Achar. Lich.* 278.

On the bark of tall trees.

VIII. 129. LITHOCIA. Acharius. *Stone-moss.*

Thallus crustlike, nearly tartarlike, unbroken, cracked in beds, or powdery, flat, expanded, adnate, uniform; *apothecia* with a nearly globular hemispherical thalamium, innate at bottom in the thallus; *perithecium* double, the exterior nearly cartilaginous, thick, black, halved above, with a nipple or mouth; the interior very thin, membranaceous; enclosing all around a nearly globular, vesicular, cellular nucleus.

1. *Lithocia Schraderi.* *Schrader's stone-moss.*

Crust tartarlike, unbroken, whitish; *apothecia* small, crowded, sunk, nearly globular; inside dirty-white, transparent.

Lichen Schraderi, *Achar. Prod.* 13; *Engl. Bot.* 1711.
Lichen immersus, *Hoffm. Lich.* 24.
Verrucaria immersa, *Persoon in Uster. Ann.* 7.
Verrucaria rupestris, *Schrader Germ.* 109.
Verrucaria Schraderi, *Achar. Meth.* 114; *Lich.* 284.

On limestone and chalk.

2. *Lithocia Harrimanni..* *Harrimann's stone-moss.*

Crust tartarlike, unbroken, distinctly limited, very thin, slightly pitted, mouse-colour; *apothecia* minute, nearly globular, sunk, nipple conical; inside dirty white.

Verrucaria Harrimanni, *Achar. Lich.* 284; *Engl. Bot.* 2539.

On hard grey limestone rocks.

3. *Lithocia plumbea.* *Lead-grey stone-moss.*

Crust tartarlike, scarcely broken, regular, very finely cracked, rather wrinkly, lead-colour; *apothecia* nearly globular, innate, become depressed above, saucershape; inside white.

Verrucaria plumbea, *Achar. Lich.* 285.
Lichen plumbosus, *Engl. Bot.* 2540.

On limestone-rocks.

4. *Lithocia glaucina.* *Greenish stone-moss.*

Crust cracked in beds, greenish-brown; *apothecia* half-sunk, prominent part hemispherical, afterwards pierced; inside dirty white, transparent.

Verrucaria glaucina, *Achar. Syn.* 94.

On the hardest stones.

5. *Lithocia maura.* *Blackmoor stone-moss.*

Crust tartarlike, thin, smooth, very much cracked, very deep black; *apothecia* minute, nearly globular, immersed; tip umbilicated, prominent; *nucleus* blackish.

Verrucaria maura, *Achar. Meth. Suppl.* 19; *Lich.* 291.
Lichen maurus, *Engl. Bot.* 2456.

On rocks and stones near the seaside.

6. *Lithocia striatula.* *Fine-streaked stone-moss.*

Crust figured, shrublike, bordered with greenish-black, beds rather separate, branched, radiating; *apothecia* conoid, afterwards slightly concave above, bordered; *nucleus* dot-like, transparent.

Verrucaria striatula, *Achar. Meth. Suppl.* 21; *Lich.* 293.

β. *acrotella* *Beds* of the crust dispersed, irregular, blackish-brown.

Verrucaria acrotella, *Achar. Meth.* 123.
Lichen acrotellus, *Engl. Bot.* 1712.
Verrucaria striatula acrotella, *Achar. Lich.* 293.

On flint-stones.

IX. 130. INODERMA. Acharius. *Tow-moss.*

Thallus soft, towlike, rather spongy, or thin cobwebby, adnate; *apothecia* containing a nearly globular or hemispherical thalamium, innate at bottom in the thallus; *perithecium* double, the external rather cartilaginous, thick, black, halved above, with a nipple or mouth; the interior very thin, membranaceous; including all around a nearly globular, vesicular, cellular nucleus.

1. *Inoderma epigea.* *Above-ground tow-moss.*

Thallus thin, nearly fibrous, uneven, pale yellowish; *apothecia* very small, globular, sunk; mouth prominent, inside black.

Sphæria epigea, *Persoon Syn. Fung. App.* 27.
Verrucaria epigea, *Achar. Meth.* 123; *Lich.* 295.

On muddy ground.

2. *Inoderma byssacea.* *Byssus tow-moss.*

Thallus rather leprous, cobwebby, dirty white; *apothecia* very small, nearly globular, half-sunk, pierced, inside black.

Sphæria byssacea, *Persoon Syn. Fung. App.* 32.
Verrucaria byssacea, *Achar. Meth.* 116; *Lich.* 294.

On the trunks of trees.

X. 131. ENDOCARPON. Hedwig. *Hidden-fruit.*

Thallus crustlike, flat, adnate, rather regular, or leaflike, and peltate; *apothecia* composed of a globular thalamium hidden in the substance of the thallus; *perithecium* single, membranaceous, thin, transparent, with a thick, nearly nipplelike prominent mouth, at the surface of the thallus; and enclosing a globular nucleus, nearly similar to the thallus.

1. *Endocarpon sinopicum.* *Jasper hidden-fruit.*

Thallus crustlike, cracked in beds, slightly lobed, greenish, rūsty, circumference depressed; *mouths* depressed, black.

Endocarpon Sinopicum, *Achar. Meth. Supp.* 30; *Lich.* 297.
Lichen Sinopicus, *Engl. Bot.* 1776, but not the magnified figure.

On slate.

2. *Endocarpon smaragdulum.* *Emerald hidden-fruit.*

Thallus crustlike, cartilaginous, rather leaflike, very small, slightly peltate, flat, pressed close, rounded, not cut, yellowish-green; mouths depressed, reddish-brown.

Endocarpon smaragdulum, *Achar. Meth. Supp.* 29; *Lich.* 298.
Lichen smaragdulus, *Engl. Bot.* 1512.

On rocks, and in their cracks.

3. *Endocarpon tephroides.* *Ash-colour-hidden-fruit.*

Thallus crustlike, membranaceous, spreading, rather leaflike, unbroken, wavy, frequently tiledlike, cracked, ash-grey, hoary; circumference irregular, crenately lobed, underneath black, rather spongy; mouths raised, convex, black, pierced.

Lichen tephroides, *Achar. Prod.* 18; *Engl. Bot.* 2013.
Endocarpon cinereum, *Persoon in Uster Ann.* 7, 28.
Endocarpon tephroides, *Achar. Meth.* 129; *Lich.* 297.

Upon the ground, and on rotten mosses.

4. *Endocarpon polythecium.* *Many-cased hidden-fruit.*

Thallus spreading, wrinkled, cracked, dark brownish-grey, hoary; *mouths* hemispherical, pierced, afterwards slightly bordered, crowded, tuberculated.

Lichen fuscellus, *Turner in Lin. Tr.* 7, 90; *Engl. Bot.* 1500.
Verrucaria fuscella α and γ, *Achar. Lich.* 289 and 675.
Verrucaria polythecia, *Achar. Lich.* 288.

On stones, walls, and the ground.

5. *Endocarpon Hedwigii.* *Hedwig's hidden-fruit.*

Thallus nearly cartilaginous, roundish, cornered and lobed, olive-colour; underneath at the edge paler, grow blackish, fibrilled; *mouths* rather prominent, blackish brown.

Lichen trapeziformis, *Dickson Crypt.* 2, 22; *Engl. Bot.* 595.
Lichen Endocarpon, *Withering Bot. Arr.* 4, 52.
Endocarpon hepaticum α and β, *Achar. Lich.* 298, 299.
Endocarpon pusillum, *Hedwig. Crypt.* 2, 56.
Endocarpon Hedwigii, *Achar. Meth.* 125; *Lich.* 298.

On barren heaths and the sides of mountains.

Thallus scarcely discernible except in wet weather, various in colour, both above and beneath, paler or darker, olive, rust-colour, brownish, brown, and blackish.

6. *Endocarpon lachneum.* *Woolly hidden-fruit.*

Thallus nearly cartilaginous, lobed; lobes aggregated, rather tiledlike; edge raised, turned over, wavy; underneath woolly, black.

Lichen lachneus, *Achar. Prod.* 140; *Engl. Bot.* 1698.
Endocarpon lachneum, *Achar. Meth.* 127; *Lich.* 299.

On downs and rocks.

7. *Endocarpon pallidum.* *Pale hidden-fruit.*

Thallus leatherlike, membranaceous, leaflike, pale, greenish, crenately lobed, grows irregularly jagged; *jags* bent, rather tiledlike; external jags underneath paler, naked; *mouths* hemispherical, pale, with a black dot.

Endocarpon pallidum, *Achar. Lich.* 301; *Engl. Bot.* 2541.
Endocarpon muscorum, *Achar. Lich.* 300.

Upon mosses, and rocks barely covered with earth.

8. *Endocarpon parasiticum.* *Parasitic hidden-fruit.*

Thallus crustlike, leatherlike, coppery, underneath black, fibrilled; lobes roundish, lobed, flat, smooth, afterwards convex, wrinkled, cracked, broken; *mouths* depressed, slightly bordered, at length convex.

Lichen parasiticus, *Engl. Bot.* 1866.
Endocarpon parasiticum, *Achar. Syn.* 100.

Parasitic on parmelia omphalodes.

9. *Endocarpon viride.* *Green hidden-fruit.*

Thallus thin, membranaceous, leaflike, roundish, slightly concave; edge not in the least cut, light greenish, underneath whitish, naked.

Endocarpon viride, *Achar. Lich.* 300.

On the ground among mosses.
Mouths not yet discovered.

10. *Endocarpon miniatum.* *Scarlet hidden-fruit.*
Thallus thick, crustlike, cartilaginous, leaflike, round peltate, greyish; circumference turned back, bent, plaited; underneath smooth, afterwards wrinkled, reddish brown; mouths small, few, slightly prominent, red.

Lichenoides coriaceum nebulosum cinereum punctatum, subtus fulvum, *Dillen Musc.* 223.
Lichen miniatus, *Lin. S. P.* 1617; *Engl. Bot.* 593, 1.
Endocarpon miniatum, *Achar. Meth.* 127; *Lich.* 302.

On stones and rocks.

11. *Endocarp. leptophyllum.* *Small-leaved hidden-fruit.*
Thallus cartilaginous, leaflike, round, peltate, black-brown or rather grayish; circumference turned back, bent; underneath smooth, wrinkled rather plaited, black; *mouths* black, slightly prominent.

Lichen leptophyllus, *Achar. Prod.* 141; *Engl. Bot.* 2012.
Endocarpon leptophyllum, *Achar. Meth.* 127; *Lich.* 502.

On rocks exposed to the drip of water.

12. *Endocarp. complicatum.* *Complicated hidden-fruit.*
Thallus leatherlike, cartilaginous, lobed, grey; underneath blackish-brown; lobes rather upright, roundish, plaited, convoluted; *mouths* crowded, convex, black.

Lichen polyphyllus, *Wulf. in Jacq. Coll.* 2.
Lichen amphibius, *Wither. Bot. Arr.* 4, 66; *Engl. Bot.* 593, 2.
Lichen complicatus, *Swartz in N. Act. Ups.* 4.
Endocarpon complicatum, *Achar. Meth.* 123; *Lich.* 303.

On rocks and stones near the water.
Thallus sometimes simple, approaches nearer to E. Weberi in habit than to E. miniatus, although esteemed by some a variety of the latter; retains its colour when moistened.

13. *Endocarpon Weberi.* *Weber's hidden-fruit.*
Thallus cartilaginous, nearly leatherlike, leaflike, lobed, greyish-brown-olive; underneath fawn-brown and black; each face smooth; lobes jagged, bent, plaited, crisp, huddled, irregular; *mouths* slightly convex, black.

Lichen fluviatilis, *Weber Gotting.* 265.
Lichen aquaticus, *Weiss Crypt.* 77; *Engl. Bot.* 594.
Platisma aquaticum, *Hoffm. Lich.* 2, 64.
Endocarpon fluviatile, *Wahlenb. Lapp.* 462.
Endocarpon Weberi, *Achar. Meth.* 128; *Lich.* 304.

On rocks and stones under water.

Thallus while wet a fine green; when dry blackish-brown or dark green; underneath sometimes deep black.

E. OPEGRAPHIDEÆ. *Thallus* crustlike, flat, expanded, adnate, uniform; *apothecia* sessile, flat, bordered, linear.

XI. 132. GRAPHIS. Adanson. *Trait-moss.*

Thallus crustlike, flat, expanded, adnate, uniform; *apothecia* composed of a long thalamium immersed in the thallus; *perithecium* single, cartilaginous, halved, lateral, black, enclosing a linear nucleus on both sides; centre naked above and below; inside cellular-streaked.

1. *Graphis scripta.* *Written trait-moss.*

Crust membranaceous, smooth, rather shining, whitish and rather greyish, nearly regular; *apothecia* slightly raised, naked, wavy, simple or branched; centre slitlike; *thalloid border* raised, membranaceous.

Lichenoides crusta tenuissima, peregrinis velut literis inscripta, *Dillen in Raii Syn.* 71, 48.
Lichen scriptus, *Lin. S. P.* 1606.
Opegrapha scripta, *Achar. Meth.* 30; *Engl. Bot.* 1813.
Graphis scripta, *Achar. Lich.* 265.

On the smooth bark of trees in woods.

Apothecia resemble Hebrew or Chinese characters.

2. *Graphis pulverulenta.* *Powdery trait-moss.*

Crust spreading, membranaceous, whitish; *apothecia* slightly raised, wavy; centre grooved, gaping, grey-hoary; *thalloid border* raised, slightly swollen.

Opegrapha pulverulenta, *Persoon in Uster Ann.* 7, 29; *Engl. Bot.* 1754.
Graphis pulverulenta, *Achar. Lich.* 266.

On the bark of trees.

3. *Graphis cerasi.* *Cherry-tree trait-moss.*

Crust very thin, grey, greenish, shining; *apothecia* slightly raised, straight, long, simple, pointed, nearly parallel; *centre* grooved, slightly hoary; *thalloid border* thin.

Opegrapha cerasi, *Persoon in Uster Ann.* 11, 20; *Engl. Bot.* 2301; *Achar. Meth.* 27.
Graphis cerasi, *Achar. Lich.* 268.

On the bark of cherry and sloe trees.

4. *Graphis betulina.* *Birch trait-moss.*

Crust very thin, white, bordered, with black; *apothecia* sunk, nearly simple, elliptic, long or starlike; *centre* broad, flat, rather hoary; *thalloid border* raised membranaceous.

Opegrapha betulina, *Persoon in Ust. Ann.* 7, 31; *Engl. Bot.* 2281; *Achar. Meth.* 20.
Graphis betulina, *Achar. Lich.* 268.

On the bark of birch-trees.

5. *Graphis dendritica.* *Shrublike trait-moss.*

Crust rather cartilaginous, uneven, very white; *apothecia* sunk, wavy, branched, black; branches diverging, forked, pointed; centre broad, flat, naked; *border* of the perithecium scarcely any, *thalloid border* very slight.

Opegrapha dendritica, *Achar. Meth.* 31; *Engl. Bot.* 1756.
Graphis dendritica, *Achar. Lich.* 271.

On the bark of trees.

Apothecia when moistened becomes transparent, brownish.

6. *Graphis serpentina.* *Serpentine trait-moss.*

Crust cartilaginous, membranaceous, uneven, wrinkled, regular, white and grey; *apothecia* sunk, long, crowded, bent, sometimes branched, blunt, grey-hoary; centre grows flat; *thalloid border* thick.

Opegrapha serpentina, *Achar. Meth.* 29; *Engl. Bot.* 1755.
Graphis serpentina, *Achar. Lich.* 269.

On the bark of trees.

Habit singular, and quite distinct from G. pulverulenta.

7. *Graphis Lyelli.* *Lyell's trait-moss.*

Crust membranaceous, smooth, pale olive-colour; *apothecia* crowded, seldom branched, curved, swollen, blunt; centre broad, convex, grey-hoary; *thalloid border* thick, white, powdery.

Opegrapha Lyelli, *Engl. Bot.* 1876.
Graphis Lyelli, *Achar. Syn.* 85.

On rugged barks of trees.

8. *Graphis elegans.* *Elegant trait-moss.*

Crust round, granular, bald, white; *apothecia* sunk, scattered, short, straight, seldom branched; edge of the perithecium grooved lengthways.

Opegrapha elegans, *Engl. Bot.* 1852.
Graphis elegans, *Achar. Syn.* 85.

On the smooth bark of young trees.

XII. 133. ALYXORIA. Acharius. *Wide-moss.*

Thallus crustlike, flat, expanded, adnate, uniform; *apothecia* oblong or long, sessile; covered with a black, cartilaginous membrane, enclosing a similar, rather solid parenchyme; centre linear, bordered on both sides, hollow, grooved or flat, open; borders distant.

1. *Alyxoria notha.* *Spurious wide-moss.*

Crust cartilaginous, rather leprous, whitish; *apothecia* sessile, scattered, rather roundish or oval, irregular; *centre* flat, grows convex, hemispherical, slightly tuberculated, edge very small.

Arthronia gibberulosa, *Achar. Lich.* 142.
Opegrapha verrucaroides β and δ, *Achar. Lich.* 244.
Opegrapha Lichenoides, *Persoon in Uster Ann.* 7, 30.
Opegrapha notha, *Achar. Meth.* 17; *Lich.* 252; *Engl. Bot.* 1890.

On the bark of old elms, fig, and other trees.

2. *Alyxoria diaphora.* *Variable wide-moss.*

Crust cartilaginous, membranaceous, dirty greyish-white; *apothecia* sessile, variable, oblong, rather long, narrow both ways, opake; centre flat; edges persistent, rather bent.

Opegrapha varia, *Persoon in Uster Ann.* 7, 30.
Opegrapha diaphora, *Achar. Meth.* 19; *Lich.* 254.
Opegrapha diaphora spanista, *Achar. Meth.* 19; *Lich.* 254.

On the trunks of trees.

XIII. 134. HYSTERINA. Acharius. *Slit-moss.*

Thallus crustlike, flat, expanded, adnate, uniform; *apothecia* oblong or long, sessile, covered with a black cartilaginous membrane, enclosing a similar rather solid parenchyme; *centre* linear, very narrow, slitlike, enclosed on each side with a swollen, connivent border nearly close.

1. *Hysterina nimbosa.* *Cloudlike slit-moss.*

Crust slightly cracked, uneven, very white; *apothecia* crowded, small, oval oblong, turgid; centre closed.

Opegrapha notha conferta, *Achar. Meth.* 18.
Opegrapha nimbosa, *Achar. Meth.* 18; *Lich.* 245; *Engl. Bot.* 2346.

On the bark of trees.

2. *Hysterina Persoonii.* *Persoon's slit-moss.*

Crust tartarlike, smoothish, coherent, uneven, whitish; *apothecia* innate, oblong; centre slitlike, growing wrinkled, bent, plaited, irregular, slightly running into one another; irregularly slightly gaping.

Opegrapha rupestris, *Persoon in Uster Ann.* 11, 20.
Opegrapha Persoonii, *Achar. Meth.* 17; *Lich.* 246; *Engl. Bot.* 2345.

On rocks and walls.

β. *aporea.* *Crust* tartarlike, leprous, uneven, powdery; *apothecia* roundish, irregular, wavy, plaited, serpentine, in various manners, gaping.

Lichenis simplicis varietas, *Davies Tr. Lin. Soc.* 2, 284.
Lecidea privigna, *Achar. Meth.* 49.
Opegrapha Persoonii aporea, *Achar. Meth.* 17; *Lich.* 246.

γ. *strepsodina.* *Crust* very thin, scarcely any, smooth, greyish; *apothecia* crowded, roundish, irregular, wrinkled and bordered.

Opegrapha Persoonii strepsodina, *Achar. Lich.* 247.

On slate-rocks.

3. *Hysterina petræa.* *Rock slit-moss.*

Crust tartarlike, cracked in beds, dirty-white; beds smooth; *apothecia* sessile, oblong, nearly linear, swollen, straightish, rather shining; *centre* slitlike, between raised edges.

Opegrapha petræa, *Achar. Syn.* 72.

On rocks.

4. *Hysterina calcarea.* *Limestone slit-moss.*

Crust tartarlike, powdery, very white; *apothecia* rather long, straight, swollen, opake, aggregated in stars; *centre* slitlike.

Opegrapha calcarea, *Engl. Bot.* 1790; *Achar. Lich.* 250.

On the mortar of old walls, and on limestone.

5. *Hysterina macularis.* *Spotted slit-moss.*

Crust regular, uneven, brown-black; *apothecia* small, run together, roundish, elliptic, growing wrinkled, irregular; *centre* slitlike.

Lichenoides punctatum et rugosum nigrum, *Dillen Musc.* 125.
Lichen rugosus, *Lin. S. P.* 1607.
Lichen macularis, *Relhan Cant.* 446.
Opegrapha quercina, *Persoon in Uster Ann.* 7, 31.
Opegrapha conglomerata, *Persoon in Uster Ann.* 7, 31; *Achar. Meth.* 23.
Opegrapha faginea, *Persoon in Uster Ann.* 7, 31.
Opegrapha macularis, *Achar. Lich.* 247; *Meth.* 21.
Opegrapha epiphega, *Achar. Meth.* 24.
Opegrapha macularis conglomerata, *Achar. Lich.* 247.
Opegrapha macularis faginea, *Achar. Lich.* 248.

On the bark of the branches of beech and oak trees.

6. *Hysterina herpetica.* *Eruption slit-moss.*

Crust nearly membranaceous, very finely cracked and wrinkled, rather rough, grey-brown; *apothecia* very small, innate in the crust, crowded, convex, elliptically oblong, rather long, straight; *centre* slitlike.

Opegrapha herpetica, *Achar. Meth.* 25; *Lich.* 248.
Opegrapha rubella decolorata, *Achar. Meth.* 21; *Lich.* 248.
Opegrapha fuliginosa, *Persoon in Act. Wetteraw*, 2, 44.
Opegrapha rimalis fuscata, *Achar. Lich.* 261.

On the trunks of trees.

7. *Hysterina disparata.* *Unlike slit-moss.*

Crust membranaceous, rather smooth, pale olive, or brownish with a green or red cast; *apothecia* various, roundish, oblong, longish, straight or crooked; centre slitlike.

Opegrapha rubella, *Persoon in Uster Ann.* 7, 31.
Opegrapha ænea, *Persoon in Uster Ann.* 7, 31.
Opegrapha viridis, *Persoon in Uster Ann.* 7, 31.
Opegrapha rubella α and δ, *Achar. Meth.* 21, 22.
Opegrapha siderella ænea, *Achar. Meth.* 26.
Opegrapha rubella α, γ and δ, *Achar. Lich.* 249, 250.

On the bark of trees.

8. *Hysterina vulgata.* *Common slit-moss.*

Crust cartilaginous, membranaceous, broken, rather scaly, smoothish, greenish-white; *apothecia* sessile, variously formed, long, cylindrical, wavy, rather shining; *centre* slitlike.

Opegrapha vulgata, *Achar. Meth.* 20; *Lich.* 250; *Engl. Bot.* 255, 1811.

On the clefts of old trees, especially fir-trees.

9. *Hysterina epipasta.* *Sprinkled slit-moss.*

Crust very thin, rather irregular, smooth, grey; *apothecia* innate, slightly raised, very small, convex, wrinkled, opake, various; the smaller apothecia dotlike; the longer extremely narrow, crooked, sometimes branched; *centre* and edges very slender, scarcely any.

Opegrapha dispersa, *Schrad. Krypt.* 167.
Opegrapha epipasta, *Achar. Meth.* 26; *Lich.* 258; *Engl. Bot.* 1828.

On smooth bark of trees, particularly maple and horse chestnut-trees.

10. *Hysterina microscopica.* *Microscopic slit-moss.*

Crust very thin, rather shining, pale olive; *apothecia* rather elliptic, not branched, nearly parallel, growing starlike, branched and angular; border very slight.

Graphis microscopica, *Ehrh. Crypt.* 278.
Opegrapha microscopica, *Engl. Bot.* 1911.
Opegrapha epipasta caraganæ, *Achar. Meth.* 26; *Lich.* 258.

On the smooth bark of trees, mostly in company with lejophlea analepta, gen. 128, 2.

11. *Hysterina venosa.* *Veiny slit-moss.*

Crust powdery, white; *apothecia* close together, branched, stuffed, prominent, bald.

Opegrapha venosa, *Persoon in Act. Wetter.* 2, 44; *Achar. Syn.* 334.

On the trunks of beech-trees; always surrounded with arthonia obscura, gen. 117, 3.

12. *Hysterina denigrata.* *Smutted slit-moss.*

Crust regular, membranaceous, palish-white; *apothecia* sessile, crowded, rather shining, longish, bent, sometimes branched; *centre* slightly channelled.

Opegrapha atra, *Persoon in Uster Ann.* 7, 30.
Opegrapha denigrata, *Achar. Meth.* 26; *Lich.* 259; *Engl. Bot.* 1753.
Opegrapha denigrata melanochroa, *Achar. Meth.* 27.
Opegrapha denigrata atra, *Achar. Lich.* 260.

On the bark of wallnut, ash, oak, and beech trees.

Fam. VI. 6. SARCOTHALAMEÆ. *Fungorum pars*, Linnæus. *Hypoxylorum pars*, De Candolle. *Xylaria*, Link. *Myelomyci*, Esenbeck. *Algarum pars*, Jussieu.

Thallus corky, fleshy, or 0; *thecæ* mostly immersed in the thallus or substance of the plant, coriaceous or bony, of a different substance from the thallus, opening by a regular mouth, sometimes but rarely bursting irregularly; *sporidia* ringed, intermixed with a deliquescent, deciduous pulp.—Grows generally on decayed plants, under the epidermis.

A. *Sporidia fixed; thecæ opening by a slit; thallus* 0. Hysterideæ.

Theca roundish, erumpent; *mouth* valvular ..... ACTIDIUM. 135.
Theca long, erumpent; *mouth* linear HYPODERMA. 136.
Theca long, naked; *mouth* linear .... HYSTERIUM. 137.

B. *Sporidia deliquescent; thecæ with a mouth or ruptile, fixed.* Sphærideæ.

Thallus clublike, succulent;
thecæ peripherical, horizontal ..... Xylaria. 138.
Thallus clublike, corky;
thecæ peripherical, horizontal ..... Hypoxylon. 139.
Thallus hemispherical, sessile;
thecæ peripherical, horizontal .. Periphorostoma. 140.
Thallus cupshape, stipitate;
thecæ vertical, immersed ..... Poronia. 141.
Thallus spreading, sessile;
thecæ vertical, immersed ..... Nemania. 142.
Thallus spreading, irregular;
thecæ clustered, naked ..... Cucurbitaria. 143.
Thallus spreading; *thecæ* immersed
in the bark; *mouths* connivent ..... Engizostoma. 144.
Thallus 0; *thecæ* immersed,
connivent; *mouths* erumpent ..... Circinostoma. 145.
Thallus 0; *thecæ* immersed,
upright; *mouths* erumpent ..... Exormatostoma. 146.
Thallus 0; *thecæ* naked;
mouths not discernible ..... Astoma. 147.
Thallus 0; *thecæ* naked;
mouths conspicuous ..... Sphæria. 148.

C. *Sporidia gelatinous; thecæ globular, projectile; thallus cupshaped.* Theleobilideæ.

Thecæ when mature projected ..... Thelebolus. 146.

D. *Sporidia threadlike, waxy, persisting; thecæ fixed, with a mouth.* Nemasporideæ.

Sporidia tendril-like ..... Nemaspora. 147.

A. Hysterideæ. *Thallus* 0; *thecæ* long or round; *mouth* opening by one or more slits; *sporidia* fixed, upright; *sporæ* oval.

I. 135. ACTIDIUM. Fries. *Actidium.*

Thallus 0; *thecæ* round, bursting through the epidermis of plants; *mouth* with many radiating slits.

Actidium Esenbeckii. *Esenbeck's actidium.*
Thecæ roundish, flat; *mouth* with five or six valves turned back.
Hysterium valvatum, *Esenbeck Syst.* 1, 281.
On decayed wood.

II. 136. HYPODERMA. De Candolle. *Hypoderme.*
Thallus 0; *thecæ* long, linear, bursting the epidermis; *mouth* a simple, linear slit.

1. *Hypoderma fraxini.* *Ash-tree hypoderme.*
Thecæ opake, blackish, ovate oblong, convex; *mouth* deep, lips turned back.
Sphæria sulcata, *Bolton Fungi*, 124; *Sowerby Engl. Fungi*, 315.
Hysterium fraxini, *Persoon Syn. Fung.* 100.
Hypoderma fraxini, *De Cand. Syn. Fl. Gall.* 64.
On the branches of ash and maple.

2. *Hypoderma quercinum.* *Oak hypoderme.*
Thecæ greyish-black, oblong, large, rather bellied, bent; *lips* acute, crisped.
Hysterium nigrum, *Tode Fung.* 1, 5.
Variolaria corrugata, *Bulliard Champ.* 117.
Sphæria collapsa, *Sowerby Engl. Fungi*, 373.
Hypoderma quercinum, *De Cand. Syn.* 64.
On dead sticks.

3. *Hypoderma conigerum.* *Conebearing hypoderme.*
Thecæ blackish, rather ovate, very small; *inside* wrinkly, powdery.
Hysterium conigerum, *Persoon Syn.* 102.
Hypoderma conigerum, *De Cand. Syn.* 824.
On dried strobiles of fir-trees.

4. *Hypoderma crispum.* *Crisp hypoderme.*
Thecæ long, convex, rather bellied; *lips* thin, crisp.
Hysterium crispum, *Persoon Syn. F.* 101.
Hypoderma crispum, *De Cand. Syn.* 826. * *
On the bark of pine-trees.

5. *Hypoderma arundinaceum.* *Reed hypoderme.*
Thecæ oval, depressed, greyish black, granular.
Hypoderma arundinaceum, *De Cand. Syn.* 825.
On dead stems of arundo vallatoria.

6. *Hypoderma xylomoides.* *Xyloma hypoderme.*
Thecæ elliptical, flat, shining, black.
Xyloma hysteroides, *Persoon Syn.* 106.
Hypoderma xylomoides, *De Cand. Syn.* 823.
On dead hawthorn and laurel-leaves.

III. 137. HYSTERIUM. Persoon. *Hysterium.*
Thallus 0; *thecæ* long, naked; *mouth* a simple linear slit. —On old dead wood.

1. *Hysterium mytilinum.* *Mussel hysterium.*
Thecæ aggregate, black-green, upright, lenticular, streaked crosswise, slightly pedicelled.
Hysterium mytilinum, *Persoon Syn.* 97.
On the bark of abies excelsa.

2. *Hysterium pulicare.* *Flea-brown hysterium.*
Thecæ gregarious, oblong, blunt, streaked, black; *lips* blunt.
Hysterium pulicare, *Persoon Syn.* 98.
Lichen scriptus β, *Lightf. Scot.* 2, 801.
On dead branches of oak-trees.

3. *Hysterium angustatum.* *Narrow-mouth hysterium.*
Thecæ crowded, linear, parallel, black; *lips* sharp.
Hysterium angustatum, *Persoon Syn.* 99.
On decayed wood.

B. Spherideæ. *Thallus* fleshy, leatherlike, crustlike, or 0; *thecæ* fixed, roundish, opening by a roundish mouth, sometimes remaining closed; *sporidia* long, mostly club-shape, twisted, deliquescing into a liquid slime; *sporæ* oblong, ringed.

IV. 138. XYLARIA. Hill. *Xylaria.*
Thallus long, clubshape, fleshy; *thecæ* roundish, in the circumference of the thallus; *mouths* circular.

a. *Growing on the earth.*

1. *Xylaria militaris.* *Soldierlike xylaria.*
Thallus yellowish red, head rough, rather tubercular; *mouth* slightly prominent.

Clavaria militaris, *Lin. S. P.* 1652.
Sphæria militaris, *Persoon Syn.* 1; *Sowerby Fungi*, 60.

Among grass and mosses; autumn.

Thallus 2 or 3 inches long, club rarely 2 or 3-cut.

2. *Xylaria alutacea.* *Leathery xylaria.*

Thallus opake, ochraceous; *club* smooth; *mouth* not prominent.

Sphæria alutacea, *Persoon Syn.* 2.

Pine-woods; autumn.

Club gradually thickening.

3. *Xylaria albicans.* *Whitish xylaria.*

Thallus pale whitish; *club* and bottom of the stipes swollen, smooth.

Sphæria clavata, *Sowerby Fungi*, 159.

Woods; autumn.

Thallus hollow, 2 inches high.

? *β. cylindrica.* *Thallus* nearly cylindrical.

Clavaria cylindrica, *Sowerby Fungi*, 90.

4. *Xylaria agariciformis.* *Mushroomlike xylaria.*

Thallus tuberous at bottom; *stipes* yellow; *club* ovate, dark chestnut, dotted.

Sphæria agariciformis, *Bolton Fung.* 130; *Sowerby Fungi*, 354.
Sphæria capitata, *Persoon Syn.* 3.

In woods.

Thallus 2-coated at bottom, inside black; *stipes* rather twisted.

b. *Growing upon dead insects.*

5. *Xylaria entomorhiza.* *Insect-rooting xylaria.*

Stipes long, very slender; *club* spherical, brown, granulated.

Sphæria entomorhiza, *Dickson Crypt.* 22; *Persoon Syn.* 4.

On the dead larvæ of wasps.

Stipes simple or branched, compressed, 2 inches long.

6. *Xylaria apum.* *Bee xylaria.*

Stipes shortish, thick, tuberous at bottom; *club* granulated, chocolate-brown.

On the pupæ of bees.

Stipes an inch long; head a quarter as long, one or two from the same base.

V. 139. HYPOXYLON. *Hypoxylon.*

Thallus long, slightly clubshape, or branched; leatherlike; inside blackish; outside whitish; *thecæ* roundish; *mouths* circular, in the circumference of the thallus.

1. *Hypoxylon pedunculatum.* *Footstalked hypoxylon.*

Thallus leatherlike, corky, black, bald; inside white; *stipes* simple, roundish, slender; *club* ovate, conical.

Sphæria pedunculata, *Sowerby Fungi*, 437.
Clavaria parasitica, *Withering Bot. Arr.* 4, 397.

On lycoperda.

2. *Hypoxylon ophioglossoides.* *Adders-tongue hypoxylon.*

Thallus blackish; inside yellowish green; *club* ovate, roundish, thickened.

Clavaria radicosa, *Bulliard Champ.* 195.
Sphæria ophioglossoides, *Persoon Syn.* 4.
Sphæria radicosa, *De Cand. Syn.* 754.

On heaths and pine-woods; autumn.

Club sometimes 2-cut.

3. *Hypoxylon cornutum.* *Horned hypoxylon.*

Thallus leatherlike, corky, black, compressed, gregarious; base hirsute; tip white, powdery.

Clavaria Hypoxylon, *Lin. Syst. Veg. ed.* 15, 1013.
Sphæria cornuta, *Hoffm. Crypt.* 4, 11.
Sphæria Hypoxylon, *Persoon Syn.* 5; *Sowerby Fungi*, 55.

On rotten wood in gardens.

Thecæ below the tip.

β. *cupressiforme.* *Thallus* small; *club* bellied or round, pointed.

Sphæria cupressiformis, *Woodward in Wither. Bot. Arr.* 3, 457.
Lichen-agaricus nigricans, cupressiformis, ramosus et non ramosus, lignis aridis adnascens, *Micheli N. Gen. Pl.* 104.

γ. *ramosum.* *Thallus* slender, very much branched.

Sphæria ramosa, *Sowerby Fungi*, 395.

4. *Hypoxylon polymorphum.* *Very-various hypoxylon.*

Thallus leatherlike, corky, black, bald, gregarious; inside white, tip yellowish, compressed, branchy, tuberculate.

Clavaria digitata, *Fl. Dan.* 900.
Sphæria digitata, *Sowerby Fungi*, 69.
Sphæria carcharias, *Gmel. Syst. Nat.* 2, 1474.
Sphæria polymorpha, *Persoon Syn.* 7.

On rotten, decayed wood.

Thallus very variable; tip of the club blunt.

β. *spathulatum.* *Thallus* slightly compressed, reverse-conical; *stipes* very short.

γ. *mammillanum.* *Club* bellied, ending in a long barren point.

5. *Hypoxylon digitatum.* *Fingered hypoxylon.*
Thallus leatherlike, corky, black; inside white; *stipes* connate at bottom; tip white, powdery, pointed, naked.

Clavaria digitata, *Lin. Syst. Veg. ed.* 15, 1010.
Sphæria digitata, *Persoon Syn.* 7.

On rotten wood.

VI. 140. PERIPHEROSTOMA. *Peripherostome.*
Thallus leatherlike, corky, hemispherical, sessile, depressed; *thecæ* in the circumference of the thallus.

a. *Thallus naked, free.*

1. *Periph. concentricum.* *Concentric peripherostome.*
Thallus nearly globose, bald, uneven; *thecæ* immersed, in concentric striæ.

Sphæria concentrica, *Bolton Fungi*, 180.
Sphæria fraxinea, *Sowerby Fungi*, 160.

On ash and hornbeam trees.
Thallus 2 or 3 inches in diameter.

β. *multicapsulare.* *Thallus* small.

Sphæria multicapsula, *Sowerby Fungi*, 436.

2. *Periph. fragiformis.* *Strawberry peripherostome.*
Thallus nearly globular, black; surface granulated; *thecæ* rather prominent, reddish-brown.

Lycoperdon variolosum, *Lin. Syst. Veg. ed.* 15, 2, 1019.
Sphæria fragiformis, *Persoon Syn.* 9.

On birch-trees.

3. *Peripherostoma fuscum.* *Brown peripherostome.*
Thallus brown, hemispherical, flattened, confluent; *thecæ* swollen, umbilicated, tubercular.

Sphæria confluens, *Willd. Berol.* 416.
Sphæria fragiformis, *Hoffm. Crypt.* 1, 20.
Sphæria tuberculosa, *Bolton Fungi*, 123; *Sowerby Fungi*, 374.
Sphæria aciniformis, *Sowerby Fungi*, 273?
Sphæria fusca, *Persoon Syn.* 12.

On the dried branches of hawthorn or of nut-trees.
Thallus conical, scattered, dark opake dull brown; *thecæ* sometimes even, not swollen.

β. *depressum.* *Thallus* flattened, rather wrinkled.

γ. *inequale.* *Thallus* wartlike, unequal, confluent.

4. *Peripherostoma confluens.* *Confluent peripherostome.* *Thallus* black, unequal, expanded; *thecæ* free above.

Sphæria cohærens, *Persoon Syn.* 11.

On the trunks of beech-trees.

5. *Peripherostoma irregulare.* *Irregular peripherostome.* *Thallus* irregular, tubercular, black; *thecæ* reddish-brown, irregularly scattered.

Sphæria irregularis, *Sowerby Fungi*, 374.

On rotten wood.

6. *Peripherostoma granulosum.* *Granular peripherostome.* *Thallus* light, spongy, knoblike, black; *thecæ* immersed; *mouth* level with the surface.

Sphæria granulosa, *Bulliard Champ.*; *Sowerby Fungi.* 356.

On dead birch-trees.

7. *Periph. multiceps.* *Many-headed peripherostome.* *Thallus* flat, black, sooty, irregular, spreading; inside green; *thecæ* with a pointed acuminated mouth.

Sphæria multiceps, *Sowerby Fungi*, 395.

On decayed sticks.

b. *Bursting through the bark.*

8. *Periph. melogramma.* *Black-letter periphrostome.* *Thallus* reverse-conical, soot-black; *thecæ* rather prominent.

Sphærica ocellata, *Persoon Disp.* 2.
Variolaria melogramma, *Bulliard Champ.* 182.
Sphæria obducta, *Bolton Fungi*, 125.
Sphæria melogramma, *Persoon Syn.* 13.

On branches of beech and birch trees.

9. *Peripherostoma ribis.* *Currant-tree peripherostome.* *Thallus* elliptical, bursting forth across the branches, brown, grooved.

Sphæria Ribesia, *Persoon Syn.* 14.

On dry branches of red-currant bushes, winter.

10. *Peripherostoma sambuci.* *Elder-tree peripherostome.*
Thallus flat, grayish, soft; outside black; *thecæ* prominent.
Sphæria sambuci, *Persoon Syn.* 15.
On elder-trees.

11. *Peripherostoma parallelum.* *Parallel peripherostome.*
Thallus nearly smooth, blackish; *thecæ* embedded.
Sphæria parallela, *Sowerby Fungi*, 374, 4.

12. *Peripherostoma populi.* *Poplar peripherostome.*
Thallus scattered, orbicular, on poplar leaves.
Sphæria populi, *Sowerby Fungi.* 374, 2.

13. *Peripherostoma ulmi.* *Elm-tree peripherostome.*
Thallus scattered, orbicular; on the leaves of ulmus campestris.
Sphæria ulmaria, *Sowerby Fungi*, 374, 3.

14. *Peripherostoma depressum.* *Flattened peripherostome.*
Thallus orbicular, flat, black, inside white; *thecæ* not prominent.
Sphæria depressa, *Sowerby Fungi*, 216.
Variolaria punctata, *Bulliard Champ.* 432, 2.
On rotten sticks.

15. *Peripherostoma arundinacea.* *Reed peripherostome.*
Thallus oblong, long, flat, black; *thecæ* in a single longitudinal row.
Sphæria arundinacea, *Sowerby Fungi*, 336.
On the stalks of arundo vallatoria.

VII. 141. PORONIA. Willdenow. *Poronia.*
Thallus leatherlike, stipitate, cupshaped; centre orbicular, truncated; *thecæ* scattered, immersed vertically in the thallus.

Poronia Gleditschii. *Gleditsch's poronia.*
Thallus cupshape; *stipes* sooty; centre snow-white; *thecæ* scattered, like black spots.
Sphæria truncata, *Bulliard Champ.* 127, 2.
Sphæria punctata, *Sowerby Fungi*, 54.
Sphæria Poronia, *Persoon Syn.* 15.
Peziza punctata, *Lin. Syst. ed.* 15, 1017.
Poronia Gleditschii, *Willd. Berol.* 400.
Sandy places, on horse-dung, rarely on cow-dung.

VIII. 142. NEMANIA. *Nemania.*

Thallus sessile, spreading, orbicular or elliptical; *thecæ* scattered, immersed vertically in the thallus.

a. *Thallus naked, free.*

1. *Nemania deusta.* *Burnt nemania.*

Thallus broad, thick, wrinkled, spreading, brown; *mouths* prominent.

Hypoxylon ustulatum, *Bulliard Champ.* 487, 1.
Sphæria deusta, *Persoon Syn.* 16.
Sphæria maxima, *Weber Germ.* 286; *Sowerby Fungi*, 338.
Sphæria versipellis, *Tode Fung.* 2, 55.

On the trunks of trees, in woods; spring.

Thallus centre gray, powdery; limb whitish, at length bullated, waved, ridged, entirely black.

2. *Nemania graminis.* *Grass nemania.*

Thallus black, equal, spotlike.

Sphæria graminis, *Persoon Syn.* 30.

On the withered leaves of grasses.

3. *Nemania typhina.* *Bullrush nemania.*

Thallus dark yellow.

Sphæria typhina, *Persoon Syn.* 13.

On withered leaves of grasses and bullrushes.

4. *Nemania serpens.* *Creeping nemania.*

Thallus black, flat, spreading lengthways; *thecæ* prominent.

Sphæria serpens, *Persoon Syn.* 20.

On oak and beech-wood.

5. *Nemania uda.* *Moist nemania.*

Thallus oblong, aggregate, black; *thecæ* very prominent.

Sphæria uda, *Persoon Syn.* 33.

On dry oak-wood.

6. *Nemania picea.* *Pitchy nemania.*

Thallus spreading, irregular, smooth, brownish-black, pitchy, cracked; *thecæ* embedded.

Sphæria picea, *Sowerby Fungi*, 374, 5.

On the outside of wood.

7. *Nemania immersa.* *Sunken nemania.*
Thallus spherical, black, penetrating wood in various directions.
Sphæria immersa, *Sowerby Fungi*, 374, 1.

8. *Nemania diffusa.* *Spread nemania.*
Thallus spreading, irregular, black.
Sphæria diffusa, *Sowerby Fungi*, 373, 10.
On the bark of dry wood, under the epidermis.

9. *Nemania fuliginosa.* *Sooty nemania.*
Thallus black; *thecæ* prominent.
On rotten branches of oak-trees, on the epidermis.

10. *Nemania crustacea.* *Crustlike nemania.*
Thallus spread; *thecæ* slightly prominent; *mouth* prominent.
Sphæria crustacea, *Sowerby Fungi*, 372, 11.
On the trunks of trees.

b. *Bursting forth from under the bark.*

11. *Nemania stigma.* *Stigma nemania.*
Thallus broad, flat, equal, spreading under the epidermis; inside white, outside black; *mouths* immersed, flattish, spotlike.
Sphæria stigma, *Hoffm. Crypt.* 1, 7.
Hypoxylon operculatum, *Bull. Champ.* 177.
On dried branches of hawthorn.

12. *Nemania decorticata.* *Unbarked nemania.*
Theca inside white, outside black; *mouths* rather prominent, conical.
Sphæria decorticata, *Sowerby Fungi*, 137.
Sphæria stigma decorticata, *Persoon Syn.* 21.
On dead branches of hazel.

13. *Nemania maculata.* *Spotted nemania.*
Thallus broad, spread, quite flat, black; *thecæ* pointed, globular, covered with a rust-colour veil.
Sphæria cinerea, *Sowerby Fungi*, 373, 11.
Sphæria macula, *Tode Meckl.* 2, 33.
On dry branches of oak-trees.
Spot black, large; *thecæ* wool-like; *mouths* slightly protuberant.

14. *Nemania lata.* *Broad nemania.*
Thallus scarcely any, spreading; *thecæ* black; *mouths* rather conical, angular.
Sphæria lata, *Persoon Syn.* 29.
On dry branches and wood.

15. *Nemania quercina.* *Oak nemania.*
Thallus black-brown, nearly orbicular, girt by the epidermis; *mouths* rather prominent, quadrangular, blunt.
Sphæria quercina, *Persoon Syn.* 24.
On dry branches of oak-trees.

16. *Nemania disciformis.* *Dishlike nemania.*
Thallus black, nearly orbicular, flat; *mouths* sunk, spotlike.
Sphæria disciformis, *Hoffm. Crypt.* 1, 15.
On dry branches of beech-trees.
Thallus shining, inside whitish-gray.

17. *Nemania ferruginea.* *Iron-colour nemania.*
Thallus brown-black, inside iron-colour, transverse; *mouths* prominent, thornlike.
Sphæria ferruginea, *Persoon Syn.* 35.
On dry branches of hazel.

18. *Nemania cerato-sperma.* *Horn-seed nemania.*
Thallus convex, black, smooth, scattered; *mouths* spinulous, connate.
Sphæria Ceratospermum, *Tode Meckl.* 2, 55.
Under the bark of the dog-rose.
Thalli gregarious; inside white.

19. *Nemania protracta.* *Protracted nemania.*
Thallus bursting forth lengthways, protracted, black; *thecæ* globular, approximated in pairs; *mouths* very short, blunt, rather wrinkly, angular.
Sphæria protracta, *Persoon Syn.* 34.
On the branches of maple-trees.

20. *Nemania flavo-virens.* *Yellow-green nemania.*
Thallus roundish, flattish yet convex, black, inside greenish, powdery.
Sphæria flavovirens, *Hoffm. Crypt.* 1, 10.
On dead branches and sticks in woods.

21. *Nemania lævis.* *Smooth nemania.*
Thallus smooth, shining, oblong, black; inside whitish; *thecæ* ovate.

Sphæria lævis, *Sowerby Fungi*, 394, 5.

On hazel-sticks?

IX. 143. CUCURBITARIA. *Cucurbitaria.*

Thallus spreading, irregular; *thecæ* in tufts, placed on the thallus.

1. *Cucurbitaria berberidis.* *Berberry cucurbitaria.*
Tufts bursting out from the bark, irregular; *thallus* thin, blackish; *thecæ* mouthless, ovate, cracked.

Sphæria berberidis, *Persoon Syn.* 52.

On the branches of berberry bushes.
Tufts long.

2. *Cucurbitaria cupularis.* *Cup cucurbitaria.*
Tufts black; *thecæ* wrinkled, mostly collapsed, mouthless.

Sphæria cupularis, *Persoon Syn.* 53.

On the dead branches of lime and hornbeam trees.

3. *Cucurbitaria rubra.* *Red cucurbitaria.*
Tufts roundish, pale vermilion-red; *thallus* scarcely any; *thecæ* collapsed, porringershaped, smoothish, mouthless.

Sphæria cucurbitula, *Tode Meckl.* 38.

On the branches of various trees.

4. *Cucurbitaria coccinea.* *Scarlet cucurbitaria.*
Tufts bursting out of the bark, nearly round, scarlet; *thallus* scarcely any; *thecæ* ovate; *mouths* blunt.

Sphæria coccinea, *Persoon Syn.* 49.
Sphæria decidua, *Tode Meckl.* 2, 31.

On the bark of beech-trees.

X. 144. ENGIZOSTOMA. *Engizostome.*

Thallus scarcely any, filling up the interstices between the thecæ which are sunk in the bark, concentrically connivent; *mouths* circular, connivent.

1. *Engizostoma ciliatum.* *Fringed engizostome.*
Thecæ black; *mouth* bristlelike, flexible, diverging above.
Sphæria ciliata, *Persoon Syn.* 35.
On the branches of elm-trees.

2. *Engizostoma corniculatum.* *Inkhorn engizostome.*
Thecæ roundish, black; *mouths* cylindrical, congregated into a compact neck; *tip* umbilicated.
Sphæria corniculata, *Persoon Syn.* 40.
Under the bark of trees.

3. *Engizostoma microstomum.* *Small-mouth engizostome.*
Thecæ roundish; disk prominent, flattish, black; *mouths* very numerous, growing together into a finely granular disk.
Sphæria microstoma, *Persoon Syn.* 40.
On the branches of plum-trees.

4. *Engizostoma leucostomum.* *Whitemouth engizostome.*
Thecæ whitish; neck truncated, bursting forth; *mouths* 2 or 3, black, dotlike.
Sphæria leucostoma, *Persoon Syn.* 29.
Sphæria marginata, *Sowerby Fungi*, 372, 7.
On the branches of cherry and plum trees.

5. *Engizostoma scutellatum.* *Saucerlike engizostome.*
Thallus saucerlike, bursting the bark; *thecæ* bottleshape, loosely conglutinated, brown.
Sphæria scutellata, *Persoon Syn.* 37.
On the branches of maple.
Thallus at first simple, with a thick, central mouth, then enlarging and disclosing the thick bottleshape thecæ.

6. *Engizostoma pustulatum.* *Eruption engizostome.*
Thallus blackish-brown, orbicular, plano-convex, contracted above, perforated with a single central, powdery pore; *thecæ* very small.
Sphæria pustulata, *Hoffm. Crypt.* 1, 26.
On the trunks of willows.

XI. 145. CIRCINOSTOMA. *Circinostome.*
Thallus 0; *thecæ* growing under the epidermis of plants, and perforating it, placed in a circle; *mouths* close together.

1. *Circinostoma pulchellum.* *Pretty circinostome.*
Thecæ close, deep, very much crowded, inclined, black; *mouths* very long, cylindrical, bent.
Sphæria pulchella, *Persoon Syn.* 43.
Upon cherry-trees.
Thecæ ovate, collapsed; *mouths* pressed together, mostly flexuous; perforated at the tip.

2. *Circinostoma ambiens.* *Girding circinostome.*
Thecæ rather ovate, girt with a white disk.
Sphæria ambiens, *Persoon Syn.* 44.
On hawthorn and beech trees.

3. *Circinostoma quaternatum.* *Quaternion circinostome.*
Thecæ in fours, depressed; *mouths* very short, blunt, joined together.
Sphæria quaternata, *Persoon Syn.* 45.
On dry beech and maple trees.
Thecæ lying down; *mouths* bent inwards, very short.

4. *Circinostoma conjunctum.* *Conjoined circinostome.*
Thecæ 3 to 9, depressed; *mouths* conjoined into a black, shining, umbilicated disk.
Sphæria conjuncta, *Esenbeck Syst.* 80.
On the branches of hazel-trees; spring.

5. *Circinostoma convergens.* *Converging circinostome.*
Thecæ ovate, nearly upright; *mouths* straight, cylindrical.
Sphæria convergens, *Tode Meckl.* 2, 39; *Sowerby Fungi*, 374, 6.
On the branches of trees.
Thecæ scarcely decumbent; *mouths* converging.

6. *Circinostoma umbilicatum.* *Umbilicated circinostome.*
Thecæ small, crowded, nearly cupshape, rough.
Sphæria umbilicata, *Persoon Syn.* 45.
On hazel-trees.
Mouths rather prominent; *tip* deeply umbilicated.

XII. 146. EXORMATOSTOMA. *Exormatostome.*

Thallus 0; *thecæ* growing under the epidermis of plants and perforating it, scattered; *mouths* upright.

1. *Exorm. rhodostomum.* *Rosy-mouth exormatostome.*
Thecæ hemispherical, black, barked, aggregated into a black stratum; *tip* flat, perforated, rosy-red.

Sphæria rhodostoma, *Alb. et Schw. Fung.* 43.

On rhamnus frangula.

2. *Exormatostoma tiliæ.* *Lime-tree exormatostome.*
Thecæ pitchershape, saucerlike, brownish-black; tip flat, membranaceous; containing within them an unattached utriculus.

Sphæria tiliæ, *Persoon Syn.* 84.

On decayed branches of lime-trees.

3. *Exormatostome tessellatum.* *Chequered exormatostome.*
Thecæ black, hollowed at the base; *mouths* dotlike, perforating the epidermis in a regular series.

Sphæria tessellata, *Persoon Syn.* 48.

On the bark of trees.
Mouths placed in quincunx, in parallel lines, or in ellipses.

4. *Exormatostoma nebulosum.* *Cloudlike exormatostome.*
Thecæ grey, very minute, forming irregular, interrupted, blackish-grey spots; *mouths* prominent, rather acute.

Sphæria nebulosa, *Persoon Syn.* 31.
Sphæria maculans, *Sowerby Fungi*, 394, 9.

On the stems of large herbaceous plants.
Spots greyish, cloudlike, about a quarter of an inch broad.

5. *Exormatostoma herbarum.* *Herb exormatostome.*
Thecæ scattered, flat, depressed; *mouths* short, nipplelike.

Sphæria herbarum, *Persoon Syn.* 78.

On dry stems of herbs.
Thecæ at first covered, afterwards naked, collapsed.

6. *Exormatostoma tubiforme.* *Tubeshape exormatostome.*
Thecæ hemispherical, brown, on leaves; *mouths* cylindrical, twice as long as the thecæ, bursting forth.

Sphæria tubiformis, *Tode Meckl.* 2, 51.

On beech, hornbeam, and birch leaves.

7. *Exormatostoma barbatum.* *Bearded exormatostome.*
Thecæ nearly globular, brown, on leaves; *mouths* eight times as long as the thecæ, bristlelike; *tips* bearded.
Sphæria barbata, *Persoon Syn.* 60.
On the fallen leaves of oak-trees.

8. *Exormatost. subcorticale.* *Underbark exormatostome.*
Thecæ depressed, within the outer bark, piercing the epidermis, when dry collapsed at bottom.
Sphæria subcorticalis, *Sowerby Fungi*, 296.
On the bark of plants and on rotten sticks.

9. *Exorm. subimmersum.* *Half-sunk exormastotome.*
Thecæ globular, black, pushing up the epidermis into a dark-grey hemisphere.
Sphæria subimmersa, *Sowerby Fungi*, 372, 8.
On the bark of trees.

10. *Exormatostoma duplex.* *Double exormatostome.*
Thecæ globular, within the outer bark, piercing the epidermis; *mouths* globular, black.
Sphæria duplex, *Sowerby Fungi*, 375, 4.
On the stems of umbelliferous plants.

XIII. 147. ASTOMA. *Astome.*
Thallus 0; *thecæ* naked, innate or free, placed on wood, mouthless.

a. *Growing upon wood.*

1. *Astoma cylindricum.* *Cylindrical astome.*
Thecæ extremely small, gregarious, cylindrical, black; tipped with a whitish globule.
Sphæria cylindrica, *Persoon Syn.* 93.
On willow-wood.

2. *Astoma parabolicum.* *Parabolic astome.*
Thecæ extremely small, gregarious, conical, cylindrical, smooth, black, with a livid globule at the tip.
Sphæria parabolica, *Tode Meckl.* 43.
On rotten wood.

3. *Astoma subulatum.* *Awlshape astome.*
Thecæ aggregate, awlshape, yellowish, larger at bottom, globule at the tip pale, deliquescent.
Sphæria subulata, *Persoon Syn.* 94.
On rotten agaries.

4. *Astoma solidum.* *Solid astome.*
Thecæ elliptical, depressed, placed longitudinally, black, with bent bristles of the same colour.
Sphæria solida, *Sowerby Fungi*, 314.
On stems of herbs.

5. *Astoma carbonarium.* *Carbonaceous astome.*
Thecæ crowded, black, roundish, ovate, rather tuberculate; tip nipply.
Sphæria Pulvis pyrius, *Persoon Syn.* 86.
Sphæria Pulvis, *Persoon Disp.* 51.
On dry wood.

6. *Astoma moriforme.* *Mulberry astome.*
Thecæ aggregate, scattered, black, oval, tuberculate.
Sphæria moriformis, *Persoon Syn.* 86.
On dry trunks of trees.

7. *Astoma nigrum.* *Black astome.*
Thecæ flattish, small, tip indented, black.
Sphæria nigra, *Sowerby Fungi*, 393, 1.
On the decayed stems of umbelliferous plants.

8. *Astoma tuberosum.* *Tuberous astome.*
Thecæ wartlike, outside black, inside white, protruding.
Sphæria tuberosa, *Sowerby Fungi*, 393, 2.
On the bark of plants.

9. *Astoma brassicæ.* *Cabbage astome.*
Thecæ tubercular, large, black, inside white.
Sphæria brassicæ, *Sowerby Fungi*, 393, 3.
On rotten cabbage-leaves.

10. *Astoma guttæforme.* *Droplike astome.*
Thecæ black, nearly conical, very minute, brittle.
Sphæria Gutta, *Sowerby Fungi*, 393, 5.
On plants.

b. *Growing upon the leaves of plants.*

11. *Astoma punctiforme.* *Dotlike astome.*
Thecæ dotlike, scattered, at last collapsed, umbilicated, rather shining.
Sphæria punctiformis, *Persoon Syn.* 90.
On oak-leaves.

12. *Astoma hederæ.* *Ivy astome.*
Thecæ depressed, cupshape.
Sphæria punctiformis β, *Persoon Syn.* 90.
Sphæria hederæ, *Sowerby Fungi*, 371, 5.
On ivy-leaves.

13. *Astoma tofieldiæ.* *Tofield astome.*
Thecæ depressed, partly immersed.
Sphæria tofieldiæ, *Sowerby Fungi*, 370, 3.
On the leaves of tofieldia palustris.

14. *Astoma potentillæ.* *Potentilla astome.*
Thecæ naked.
Sphæria potentillæ, *Sowerby Fungi*, 370, 2.
On the leaves of potentilla verna.

15. *Astoma arbuti.* *Arbutus astome.*
Thecæ hemispherical.
Sphæria arbuti, *Sowerby Fungi*, 370, 6.
On the leaves of arbutus.

16. *Astoma? lauri.* *Bay astome.*
Thecæ conical, penetrating the leaves, and forming a black ring on the under side.
Sphæria lauri, *Sowerby Fungi*, 371, 4.
On bay leaves.

17. *Astoma salicinum.* *Willow astome.*
Thecæ conical, penetrating the leaves and forming a black ring on the under side, sometimes dotted in the centre.
Sphæria salicina, *Sowerby Fungi*, 372, 1.
On willow-leaves.

18. *Astoma circumvallatum.* *Fortified astome.*
Thecæ depressed, blackish.
Sphæria circumvallata, *Sowerby Fungi*, 373, 4.
On oak-leaves.

19. *Astoma bifrons.* *Two-faced astome.*
Thecæ black, penetrating and rising a little above the surface on both faces of leaves.
Sphæria bifrons, *Sowerby Fungi*, 316.
On holly-leaves.

20. *Astoma concavum.* *Concave astome.*
Thecæ flat, beneath concave, black, on the upper surface only of the leaves.
Sphæria concava, *Sowerby Fungi*, 317.
On holly-leaves.

21. *Astoma pustulatum.* *Pustule astome.*
Thecæ flat.
Sphæria pustula, *Sowerby Fungi*, 370 and 375, 1.
On the bark of trees.

XIV. 148. SPHÆRIA. Haller. *Spheria.*
Thallus 0; *thecæ* free, placed on the wood, or naked and attached to it; *mouths* cylindrical or slightly compressed.

a. *Mouth short, or nipplelike.*

1. *Sphæria aurantiaca.* *Orange spheria.*
Thecæ globular, orange-colour; *mouths* minute, nipplelike, blunt, crowded in the middle of a very slender yellow base.
Sphæria aurantia, *Persoon Syn.* 68.
On rotten fungi.

2. *Sphæria pezizæformis.* *Cupmoss spheria.*
Thecæ aggregate, red-lead-colour, soft, collapsed, cup-shape, rather woolly at bottom; *mouths* small, nipplelike.
Sphæria Peziza, *Persoon Syn.* 66.
Sphæria miniata, *Hoffm. Germ.* 2.
On the trunks of trees.

3. *Sphæria sanguinea.* *Blood-red spheria.*
Thecæ aggregated, ovate, smooth, scarlet; *mouths* blunt, nipplelike.
Sphæria sanguinea, *Sibth. Oxf.* 404; *Bolton Fung.* 121.
Hypoxylon phœniceum, *Bull. Champ.* 171.
On rotten wood.

4. *Sphæria araneosa.* *Cobweb spheria.*
Thecæ opake, black, nipply, smooth, covered by a very fine whitish down.
Sphæria araneosa, *Persoon Syn.* 67.
On dry branches of barked trees.
Thecæ large, sometimes solitary, sometimes aggregated.

5. *Spheria byssoidea.* *Byssus spheria.*
Thecæ rather large, globular, nippled, girt with a thick brown down.

Sphæria byssoidea fusca, *Tode Meckl.* 2, 10.

On branches of trees.

6. *Spheria ovina.* *Egglike spheria.*
Thecæ scattered, globular, egglike, covered with a compact white wooliness; *mouths* nipplelike, blackish.

Sphæria mucida β, *Tode Meckl.* 2, 16.
Sphæria ovina, *Persoon Syn.* 71.
Sphæria lichenoides, *Sowerby Fungi*, 373, 12?

On the trunks of trees.

7. *Spheria hirsuta.* *Shaggy spheria.*
Thecæ rather crowded, brittle, black, ovate, with scattered bristle; *mouths* blunt, slightly angular.

Sphæria hirsuta, *Persoon Syn.* 73.
Sphæria terrestris, *Sowerby Fungi*, 373, 7.

On rotten trunks of trees, and the ground.

8. *Sphæria bombardica.* *Explosive spheria.*
Thecæ nearly cylindrical, brownish-black, small, crowded, upright; *mouths* very short, nipplelike.

Sphæria Bombarda, *Persoon Syn.* 75.
Næmaspora glabra, *Willd. Berl.* 1207.

On the trunks of trees.

9. *Spheria equina.* *Horsedung spheria.*
Thecæ nearly crustlike, partly immersed; *mouths* long, rather oblique.

Sphæria fimeti, *Persoon Syn.* 64.

On cow or horse dung.

10. *Sphæria stercoraria.* *Dung spheria.*
Thecæ scattered, orbiculate, convex; *mouths* nipplelike, very short.

Sphæria stercoria, *Sowerby Fungi*, 357, 1.

On dung.

11. *Sphæria solitaria.* *Solitary spheria.*
Thecæ scattered, nearly globular; *mouths* acute, nipplelike; on the ground.

Sphæria solitaria, *Sowerby Fungi*, 357, 2.

On the ground.

12. *Sphæria coriacea.* *Leatherlike spheria.*
Thecæ reverse-ovate, often collapsed at the tip.
Sphæria coriacea, *Sowerby Fungi*, 371, 1.

13. *Sphæria rimosa.* *Cracked spheria.*
Thecæ clustered, reverse-ovate, collapsed at the tip, conglutinated together; masses cracked.
Sphæria rimosa, *Sowerby Fungi*, 375, 3.
On plants.

14. *Sphæria rupestris.* *Rock spheria.*
Thecæ nearly globular, almost loose.
Sphæria rupestris, *Sowerby Fungi*, 371, 2.
On slate.

15. *Sphæria communis.* *Common spheria.*
Thecæ depressed, orbicular becoming cupshape, blackish.
Sphæria communis, *Sowerby Fungi*, 295.
On walls.

16. *Sphæria insidens.* *Seated spheria.*
Thecæ nearly globular, black, sometimes confluent, roughish, hard.
Sphæria insidens, *Sowerby Fungi*, 372, 12.
On wood.

17. *Sphæria rubiformis.* *Raspberry spheria.*
Thecæ nearly globular, crowded, finely tuberculated.
Sphæria rubiformis, *Sowerby Fungi*, 373, 2.
On wood.

18. *Sphæria vaccinii.* *Whortleberry spheria.*
Thecæ ovate, nearly eggshape, acute, crowded.
Sphæria vaccinii, *Sowerby Fungi*, 373, 1.
On the stems of vitis Idæa punctifolia, surrounding them.

19. *Spheria viridis.* *Green spheria.*
Thecæ nearly globular, black, inside green.
Sphæria viridis, *Sowerby Fungi*, 375, 8.
On wood.

20. *Sphæria loniceræ.* *Wooodbine spheria.*
Thecæ oval or globular, black; *mouths* very minute, nippleshape.
Sphæria loniceræ, *Sowerby Fungi*, 393, 6.
On the stems of woodbine.

21. *Sphæria nidula.* *Nestling spheria.*
Thecæ small, crowded, nearly globular, black; *mouths* nippleshape.
Sphæria nidula, *Sowerby Fungi*, 394, 2.
On the roots of beans.

22. *Sphæria fusca.* *Brown spheria.*
Thecæ round, brownish.
Sphæria fusca, *Sowerby Fungi*, 395, 3.
On rotten fir-wood.

23. *Sphæria claviformis.* *Nailshape spheria.*
Thecæ ovate, large, outside wrinkled, black; middle coat white; *mouths* perforated.
Sphæria claviformis, *Sowerby Fungi*, 337.
On rotten sticks.

24. *Sphæria Kirbii.* *Kirby's spheria.*
Thecæ nearly globular, black.
Sphæria Kirbii, *Sowerby Fungi*, 371, 3.
On the cores of apples.

25. *Sphæria subsecreta.* *Nearly-hidden spheria.*
Thecæ orbicular, black, partly immersed, collapsed above; *mouths* nippleshape, prominent, lips 4-parted.
Sphæria subsecreta, *Sowerby Fungi*, 373, 8.
On rotten poplar sticks.

26. *Sphæria longa.* *Long spheria.*
Thecæ black, immersed, oblong, small, inside white: *mouth* lightish, nipplelike.
Sphæria longa, *Sowerby Fungi*, 393, 4.
On reeds, under the epidermis.

b. *Mouths round, as long as the thecæ.*

27. *Sphæria dryina.* *Oak spheria.*
Thecæ extremely small, clustered, naked, globular, black; *mouths* eight times as long as the thecæ, bristlelike. very slender, flexible, drooping.
Sphæria dryina, *Persoon Syn.* 58.
Sphæria rostrata nigrofusca, *Tode Meckl.* 2, 14.
Sphæria ciliaris, *Sowerby Fungi*, 339?
On oak-timber.

28. *Sphæria rostrata.* *Beaked spheria.*
Thecæ naked, globular, black, granulated; *mouths* very long, bristlelike.
Sphæria rostrata, *Tode Meckl.* 2, 14.
On rotten sticks; July.

29. *Sphæria acuta.* *Pointed spheria.*
Thecæ naked, gregarious, black, shining, nearly globular; *mouth* bristlelike, thickish, cylindrical.
Sphæria acuta, *Hoffm. Crypt.* 1, 22; *Sowerby Fungi*, 11.
On decayed herbage under hedges; winter and spring.

30. *Sphæria curvirostra.* *Bent-beak spheria.*
Thecæ partly immersed, ovate; *mouths* cylindrical, bent obliquely on one side.
Sphæria curvirostra, *Sowerby Fungi*, 373, 5.
On the stems of herbs.

31. *Sphæria stylifera.* *Stylebearing spheria.*
Thecæ mostly collapsed above; *mouths* clubshape, quite smooth.
Sphæria Gnomon, *Persoon Syn.* 61; *Sowerby Fungi*, 373, 6.
On the leaves of the hazel; spring.

32. *Sphæria floriformis.* *Flowerlike spheria.*
Thecæ gregarious, immersed, large; *mouths* as long as the thecæ; *tip* plaited, flowerlike.
Sphæria floriformis, *Sowerby Fungi*, 297.
On the bark of hornbeam.

33. *Sphæria acuminata.* *Acuminated spheria.*
Thecæ partly immersed, ovate, conical, black; *mouths* conical, pointed, as long as the thecæ.
Sphæria acuminata, *Sowerby Fungi*, 394, 3.
On the stalks of thistles.

34. *Sphæria decomponens.* *Decomposing spheria.*
Thecæ gregarious, immersed, large, globular; *mouths* as long as the thecæ, slightly prominent.
Sphæria decomponens, *Sowerby Fungi*, 217.
On sticks destitute of bark. Black, giving the sticks a charred appearance.

c. *Mouth very broad, compressed.*

35. *Sphæria compressa.* *Compressed spheria.*
Thecæ immersed, scattered, elliptical, compressed; *mouth* compressed.
Sphæria compressa, *Persoon Syn.* 54.
On dry wood.

36. *Sphæria cristata.* *Crested spheria.*
Thecæ naked, scattered, globular, black; *mouth* crested.
Sphæria cristata, *Persoon Syn.* 54.
On the branches of sloe-trees.

C. THELEBOLIDEÆ. *Thallus* hemispherical; *thecæ* immersed, nipplelike, afterwards ejected; *sporidia* deliquescent, gelatinous; *sporæ* granular.

XIV. 149. THELEBOLUS. Tode. *Thelebole.*
Thallus hemispherical, bellied, edge not cut; *thecæ* immersed; *sporidia* gelatinous.

Thelebolus terrestris. *Earth thelebole.*
Thallus hemispherical, saffron-yellow, congregated on a yellowish, flocky basis.
Thelebolus terrestris, *Albert. et Schwein. Fung.* 71.
Peziza hydrophora, *Bulliard Champ.* 410.
Lycoperdon hydrophoron, *Sowerby Fungi*, 23.
On rotten wood.

D. NEMASPORIDEÆ. *Thallus* 0, or spreading; *thecæ* immersed in wood; *sporidia* ejected, waxlike, threadlike, twisted, persistent; *sporæ* granular.

XVI. 150. NEMASPORA. *Nemaspore.*
Thallus spreading or 0; *thecæ* immersed.

1. *Nemaspora profusa.* *Spreading nemaspore.*
Thecæ orbicular, depressed, black, immersed, above yellowish, convex; *sporidia* yellow, 2 or 3 from each thecæ.
Sphæria profusa, *Sowerby Fungi*, 377.
On the bark of trees and old wood.
Thallus spongy, yellowish, spreading; *thecæ* black.

2. *Nemaspora chrysosperma.* *Gold-seeded nemaspore.*
Thecæ rather conical, truncated; *sporidia* solitary, golden yellow.

Sphæria cirrhata, *Sowerby Fungi*, 138.
Nemaspora chrysosperma, *Persoon Syn.* 80.

Under the bark of the black poplar.

3. *Nemaspora composita.* *Compound nemaspore.*
Thecæ orbicular, depressed, black; *mouths* many, in a circle; central mouth largest, the rest small; *sporidia* yellow.

Sphæria composita, *Sowerby Fungi*, 237.

On sticks, and the bark of trees.

4. *Nemaspora dubia.* *Doubtful nemaspore.*
Thecæ orbicular, rather depressed, black, cottony, solitary; *sporidia* solitary, yellowish.

Sphæria dubia, *Sowerby Fungi*, 375, 7.

On the stem of vines.

5. *Nemaspora carpini.* *Hornbeam nemaspore.*
Thecæ orbicular, depressed, black, solitary, immersed; *sporidia* black, thick.

Sphæria carpini, *Sowerby Fungi*, 376.

On the bark of the hornbeam.

Fam. VII. 7. PROTOMYCEÆ. *Mycetoideæ*, Esenbeck.
Fungorum pars, Linnæus, Jussieu.
Anandræ epiphytæ, Link.

Sporidia simple, free, sessile or pedicelled, one or many-celled, naked or innate on a stroma.

A. *Sporidia free, sessile or pedicelled, under the epidermis of living plants; stroma* 0. Cœomideæ.

Sporidia free, 1-celled, globular;
false peridium tubular, cut..... RŒSTELIA. 151.
Sporidia free, 1-celled, globular;
false peridium calyxlike, short..... ÆCIDIUM. 152.
Sporidia free, 1-celled, globular,
naked, on the fructification of plants.... USTILAGO. 153.
Sporidia free, 1-celled, globular,
naked; *epidermis* ruptured ..... UREDO. 154.

Sporidia free, 1-celled, globular,
naked; *epidermis* bullated ..... ALBUGO. 155.
Sporidia pedicelled, 1-celled, ovate,
naked; *epidermis* ruptured ..... CŒOMURUS. 156.
Sporidia pedicelled, 2-celled, ovate,
naked; *epidermis* ruptured ..... DICEOMA. 157.
Sporidia pedicelled, many-celled,
naked; *pedicells* free ..... PUCCINIA. 158.
Sporidia pedicelled, many-celled,
naked; *pedicells* conglomerated ..... PODISOMA. 159.

B. *Sporidia many-celled, free, naked; stroma* 0; *growing on decayed vegetables.* Stilbosporideæ.

Sporidia spindleshape, pellucid ..... FUSIDIUM. 160.
Sporidia oblong, blunt. ..... STILBOSPORA. 161.

C. *Sporidia budlike, under the epidermis of living plants.* Xylomideæ.

Crust cellular, inside pale ..... XYLOMA. 162.

D. *Sporidia 2-celled, pedicelled; thecæ irregular, gelatinous, on live plants.* Gymnosporangideæ.

Erumpent; *thecæ* irregular GYMNOSPORANGIUM. 163.

E. *Sporidia* 1-*celled, free, expanding; thecæ free.* Ægeritideæ.

Sporidia globular; *thecæ* round ..... ÆGERITA. 164.
Sporidia spindleshape; *thecæ* globular FUSARIUM. 165.

F. *Sporidia* 1-*celled, free; thecæ evolute, pedicelled, free.* Tuberculariideæ.

Sporid. globular; *thecæ* pedicelled TUBERCULARIA. 166.

A. CŒOMIDEÆ. *Sporidia* dustlike, free, heaped, sessile or pedicelled, one or many-celled, growing at first under the epidermis of living plants, then bursting through it, naked or covered with a false peridium or thecæ formed of the epidermis of the plant on which it grows.

I. 151. RŒSTELIA. Link. *Restelia.*

Sporidia 1-celled, free, sessile, globular, heaped together, girt with a false peridium; *peridium* irregularly glomerated.

1. *Rœstelia cancellata.* *Rail-like restelia.*

Tufts brown, aggregated; *thecæ* cancellated, bellied; *tip* closed.

Æcidium cancellatum, *Persoon Syn.* 205.
Lycoperdon cancellatum, *Jacq. Austr.* 1, 13.
Cancellaria pyri, *Sowerby Fungi*, 409 and 410

On the lower surface of pear-leaves.

2. *Rœstelia lacerata.* *Torn restelia.*

Tufts iron-colour, aggregated; *thecæ* cancellated, concave; *tip* toothed; teeth separate, spreading.

Æcidium laceratum, *Sowerby Fungi*, 318.
Æcidium oxyacanthæ, *Persoon Syn.* 206.

On the lower surface of the leaves of apple-trees, hawthorn, and mountain-ash.

3. *Rœstelia cornuta.* *Horned restelia.*

Tufts brown, aggregate; base reddish; *thecæ* long conical, cylindrical; *tip* toothed, turned back.

Æcidium cornutum, *Persoon Syn.* 205; *Sowerby Fungi*, 319.
Lycoperdon corniferum, *Fl. Dan.* 838.
Lycoperdon corniculatum, *Ehrh. Crypt.* 20.

On the lower surface of the leaves of wild service.

Leaves spotted red on the upper surface; *peridia* few together; *sporidia* greyish-red.

4. *Rœstelia berberidis.* *Berberry restelia.*

Tufts yellowish, round, convex; *thecæ* cylindrical, orange-yellow; *mouth* 5-toothed.

Æcidium berberidis, *De Cand. Syn.* 51.
Lycoperdon poculiforme, *Jacq. Coll.* 1, 122.

On the lower face of berberry-leaves.

5. *Rœstelia campanulata.* *Bellshape restelia.*

Tufts reddish-yellow, round, convex; *thecæ* cylindrical, bellshape; *mouth* not cut, yellowish.

Æcidium berberidis, *Sowerby Fungi*, 397.
Æcidium berberidis β, *De Cand. Fl. Gall.* 247.

On the lower face of berberry-leaves.

II. 152. ÆCIDIUM. Persoon. *Ecidium.*

Sporidia 1-celled, sessile, globular, in heaps, bursting from the epidermis of plants, and girt with a short, calyx-like peridium or theca formed of it.

a. *Thecæ crowded together irregularly.*

1. *Æcidium ranunculi.* *Crowfoot ecidium.*
Tufts few, peridiated; *thecæ* crowded, pale, prominent; *mouths* torn, edges turned back.

Æcidium ranunculi, *De Cand. Syn.* 51.
Æcidium ranunculi acris, *Persoon Syn.* 210.

On the lower face of the leaves of ranunculus acris, and r. bulbosus.

2. *Æcidium bunii.* *Earth-nut ecidium.*
Tufts ovate or orbicular, bullate, irregular; *thecæ* numerous, rather distinct, yellow and orange; *mouths* scarcely cut.

Æcidium bunii, *De Cand. Syn.* 51.

On the leaves of earth-nut.

3. *Æcidium irregulare.* *Irregular ecidium.*
Tufts brownish, thickish; *peridium* pale-yellow, at first cylindrical blunt, then disappearing.

Æcidium irregulare, *De Cand. Syn.* 51.

On the lower face of the leaves of buckthorn.

4. *Æcidium confertum.* *Crowded ecidium.*
Tufts with a whitish edge; *thecæ* crowded, confluent, white; *mouths* toothed; *sporidia* yellow, become brown.

Æcidium confertum, *De Cand. Syn.* 51.
Æcidium crassum β, *Persoon Syn.* 208.

On the lower surface of the leaves of ranunculi.

5. *Æcidium crassum.* *Thick ecidium.*
Tufts irregularly crowded, thick, convex; *thecæ* pitcher-shape, orange; *sporidia* pale-yellow.

Æcidium crassum, *Persoon Syn.* 208.

On the berry-bearing alder.

6. *Æcidium barbareæ.* *French-cress ecidium.*
Thecæ crowded, orbicular; *mouths* whitish, crenulated; *sporidia* orange-yellow.

Æcidium barbareæ, *De Cand. Syn.* 51.

On both faces of the leaves of French cresses.
Tufts girt with a brownish margin.

7. *Æcidium urticæ.* *Nettle ecidium.*
Thecæ bellshape, yellow; *mouths* toothed; *sporidia* first yellow, then red.
Æcidium urticæ, *De Cand. Syn.* 51.
On common stinging-nettles.

8. *Æcidium petasitidis.* *Butterburr ecidium.*
Thecæ bellshape, light-brown; *mouths* cracked, turned black; *sporidia* yellowish.
Æcidium tussilaginis, *Sowerby Fungi*, 397, 1.
On the lower face of the leaves of butter-burr.

9. *Æcidium corni.* *Wild-cornel ecidium.*
Tufts crowded, base orange; *thecæ* yellowish-orange; *mouth* not cut?
Æcidium corni, *Sowerby Fungi*, 397, 3.
On the lower face of the leaves of the wild cornel-tree.

b. *Thecæ in concentric circles.*

10. *Æcidium clematitis.* *Travellers-joy ecidium.*
Thecæ pale-yellow; *mouths* slightly toothed, at length vanishing; *sporidia* yellow.
Æcidium clematitis, *De Cand. Syn.* 50.
On the lower face of the leaves of travellers-joy.
Leaves marked with brown spots on the upper face.

11. *Æcidium asperifoliarum.* *Asperifoliæ ecidium.*
Thecæ white, confluent, wineglass-shape, half-immersed, pale-yellow; *sporidia* yellowish-white.
Æcidium asperifoliæ, *De Cand. Syn.* 50.
On the lower face of the leaves of various boragineæ.
Leaves hollowed on the upper face.

12. *Æcidium rubellum.* *Small-red ecidium.*
Thecæ very small, confluent, partly immersed, pale yellow; *sporidia* yellowish-white.
Æcidium rubellum, *De Cand. Syn.* 50.
Æcidium rumicis, *Persoon Syn.* 207.
On the lower face of great water-dock leaves.
Leaves spotted red on the upper face.

β. *sparsum.* *Spots* scattered, on both faces, bordered with yellow.
Æcidium rumicis, *Sowerby Fungi*, 405.

13. *Æcidium tussilaginis.* *Coltsfoot ecidium.*
Thecæ immersed, confluent, very short, white; edge toothed.

Æcidium tussilaginis, *De Cand. Syn.* 50.
Lycoperdon epiphyllum, *Lin. S. P.* 1655.

On the lower face of coltsfoot leaves.
Leaves spotted with purple on the upper face.

c. *Thecæ distinct.*

14. *Æcidium characiæ.* *Unsavoury-spurge ecidium.*
Thecæ remote; *mouths* scarcely cut, turned back; *sporidia* orange-colour.

Æcidium euphorbiæ-sylvaticæ, *De Cand. Syn.* 50.

On the lower face of the leaves of characias amygdaloides, rarely on the upper.

15. *Æcidium periclymeni.* *Woodbine ecidium.*
Thecæ numerous, first nearly globular, then rather conical; *mouths* toothed; *sporidia* orange-yellow.

Æcidium perichymeni, *De Cand. Syn.* 50.

On the upper face of woodbine-leaves.
Leaves spotted with yellow on the upper face.

16. *Æcidium violarum.* *Violet ecidium.*
Thecæ many, close together, rather prominent, whitish; *mouths* toothed; *sporidia* orange, becoming brownish.

Æcidium violarum, *De Cand. Syn.* 50.

On the stems and leaves of hearts-ease.

17. *Æcidium cichoracearum.* *Succory ecidium.*
Thecæ hemispherical, white; *mouths* unequally torn; lobes few, broad, turned back; *sporidia* yellow.

Æcidium cichoracearum, *De Cand. Syn.* 50.
Æcidium tragopogonis, *Sowerby Fungi*, 397, 2.
Æcidium tragopogi, *Persoon Syn.* 211.

On the stems and leaves of yellow goats-beard.

18. *Æcidium leucospermum.* *White-seeded ecidium.*
Thecæ cylindrical, prominent, whitish; *mouths* thick, mostly toothed; *sporidia* very copious, white.

Lycoperdon anemones, *Pultney in Lin. Tr.* 2, 331.
Æcidium anemones, *Persoon Syn.* 212.
Æcidium leucospermum, *De Cand. Syn.* 50.

On the lower face of the leaves of wood anemonies.

6. *integra.* *Mouths* not cut.

19. *Æcidium punctatum.* *Dotted ecidium.*
Thecæ hemispherical, pale-yellow; *mouths* not cut; *sporidia* brown.

Æcidium punctatum, *Persoon Syn.* 212.
Æcidium anemones, *Hoffm. Germ.* 2, 2.

On the lower face of the leaves of yellow anemonies.

20. *Æcidium rubi.* *Bramble ecidium.*
Thecæ flattish, edge white; *mouth* orbicular, prominent, not cut or but slightly toothed; *sporidia* yellowish-brown.

Æcidium rubi, *De Cand. Syn.* 50.

On the lower face of the bramble-leaves.

21. *Æcidium epilobii.* *Willow-herb ecidium.*
Thecæ scattered, distinct, white; *mouth* torn, expanded, withering; *sporidia* orange, becoming brownish.

Æcidium epilobii, *De Cand. Syn.* 50.

On the lower face of the leaves of squarestalk willow-herb, rarely on the upper.

III. 153. USTILAGO. Persoon. *Smut.*
Sporidia 1-celled, globular, sessile, free, heaped, spreading, girt with a false peridium or theca, black or brown, growing on the parts of fructification.

1. *Ustilago segetum.* *Corn-smut.*
Black, greenish or brownish, involute.

Ustilago segetum, *Persoon Syn.* 224.
Reticularia segetum, *Bull. Champ.* 1, 90.

On deformed glumes of the grasses.

2. *Ustilago utriculosa.* *Utricular smut.*
Blackish violet; *sporidia* large.

Cæoma (ustilago) utriculosum, *Esenbeck Syst.* 2.

On enlarged fruit of water-pepper.

3. *Ustilago violacea.* *Violet smut.*
Violet; sporidia minute.

Uredo violacea, *Persoon Syn.* 225.
Cæoma (ustilago) violaceum, *Esenbeck Syst.* 2.

On enlarged anthers of the caryophylleæ.

IV. 154. UREDO. *Blight.*

Sporidia 1-celled, globular, sessile, free, heaped, spreading, girt with the ruptured epidermis, growing on living plants.

a. *Sporidia black or brown.*

1. *Uredo suaveolens.* *Sweet-scented blight.*

Tufts reddish-brown, flattish, running together.

Uredo suaveolens, *Persoon Syn.* 221.

On the lower face of the leaves of the common-way thistle.

Odour grateful.

2. *Uredo fabæ.* *Bean blight.*

Tufts chestnut-brown, scattered, very numerous, roundish, irregularly depressed.

Uredo fabæ, *De Cand. Syn.* 47.
Uredo viciæ fabæ, *Persoon Syn.* 221.

On the stems and leaves of beans.

3. *Uredo cichoracearum.* *Succory blight.*

Tufts brown, distant, small, orbicular.

Uredo cichoracearum, *De Cand. Syn.* 47.

On both faces of the leaves of dandelion, and similar plants.

4. *Uredo anemones.* *Anemone blight.*

Tufts black, oblong, orbicular.

Uredo anemones, *Persoon Syn.* 223.

On both faces of the leaves of wood anemonies.

5. *Uredo bifrons.* *Through-and-through blight.*

Tufts reddish, distant, orbiculate.

Uredo bifrons, *De Cand. Syn.* 47.

On both faces of the leaves of curled-leaf dock.

b. *Sporidia yellowish.*

6. *Uredo vitellina.* *Golden-osier blight.*

Tufts orange-yellow, convex, orbicular, at last running together.

Uredo vitellina, *De Cand. Syn.* 48.

On the lower face of the leaves of golden osier.

7. *Uredo tussilaginis.* *Coltsfoot blight.*
Tufts orange-yellow, rather concentric, running together.
Uredo tussilaginis, *De Cand. Syn.* 48.
On the lower surface of coltsfoot-leaves.

8. *Uredo senecionis.* *Groundsel blight.*
Tufts saffron-colour, oblong or irregular, at length running together.
Uredo senecionis, *De Cand. Syn.* 48.
On the lower surface of the leaves of groundsel.

9. *Uredo linearis.* *Linear blight.*
Tufts yellow, becoming brown; *sporidia* rather ovate.
Uredo linearis, *Persoon Syn.* 216.
Uredo longissima, *Sowerby Fungi*, 139.
On both faces of the leaves of wheat and other corn.

10. *Uredo confluens.* *Confluent blight.*
Tufts pale yellow, concentric, confluent; *sporidia* scarcely effused.
Uredo confluens, *De Cand. Syn.* 48.
On the lower face of the leaves of dogs-mercury.

V. 155. ALBUGO. Persoon. *Albugo.*
Sporidia globular, sessile, 1-celled, enclosed in the bullated epidermis of live plants.—White.

1. *Albugo cruciferarum.* *Cruciferous albugo.*
Tufts broad, depressed; *sporidia* very copious.
Uredo candidum α, *Persoon Syn.* 222.
Uredo thlaspi, *Sowerby Fungi*, 340.
Uredo cruciferarum, *De Cand. Syn.* 49.
On the lower face of the leaves of cruciferous plants.

2. *Albugo tragopogi.* *Goatsbeard albugo.*
Tufts white, scattered, oblong, minute.
Uredo candidum β, *Persoon Syn.* 223.
Uredo tragopogi, *De Cand. Syn.* 49.
On purple goatsbeard.

3. *Albugo petroselini.* *Parsley albugo.*
Tufts scattered, roundish, oblong, confluent; *sporidia* very copious.
Uredo petroselini, *De Cand. Syn.* 49.
On the stem and leaves of parsley.

VI. 156. CŒOMURUS. Link. *Ceomure.*

Sporidia ovate or globular, 1-celled, pedicelled; girt with the ruptured epidermis of live plants.

1. *Cœomurus phaseolarum.* *Kidney-bean ceomure.*

Sporidia ovoid; *pedicells* rather long; *tufts* blackish-red, orbicular.

Uredo appendiculata, *Persoon Syn.* 222.
Puccinia phaseolarum, *De Cand. Syn.* 46.

On both faces of the leaves of kidney-beans.

2. *Cœomurus pisi.* *Pea ceomure.*

Sporidia ovoid; *pedicells* short; *tufts* brown, orbicular, or oblong.

Uredo appendiculata β, *Persoon Syn.* 222.
Puccinia pisi, *De Cand. Syn.* 46.

On the stems and leaves of peas.

3. *Cœomurus ficariæ.* *Pilewort ceomure.*

Sporidia ovoid; *pedicells* rather long; *tufts* brown, confluent; epidermis at first raised, then burst.

Puccinia ficariæ, *De Cand. Syn.* 46.

On the stems, and upper face of the leaves of pilewort.

4. *Cœomurus trifolii.* *Trefoil ceomure.*

Sporidia ovoid, nearly sessile; *tufts* reddish-brown, oblong, or irregular, bursting the epidermis.

Puccinia trifolii, *De Cand. Syn.* 46.

On the stems and leaves of several species of trefoil.

5. *Cœomurus porri.* *Leek ceomure.*

Sporidia reverse, eggshape; *pedicells* rather short; *tufts* reddish-brown, oblong, bursting the epidermis.

Uredo porri, *Sowerby Fungi*, 411.

On both faces of the leaves of leaks.

VII. 157. DICÆOMA. *Diceome.*

Sporidia ovate, 2-celled, pedicelled, girt by the ruptured epidermis of the living plant.

1. *Diccæoma persicariæ.* *Persicaria diceome.*

Sporidia clubbed; upper cell thick, globular; lower cell long, slender; *pedicells* short; *tufts* red-brown, small, orbicular.

Puccinia polygoni amphibii, *Persoon Syn.* 227.

On the lower face of the leaves of narrow-leaved pondweed.

2. *Dicæoma scirpi.* *Rush diceome.*

Sporidia rather clubbed; upper cell large, globular; *pedicell* short; *tufts* blackish, roundish, compact.

Puccinia scirpi, *De Cand. Syn.* 46.

On the decaying stems of bullrushes.

3. *Dicæoma graminis.* *Grass diceome.*

Sporidia rather clubbed; upper cell large, globular; *pedicells* short; *tufts* yellow, brown, or black, scattered, parallel.

Puccinia graminis, *Persoon Syn.* 228.
Uredo frumenti, *Sowerby Fungi*, 140.

On the stem and leaves of grasses.

4. *Dicæoma anemones.* *Anemone diceome.*

Sporidia oblong; cells rounded; *pedicells* short; *tufts* brown, hemispherical, in rows or marginal.

Puccinia anemones, *Persoon Syn.* 226.
Æcidium fuscum, *Sowerby Fungi*, 53.

On the lower face of the leaves of wood-anemonies.

Plants on which this fungus is parasitic have been taken for a new species of fern, under the name of the *Conjurer of Chalgrave's fern*, he having been the first botanist who observed it.

5. *Dicæoma menthæ.* *Mint diceome.*

Sporidia oblong; cells rounded; *pedicells* short; *tufts* brown, threadlike, rather thicker at bottom; *tufts* black, hemispherical, powdery.

Puccinia menthæ, *De Cand. Syn.* 45.

On the lower face of the leaves of several species of mint.

6. *Dicæoma ribis.* *Currant diceome.*

Sporidia cylindrical, blunt; *pedicells* short; *tufts* brown, orbicular, girt with the epidermis.

Puccinia ribis, *De Cand. Syn.* 45.

On the upper face of the leaves of red currants.

7. *Dicæoma aviculare.* *Knotgrass diceome.*

Sporidia ovoid, blunt; *pedicells* long, flaccid; *tufts* brown, oblong, or roundish.

Puccinia polygoni avicularіæ, *Persoon Syn.* 227.
Puccinia avicularіæ, *De Cand. Syn.* 45.

On the stem and leaves of knotgrass.

8. *Dicæoma adoxæ.* *Moscatell diceome.*

Sporidia oblong, blunt; *pedicells* short; *tufts* brown, irregularly confluent.

Puccinia adoxæ, *De Cand. Syn.* 45.

On the stem and leaves of tuberous moscatell.

9. *Dicæoma buxi.* *Boxtree diceome.*

Sporidia oblong, lanceolate, cells rather acute; *pedicells* long; *tufts* black, orbicular, convex.

Puccinia buxi, *Sowerby Fungi*, 439.

On box-leaves.

VIII. 158. PUCCINIA. Micheli. *Puccini.*

Sporidia cylindrical, many-celled, pedicelled, free, upon the epidermis of living plants.

1. *Puccinia rosæ.* *Rose puccini.*

Sporidia cylindrical, 3 to 5-celled, pointed; *pedicells* white, threadlike, thicker at the bottom; *tufts* black, rather powdery.

Ascophora disciflora, *Tode Meckl.* 3, 26.
Puccinia mucronata, *Persoon Syn.* 230.
Puccinia rosæ, *De Cand. Syn.* 44.

On the lower face of rose-leaves.

2. *Puccinia rubi.* *Bramble puccini.*

Sporidia cylindrical, 3 to 5-celled, bluntly pointed; *pedicells* white, threadlike, thicker at the bottom; *tufts* black, rather powdery.

Ascophora disciflora β, *Tode Meckl.* 3, 27.
Puccinia mucronata β, *Persoon Syn.* 230.
Puccinia rubi, *De Cand. Syn.* 44; *Sowerby Fungi*, 400, 9.

On the lower face of the leaves of blackberry bushes.

3. *Puccinia potentillæ.* *Cinquefoil puccini.*

Sporidia cylindrical, 4-celled, blunt; *pedicells* white, threadlike; *tufts* black, compact.

Puccinia potentillæ, *Persoon Syn.* 229.

On dry leaves of vernal cinquefoil.

4. *Puccinia ulmi.* *Elm puccini.*
Sporidia cylindrical, 3 or 4-celled, blunt; *pedicells* white, threadlike; *tufts* free, black, rather powdery.
Puccinia ulmi, *De Cand. Syn.* 44.
On the lower face of elm-leaves.

5. *Puccinia spergulæ.* *Spurrey puccini.*
Sporidia cylindrical, 3-celled, blunt; *pedicells* white, threadlike; *tufts* compact, brown.
Puccinia spergulæ, *De Cand. Syn.* 44.
On the stem and leaves of spurrey.

IX. 159. PODISOMA. Link. *Podisome.*
Sporidia cylindrical, many-celled; *pedicells* long, united into a rather gelatinous or fleshy mass, protuberant from the live branches.

Podisoma juniperi. *Juniper podisome.*
Tufts yellow, conical.
Puccinia non ramosa major pyramidata, *Micheli N. Gen.* 213.
Clavaria resinosorum, *Gmel. Linn. Syst. Nat.* 2, 1443.
Puccinia cristata, *Schmidel Ic.* 3, 254.
Puccinia juniperi, *Persoon Syn.* 228.
Gymnosporangium conicum, *De Cand. Syn.* 44.
Podisoma juniperi, *Esenbeck Syst.* 2, 4.
On the stems of juniper-bushes.

B. STILBOSPORIDEÆ. *Sporidia* dustlike, free, naked, many-celled, growing on wood and other dead substances.

X. 160. FUSIDIUM. Link. *Fusidium.*
Sporidia spindleshape, transparent, lying down.

1. *Fusidium griseum.* *Grey fusidium.*
Heaps grey, thin, spreading.
Fusidium griseum, *Link Berl. Mag.* 1809, 8.
On oak-leaves.

2. *Fusidium æruginosum.* *Verdigris fusidium.*
Heaps verdigris-green, thin, spreading.
Fusidium æruginosum, *Link Berl. Mag.* 1809, 8.
On dry leaves.

3. *Fusidium candidum.* *White fusidium.*
Heaps snow-white, thick, irregular.
Fusidium candidum, *Link Berl. Mag.* 1809, 8.
On decayed beech-leaves.

XI. 161. STILBOSPORA. Persoon. *Stilbospore.*
Sporidia dark-coloured, ringed, in irregular heaps.

1. *Stilbospora asterosperma.* *Star-seeded stilbospore.*
Sporidia starlike, 3 or 4-rayed.
Stilbospora asterosperma, *Persoon Syn.* 96.
On the branches of beech, birch, and maple-trees.

2. *Stilbospora sphærosperma.* *Round-seeded stilbospore.*
Sporidia globular, minute.
Stilbospora sphærosperma, *Persoon Syn.* 97.
On the dry stems of the common bankside reed.

C. XYLOMIDEÆ. *Sporidia* budlike, enclosed in a crust; *crust* swollen, variable in shape; inside pale; *texture* irregular, cellular, under the epidermis of plants.

XII. 162. XYLOMA. Persoon. *Xyloma.*
Crust hard, inside fleshy, cellular.

1. *Xyloma salicinum.* *Willow xyloma.*
Crust black, shining, thick; inside granular, white.
Xyloma salicinum, *Persoon Syn.* 103.
On willow-leaves.
Solitary, bossed.
β. *confluens.* *Crust* confluent, disk naked.

2. *Xyloma acerinum.* *Maple xyloma.*
Crust black, flat, surface rather unequal with winding lines.
Xyloma acerinum, *Esenbeck Syst.* 2, 5.
Xyloma punctatum, *Persoon Syn.* 104.
On the leaves of maple and sycamore-trees.
Aggregate, orbicular.
β. *confluens.* *Crusts* confluent.
Xyloma acerinum, *Persoon Syn.* 104.

3. *Xyloma leucocreas.* *White-flesh xyloma.*
Crust thick, tubercular; inside white.
Xyloma leucocreas, *De Cand. Syn.* 63.
On the leaves of different species of willow.

4. *Xyloma multivalve.* *Many-valved xyloma.*
Crusts dotlike, scattered, slightly convex; *epidermis* raised round the tubercles in many valvelike divisions.

Xyloma multivalve, *De Cand. Syn.* 63.

On holly-leaves.

5. *Xyloma pezizoides.* *Peziza-like xyloma.*
Crusts scattered, orbicular, black; afterwards ruptured, border upright, slightly crenate; centre pale.

Peziza comitialis, *Sowerby Fungi*, 118.
Peziza viridis, *Bolton Fungi*, 119, 1.
Xyloma pezizoides, *Persoon Syn.* 105.

D. GYMNOSPORANGIDEÆ. *Sporidia* one-ringed, pedicelled; *pedicells* irregularly grown together into a firm gelatinous stroma.—On live plants.

XIII. 163. GYMNOSPORANGIUM. Link. *Soft-ball.*
Sporidia 1-ringed; *pedicells* long; *stroma* gelatinous.

Gymnosporangium juniperinum. *Juniper soft-ball.*
Sporidia yolk-of-egg yellow, plaited.

Agaricus membranaceus sinuosus, substantia gelatinæ, *Raii Syn.* 21, 3.
Tremella juniperina, *Lin. S. P.* 1625; *Villars Dauph.* 3, 1007.
Gymnosporangium juniperum, *Esenbeck Syst.* 2, 6.

On the stem of juniper-bushes.

E. ÆGERITADEÆ. *Sporidia* 1-celled, free, naked, on an irregular expanded stroma.—On decayed vegetables.

XIV. 164. ÆGERITA. Persoon. *Egerita.*
Sporidia globular, embedded on a round, sessile stroma.

Ægerita candida. *White egerita.*
Tufts snow-white, hemispherical, scattered.

Sclerotium Ægerita, *Hoffm. Crypt.* 9, 1.
Ægerita candida, *Persoon Syn.* 684.

On alder-trees; autumn.

XV. 165. FUSARIUM. Link. *Fusarium.*
Sporidia spindleshape, sessile, diffusible, on a globular sessile stroma.

Fusarium roseum. *Rose-red fusarium.*
Stromata gregarious, hemispherical, rose-red; *sporidia* lighter coloured.
Fusarium roseum, *Link in Berl. Mag.* 1809, 10.
On the stems of the malvaceæ.

F. TUBERCULARIDÆ. *Sporidia* 1-celled, bursting forth from the top of a free, pedicelled stroma.

XVI. 166. TUBERCULARIA. Tode. *Tubercularia.*
Sporidia small, globular; *stroma* wine-glass-shape, pedicelled; *pedicell* short, from an expanded gelatinous mass.

1. *Tubercularia granulata.* *Granulated tubercularia.*
Stroma rather globular, nearly sessile, surface granular, brownish; *sporidia* intermixed with flocks.
Tubercularia granulata, *Persoon Syn.* 113.
On the branches of maple-trees.

2. *Tubercularia vulgaris.* *Common tubercularia.*
Stroma stipitate, thick, pale, furrowed, wrinkled.
Tubercularia vulgaris, *Persoon Syn.* 112.
Tremella purpurea, *Lin. S. Veg.* 1004.
Sphæria miniata, *Bolt Fung.* 127.
Sphæria tremelloides, *Weis. Obs. Bot.* 3, 1.
Clavaria coccinea, *Sowerby Fungi*, 294.
On the branches of trees.

Fam. VIII. 8. NEMATOMYCEÆ. Esenbeck. *Fungorum pars*, Linnæus. *Algarum pars*, Linnæus, Jussieu. *Anandræ Mucedines*, Link.
Sporidia naked, attached to the thallus; *thallus* thread-like, simple or branched.—Plants terrestrial or parasitic, generally growing in damp places, minute: when put into water they expand, and may be displayed with ease for examination.

A. Mucedineæ. *Thallus flocky, tubular; sporidia free, scattered on the surface.*

Flocks rather branched;
sporidia single; pedicells long ..... ACREMONIUM. 167.
Flocks spreading;
spor. loose, oblong; pedic. short ..... EPOCHNIUM. 168.

Flocks branched;
spor. ovate, 2-celled, much scattered TRICOTHECIUM. 169.
Flocks branched, entangled;
spor. ovate or globose, scattered ... SPOROTRICHUM. 170.
Flocks branched, radiated;
spor. small, globular, scattered ..... BYSSOCLADIUM. 171.

B. Aspergillideæ. *Thallus tubular, simple or jointed; sporidia scattered, towards the top.*

Flocks simple, or slightly branched;
spor. globular, in heaps ..... HAPLARIA. 172.
Flocks simple, aggregated, beadlike,
with separated joints ..... ACROSPORUM. 173.
Flocks upright, twiglike, forked;
spor. globular, crowded at top ..... VIRGARIA. 174.
Flocks upright, interwoven, corymbose;
spor. globular, on the tips. ..... BOTRYTIS. 175.
Flocks upright, branched in whirls;
spor. globular, on the whirls ..... STACHYLIDIUM. 176.
Flocks upright, branched at top;
spor. globular ..... POLYACTIS. 177.
Flocks branched at the tip, headlike;
spor. globular, clustered, on the tip ... PENICILLUM. 178.
Flocks dilated at the tip, clublike;
spor. globular, clustered, on the tips .. ASPERGILLUM. 179.

C. Erineideæ. *Thallus fibrous, unbranched, on the epidermis of plants.*

Fibres threadlike, twisted ..... ERINEUM. 180.
Fibres clublike, twisted ..... RUBIGO. 181.

D. Byssideæ. *Thallus fibrous, free.*

Fibres upright, pellucid, crowded;
spor. in rows, ovate, falling off ..... CLADOSPORIUM. 182.
Fibres upright, opake, aggregated;
spor. oblong clublike, ringed ..... HELMOSPORIUM. 183.
Fibres upright, stiff;
spor. spiral, ringed ..... HELICOSPORIUM. 184.
Fibres upright, jointed;
joints ovate ..... MONILIA. 185.
Fibres decumbent, jointed;
joints globular, separating ..... TORULA. 186.

Fibres entangled, jointless, opake;
granules formed of beadlike twigs .. .... RACODIUM. 187.
Fibres decumbent, stiff, opake,
branched; twigs jointless, persistent.... DEMATIUM. 188.
Fibres decumbent, very slender, opake,
branched; twigs jointless, deliquescent .... BYSSUS. 189.
Fibres decumbent, jointed, pellucid,
entangled into a pellicle ..... TYPHODERMA. 190.
Fibres decumbent, jointless, entangled
into a leatherlike mass ..... XYLOSTROMA. 191.

E. Trichodermideæ. *Thallus tubular, jointed, entangled into a globe covering the sporidia.*

Flocks branched; *sporidia* globular TRICHODERMA. 192.

F. Mucorideæ. *Thallus tubular; sporæ enclosed in a terminal, membranaceous, bladderlike sporidium.*

Thallus branched at bottom, simple at top;
spor. globose, solitary, terminal..... THAMNIDIUM. 193.
Thallus simple or branched;
spor. nearly globular ..... MUCOR. 194.
Thallus simple or branched;
spor. globular, then inverted, bellshape. ASCOPHORA. 195.
Thallus simple, jointless, clublike;
spor. globular, projected ..... PILOBOLUS. 196.

G. Isarideæ. *Thallus tubular; tubes united at bottom to form a simple or branched stroma, free at the other end.*

Stroma membranaceous, branched;
flocks simple; *spor.* vanishing ..... CERATIUM. 197.
Stroma cylindrical;
flocks branched; *spor.* globular, scattered ... ISARIA. 198.
Stroma simple, headed at top;
flocks pencilshape; *spor.* scattered..... COREMIUM. 199.
Stroma simple, threadlike;
flocks entangled; *spor.* globular, in heads
CEPHALOTRICHUM. 200.

H. Stilbideæ. *Thallus fibrous, entangled into a gelatinous stroma; tip headlike, fleshy; sporidia scattered.*

Stroma simple; head naked, soft ..... STILBUM. 201.

A. MUCEDINEÆ. *Thallus* threadlike, tubular, simple or branched, mostly jointed, free; *sporidia* naked, scattered on the surface.

I. 167. ACREMONIUM. Link. *Clung-mould.*

Thallus slightly branched; *sporidia* single, on long pedicells.

1. *Acremonium verticillatum.* *Whirled clungmould.*
Thallus expanded, white; *sporidia* in whirls.
Acremonium verticillatum, *Link in Berl. Mag.* 3, 15.
On the bark of fir-trees.

2. *Acremonium alternatum.* *Alternate clungmould.*
Thallus spreading, white; *sporidia* placed alternately.
Acremonium alternatum, *Link in Berl. Mag.* 3, 15.
On fir-trees.

II. 168. EPOCHNIUM. Link. *Stalked-mould.*

Thalli dispersed; *sporidia* separating, oblong, on short pedicells.

Epochnium monilioides. *Beadlike stalked-mould.*
Thalli tufted, white or grey, spotlike, round.
Torula fructigera, *Persoon Obs. Mic.* 2, 26.
Monilia fructigera, *Persoon Syn.* 693.
Epochnium monilioides, *Link in Berl. Mag.* 3, 18.
On dried plants and pears.

III. 169. TRICHOTHECIUM. Link. *Twin-mould.*

Thallus branched; *sporidia* ovate, 2-celled, copiously scattered.

Trichothecium roseum. *Rose twinmould.*
Thalli white, interwoven; *sporidia* rose-red.
Trichoderma roseum, *Persoon Syn.* 231.
Trichothecium roseum, *Link in Berl. Mag.* 3, 18.
On rotten wood, especially willow and poplar trees.

IV. 170. SPOROTRICHUM. Link. *Dust-mould.*

Thalli branched, entangled; *sporidia* globular or ovate, scattered here and there.

1. *Sporotrichum fuscum.* *Brown dustmould.*
Thalli in very thin tufts, brown, lying down; *sporidia* small.

Sporotrichum fuscum, *Link in Berl. Mag.* 3, 12.

On felled timber.

2. *Sporotrichum badium.* *Bay dustmould.*
Thalli in thin tufts, bay, lying down; *sporidia* small.

Sporotrichum badium, *Link in Berl. Mag.* 3, 12.

On the trunks of trees.

3. *Sporotrichum stuposum.* *Towlike dustmould.*
Thalli in rather thick close tufts, black-brown, lying down; *sporidia* small.

Sporotrichum stuposum, *Link in Berl. Mag.* 3, 12.

On the trunks of trees.

4. *Sporotrichum aureum.* *Golden dustmould.*
Thalli in thick tufts, gold-yellow, nearly upright; *sporidia* minute.

Sporotrichum aureum, *Link in Berl. Mag.* 3, 13.

On the trunks of trees.

5. *Sporotrichum candidum.* *White dustmould.*
Thalli in thin tufts, snow-white, lying down; *sporidia* small.

Sporidium candidum, *Link in Berl. Mag.* 3, 13.

On the trunks of trees.

V. 171. BYSSOCLADIUM. Link. *Meal-mould.*
Thalli branched, spreading in rays; *sporidia* small, globular.

1. *Byssocladium candidum.* *White mealmould.*
Thalli in thin tufts, snow-white, close, much branched; tips pencilshape.

Byssocladium candidum, *Link in Berl. Mag.* 7, 13.

On rotten leaves, and wood.

2. *Byssocladium fenestrale.* *Window mealmould.*
Thalli tufted, grey, pressed close, very minute, branched, bent; *branches* spreading; *joints* indistinct.

Conferva fenestralis, *Dillw. Conf.* 94.
Byssocladium fenestrale, *Link in Berl. Mag.* 7, 36.
Sporotrichum fenestrale, *Dittmar in Sturm. Germ.* 3, 1.

On neglected windows in damp places.

3. *Byssocladium punctiformis.* *Dotlike mealmould.*
Thalli in tufts, blackish-grey, opaque, pressed close; very minute, rather torulose; branches slightly one-rowed; joints rounded.
Conferva punctiformis, *Roth Cat.* 3, 220.
On neglected windows.
Thallus rather beadlike, joints as long as broad.

4. *Byssus dendritica.* *Treelike mealmould.*
Thalli in tufts, blackish-green, bent; branches slender, slightly pinnated.
Conferva dendritica, *Agardh Syn.* 96.
Dematium olivaceum, *Albert et Schw. Consp.*
On old books in damp places.
Tufts circular, a quarter of an inch in diameter.

B. ASPERGILLIDEÆ. *Thallus* flocklike, simple or branched, mostly jointed, tubular, free; *sporidia* naked, towards the tip of the thallus.

VI. 172. HAPLARIA. Link. *Skein-mould.*
Thalli simple or slightly branched, distant; *sporidia* globular, crowded in places.

Haplaria grisea. *Grey skeinmould.*
Thalli scattered, simple, 2-cut, forked, grey.
Haplaria grisea, *Link in Berl. Mag.* 3, 11.
On dry leaves of reeds, bur-reeds, &c.

VII. 173. ACROSPORIUM. Esenbeck. *Chain-mould.*
Thalli simple, aggregated, beadlike at top; joints separating by age.

Acrosporium monilioides. *Necklacelike chainmould.*
Thalli in tufts, snow-white, spreading, powdery.
Acrosporium monilioides, *Esenbeck Syst.* 2, 14.
Monilia hyalina, *Fries Obs. Mycet.* 1815, 210.
Botrytis simplex monilis, *Alb. et Schw. Consp.* 363.
On the leaves of grasses.

VIII. 174. VIRGARIA. Esenbeck. *Brush-mould.*
Thalli flocklike, upright, stiff; branches forked; *sporidia* difluent, globular, crowded towards the tips.

1. *Virgaria nigra.* *Black brushmould.*

Thalli in tufts, spreading, black, crowded.

Botrytis nigra, *Link in Berl. Mag.* 3, 14.
Virgaria nigra, *Esenbeck Syst.* 2, 14.

On felled trees.

2. *Virgaria olivacea.* *Olive brushmould.*

Thalli in tufts, spreading, very thin, olive-green, rather distant.

Botrytis olivacea, *Link in Berl. Mag.* 3, 14.

On felled trees.

IX. 175. BOTRYTIS. Micheli. *Grape-mould.*

Thalli flocklike, upright, generally entangled at the bottom, much branched; branches corymbose; *sporidia* globular, collected about the ends of the branches.

Botrytis allochroa. *Shotten grapemould.*

Thalli in small tufts, upright, white afterwards reddish; *sporidia* whitish.

Botrytis allochroa, *Link in Berl. Mag.* 3, 16.

On dead stalks; autumn.

X. 176. STACHYLIDIUM. Link. *Ear-mould.*

Thalli flocklike, ascending, entangled at bottom; twigs whirled at top, short, blunt; *sporidia* globular, crowded about the whirls.

1. *Stachylidium bicolor.* *Two-coloured earmould.*

Thalli in tufts, white, the barren lying down, greenish-grey; the fertile upright, not branched at top.

Dematium verticillatum, *Persoon Syn.* 694.
Stachylidium bicolor, *Link in Berl. Mag.* 3, 15.

On the stem of herbaceous plants.

2. *Stachylidium terrestre.* *Land earmould.*

Thalli in tufts, spreading, white; the barren lying down, few; the fertile upright, branched.

Monilia racemosa, *Persoon Syn.* 692.
Aspergillus terrestris cæspitosus ac ramosus albus, *Micheli N. Gen. Pl.* 213.
Stachylidium terrestre, *Link in Berl. Mag.* 3, 15.

On the ground.

XL. 177. POLYACTIS Link. *Beard-mould.*

Thalli upright, stiff: branches naked at bottom, divided at top: twigs short, blunt, crowded: sporidia globular, on the twigs.

Polyactis vulgaris. *Common beard-mould.*

Thalli greenish-grey, close: sporidia glaucous.

Botrytis vulgaris. *Persoon Syn. 686.*
Botrytis tenuis comosa, ramulosa erecta. *Michel N. Gen. Pl. 212.*
Polyactis vulgaris. *Link in Berl. Mag. 3. 16.*

On rotten herbs.

XLI. 178. PENICILLIUM. Link. *Pencil-mould.*

Thalli fasciculate, simple or branched, dilated at top and split into a bundle of twigs, which enclose a head of globular sporidia.

1. *Penicillium expansum.* *Expanded pencil-mould.*

Thalli fasciculate, naked: the berner lying down, entangled, greyish: the fertile upright, simple, white: sporules sub-colour, glaucous.

Mucilla digitata. *Persoon Syn. 685.*
Penicillium expansum. *Link in Berl. Mag. 3. 17.*

On rotten fruit, or mushrooms.

2. *Penicillium candidum.* *White pencil-mould.*

Thalli fasciculate, branched, snow-white: sporidia white.

Penicillium candidum. *Link in Berl. Mag. 3. 17.*

On rotten herbs and fungi.

Tufts roundish or irregular.

XLII. 179. ASPERGILLUS. Michel. *Knot-mould.*

Thalli fasciculate, simple or branched, thickened at top into a club; sporidia globular, collected round the tip in heads and rather in rows.

1. *Aspergillus glaucus.* *Glaucous knot-mould.*

Thalli in loose tufts, grey, not branched, white; heads at first white, afterwards glaucous.

Aspergillus vulgaris, capitulo glauco, ramulis simplicibus. *Michel N. Gen. Pl. 213.*
Mucor glaucus. *Lin. Syst. Veg. 4. 1328.*
Mucilla glauca. *Persoon Syn. 681.*
Aspergillus glaucus. *Link in Berl. Mag. 3. 18.*

On apples, and other juicy fruits.

2. *Aspergillus flavus.* *Yellow knot-mould.*
Thalli in loose tufts, not branched, white, erect; *heads* first white, afterwards yellow.

Aspergillus flavus, *Link in Berl. Mag.* 3, 16.

On dry plants.

3. *Aspergillus laneus.* *Woolly knot-mould.*
Thalli in close tufts, branched, entangled, yellowish-white, nearly upright; *heads* yellowish.

Aspergillus laneus, *Link in Berl. Mag.* 3, 16.

On rotten fungi.

4. *Aspergillus virescens.* *Greenish knot-mould.*
Thalli in close tufts, branched, entangled, greenish, nearly upright; heads greenish.

Aspergillus virescens, *Link in Berl. Mag.* 3, 16.

On rotten fungi.

C. ERINEIDEÆ. *Thalli* fibrous, not branched, nor jointed; *sporidia* contained in the threads.—On the epidermis of plants.

XIV. 180. ERINEUM. Persoon. *Rust-byssus.*
Thalli threadlike, not branched, twisted, short, in tufts on decaying leaves.

Erineum tiliaceum. *Lime-tree rust-byssus.*
Thalli in round tufts, whitish-violet, hooked.

Erineum tiliaceum, *Persoon Syn.* 700.

On the leaves of lime-trees.

XV. 181. RUBIGO. Link. *Funnel-mould.*
Thalli funnelshape or clubshape, twisted, in tufts on decaying leaves.

1. *Rubigo faginea.* *Beech funnel-mould.*
Thalli in round or oblong tufts, brown, globularly clubbed, tip mostly closed; tufts confluent, pale on the edge.

Rubigo faginea, *Link in Berl. Mag.* 3, 16.

On beech-leaves; spring.

2. *Rubigo alnea.* *Alder funnel-mould.*
Thalli in convex tufts, reddish-brown, shining, funnel-shape, open at the tip.

Rubigo alnea, *Esenbeck Syst.* 2, 17.
Erineum alneum, *Persoon Syn.* 701.

On the leaves of black alder.

3. *Rubigo acerina.* *Maple funnel-mould.*
Thalli in broad, flattish tufts, reddish-brown, when young pale.

Mucor ferrugineus, *Bull. Champ.* 514.
Erineum acerinum, *Persoon Syn.* 700.

On maple-leaves, that have fallen.

D. Byssideæ. *Thalli* fibrous, sometimes jointed, mostly free; *sporidia* mostly enclosed in the thallus.—On decayed wood.

XVI. 182. CLADOSPORIUM. Link. *Chain-byssus.*
Thalli upright, simple or slightly branched, rather transparent, crowded; *sporidia* in rows on the thalli, ovate, falling off.

Cladosporium herbarum. *Herb chain-byssus.*
Thalli in close tufts, light olive-green.

Dematium herbarum, *Persoon Syn.* 699.
Acladium herbarum, *Link in Berl. Mag.* 3, 12.
Cladosporium herbarum, *Link in Berl. Mag.* 7, 37.

On decaying herbs.

XVII. 183. HELMISPORIUM. Link. *Ring-byssus.*
Thalli upright, stiff, slightly branched, opake, crowded; *sporidia* oblong, clubshape, ringed, falling off.

1. *Helmisporium nanum.* *Dwarf ring-byssus.*
Thalli scattered, forked or simple, slightly knotted; *sporidia* nearly cylindrical, scattered on the thalli, scarcely shorter than them.

Helmisporium nanum, *Esenbeck Syst.* 2, 67.

On decaying plants.

2. *Helmisporium velutinum.* *Velvet ring-byssus.*
Thalli spreading, black, forked, rather stiff; *sporidia* pearshape, on the thalli, and much shorter than them.
Helmisporium velutinum, *Link in Berl. Mag.* 3, 10.
On rotten birch-wood.

XVIII. 184. HELICOSPORIUM. Esenb. *Spiral-byssus.*
Thalli upright, stiff, seldom branched, opake; *sporidia* spiral, distantly kneed, fugacious, interspersed among the thalli.

Helicosporium vegetum. *Quick spiral-byssus.*
Thalli black, distant; *sporidia* yellowish-green.
Helicosporium vegetum, *Esenbeck Syst.* 2, 19.
On oak-wood.

XIX. 185. MONILIA. Link. *Jointed-fibre.*
Thalli fibrous, upright, in tufts, dark colour, opake, distinctly jointed, lasting; *joints* ovate.

Monilia antennæformis. *Feeler jointed-fibre.*
Thalli in velvet black close tufts.
Dematium antennæforme, *Hoffm. Germ.* 13.
Monilia antennata, *Persoon Syn.* 694.
On trunks of trees, and plants; autumn.

XX. 186. TORULA. Link. *Clinging-fibre.*
Thalli threadlike, lying down, not branched, often crustlike, jointed; *joints* globular, separating.

Torula herbarum. *Herb clinging-fibre.*
Thalli black, forming a broad crust.
Monilia herbarum, *Persoon Syn.* 693.
Torula herbarum, *Link in Berl. Mag.* 3.
On the dry stems of large herbs; autumn.

XXI. 187. RACODIUM. Persoon. *Headed-fibre.*
Thalli threadlike, closely entangled, not jointed, branched, opake; interspersed with granules conglobated from the beadlike twigs.

Racodium cellare. *Cellar headed-fibre.*
Thalli greyish-black, entangled into a silky clothlike substance.

Fungus spongiosus niger reticulatus, doliolis vinosis adnascens, *Raii Syn.* 57, 10.
Byssus mollissima, *Ehrh. Crypt.* 217.
Byssus septica, *Roth Germ.* 4, 561.
Fibrillaria vinaria, *Sowerby Fungi*, 432.
Racodium cellulare, *Persoon Syn.* 701.
Mouse-skin byssus.

On casks in wine-cellars, from the rotten hoops; sometimes entirely covering the cask.

When compressed, resembles the skin of a mouse.—Used as an excellent styptic.

XXII. 188. DEMATIUM. Link. *Star-fibre.*

Thalli lying down or ascending, stiff, opake, branched, not jointed in any part, lasting.

Dematium rupestre. *Rock star-fibre.*

Thalli black, interwoven, cushionlike.

Byssus petræa nigerrima, *Dillen in Raii Syn.* 57, 8.
Byssus nigra, *Hudson Fl. Angl.* 606.
Byssus antiquitatis, *Weiss Crypt.*
Conferva nigra, *Roth Cat.* 3, 299.
Conferva eburnea, *Dillwyn Conf.* 101.
Racodium rupestre, *Persoon Syn.* 701.
Dematium rupestre, *Esenbeck Syst.* 2, 21.

On rocks, especially sandstone.

XXIII. 189. BYSSUS. Micheli. *Byssus.*

Thalli threadlike, lying or hanging down, very tender, opake, branched, not jointed in any part; soon melting away.

Byssus bombycina. *Cottony byssus.*

Thalli very long, slender, collected into close flocks, extremely white.

Byssus bombycina, *Roth Germ.* 3, 563.
Mucor fugacissima, *Schrank Brief*, 2, 321.
Byssus floccosa, *Schreb. Germ.* 144.
Byssus subterranea, *Scopoli Carn.* 2, 411.

On wood, in cellars.

XXIV. 190. TYPHODERMA. *Death-skin.*

Thalli fibrous, not branched, lying down, jointed, entangled into a pellucid pellicle.

1. *Typhoderma Dillwynii.* *Dillwyn's death-skin.*
Thalli slightly branched; joints as long as broad; *pellicle* olive-green.

Conferva typhoderma, *Dillw. Conf.* 83.
Conferva atramenti β, *Lingby Hydr. Dan.* 165.

On a solution of gum Arabic in water.

2. *Typhoderma sanguinea.* *Bloody death-skin.*
Thalli branched; branches divaricating; joints rather longer than broad; *pellicle* red, gelatinous.

Conferva sanguinea, *Dillw. Conf.* 55.

On a solution of isinglass in water.

3. *Typhoderma pallida.* *Pale death-skin.*
Thalli forked, bent different ways, even-topped; angles of the forks rounded; joints very long; *pellicle* pale ochry yellow, gelatinous, leatherlike.

Conferva pallida, *Dillw. Conf.* 78.

4. *Typhoderma lactea.* *Milky death-skin.*
Thalli branched; joints very long; *pellicle* gelatinous, hyaline, dull milky yellow.

Conferva lactea, *Dillw. Conf.* 79.

XXV. 191. XYLOSTROMA. Tode. *Oak-leather.*
Thalli fibrous, branched, lying down, not jointed, very closely entangled into a soft leatherlike mass.

Xylostroma giganteum. *Gigantic oak-leather.*
Mass very broad, soft, ochre-yellow.

Xylostroma giganteum, *Tode Meckl.* 1, 36; *Sowerby Fungi*, 358.
Racodium Xylostroma, *Persoon Syn.* 702.
Dry rot.

On rotten oak-trees and timber.

The terror of house and ship-owners of late; destroying them with great rapidity, if built of too young or unseasoned timber, and not sufficiently ventilated; destroyed by green vitriol, sal enixum, common salt, but especially by the admission of a free current of air.

E. TRICHODERMIDEÆ. *Thalli* flocklike, tubular, jointed, entangled into a globule, covering the sporidia; *sporidia* globular.

XXVI. 192. TRICHODERMA. Persoon. *Hair-skin.*

Thalli branched, jointed, entangled, covering the sporidia; *sporidia* globular.

1. *Trichoderma viride.* *Green hair-skin.*

Thalli snow-white, in a nearly orbicular tuft; *sporidia* green.

Trichoderma viride, *Persoon Syn.* 231.
Pyrenium lignorum vulgare, *Tode Meckl.* 1, 33.
Sphæria olivacea, *Willden. Berol.* 416.

On the fallen branches of trees, and stems of herbs.

2. *Trichoderma tuberculatum.* *Tuberculated hair-skin.*

Thalli snow-white, in a nearly orbicular tuft; at first tomentose, then tubercular; *sporidia* grey.

Trichoderma tuberculatum, *Persoon Syn.* 234.

On the ground in shady woods; summer after heavy rain.

F. MUCORIDEÆ. *Thalli* flocklike, tubular, not jointed or partitioned; *sporidia* terminal, membranaceous, bladder-like; *sporæ* roundish.

XXVII. 193. THAMNIDIUM. Link. *Branch-fibre.*

Thalli branched at the bottom, branches each ending in a single spore; *sporidium* terminal, globular, bursting.

Thamnidium elegans. *Elegant branch-fibre.*

Thalli white; *branches* much divided.

Thamnidium elegans, *Link in Berl. Mag.* 3, 31.

On paste.

XXVIII. 194. MUCOR. Columella. *Mould.*

Thalli simple or branched; *sporidia* terminal, globular, bursting.

1. *Mucor flavidus.* *Yellowish mould.*

Thalli branched, rather forked; *sporidia* globular, first yellowish, then blackish.

Mucor flavidus, *Persoon Syn.* 199.

On rotten mushrooms.

2. *Mucor botrytis.* *Bunch-of-grapes mould.*
Thalli branched, slightly forked; *sporidia* globular, white.
Mucor botrytis, *Sowerby Fungi*, 359.
Mucor erysimi, *Sowerby Fungi*. 400, 7.
On cruciferous plants.

3. *Mucor hydrophora.* *Pitcher mould.*
Thalli not branched, yellowish; *sporidia* transparent, at first oval, growing globular.
Hydrophora minima, *Tode Meckl.* 2, 5.
Mucor Hydrophora, *Persoon Syn.* 202.
On decaying beech-trees.

4. *Mucor caninus.* *Dog mould.*
Thalli not branched, aggregated; *sporidia* yellowish, nearly globular, umbilicated beneath.
Hydrophora stercoraria, *Tode Meckl.* 2, 6.
Mucor caninus, *Persoon Syn.* 201.
On dogs' dung.

5. *Mucor murinus.* *Mice mould.*
Thallus not branched, scattered, minute, white, shortish, stiff; *sporidia* globular, yellow.
Mucor murinus, *Persoon Syn.* 201.
On mice-dung.

XXIX. 195. ASCOPHORA. Tode. *Bottle-mould.*
Thalli simple or branched; *sporidia* terminal, globular, turning inside out and becoming bellshape.

1. *Ascophora grisea.* *Grey bottle-mould.*
Thalli not branched; *sporidia* large, blackish-grey.
Ascophora Mucedo, *Tode Meckl.* 1, 13.
Mucedo grisea, *Persoon Disp.* 14.
Mucor Mucedo, *Persoon Syn.* 201.
On decayed vegetables, and on rotten wallnut-shells.

2. *Ascophora vulgaris.* *Common bottle-mould.*
Thalli not branched, crowded; *sporidia* minute, blackish.
Mucor Mucedo, *Lin. S. P.*
Mucor Mucedo β, *Persoon Syn.* 201.
On rotten plants.

XXX. 196. PILOBOLUS. Persoon. *Spring-mould.*
Thalli not branched, not jointed, dilated at top, cup-shape; *sporidia* globular, springing with a jerk from the tips of the thalli.

Pilobolus crystallinus. *Crystalline spring-mould.*
Thalli transparent, clear; *sporidia* black.

Pilobolus crystallinus, *Persoon Obs. myc.* 1, 76; *Syn.* 117.
Mucor urceolatus, *Dickson Crypt.* 1, 25; *Sowerby Fungi*, 300.
Hydrogora crystallina, *Wigg. Fl. Hols.* 111.
Mucor roridus, *Bolton Fungi*, 122.

On dung of various animals.

G. ISARIADEÆ. *Thalli* tubular, united at bottom into a stroma, free at the tip; *sporidia* scattered in the flocklike heads.

XXXI. 197. CERATIUM. Link. *Plaited-tuft.*
Thalli not branched, united at bottom into a stroma; *stroma* membranaceous, plaited; *sporidia* globular, interspersed, fugacious.

Ceratium hydnoides. *Hydnumlike plaited-tuft.*
Stroma white, oblique, branched; branches short, obtuse.

Puccinia byssoides, *Gmelin Syst. Nat.* 2, 1462.
Byssus fruticolosa, *Fl. Dan.* 741.
Clavaria Puccinia, *Batsch Fungi*, 49.
Isaria mucida, *Persoon Syn.* 688.
Ceratium hydnoides, *Link in Berl. Mag.* 3.

On rotten wood, especially fir; summer and autumn.

XXXII. 198. ISARIA, Persoon. *Club-tuft.*
Thalli branched, united at bottom into a stroma; *stroma* long, fleshy, clubshape, sometimes branched; *sporidia* globular, white, softish, interspersed.

1. *Isaria velutipes.* *Velvet-footed club-tuft.*
Stroma simple, clubbed at the top; tips of the thalli snow-white.

Isaria velutipes, *Link in Berl. Mag.* 3, 20.
Isaria velutina, *Esenbeck Syst.* 2, 23.

On the larvæ and pupæ of lepidopterous insects.

2. *Isaria crassa.* *Thick club-tuft.*
Stroma not branched, thick, rather conical; pedicell distinct, bald.

Isaria crassa, *Persoon Syn.* 687.

On chrysalides covered with earth.

3. *Isaria eleutheratorum.* *Beetle club-tuft.*
Stroma threadlike, twisted, slightly compressed, branched; branches spreading.
Isaria eleutheratorum, *Esenbeck Syst.* 2, 23.
On dead carabideæ.

XXXIII. 199. COREMIUM. Link. *Pencil-tuft.*
Thalli pencilshape, united at bottom into a stroma; *stroma* not branched, headed at top; *sporidia* interspersed among the tip of the thalli.

1. *Coremium candidum.* *White pencil-tuft.*
Stroma snow-white; base flocular.
Coremium candidum, *Esenbeck Syst.* 2, 24.
Monilia candida, *Persoon Syn.* 692.
On rotten fruit.

2. *Coremium glaucum.* *Glaucous pencil-tuft.*
Stroma yellowish, short; *sporidia* greenish.
Coremium glaucum, *Link in Berl. Mag.* 3, 19.
Mucor glaucus, *Lin. Syst. Veg. ed.* 15, 1020.
On rotten fruit.

XXXIV. 200. CEPHALOTRICHUM. *Tangle-tuft.*
Thalli fibrous, entangled at bottom into a stroma, at top into a head; *stroma* threadlike or awlshape, not branched; *sporidia* interspersed, in the head.

Cephalotrichum nigrescens. *Blackish tangle-tuft.*
Stroma awlshape, flocklike, black; *head* globular, brown.
Cephalotrichum nigrescens, *Link in Berl. Mag.* 3, 20.
On the trunks of trees.

H. STILBIDEÆ. *Thalli* tubular, entangled at bottom into a gelatinous stroma, at top into a fleshy head; *sporidia* interspersed in the head.

XXXV. 201. STILBUM. Persoon. *Glance-head.*
Stroma not branched; *head* rather naked, soft.

1. *Stilbum piliforme.* *Hairlike glancehead.*
Stroma slightly bundled, awlshape, black; *heads* globular, hyaline, deliquescent.
Stilbum minimum nigripes, *Tode Meckl.* 1, 11.
Stilbum piliforme, *Persoon Syn.* 681.
On rotten stems of trees.

2. *Stilbum vulgare.* *Common glancehead.*
Stromata cylindrical, thickish, crowded into yellowish white tufts; *heads* hemispherical, withering.
Stilbum vulgare, *Persoon Syn.* 682.
On half-rotten stalks; autumn.

3. *Stilbum bulbosum.* *Bulbous glancehead.*
Stroma slender, bulbous at bottom, ochre-yellow; *head* spherical, white, strewed with a yellowish powder.
Stilbum bulbosum, *Persoon Syn.* 682.
On rotten plants, in covered situations; autumn after heavy rains.

Fam. IX. 9. GASTEROMYCEÆ. *Fungorum pars,* Linnæus, Jussieu. *Gasteromyci,* Persoon.
Thallus 0; *peridium* single or double, membranaceous or leatherlike, bladdershape; *sporidia* naked, or intermixed with fibres, included in the peridium, at first generally liquid.

A. *Peridium thin, sessile, irregular, becoming fibrous, or skinny; sporidia in heaps.* Spumarideæ.

Peridium membranous, globular;
sporidia naked, conglomerate ..... EUROTIUM. 202.
Per. sessile, outside towlike, ins. flaky;
sporidia naked, conglobate ..... ÆTHALIUM. 203.
Per. membranous, fibres membranous
at the axillæ; *spor.* in heaps ..... LIGNYDIUM. 204.
Per. cellularly fibrous, ascending;
sporidia in heaps ..... SPUMARIA. 205.
Per. membranous; fibres upright;
sporidia in cylinders..... STRONGYLIUM. 206.
Per. membranous, becoming fibrous;
sporidia crowded ..... LYCOGALA. 207.

B. *Peridium thin, sessile, irregular, vanishing in dust; sporidia in heaps.* Myrotheciadeæ.

Perid. flattened, branlike, brittle;
sporidia conglutinated..... MYROTHECIUM. 208.
Perid. flattened, covered with granules;
sporidia conglobated..... DICHOSPORIUM. 209.
Perid. globular or cylindrical, thin;
sporidia heaped ..... LICEA. 210.
Perid. irregular, very thin, vanishing;
sporidia conglobated, very numerous .. DERMODIUM. 211.

C. *Peridium thin, pedicelled or regular, brittle; fibres growing from the base, enclosed; sporidia conglobated.* Physarideæ.

Peridium double; *columell* distinct ... DIDYMIUM. 212.
Perid. double; *columell* 0 ..... DIDERMA. 213.
Perid. single, scaly; *col.* distinct ..... CIONIUM. 214.
Perid. single, scaly; *col.* 0 ..... PHYSARUM. 215.
Perid. single, membranous; *col.* distinct LEANGIUM. 216.
Perid. single, membranous; *col.* 0 ... LEOCARPUS. 217.

D. *Peridium thin, pedicelled or regular, brittle; fibres exserted, springing elastically from the base.* Trichiadeæ.

Perid. bursting; *fibres* ascending in an irregular mass from the bottom ..... TRICHIA. 218.
Perid. vanishing, leaving a saucer; *fibres* rising elastically, falling off ..... ARCYRIA. 219.

E. *Peridium thin, pedicelled, regular, becoming flocklike, networked.* Cribarideæ.

Perid. becoming netlike at top ..... CRIBARIA. 220.
Perid. becoming netlike throughout .. DICTYDIUM. 221.

F. *Peridium thin, single pedicelled, vanishing away; fibres free, in network, perforated by the stem.* Stemonitideæ.

Perid. globular or long ..... STEMONITIS. 222.

G. *Peridium thin, single, operculated; fibres* 0 *or free and falling off with the sporidia.* Crateridеæ.

Peridium pedicelled; *flocci* many ... CRATERIUM. 223.
Peridium sessile; *flocci* 0 ..... PYXIDIUM. 224.

H. *Peridium crustlike, fibrous, single; sporidia naked, conglobated.* Onygenideæ.

Perid. globular; *pedicells* fibrous ..... ONYGENA. 225.

I. *Peridium leatherlike, double, outer peridium starlike, the inner projectile; sporidia naked, conglobated.* Sphærobolideæ.

Perid. globular, sessile ..... SPHÆROBOLUS. 226.

K. *Peridium leatherlike, double; the inner fixed; sporidia floccular, conglomerated.* Lycoperdeæ.

Perid. outer warty, rooting;
spor. collected in heaps ..... SCLERODERMA. 227.
Perid. outer warty, rootless;
spor. collected in heaps ..... HYPOGÆUM. 228.
Perid. outer adnate, splitting in lobes;
spor. pedicelled ..... BOVISTA. 229.
Perid. outer, falling off like bran;
spor. scattered, crowded ..... LYCOPERDON. 230.
Perid. outer leatherlike, stellate;
inner one-pedicelled or sessile;
mouth 1; *spor.* pedicelled ..... GEASTRUM. 231.
Perid. outer leatherlike, stellate;
inner many-pedicelled; *mouths*
many; *spor.* pedicelled, from the first .... POLYSTOMA. 232.

L. *Peridium single, leatherlike, mouth cartilaginous, circular; sporidia conglobated.* Tulostomideæ.

Peridium globular ..... TULOSTOMA. 233.

M. *Peridium single, thin, membranaceous, containing peridiola, filled with sporidia.* Polyangideæ.

Peridiola ovate ..... POLYANGIUM. 234.

N. *Peridium thich, leatherlike, containing peridiola filled with sporidia.* Cyathideæ.

Peridium cuplike, open ..... CYATHUS. 235.

A. SPUMARIDEÆ. *Peridium* single or double, sessile, spread out irregularly, becoming fibrous or skinny, inside smooth or lamellar, membranaceous; *columella* 0; *sporidia* numerous, scattered or placed in lines between the laminæ. —Plant at first liquid, afterwards powdery.

I. 202. EUROTIUM. Link. *Purse-mould.*

Peridia membranaceous, nearly globular, innate on a jointed stroma.

Eurotium herbariorum. *Herbarists' purse-mould.*
Peridia dotlike, yellow; *stroma* whitish.

Monilia nidulans, *Roth Fl. Germ.* 1, 559.
Stemonitis sulphurea, *Roth. Fl. Germ.* 1, 443?
Mucor herbariorum, *Persoon Syn.* 202, 9.
Eurotium herbariorum, *Link in Berl. Mag.* 3.

On dried plants, placed in damp situations, or on recent plants while being dried, if not changed often enough.

II. 203. ÆTHALIUM. Link. *Froth-mould.*

Sporangium irregular; *peridia* sessile, double; the outer towlike, vanishing; the inner membranaceous, flakey; *sporidia* naked, conglomerate.

Æthalium flavum. *Yellow froth-mould.*

Peridia yellow; becoming whitish, branny; *sporidia* purplish-brown.

Reticularia lutea, *Bulliard Champ.* 87, 380; *Sowerby Fungi*, 399, 2.
Reticularia carnosa, *Sowerby Fungi*, 399, 3.
Reticularia cerea, *Sowerby Fungi*, 399, 4.
Reticularia hortensis, *Sowerby Fungi*, 391, 1.
Fuligo flava, *Persoon Syn.* 161, 4; *Bolton Fung.* 134.
Æthalium flavum, *Link in Berl. Mag.* 3.

On grasses, fallen leaves, &c.; autumn after rain.

Resembles a froth fallen upon plants; in a few hours it grows brittle, fibrous, and filled with sporidia.

III. 204. LIGNYDIUM. Link. *Leaf-mould.*

Sporangium nearly globular, adnate to a membranaceous stroma; *peridium* single, membranaceous, bursting, flocks adherent to the inside; *sporidia* crowded, among the flocks.

Lignydium griseo-flavum. *Greyish-yellow leaf-mould.*

Peridia grey; *flocks* yellow; *sporidia* brown.

Lignydium griseo-flavum, *Link in Berl. Mag.* 3, 24.

On the bark of trees.

From one-third to half an inch in diameter.

IV. 205. SPUMARIA. Persoon. *Fold-mould.*

Sporangium irregular, on a membranaceous stroma; *peridium* loose, cellularly flocky; inside with various twisted plaits arising from the stroma; *sporidia* heaped in the folds.

Spumaria alba. *White fold-mould.*

Sporangium white; *plaits* iron-black; *sporidia* brown.

Reticularia alba, *Bulliard Champ.* 92.
Spumaria Mucilago, *Persoon Syn.* 163, 1.

On the stem or leaves of plants; autumn.

V. 206. STRONGYLIUM. Ditmar. *Cylinder-mould.*

Sporangidium indeterminate in form; *peridium* simple, membranaceous; *flocks* upright, stiff, bundled, ascending from the bottom; *sporidia* crowded into cylinders.

Strongylium fuliginoides. *Smokelike cylinder-mould.*

Sporangium roundish, rather convex, brown.

Trichoderma fuliginoides, *Persoon Syn.* 231, 1.
Lycoperdon fuliginosum, *Sowerby Fungi*, 257.
Lycogala atrum, *Alb. et Schwein. Fung.* 131.

On rotten trees, and floating timber.

VI. 207. LYCOGALA. Micheli. *Blood-mould.*

Sporangium globular, or slightly irregular; *peridium* membranaceous, becoming a mass of fibres; *sporidia* crowded.

1. *Lycogala punctata.* *Dotted blood-mould.*

Sporangi hemispherical or globular, in tufts reddish grey-brown both inside and out; surface dotted.

Reticularia Lycoperdon 3, *Bulliard Champ.* 95.
Lycogala punctata, *Persoon Syn.* 158, 3.

On rotten trunks of trees.

2. *Lycogala turbinata.* *Topshape blood-mould.*

Sporangium topshape, pale, smooth.

Reticularia Lycoperdon 2, *Bulliard Champ.* 95.
Lycogala turbinata, *Persoon Syn.* 158, 2.

On rotten wood.

3. *Lycogala argentea.* *Silvery blood-mould.*

Sporangium nearly hemispherical, silver-grey, smooth.

Lycogala griseum majus, *Micheli N. Gen. Pl.* 216.
Reticularia Lycoperdon, *Bulliard Champ.* 95.
Mucor Lycogalus, *Bolton Fungi*, 133.

On rotten trunks of trees.

4. *Lycogala miniata.* *Scarlet blood-mould.*

Sporangia globular, aggregated; surface smooth, blood-red, afterwards brownish; *sporidia* rose-colour, afterwards pale.

Mucor fragiformis, *Schæffer Fung.* 193.
Lycoperdon Epidendrum, *Sowerby Fungi*, 52, and 400.
Lycogala miniata, *Persoon Syn.* 158, 4.
Lycoperdon variolosum, *Hudson Angl.* 645.

On rotten trunks of trees; autumn after rain.

β. *fuligineum.* *Sporangium* covered with a spongy crust.
Lycoperdon Epidendrum fuligineum, *Bull. Champ.* 503.

γ. *marginata.* *Sporangium* blood-red, black at the base.

B. MYROTHECIADEÆ. *Peridium* thin, single or double, sessile, spread out, irregular, falling to pieces and vanishing; *columella* 0; *flocks* 0; *sporidia* in tufts, afterwards separating.—*Sporangium* at first liquid, afterwards solid.

VII. 208. MYROTHECIUM. Tode. *Slime-mould.*

Sporangium irregular, flattened, sessile; *peridium* simple, brittle, branlike, at length vanishing; *sporidia* very small, globular, at length conglutinated.

Myrothecium inundatum. *Inundated slime-mould.*
Sporangium snow-white, irregular, confluent; *sporidia* black-green.
Myrothecium inundatum, *Tode Meckl.* 1, 25.
On rotten fungi; autumn.

VIII. 209. DICHOSPORIUM. Esenb. *Double-mould.*

Sporangium flattened, hemispherical; *peridium* membranaceous, covered with a bed of granules; *sporidia* at first fluid, then compact, conglutinated.

Dichosporium aggregatum. *Aggregated double-mould.*
Sporangia crowded; *peridia* brown; *bed* of granules snow-white, shining; *sporidia* black.
Spumaria physaroides, *Persoon Syn.* 163.
Dichosporium aggregatum, *Esenbeck Fungi*, 2, 23.
On rotten branches of trees; autumn.

IX. 210. LICEA. Link. *Bare-mould.*

Sporangium nearly globular, or lengthened into a cylinder; *peridium* thin, membranaceous, becoming cracked; *sporidia* crowded.

1. *Licea strobilina.* *Cone bare-mould.*
Sporangia crowded, orbicular or elliptical, smooth, brown; *sporidia* ovate, yellow.
Licea strobilina, *Alb. et Schwein. Fung.* 2, 20.
On rotten pine-cones.

2. *Licea fragiformis.* *Strawberry bare-mould.*
Sporangia cylindrical, in hemispherical tufts, at first fulvous-red, afterwards pale-brown; *sporidia* brown.

Tubifera ferruginosa, *Gmelin Syst. Nat.* 2, 1472.
Tubulifera arachnoidea, *Jacq. Miscel.* 1, 144.
Tubulifera Cremor, *Œder Fl. Dan.* 659.
Stemonitis ferruginosa, *Batsch. Fung.* 175.
Tubulina fragiformis, *Persoon Syn.* 198.

On rotten trunks of trees; autumn.

X. 211. DERMODIUM. Link. *Flight-mould.*
Sporangium irregularly formed; *peridium* single, membranaceous, very thin, vanishing; *sporidia* very numerous, conglomerate.

1. *Dermodium inquinans.* *Dirtying flight-mould.*
Sporangium widely expanded, black; *sporidia* black.

Dermodium inquinans, *Link in Berl. Mag.* 3.

On the trunks of trees.

2. *Dermodium fallax.* *Deceiving flight-mould.*
Sporangium umber-brown; surface warty, cellular; *sporidia* in tufts, cylindrical, globular.

Dermodium fallax, *Esenbeck Syst.* 2, 29.

On the trunks of trees.

C. PHYSARIDEÆ. *Peridium* thin, single or double, regular, mostly pedicelled, skinny, the outer falling into angular pieces; *flocci* adnate to the base of the peridium, not extending beyond it; *sporidia* collected into a ball; *columella* mostly distinct.

XI. 212. DIDYMIUM. Schrader. *Skin-mould.*
Sporangium nearly globose; *peridia* double, both membranaceous, crustlike, falling to pieces; *columella* distinct, nearly globular; *sporidia* globular.

1. *Didymium candidum.* *White skin-mould.*
Sporangia sessile, smooth, globular or rather hemispherical, snow-white.

Diderma globosum, *Persoon Syn.* 167.

On decayed leaves; autumn.
Resemble the eggs of insects.

2. *Didymium testaceum.* *Pearly skin-mould.*
Sporangia sessile, roundish, hemispherical, flesh-colour, afterwards whitish.

Didymium testaceum, *Schrad. N. Gen. Pl.* 1, 25.
Diderma testaceum, *Persoon Syn.* 167.

On decayed leaves; autumn.

3. *Didymium difforme.* *Irregular skin-mou'd.*
Sporangia sessile, smooth, difform; *outer peridium* snow-white; inner bluish; *sporidia* dull-brown.

Reticularia angulata, *Gmelin Syst. Nat.* 2, 1472.
Diderma difforme, *Persoon Syn.* 167.

On the stems of the potatoe-plant.

XII. 213. DIDERMA. Link. *Tall-mould.*
Sporangium roundish or globular; *peridia* double, both membranaceous, bursting; outer chaffy; *columella* 0; *sporidia* crowded.

Diderma muricolum. *Wall tall-mould.*
Sporangium roundish, lobed, rather angular, sessile; *outer peridium* white; inner brown; *sporidia* black-brown.

Diderma Muricola, *Link in Berl. Mag.* 3.
Diderma difforme, *Alb. et Schwein. Fung.* 90.

On mosses.

XIII. 214. CIONIUM. Link. *Flock-mould.*
Sporangium globular, pedicelled; *peridium* single, membranaceous, bursting, separating into scales; *columella* distinct.

1. *Cionium iridis.* *Flag flock-mould.*
Sporangium globular, pedicelled; *peridium* grey; *pedicell* yellow, thickest at bottom.

Cionium iridis, *Ditmar in Sturm. Deutsch. Fl.* 3, 1.

On the leaves of the yellow water-flag; summer.

2. *Cionium farinaceum.* *Floury flock-mould.*
Sporangium globular, pedicelled; *peridium* grey; *pedicell* grey, thickest at bottom.

Didymium farinaceum, *Schrad. N. Gen.* 26.
Trichia compressa, *Trentepohl in Roth Cat. Bot.* 1, 229.
Physarum melanospermum, *Persoon Disp.* 3.
Physarum farinaceum, *Persoon Syn.* 175, 15.

On the branches of pine-trees, or the mosses on them.
Sporangia sometimes unite in pairs.

3. *Cionium? muricatum.* *Thorned flock-mould.*
Sporangia sessile, blood-red, globular, woolly, clustered.
Trichia polymorpha, *Sowerby Fungi*, 180, part.
On rotten cheese and wood.

4. *Cionium? lacteum.* *Milky flock-mould.*
Sporangia crowded, pedicelled, yellowish white, ovate, woolly; *pedicells* yellow, thickest at bottom, upright.
Trichia polymorpha, *Sowerby Fungi*, 180, part.
On rotten wood and branches.

5. *Cionium? nigrescens.* *Blackish flock-mould.*
Sporangia scattered, pedicelled, whitish, growing black, globular; *pedicell* short, thick at bottom.
Trichia sphærocarpus, *Sowerby Fungi*, 240.
On rotten wood and branches.

6. *Cionium? fulvum.* *Red-brown flock-mould.*
Sporangia scattered, pedicelled, reddish-brown-yellow, globular; *pedicells* long, narrowing upwards, pellucid, white.
Mucor fulvus, *Sowerby Fungi*, 400, 4.
On rotten dung.

XIV. 215. PHYSARUM. Persoon. *Scale-mould.*
Sporangium nearly globular; *peridium* simple, membranaceous, bursting and separating in scales or wartlike pieces; *columella* 0.

1. *Physarum cinereum.* *Grey scale-mould.*
Sporangia sessile, globular, grey, often confluent; *flocci* white; *sporidia* collected into a globe.
Lycoperdon cinereum, *Batsch Fung.* 249.
Trichia cærulea, *Roth Cat. Bot.* 1, 229.
Physarum cinereum, *Persoon Syn.* 170.
On trunks of trees; autumn.

2. *Physarum bivalve.* *Two-valved scale-mould.*
Sporangia compressed, flexuous, greyish white, long, sinuous, opening on one side.
Reticularia sinuosa, *Bulliard Champ.* 94.
Trichia sphærica β, *Roth Cat.* 1, 230.
Physarum bivalve, *Persoon Syn.* 169.
On dry leaves and branches; autumn.

3. *Physarum nutans.* *Drooping scale-mould.*
Sporangia globular, beneath flattish, grey; *flocci* brown; *pedicell* long, slender, weak, brownish.
Sphærocarpus albus, *Bulliard Champ.* 137.
Trichia hæmispherica, *Roth Cat. Bot.* 1, 288?
Trichia alba, *Sowerby Fungi*, 259.
Physarum nutans, *Persoon Syn.* 171.
On the trunks of trees.

4. *Physarum sulcatum.* *Furrowed scale-mould.*
Sporangium globular, beneath flattish, grey; *flocci* brown; *pedicell* long, slender, weak, white, furrowed.
Physarum sulcatum, *Link in Berl. Mag.* 3.
On the trunks of trees.

5. *Physarum nigripes.* *Blackfooted scale-mould.*
Sporangia globular, beneath flattish, grey; *flocci* brown; *pedicells* long, blackish-brown.
Physarum nigripes, *Link in Berl. Mag.* 3.
On the trunks of trees.

6. *Physarum viride.* *Green scale-mould.*
Sporangia globular, beneath umbilicated, yellowish-green; *pedicells* slender, weak, grey.
Sphærocarpus viridis, *Bulliard Champ.* 115.
Physarum viride, *Persoon Syn.* 172.
On the ground, and on trees.

7. *Physarum luteum.* *Yellow scale-mould.*
Sporangia globular, beneath umbilicated, white; *flocci* white; *pedicells* long, cylindrical, slender.
Sphærocarpus luteus, *Bulliard Champ.* 136.
Physarum luteum, *Persoon Syn.* 172.
On the trunks of trees.

XV. 216. LEANGIUM. Link. *Slash-mould.*
Sporangium globular; *peridium* simple, membranaceous, brittle, bursting starwise; *columella* distinct.

1. *Leangium stellare.* *Star slash-mould.*
Sporangia pale-brown, beneath umbilicated; *lobes* of the peridium turned back; *pedicells* short.
Didymium stellare, *Schrader N. Gen.* 25.
Diderma stellare, *Persoon Syn.* 164.
Leangium stellare, *Link Berl. Mag.* 3.
On trunks of trees; autumn.

2. *Leangium floriforme.* *Flowershape scale-mould.*
Sporangia straw-colour, first globular, afterwards stellate, spreading; *pedicells* long, slender, cylindrical.

Didymium floriforme, *Schrader N. Gen.* 1, 25.
Sphærocarpus floriformis, *Bulliard Champ.* 142.
Diderma floriforme, *Persoon Syn.* 164.

On trunks of trees, and on hypna.

XVI. 217. LEOCARPUS. Link. *Glance-mould.*
Sporangium roundish or ovate; *peridium* simple, membranaceous, brittle, bursting; *columella* 0.

1. *Leocarpus vernicosus.* *Varnished glance-mould.*
Sporangium reverse-ovate, shining, brown; *pedicells* short, dilated at bottom, membranaceous.

Lycoperdon fragile, *Dickson Crypt.* 1, 25; *Sowerby Fungi*, 136.
Trichia lutea, *Roth Cat. Bot.* 2, 330.
Diderma vernicosum, *Persoon Syn.* 167.
Leocarpus vernicosus, *Link Berl. Mag.* 3.

On ivy-leaves, and large mosses.

2. *Leocarpus parasiticus.* *Parasitic glance-mould.*
Sporangium nearly globular, dull tawny; *pedicells* cylindrical, yellowish-white.

Diderma vernicosum parasiticum, *Persoon Syn.* 165.
Lycoperdon cylindricum, *Withering Bot. Arr.* 414.

On grasses and mosses, in clusters.

D. TRICHIADEÆ. *Peridium* thin, single, regular, mostly pedicelled, smooth, bursting or falling into regular pieces; *flocci* springing out from the bottom of the peridium, and extending elastically after its destruction; *sporidia* scattered among the flocci.

XVII. 218. TRICHIA. Persoon. *Hair-mould.*
Sporangium determinately figured; *peridium* membranaceous, cracking; *flocci* ascending in a winding manner from the bottom; *sporidia* angular.

a. *Sporangia creeping.*

1. *Trichia reticulata.* *Network hair-mould.*
Sporangia spreading, yellow; *peridium* very thin, in irregular network.

Lycoperdon lumbricale, *Batsch Fungi*, 1, 259.
Trichia reticulata, *Persoon Syn.* 182.

On the mossy trunks of trees; autumn.

b. *Sporangia round.*

2. *Trichia varia.* *Various hair-mould.*
Sporangia scattered, yellowish, lying down, roundish or kidneyshape.

Stemonitis varia, *Gmelin Syst. Nat.* 2, 1470.
Trichia varia, *Persoon Syn.* 181.
Lycogala luteum, *Micheli N. Gen. Pl.* 216.

On felled trees.

3. *Trichia nitens.* *Shining hair-mould.*
Sporangia crowded, sessile, roundish, shining-yellow, or cinnamon-colour.

Stemonitis favaginea, *Gmel. Syst. Nat.* 2, 1470.
Lycoperdon favagineum, *Batsch Fungi*, 1, 253.
Trichia nitens, *Persoon Syn.* 181.

On rotten fir, or beech-trees; autumn.

c. *Sporangia ovate.*

4. *Trichia ovata.* *Ovate hair-mould.*
Sporangia crowded, sessile, reverse-ovate, opake, ochrey-brown.

Clathrus turbinatus, *Bolton Fungi*, 43, 7.
Trichia ovata, *Persoon Syn.* 180.
Lycoperdon epiphyllum, *Lightfoot Scot.* 1069.

In woods; autumn.
Sporangium exactly reverse-ovate; *sporidia* stellate.

5. *Trichia vulgaris.* *Common hair-mould.*
Sporangia scattered, roundish, topshape; *pedicells* very short, blackish.

Trichia nigripes δ, *Persoon Syn.* 179.
Trichia turbinata, *Sowerby Fungi*, 85?

On trunks of trees; autumn.

6. *Trichia pyriformis.* *Pearshape hair-mould.*
Sporangia gregarious, rather scattered, pearshape, yellowish; *pedicells* shortish, blackish.

Sphærocarpus pyriformis, *Bulliard Champ.* 129.
Trichia nigripes pyriformis, *Persoon Syn.* 178.

On trunks of trees.

7. *Trichia fallax.* *Deceiving hair-mould.*
Sporangia gregarious, pedicelled, pearshape, beneath plaited, brown-red, afterwards dull yellow, bursting at the tip.

Mucor miniatus, *Jacquin Austr.* 299.
Trichia fallax, *Persoon Syn.* 177.
Sphærocephalus fragilis, *Sowerby Fungi*, 279.

On rotten trunks of trees; autumn.

8. *Trichia rubiformis.* *Brambleberry hair-mould.*
Sporangia pedicelled, cylindrical, purplish; *pedicells* short, forming a membranaceous thallus.

Stemonitis fasciculata, *Gmelin Syst. Nat.* 2, 1468.
Lycoperdon vesparium, *Batsch Fungi*, 1, 254.
Lycoperdon favaceum, *Schrank Bavar.* 2, 667.
Trichia rubiformis, *Persoon Syn.* 176, 2.

On the trunks of trees in woods; end of summer.

XVIII. 219. ARCYRIA. Persoon. *Cup-mould.*

Sporangia ovate or cylindrical, pedicelled; *peridium* membranaceous, upper half vanishing, lower half saucer-like, persistent; *flocci* expanding elastically, falling off; *sporidia* globular.

1. *Arcyria punicea.* *Scarlet cup-mould.*
Sporangia in tufts, dull scarlet, oblong, pedicelled; *flocci* ovate, slightly persistent; *sporidia* blood-red.

Stemonitis crocata, *Roth Cat. Bot.* 1, 220.
Trichia cinnabarina, *Bulliard Champ.* 121.
Trichia denudata, *Sowerby Fungi*, 49.
Clathrus denudatus, *Lin. S. P.* 1649.
Arcyria punicea, *Persoon Syn.* 185, 5.

On rotten wood; summer.

2. *Arcyria coccinea.* *Cochineal cup-mould.*
Sporangia in tufts, scarlet, spherical, pedicelled; *flocci* fugacious.

Trichia coccinea, *De Candolle Syn. Fl. Gall.* 55.

On rotten wood.

3. *Arcyria hæmispherica.* *Hemispherical cup-mould.*
Sporangia spherical, depressed, snow-white, pedicelled; *pedicells* grey, thick at bottom; *sporidia* reddish-brown, on an expanded disk.

Reticularia hæmisphærica, *Sowerby Fungi*, 12.
Trichia cinerea? *De Candolle Fl. Gall.* 685.

On sticks and rotten wood.

4. *Arcyria flava.* *Yellow cup-mould.*
Sporangia scattered, yellow; *flocci* long, drooping.
Trichia nutans, *Sowerby Fungi*, 260.
Stemonitis amœna, *Roth Cat. Bot.* 1, 220.
Arcyria flava, *Persoon Syn.* 184.
On rotten trunks of trees.
Flocci weak, very long, lying down; when young, milk-white.

5. *Arcyria turbinata.* *Topshape cup-mould.*
Sporangia clustered, yellowish-white, globular, sessile.
Trichia turbinata, *Sowerby Fungi*, 85.
Clathrus turbinatus, *Hudson Fl. Angl.* 632.
Lycoperdon luteum, *Relhan Cant.* 1103.
On rotten wood.

E. CRIBARIDEÆ. *Sporangium* regularly formed, pedicelled; *peridium* thin, single, breaking into regular pieces; *flocci* expanding from the bottom, or forming a regular network; *sporidia* conglobated, or interwoven among the flocci.

XIX. 220. CRIBARIA. Schrader. *Sieve-mould.*
Sporangia globular, pedicelled; *peridium* breaking above into regular pieces, remaining entire below.

1. *Cribaria vulgaris.* *Common sieve-mould.*
Sporangia gregarious, globular, drooping, brown; *pedicells* brownish-purple.
Cribaria vulgaris, *Schrader N. Gen.* 1, 6.
On rotten trees in woods, and on mosses.

2. *Cribaria Bulliardi.* *Bulliard's sieve-mould.*
Sporangia scattered, globular, upright; *pedicells* white, pellucid, slender.
Sphærocarpus semitrichoides, *Sowerby Fungi*, 400, 5.
On rotten wood.

3. *Cribaria rufescens.* *Reddish sieve mould.*
Sporangia scattered, reverse-ovate, reddish; *pedicells* rather bent.
Cribaria fulva, *Schrader N. Gen.* 1, 5.
Cribaria rufescens, *Persoon Syn.* 193, 7.
On rotten trunks of trees, near the ground; autumn.

XX. 221. DICTYDIUM. Schrader. *Net-mould.*

Sporangia globular, pedicelled; *peridium* either entirely or for the greater part breaking off in regular pieces.

1. *Dictydium cernuum.* *Drooping net-mould.*

Sporangia gregarious, globular, brownish purple, drooping, umbilicated at the tip.

Dictydium umbilicatum, *Schrader N. Gen.* 1, 11.
Mucor cancellatus, *Batsch Fungi*, 2, 135.
Cribaria cernua, *Persoon Syn.* 189.
Dictydium cernuum, *Esenbeck Syst.* 2, 33.

On rotten wood.

2. *Dictydium splendens.* *Resplendent net-mould.*

Sporangia upright, roundish, shining; *pedicells* bent, purplish-brown; *sporidia* yellow.

Dictydium splendens, *Schrader N. Gen.* 1. 4.
Cribaria splendens, *Persoon Syn.* 191.

On the trunks of fir-trees.

F. STEMONITIDEÆ. *Sporangia* regularly formed, pedicelled; *peridium* thin, single, vanishing away; *flocci* free, netlike, perforated by the stem.

XXI. 222. STEMONITIS. Persoon. *Thread-mould.*

Sporangium globular or long; *peridium* membranaceous, vanishing; *flocci* entangled, netlike, perforated by the stem, diffluent.

a. *Flocci in an ovate mass.*

1. *Stemonitis papillata.* *Papillated thread-mould.*

Sporangia scattered, reddish-brown, globular; *pedicell* perforating the flocci to the top.

Stemonitis reticulata, *Roth Cat. Bot.* 1, 223.
Stemonitis papillata, *Persoon Syn.* 188.

On bared branches of oak-trees.

2. *Stemonitis ovata.* *Eggshape thread-mould.*

Sporangia scattered, blackish, ovate or roundish; *pedicell* perforating half-way through the flocci.

Stemonitis nigra, *Gmelin Syst. Nat.* 2, 1467.
Stemonitis ovata, *Persoon Syn.* 189.
Stemonitis atrofusca, *Persoon Disp.* 11.

On rotten wood.

b. Embolus. *Flocci in a long mass.*

3. *Stemonitis fasciculata.* *Bundled thread-mould.*
Sporangia clustered, on a shining base, dark-brown, long, tip drooping; *pedicells* passing through the flocci, exserted at the top.

Stemonitis fusca, *Roth Cat. Bot.* 1, 222.
Trichia axifera, *Bulliard Champ.* 118.
Stemonitis typhina, *Gmelin Syst. Nat.* 2, 1461.
Trichia nuda, *Sowerby Fungi*, 50.
Clathrus nudus, *Lin. Syst. Veg.* 1017.
Embolus lacteus, *Hoffm. Crypt.* 2, 8, when young.

On trunks of trees; autumn.

4. *Stemonitis typhina.* *Bull-rush thread-mould.*
Sporangia scattered, cylindrical, blunt, slightly bent.

Trichia typhoides, *Bulliard Champ.* 113.
Embolus pertusus, *Batsch Fung.* 1, 263.
Stemonitis typhina, *Persoon Syn.* 187.

On trunks of trees; autumn.
Sporangia smaller than S. fasciculata; *peridium* does not vanish entirely, some pieces remaining; base none.

G. Crateridæ. *Sporangium* regularly formed, pedicelled, operculated; *peridium* single, membranaceous; *flocci* 0, or enclosed, free; *sporidia* intermixed with the flocci.

XXII. 223. CRATERIUM. Trentepohl. *Pitcher-mould.*
Sporangium pitcher or cupshape, operculated, pedicelled; *peridium* membranaceous; *operculum* flattish; *flocci* free, coming out with the sporidia.

1. *Crater. leucocephalum.* *White-headed pitcher-mould.*
Sporangium funnelshape, reddish-brown; *operculum* pale; *flocci* white; *sporidia* globular, white.

Arcyria leucocephala, *Hoffm. Germ.* 2, 6.
Stemonitis leucocephala, *Gmel. Syst. Nat.* 2, 1467.
Trichia cinerea, *Roth Cat. Bot.* 1, 237.

On mosses.

2. *Craterium vulgare.* *Common pitcher-mould.*
Sporangium bellshape, greyish-brown; mouth expanded; *pedicell* dark-yellow; *sporidia* brown.

Craterium pedunculatum, *Roth Cat. Bot.* 1, 224.
Craterium vulgare, *Sowerby Fungi*, 239, lowest figure.
Trichia minuta, *Relhan Fl. Cant.*
Trichia capsulifer, *De Candolle Syn. Fl. Gall.* 35.

On rotten wood and mosses.

3. *Craterium ovatum.* *Eggshape pitcher-mould.*
Sporangium eggshape, truncated, straight, brownish; *pedicells* yellow; *sporidia* brown.

Cyathus minutus, *Sowerby Fungi*, 239, upper figure.

On rotten wood.

XXIII. 224. PYXIDIUM. *Goblet-mould.*
Sporangium ovate, operculated, sessile; *operculum* large convex; *flocci* very few or none.

Pyxidium sessile. *Squatted goblet-mould.*
Sporangia eggshape, clustered, yellowish-brown; *opercula* brown.

Sphærocarpus sessilis, *Bull. Champ.* 417; *Sowerby Fungi*, 258.
Trichia gymnosperma, *Persoon Obs. Myc.* 63.
Licea circumcissa, *Persoon Syn.* 196.

On the trembling poplar, under the bark; autumn.
Sporangia resembles the eggs of insects.

H. ONYGENADEÆ. *Sporangia* pedicelled; *peridium* crustlike, formed of interwoven fibres; *flocci* 0; *sporidia* closely conglobated.

XXIV. 225. ONYGENA. Persoon. *Cap-mould.*
Sporangia globular, pedicelled; *peridium* crustlike, brittle, fibrous; *pedicells* fibrous; *flocci* 0; *sporidia* conglobated.

Onygena equina. *Horse-hoof cap-mould.*
Sporangia greyish-brown, hemispherical.

Coralloides fungiforme ex ungula equina, viride rufescens, *Dillen Musc.* 73.
Lycoperdon equinum, *Willdenow Berl.* 412; *Sowerby Fungi*, 292.
Onygena equina, *Persoon Syn.* 203.

On the hoofs and horns of animals, left on the ground.

I. SPHÆROBOLIDEÆ. *Peridia* double; the outer leatherlike, lobed starwise; inner fibrous, membranaceous, ejectile; *sporidia* naked, closely conglomerated.

XXV. 226. SPHÆROBOLUS. Persoon. *Spring-bag.*
Sporangium globular, sessile; *peridia* double, outer leatherlike, 5 or 6-cut; inner membranaceous, projected elastically; *sporidia* naked, closely conglomerated.

Sphærobolus stellatus. *Starry spring-bag.*
Sporangium globular, white, becoming yellow, and afterwards brown.

Carpobolus albicans, *Micheli N. Gen.* 221.
Lycoperdon Carpobolus, *Lin. S. P.* 1654; *Sowerby Fungi*, 22.
Sphærobolus stellatus, *Tode Meckl.* 1, 43.

On rotten leaves and wood.
Peridia covered at first with a white wool-like substance.

K. LYCOPERDONIDEÆ. *Peridia* double, the outer separating in scaly, prickly flocci, or regularly formed pieces; the inner membranaceous, of interwoven fibres, torn by the expansion of the flocci.

XXVI. 227. SCLERODERMA. Persoon. *Skin-litter.*
Sporangia nearly globular, often attenuated below, with rootlike fibres; *peridia* double, the outer adnate, warty, cracked, bursting irregularly; *sporidia* collected into heaps, purplish brown or ferrugineous.

1. *Scleroderma citrinum.* *Lemon-yellow skin-litter.*
Sporangia middle-size, roundish, depressed, pale lemon-yellow, slightly scaly; scales thick.

Lycoperdon defossum, *Batsch Fung.* 2, 126.
Scleroderma citrinum, *Persoon Syn.* 153.
Scleroderma Aurantium, *Persoon Syn.* 153.
Lycoperdon cervinum, *Bolton Fung.* 162, not of Linnæus.
Lycoperdon Aurantium, *Bulliard Champ.* 158; *Sowerby Fungi*, 268.

On the ground and mosses at the roots of trees.
Sporangia 1 or 2 inches in diameter, depressed; *sporidia* purplish-brown.

2. *Scleroderma verrucosum.* *Warty skin-litter.*
Sporangia large, roundish, reddish-brown, scaly; scales small; *base* pedicell-like, long, rooting.

Lycoperdon verrucosum, *Bulliard Champ.* 157.
Scleroderma verrucosum, *Persoon Syn.* 154.
Lycoperdon defossum, *Sowerby Fungi*, 331, not Batsch.

On the ground at the root of trees.

3. *Scleroderma spadiceum.* *Chestnut skin-litter.*
Sporangia globular, depressed, smooth, chestnut-brown, stemlike basis thickest at bottom, hard, fibrous; *sporidia* purplish-brown.

Scleroderma spadiceum, *Persoon Syn.* 155.
Lycoperdon spadiceum, *Dickson Crypt.* 1, 25.

On the ground at the roots of trees.

4. *Scleroderma cepoides.* *Onionlike skin-litter.*

Sporangia roundish, depressed, rather smooth, shining; stemlike basis short, thickest at bottom, scarcely fibrous.

Lycoperdon cepæ facie, *Vaillant Bot. Par.* 123.
Tuber solidum, *Withering Bot. Arr.* 4, 407.
Scleroderma Cepa, *Persoon Syn.* 155, 10.

In woods under oak-trees; August.

XXVII. 228. HYPOGÆUM. Persoon. *Hypogeum.*

Sporangia globular, rootless; *peridia* double, the outer adnate, warty, cracked; *sporidia* in heaps, among the flocci. —Grows under ground.

Hypogæum cervinum. *Stag hypogeum.*

Sporangium round or oblong; *peridium* granulated.

Lycoperdon cervinum, *Lin. S. P.* 1653; *Sowerby Fungi*, 269.
Lycoperdastrum tuberosum, arhizon fulvum, cortice duriore crasso et granulato, medulla ex albo purpurascente, semine nigro crassiore, *Micheli N. Gen.* 220.
Hypogæum cervinum, *Persoon Dispos.* 7.
Scleroderma cervinum, *Persoon Syn.* 156.

Under ground, near fir-trees. Perhaps a tuber.

XXVIII. 229. BOVISTA. Dillenius. *Bull-fist.*

Sporangium globular, generally sessile, bottom rooted; *outer peridium* adnate to the inner, separating into lobes, tip bursting irregularly, vanishing; *sporidia* pedicelled on the flocci, brownish-purple.—Grows on the ground, sometimes half-sunk in it.

1. *Bovista plumbea.* *Lead-colour bull-fist.*

Sporangium globular, umbilicated beneath, rooting, lead-colour.

Lycoperdon ardesiaceum, *Bull. Champ.* 146.
Bovista plumbea, *Persoon Syn.* 137, 2.

On fields and grassy places, after rain.

Outer peridium white, becoming lead-colour, vanishing entirely, except at the base.

2. *Bovista nigrescens.* *Blackish bull-fist.*

Sporangium globular or roundish, brownish-black, beneath plaited.

Lycoperdon arrhizon, *Batsch Fung.* 239.
Lycoperdon globosum, *Bolton Fung.* 118.
Lycoperdon Bovista, *Lin. S. P.* 1653; *Sowerby Fungi*, 331.
Bovista nigrescens, *Persoon Syn.* 136, 1.

In shady woods; autumn.

Sporangium an inch and half in diameter.

3. *Bovista gigantea.* *Giant bull-fist.*

Sporangium globular, pale-whitish; scales scattered, scarcely distinguishable.

Lycoperdon giganteum, *Batsch Fung.* 135.
Lycoperdon maximum, *Schæffer Bau.* 4, 130.
Lycoperdon Bovista, *Bulliard Champ.* 154.
Bovista gigantea, *Esenbeck Syst.* 2, 34.

In grassy places; autumn.

Sporangium from 5 inches to 2 feet in diameter, at first white, afterwards reddish straw-colour; root very slender.

XXIX. 230. LYCOPERDON. Tournefort. *Puff-ball.*

Sporangium nearly globular, often narrowed at bottom into a stemlike appearance, rooting; *peridium* mostly spinous or scaly, becoming chaffy, vanishing, bursting at the tip; *sporidia* in heaps, scattered among the flocci, green.—Grows on the ground.

1. *Lycoperdon cælatum.* *Latticed puff-ball.*

Sporangium globular, conical at the bottom, plaited, brownish-grey, scales rather broad.

Lycoperdon gemmatum, *Schæffer Fung.* 4, 130.
Lycoperdon areolatum, *Schæffer Fung.* 4, 190.
Lycoperdon cælatum, *Bulliard Champ.* 156.
Lycoperdon Bovista, *Persoon Syn.* 141.
Spunk.

In grassy places; autumn.

Sporangium about 4 inches in diameter; the bottom part prepared by beating is used as tinder.

2. *Lycoperdon pratense.* *Meadow puff-ball.*

Sporangium hemispherical, snow-white, soft; warts few, scattered; *stem* very short.

Lycoperdon Proteus cepiforme, *Bull. Champ.* 143.
Lycoperdon papillatum, *Schæff. Bav.* 4, 127.
Lycoperdon pratense, *Persoon Syn.* 142, 3.

On grassy hills after rain; summer.

Sporangium about an inch and half broad; sunk in the ground one half its depth.

3. *Lycoperdon utriforme.* *Bottle puff-ball.*

Sporangium reverse-ovate, cylindrical, pale smoke-grey, smoothish; *stem* not distinct.

Lycoperdon utriforme, *Bulliard Champ.* 153.

On grass-ground.

4. *Lycoperdon excipuliformis.* *Receiverlike puff-ball.*

Sporangium white, nearly globular, scaly; scales spinous, scattered; *stem* roundish, long, plaited.

Lycoperdon excipuliforme, *Scopoli Carn.* 1631.
Lycoperdon Proteus excipuliforme, *Bulliard Champ.* 149.
Lycoperdon Proteus, *Sowerby Fungi*, 332, in part.

In fir-plantations on the ground; autumn.

5. *Lycoperdon perlatum.* *Pearly puff-ball.*

Sporangia in tufts, bossed, whitish; *stem* rather long, cylindrical; *warts* compact, round, deciduous, ending in a point.

Lycoperdon gemmatum, *Fl. Dan.* 1120.
Lycoperdon Proteus, *Bulliard Champ.* 148.
Lycoperdon excipuli chemici forma, *Vaillant Paris*, 12, 15.
Lycoperdon album, totum aculeatum, altiori basi donatum, *Micheli N. Gen.* 217.
Lycoperdon perlatum, *Persoon Syn.* 145.

In woods; autumn.

6. *Lycoperdon pyriforme.* *Pearshape puff-ball.*

Sporangia in tufts, pearshaped, bossed, pale smoke-grey; *scales* very thin; *roots* long, fibrous.

Lycoperdon pyriforme, *Schæffer Icon. Fung.* 135.
Lycoperdon Proteus ovoideum, *Bulliard Champ.* 143.

On rotten trunks of trees, seldom on the ground; autumn.

7. *Lycoperdon gossypinum.* *Cottony puff-ball.*

Sporangia gregarious, minute, globular topshape, slightly cottony, pale.

Lycoperdon gossypinum, *Bulliard Champ.* 147.

On rotten trunks of trees.

XXX. 231. GEASTRUM. Persoon. *Shell-puff.*

Sporangium globular, sessile; *outer peridium* leatherlike, expanding and turning back starwise; *inner peridium* membranaceous, sessile or pedicelled; apex ending in a cylindrical mouth; *peduncle* simple; *sporidia* pedicelled upon the flocci.

a. *Inner peridium pedicelled.*

1. *Geastrum quadrifidum.* *Four-cut shell-puff.*

Outer peridium four-cut, arched; inner globular, pedicelled; *mouth* blunt, ciliated, greyish.

Lycoperdon fornicatum, *Hudson Angl.* 644; *Engl. Bot.* 198.
Geastrum quadrifidum, *Persoon Syn.* 133.

In pine plantations; autumn.

2. *Geastrum stellatum.* *Starred shell-puff.*

Outer peridium many-cut, brownish, outside granular, rather flat; inner globular, pedicelled, centre flattish; *mouth* broad, conical.

Geastrum coronatum, *Persoon Syn.* 132.
Geastrum multifidum β, *Persoon Disp.* 1, 6.
Lycoperdon volvam explanans, *Schmidel Icon.* 179.
Lycoperdon stellatum, *Sowerby Fungi*, 312.

In woods.

β. *Woodwardi. Sporangium* small, flat above; mouth acuminated, ciliated; *ciliæ* and *stem* long.

Geastrum coronatum Woodwardi, *Persoon Syn.* 132.

On dry banks, among ivy.

Sporangium dark-brown; does not exceed an inch and half in diameter.

3. *Geastrum pectinatum.* *Comblike shell-puff.*

Outer peridium many-cut, pale, arched; inner pedicelled, dark-brown; *mouth* pointed, conical.

Geastrum multifidum α, *Persoon Disp.* 6.
Geastrum pectinatum, *Persoon Syn.* 132.

In fir-plantations.

b. *Inner peridium sessile.*

4. *Geastrum rufescens.* *Reddish shell-puff.*

Outer peridium many-cut, reddish; inner sessile, bald, pale.

Geastrum rufescens, *Persoon Syn.* 134.
Geastrum sessilis? *Sowerby Fungi*, 80.

In fir-plantations.

5. *Geastrum recolligens.* *Retracting shell-puff.*

Outer peridium many-lobed, spreading, lobes equal, outside yellowish, inside brown; inner depressed spherical, sessile; *mouth* conical.

Lycoperdon stellatum, *Bulliard Champ.* 238.
Lycoperdon recolligens, *Wood in Lin. Tr.* 2, 58; *Sowerby Fungi*, 401.

In woods; spring and autumn.

Outer peridium expands with moisture, and contracts again on drying; contrary to the other geastra.

6. *Geastrum cylindricum.* *Cylindrical shell-puff.*

Outer peridium many-cut; inner cylindrical, sessile.

Lycoperdon cylindricum, *Withering Bot. Arr.* 4, 411.

In fir-plantations.

XXXI. 232. POLYSTOMA. *Pill-box.*

Sporangium globular or depressed, sessile; *outer peridium* expanding starwise; inner membranaceous, pedicelled; *pedicells* and *mouths* many.

Polystoma coliforme. *Sievelike pill-box.*

Outer peridium many-cut; inner 5 or 6-pedicelled; pecells short; *mouths* ciliated.

Lycoperdon coliforme, *Dickson Crypt.* 24; *Sowerby Fungi*, 313.
Geastrum coliforme, *Persoon Syn.* 131.

On sandy banks.

L. TULOSTOMIDEÆ. *Peridia* single, leatherlike; *mouth* cartilaginous, circular; *sporidia* conglobated, scattered among the flocci.

XXXII. 233. TULOSTOMA. Persoon. *Tulostome.*

Sporangium globular, pedicelled; *peridium* single, leatherlike; *mouth* single, cylindrical, cartilaginous; *sporidia* conglomerated, among the flocci.

Tulostoma brumale. *Winter tulostome.*

Sporangium whitish; *pedicell* slightly scaly; *peridium* attached to the stem; *mouth* flattish.

Lycoperdon pedunculatum, *Lin. S. P.* 1654; *Sowerby Fungi*, 406.
Tulostoma brumale, *Persoon Syn.* 139.

Among moss on walls; autumn.

M. POLYANGIDEÆ. *Peridium* single, thin, membranaceous, bursting irregularly, enclosing many peridiola; *sporidia* grumose, naked, in the peridiola.

XXXIII. 234. POLYANGIUM. Ditmar. *Bud-mould.*

Sporangium roundish, sessile; *peridium* membranaceous; *peridiola* ovate, inside grumous.

Polyangium vitellinum. *Yelk-of-egg budmould.*
Sporangia gregarious, yellow; *periodola* deep reddish-yellow.

Polyangium vitellinum, *Ditmar in Sturm. Germ.* 3, 2.

On rotten wood.

N. CYATHIDEÆ. *Peridium* single, leatherlike, opening at the tip, containing many periodola; *peridiola* membranaceous, or coriaceous; enclosing the sporidia; *sporidia* naked, or floccular.

XXXIV. 235. CYATHUS. Persoon. *Cup-mushroom.*
Sporangium cupshape, closed at first with an epiphragma, afterwards open at the top; *peridiola* lentilshape, nestling, fleshy, inside woolly; *sporidia* naked, conglobate, in the centre of the periodola.

1. *Cyathus striatus.* *Streaked cup-mushroom.*
Sporangium reverse-conical; outside blackish-brown, shaggy; inside pale, streaked.

Peziza quæ fungus seminifer, externe hirsutus, interne striatus, *Raii Syn.* 20, 22.
Peziza lentifera β, *Lin. S. P.* 1650.
Peziza striata, *Hudson Fl. Angl.* 634.
Nidularia striata, *Sowerby Fungi*, 29.
Cyathus striatus, *Persoon Syn.* 237.

In woods on the ground; summer and autumn.

2. *Cyathus ollaris.* *Skellet cup-mushroom.*
Sporangium bellshape; outside grey or brownish, rather downy; *mouth* wide; inside smooth, livid lead-grey.

Cyathus lævis, *Hoffman Crypt.* 2, 31.
Nidularia verrucosus, *Bulliard Champ.* 164.
Nidularia lævis? *Sowerby Fungi*, 31, outside yellow.
Peziza lentifera, *Lin. S. P.* 1650.
Nidularia campanulata? *Sowerby Fungi*, 28.
Cyathus Olla, *Persoon Syn.* 237.

On rotten wood.

3. *Cyathus crucibuliformis.* *Crucibleshape cup-mushroom.*
Sporangium nearly cylindrical, hard, bald, ochry-yellow; bottom woolly, whitish.

Peziza lævis, *Hudson Fl. Angl.* 639.
Nidularia lævis, *Sowerby Fungi*, 30.
Cyathus Crucibulum, *Hoffm. Crypt.* 2, 29; *Persoon Syn.* 238, 3.

On rotten wood.
Sporangium at first cylindrical, afterwards reverse-conical.

4. *Cyathus scutellaris.* *Saucer cup-mushroom.*

Sporangia globular, grey; inside pale whitish; *peridiola* white, afterwards blackish.

Cyathoides scutellatum, ore crispo, fructibus nigris majoribus, *Micheli N. Gen.* 202, 4.
Cyathus scutellaris, *Roth Cat.* 1, 217; *Persoon Syn.* 239.
Cyathus complanatus, *De Candolle Syn.* 56?

On the ground, in woods.

Sporangia the size of a large pea, at first globular, then hemispherical; edge not cut.

Fam. X. 10. SARCOTHECEÆ. *Fungorum pars*, Linnæus, Jussieu. *Fungi sarcocarpi*, Persoon. *Vegetabilium fungosorum pars*, Esenbeck.

Thallus solid, entirely covered with a membranaceous or leatherlike epidermis; *flesh* becoming cellular; *sporidia* scattered in the substance of the flesh.

A. *Thallus solid, globular; inside smooth.* Sclerotideæ.

Thallus globular; *basis* radiated ..... ERYSIBE. 236.
Thallus tuberous; *basis* creeping, rootlike ..... THANATOPHYTON. 237.
Thallus roundish; *basis* not expanded ..... SCLEROTIUM. 238.

B. *Thallus globular; inside cellular, or veiny.* Tuberideæ.

Thallus subterraneous; inside veiny; *sporidia* pedicelled ..... TUBER. 239.

C. *Thallus irregular, gelatinous fibrous, cellular; sporidia scattered, inmersed.* Tremellideæ.

Thallus variously formed; *spor.* in the inside only ..... TREMELLA. 240.
Thallus dilated, in folds; *spor.* internal and external ..... GYRARIA. 241.
Thallus caulescent, slightly branched; *spor.* internal and external ..... CORYNE. 242.

A. SCLEROTIDEÆ. *Thallus* variously shaped, mostly globular, solid, obscurely cellular, covered with an epidermis.

I. 236. ERYSIBE. Rebentisch. *Mould-bud.*

Thalli globular, upon a radiated basis.

1. *Erysibe suffulta.* *Propped mould-bud.*

Thalli lentilshape, brown; *basis* fibrous, fulcrate, radiating irregularly.

Erysibe suffulta, *Rebentisch Fl. Neomont.*
Sclerotium Erysiphe coryleum, *Persoon Syn.* 124, 12.
Erysiphe coryli, *De Candolle Fl. Gall.* 730.

On the lower face of hazel-leaves.

2. *Erysibe alni.* *Alder mould-bud.*

Rays many, expanded, very long, free.

Erysiphe alni, *De Candolle Fl. Gall.* 730.*

On the lower face of alder-leaves.

3. *Erysibe aceris.* *Maple mould-bud.*

Rays many, long, interwoven into a thin membranaceous pellicle; *thalli* at length collapsing and becoming concave.

Erysiphe aceris, *De Cand. Fl. Gall.* 732.*

On the lower face of maple-leaves, rarely on the upper.

4. *Erysibe polygoni.* *Knot-grass mould-bud.*

Rays many, long, interwoven into a membranaceous pellicle; *thalli* few.

Erysiphe polygoni, *De Cand. Fl. Gall.* 733.

On the lower face of knot-grass leaves.

5. *Erysibe populi.* *Poplar mould-bud.*

Rays many, interwoven into a slight crustlike pellicle.

Erysiphe populi, *De Cand. Fl. Gall.* 733.*

On the upper face of black poplar-leaves, rarely on the lower.

6. *Erysibe pisi.* *Pea mould-bud.*

Rays numerous, very long, very slender, sometimes interwoven into an irregular pellicule.

Erysiphe pisi, *De Cand. Fl. Gall.* 734.

On the leaves of peas.

7. *Erysibe convolvuli.* *Bindweed mould-bud.*

Rays numerous, interwoven into a slightly membranaceous adhering pellicle; *thalli* scattered, or in rings.

Erysiphe convolvuli, *De Cand. Fl. Gall.* 736.

On the upper face of bindweed-leaves.

8. *Erysibe berberidis.* *Berberry mould-bud.*
Rays two-forked at the tip.
Erysiphe berberidis, *De Cand. Fl. Gall.* 737.
On the upper face of berberry-leaves.

9. *Erysibe acariforme.* *Ticklike mould-bud.*
Thalli heartshape, brown, rather downy; rays interwoven, torn, yellow.
Lycoperdon acariforme, *Sowerby Fungi*, 146.
On rotten wood.

10. *Erysibe Sowerbii.* *Sowerby's mould-bud.*
Thallus nearly globular, brown, woolly; rays very slender, very long, radiately regular, yellowish.
Lycoperdon radiatum, *Sowerby Fungi*, 145.
On plaistered walls.

II. 237. THANATOPHYTUM. Esenb. *Death-mould.*
Thallus tuberous, expanded creeping, rootlike.

Thanatophytum crocorum. *Saffron death-mould.*
Thallus red.
Tuber parasiticum, *Bulliard Champ.* 81.
Sclerotium crocorum, *Persoon Syn.* 119.
Thanatophytum crocorum, *Esenbeck Syst.* 2, 38.
La mort de saffron.
On the bulbs of crocuses, the roots of dwarf elder and asparagus.
Very destructive to saffron, speedily destroying a whole plantation of it. The French cultivators trench the ground very deep round the infected spot, throwing the earth of the trench upon it, and no longer cultivate saffron thereon, as it will remain in the ground for 15 or 20 years.

III. 238. SCLEROTIUM. Persoon. *Corn-mould.*
Thallus variously shaped, mostly globular, without any expansion.

1. *Sclerotium vaporariorum.* *Stove corn-mould.*
Thallus flat, often lobed, rather hard; at first smooth-brown; when old black, wrinkled.
Sclerotium vaporariorum, *Albert and Schwein. Nisk.* 73.
On the bark-bed of hot-houses.

2. *Sclerotium lacunosum.* *Pitted corn-mould.*
Thallus roundish, pitted, black; inside palish.

Sclerotium lacunosum, *Persoon Syn.* 121.

On the roots of agaricus racemosus, and other plants.

3. *Sclerotium muscorum.* *Moss corn-mould.*
Thallus roundish or irregularly lobed, surface tuberculär; inside yellow.

Sclerotium subterraneum muscorum, *Tode Meckl.* 3.
Sclerotium muscorum, *Persoon Syn.* 120.

On the roots of mosses.

4. *Sclerotium brassicæ.* *Cabbage corn-mould.*
Thallus oblong, depressed, black; inside black, dotted.

Sclerotium Brassicæ, *Persoon Syn.* 122.

On the rotten leaves of cabbage, kept in cellars; winter.

5. *Sclerotium varium.* *Various corn-mould.*
Thallus roundish or oblong, rather lobed, slightly wrinkled, whitish, becoming brownish-black.

Elvella brassicæ, *Hoffm. Crypt.* 2, 18.
Sclerotium varium, *Persoon Syn.* 122.

On the stems and ribs of cabbages; winter.

6. *Sclerotium seminiforme.* *Seedlike corn-mould.*
Thalli gregarious, nearly globular, scrobiculate, blackish-bay, becoming wrinkled.

Sphæria brassicæ, *Dickson Crypt.* 23; *Bolton Fungi*, 119.
Sclerotium Semen, *Tode Meckl.* 1, 4; *Persoon Syn.* 123.

On potatoe-stalks rotting in the fields; autumn and spring.

7. *Sclerotium quercinum.* *Oak corn-mould.*
Thalli scattered, nearly hemispherical, convex, smooth, dirty white, rather blackish.

Sclerotium quercinum, *Persoon Syn.* 124.

On dry fallen oak-leaves; summer.

8. *Sclerotium scutellatum.* *Saucer corn-mould.*
Thallus rounded, hollowed, black, inside white, slightly stemmed.

Sclerotium scutellatum, *Albert and Schwein. Nisk.* 74.

On the branches and leaves of willows.

9. *Sclerotium complanatum.* *Flattened corn-mould.*
Thallus nearly orbicular, compressed, smooth, pale, slightly stemmed.
Sclerotium complanatum, *Tode Mēcklen.* 5.
On rotten dung and straw; winter.

B. TUBERIDEÆ. *Thallus* solid, globular or irregular, inside cellular or veiny; *sporidia* scattered in the cells.

IV. 239. TUBER. Matthioli. *Truffle.*
Thallus globular, irregular, bark thick, cracked, inside veiny; *sporidia* nearly globular, pedicelled, affixed to the veins.—Subterraneous.

a. *Root* 0, *grows deep in the ground.*

1. *Tuber cibarium.* *Food truffle.*
Thallus nearly globular, outside black, warty; *warts* large, blunt, angular.
Tubera,
Lycoperdon Tuber, *Lin. S. P.* 1653.
Lycoperdon gulosorum, *Scopoli Carn.* 2, 491.
Tuber gulosorum, *Wigg Holsat.* 109.
Tuber cibarium, *Sibthorp Oxon.* 398.
Truffs. Truffles.
Subterraneous.
Flavour very grateful in made-dishes; procured by observing where hogs wish to turn up the ground, and there digging, or by having spaniels trained to point at them.

2. *Tuber moschatum.* *Musk truffle.*
Thallus roundish, smooth, black inside and out; flesh soft becoming wrinkled; when fresh smelling like musk.
Tuber moschatum, *Bulliard Champ.* 79; *Sowerby Fungi*, 426.
Subterraneous.
Used as the former.

b. *Root fibrous, grows near the surface.* Tartufa.

3. *Tuber album.* *White truffle.*
Thallus smooth, inside and outside white, afterwards dull-red with red lines.
Tuber album, *Bulliard Champ.* 30; *Sowerby Fungi*, 320.
Lycoperdon gibbosum, *Dickson Crypt.* 2, 26.
White truffle.
Under ground, near the surface.
Inodorous, becoming yellow, and wrinkly when dry.—Used for sauce, but inferior to the common.

C. TREMELLIDEÆ. *Thallus* variously shaped, rather gelatinous; epidermis thin; inside cellular, fibrous; *sporidia* naked, scattered in the substance, and very copiously on the outer surface.

V. 240. TREMELLA. Dillenius. *Tremelle.*

Thallus variously shaped; *sporidia* scattered in the inside only.

Tremella recisa. *Cut-off tremelle.*

Thallus reverse-conical, umber-brown, inside rather fibrous.

Peziza granulosa, *Persoon Syn.* 633, 4.
Tremella recisa, *Ditmar Fung.*

On dry willow-branches.

VI. 241. GYRARIA. Esenbeck. *Gyraria.*

Thallus dilated, meandering; *sporidia* scattered in the substance, and over the external surface.

1. *Gyraria mesenterica.* *Cawl gyraria.*

Thallus roundish, orange-colour; *plaits* vertical, twisted.

Tremella mesenterica, *Jacq. Miscell. Austr.* 1, 13.

On the fallen branches of trees.

Becomes hard, but not much smaller when dry.

2. *Gyraria? albida.* *Whitish gyraria.*

Thallus whitish, sessile, rather wrinkled, solid, semi-transparent, variously shaped, jellylike.

Tremella albida, *Huds. Fl. Angl.* 565; *Engl. Bot.* 2117.
Tremella cerebrina, *Bulliard Champ.* 386.

On half-rotten branches, or wet wood.

3. *Gyraria ferruginea.* *Iron-brown gyraria.*

Thalli clustered, rusty-brown, lobed; lobes waved; surface finely pulverulent, granulated; inside white.

Tremella ferruginea, *Engl. Bot.* 1454.

On the dead branches of trees.

4. *Gyraria intumescens.* *Swelling gyraria.*

Thalli clustered, twisted, swollen, brown, shining, jellylike; when dry thin, membranaceous.

Tremella intumescens, *Engl. Bot.* 1870.

On rotten wood in wet weather.

5. *Gyraria violacea.* *Violet gyraria.*

Thallus roundish, violet, slightly compressed, small, compact, meandering.

Tremella violacea, *Relhan Cantab.* 442.

On the trunks of pear-trees; winter.

6. *Gyraria spiculosa.* *Spicular gyraria.*

Thallus flattened, spreading, rather thick, black; nipples conical, spicular.

Tremella spiculosa, *Persoon Syn.* 624.
Tremella arborea, *Hudson Angl.* 565.

On the trunks of trees; autumn.

7. *Gyraria auricularis.* *Ear gyraria.*

Thalli in tufts, thin, winding, concave, blackish, beneath plaited, slightly woolly, olive-grey.

Peziza auriculam referens, *Raii Syn.* 18, 9.
Tremella Auricula, *Lin. S. P.* 1625.
Peziza Auricula, *Lin. Syst. Veg. ed.* 15, 1013.
Merulius Auricula, *Roth Germ.* 625.
Tremella Auricula-judæ, *Persoon Syn.* 624.
Jews' ears.

On the trunks of elder-trees; annual; autumn.

Used in a poultice, soaked in milk or vinegar as an application to sore throats, also the infusion strained as a gargle.

8. *Gyraria foliacea.* *Leafy gyraria.*

Thalli in tufts, entirely bald, thin, plaited wavy, concave, base crisp, dark red flesh-colour.

Tremella mesenteriformis, *Bulliard Champ.* 230.
Tremella foliacea, *Persoon Syn.* 626.

On rotten trunks of trees; autumn.

9. *Gyraria juniperina.* *Juniper gyraria.*

Thallus brownish-red, sessile, membranaceous, roundish-earshape.

Tremella juniperina, *Lin. S. P.* 1625.

On juniper, furze, and common broom.

10. *Gyraria ustulata.* *Burnt gyraria.*

Thallus small, vesicular, slightly gelatinous-fleshy, brownish-black; surface furrowed, furrows winding.

Tremella ustulata, *Bulliard Champ.* 221.

On half-rotten fleshy fruits.

11. *Gyraria lachrymalis.* *Tear gyraria.*
Thallus roundish or slightly uneven, peziza-like, shining, pellucid, yellow.
Tremella deliquescens, *Bulliard Champ.* 219.
Tremella lachrymalis, *Persoon Syn.* 628.
On rotten wood.

12. *Gyraria cinnabarina.* *Vermilion gyraria.*
Thallus very small, slightly gelatinous, fleshy, bullate, purplish; surface granular, rough.
Tremella cinnabarina, *Bulliard Champ.* 218.
On mosses and several other herbs.

VII. 242. CORYNE. Esenbeck. *Coryne.*
Thallus long, stemlike, slightly branched, thickened; *sporidia* scattered in the cellular substance and on the outside.

1. *Coryne dubium.* *Doubtful coryne.*
Thallus pale flesh-colour, nearly spatulashape; tip white, hoary.
Tremella dubia, *Persoon Syn.* 630, 25.
Acrosperma dubium, *Persoon Comm.* 92.
Tremella (Coryne) Acrospermum, *Esenbeck Syst.* 2, 40.
On the rotten trunks of trees.

2. *Coryne clavatum.* *Clubbed coryne.*
Thallus solitary, reddish flesh-colour, clubshape.
Tremella stipitata, *Willd. Berol.* 420.
Tremella clavata, *Persoon Syn.* 630, 24.
Acrospermum clavatum, *Persoon Comm.* 90.
On rotten branches; autumn.

Fam. XI. 11. HYMENOTHECEÆ. *Fungorum pars,* Ray, Linnæus, Jussieu. *Fungi clavati et pileati,* Esenbeck.

Thalli long or expanded into an hemispherical cap, inside cellular or fibrous; *sporidia* threadlike, on the whole surface, or the flat surface of the cap.

A. *Hymenium lamellar, gills decaying without changing colour; cap fleshy or leathery, juiceless.* Agaricideæ.

Volva, collar, and *radical tuber,* distinct AMANITA. 243.
Volva cylindrical; *collar* 0 ..... VAGINATA. 244.

Volva 0; *collar* distinct ..... LEPIOTA. 245.
Stem central, naked; *cap* convex .... GYMNOPUS. 246.
Stem central, naked; *cap* concave.... OMPHALIA. 247.
Stem eccentric, naked ..... PLEUROPUS. 248.
Stem marginal, naked ..... CREPIDOPUS. 249.
Stem 0; *cap* sessile ..... APUS. 250.
Thallus attached by its back ..... RESUPINATUS. 251.

B. *Hymenium lamellar; gills decaying without changing colour; cap fleshy or membranaceous, juicy.* Mycenadeæ.

Texture venulose, cellular;
cap fleshy; *stem* naked ..... RUSSULA. 252.
Text. fibrous; *cap* membranaceous;
stem naked; *sporidia* short ..... MYCENA. 253.
Text. fibrous; *cap* membranaceous;
stem naked; *sporidia* long ..... MICROMPHALE. 254.
Text. fibrous; *cap* funnelshape;
gills milky ..... LACTARIUS. 255.

C. *Hymenium lamellar; gills becoming black, powdery; cap fleshy or skinny; texture fibrous.* Pratellideæ.

Cap thick; *gills* persisting;
sporidia single; *collar* distinct ..... PRATELLA. 256.
Cap thin; *gills* persisting;
sporidia single; *collar* fibrous ..... CORTINARIA. 257.
Cap thin; *gills* persisting;
sporidia in pairs; *collar* 0..... PRUNULUS. 258.
Cap thin; *gills* diffluent;
sporidia in fours; *collar* distinct or 0.... COPRINUS. 259.

D. *Cap beneath lamellar; gills barren; apex woolly; sporidia interspersed in the wool of the cap.* Asterophorideæ.

Sporidia angular ..... ASTEROPHORA. 260.

E. *Hymenium veined; veins superficial, distinct; cap fleshy.* Merulideæ.

Stem central; *cap* round, convex..... MERULIUS. 261.
Stem central; *cap* round, concave CANTHARELLUS. 262.
Stem lateral; *cap* semicircular ..... CORNIOLA. 263.
Thallus attached by its back..... SERPULA. 264.
Thallus clubshape, sessile, sides plaited GOMPHUS. 265.

F. *Hymenium veined; veins anastomosing; cap leatherlike, corky.* Dædaleadeæ.

Cap semicircular ..... DÆDALEA. 266.

G. *Hymenium tubular; tubes short, persistent, not cut; cap leatherlike or woody.* Boletideæ.

Thallus attached by its back ..... PORIA. 267.
Thallus semicircular ..... BOLETUS. 268.
Stem lateral; *cap* semicircular ..... GRIFOLA. 269.
Stem central; *cap* orbicular, membranaceous ..... COLTRICIA. 270.
Stem central; *cap* orbicular, fleshy, concave ..... STRILIA. 271.
Stem central; *cap* orbicular, fleshy, convex ..... ALBATRELLUS. 272.
Stem lobed; lobes branchlike, porous POLYPORUS. 273.

H. *Hymenium tubular; tubes long, separable from the cap, not cut; cap convex, fleshy.* Suillideæ.

Tubes close; *stem* central; *collar* distinct; *cap* orbicular ..... SUILLUS. 274.
Tubes close; *stem* central; *collar* fibrous; *cap* orbicular ..... PINUZZA. 275.
Tubes close; *stem* central; *collar* 0; *cap* orbicular ..... LECCINUM. 276.
Tubes separate; *stem* lateral; *collar* 0; *cap* semicircular ..... FISTULINA. 277.

I. *Hymenium toothed, teeth lamellar, torn; cap leatherlike.* Sistotremadeæ.

Stem distinct; *cap* concave ..... SISTOTREMA. 278.
Stem 0; *cap* semicircular ..... CERRENA. 279.
Thallus attached by its back ..... XYLODON. 280.

K. *Hymenium spinose; spines not divided.* Hydnideæ.

Cap regular, fleshy, convex; *stem* central, naked. ..... HYDNUM. 281.
Cap regular, fleshy, concave; *stem* central, naked ..... DENTINUM. 282.
Cap regular, membranaceous; *stem* lateral, naked ..... AURISCALPIUM. 283.
Cap semicircular, sessile ..... STECHERINA. 284.

Thallus on its back, spreading ..... ODONTIA. 285.
Thallus branched or clublike, spinose.. HERICIUM. 286.

L. *Hymenium smooth, hairy or warty, expanded; thallus leatherlike, sometimes capped.* Thelephorideæ.

Stem central; *cap* concave ..... CRATERELLA. 287.
Stem eccentric or 0; *cap* semicircular .. STEREUM. 288.
Thallus attached by its back ..... CORTICIUM. 289.
Thallus branched, compressed ..... MERISMA. 290.

M. *Hymenium smooth, expanded; thallus fleshy, long, uniform, simple or branched.* Clavarideæ.

Thallus cartilaginous or gelatinous.. CORYNOIDES. 291.
Thallus fleshy, cylindrical, branched... RAMARIA. 292.
Thallus fleshy, clubshape, simple ..... CLAVARIA. 293.

N. *Hymenium smooth, expanded; thallus fleshy, long; tip expanded, clubshape or capped; cap smooth.* Geoglossideæ.

Club compressed, edge prominent.. GEOGLOSSUM. 294.
Club compressed or ovate; edge free .. MITRULA. 295.
Cap orbicular ..... LEOTIA. 296.
Cap hemispherical ..... HELOTIUM. 297.
Cap conical ..... RELHANUM. 298.

O. *Hymenium smooth, expanded; thallus fleshy, long; tip capped; cap plaited or cellularly networked.* Helvellideæ.

Mitre conical above, reticulated .... MORCHELLA. 299.
Mitre plaited, distinct ..... HELVELLA. 300.
Mitre compressed, connate to the stem
SPATULARIA. 301.

P. *Hymenium smooth, expanded; sporidia clubshape, intermixed with barren filaments, fixed; thallus fleshy or waxlike, cupshape.* Pezizadeæ.

Cup sessile, immersed, dry ..... STICTIS. 302.
Cup sessile, dry, edged; edge flat... PATELLARIA. 303.
Cup sessile, woolly ..... PEZIZA. 304.
Cup sessile, soft, fibrous, cellular, naked OCTOSPORA. 305.
Cup sessile, hemispherical, spread, scaly ..... SCODELLINA. 306.
Cup pedicelled, dry, fibrous, woolly or bald ..... CALYCINA. 307.

Cup pedicelled, soft, fibrous, cellular, surface woolly ..... DASYSCYPHUS. 308.
Cup pedicelled, soft, cellular, slightly fibrous, scaly or bristly ..... MACROSCYPHUS. 309.
Cup pedicelled, thin, fibrous, cellular, bald ..... HYMENOSCYPHUS. 310.

Q. *Hymenium smooth, expanded; sporidia clubshape, intermixed with barren filaments, ejectile; thallus fleshy.* Ascobolideæ.

Thallus dishlike or reverse-conical .. ASCOBOLUS. 311.

A. AGARICIDEÆ. *Hymenium* lamellar; *gills* separable from the cap, not becoming black or juicy; *cap* thick, fleshy, or leathery; texture vesicular or cellular.

I. 243. AMANITA. Dillenius. *Amanite.*

Volva at first covers the whole thallus; fragments left on the cap; *stem* central, bulbose at bottom; *collar* distinct; cap fleshy; *gills* crowded.—Poisonous.

1. *Amanita bulbosa.* *Bulbous amanite.*
Thallus white; cap convex; *stem* long, slender, bulbous.

Agaricus bulbosus, *Schæff. Fung.* 241.
Amanita bulbosa, *Persoon Syn.* 250, 7.

In woods and pastures; autumn.

2. *Amanita citrina.* *Lemon-yellow amanite.*
Cap bald, lemon-yellow; *gills* and *stem* white.

Agaricus citrina, *Schæff. Fung.* 20.
Amanita citrina, *Persoon Syn.* 251.

In woods, on the ground, in sandy soils.

β. *mappalis.* *Cap* yellowish, with brownish warts.

Agaricus Mappa, *Willd. Berol.* 381.
Amanita citrina Mappa, *Persoon Syn.* 251.

3. *Amanita aurantiaca.* *Orange amanite.*
Thallus large; *cap* bellshape, orange-red; *gills* bellied, gold-yellow; *warts* scattered, white; *stem* white.

Amanita aurantiaca, *Bull. Herb.* 120; *Pers. Syn.* 252, 10.

In woods.

4. *Amanita muscaria.* *Fly amanite.*

Stem white; *cap* orange-red, shining, flattish; *warts* and *gills* white.

Amanita muscaria, *Schæff. Fung.* 27; *Persoon Syn.* 253, 11.
Agaricus muscarius, 3, 4, *With.* 218; *Sowerby Fungi*, 286.

In plantations of firs.

Powder in doses of gr. x. to xxx. with vinegar, cathartic and sudorific, useful in epilepsy and palsy occasioned by eruptions which have been improperly repelled; also used externally sprinkled upon ulcers and gangrene: the juice rubbed upon bedsteads kills or expels bugs, and mixed with milk is used in Sweden to kill flies.

β. *minor.* *Thallus* small; *cap* convex, warts generally wanting.

5. *Amanita umbrina.* *Umber amanite.*

Stem white; *cap* flattish, greyish-bay; *warts* and *gills* white.

Agaricus verrucosus, *Hudson Angl.* 613.
Agaricus maculatus, *Schæff. Fungi*, 90.
Amanita umbrina, *Persoon Syn.* 254, 12.
Agaricus muscarius, var. 6, *With. Arr.* 219.

In beech-woods.

6. *Amanita rubescens.* *Reddish amanite.*

Cap convex, opake, reddish; *warts* crowded, white; *gills* white.

Agaricus margaritiferus, *Schæff. Fung.* 91.
Amanita rubescens, *Persoon Syn.* 67.
Agaricus muscarius, var. 7, *Withering Arr.* 219.

In beech-woods; autumn.

7. *Amanita circinnata.* *Compassed amanite.*

Stem bulbous, rather scaly, reddish; *cap* hemispherical, slightly umbilicated, reddish; *warts* oblong, round, whitish; *gills* flattish, whitish.

Agaricus myodes, *Schæff. Fung.* 261.
Agaricus muscarius, var. 5. *Wither. Arr.* 4, 218.

In woods; rare.

8. *Amanita aspera.* *Rough amanite.*

Stem long, fibrilled, slightly bulbed; *cap* fleshy, compact, bossed, reddish grey; *warts* pointed, rough; *gills* crowded, white.

Agaricus verrucosus, *Bulliard Herb.* 316, warts globular.
Amanita aspera, *Persoon Syn.* 256.

In woods; late in autumn.

Odour strong.

II. 244. VAGINATA. Esenbeck. *Boot-mushroom.*

Stem cylindrical at bottom; *volva* cylindrical; *collar* 0; *cap* fleshy; *gills* crowded, equal.—Poisonous.

1. *Vaginata livida.* *Livid boot-mushroom.*

Stem long, white; *cap* bossed, flattish, streaked, livid lead-colour; *gills* white.

Agaricus vaginatus, *Bulliard Herb.* 512, M.
Agaricus plumbeus, *Schæff. Fung.* 35 & 36.

Boders of shady woods, after long rains.

2. *Vaginata spadicea.* *Dark-bay boot-mushroom.*

Stem scaly, brown; *cap* rather bellshape, bossed, streaked, brittle, bay; *gills* white.

Agaricus fuscus, *Schæff. Fung.* 95.
Amanita spadicea, *Persoon Syn.* 248, 2.

In fir plantations.

3. *Vaginata virgata.* *Stiff boot-mushroom.*

Thalli in tufts; *cap* bellshape, conical, hairy, grey and black, stiff; *gills* powdery, cinnamon-red.

Agaricus volvaceus, *Bulliard Herb.* 261.
Amanita virgata, *Persoon Syn.* 249, 4.

In the bark-bed of hot-houses; summer.

III. 245. LEPIOTA. Persoon. *Lepiote.*

Stem central; *volva* 0; *collar* distinct; *cap* fleshy; *gills* equal in length, or mixed with shorter, juiceless, not variegated.—Wholesome.

1. *Lepiota procera.* *Tall lepiote.*

Thallus large; *stem* bulbous, very long; *collar* moveable; *cap* fleshy, bossed, scaly, reddish-grey; *gills* very far apart, whitish.

Agaricus procerus, *Schæff. Fung.* 22 & 23; *Sowerby Fungi*, 190.

In woods.

Thallus elegant, esculent.

β. *excoriatus.* *Thallus* small, whitish; scales scarcely discernible.

Agaricus excoriatus, *Schæff. Fung.* 18 & 19; *Sibth. Ox.* 341.

2. *Lepiota colubrina.* *Snake lepiote.*

Thallus large; *stem* rather long, villous, soft; *collar* decaying; *cap* bellshape, scaly, pale; *scales* large, scattered, reddish; *gills* whitish, free.

Agaricus calceolarius, *Bull. Herb.* 405.
Agaricus colubrinus, *Persoon Syn.* 258, 2.

In woods, on moist land; autumn.
Stem 3 inches long; *cap* about 2 broad, brittle.

β. *cristata.* *Thallus* small; *stem* shortish, hollow, light reddish, bald; *ring* vanishing; *cap* bellshape, whitish; centre and scales brown; *gills* free, white.

Agaricus cristatus, *Willd. Berol.* 1104.
Agaricus subantiquatus, *Batsch Fung.* 2, 59.

In beech woods, on the ground, or stems.
Stem 2 inches long; *cap* half an inch broad; *odour* heavy; *taste* very ungrateful.

γ. *pantherina.* *Stem* middling, rather bulbous, slightly scaly; *cap* rather fleshy, bossed; *scales* crowded, dark-cinnamon, pressed close; *gills* free, broadish, yellowish.
In pine woods.
Cap 2 inches broad; *collar* scarcely any.

3. *Lepiota granulosa.* *Granular lepiote.*
Thalli middle-size, several together; *stem* scaly, collared; *cap* rather fleshy, bossed, rust-colour; *gills* crowded, mostly pale.

Agaricus granulosus, *Batsch Fung.* 79 & 170.
Agaricus flavo-floccosus, *Batsch Fung.* 117.
Agaricus ochraceus, *Bull. Herb.* 533.
Agaricus croceus, *Bolt. Fung.* 51; *Sowerby Fungi*, 19.

In woods, and plantations of firs.
Stem 2 inches long, 2 lines broad, hollow; *cap* an inch over.

4. *Lepiota squarrosa.* *Rough lepiote.*
Thalli in tufts; *stem* rough, scaled, ochry-brown; *cap* fleshy, gills crowded, pale olive.

Agaricus floccosus, *Curtis Lond.* 264.
Agaricus squarrosus, *Willd. Berol.* 380.

At the root of oak trees; autumn.
Stem stiff or ascending; *collar* small; *cap* 3 inches broad; *flesh* lemon-yellow; *odour* fishy.

β. *aurivella.* *Thallus* rusty yellow; *cap* bellshape, scaly; *stem* hairy, bent.

Agaricus aurivellus, *Batsch. Fung.* 153.
Agaricus filamentosus, *Schæff. Fung.* 209.

5. *Lepiota aurea.* *Golden lepiote.*

Thalli in small tufts, large, entirely reddish-brown; *stem* stiff, bald, thickish; *collar* rather small; *cap* fleshy, flattish, slightly scaly or hairy; *gills* crowded, thin, slightly nicked.

Agaricus aureus, *Sowerby Fungi*, 77.

In woods, on the ground.

Cap 3 or 4 inches broad; *flesh* brimstone-yellow; *taste* bitter.

6. *Lepiota polymyces.* *Many-stemmed lepiote.*

Thalli in close tufts; *stem* collared, conical, greyish-olive; *cap* bossed, scaly, greyish-yellow; *gills* rather decurrent, pale-whitish.

Agaricus melleus, *Bolton Fung.* 141.
Agaricus congregatus, *Bolton Fung.* 140.
Agaricus annularius, *Bull. Herb.* 540.
Agaricus stipitis, *Sowerby Fungi*, 101.
Agaricus cumulatus, *Withering Arr.* 4, 195.
Agaricus polymyces, *Persoon Syn.* 269.

In woods, at the roots of trees, or on the ground.

Stem solid, elastic; *collar* thick.

7. *Lepiota caudicina.* *Stem lepiote.*

Thalli in tufts; *stem* scaly, rather slender, cylindrical; *cap* rather fleshy, bossed, bald, cinnamon-colour; *gills* slightly decurrent, pale rusty-brown.

Agaricus mutabilis, *Schæff. Fung.* 9.
Agaricus annularis, *Bull. Herb.* 543.
Agaricus lignatilis, *Bull. Herb.* 534, 1.
Agaricus caudicinus, *Persoon Syn.* 271.

On rotten trunks of trees; autumn.

Cap quite bald, rather slimy; esculent.

8. *Lepiota helvola.* *Reddish-brown lepiote.*

Thalli gregarious, middle-size; *stem* rather long, cylindrical, girt at bottom with a very small collar; *cap* rather fleshy, bossed, nearly cinnamon-coloured; *gills* distant, of the same colour.

Agaricus hinnuleus, *Sowerby Fungi*, 173.
Agaricus helvolus, *Persoon Syn.* 273.

In woods, grassy grounds, and paths.

Cap half an inch over; *stem* 3 inches long.

IV. 246. GYMNOPUS. Persoon. *Naked-foot.*

Stem central; *collar* and *volva* 0; *cap* fleshy, orbicular, convex.—Wholesome.

a. *Cap bay, cinnamon, chestnut, reddish or brown.*

1. *Gymnopus pratensis.* *Meadow naked-foot.*

Thallus brownish-red, rather hard; *stem* short, rather thin, smallest at bottom; *cap* bellshape, bluntly bossed or flattish, bald; *gills* thick, distant, decurrent.

Agaricus ficoides, *Bull. Herb.* 587.
Agaricus miniatus, *Sowerby Fungi*, 141.
Agaricus fulvosus, *Bolt. Fung.* 56.
Agaricus pratensis, *Persoon Syn.* 304.

In meadows, pasture-lands, and grassy hills.

Stem solid; *gills* rather yellowish.

β. *vitulinus.* *Cap* pale-reddish; *gills* and *stem* white.

Agaricus oreades, *Bolton Fung.?*
Agaricus pratensis vitulinus, *Persoon Syn.* 305.

2. *Gymnopus rimosus.* *Cracked naked-foot.*

Stem scaly, hoary, pale; *cap* conical, cracked lengthways, rather reddish; *gills* broadish, olive clay-colour, white on the edge.

Agaricus rimosus, *Bull. Herb.* 599.
Agaricus aurivenius, *Batsch Fung.* 20, 107.

In grassy woods, on the ground; August and September.

Stem 2 inches long, 2 lines and a half thick, swollen at top and bottom; *cap* 2 inches broad, 1 high, dirty; *taste* and *odour* not unpleasant.

3. *Gymnopus reflexus.* *Reflected naked-foot.*

Thalli gregarious, ochry rust-colour; *stem* long, slender, fibrous-scaly; *scales* turned backwards; *cap* rather fleshy, acutely bossed, scaly, ochre-yellow; *gills* distinct, pale cinnamon-colour.

Agaricus pilosus, *Schæff. Bav.* 80?
Agaricus reflexus, *Persoon Syn.* 311.

On stumps of apple and pear trees.

4. *Gymnopus fusipes.* *Spindle naked-foot.*

Thalli in tufts; *stem* furrowed, bellied, rooted, bald; *cap* rather tough, reddish-buff; *gills* distant, reddish-white.

Agaricus fusipes, *Bull. Herb.* 516.
Agaricus crassipes, *Schæff. Fung.* 88; *Sowerby Fungi*, 129.

At the foot of decaying trees; autumn.

Stem 4 or 5 inches high, 3 quarters thick; *cap* 4 to 6 inches over, often slopes very much.

5. *Gymnopus radicatus.* *Rooted naked-foot.*

Root long, spindleshape; *stem* very long; *cap* fleshy, bossed, slimy, wrinkled, grey-cow colour or brownish; *gills* slightly decurrent, white.

Agaricus macrorhizus, *Persoon Obs. Myc.* 1, 47.
Agaricus radicatus, *Relhan Cant.* 1040; *Sowerby Fungi*, 48.

In felled woods, at the side of the fallen trees, after rain.

6. *Gymnopus pudens.* *Modest naked-foot.*

Root long, spindleshape; *stem* very long, solid, downy, rooted, rust-brown; *cap* rather fleshy, bossed, smooth, dun-colour; edge villous; *gills* ascending, white.

Agaricus longipes, *Bull. Herb.* 232?
Agaricus radicatus pudens, *Persoon Syn.* 314.

In shady woods, at the foot of trees.

7. *Gymnopus velutipes.* *Velvet stem naked-foot.*

Thalli in tufts; *stem* downy, very dark bay; *cap* rather fleshy, turned up, bald, brown; *gills* bellied, yellowish.

Agaricus velutipes, *Curtis Lond.*; *Sowerby Fungi*, 163.
Agaricus nigripes, *Bull. Herb.* 344.

In willow plantations; autumn and mild winters.

Stem 2 inches long, 2-tenths thick; *cap* 1 inch to 3 inches over; *flesh* white.

8. *Gymnopus badipus.* *Bay-stemmed naked-foot.*

Stem whitish, fibrilled, bay colour at bottom, rather tough; *cap* fleshy membranaceous, bellshape, blunt, bald, rather rust-brown; *gills* broadish, flat ascending, similarly coloured.

Agaricus badipus, *Persoon Syn.* 318.
Agaricus caulicinalis, *Sowerby Fungi*, 163.

In plantations.

b. *Cap greenish, yellowish, pale, or light fawn-colour.*

9. *Gymnopus rutilans.* *Brilliant naked-foot.*

Stem long, solid, thick at bottom, yellowish; *cap* fleshy, flattish, same colour as the stem, mostly spotted red towards the edge; *gills* pale.

Agaricus rutilans, *Schæff.* 218.
Agaricus xerampelinus, *Sowerby Fung.* 31.

In woods.

Stem 3 inches long, half an inch thick, sometimes bent, spotted with red; *cap* 2 inches and a half broad.

10. *Gymnopus luridus.* *Lurid naked-foot.*

Thalli rather gregarious; *stem* solid, slightly scaly, pale; *cap* fleshy, rather bent, bald, greenish-grey; *gills* narrow, yellowish.

Agaricus luridus, *Schæff. Fung.* 69.

In woods; autumn.

Thallus middle-size; *stem* rather thick.

11. *Gymnopus sulphureus.* *Brimstone naked-foot.*

Thalli gregarious, nearly brimstone-colour, odorous; *stem* long, hollow, bent, pale; *cap* fleshy, slightly bossed, bald; *gills* distinct, nicked.

Agaricus sulphureus, *Bull. Herb.* 163; *Sowerby Fungi*, 44.

In woods, on sandy soils, on the ground.

Stem 4 inches long; *cap* 3 inches over, dirty yellow; *odour* of philadelphus coronarius.

12. *Gymnopus odorus.* *Scented naked-foot.*

Stem solid, slightly bent, green or greenish; *cap* fleshy, flattish, smooth, greenish; *gills* crowded, slightly decurrent, whitish.

Agaricus odorus, *Bull. Herb.* 146; *Sowerby Fungi*, 42.

In oak woods, among the fallen leaves.

13. *Gymnopus viridis.* *Green naked-foot.*

Stem long, solid, white; *cap* fleshy, bald, green; *gills* white.

Fungus magnus viridis, *Raii Syn.* 2, 3.
Agaricus viridis, *Withering Arr.* 4, 233.
Agaricus cæruleus, *Bolton Fung.* 12.

In woods; August to October.

Stem 3 inches long; *cap* 3 inches broad.

14. *Gymnopus fertilis.* *Fertile naked-foot.*

Thalli gregarious, large, pale white; *stem* slightly bulbous, thickish; *cap* flattish, same colour as the stem; *gills* distinct; *sporæ* copious, brilliant.

Agaricus phonospermus, *Bull. Herb.* 547.
Agaricus pallidus, *Sowerby Fungi*, 143.

In open spaces in woods.

Cap 3 or 4 inches over.

15. *Gymnopus obesus.* *Fat naked-foot.*

Thalli gregarious; *stem* bulbous, short, whitish, pale; *cap* fleshy, flattish, bent, pale; *gills* grow chestnut-colour.

Agaricus obesus, *Batsch Fung.* 216; *Persoon Syn.* 330.

In pastures among mosses; August.

16. *Gymnopus collinus.* *Hill naked-foot.*

Thalli rather gregarious; *stem* long, tough, pale; *cap* rather fleshy, membranaceous, blunt, bossed, pale-red, streaked; *gills* distant.

Agaricus collinus, *Schæff. Fung.* 220; *Persoon Syn.* 330.
Agaricus pratensis, *Sowerby Fung.* 127?
Agaricus arundinaceus, *Bull. Herb.* 50.

On grassy hills.

17. *Gymnopus peronatus.* *Shaggy naked-foot.*

Thallus pale; *stem* solid, whitish, rooted, yellow and shaggy at bottom; *cap* fleshy, thin, convex, slightly bossed, wrinkled; *gills* distinct.

Agaricus peronatus, *Sowerby Fungi*, 37; *Persoon Syn.* 331.

In woods among the fallen leaves.

c. *Cap shining, scarlet, brownish-red or yellow.*

18. *Gymnopus ceraceus.* *Waxlike naked-foot.*

Stem yellow; *cap* hemispherical, smooth, yellow; *gills* watery yellowish.

Agaricus ceraceus, *Wulf. in Jacq. Aust.* 2, 105; *Persoon Syn.* 336.

On dry hills and edges of woods; autumn.

d. *Cap flesh-red.*

19. *Gymnopus russulus.* *Rosy naked-foot.*

Thallus large; *stem* solid, short, rose-red; *cap* fleshy, slightly convex, granular with small scales; *gills* unequal, white.

Fungus magnus rubentis seu incarnati coloris, *Raii Syn.* 3, 7.
Fungus minor campestris rotundus, lamellatus, inferne albus, superne purpureus, *Dillen in Raii Syn.* 3, 9.
Agaricus Russula, *Schæff. Fung.* 58.
Agaricus integer, var. 2, *Withering Arr.* 4, 227.

In woods and pastures under trees; Aug. to November.

20. *Gymnopus purus.* *Pure naked-foot.*
Thalli gregarious; *stem* hollow, villous and paler at the bottom; *cap* nearly membranaceous, rose-colour, shining; *gills* broadish, veiny at the bottom, pale-rose.

Agaricus roseus, *Sowerby Fungi*, 72.
Agaricus purus roseus, *Persoon Syn.* 339.
Agaricus incarnatus, *Relhan Cant. Suppl.* 2, 1092.

In woods, among dead leaves; November.

β. *purpureus.* *Stem* purple; *cap* hemispherical, purple; *gills* three in a set.

Agaricus purpureus, *Bolton Fungi*, 41.
Agaricus purus purpureus, *Persoon Syn.* 339, 149, γ.

e. *Cap more or less violet, purplish or grey.*

21. *Gymnopus geophilus.* *Earthloving naked-foot.*
Thalli gregarious, rather small; *stem* nearly cylindrical, powdery, same colour as the cap; *cap* bellshape, rather fleshy, pale-violet; centre brownish; *gills* cinnamon clay-colour.

Agaricus affinis, *Sowerby Fungi*, 124.
Agaricus geophilus, *Persoon Syn.* 340.

In woods, on clay-ground.

22. *Gymnopus chalybeus.* *Steel-grey naked-foot.*
Stem rather slender, same colour as the cap; *cap* rather fleshy, bellshape, rather scaly, at first steel-grey, afterwards blackish-grey; *gills* purplish-grey.

Agaricus columbarius, *Sowerby Fungi*, 161,
Agaricus chalybeus, *Persoon Syn.* 343.

On grassy hills; autumn.

f. *Cap grey, smoke-colour, or blackish.*

23. *Gymnopus myomyces.* *Mouse-colour naked-foot.*
Thalli gregarious; *stem* bald, whitish-grey; *cap* fleshy, bossed, scaly, grey; *gills* whitish-grey.

Fungus superficie murini coloris; lamellis albicantibus, *Raii Syn.* 5, 21.
Agaricus terreus, *Sowerby Fungi*, 76.
Agaricus myomyces, *Persoon Syn.* 345.

In pine and beech woods.
When broken, or rubbed, it emits the odour of burnt feathers.

24. *Gymnopus meleagris.* *Turkey-fowl naked-foot.*
Root networked; *stem* solid, blackish at bottom; *cap* rather fleshy, flattish, scaly; *scales* scattered, blackish.

Agaricus meleagris, *Sowerby Fungi*, 171.
Agaricus meleagris, *Persoon Syn.* 347.

On hot-beds.

25. *Gymnopus plumosus.* *Feathery naked-foot.*
Stem long, slender, feathery; *cap* hemispherical, feathery with scales, mouse-colour; *gills* 3 in a set, whitish.

Agaricus plumosus, *Bolton Fung.* 33; *Persoon Syn.* 347.

In woods.

26. *Gymnopus nebularis.* *Cloudy naked-foot.*
Thalli gregarious, firm; *stem* solid, rather bulbous, greyish-white; *cap* thick, bossed, livid-grey; *gills* crowded, slightly decurrent, pale-white.

Agaricus nebularis, *Batsch Fung.* 193; *Persoon Syn.* 349.
Agaricus mollis, *Bolton Fung.* 40.
Agaricus pileolarius, *Sowerby Fungi*, 61.
Agaricus albellus, *Sowerby Fungi*, 122.

In fir plantations; autumn to November.

27. *Gymnopus limacinus.* *Snail naked-foot.*
Stem solid, naked, cracked transversely, same colour as the cap, tip snow-white; *cap* fleshy, rather narrow, plano-convex, glutinous, olive-grey, blackish; *gills* decurrent, white.

Agaricus limacinus, *Schæff. Fung.* 312; *Persoon Syn.* 355.

In woods and plantations.

28. *Gymnopus brevipes.* *Short-stemmed naked-foot.*
Thalli rather gregarious; *stem* solid, very short, colour of the cap; *cap* fleshy, bossed or rather smooth, grey; centre blackish; *gills* crowded, nicked, grey.

Agaricus brevipes, *Bull. Herb.* 521; *Persoon Syn.* 360.

On the ground.
Stem scarce an inch long, inside reddish; *cap* 3 inches broad.

29. *Gymnopus graveolens.* *Stinking naked-foot.*
Thallus heavy; *stem* solid, rather disposed to split, whitish; *cap* fleshy, thick, nearly hemispherical, bald, smoke-grey; *gills* crowded, nicked.

Agaricus graveolens, *Persoon Syn.* 361.

In grassy places, and plantations.

Taste and *smell* very disagreeable, also heavy on the hand.

30. *Gymnopus compressus.* *Flattened naked-foot.*

Thallus brittle; *stem* compressed, rather twisted; *cap* thin, flattish, irregular, brown, waxy; *gills* rather thick, distant, white.

Agaricus compressus, *Withering Arr.* 4, 278; *Sowerby Fungi*, 66; *Persoon Syn.* 363.

On grassy hills; June.

g. *Cap white.*

31. *Gymnopus albus.* *White naked-foot.*

Thallus entirely white, usually solitary; *stem* thick, short, nearly upright, rather smaller at bottom; *cap* fleshy, convex; *gills* distinct.

Agaricus virgineus, *Batsch Fung.* 39.
Agaricus albus, *Persoon Syn.* 363.

On the ground, in sandy soils.
Esculent.

32. *Gymnopus eburneus.* *Ivory naked-foot.*

Thalli gregarious, white; *stem* long, scaly at the tip; *cap* rather fleshy, viscous, plano-convex, edge smooth; *gills* rather distant, slightly decurrent.

Agaricus eburneus, *Persoon Syn.* 364.

In beech woods, rarely among firs; autumn.
Esculent.

β. *nitens.* *Stem* rather short.

Agaricus Jozzolus, *Scopoli Carn.* 2, 431.
Agaricus eburneus, *Bull. Herb.* 551.
Agaricus niteus, *Sowerby Fungi*, 71.

33. *Gymnopus parasiticus.* *Parasitic naked-foot.*

Thalli rather small, in tufts, parasitic; *stem* bent, hairy, solid; *cap* bellshape, rather turned back, pale-white; *gills* distant, thickish, brown.

Agaricus parasiticus, *Bull. Herb.* 574; *Persoon Syn.* 371.
Agaricus umbratus, *Withering Arr.* 4, 235.

On rotten fungi.

34. *Gymnopus pilipes.* *Hairy-stemmed naked-foot.*
Thalli in bundles, brown; *stem* covered throughout with scattered hairs; *cap* bellshape.

Agaricus pilipes, *Sowerby Fungi*, 249.

On rotten fungi.

35. *Gymnopus tuberosus.* *Tuberous naked-foot.*
Thalli gregarious, small, whitish; *stem* short, rather reddish, innate in tubers; *cap* convex, nippled.

Agaricus tuberosus, *Bull. Herb.* 256.
Agaricus Amanitæ, *Batsch Fung.* 1, 109.
Agaricus alumnus, *Bolton Fung.* 155.
Agaricus albus, var. 2, *Withering Arr.* 4, 254.

On rotten fungi; autumn.

36. *Gymnopus ramealis.* *Branch naked-foot.*
Thalli gregarious, small, slightly persistent; *cap* bent, powdery; *cap* rather fleshy, hemispherical, whitish; centre reddish; *gills* narrow, crowned.

Agaricus ramealis, *Bull. Herb.* 336; *Persoon Syn.* 375.
Agaricus candidus, *Bolton Fung.* 39.

In beech woods, on sticks, after rain; autumn.

V. 247. OMPHALIA. Persoon. *Navel-stool.*
Volva 0; *stem* central; *collar* 0; *cap* fleshy, orbicular, funnelshape or umbilicated; edge smooth; *gills* unequally long, decurrent.—All are supposed to be poisonous.

a. *Cap yellowish, pale, liver-brown or chestnut.*

1. *Omphalia involuta.* *Involved navel-stool.*
Thallus large; *cap* fleshy, depressed, liver-colour; edge turned back, downy; *gills* two-forked, rather porous at bottom.

Agaricus involutus, *Batsch Fung.* 1, 39; *Persoon Syn.* 448.
Agaricus contiguus, *Bull. Herb.* 240; *Sowerby Fungi*, 56.

On sandy soils, on the ground.

β. *truncigena.* *Thallus* small; *cap* not quite expanded, soft.

Agaricus cyathiformis, *Schæff. Fung.* 252.
Agaricus involutus truncigenus, *Persoon Syn.* 448.
Agaricus castaneus, var. 2, *Withering Arr.* 4, 198.

2. *Omphalia gilva.* *Pale-red navel-stool.*

Thalli gregarious, rather large, yellow, ferrugineous, shining; *stem* thick, rather tuberous; *cap* funnelshape, stiff, edge turned up.

Agaricus infundibuliformis, *Bull. Herb.* 553.
Agaricus cyathiformis, *Vahl. in Fl. Dan.* 1011.
Agaricus gilvus, *Persoon Syn.* 448.
Agaricus flaccidus? *Sowerby Fungi*, 185.

In fir woods, on the ground.

Thalli usually grow in regular rows.

3. *Omphalia gibba.* *Bunched navel-stool.*

Stem tough, slightly bulbous; *cap* rather thin, pale, funnelshape, bossed in the centre; *gills* white.

Agaricus membranaceus, *Fl. Dan.* 1012.
Agaricus gibbus, *Persoon Syn.* 449.

In beech and fir woods.

4. *Omphalia lobata.* *Lobed navel-stool.*

Thalli gregarious; *stem* oblong, thickest at top; *cap* funnelshape, lobed, chestnut-brown; *gills* crowded, pale.

Agaricus lobatus, *Sowerby Fungi*, 186.

On the ground in gardens.

5. *Omphalia cochleata.* *Snail navel-stool.*

Thalli in tufts; *stems* furrowed, red, connate at bottom; *cap* lobed, twisted, reddish-brown; *gills* serrate, pale.

Agaricus cochleatus, *Persoon Syn.* 450.
Agaricus confluens, *Sowerby Fungi*, 168.

At the root of trees.

β. *cornucopioides.* *Stem* bent; *cap* lobed; *gills* 3 in a set, decurrent.

Agaricus cornucopioides, *Bolton Fung.* 8.
Merulius cornucopioides, *Gmelin Syst. Nat.* 2, 1429.

6. *Omphalia dryophilus.* *Grove-loving navel-stool.*

Thalli gregarious; *stem* hollow, yellowish, brilliant; *cap* rather fleshy, hemispherical, umbilicated, pale; *gills* pale.

Agaricus dryophilus, *Sowerby Fungi*, 127.

In fir plantations; autumn.

7. *Omphalia farinacea.* *Mealy navel-stool.*

Stem long, ochry-red; *cap* rather fleshy, umbilicated, slightly scaly; *gills* distant, rose-colour, at last mealy.

Agaricus farinaceus, *Hudson Fl. Angl.* 616; *Sowerby Fungi*, 208.

In woods, on the ground.

8. *Omphalia rosella.* *Rose-bud navel-stool.*

Thalli gregarious, small; *stem* long, pinky-red; *cap* rather fleshy, slightly umbilicated, smooth, brown-red; *gills* rose-red.

Agaricus rosellus, *Batsch Fung.* 123.
Agaricus farinaceus rosellus, *Persoon Syn.* 453.

In grassy woods; end of summer.

9. *Omphalia tortilis.* *Twisted navel-stool.*

Stem short; *cap* brown, streaked, wavy; *gills* flesh-colour.

Agaricus tortilis, *Bolton Fung.* 41.
Agaricus farinaceus tortilis, *Persoon Syn.* 454.

In shady coppices, on rich mould.

10. *Omphalia fragrans.* *Sweet-scented navel-stool.*

Thalli gregarious, scented, brownish-white or pale; *stem* long, solid; *cap* umbilicated, smooth; *gills* horizontal.

Agaricus fragrans, *Sowerby Fungi*, 10.

In meadows.

Scent resembles that of new-made hay.

b. *Thallus white.*

11. *Omphalia virginea.* *Virgin navel-stool.*

Thalli gregarious, white, rather small, pale; *cap* fleshy, first convex, then slightly depressed, when full grown with the edge turned in, streaked; *gills* distant, decurrent, connected by veins.

Agaricus virgineus, *Schæff. Fung.* 232; *Persoon Syn.* 456.
Agaricus ericeus, *Bull. Herb.* 183.

In meadows, rarely in woods; autumn.

12. *Omphalia candicans.* *Whitish navel-stool.*

Thallus tough throughout, shining-white; *cap* umbilicated, very smooth, at first convex.

Agaricus umbilicatus, *Bolton Fung.* 17.
Agaricus candicans, *Persoon Syn.* 456.

In woods; autumn.

13. *Omphalia tigrina.* *Tiger navel-stool.*

Stem hard, rather scaly; *cap* fleshy, umbilicated, whitish, scaly; scales rather hairy, blackish.

Agaricus tigrinus, *Sowerby Fungi*, 68; *Persoon Syn.* 458.
Agaricus squamosus, *Schæff. Fung.* 29 *et* 30.

On trunks of trees.

c. *Thallus blackish, smoke-grey, grey, livid or inclining to violet.*

14. *Omphalia adusta.* *Burnt navel-stool.*

Thallus rather large; *stem* solid, shortish, grey; *cap* fleshy, depressed, olive-grey, afterwards black, as if burnt; *gills* thick, palish-white.

Agaricus nigricans, *Bull Herb.* 370.
Agaricus adustus, *Persoon Syn.* 459.

In woods, on the ground; autumn.

In their black state taken for the remains of fires made by gypsies.

β. *elephantinus.* *Thallus* large, at first white.

Agaricus elephantinus, *Sowerby Fungi*, 36.

15. *Omphalia elixa.* *Sodden navel-stool.*

Thallus large; *stem* solid, rather long; *cap* fleshy, slightly depressed, turned back, stiff, blackish-grey; *gills* pale, rather decurrent.

Agaricus elixus, *Sowerby Fung.* 172; *Persoon Syn.* 460.

In damp meadows; autumn.

16. *Omphalia cyathoides.* *Cyathus navel-stool.*

Roots numerous, fibrous; *stem* very long, bulbous; *cap* rather thin, at first flattish, then funnelshape, umber-brown; *gills* decurrent, whitish-brown.

Agaricus cyathoides, *Bolton Fung.* 145; *Persoon Syn.* 460.

On an old hot-bed; February.

17. *Omphalia tarda.* *Late navel-stool.*

Thallus tough, blackish-brown; *stem* conical, elastic: *cap* funnelshape; edge turned back, smooth.

Agaricus Infundibulum, *Leyser Halens.*
Agaricus sericeus, *Plan. Erfurt.* 73.
Agaricus sordidus, *Dickson Crypt. Brit.* 1, 16.
Agaricus cyathiformis, *Bull. Herb.* 575.
Agaricus tardus, *Persoon Syn.* 461.

In woods on the ground, or on trees; late in autumn.

18. *Omphalia amethystea.* *Amethyst navel-stool.*

Thalli gregarious, rather tough, when fresh light violet, turning greyish; *stem* long, fibrilled, slender; *cap* umbilicated; *gills* distant.

Agaricus amethysteus, *Persoon Syn.* 465; *Sowerby Fungi*, 187.

On trees, or at their roots, in shady woods; early in autumn.

β. *incana*. *Cap* smooth or slightly scaly, pale.
Agaricus incanus, *Bull. Herb.* 570.

VI. 248. PLEUROPUS. Persoon. *Side-foot.*

Volva 0; *stem* not in the centre of the cap; *collar* 0; *cap* fleshy, depressed, orbicular, oblique; *gills* decurrent.—Poisonous, or at least suspected.

1. *Pleuropus orcellus.* *Litmus side-foot.*
Thalli gregarious; *stem* pale; *cap* elliptic or circular; *gills* crowded, flesh-red.
Agaricus orcellus, *Bull. Herb.* 575; *Persoon Syn.* 473.
On the trunks of trees.

2. *Pleuropus ulmarius.* *Elm side-foot.*
Stem ascending; *cap* fleshy, very broad, uniformly pale or marked with stripes; *gills* very broad, slightly nicked, connected.
Agaricus ulmarius, *Sowerby Fungi*, 67; *Persoon Syn.* 473.
On trees, especially on elm trees; autumn.

3. *Pleuropus palmatus.* *Palmate side-foot.*
Thalli in tufts; *stem* nearly straight, whitish; *cap* and *gills* opake, reddish-chestnut.
Agaricus palmatus, *Bull. Herb.* 216; *Persoon Syn.* 474.
On trees, or carpenters' work.

β. *rubescens*. *Thallus* reddish throughout.
Agaricus palmatus, *Sowerby Fungi*, 62.

4. *Pleuropus fornicatus.* *Arched side-foot.*
Thallus solitary, compact; *stem* very short, downy, slightly eccentric; *cap* flattish, rather livid; *gills* distinct, rather decurrent, brilliant red.
Agaricus carnosus? *Bolton Fung.* 146.
Agaricus fornicatus, *Persoon Syn.* 474.
On trees.

5. *Pleuropus inconstans.* *Inconstant side-foot.*
Thallus rather large; *cap* rather tough, depressed, whole or halved, lobed, bent, rather reddish; *gills* slightly branched, crisp at bottom, white and rather brilliant-red.
Agaricus flabelliformis, *Schæff. Fung.* 43 *et* 44.
Agaricus inconstans, *Persoon Syn.* 475.
On the trunks of trees.

VII. 249. CREPIDOPUS. Esenbeck. *Slipper-stool.*

Volva 0; *stem* marginal or 0; *collar* 0; *cap* fleshy, depressed, semicircular, oblique; *gills* decurrent.

1. *Crepidopus ostreatus.* *Oyster slipper-stool.*

Thalli slightly stipitate, in imbricated bundles; *cap* convex, grey or brownish, reverse-ovate; *gills* white, decurrent, anastomosing at bottom.

Agaricus ostreatus, *Curtis Lond.* 216; *Persoon Syn.* 477.

On the trunks of trees.

β. *atro-albus.* *Thalli* in tufts; *stem* lateral, short, dirty white; *cap* fleshy, plano-convex, edge turned over, blackish; *gills* decurrent, veiny, white.

Agaricus nigricans, *Fl. Dan.* 892.
Agaricus ostreatus, *Sowerby Fungi*, 241.

2. *Crepidopus mollis.* *Soft slipper-stool.*

Thalli gregarious, soft; *cap* bald, bunched, pale; *gills* watery, brownish.

Agaricus mollis, *Dickson Crypt.* 1, 17; *Sowerby Fungi*, 98; *Persoon Syn.* 480.

On rotten trees; autumn.

3. *Crepidopus stypticus.* *Styptic slipper-stool.*

Thalli in close tufts; *stem* compressed, ascending, dilated at bottom; *cap* leatherlike, nicked, rather tough, somewhat powdery; *gills* very thin, connected by veins, cinnamon-colour.

Agaricus stypticus, *Bull. Herb.* 140; *Sowerby Fungi*, 109; *Persoon Syn.* 481.

On dry trunks of trees; autumn and mild winters.

Taste at first nauseously sweet, afterwards styptic.

4. *Crepidopus variabilis.* *Variable slipper-stool.*

Thalli gregarious, stemless; *cap* rather woolly, white; *gills* whitish, afterwards rust-colour.

Agaricus niveus, *Dickson Crypt.* 1, 17; *Sowerby Fungi*, 97.
Agaricus sessilis, *Bulliard Herb.* 152.
Agaricus variabilis, *Persoon Syn.* 483.
Agaricus pubescens, *Fl. Dan.* 1073.

In damp woods or hedges, upon sticks.

5. *Crepidopus epigæus.* *Ground slipper-stool.*

Cap kidneyshape, brittle, reddish-grey; bottom villous, whitish; *gills* distinct, watery, reddish, diverging.

Agaricus depluens, *Batsch Fung.* 167.
Agaricus epigæus, *Persoon Syn.* 484.

In woods, on the ground; rarely on the side of rocks.

β. *tremulus.* *Stem* short, slate-grey, downy; *cap* smooth.
Agaricus tremulus, *Schæff. Fung.* 53; *Sowerby Fungi*, 242.

VIII. 250. APUS. Esenbeck. *Footless-stool.*

Volva 0; *stem* 0; *collar* 0; *cap* corklike or leatherlike, sessile, semicircular.

1. *Apus alneus.* *Alder footless-stool.*

Thallus leatherlike, woolly, whitish-grey; *gills* split, edges turned back, purplish-grey.

Agaricus alneus, *Lin. S. P.* 1645; *Sowerby Fungi*, 183; *Persoon Syn.* 485.
Agaricus multifidus, *Batsch Fung.* 126.

On timber.

2. *Apus coriaceus.* *Leathery footless-stool.*

Thallus leatherlike, zoned, woolly, pale; *gills* slightly branched, pale, woody.

Agaricus villosus, lamellis sinuosis et invicem implexis, *Raii Syn.* 24, 19.
Agaricus betulinus, *Sowerby Fungi*, 182, young? *Withering Arr.* 4, 339.
Agaricus coriaceus, *Bolton Fung.* 158, old? *Persoon Syn.* 486.

On dry trunks of trees.

Perhaps a species of dædalea: is often confounded with dædalea quercina, 266, 1.

IX. 251. RESUPINATUS. Esenbeck. *Turn-over.*

Volva 0; *stem* 0; *collar* 0; *cap* membranaceous, orbicular, attached by the back.

Resupinatus applicatus. *Applied turn-over.*

Cap thin, dark-grey; *gills* broad, unequal.

Agaricus applicatus, *Batsch Fung.* 171; *Sowerby Fungi*, 301.
Agaricus epigæus tephromelas, *Persoon Syn.* 484.

On rotten sticks.

B. MYCENADEÆ. *Volva* 0; *stem* central, juicy; *collar* 0; *cap* orbicular, thick, fleshy or membranaceous; texture vesicular, cellular or fibrous; hymenium lamellar; *gills* separable from the cap, juicy, not becoming black when decaying.

X. 252. RUSSULA. Persoon. *Russule.*

Texture vesicular or cellular; *stem* mostly white; *cap* fleshy, mostly depressed; *gills* equal, not terminated by an annular margin.—Most are poisonous.

a. *Cap reddish.*

1. *Russula rosacea.* *Rose russule.*

Cap plano-convex, rather smooth, rose or pale-red; *gills* and *stem* white.

Agaricus integer, *Lin. S. P.* 1640; *Sowerby Fungi*, 201.
Agaricus roseus, *Schæff. Fung.* 58.
Agaricus russula rosaceus, *Persoon Syn.* 439.

In shady woods.

Thallus smaller than r. emetica; taste sometimes acrid, sometimes mild.

2. *Russula emetica.* *Emetic russule.*

Thallus acrid; *stem* white or pink; *cap* depressed, edge furrowed, blood-red; *gills* white.

Agaricus integer, *Lin. S. P.* 1640; *Sowerby Fungi*, 201.
Agaricus emeticus, *Schæff. Fung.* 15.
Agaricus integer, var. 3, *Withering Arr.* 4, 228.
Agaricus russula emeticus, *Persoon Syn.* 439.

In woods.

A favourite food of snails, so that a perfect specimen is rarely found.

b. *Cap reddish-brown or yellowish.*

3. *Russula vitellina.* *Yelk russule.*

Thallus small; *stem* slender, white; *cap* flattish, pale yelk-colour; *gills* shining, pinky inclining to yellow.

Agaricus integer, *Lin. S. P.* 1640; *Sowerby Fungi*, 201.
Agaricus risigallinus, *Batsch Fung.* 67.
Agaricus russula vitellinus, *Persoon Syn.* 442.

In woods.

4. *Russula lutea.* *Yellow russule.*

Stem very long, white; *cap* rather slimy, umbilicated, pale; *gills* distinct, yelk-colour.

Agaricus luteus, *Hudson Angl.* 611.
Agaricus russula luteus, *Persoon Syn.* 442.

In woods.

XI. 253. MYCENA. Persoon. *High-stool.*

Texture fibrous; *stem* long, mostly pipey; *cap* membranaceous, streaked, pellucid, convex, persisting; *gills* of the same colour; *sporidia* short.—*Thalli* small, poisonous.

1. *Mycena porrea.* *Leek high-stool.*

Thalli gregarious, large; *stem* long, rather downy, blood-red at bottom; *cap* rather membranaceous, hemispherical, yellowish; *gills* same colour.

Agaricus alliaceus, *Scop. Carn.* 2, 454; *Sowerby Fungi*, 81.
Agaricus porreus, *Persoon Syn.* 376.

In woods; autumn.

Odour like garlick.

2. *Mycena galericulata.* *Helmetted high-stool.*

Thalli in tufts, scentless; *stem* smooth, rooted, juiceless, shaggy at the bottom; *cap* membranaceous, bossed, livid-brown; *gills* distinct, white.

Agaricus galericulatus, *Schæff. Fung.* 52; *Persoon Syn.* 376; *Sowerby Fungi*, 165.

On stumps of willows; autumn.

3. *Mycena polygramma.* *Many-streaked high-stool.*

Thalli solitary; *stem* tailed, streaked lengthways, sattiny, grey; *cap* bellshape, bossed, greyish.

Agaricus polygrammus, *Sowerby Fungi*, 222; *Persoon Syn.* 377.

On the ground among dead leaves; autumn.

4. *Mycena atro-alba.* *Pied high-stool.*

Stem rooted, pipey, feathery at bottom; *cap* smooth, edge whitish, tip black.

Agaricus atro-albus, *Bolton Fung.* 137; *Persoon Syn.* 378.
Agaricus varius, var. 8, *Withering Arr.* 4, 278.

On the ground?

5. *Mycena flavipes.* *Yellow-stalked high-stool.*

Thalli gregarious; *stem* long, rather slimy, yellowish; *cap* bellshape, streaked, whitish-grey; *gills* the same colour.

Agaricus plicatus, *Schæff. Fung.* 51.
Agaricus flavipes, *Sibthorp Oxon.* 305; *Persoon Syn.* 382.

In woods on the ground; autumn.

6. *Mycena epipterygia.* *Top-winged high-stool.*

Thalli rather in tufts; *stem* brimstone-yellow, slimy; *cap* bellshape, smoothish, blunt or slightly bossed, dark-grey, rather slimy; *gills* distant, white.

Agaricus epipterygius, *Persoon Syn.* 382.

In woods on dead sticks; autumn.

β. *nutans? Cap* when young nodding, reddish, edge toothed; teeth when young surrounding the stem.

Agaricus nutans, *Sowerby Fungi*, 92.

7. *Mycena luteo-alba.* *Yellowish-white high-stool.*

Thallus small; *stem* threadlike; *cap* conical, streaked, yellow; *gills* 3 in a set, white.

Agaricus luteo-albus, *Bolton Fung.* 38; *Persoon Syn.* 383.

In woods.

8. *Mycena tenera.* *Tender high-stool.*

Thalli nearly solitary, rust-colour, small; *stem* rather long; *cap* membranaceous, conical, smoothish; *gills* distant.

Agaricus tener, *Sowerby Fungi*, 33; *Persoon Syn.* 386.

On osier grounds and grassy places; summer and autumn.

9. *Mycena atro-rufa.* *Reddish-black high-stool.*

Stem very long, slender; *cap* nearly conical, brown, dry, tough; *gills* few, 3 in a set, brownish-red.

Agaricus atro-rufus, *Bolt. Fung.* 52; *Persoon Syn.* 386.

In dry pastures, and among mosses.

10. *Mycena racemosa.* *Racemelike high-stool.*

Stem racemelike; *cap* membranaceous, nipplelike, grey; *gills* white.

Agaricus racemosus, *Persoon Syn.* 389; *Sowerby Fungi*, 287.

In woods.

Stem resembles a raceme of the currant-bush, from whence the berries have been plucked; branches terminated by hyaline heads which disappear.

11. *Mycena Hudsoni.* *Hudson's high-stool.*

Thalli gregarious; *stem* hairy, reddish; *cap* convex, whitish, hairy; *hairs* scattered, stiff, red.

Agaricus pilosus, *Hudson Angl.* 622; *Sowerby Fungi*, 164.
Agaricus Hudsoni, *Persoon Syn.* 390.

On holly-leaves.

12. *Mycena Adonis.* *Adonis high-stool.*

Thalli gregarious; *cap* smooth, bellshape, whitish rose-red or green; *gills* rather hooked, adnate, white.

Agaricus Adonis, *Persoon Syn.* 391; *Sowerby Fungi*, 385.

In woods.

13. *Mycena variegata.* *Variegated high-stool.*
Thalli gregarious, rather large; *stem* white; *cap* rather fleshy, bellshape, smooth or nippled, variegated with reddish lines; *gills* hooked, decurrent, white.

Agaricus tentaculatus, *Bull. Herb.* 560; *Sowerby Fungi*, 385.
Agaricus variegatus, *Persoon Syn.* 391.

In grassy places, on the ground.

14. *Mycena claviformis.* *Nail-like high-stool.*
Thalli gregarious, minute; *stem* solid, slender, white; *cap* rather fleshy, nippled, orange or red; *gills* broadish, white.

Agaricus Clavus, *Bolt. Fung.* 39; *Persoon Syn.* 392.

On the ground, or on dead trees; autumn.

15. *Mycena strobilina.* *Cone high-stool.*
Thalli gregarious, rather tufted, red; *stem* solid, tailed at bottom, hairy; *cap* bellshape, rather fleshy, smooth.

Agaricus coccineus, *Sowerby Fungi*, 197.
Agaricus strobilinus, *Persoon Syn.* 393.

On the branches and cones of the Scotch fir.

16. *Mycena integrella.* *Small-entire high-stool.*
Thalli small, in bundles, white; *stem* downy at bottom; *cap* membranaceous, hemispherical; *gills* decurrent, rather distant, mostly entire.

Agaricus integrellus, *Persoon Syn.* 393.
Agaricus Mycena integrella, *Esenbeck Syst.* 2, 51.

In shady woods.

17. *Mycena corticola.* *Bark high-stool.*
Thalli minute, scattered, brownish; *stem* rather short, bent; *cap* hemispherical, slightly plaited; *gills* hooked, adnate, whitish.

Agaricus corticalis, *Bull. Herb.* 519; *Sowerby Fungi*, 243.

On stumps of trees, in damp weather.

XII. 254. MICROMPHALE. *Dimple-stool.*
Texture fibrous; *stem* often pipey; *cap* membranaceous, streaked, pellucid; *tip* umbilicated; *sporidia* long.—*Thalli* small.

1. *Micromphale fimbriatum.* *Fringed dimple-st. ol.*
Thallus large; *stem* slender, short; *cap* funnelshape, edge crisp, elegantly lobed, fringed, thin, semitransparent; *gills* 3 in a set, very long, narrow, translucid.

Agaricus fimbriatus, *Bolt. Fung.* 61; *Persoon Syn.* 466.

In grass land.

2. *Micromphale venosum.* *Veiny dimp'e-stool.*
Stem compressed, blackish, hoary; *cap* nearly membranaceous, tough, veiny, streaked, reddish-brown; *gills* few, nearly the same colour, glaucous, affixed nearly in a ring.

Merulius fœtidus? *Sowerby Fungi*, 21.
Agaricus venosus, *Persoon Syn.* 467.

In woods; August.
Odour like garlick.

3. *Micromphale collariatum.* *Collared dimple-stool.*
Thalli in tufts, white; *stem* blackish; *cap* deeply furrowed; *gills* annexed to a tube surrounding the stem.

Agaricus Rotula, *Scop. Carn.* 2, 1569; *Sowerby Fungi*, 95; *Persoon Syn.* 467.
Agaricus collariatus, *Withering Arr. ed.* 2.
Merulius collariatus, *Withering Arr.* 4, 178.

On sticks.
Stem frequently branched repeatedly.

4. *Micromphale perforans.* *Perforating dimple-stool.*
Thalli gregarious, persisting; *stem* dark bay; *cap* flattish, slightly plaited, very slightly bossed; *gills* simple, entirely annexed.

Agaricus androsaceus, *Sowerby Fungi*, 94; *Persoon Syn.* 468.
Agaricus perforans, *Hoffman Nomencl.* 4, 2.

On the leaves of trees, perforating them.

5. *Micromphale epiphyllum.* *Leaf dimple-stool.*
Thalli gregarious, minute, white; *stem* blackish; *cap* membranaceous, convex, at length slightly umbilicated; *gills* distant, branched.

Agaricus Squamula, *Sowerby Fungi*, 93.
Agaricus epiphyllus, *Persoon Syn.* 468.
Agaricus lacteus, *Bull. Herb.* 601.

On beech and other leaves; autumn.

6. *Micromphale fragile.* *Brittle dimple-stool.*
Thalli gregarious; *stem* pipey, chestnut; *cap* hemispherical, umbilicated, streaked, rust-colour; *gills* decurrent.

Agaricus fragilis, *Schæff. Fungi*, 230.
Agaricus Campanella, *Batsch. Fung.* 74; *Persoon Syn.* 470.

On the trunks of fir-trees.

7. *Micromphale fibulare.* *Button dimple-stool.*
Thallus small; *stem* long, solid; *cap* umbilicated, smooth, reddish-ochry; *gills* distant, white.

Agaricus Fibula, *Sowerby Fungi*, 45; *Persoon Syn.* 471.

On the trunks of trees.

8. *Micromphale ericetorum.* *Heath dimple-stool.*
Thallus gregarious, entirely grey, membranaceous; *stem* middle size; *gills* distant, very broad at bottom.

Agaricus ericetorum, *Persoon Syn.* 472.

On heaths and woods on a sandy soil.

XIII. 255. LACTARIUS. De Candolle. *Milk-stool.*
Texture fibrous; *cap* fleshy, depressed or funnelshape; *gills* unequal.—Emit a white yellow or red milky liquor; they are all usually suspected to be poisonous, but some are eaten, after they have been thoroughly dressed.

a. *Cap whitish.*

1. *Lactarius piperatus.* *Pepper milk-stool.*
Cap funnelshape, edge spread out, bald, whitish; *gills* crowded, forked, white, pale.

Agaricus Listeri, *Sowerby Fungi*, 104.
Agaricus lactifluus piperatus, *Persoon Syn.* 429.
Agaricus piperatus, *Bolt. Fung.* 21.

In woods.
Cap at first hemispherical, flattened; *juice* very acrid, pepperlike, does not tarnish steel; when dried, green; flesh when boiled becomes mild.

b. *Cap yellowish.*

2. *Lactarius torminosus.* *Bellyach milk-stool.*
Cap umbilicated, zoned, pale ochry-yellow; edge turned back, downy.

Agaricus piperatus, *Withering Arr.* 4, 205.
Agaricus torminosus, *Schæff. Fung.* 12; *Sowerby Fungi*, 103.
Agaricus lactifluus torminosus, *Persoon Syn.* 450.

In grassy places, near woodlands.
Juice acrid.

3. *Lactarius flexuosus.* *Bent milk-stool.*

Thalli gregarious, bent; *stem* very short, whitish; *cap* broad, umbilicated, reddish-yellow, slightly zoned.

Agaricus zonarius, *Bull. Herb.* 104.
Agaricus lactifluus flexuosus, *Persoon Syn.* 430.

In mountain pastures, or woods; after rain.

4. *Lactarius theiogalus.* *Brimstone milk-stool.*

Thalli small; *stem* reddish; *cap* depressed, nearly grown together, reddish; *juice* yellowish red.

Agaricus theiogalus, *Bull. Herb.* 567; *Withering Arr.* 245.
Agaricus lactifluus theiogalus, *Persoon Syn.* 431.

In woods.
Poisonous; juice does not keep its colour.

5. *Lactarius aurantiacus.* *Orange milk-stool.*

Stem long; *cap* rather narrow, flattish, orange-colour; *gills* slightly decurrent.

Agaricus lactifluus, *Bolton Fung.* 3.
Agaricus lactifluus aurantiacus, *Persoon Syn.* 432.
Agaricus dulcis, *Withering Arr.* 4, 206.

In fir plantations.

6. *Lactarius deliciosus.* *Delicious milk-stool.*

Cap umbilicated, nearly orange-colour; when dry, dirty white; *gills* and *juice* yellowish brick-red.

Lactarius lateritius, *Persoon Disp. Fung.* 64.
Agaricus deliciosus, *Schæff. Fung.* 11; *Sowerby Fungi*, 202.
Agaricus lactifluus deliciosus, *Persoon Syn.* 432.

In fir plantations; September and October.
Juice ungrateful, acrid; yet when dressed this mushroom is highly esteemed.

c. *Cap reddish, pink, or buff.*

7. *Lactarius ruber.* *Red milk-stool.*

Thalli gregarious, large; *stem* thickish, ochry-red; *cap* flattened, red ochre-colour; *gills* yellowish.

Agaricus lactifluus, *Schæff. Fung.* 5; *Sowerby Fungi*, 204.
Agaricus lactifluus ruber, *Persoon Syn.* 433.

In fir plantations.
Taste at first mild, but afterwards acrid.

8. *Lactarius subdulcis.* *Sweetish milk-stool.*
Cap funnelshape, reddish; *gills* pale pink; *juice* sweetish.

Agaricus rubescens, *Schæff. Fung.* 75.
Agaricus lactifluus dulcis, *Bull. Herb.* 224.
Agaricus lactifluus subdulcis, *Persoon Syn.* 433.

In grass ground.

β. *cimicarius.* *Stem* longish; *cap* opake, slightly umbilicated, scarcely zoned, buff; *gills* yellowish, rather shining.

Agaricus cimicarius, *Batch Fung.* 69; *With. Arr.* 4, 206.

Odour strong, like that of bugs.

d. *Cap dark brown, or blackish-grey.*

9. *Lactarius necans.* *Destructive milk-stool.*
Cap olive-brown; edge woolly, turned in.

Agaricus lactifluus necator, *Bull. Herb.* 529; *Persoon Syn.* 435.

In woods; autumn.

10. *Lactarius plumbeus.* *Lead-colour milk-stool.*
Stem dark grey; *cap* very broad, funnelshape, blackish-grey; *gills* yellowish.

Agaricus plumbeus, *Bull. Herb.* 559, 2.
Agaricus lactifluus plumbeus, *Persoon Syn.* 435.
Agaricus Listeri, *Sowerby Fungi*, 245.

In woods.

11. *Lactarius luridus.* *Dark milk-stool.*
Stem downy at bottom; *cap* flattish; edge turned up, slightly zoned, rather slimy, reddish-grey; *gills* short, whitish; *juice* acrid.

Agaricus fuscus? *Schæff. Fung.* 235.
Agaricus zonarius, *Withering Arr.* 4, 227; *Sowerby Fungi*, 202.
Agaricus lactifluus luridus, *Persoon Syn.* 436.

On heaths.

12. *Lactarius acris.* *Acrid milk-stool.*
Stem whitish; *cap* not zoned, flattish, rather oblique, dark grey; *gills* at first white, then leathery; *juice* reddish-white.

Agaricus acris, *Bolton Fung.* 60.
Agaricus lactifluus acris, *Persoon Syn.* 437.

In woods.
Juice at first yellowish-white, very acrid.

C. PRATELLIDEÆ. *Volva* 0; *stem* central; *collar* distinct or 0; *cap* orbicular, fleshy or membranaceous; texture fibrous; hymenium lamellar; *gills* separable from the cap, becoming black, watery or powdery; *thecæ* single, in pairs or four together.

XIV. 256. PRATELLA. Persoon. *Mushroom.*

Stem collared; *collar* distinct; *cap* thick, fleshy, smooth, persistent; *gills* clouded becoming black, or uniform watery becoming darker; *sporidia* single, scattered.—*Flesh* wholesome.

a. *Cap fleshy; stem with a collar.*

1. *Pratella edulis.* *Eatable mushroom.*

Thalli gregarious, large; *stem* long, bulbous; *collar* manifest; *cap* snow-white, smooth, or very slightly scaly; *gills* red.

Fungus campestre albus superne, inferne rubens, *Raii Syn.* 2, 1.
Fungus minor pileolo lato, superne candido, lamellis subtus creberrimis pallide rubentibus seu incarnati coloris, *Raii Syn.* 3, 8.
Agaricus edulis, *Bull. Herb.* 514; *Persoon Syn.* 418.
Agaricus arvensis, *Schæff. Fung.* 310.
Mushroom.

In parks and pastures, also cultivated.

Flesh of the cap delicately flavoured; used in cookery, either eaten by itself, or dried and powdered as a sauce.

2. *Pratella campestris.* *Field mushroom.*

Stem short; *collar* incomplete; *cap* fleshy, flattish, with red scales; *gills* reddish-brown.

Agaricus campestris, *Lin. S. P.* 1614; *Schæff. Fung.* 33; *Withering Arr.* 4, 266, var. 2; *Persoon Syn.* 418.

In fields and hilly pastures.

β. *vaporaria.* *Thallus* large; *stem* tuberous, scaly; *cap* convex, hairy or scaly, reddish-brown; *gills* brown.

On hot-beds; also cultivated.

Cap very broad, sometimes 9 inches or more across.

3. *Pratella æruginosa.* *Coppery mushroom.*

Stem scaly; *collar* fugacious; *cap* fleshy, glutinous, coppery; when dry yellowish; *gills* flat, annexed, purple variegated with brown.

Agaricus æruginosus, *Curtis Lond.* 309? *Persoon Syn.* 419.
Agaricus viridulus, *Schæff. Fung.* 1.
Agaricus cyaneus, *Bull. Herb.* 530; *Withe. Arr.* 4, 243.
Agaricus politus, *Bolt. Fung.* 30.
Agaricus Beryllus, *Batsch Fung.* 213.

In woods, near trees.

4. *Pratella lateritia.* *Brickred mushroom.*

Thalli in tufts, large, on trees; *stem* long, rather solid; *collar* fugacious, blackish; *cap* fleshy, rather slimy, brick-red; edge yellowish; *gills* distinct, slightly clouded, greenish-grey.

Agaricus lateritius, *Schæff. Fung.* 49, 4, 5; *Persoon Syn.* 421.
Agaricus amarus, *Bull. Herb.* 30.
Agaricus auratus, *Fl. Dan.* 820.
Agaricus pomposus, *Bolton Fung.* 5.

On rotten trees.
Taste bitter.

5. *Pratella fascicularis.* *Bundle mushroom.*

Thalli small, in tufts; *stem* hollow, slender; *curtain* hairy, blackish; *cap* rather fleshy, bossed, ochre-yellow; *gills* clouded, greenish.

Agaricus fascicularis, *Bolt. Fung.* 29; *Persoon Syn.* 421.
Agaricus pulverulentus, *Bull. Herb.* 49.

About trees, after long rain.

XV. 257. CORTINARIA. Persoon. *Curtain-stool.*

Stem central, generally bulbous; *collar* separating into threads; *cap* mostly fleshy; *gills* nicked, unequal, at first uniform coloured, afterwards clouded with brown.—Generally to be suspected.

1. *Cortinaria cyana.* *Blue curtain-stool.*

Thallus entirely violet, shining; *stem* bulbous, pale below the bulb; *cap* fleshy, bald.

Agaricus cyanus, *Schæff. Fung.* 34; *Persoon Syn.* 276.

In woods.

β. *cærulescens. Stem* bulbous, blue; bulb bordered, pale; *cap* fleshy, convex, pale blue; *gills* at first pale blue, then cinnamon-colour.

Agaricus cærulescens, *Schæff. Fung.* 34.
Agaricus cyanus cærulescens, *Persoon Syn.* 277.

2. *Cortinaria violacea.* *Violet curtain-stool.*
Stem bluish; *collar* rust-colour; *cap* split, edge violet, woolly.

Agaricus violaceus, *Bolton Fung.* 52; *Persoon Syn.* 277.

On the borders of woods.

3. *Cortinaria nuda.* *Naked curtain-stool.*
Thalli gregarious; *stem* rather long, slenderish, cylindrical, naked, pale violet; *collar* mostly 0; *cap* fleshy, plano-convex, edge expanded, changing from violet to reddish; *gills* crowded, pale violet.

Agaricus nudus, *Bull. Herb.* 439; *Persoon Syn.* 277.
Agaricus violaceus, var. 2, *Withering Arr.* 4, 243.

In fir plantations.

4. *Cortinaria cinerea.* *Grey curtain-stool.*
Stem bulbous; *cap* fleshy, hemispherical, dotted or scaly, wrinkled, violet-grey; *gills* distinct, purplish-brown.

Agaricus violaceus, *Schæff. Fung.* 3; *Withering Arr.* 4, 242.
Agaricus violaceo-cinereus, *Persoon Syn.* 279.

In oak woods.

b. *Cap brown-bay.*

5. *Cortinaria bicolor.* *Two-coloured curtain-stool.*
Stem thick, rather tuberous, woolly, pale violet; *cap* fleshy, convex, reddish-brown; edge turned in, rather woolly; *gills* pale violet.

Agaricus violaceus, *Sowerby Fungi*, 209, not of Persoon.
Agaricus bicolor, *Persoon Syn.* 281.
Blewits.

In woods.
Taste inferior to that of the common mushroom; but sold for making katsup.

c. *Cap yellowish, or cinnamon-colour.*

6. *Cortinaria collinita.* *Glued curtain-stool.*
Stem split transversely into cartilaginous, gelatinous scales; *collar* nearly vanishing; *cap* fleshy, bossed, covered with a viscous slime, drying on it.

Agaricus collinitus, *Sowerby Fungi*, 9; *Persoon Syn.* 281.
Agaricus mucosus, *Bull. Herb.* 549.

In woods.

7. *Cortinaria glaucopa.* *Blue-footed curtain-stool.*
Thallus large; *stem* rather short, bulbous, thick, bluish; *cap* chestnut or brownish-olive; *gills* bluish clay-colour, afterwards cinnamon-colour.

Agaricus glaucopus, *Sowerby Fungi*, 223; *Persoon Syn.* 282.
Agaricus araneosus, *Bull. Herb.* 598.
Agaricus varius, *Schæff. Fung.* 42.

In woods.
Esculent?

8. *Cortinaria callochroa.* *Fair-coloured curtain-stool.*
Stem pale, bulbous; bulb bordered; *cap* rather broad, dry, yellow; *gills* with a fine purple cast.

Agaricus turbinatus, *Sowerby Fungi*, 102.
Agaricus callochrous, *Persoon Syn.* 283.

In grassy woods.

d. *Cap more or less purplish, livid, red, blood-colour, or scarlet.*

9. *Cortinaria sanguinea.* *Bloody curtain-stool.*
Thallus saffron-red; *stem* solid, long; *cap* pink, convex; *gills* distinct.

Agaricus sanguineus, *Sowerby Fungi*, 43; *Persoon Syn.* 290.
Agaricus rubeus, *Bolt. Fung.* 36.

In woods.

10. *Cortinaria viscida.* *Viscid curtain-stool.*
Thalli gregarious; *stem* thickest at bottom, inside and bottom yellow; *collar* blackish; *cap* fleshy, first convex, afterwards depressed, gelatinous, purplish brown; *gills* decurrent, branched, rather grey.

Agaricus glutinosus, *Sowerby Fungi*, 7.
Agaricus viscidus, *Persoon Syn.* 291.

In fir plantations.

β. *atropuncta.* *Stem* thickish, whitish, with black scaly spots; *cap* bluntly bossed, viscid; *gills* snow-white.

11. *Cortinaria rutila.* *Brilliant curtain-stool.*
Thalli gregarious; *stem* long, scaly, flesh-red; *cap* bossed, livid purple or flesh-red, rather slimy; *gills* simple, decurrent, purplish-brown.

Agaricus rutilus, *Sowerby Fungi*, 105.
Agaricus gomphus, *Persoon Syn.* 292.

In fir plantations.

c. *Cap yellow, rust-colour, cinnamon or chestnut.*

12. *Cortinaria bulbosa.* *Bulbous curtain-stool.*
Thallus bald, large, nearly chestnut; *stem* solid, rather long, bulbous, ovate; *collar* vanishing; *cap* bellshape, edge thin; *gills* distant.
Agaricus bulbosus, *Sowerby Fungi*, 130; *Persoon Syn.* 295.
In woods.

13. *Cortinaria crocea.* *Saffron curtain-stool.*
Thalli gregarious, small; *stem* rather slender, fibrilled, yellowish; *collar* vanishing; *cap* rather fleshy, bossed, slightly woolly, reddish cinnamon, opake; *gills* saffron-yellow.
Agaricus croceus, *Batsch. Fung.* 117; *Persoon Syn.* 297.
Agaricus cinnamomeus, *Bolt. Fung.* 150.
In woods.

14. *Cortinaria cinnamomeus.* *Cinnamon curtain-stool.*
Stem rather long, at first slightly bulbous, pale brown; *cap* rather fleshy, bossed, bald, shining, cinnamon or pale chestnut; *gills* broadish, cinnamon-red.
Agaricus cinnamomeus, *Sowerby Fung.* 205; *Persoon Syn.* 298.
In woods.

15. *Cortinaria scabra.* *Rough curtain-stool.*
Thalli gregarious, rather small, greyish-brown; *stem* fibrilled, pale, cylindrical; *cap* scaly; *gills* dark-coloured.
Agaricus scaber, *Sowerby Fungi*, 207; *Persoon Syn.* 301.
In woods.

XVI. 258. PRUNULUS. Cesalpini. *Prune-stool.*
Stem naked; *collar* 0; *cap* brittle, scaly, membranaceous; *gills* persisting; *sporidia* in pairs.

1. *Prunulus denticulatus.* *Toothed prune-stool.*
Thallus rather watery, weak; *stem* pipey, brownish; *cap* hemispherical, livid purple; *gills* toothed on the edge.
Agaricus denticulatus, *Bolt. Fung.* 4; *Persoon Syn.* 425.
In woods.

2. *Prunulus gracilis.* *Slender prune-stool.*
Thallus weak, very brittle; *stem* very long, bald; *cap* membranaceous, bellshape, pointed, very soft; *gills* linear, blackish-grey.

Agaricus gracilis, *Persoon Syn.* 425.

In woods, amongst dead leaves.

β. *cuspidata.* *Stem* pipey; *cap* conical, pointed, reddish-brown; *gills* rather brown, narrow at bottom.

Agaricus cuspidatus, *Bolton Fung.* 66.

3. *Prunulus papyraceus.* *Paper prunestool.*

Stem pipey, whitish; *cap* hemispherical, membranaceous, whitish; *gills* 3 in a set, distant, pale.

Agaricus membranaceus, *Bolt. Fung.* 11.
Agaricus papyraceus, *Persoon Syn.* 425.

In shady places, near oak-trees.

Thallus dry, and feels like paper.

4. *Prunulus confertus.* *Crowded prune-stool.*

Thalli numerous, in tufts; *stem* whitish; *cap* whitish, pointed; *gills* pale brown.

Agaricus confertus, *Bolt. Fung.* 18; *Persoon Syn.* 426.

On the bark-bed in hot-houses.

5. *Prunulus fœnisicii.* *Haymaking prune-stool.*

Thalli gregarious, brittle; *stem* rather thick, bald; *cap* bellshape, brownish-grey; *gills* slightly bellied, clouded, umberbrown.

Agaricus fœnisicii, *Persoon Syn.* 411.

In meadows, after haymaking; also on cowdung.

6. *Prunulus ericæus.* *Heath prune-stool.*

Thalli solitary; *stem* rather tough, long; *cap* rather fleshy, hemispherical, slightly nippled, rusty brown; *gills* rather broad, clouded, black.

Agaricus helvolus, *Schæff. Fung.* 210.
Agaricus ericæus, *Persoon Syn.* 413.

On heaths and commons.

7. *Prunulus varius.* *Variegated prune-stool.*

Thallus small; *stem* slender, reddish, rather tough; *cap* bellshape, shining, pale and livid, variegated; *gills* variegated, ascending.

Agaricus varius, *Bolt. Fung.* 66; *Persoon Syn.* 414.

In grass, among willows.

8. *Prunulus Boltonii.* *Bolton's prune-stool.*
Thallus weak; *stem* rather thickish at bottom; *collar* vanishing; *cap* hemispherical, bossed, pale-yellow.

Agaricus flavidus, *Bolt. Fung.* 149; *Sowerby Fungi*, 96; *Persoon Syn.* 414.

In meadows, and on cow-dung.

9. *Prunulus titubans.* *Tottering prune-stool.*
Thallus small, shining, brittle; *stem* yellowish; *cap* bell-shape, streaked, viscous, rather pale; centre yellow; *gills* distinct, pink.

Agaricus titubans, *Sowerby Fung.* 123; *Persoon Syn.* 415.

On horsedung.

10. *Prunulus extinctorius.* *Extinguisher prune-stool.*
Stem rather bulbous, awlshape; *cap* bellshaped, whitish, torn; *gills* brownish or snow-white.

Agaricus extinctorius, *Bolt. Fung.* 24; *Persoon Syn.* 417.

In sandy ground.

XVII. 259. COPRINUS. Persoon. *Dung-stool.*
Stem naked, sometimes collared; *cap* thin, brittle, membranaceous, vanishing; *gills* unequal, growing watery, black; *sporidia* in fours.—Poisonous.

a. *Cap slightly fleshy; gills at last dark grey, spotted or cloudy.*

1. *Coprinus semiglobatus.* *Hemispherical dung-stool.*
Stem long, collared; *cap* fleshy, hemispherical, rather glutinous, yellowish; *gills* very broad, horizontal, clouded, black.

Agaricus glutinosus, *Curtis Lond.* 69.
Agaricus semiglobatus, *Sowerby Fungi*, 248; *Persoon Syn.* 407.
Agaricus virosus, *Sowerby Fungi*, 480 and 481.

In meadows, pastures, and on dung.
Poisonous, and has caused several fatal accidents by having been mistaken for champignons, gen. 246, sp. 17.

2. *Coprinus semiovatus.* *Half-egg dung-stool.*
Stem long; *collar* small; *cap* bellshape, glutinous, yellowish; *gills* ascending, blackish-grey, clouded.

Agaricus semiovatus, *Sowerby Fungi*, 131; *Persoon Syn.* 408.
Agaricus fimiputris, *Bull. Herb.* 66.

On cowdung.

3. *Coprinus velutinus.* *Velvetty dung-stool.*

Thalli in tufts, brittle; *stem* fibrilled, collared; *cap* hemispherical, bossed, hairy or scaly, rust-yellow; *gills* crowded, clouded, brown; *edge* whitish.

Agaricus lacrymabundus, *Sowerby Fung.* 41.
Agaricus velutinus, *Persoon Syn.* 408.

In grass-land, or on trees; autumn.

4. *Coprinus papilionaceus.* *Butterfly dung-stool.*

Stem furrowed at top, covered with black powder; *cap* rather fleshy, bellshape, grey, almost black; *gills* entirely adnexed, variegated grey and black; *edge* whitish.

Agaricus papilionaceus, *Bull. Herb.* 561; *Persoon Syn.* 410.
Agaricus acuminatus, *Schæff.* 202.

In pastures, and grassy woods.

5. *Coprinus cinctulus.* *Girdle dung-stool.*

Stem long, pipey, brown; *cap* convex, reddish-brown, with a dark ring towards the edge; *gills* 3 in a set, broad, black.

Agaricus cinctulus, *Bolton Fung.* 152; *Persoon Syn.* 411.

In meadows, and on dunghills.

6. *Coprinus cepæstipes.* *Onion-stalked dung-stool.*

Thalli in tufts, entirely yellow; *stem* bellied, solid at bottom; *cap* bellshaped, streaked; *gills* free.

Agaricus cepæstipes, *Persoon Syn.* 416; *Sowerby Fungi*, 2.
Agaricus luteus, *Bolt. Fung.* 50.

On dunghills.

β. *cretaceus.* *Thallus* entirely white.

Agaricus cretaceus, *Bull. Herb.* 374.

7. *Coprinus ciliaris.* *Fringe dung-stool.*

Thallus large; *stem* bulbous, collared; *cap* conical, covered with a snow-white powder, afterwards glutinous; edge fringed; *gills* 3 in a set, black.

Agaricus ciliaris, *Bolt. Fung.* 53; *Persoon Syn.* 416.

In meadows, and on fresh dunghills.

b. *Cap membranaceous, running almost entirely into water; gills very thin.*

8. *Coprinus comatus.* *Wig dung-stool.*

Thalli gregarious; *stem* very long; *collar* moveable; *cap* conical, scaly, whitish; scales yellowish; *gills* crowded, at first purplish-white.

Agaricus cylindricus, *Sowerby Fungi*, 189.
Agaricus porcellaneus, *Schæffer Fung.* 46 & 47.
Agaricus comatus, *Persoon Syn.* 396.

In grass-ground, gardens, and on dunghills; autumn.

9. *Coprinus plicatus.* *Plaited dung-stool.*

Thalli in tufts; *cap* bellshape, plaited, brownish grey, scaly at the tip, edge at last turned up; *gills* crowded, broad, at first purplish-brown, hoary.

Agaricus plicatus, *Curtis Lond.* 101; *Persoon Syn.* 396.
Agaricus fimetarius, *Sowerby Fungi*, 188.

In meadows, hedges, and near villages.

10. *Coprinus picaceus.* *Pitchy dung-stool.*

Stem very long, bulbous, naked; *cap* bellshape, very tender, whitish, afterwards breaking into broad scattered scales; *gills* becoming bare, crowded, umber-brown.

Agaricus picaceus, *Sowerby Fungi*, 397; *Persoon Syn.* 397.

Among rubbish, and heaps of rotting plants.

11. *Coprinus oblectus.* *Attractive dung-stool.*

Stem collared at the bottom; *cap* whitish, woolly, vanishing; *gills* becoming bare, at first red.

Agaricus oblectus, *Bolton Fung.* 142; *Persoon Syn.* 397.

On dunghills.

12. *Coprinus cinereus.* *Grey dung-stool.*

Stem long, scaly; *cap* conical, furrowed, rather woolly, grey; tip smooth, livid; edge at last torn, bent in; *gills* linear, dotted, slightly bent.

Agaricus cinereus, *Schæff. Fung.* 100; *Persoon Syn.* 398.

In gardens and woods.

β. *tomentosus.* *Stem* short, cylindrical, downy; *cap* oblong, at first pyramidal, then bellshape, torn; *gills* numerous, narrow, pale; edge black.

Agaricus tomentosus, *Bolt. Fung.* 156.

γ. *pullatus.* *Stem* long, bellied, whitish; *cap* bellshape, plaited, black.

Agaricus pullatus, *Bolt. Fung.* 20.

In pastures and on dunghills.

13. *Coprinus disseminatus.* *Disseminated dung-stool.*

Thalli crowded, small, ephemeral; *stem* generally bent; *cap* half-oval, streaked, plaited, ochry-yellow, growing grey; *gills* distinct, half-annexed, brownish-white.

Agaricus coprinus disseminatus, *Persoon Syn.* 403.

On the trunks of willows, especially when hollow; autumn.

β. *striatus.* *Thallus* rather large.

Agaricus striatus, *Sowerby Fungi*, 166.

14. *Coprinus domesticus.* *House dung-stool.*

Cap bellshape, blunt, waved, furrowed, smoke-grey; scales branny; *gills* crowded, linear, forming a collar, greyish-red, growing blackish-brown.

Agaricus coprinus domesticus, *Persoon Syn.* 404.
Agaricus domesticus, *Bolt. Fung.* 26.

In houses near moist walls.

15. *Coprinus pulcher.* *Handsome dung-stool.*

Thallus tender, ephemeral; *stem* long, reddish-white; *cap* umbilicated, flattish, plaited; plaits broadish, grey; *gills* free, distant, forming a collar.

Agaricus coprinus pulcher, *Persoon Syn.* 404.
Agaricus semistriatus, *Fl. Dan.* 1134.
Agaricus plicatus, *Curtis Lond.*

In well-dunged gardens.

16. *Coprinus radiatus.* *Radiated dung-stool.*

Thallus very minute, grey, ephemeral; *stem* threadlike; *cap* grows flattish, splitting in rays; centre ochre-yellow; *gills* distant.

Agaricus radiatus, *Bolt. Fung.* 39; *Persoon Syn.* 407.
Agaricus ephemerus, *Bull. Herb.* 342.

In grass-land in woods, on horsedung; autumn.

Thallus very tender, blown down by the breath.

D. ASTEROPHORIDEÆ. *Volva* 0; *stem* central; *collar* 0; *cap* hemispherical, texture fibrous, beneath lamellar, above woolly, at length bursting, becoming floccular; *gills* barren, naked; *sporidia* stellate, intermixed with the flocci.

XVIII. 260. ASTEROPHORA. Ditmar. *Starhead.*

Stem central, orbicular; *sporidia* stellate.

Asterophora lycoperdoides. *Lycoperdon starhead.*

Stem woolly, greyish; *cap* woolly, fawn-colour; *gills* rather gelatinous, thick, slightly prominent, grey.

Agaricus lycoperdoides, *Bull. Herb.* 519; *Persoon Syn.* 325.

On rotten mushrooms, especially omphalia adusta.

Stem above an inch long, rather bent; *cap* half an inch over.

E. MERULIDEÆ. *Volva* 0; *stem* central, lateral or 0; *collar* 0; *cap* fleshy or membranaceous; *hymenium* veiny; veins superficial, distinct, simple or forked.— None are poisonous.

XIX. 261. MERULIUS. *Merule.*

Stem central; *cap* orbicular, fleshy, convex.

Merulius aurantiacus. *Orange merule.*

Stem ochry-yellow; *cap* fleshy, woolly; *veins* stiff, orange.

Agaricus aurantiacus, *Wulff. Misc. Austr.* 2, 107.
Merulius aurantiacus, *Persoon Syn.* 488.

In grass land.

XX. 262. CANTHARELLUS. *Chanterelle.*

Stem central; *cap* orbicular, fleshy or rather membranaceous, concave, umbilicated.

1. *Cantharellus vulgaris.* *Common chanterelle.*

Thalli gregarious, entirely yelk-yellow; *cap* fleshy, bald, depressed.

Agaricus Cantharellus, *Lin. S. P.* 1641; *Sowerby Fungi*, 46.
Merulius Cantharellus, *Persoon Syn.* 488.

In woods.

Esteemed as a sauce; odour like ripe apricocks.

2. *Cantharellus lutescens.* *Yellowish chanterelle.*

Stem hollow, yellow; *cap* umbilicated, bald, yellow; *veins* bright grey.

Agaricus cantharelloides, *Sowerby Fungi*, 47.
Helvella cantharelloides, *Bull. Herb.* 473.
Merulius lutescens, *Persoon Syn.* 489.

In woods; autumn.

3. *Cantharellus tubæformis.* *Trumpet chanterelle.*

Thalli gregarious, small; *stem* yellow, rather thick; *cap* membranaceous, umbilicated, wrinkly, scaly, brown; *veins* straight, yellow, rather grey.

Helvella tubæformis, *Bull. Herb.* 461.
Peziza undulata, *Bolt. Fung.* 105.
Merulius tubiformis, *Persoon Syn.* 489.

4. *Cantharellus cornucopioides.* *Cornucopiæ chanterelle.*

Thalli in tufts, blackish; *cap* membranaceous, rather scaly; *veins* scarcely visible.

Peziza cornucopioides, *Lin. S. N.* 1650; *Sowerby Fungi*, 74.
Merulius cornucopioides, *Persoon Syn.* 491.

In woods; autumn.

5. *Cantharellus undulatus.* *Waved chanterelle.*

Thallus pale-livid; *cap* rather leatherlike, depressed; edge upright, waved, crisp, underneath wrinkled.

Helvella crispa, *Sowerby Fungi*, 75.
Merulius undulatus, *Persoon Syn.* 493.

In beech woods.

XXI. 263. CORNIOLA. *Corniole.*

Stem lateral; *cap* semicircular, nearly membranaceous.

1. *Corniola muscigena.* *Mossborn corniole.*

Stem short, rather thick; *cap* pale brown; *veins* branched.

Helvella dimidiata, *Bull. Champ.* 1, 290.
Agaricus muscigenus, *Bull. Herb.* 288.
Merulius muscigenus, *Withering Arr.* 4, 183.

On hypnum sericeum.

2. *Corniola lobata.* *Lobed corniole.*

Thallus stemless, irregular, brownish; edge variously lobed, crisp; *veins* branched, anastomosing.

Helvella membranacea, *Dickson Crypt.* 1, 21; *Sowerby Fungi*, 348.
Merulius membranaceus, *Withering Arr.* 4, 184.
Merulius lobatus, *Persoon Syn.* 494.

In bogs, upon moss; spring.

XXII. 264. SERPULA. Persoon. *Rot.*

Thallus stemless, affixed by its back.

Serpula destruens. *Destroying rot.*

Thallus spreading, large, yellowish-red; edge whitish, woolly; *veins* large, porous, crooked.

Boletus lacrymans, *Sowerby Fungi*, 113.
Merulius destruens, *Persoon Syn.* 496.

Upon timber-work, where it joins the walls, in damp situations.

Appears at first like a byssus; when dry covered with brown powder; destroyed by spirit of vitriol, and other corroding substances, in the same manner as xylostroma giganteum.

XXIII. 265. GOMPHUS. *Gomphe.*

Thallus clubshaped; sides plaited, veiny; *cap* not distinct.

Gomphus clavatus. *Clubbed gomphe.*

Thalli in tufts, truncated, veiny on the sides.

Clavaria truncata, *Schmid. Icon.* 3, 237.
Merulius clavatus, *Persoon Syn.* 498.

In grassy places in woods.

F. DÆDALIDEÆ. *Volva* 0; *stem* 0; *cap* semicircular, leatherlike or corklike, sessile; hymenium veiny; *veins* anastomosing and forming a network.

XXIV. 266. DÆDALEA. Persoon. *Labyrinth-stool.*

Cap semiorbicular, beneath netlike.

1. *Dædalea quercina.* *Oak labyrinth-stool.*

Thallus leatherlike, pale woody; *cap* wrinkly, bald, flakes branched, sinuated, sinuses large.

Agaricus quercinus, *Lin. S. P.* 1644; *Sowerby Fungi*, 181.
Agaricus labyrinthiformis, *Bull. Herb.* 442.
Merulius quercinus, *Gmel. Syst. Nat.* 2, 1431.
Dædalea quercina, *Persoon Syn.* 500.
Agaric of the oak.

On the trunks of oak-trees.

Texture delicately fibrous, flexible, and may be readily cut into slices; used as a styptic to restrain the bleeding from wounded arteries.

β. *dura.* *Thallus* hard, thick, in network like peach-stones.

2. *Dædalea sinuosa.* *Sinuous labyrinth-stool.*

Thallus downy, knobby, zoned and wavy in ridges; *veins* sinuous, oblong, or irregular.

Boletus sinuosus, *Sowerby Fungi*, 194.
Dædalea gibbosa β? *Persoon Syn.* 501.

On old poplar-trees.

3. *Dædalea confragosa.* *Broken-in labyrinth-stool.*

Thallus leatherlike, woody, rough zoned, brown-brick-red; sinuses labyrinthlike, grey.

Boletus confragosus, *Bolt. Fung.* 160.
Boletus labyrinthiformis, *Bull. Champ.* 357.
Dædalea confragosa, *Persoon Syn.* 501.

On the trunks of trees.

4. *Dædalea angustata.* *Narrow labyrinth-stool.*
Cap flattish, much blotched with dull crimson, lobed, zoned; edges sattiny, silvery-brown; *veins* olive, long, narrow.

Boletus angustatus, *Sowerby Fungi*, 193.
Dædalea angustata, *Persoon Syn.* 502.

At the feet of poplar-trees.

5. *Dædalea suaveolens.* *Sweet-scented labyrinth-stool.*
Thallus leathery corklike, sessile, bald, slightly reddish-brown; inside greyish-straw; *tubes* very long, reddish.

Boletus suaveolens, *Bull. Champ.* 342.
Dædalea? suaveolens, *Persoon Syn.* 502.

On the trunks of willows.

G. BOLETIDEÆ. *Volva* 0; *stem* central, lateral, or 0; *collar* 0; *cap* thin, leathery or rather woody, rarely fleshy; hymenium tubular; *tubes* short, not longer than the thickness of the cap, not separable from it, united or distinct, not cut.

XXV. 267. PORIA. Persoon. *Honeycomb-stool.*
Thallus spreading, attached by its back, leatherlike or membranaceous.

1. *Poria vulgaris.* *Common honeycomb-stool.*
Thallus spreading, inclining backwards, leathery corklike, bristled, zoned, greyish-brown; *tubes* long, very wide, grey, honeycomblike.

Boletus Favus, *Bull. Champ.* 363; *Persoon Syn.* 542.

On the trunks of trees, and fir-timber in damp-places.

2. *Poria cryptarum.* *Cellar honeycomb-stool.*
Thallus leathery, spongelike, sessile, rather greyish-red, thin; border above gaping; *tubes* very long.

Boletus cryptarum, *Bull. Champ.* 350; *Persoon Syn.* 542.

Upon beams in cellars.

3. *Poria destruens.* *Destroying honeycomb-stool.*
Thallus whitish, spreading; *cap* unequal, wavy, wrinkled; pores roundish, blunt.

Boletus Destructor, *Schrad. Germ.* 166; *Persoon Syn.* 543.
Boletus sebaceus, *Leyss. Fl. Halens*, 1250.

On timber-work in damp houses.
Substance fibrous, when dry friable; *odour* heavy, but not ungrateful.

4. *Poria spongiosa.* *Spongy honeycomb-stool.*

Thallus leathery, spongelike, sessile, rust-colour; *tubes* very long, upright; *pores* minute, round.

Boletus spongiosus, *Bolt. Fung.* 165; *Persoon Syn.* 543, not of Lightfoot.

On trees.

5. *Poria medullaris.* *Crumblike honeycomb-stool.*

Thallus spreading, white, hard, flat, crustlike, above perforated; *tubes* oblique and straight.

Boletus Medulla panis, *Bolt. Fung.* 166; *Persoon Syn.* 545.

On timber-work as old garden-gates, and old trees.

XXVI. 268. BOLETUS. Dillenius. *Bolete.*

Cap sessile, semicircular, attached by the side.

1. *Boletus cæsius.* *Grey bolete.*

Thallus rather small, soft; *cap* fleshy, bald, streaked, wrinkled, whitish-grey; *pores* white.

Boletus albidus, *Sowerby Fungi*, 226.
Boletus cæsius, *Schrad. Germ.* 167; *Persoon Syn.* 526.

In fir plantations.

Thalli mostly solitary, turn blue when bruised.

2. *Boletus hispidus.* *Shaggy bolete.*

Thallus rust-red; *cap* thick, stiff-haired; underneath pale.

Boletus hispidus, *Bull. Herb.* 493; *Persoon Syn.* 526.
Boletus villosus, *Hudson Fl. Angl.* 626.
Boletus velutinus, *Sowerby Fungi*, 345, not of Persoon.
Boletus spongiosus? *Lightf. Scot.*

On apple-trees.

3. *Boletus heteroclitus.* *Mis-shapen bolete.*

Thallus sessile, lobed, irregular-shaped; above villous, orange-colour; *tubes* short; *pores* variously shaped.

Boletus heteroclitus, *Bolt. Fung.* 164; *Persoon Syn.* 528.

On the ground.

4. *Boletus alneus.* *Alder-tree bolete.*

Thalli gregarious, rather tiledlike; *cap* unequal, rather woolly, rust-red; pores fawn-colour, shining, afterwards cinnamon-colour.

Boletus radiatus? *Sowerby Fungi*, 196.
Boletus alneus, *Persoon Syn.* 528.

On sickly alder-trees.

5. *Boletus carpineus.* *Hornbeam bolete.*
Thalli in tufts; *cap* bald, yellowish, bordered; underneath grey.

Boletus carpineus, *Sowerby Fungi*, 231.

On the trunks of hornbeam.

6. *Boletus suaveolens.* *Sweetscented bolete.*
Thallus scented, fleshy, rather corky; *cap* slightly woolly, white; *pores* large, brownish, some prominent, pointed, with an unequal surface.

Boletus suaveolens, *Lin. S. P.* 1646; *Persoon Syn.* 530.
Boletus suberosus, *Bolt. Fung.* 162.
Boletus salicinus, *Bull. Herb.* 340.

On the white willow and other trees; mild winters.
Odour grateful, when dry like that of anise-seeds.

7. *Boletus igniarius.* *Tinder bolete.*
Thallus dilated, smooth; *skin* wrinkly; *cap* hard, blackish at bottom; edge vermillion red, underneath ochry-yellow.

Boletus igniarius, *Lin. S. P.* 1645; *Persoon Syn.* 534.

On the trunks of fir-trees.
When beaten, used for tinder, under the name of amadou.

8. *Boletus betulinus.* *Beech bolete.*
Thallus short-stemmed, rather large; *cap* fleshy cork-like, kidneyshape, grey-reddish; beneath whitish.

Boletus betulinus, *Gmel. Syst. Nat.* 2, 1436; *Sowerby Fungi*, 212; *Persoon Syn.* 535.

On the trunks of beech-trees.
Taste acid.

9. *Boletus fomentarius.* *Spunk bolete.*
Thallus halved, hard; *cap* rather 3-cornered, slightly banded, smoke-grey; *pores* whitish-grey, becoming rather rust-colour.

Agaricus pedis equini facie, *Raii Syn.* 22, 7.
Boletus fomentarius, *Sowerby Fungi*, 153; *Persoon Syn.* 536.

On sickly beech-trees.
When beaten, used for tinder, or quick-match, also to restrain hæmorrhage, instead of the true agaric, dædalia quercina, genus 266.

10. *Boletus applanatus.* *Flattened bolete.*
Thallus dilated, flattish above and below; *cap* tuberculated, wrinkly, reddish-grey; *pores* very minute, white, becoming reddish-grey.

Boletus Lipsiensis, *Batsch Fung.* 130.
Boletus fomentarius β, *Persoon Syn.* 536.

On dry rotten beech-trees.

11. *Boletus dryadeus.* *Oak bolete.*
Thallus very broad, soft; *cap* rather flattened, wrinkled, tubercular, brown; zones 0; *pores* pale.

Boletus pseudo-igniarius, *Bull. Herb.* 458.
Boletus fomentarius γ, *Persoon Syn.* 537.

On oak-trees.

12. *Boletus ungulatus.* *Hooflike bolete.*
Thallus nearly cylindrical, tall, greyish-brown, banded; bands prominent; *pores* flattened, whitish or rust-red.

Boletus Hippocrepis, *Schrank Bav.* 1731 & 34.
Boletus fomentarius δ, *Persoon Syn.* 537.

On old willow-trees.

13. *Boletus obtusus.* *Blunt bolete.*
Thallus thick, blunt, irregular; *cap* globular growing nearly horizontal, smooth, grey, edge and under surface cinnamon-colour; *pores* convex, scarcely visible.

Boletus igniarius, *Bull. Herb.* 361.
Boletus fomentarius ε, *Persoon Syn.* 538.

On old willow-trees.

14. *Boletus pomaceus.* *Apple bolete.*
Thallus halved, small, grey; *cap* perpendicular, edge sharp, bands brownish-grey; *pores* manifest, flat, rust-colour.

Boletus fomentarius ζ, *Persoon Syn.* 538.

In orchards, at the foot of the trees.

β. *prunastri.* *Cap* nearly attached by its back, thick, smooth, truncated.

Boletus prunastri, *Persoon Syn.* 538.

15. *Boletus versicolor.* *Changeable bolete.*
Thalli in tufts, leatherlike; *cap* thin, blue, zoned of many colours; *pores* white.

Boletus versicolor, *Lin. S. P.* 1645; *Sowerby Fungi*, 135; *Persoon Syn.* 540.

On trees and timber-work; autumn.

16. *Boletus abietinus.* *Fir bolete.*

Thalli crowded, tiledlike; *cap* spreading at bottom, thin, woolly, greyish-white; *pores* acute, purple-brown.

Boletus abietinus, *Dickson Crypt.* 3, 9; *Persoon Syn.* 541.

On decaying larch-trees.

17. *Boletus citrinus.* *Lemon bolete.*

Thallus halved, tiledlike, fleshy, bald, lemon-yellow.

Boletus citrinus, *Plan. Erfurt.* 26; *Persoon Syn.* 524.
Boletus caudicinus, *Schæff. Fung.* 131 & 132.
Boletus sulphureus, *Sowerby Fungi*, 135.

On willow, old oak, plum and other trees; summer.

When young soft like a custard; on drying exudes crystals of pure oxalic acid.

XXVII. 269. GRIFOLA. Micheli. *Grifole.*

Stem lateral; *cap* semicircular.

1. *Grifolia frondosa.* *Frondose grifole.*

Thallus much branched; *caps* numerous, halved, smoke grey.

Boletus entybaceus, *Baumgart. Lips.* 631.
Boletus frondosus, *Dickson Crypt.* 1, 18; *Sowerby Fungi*, 87; *Persoon Syn.* 520.

At the foot of oak-trees; autumn.

Eatable, but requires thorough dressing; about a foot wide.

2. *Grifola platypora.* *Wide-pored grifole.*

Thallus large; *stem* thick; *cap* fleshy, corklike, ochre yellow; centre scaly, scales umber-brown or blackish; *pores* large, bent.

Boletus juglandis, *Schæff. Fung.* 101, 102.
Boletus squamosus, *Bolton Fung.* 77.
Boletus cellulosus, *Lightf. Scot.* 1052.

On willows and other trees.

3. *Grifola cristata.* *Crested grifole.*

Thalli in tufts; *stem* white; *cap* fleshy, irregular, rather turned inwards, greenish; *pores* white, growing light ochry.

Boletus cristatus, *Schæff. Fung.* 316, 317; *Persoon Syn.* 522.
Boletus floriformis, *Schæff. Fung.* 113.

In shady beech woods.

4. *Grifola lucida.* *Shining grifole.*

Stem variously coloured; *cap* leatherlike, chestnut, shining, furrowed concentrically; *pores* small, white.

Boletus lucidus, *Sowerby Fungi*, 134; *Persoon Syn.* 522.
Boletus vernicosus, *Berg. Phyt.* 99.
Boletus laccatus, *Timm. Fl. Megap.*
Boletus niteus, *Batsch. Fung.*

On the trunks of oak and other trees.

5. *Grifola badia.* *Bay grifole.*

Thalli in tufts; *stem* short, thick, blackish-grey; *cap* bald, tough, bay or chestnut; *pores* minute, pale.

Boletus durus, *Timm. Fl. Megap.* 271.
Boletus badius, *Persoon Syn.* 523.
Boletus perennis, *Batsch Fung.* 131.

On rotten willows; autumn.

β. *calceoliformis.* *Cap* hollowed in the middle; edge thin, wavy; tubes short; pores small.

Boletus Calceolus, *Bull. Champ.* 338.

6. *Grifola varia.* *Changing grifole.*

Thalli nearly solitary; *stem* long, the lower half black; *cap* tough, ochry, sometimes circular.

Boletus lateralis, *Bolt. Fung.* 83.
Boletus varius, *Persoon Syn.* 524.

On beech and fir trees.

XXVIII. 270. COLTRICIA, Micheli. *Coltricione.*

Stem central; *cap* orbicular, umbilicated, membranaceous.

1. *Coltricia connata.* *United coltricione.*

Thallus leatherlike, tough, cinnamon; *caps* thin, zoned, velvetty, mostly growing into another.

Boletus perennis, *Lin. S. P.* 1646; *Sowerby Fungi*, 193; *Persoon Syn.* 518.
Boletus fimbriatus, *Bull. Champ.* 332.
Boletus subtomentosus, *Bolt. Fung.* 37.

In woods on sandy soils, at the foot of trees; autumn.

2. *Coltricia nummularia.* *Moneylike coltricione.*

Thallus small, entirely bald; *stem* slightly eccentric, black at bottom; *cap* hard, convex, thin, flat, pale whitish-brown.

Boletus nummularius, *Dickson Crypt.* 1, 18; *Sowerby Fungi*, 89; *Persoon Syn.* 519.

On sticks in beech woods and fir plantations.

3. *Coltricia leptocephala.* *Smooth-head coltricione.*
Stem rather eccentric, short, pale; *cap* flat, thin, above fawn-colour; beneath white.
Boletus leptocephalus, *Persoon Syn.* 519; *Withering Arr.* 4, 346.
On rotten sticks.

XXIX. 271. STRILIA. Micheli. *Striglia.*
Stem central; *cap* orbicular, umbilicated, fleshy.

Strilia cinnamomea. *Cinnamon striglia.*
Thallus cinnamon, brittle; *cap* concave, villous, centre funnelshape, reddish-brown; *pores* ringed.
Boletus cinnamomeus, *Gmel. Syst. Nat.* 2, 1433; *Persoon Syn.* 515.
Boletus perennis, var. 2, *Withering Arr.* 4, 349.
In pastures.

XXX. 272. ALBATRELLUS. Micheli. *Albatrello.*
Stem central; *cap* orbicular, convex.

1. *Albatrellus albidus.* *Whitish albatrello.*
Thalli gregarious, whitish; *stem* rather short, unequal; *cap* bald, fleshy, brittle; *pores* minute, at last lemon-yellow.
Boletus albidus, *Persoon Syn.* 516.
Boletus ovinus, *Schæff. Fung.* 121?
Boletus constrictus, *Bolt. Fung.*
In fir plantations, on buried sticks; Aug. and Sept.

2. *Albatrellus fuligineus.* *Smoke-grey albatrello.*
Thallus nearly leatherlike, soft; *cap* nearly smoke-grey, flapping down all round; flesh white, very thin.
Boletus fuligineus, *Persoon Syn.* 516.
Boletus polyporus, *Bull. Champ* 331; *Withering Arr.* 4, 345.
On the ground, at the foot of palings.

XXXI. 273. POLYPORUS. Persoon. *Sponge-stool.*
Thallus branched, lobed, every where porous.

Polyporous ramosus. *Branched sponge-stool.*
Thallus leatherlike, brittle, reddish-yellow, branched, everywhere tubular; *branches* nearly cylindrical; flesh whitish; *tubes* short.
Polyporus ramosus, *Bull. Champ.* 349; *Persoon Syn.* 549.
Boletus sulphureus, *Sowerby Fungi*, 135, lower fig.
In quarries and cellars, on rotten beams.
When dry very friable.

H. SUILLIDEÆ. *Volva* 0; *stem* central, fleshy, nearly lateral; *cap* fleshy, convex; *hymenium* tubular; *tubes* long, not shorter than the thickness of the cap, united or distinct from one another, separable from the cap.

XXXII. 274. SUILLUS. Micheli. *Porcino.*

Stem central; *collar* distinct; *cap* circular; *tubes* adhering together.

Suillus luteus. *Yellow porcino.*

Cap cushionlike, bellshape, glutinous, livid-yellow, variegated with brick-red spots; *pores* yellow.

Boletus luteus, *Schæff. Fung.* 114; *Sowerby Fungi*, 265? not of Linnæus.
Boletus annularius, *Bull. Champ.* 316.
Boletus annulatus, *Persoon Syn.* 503.

In plantations; autumn.

XXXIII. 275. PINUZZA. Micheli. *Pinuzzo.*

Stem central; *collar* fibrous; *cap* circular; *tubes* adhering together.

Pinuzza flava. *Yellow pinuzzo.*

Cap yellow, centre orange; *flesh* white, crisp, firm; *tubes* yellow; *collar* white.

Boletus flavus, *Bolt. Fung.* 169.
Boletus annularius? *Bull. Champ.* 332.
Boletus cortinatus, *Persoon Syn.* 503.

In fir plantations.

XXXIV. 276. LECCINUM. Micheli. *Leccino.*

Stem central; *collar* 0; *cap* circular; *tubes* adhering together.

1. *Leccinum aurantiacum.* *Orange leccino.*

Stem long, white, with orange-yellow wartlike scales; *cap* fleshy, shining, orange-colour; *pores* minute, white.

Boletus aurantiacus, *Bull. Champ.* 300; *Persoon Syn.* 504.

In beech woods; autumn.

Esculent.

β. *leucopodium.* *Stem-scales* white; *cap* flattish, orange inclining to cinnamon, shining; *pores* white.

γ. *rufum.* *Stem* long, wrinkly torn; *scales* blackish; *cap* swollen, plano-convex, reddish-streaked; *pores* whitish.

Boletus aurantiacus, *Bull. Champ.* 489, 2; *Sowerby Fungi*, 110.

2. *Leccinum scabrum.* *Rough leccino.*

Stem slender, scales blackish; *cap* rather wrinkled, opake, smoke-grey; *pores* pale white, depressed round the stem.

Boletus scaber, *Sowerby*, 175; *Persoon Syn.* 505.

In beech woods; autumn.

Esculent; pickled by the Russians and Poles.

3. *Leccinum lactifluum.* *Milk-yielding leccino.*

Stem pale-yellow; *cap* reddish-buff, thick, convex, glutinous, flesh-white; *tubes* yellow, filled with a milklike juice.

Boletus lactifluus, *Withering Arr.* 4, 355; *Persoon Syn.* 506.

In parks.

4. *Leccinum subtomentosum.* *Rather-woolly leccino.*

Thallus middle-size; *stem* rather slender, reddish in the middle, or uniformly yellowish; *cap* cushionlike, plano-convex, rather woolly, reddish or greyish-yellow; flesh scarcely altering; *pores* large.

Boletus subtomentosus, *Lin. S. P.* 1647; *Persoon Syn.* 507.

In woods; autumn.

5. *Leccinum piperatum.* *Pepper leccino.*

Stem yellow at bottom and in the inside; *cap* rather thick, cushionlike, bent, cinnamon; *pores* large, convex, rust-red.

Boletus piperatus, *Sowerby Fungi*, 34; *Persoon Syn.* 507.

In woods.

Taste acrid and burning, like capsicum.

6. *Leccinum constrictum.* *Bound leccino.*

Stem smooth, bellied, greyish-white at top; *cap* broad, greyish; flesh bluish; pores white.

Boletus cyanescens, *Bull. Champ.* 319; *Withering Arr.* 4, 345.
Boletus constrictus, *Persoon Syn.* 508.

In gardens.

7. *Leccinum edule.* *Eatable leccino.*

Stem tuberous, rather bellied, greyish-red, with network; *cap* cushionlike, very wide, brownish-red; flesh not changing colour; *pores* at first stuffed, whitish, grow yellow.

Boletus edulis, *Bull. Herb.* 494; *Persoon Syn.* 510.

In woods and heaths; autumn.

Taste grateful, like that of the cocoa-nut.

8. *Leccinum elephantinum.* *Elephant leccino.*
Stem yellow, short, thick; *cap* white, convex, very irregular; *tubes* yellow, short.

Boletus elephantinus, *Withering Arr.* 4, 351.
Boletus edulis elephantinus, *Persoon Syn.* 510.

In fir plantations.

9. *Leccinum luridum.* *Lurid leccino.*
Thallus large; *stem* long, reddish, networked, rather bulbous; *cap* cushionlike, brownish-olive; *tubes* equal, red, afterwards orange.

Boletus luridus, *Sowerby Fungi*, 250; *Persoon Syn.* 512.

In grassy woods.

10. *Leccinum rubeolarium.* *Measle leccino.*
Stem short, bulbous, thick, smoothish, olive; *cap* cushionlike, nearly hemispherical, olive, slightly woolly; *tubes* plano-convex, dark-red.

Boletus rubeolarius, *Sowerby Fungi*, 250; *Persoon Syn.* 512.

In oak woods; autumn.

XXXV. 277. FISTULINA. Persoon. *Pipe-stool.*
Stem lateral, naked; *cap* semicircular; *tubes* separate from one another.

Fistulina hepatica. *Liver pipe-stool.*
Thallus fleshy, blood-red; *tubes* free, growing yellow.

Agaricus porosus rubens, carnosus, hepatis facie, *Raii Syn.* 23, 12.
Boletus hepaticus, *Sowerby Fungi*, 58; *Persoon Syn.* 549.
Boletus buglossum, *Fl. Dan.* 1039.
Fistulina buglossoides, *Bull. Champ.* 314.

On oak-trees; autumn.
Resembles bullock's liver; esculent and thought to be equal in flavour to the mushroom.

I. SISTOTREMIDEÆ. *Volva* 0; *thallus* leatherlike; *hymenium* at first meandering, porous, becoming toothed; teeth lamellar, torn.

XXXVI. 278. SISTOTREMA. Persoon. *Sistotreme.*
Stem distinct; *cap* round.

1. *Sistotrema bienne.* *Two-year sistotreme.*
Stem contracted, woolly; *cap* cuplike, thick, rather rust-colour; *tubes* grey, labyrinthlike.

Boletus biennis, *Bull. Champ.* 333; *Sowerby Fungi*, 191?
Sistotrema bienne, *Persoon Syn.* 550.

On rotten wood and the ground.

2. *Sistotrema confluens.* *Confluent sistotreme.*
Thalli gregarious, usually in pairs, white, pale; *cap* fleshy, bent, running together; *teeth* decurrent, whitish.

Hydnum sublamellosum, *Sowerby Fungi*, 112.
Sistotrema confluens, *Persoon Syn.* 551.

In beech woods and fir plantations, on the ground.

XXXVII. 279. CERRENA. Micheli. *Cerrena.*
Stem distinct; *cap* semicircular.

Cerrena cinerea. *Grey cerrena.*
Thallus tiledlike, corklike; *cap* semicircular, rough, underneath grey.

Boletus unicolor, *Sowerby Fungi*, 325.
Sistotrema cinereum, *Persoon Syn.* 551.

On trunks of trees.

XXXVIII. 280. XYLODON. Persoon. *Wood-tooth.*
Thallus attached by its back; *teeth* irregular, cut.

1. *Xylodon quercinum.* *Oak wood-tooth.*
Thallus bald, pale reddish-grey; *teeth* thick, irregular, cut, slightly tiledlike.

Hydnum candidum, *Bull. Herb.* 481.
Odontia quercina, *Persoon Obs. Myc.* 2, 17.
Sistotrema quercinum, *Persoon Syn.* 552.

On dry oak-sticks.

2. *Xylodon digitatum.* *Fingered wood-tooth.*
Thallus white, diverging; *teeth* fingerlike, crowded.

Hydnum paradoxum, *Schrad. Germ.* 179.
Sistotrema digitatum, *Persoon Syn.* 553.

On trees.

K. Hydnideæ. *Volva* 0; *collar* 0; *cap* leatherlike or fleshy; *hymenium* prickly; *prickles* awlshape, not divided. —None are known to be poisonous.

XXXIX. 281. HYDNUM. Dillenius. *Prickle-stool.*

Stem central; *cap* regular, round, fleshy, convex.

Hydnum imbricatum. *Tiled prickle-stool.*

Cap umbilicated, umber-brown, scaly; *scales* thick, nearly upright, darker.

Hydnum imbricatum, *Lin. S. P.* 1647; *Sowerby Fungi*, 73; *Persoon Syn.* 554.

In fir plantations.

Esculent.

XL. 282. DENTINUM. Micheli. *Dentino.*

Stem nearly central; *cap* regular, round, fleshy, umbilicated.

1. *Dentinum repandum.* *Spread dentino.*

Thallus pale flesh-colour; *stem* tuberous, rather eccentric; *cap* wrinkled, bent, slightly lobed, bald; *prickles* rather thick, many, compressed.

Hydnum repandum, *Lin. S. P.* 1647; *Sowerby Fungi*, 176; *Persoon Syn.* 555.

In woods.

2. *Dentinum rufescens.* *Reddish dentino.*

Stem rather slender, nearly cylindrical; *cap* rather thin, fleshy, slightly woolly, flesh-red; *prickles* pointed, slightly compressed, yellowish.

Hydnum rufescens, *Bolton Fung.* 88; *Persoon Syn.* 555.

In woods.

XLI. 283. AURISCALPIUM. *Earpick-stool.*

Stem lateral, naked; *cap* leatherlike, membranaceous, nearly round.

Auriscalpium vulgare. *Common earpick-stool.*

Thallus bay-colour; *cap* halved, leatherlike.

Hydnum Auriscalpium, *Lin. S. P.* 1648; *Persoon Syn.* 557.

On the cones of fir; all the year.

XLII. 284. STECCHERINUM. Mich. *Hedgehog-stool.*
Stem 0; *cap* semicircular, horizontal.

1. *Steccherinum ochraceum.* *Ochry hedgehog-stool.*
Thallus spreading, turned back, rather tiledlike; *cap* leatherlike, thin, zoned, ochraceous; *prickles* minute, yellow flesh-colour.

Hydnum Daviesii, *Sowerby Fungi*, 15.
Hydnum ochraceum, *Persoon Syn.* 559.

On fir-trees.

2. *Steccherinum gelatinosum.* *Gelatinous hedgehog-stool.*
Thallus gelatinous, glaucous white; *stem* lateral; *cap* flat on both faces.

Hydnum gelatinosum, *Persoon Syn.* 560.

On the branches of firs.

3. *Steccherinum quercinum.* *Oak hedgehog-stool.*
Thallus large, convex, yellowish-white, leatherlike; *prickles* very long, hanging down in stages.

Hydnum Erinaceus, *Bull. Champ.* 34; *Persoon Syn.* 560.

On old oak-trees.
Esculent.

XLIII. 285. ODONTIA. Persoon. *Toothless-stool.*
Thallus spreading, attached by its back; *prickles* round.—Wholesome.

1. *Odontia obtusa.* *Blunt toothless-stool.*
Thallus white; *prickles* cylindrical, blunt, villous at the tip.

Fungoides humile ex albido livescens, apicibus tenuissime crenatis, *Dillen in Raii Syn.* 14, 7.
Hydnum obtusum, *Schrader Germ.* 178; *Persoon Syn.* 562.

On felled trees.

2. *Odontia diaphana.* *Transparent toothless-stool.*
Thallus paperlike, transparent; *prickles* awlshape, scattered.

Hydnum diaphanum, *Schrader Germ.* 178; *Persoon Syn.* 563.

On beech-trees.

XLIV. 286. HERICIUM. Persoon. *Spine-stool.*

Thallus clublike, simple or branched; *prickles* covering every part.—Wholesome.

Hericium coralloides. *Coral-like spine-stool.*

Thallus large, much branched; branches crowded, bent in; *prickles* terminal, rather bundled.

Hydnum coralloides, *Sowerby Fungi*, 252; *Persoon Syn.* 252.

In woods, upon oak and other trees.

Esculent.

L. THELEPHORIDEÆ. *Thallus* leathery, rarely with a cap; *hymenium* smooth, hairy or warty, expanded.

XLV. 287. CRATERELLA. Persoon. *Crater-stool.*

Stem central; *cap* round, umbilicated or funnelshape; centre shaggy.

Cratella caryophyllea. *Pink crater-stool.*

Thallus varying; *cap* funnelshape, thin, brown then purple; edge generally cut, rather crisp.

Craterella ambigua, *Persoon Comment.* 128.
Helvella caryophyllea, *Dickson Crypt.* 1, 20.
Thelephora caryophyllea, *Persoon Syn.* 565.

In fir plantations, on the ground.

XLVI. 288. STEREUM. Persoon. *Stereum.*

Cap semicircular, at length horizontal.

1. *Stereum laciniatum.* *Jagged stereum.*

Thallus tiledlike, dark brown; *cap* thin, jagged, crisp, beneath rough with nipples crowded together.

Stereum laciniatum, *Persoon Obs. Myc.* 1, 36.
Auricularia caryophyllea, *Sowerby Fungi*, 213?
Thelephora laciniata, *Persoon Syn.* 567.

On trees, near their roots.

2. *Stereum rubiginosum.* *Rusty stereum.*

Thallus tiledlike, stiff, rusty chestnut, smooth on both faces; nipples scattered, large.

Helvella rubiginosa, *Dickson Crypt.* 1, 20.
Auricularia rubiginosa, *Sowerby Fungi*, 26.
Thelephora rubiginosa, *Persoon Syn.* 567.

On the mossy trunks of oak and other trees.

3. *Stereum ferrugineum.* *Ferruginous stereum.*

Thallus spreading, turned back, rust-colour; *cap* thin, slightly woolly, smoothish; beneath hairy.

Thelephora variegata, *Schrad. Germ.* 185.
Auricularia tabacina, *Sowerby Fungi*, 25.
Thelephora ferruginea, *Persoon Syn.* 569.

On fallen sticks, in woods.

4. *Stereum hirsutum.* *Shaggy stereum.*

Thalli in tufts, leatherlike, yellowish, shaggy; underneath bald.

Auricularia reflexa, *Sowerby Fungi*, 27.
Thelephora hirsuta, *Persoon Syn.* 570.

On trees and palings.

5. *Stereum mesentericum.* *Cawl stereum.*

Thallus large, leathery, gelatinous; *cap* horizontal, rather thin, with impressed zones, woolly, greyish-brown; beneath turning purple, with scattered, longitudinal folds.

Helvella mesenterica, *Dickson Crypt.* 1, 20.
Thelephora mesenterica, *Persoon Syn.* 571.

On trees.

XLVII. 289. CORTICIUM. Persoon. *Bark-ear.*

Thallus spread, attached by its back, nipply.

Corticium quercinum. *Oak bark-ear.*

Thallus attached lengthways, leatherlike, wrinkly, rather fleshy; edge somewhat turned in; beneath brown.

Auricularia corticalis, *Withering Arr.* 4, 377.
Thelephora quercina, *Persoon Syn.* 573.

On the branches of oak-trees.

XLVIII. 290. MERISMA. Persoon. *Branch-ear.*

Thallus branched, leatherlike, compressed, smooth; tip mostly hairy.

1. *Merisma cristatum.* *Crested branch-ear.*

Thallus rather lying down, encrusting, pale; *branches* jagged, thickened, wrinkly.

Clavaria laciniata, *Sowerby Fungi*, 158.
Merisma cristatum, *Persoon Syn.* 583.

In woods, on the ground.

2. *Merisma fœtidum.* *Stinking branch-ear.*
Thallus brown-purplish; *branches* palmate, close; tips whitish, shining.

Clavaria palmata, *Scopoli Carn.* 2, 485.
Clavaria anthocephala, *Sowerby Fungi*, 156.
Merisma fœtidum, *Persoon Syn.* 584.

In fir plantations, on the ground.
Odour very disagreeable.

M. CLAVARIDEÆ. *Thallus* fleshy, long, uniform, simple or branched; *hymenium* smooth, expanded.

XLIX. 291. CORYNOIDES. *Corynoide.*
Thallus cartilaginous or gelatinous, compressed; *sporidia* scattered over the whole surface of the thallus.

1. *Corynoides cornea.* *Horny corynoide.*
Thalli gregarious, small, glutinous, yellowish; simple or branched, connate at bottom.

Clavaria cornea, *Sowerby Fungi*, 40; *Persoon Syn.* 596.

On trees after rain in autumn, and on timber.

2. *Corynoides fabarum.* *Bean corynoide.*
Thallus brownish olive, scaly, divided above; branches blunt or nicked; scales brown.

Clavaria fabæ, *Sowerby Fungi*, 404.

On bean-stalks; autumn.

3. *Corynoides farinosa.* *Mealy corynoide.*
Thalli pale-yellow, mealy, scattered, branched; branches short, scalloped; meal white.

Clavaria farinosa, *Dickson Crypt.* 2, 25; *Sowerby Fungi*, 308.

On decayed pupæ, at the bottom of walls or trees.

4. *Corynoides byssoides.* *Byssuslike corynoide.*
Thalli snow-white, in tufts, entangled, much and irregularly branched.

Clavaria byssoides, *Sowerby Fungi*, 335.

On the stumps of old trees.

L. 292. RAMARIA. Holmskiold. *Ramaria.*

Thallus fleshy, cylindrical, branched, generally pipey, below slender; *sporidia* scattered on the upper part of the thallus.—None are poisonous.

1. *Ramaria ceranoides.* *Hornlike ramaria.*

Thalli in tufts; clubs toothed, or slightly branched, yellowish; branches irregular, brown at the tip.

Clavaria rugosa, *Sowerby Fungi*, 235.
Clavaria ceranoides, *Persoon Syn.* 594.

On the ground.

2. *Ramaria rugosa.* *Wrinkled ramaria.*

Thallus rather large, whitish, thick, wrinkled, simple or branched; branches few, irregular.

Clavaria rugosa, *Bull. Herb.* 448; *Persoon Syn.* 595.
Clavaria elegans, *Bolton Fung.* 115.
Clavaria coralloides, *Sowerby Fungi*, 278, centre fig. below.

On the ground under trees; September.

3. *Ramaria tuberosa.* *Tuberous ramaria.*

Thallus yellowish, scarcely branched, tuberous at bottom.

Clavaria tuberosa, *Sowerby Fungi*, 199; *Persoon Syn.* 593.

On the bark of trees.
Tuber inserted into the bark.

4. *Ramaria corniculata.* *Horned ramaria.*

Thallus slightly branched, yellow; *stem* slender, long, twice or thrice forked; branches acute.

Fungus parvus luteus ramosus, *Raii Syn.* 16, 15.
Clavaria muscoides, *Lin. S. P.* 1652; *Sowerby Fungi*, 157.
Clavaria corniculata, *Persoon Syn.* 589.

In woods, on dry soils.

β. *alba.* *Thallus* white.

Clavaria coralloides, *Sowerby Fungi*, 278, upper figure.

5. *Ramaria pratensis.* *Meadow ramaria.*

Thalli in tufts, yellowish; *stem* short; branches kneed, spreading; twigs rather even-topped, blunt.

Fungoides coralliforme luteum fœtidum et minus ramosum, *Dillen in Raii Syn.* 479.
Clavaria fastigiata, *Lin. S. P.* 1652.
Clavaria muscoides, *Fl. Dan.* 836.
Clavaria pratensis, *Persoon Syn.* 590.

Among grass; autumn.

6. *Ramalaria coriacea.* *Leatherlike ramaria.*
Thallus soft, leatherlike, flat, grooved, ends fringed, grey turning dark-brown.

Clavaria coriacea, *Bull. Herb.* 452; *Withering Arr.* 4, 403.

On the ground, in plantations.

7. *Ramaria amethystea.* *Amethyst ramaria.*
Thallus brittle, tender, very much branched, smooth, violet-colour.

Clavaria coralloides, var. b. *Bolt. Fung.* 113.
Clavaria amethystea, *Persoon Syn.* 590.

On heaths and woods among fallen leaves; autumn.

8. *Ramaria cinerea.* *Grey ramaria.*
Thallus brittle, tender, solid, greyish-brown, branched; twigs dilated.

Clavaria coralloides, a, *Bolt. Fung.* 113.
Clavaria cinerea, *Persoon Syn.* 186.
Menottes grises. Gantelines.

In woods.
Esculent.

LI. 293. CLAVARIA. Micheli. *Club-stool.*
Thallus long, cylindrical, clublike, mostly simple; *stem* scarcely distinct; *sporidia* scattered on the tip.

1. *Clavaria gracilis.* *Slender club-stool.*
Thalli in clusters, brittle, snow-white; *club* pipey, slightly thicker at the tip.

Clavaria gracilis, *Bolton Fung.* 3, 1; *Sowerby Fungi*, 232.
Clavaria eburnea α, *Persoon Syn.* 603.

On decayed sticks.

2. *Clavaria cylindrica.* *Cylinder club-stool.*
Thalli in clusters, brittle, snow-white; *stem* long, slender; *club* rather thick, cylindrical, blunt, pipey.

Clavaria cylindrica, *Sowerby Fungi*, 90, part only.
Clavaria fragilis, *Holmskiold*, a—e.
Clavaria eburnea β, *Persoon Syn.* 603.

In damp woods.

3. *Clavaria solida.* . *Solid club-stool.*
Thalli in clusters, brittle, snow-white, nearly cylindrical tapering to a point, solid.

Fungoides clavatum incurvum in acutum mucronem productum, *Dillen in Raii Syn.* 14, 3.
Clavaria pistillaris, *Lin. S. P.* 1651.
Clavaria vermiculata, *Lightf. Scot.* in part.
Clavaria eburnea γ, *Persoon Syn.* 603.

On heaths, and in woods on a dry soil.

4. *Clavaria acuta,* *Pointed club-stool.*

Thallus solitary, snow-white; *stem* cylindrical, long, rather transparent; *club* rather conical, pointed, opake, mealy.

Clavaria acuta, *Sowerby Fungi*, 333.

In damp places, on the ground.

5. *Clavaria vermiculata.* *Worm club-stool.*

Thalli in clusters, brittle, snow-white, nearly cylindrical, pipey, bent, tapering to a point.

Clavaria vermiculata, *Lightf. Scot.* in part.

In woods and pastures; autumn.

6. *Clavaria fusiformis.* *Spindlelike club-stool.*

Thalli in clusters, crowded, gold-yellow, rather tough, pointed at each end, cohering at the bottom.

Clavaria fusiformis, *Sowerby Fungi*, 234; *Persoon Syn.* 601.
Clavaria fasciculata, *Persoon Comm.* 73.

On heathy, mossy woods.

7. *Clavaria bifurca.* *Two-forked club-stool.*

Thalli in clusters, yellowish, brittle, solid, bald, simple afterwards becoming forked; tips pointed.

Clavaria bifurca, *Bull. Champ.* 207.
Clavaria vermicularis, *Lightf. Scot.*
Clavaria inequalis γ, *Persoon Syn.* 601.

In grassy woods, on the ground.

8. *Clavaria Ardeniæ.* *Lady-Arden's club-stool.*

Thalli scattered, very long, chestnut-brown, hollow; base woolly; tip becomes truncated.

Clavaria Ardenia, *Sowerby Fungi*, 215; *Persoon Syn.* 599.

On decaying hazel-sticks.

Thallus above a span long.

9. *Clavaria Herculeana.* *Herculean club-stool.*

Thallus solitary, large, light chestnut-brown, wrinkled, solid; tip cut off, depressed.

Clavaria Herculeana, *Lightf. Scot.* 2, 1056.
Clavaria pistillaris β, *Persoon Syn.* 597.

In fir plantations, on the ground.

10. *Clavaria pistillaris.* *Pistil-like club-stool.*
Thallus solitary, large, yellowish-red, thicker at top, wrinkled, solid; top rounded off.
Clavaria Herculanea, *Bull. Herb.* 244; *Sowerby Fungi*, 277.
Clavaria pistillaris, *Persoon Syn.* 597.
In woods, on the ground.
Taste very bitter.

11. *Clavaria erythropus.* *Red-footed club-stool.*
Stem stiff, long, dark-red; *club* cylindrical, short, white.
Clavaria gyrans, *Bolton Fung.* 112.
Clavaria erythropus, *Persoon Syn.* 606.
On sticks.

12. *Clavaria phacorhiza.* *Lentil-rooted club-stool.*
Thallus threadlike, bent, brown; *club* pipey; *root* lentil-shape, black.
Clavaria phacorhiza, *Sowerby Fungi*, 233; *Persoon Syn.* 607.
On the ground in gardens.

N. GEOGLOSSIDEÆ. *Thallus* fleshy, long, expanded at the top, either clubshaped or capped; cap smooth; *hymenium* smooth, expanded.

LII. 294. GEOGLOSSUM. Persoon. *Ground-tongue.*
Thallus clubshape; club fleshy, mostly compressed, short, edged; edges prominent; *sporidia* scattered over the whole surface of the club.

1. *Geoglossum hirsutum.* *Shaggy ground-tongue.*
Thalli in clusters, large, black, woolly.
Clavaria ophioglossoides, *Sowerby Fungi*, 83.
Geoglossum hirsutum *β*, *Persoon Syn.* 608.
In woods and pastures.

2. *Geoglossum glabrum.* *Bald ground-tongue.*
Thallus greyish-black, bald; *stem* rather scaly; *club* ligulate, not glutinous.
Clavaria ophioglossoides, *Ehrh. Crypt.* 140.
Geoglossum glabrum, *Persoon Syn.* 608.
On grassy hills; beginning of autumn.

3. *Geogl. atropurpureum.* *Dark-purple ground-tongue.*
Thallus bald, dark-purple.
Geoglossum purpurascens, *Persoon Comm.* 39.
Clavaria atropurpurea, *Batsch. Fung.* 2, 48.
Geoglossum atropurpureum, *Persoon Syn.* 609.
In grassy places.

4. *Geoglossum viride.* *Green ground-tongue.*
Thalli in clusters, green; *stem* rather scaly; *club* blunt.

Clavaria viridis, *Gmel. Syst. Nat.* 2, 1443.
Clavaria serpentina, *Schrank Bavar.* 2, 571.
Geoglossum viride, *Persoon Syn.* 610.

In woods; autumn.

5. *Geoglossum? herbarum.* *Herb ground-tongue.*
Thalli in clusters, minute, lanceolate, rather tough, dark-olive.

Acrospermum compressum, *Tode Mecklenb.* 1, 3.
Clavaria herbarum, *Sowerby Fungi*, 353; *Persoon Syn.* 605.
Sclerotium ..... *Esenbeck Syst.* 1, 171.

On dry sticks, covered with leaves.

6. *Geoglossum obtusum.* *Blunt ground-tongue.*
Thalli scattered, small, solid, snow-white, bald; *club* ovate.

Clavaria obtusa, *Sowerby Fungi*, 334, 1.

On dead fern-stalks.

7. *Geoglossum oblongum.* *Oblong ground-tongue.*
Thalli scattered, small, solid, snow-white, rather woolly; *club* oblong.

Clavaria obtusa, *Sowerby Fungi*, 334, 2.

On dead fern-stalks.

8. *Geoglossum minutum.* *Small ground-tongue.*
Thalli scattered, small; *stem* pale; *club* oblong, reddish-yellow.

Clavaria minuta, *Sowerby Fungi*, 391.

On the bracteæ of galedragon pilosus.

9. *Geogl. polymorphum.* *Many-formed ground-tongue.*
Thalli scattered, small; *stem* threadlike, brown; *club* variously formed, compressed, hollow, blunt.

Clavaria polymorpha, *Sowerby Fungi*, 276.

On fallen elm-leaves.

LIII. 295. MITRULA. Persoon. *Mitre-stool.*
Thallus with a club-head; *club* conical or ovate, smooth, edge turned in; *sporidia* on the whole surface of the club.

1. *Mitrula Dicksoni.* *Dickson's mitre-stool.*
Stem pale yellow; *cap* rather clubshape, blunt, hollow, red.
Clavaria epiphylla, *Dickson Crypt.* 3, 22; *Persoon Syn.* 612.
In turf-bogs, upon half-rotten-leaves.

2. *Mitrula Heyderi.* *Heyder's mitre-stool.*
Thalli scattered, small; *club* ovate, light chestnut-brown.
Elvella cucullata, *Batsch Fung.* 189.
Clavaria ferruginea, *Sowerby Fungi*, 84.
Leotia Mitrula, *Persoon Syn.* 611.
On fir-leaves; end of autumn.

LIV. 296. LEOTIA. Persoon. *Leotia.*
Thallus capped, rather gelatinous; *cap* orbicular, smooth, edge turned in; *sporidia* scattered on the gelatinous upper surface of the cap.

1. *Leotia marcida.* *Withered leotia.*
Thallus yellowish-green, rather gelatinous; *stem* very long, narrowed at bottom; *cap* flattish, turned up.
Phallus marcidus, *Fl. Dan.* 654, 1.
Leotia marcida, *Persoon Syn.* 613.
In woods.

2. *Leotia lubrica.* *Slippery leotia.*
Thallus yellowish-green, rather gelatinous; *stem* cylindrical; *cap* convex.
Helvella gelatinosa, *Bull. Herb.* 296; *Sowerby Fungi*, 70.
Leotia lubrica, *Persoon Syn.* 613.
In woods, after heavy rains.

LV. 297. HELOTIUM. Persoon. *Head-stool.*
Thallus with a cap; *cap* fleshy, hemispherical, smooth, edge turned in; *sporidia* on the upper surface.

1. *Helotium aciculare.* *Needlelike head-stool.*
Thalli in clusters, small, white, lasting; *cap* at first slightly hollowed.
Leotia acicularis, *Persoon Observ.* 2, 20.
Helvella agariciformis, *Sowerby Fungi*, 57.
Helotium aciculare, *Persoon Syn.* 677.
On decayed oak-leaves.
Stem often branched: *cap* consists of thecæ each filled with 3 sporidia.

2. *Helotium æruginosum.* *Brassy head-stool.*
Thalli in clusters, bright green; *cap* concave, variously shaped, edge irregular.

Helvella æruginosa, *Sowerby Fungi*, 347; *Persoon Syn.* 617.

On decayed wood, which it turns of a light green.

3. *Helotium infundibuliformis.* *Funnelshape head-stool.*
Thallus large; *stem* thick, pale-brown; *cap* hemispherical; above blackish, becoming concave; beneath pale.

Helvella infundibuliformis, *Schæff. Fung.* 277; *Sowerby Fungi*, 153.

In damp shady places.

LVI. 298. RELHANUM. *Relhan.*
Thallus stipitate; *cap* conical, bellshape, edge curtain-like, beneath smooth; *sporidia* on the silky upper surface of the cap.

Relhanum conicum. *Conical Relhan.*
Stem cylindrical, pipey, yellowish; *cap* above brown, beneath yellow.

Phallus conicus, *Fl. Dan.* 654.
Helvella Relhani, *Sowerby Fungi*, 11.
Leotia? conica, *Persoon Syn.* 613.

On chalk-hills.

O. HELVELLIDEÆ. *Thallus* fleshy, long; *cap* mitrelike, plaited or cellular, like network; *hymenium* smooth, expanded.

LVII. 299. MORCHELLA. Dillenius. *Morell.*
Stem hollow; *cap* conical, above cellular in network; *sporidia* over the whole surface.—Wholesome, and fine flavoured.

1. *Morchella esculenta.* *Eatable morell.*
Thallus yellowish; *stem* filled up; *cap* contracted at the bottom.

Fungus favaginosus, *Park.* 1317; *Raii Syn.* 11, 7.
Phallus esculentus, *Lin. S. P.* 1648.
Helvella esculenta, *Sowerby Fungi*, 51, left-hand fig.
Morchella esculenta, *Persoon Syn.* 618.
White morells.

In woods, especially where fires have been made; spring. When dry, used to flavour soups, as also the following.

2. *Morchella vulgaris.* *Common morell.*

Thallus blackish; *stem* filled up; *cap* contracted at bottom; cells nearly 4-sided.

Helvella esculenta, *Sowerby Fungi*, 51, right-hand fig.
Morchella esculenta β, *Persoon Syn.* 619.

In woods; spring.

3. *Morchella patula.* *Open morell.*

Thallus yellowish; *stem* hollow; *cap* short, spreading at bottom; cells rhomboidal.

Phallus patulus, *Gmelin Syst. Nat.* 2, 1449.
Helvella esculenta, *Sowerby Fungi*, 51, centre fig.
Morchella patula, *Persoon Syn.* 619.

In woods; spring.

4. *Morchella hybrida.* *Bastard morell.*

Stem very long, cylindrical; *cap* short, conical; cells oblong, ribbed with anastomosing veins.

Helvella hybrida, *Sowerby Fungi*, 238.

In woods; May.

LVIII. 300. HELVELLA. Linnæus. *Helvelle.*

Thallus plaited; *stem* hollow; *cap* membranaceous, plaited, sinuated mostly irregular, turned down on all sides; *sporidia* scattered on the whole surface.

1. *Helvella sulcata.* *Furrowed helvelle.*

Thallus large; *stem* ribbed, grooved, whitish; *cap* swollen, free, livid-black.

Fungus terrestris pediculo striato et cavernoso, capitulo plicatili subtus plano, *Raii Syn.* 8, 39.
Helvella Mitra, *Schæff. Fung.* 154; *Persoon Syn.* 615.
Helvella sulcata, *Wilden Berol.* 398.

On the ground.

2. *Helvella leucophæa.* *Light-grey helvelle.*

Stem ribbed, pitted, bellied at bottom; *cap* free, crisp, light-grey.

Phallus crispus, *Scop. Carn.* 2, 475.
Helvella nivea, *Schrad. Bot. Journ.* 2, 66.
Helvella Mitra, *Sowerby Fungi*, 39.
Helvella leucophæa, *Persoon Syn.* 616.

In woods, on the ground; autumn.

3. *Helvella albida.* *Whitish helvelle.*

Thallus pale white; *stem* long, narrow; *cap* free, rather swollen.

Helvella Mitra, *Bolt. Fung.* 95?
Helvella fuliginosa, *Sowerby Fungi*, 154.
Helvella albida, *Persoon Syn.* 616.

In damp shady places.

LIX. 301. SPATHULARIA. Persoon. *Spathula-stool.*

Thallus with a stem; *club* compressed, running down the stem on both sides; *sporidia* on the upper part of the club.

Spathularia flavida. *Yellowish spatula-stool.*

Clavaria Spathula, *Dickson Crypt.* 1, 21.
Helvella spathulata, *Sowerby Fungi*, 35.
Spathularia flavida, *Persoon Syn.* 610.

In fir plantations; autumn.

Grows in clusters; pale white, when dried, becomes yellowish.

P. PEZIZADEÆ. *Thallus* fleshy or waxlike, hollowed out like a cup; hymenium smooth, expanded; *sporidia* clubshaped, intermixed with barren ovaries as in mosses, fixed.

LX. 302. STICTIS. Persoon. *Sunk-cup.*

Thallus leatherlike, membranaceous, dry, sunk in wood, edge only prominent.

1. *Stictis radiata.* *Radiated sunk-cup.*

Edge snow-white, rather mealy, cut in rays, or undivided.

Lycoperdon radiatum, *Lin. S. P.* 1654.
Lichen excavatum, *Hoffm. Lichen.* 7, 4.
Sphærobolus rosaceus, *Tode Meckl.* 1, 44.
Peziza marginata, *Sowerby Fungi*, 16.
Peziza stictis radiata, *Persoon Syn.* 674.

On wood and dry sticks.

2. *Stictis æcidioides.* *Æcidium sunk-cup.*

Edge orange-colour; accessory edge white, rather torn, mealy.

Peziza æcidioides, *Esenbeck Syst.* 2, 66.

Upon the dead stems of herbs; spring and autumn.

3. *Stictis terrestris.* *Ground sunk-cap.*
Thallus globular, fleshy, when dry leatherlike, smooth on both sides.
Peziza immersa, *Sowerby Fungi*, 389.
Sunk in the ground, edge level with the surface.

LXI. 303. PATELLARIA. Esenbeck. *Flat-cup.*
Thallus leatherlike, dry, sessile, edged, edge flat.

1. *Patellaria populnea.* *Poplar flat-cup.*
Thalli in tufts, rather large; *cups* when dry wrinkled, grey.
Peziza sphærioides, *Roth Cat.* 1, 239.
Peziza populnea, *Persoon Syn.* 671.
On dry branches of the trembling poplar; winter and spring.

2. *Patellaria prunastri.* *Plum-tree flat-cup.*
Thalli in bundles, slightly stemmed, hard, black on both sides, opake.
Peziza prunastri, *Persoon Syn.* 673.
On the branches of sloe-trees.

3. *Patellaria cartilaginea.* *Cartilaginous flat-cup.*
Thallus cartilaginous, bright scarlet.
Peziza cartilaginea, *Sowerby Fungi*, 369.
On damp walls, among moss; spring and autumn.

4. *Patellaria rimosa.* *Cracked flat-cup.*
Thallus cartilaginous, white; when old cracked in the centre.
Peziza rimosa, *Sowerby Fungi*, 369.
On brown paper, left on a beer barrel in a cellar.

5. *Patellaria immersa.* *Sunk flat-cup.*
Thallus black, sunk in the wood, beneath rather woolly.
Peziza immersa, *Sowerby Fungi*, 369.
On wood.

LXII. 304. PEZIZA. Pliny. *Rough-cup.*
Thallus mostly small, sessile; outer surface shaggy, hairy, woolly or downy.

1. *Peziza sanguinea.* *Blood-red rough-cup.*

Cups very minute, black, bald, placed on a blood-red woolly strome.

Peziza sanguinea, *Persoon Syn.* 657.

On trees and planks.

2. *Peziza cæsia.* *Grey rough-cup.*

Thalli crowded; *cups* grey, cohering on a white woolly strome.

Peziza lichenoides, *Persoon Ic. fung.* 29, 31.
Peziza cæsia, *Persoon Syn.* 657.

On oak-branches bared of bark; autumn.

3. *Peziza hæmispherica.* *Hemispherical rough-cup.*

Thalli gregarious, large, hemispherical; *cups* internally white, greenish, externally brown; *hairs* in bundles.

Peziza hispida, *Hudson Angl.* 635; *Sowerby Fungi*, 147.
Peziza fasciculata, *Schrad. Journ.* 60.
Peziza hæmisphærica, *Persoon Syn.* 648.

In woods and moist places, on the ground; autumn.

4. *Peziza sulphurea.* *Brimstone rough-cup.*

Thallus sessile, nearly globular, shaggy, brimstone-yellow.

Peziza hydnoides, *Sowerby Fungi*, 178.
Peziza sulphurea, *Persoon Syn.* 649.

On dry large herbs among dead leaves.

5. *Peziza scutellata.* *Saucerlike rough-cup.*

Thallus rather large, flat, orange-red, externally shaggy; *bristles* diverging, black.

Peziza scutellata, *Sowerby Fungi*, 24; *Persoon Syn.* 650.

In the moist parts of rotten trees, or wood.

6. *Peziza cærulea.* *Blue rough-cup.*

Thallus flat, sessile, blue; edge blunt, hairy; underneath black.

Peziza cærulea, *Bolt. Fung.* 108; *Persoon Syn.* 650.

In moist places, on trees.

7. *Peziza stercorea.* *Dung rough-cup.*

Thalli in clusters, sessile, deep, entirely reddish-brown, bristly; *bristles* bay, nearly upright.

Peziza scutellata, *Bolt. Fungi*, 108.
Octospora scutellata, *Hedwig. Musc.* 2.
Peziza stercorea, *Persoon Syn.* 650.

On horse and other dung.

8. *Peziza argillacea.* *Clay rough-cup.*
Thallus globular, narrow-mouthed, splitting when old, yellow.
Peziza argillacea, *Sowerby Fungi*, 148.
On black modelling clay.

9. *Peziza papillaris.* *Papillalike rough-cup.*
Thalli in clusters, flat, reddish-grey, externally hairy, hairs falling off.
Peziza papillaria, *Bull. Herb.* 467 ; *Sowerby Fungi*, 177.
On rotten stumps of trees.

10. *Peziza cellulariæformis.* *Cellularia rough-cup.*
Thallus large, spreading at top; internally yellow, externally woolly, wool white.
Peziza cellularia, *Sowerby Fungi*, 91.
Cellularia cyathiformis, *Fl. Dan.* 1450.
On timber.

11. *Peziza hybrida.* *Mule rough-cup.*
Thallus hæmispherical, inside reddish, outside hairy, white.
Peziza hybrida, *Sowerby Fungi*, 369.
On the ground?

12. *Peziza domestica.* *House rough-cup.*
Thalli in clusters, conical; outside hairy, salmon-colour.
Peziza domestica, *Sowerby Fungi*, 351.
On new-plastered ceilings, or damp walls.

13. *Peziza nigra.* *Black rough-cup.*
Thallus cartilaginous, small, entirely black.
Peziza nigra, *Sowerby Fungi*, 369.
On old palings.

14. *Peziza equina.* *Horse-dung rough-cup.*
Thallus globular, not expanded, dull fox-red; outside rough hairy.
Helvella equina, *Fl. Dan.* 779.
Peziza equina, *Sowerby Fungi*, 352.
On horsedung in damp shady places.

LXIII. 305. OCTOSPORA. Hedwig. *Eight-seeds.*
Thallus soft, sessile, fibrous-cellular, naked; *sporidia* large, with 6 to 8 sporæ in each.

1. *Octospora atrata.* *Blackened eight-seeds.*
Thalli in clusters, hemispherical, hollowed out, black, edge greyish.

Peziza atra, *Persoon Syn.* 669.

On rotten trunks of trees; spring.

2. *Octospora leucoloma.* *White-edged eight-seeds.*
Thallus very small, flat, scarlet; edge snow-white, jagged.

Peziza cartilaginea, *Bolt. Fung.* 101.
Octospora leucoloma, *Hedwig Musc.* 13.

On clay banks, in mossy tufts; spring.

3. *Octospora cinerea.* *Grey eight-seeds.*
Thalli clustered, small, grey, rather gelatinous; edge upright, whiter.

Peziza cinerea, *Sowerby Fungi*, 634; *Persoon Syn.* 634.

On rotten trees; spring and autumn.

4. *Octospora hyalina.* *Transparent eight-seeds.*
Thalli in clusters, sessile, whitish, transparent, rather hairy.

Peziza hyalina, *Persoon Syn.* 655.

On rotten trunks of trees.

5. *Octospora inquinans.* *Dirtying eight-seeds.*
Thalli in clusters, large, black, dirtying; at last convex, reverse conical, outside wrinkled, brownish.

6. *Octospora sarcoides.* *Fleshlike eight-seeds.*
Thalli in tufts, fleshy, gelatinous, flesh-red; outside rather veiny.

Peziza tremelloidea, *Bull. Herb.* 410.
Peziza porphyria, *Batsch Fung.* 53.
Peziza hepatica, *Batsch Fung.* 138.
Peziza sarcoides, *Persoon Syn.* 633.
Tremella sarcoides, *Withering Arr.* 4, 84.

On rotten timber; autumn.

7. *Octospora lenticularis.* *Lenticular eight-seeds.*
Thallus convex, pressed, light-yellow; *stem* scarcely any, nipplelike, blackish.

Peziza flava, *Willden. Prodr.* 404.
Peziza aurea, *Sowerby Fung.* 150.

In woods, upon trees; late in autumn.

8. *Octospora lurida.* *Dark eight-seeds.*
Thallus sessile, greyish white, turned back; edge ochre-yellow, dark yellow.

Peziza lurida, *Persoon Syn.* 666.
Peziza pineti, *Batsch Fungi*, 201.

In fir plantations; on the fallen leaves.

LXIV. 306. SCODELLINA. Micheli. *Spread-cup.*
Thallus fleshy, membranaceous, brittle, sessile, hemispherical, spreading; outside scaly or mealy.

1. *Scodellina leporina.* *Hares-ear spread-cup.*
Thallus rust-colour, long, open on one side, ear-shape, inside smooth at bottom.

Peziza leporina, *Persoon Syn.* 6.

In fir plantations.

2. *Scodellina onotica.* *Ear spread-cup.*
Thallus one-sided, long, pale-rose, woolly at bottom, inside plaited, wrinkled.

Peziza leporina, *Sowerby Fungi*, 79.
Peziza onotica, *Persoon Syn.* 637.

In woods.

3. *Scodellina aurantiaca.* *Orange spread-cup.*
Thalli in tufts, one-sided, bent, often split; inside orange, outside white.

Helvella coccinea, *Bolt. Fung.* 100.
Peziza coccinea, *Bull. Herb.* 474.
Peziza Aurantia, *Persoon Syn.* 637.

At the foot of rotten oak-trees; autumn.

4. *Scodellina umbrina.* *Umber-brown spread-cup.*
Thalli large, in tufts, twisted, umber-brown.

Peziza umbrina, *Persoon Syn.* 638.

In grassy grounds, on sandy soils.

5. *Scodellina alutacea.* *Leathery spread-cup.*
Thalli in tufts; outside whitish; inside pale grey; *stem* very short, woolly, whitish.

Peziza alutacea, *Persoon Syn.* 638.

In woods.

6. *Scodellina badia.* *Bay spread-cup.*
Thallus nearly stemless, not divided; edge turned in, dark brown; externally rather olive.

Peziza cochleata, *Bolt. Fung.* 99.
Peziza badia, *Persoon Syn.* 639.
Mushroom flaps.

In woods and damp places.
Dried, and eaten in hashes and soups.

7. *Scodellina violacea.* *Violet spread-cup.*
Thallus flat, round, inside violet with black dots; edge and outside whitish, granulated.

Peziza violacea, *Bull. Herb.* 438; *Withering Arr.* 4, 390, not of Persoon.

On the bark of trees.

8. *Scodellina pyxidata.* *Box spread-cup.*
Thalli in small tufts, yellowish white; bottom rather tubercular on the inside.

Peziza Marsupium β, *Persoon Syn.* 640.
Elvella pyxidata, *Schæff. Germ.* 230.
Helvella vesiculosa, *Bolt. Fung.* 175.

In woods; summer and autumn, after rain.

9. *Scodellina vesiculosa.* *Bladderlike spread-cup.*
Thalli in tufts, large, olive brown, outside whitish yellow; mouth slightly connivent; *hymenium* separable from the outer bark.

Peziza vesiculosa, *Sowerby Fungi*, 4; *Persoon Syn.* 641.

On dunghills.

10. *Scodellina pustulata.* *Pustuled spread-cup.*
Thallus not divided, brown; outside branny-pustuled.

Octospora pustulata, *Hedwig Musc.* 6.
Peziza pustulata, *Persoon Syn.* 646.
Peziza cochleata β, *Batsch Fung.* 223.

In fir plantations, banks, and shady places.
Eaten up, while quite young, by some insect or caterpillar.

LXV. 307. CALYCINA. Esenbeck. *Funnel-stool.*
Thallus cuplike, pedicelled, dry, fibrous; surface woolly or bald: *barren ovaries* copious.

1. *Calycina firma.* *Firm funnel-stool.*
Thallus rather large, irregular, rather tough, watery, brown; *stem* long, growing black at the bottom; *cup* glass-shape, afterwards spreading, turned over.

Peziza ochroleuca, *Bolt. Fung.* 105; *Sowerby Fungi*, 115.
Peziza firma, *Persoon Syn.* 658.

On trees in shady places.

2. *Calycina citrina.* *Lemon funnel-stool.*
Thalli crowded, of various sizes, entirely lemon-yellow; *stem* thick, short, reverse-conical.

Octospora citrina, *Hedwig Musc.* 28.
Peziza citrina, *Sowerby Fungi*, 151; *Persoon Syn.* 663.

On dry trees and sticks, especially beech.

3. *Calycina pallescens.* *Pale funnel-stool.*
Thalli crowded, bald, whitish, afterwards pale brown; *stem* rather thick; *cup* nearly funnelshaped.

Peziza lenticularis, *Hoffm. Crypt.* 13.
Peziza pallescens, *Persoon Syn.* 664.

In woods.

4. *Calycina herbarum.* *Herb funnel-stool.*
Thalli in clusters, nearly sessile, whitish-brown, grows convex; *stem* very short.

Peziza herbarum, *Persoon Syn.* 664.

On the dry stem of large herbs.

5. *Calycina melastoma.* *Black-mouth funnel-stool.*
Thalli scattered or in clusters, large, thick, hard, reddish-brown, woolly; inside black, cracked when dry.

Peziza melastoma, *Sowerby Fungi*, 149.

On the roots of common heath or ling; spring.

LXVI. 308. DASYSCYPHUS. Esenb. *Rough-funnel.*

Thallus cuplike, soft, fibrous, cellular; surface woolly; *sporidia* large, with 6 sporæ in each.

1. *Dasyscyphus pulchellus.* *Handsome rough-funnel.*
Thalli scattered, nearly sessile, woolly, white; centre orange inclining to scarlet.

Peziza bicolor, *Sowerby Fungi*, 17.
Peziza pulchella, *Persoon Syn.* 653.

On dry branches of oak-trees, firs, &c.; spring.
Thallus closes up in dry weather.

2. *Dasyscyphus virgineus.* *Virgin rough-funnel.*
Thalli gregarious, white; *stem* rather long; *cap* hemispherical, open, villous.
Peziza nivea, *Sowerby Fungi*, 65.
Lachnum agaricinum, *Retz Scand. ed.* 2, 329.
Peziza virginea, *Persoon Syn.* 653.
On sticks and trunks of trees.

3. *Dasyscyphus patulus.* *Open rough-funnel.*
Thalli scattered, villous, white; centre flat, ochre-yellow.
Peziza patula, *Persoon Syn.* 654.
Peziza Abbotiana? *Sowerby Fungi*, 389.
On rotten oak-leaves; autumn.

4. *Dasyscyphus fuscescens.* *Brownish rough-funnel.*
Thallus very small, entirely brown.
Peziza fuscescens, *Persoon Syn.* 654.
On rotten beech-leaves in shady places; spring.

5. *Dasyscyphus sessilis.* *Squatted rough-funnel.*
Thallus very small; inside smooth, whitish; outside cottony, white.
Peziza sessilis, *Sowerby Fungi*, 389.
On rotten sticks.

6. *Dasycyphus tricolor.* *Three-colour rough-funnel.*
Thallus very small, inside pale yellow; edge thick, outside dark grey, white at bottom.
Peziza tricolor, *Sowerby Fungi*, 369.
On the trunks of trees.

LXVII. 309. MACROSCYPHUS. Esenb. *Long-funnel.*
Thallus cuplike, soft, cellular, rather fibrous; surface scaly or slightly bristly; *sporidia* with 6 or 8 sporæ in each, in a single row.

1. *Macroscyphus radicatus.* *Rooted long-funnel.*
Thallus brown, hemispherical, bald; *root* long, simple.
Peziza radicata, *Withering Arr.* 4, 381; *Persoon Syn.* 642.
In mountain pastures; spring.

2. *Macroscyphus Sowerbei.* *Sowerby's long-funnel.*
Thalli large, in tufts; inside yellowish; outside cottony, white; *root* long, thick, cottony, white.

Peziza radiculata, *Sowerby Fungi*, 114.
Peziza Sowerbea, *Persoon Syn.* 642.
In gardens.

3. *Macroscyphus cereus.* *Waxlike long-funnel.*
Thalli in tufts, large; *stem* thick, cottony, reverse-conical; *cup* nearly funnelshape, turned back, yellowish.
Peziza cerea, *Sowerby Fungi*, 3; *Persoon Syn.* 643.
In hot-houses.

4. *Macrosc. acetabuliforme.* *Eggcupshape long-funnel.*
Thallus earthy-brown, eggcupshape, stalked; *cup* angular on the outside; veins branched.
Peziza Acetabulum, *Sowerby Fungi*, 59; *Persoon Syn.* 643.
In shady places.

5. *Macroscyphus tuberosus.* *Tuberous long-funnel.*
Root tuberous, irregular; *stem* very long; *cup* rather small, funnelshape, chestnut or bay.
Peziza tuberosa, *Dickson Crypt.* 2, 25; *Sowerby Fungi*, 63; *Persoon Syn.* 644.
In woods; April.

6. *Macroscyphus perennis.* *Perennial long-funnel.*
Thalli in tufts, stalked; *root* tuberous, black, perennial; *cup* funnelshape, reddish brown.
Peziza Tuba, *Batsch Fung.* 121.
Peziza perennis, *Persoon Syn.* 644.
In woods; April.

7. *Macroscyphus macropus.* *Long-stalked long-funnel.*
Thallus large; *stem* very long, smooth or pitted; *cup* hemispherical, inside mouse-colour, outside grey.
Peziza macropus, *Bolt. Fung.* 96; *Persoon Syn.* 645.
In woods; autumn.

8. *Macroscyphus coccineus.* *Scarlet long-funnel.*
Thallus stalked, rather large, topshape or funnelshape, inside scarlet; outside slightly cottony, whitish; edge generally crenate.
Peziza coccinea, *Bolt. Fung.* 104; *Persoon Syn.* 652.
Peziza poculiformis, *Hoffm. Crypt.* 2, 27.
Peziza epidendra, *Bull. Herb.* 467; *Sowerby Fungi*, 13.
On dry sticks in woods; on mountains on the ground; March.

LXIX. 310. HYMENOSCYPHUS. *Fruit-cup.*

Thallus cuplike, thin, fibrous cellular, bald; *sporidia* clubshape, with 8 sporæ in each, in two rows.

1. *Hymenoscyphus rapæformis.* *Rapelike fruit-cup.*
Thallus waxlike, light brown growing nearly chestnut, thin, brittle, bald; *stem* long, with rooting fibres.

Peziza Rapula, *Persoon Syn.* 654.

On the ground.

2. *Hymenoscyphus fibulæformis.* *Buttonshape fruit-cup.*
Thallus stalked, cartilaginous, above yellowish white; beneath dark brown; *stem* dark brown.

Peziza Fibula, *Bolt. Fung.* 176; *Persoon Syn.* 660.

On elm-trees.

3. *Hymenoscyphus tubæformis.* *Trumpetshape fruit-cup.*
Thallus stalked, entirely yellow; *stem* threadlike; *cup* flat-edged.

Peziza Tuba, *Bolt. Fung.* 106; *Persoon Syn.* 660.

On rotten trees in bogs.

4. *Hymenosc. infundibuliformis.* *Funnelshape fruit-cup.*
Thallus entirely pale brown; *stem* thickish, stiff, rather short; *cup* nearly funnelshape; *edge* upright.

Peziza Calyculus, *Sowerby Fungi*, 116; *Persoon Syn.* 660.
Peziza Infundibulum? *Batsch. Fung.* 147.

On rotten trunks of trees.

5. *Hymenoscyphus fructigenus.* *Bearing fruit-cup.*
Thalli in clusters or scattered; *stem* long, rather bent, narrowest at bottom; *cup* nearly funnelshape, pale brown grows reddish.

Peziza fructigena, *Sowerby Fungi*, 117; *Persoon Syn.* 660.

On acorns and other fruits; summer and autumn.
Used, in decoction, in hooping cough.

6. *Hymenoscyphus radiatus.* *Radiated fruit cup.*
Thallus small, stalked, whitish turning pale brown; edge toothed; *teeth* bristlelike, upright.

Peziza coronata, *Bull. Herb.* 411.
Peziza armata, *Roth Cat. Bot.* 1, 140.
Peziza radiata, *Persoon Syn.* 662.
Peziza inflexa, *Sowerby Fungi*, 306.

In woods, on sticks and stems; summer.

7. *Hymenoscyphus cyathoideus.* *Cyathuslike fruit-cup.*
Thalli in clusters, whitish or pale brown; *stem* long, rather thicker at bottom; *cup* glass-shape, unarmed, rather slender.

Peziza cyathoidea, *Bull. Champ.* 250; *Persoon Syn.* 662.
Peziza solani, *Persoon Obs.* 2, 80.

On dry stems of large herbs; autumn.

8. *Hymenoscyphus tenellus.* *Very-tender fruit-cup.*
Thalli in clusters, very minute, funnelshape, tender, snow-white growing yellow; *stem* threadlike.

Peziza tenella, *Batsch Fungi*, 150.

On dry stems of large herbs; autumn.

9. *Hymenoscyphus chrysocomus.* *Gold-head fruit-cup.*
Thalli in clusters, globular becoming flat, dull yellow, smooth, brittle, thin.

Peziza chrysocoma, *Sowerby Fungi*, 152.

On bits of wood, especially the under side.

Q. ASCOBOLIDEÆ. *Thallus* fleshy; *hymenium* smooth, expanded over the surface; *sporidia* clubshape, intermixed with barren filaments, flung out with force, usually containing three sporæ in each.

LXIX. 311. ASCOBOLUS. Persoon. *Spring-cup.*
Thallus dishlike, or reverse-conical, fleshy.

Ascobolus furfuraceus. *Branny spring-cup.*
Thalli in clusters, rather concave, greenish; outside branlike.

Peziza stercoraria, *Bull. Champ.* 256; *Sowerby Fungi*, 18.
Ascobolus furfuraceus, *Persoon Syn.* 676.

On cowdung; late in autumn.

Fam. XII. 12. LYTOTHECEÆ, Persoon. *Fungorum pars*, Linn. *Fungi pistillares*, Esenb.
Thallus fleshy, clubshape, rising from a volva; *hymenium* expanded, superficial, deliquescing into a slime containing the sporæ.

Cup hemispherical, above hairy;
involucrum triple ..... BATARREA. 312.

Cap joined to the stem, tuberculate;
involucrum double ..... ITHYPHALLUS. 313.
Cap cellular, networklike, bare;
involucrum double ..... PHALLUS. 314.

I. 312. BATARREA. Persoon. *Batarrea.*

Thallus stipitate; *volva* triple, filled with mucilage; *stem* smooth; *cap* hemispherical, bellshape, with sporiferous flocks under the crown.

Batarrea phalloides. *Phalluslike batarrea.*
Thallus brown.
Lycoperdon phalloides, *Dickson Crypt.* 1, 24; *Sowerby Fungi*, 390.
Batarrea phalloides, *Persoon Syn.* 129.
On sandy banks.
Stem at first short, then springing up on a sudden to a foot high.

II. 313. ITHYPHALLUS. *Dog's-acorn.*

Thallus stipitate; *volva* double, the outer large; *stem* networked; *cap* ovate, tubercled, confluent into the stem; *indusium* 0.

Ithyphallus inodorus. *Scentless dog's-acorn.*
Stem cellular; *cap* ovate, tip blunt, not perforated; edge undivided.
Phallus caninus, *Curt. Lond.* 235; *Persoon Syn.* 245.
Phallus inodorus, *Sowerby Fungi*, 330.
On rotten wood; autumn.

III. 314. PHALLUS. Micheli. *Acorn-stool.*

Thallus stipitate; *volva* double, the outer large; *stem* networked; *cap* ovate, not cut, free from the stem, networked; *indusium* 0.

1. *Phallus impudicus.* *Immodest acorn-stool.*
Stem pitted obliquely; *cap* cellular, perforated at top.
Fungus phalloides, *Raii Syn.* 12, 8.
Phallus impudicus, *Lin. S. P.* 1648; *Bolt. Fung.* 92.
Phallus fœtidus, *Sowerby Fungi*, 242.
Stink-horns.
In shady woods; autumn.
Volva egglike; *cap* dissolves into a very fœtid slime, containing the sporæ, greedily devoured by flesh-flies.—

Plant oftener smelt than seen, the fetor being so like that of carrion causing persons to avoid the spot, yet when near the nostrils it has only the pungent odour of spirit of hartshorn; used by some Dutch villagers as a poultice in rheumatism, but infects the whole house for some days with its disagreeable odour.

2. *Phallus cancellatus.* *Rail-work acorn-stool.*
Stem cylindrical, smooth; *cap* networked, not perforated.
Phallus cancellatus, *Persoon Syn.* 243.
On barren mossy grounds.
Odour like that of the orchideæ.

Subseries I. B. PLANTÆ CELLULOSÆ FOLIOSÆ.

Muscorum et algarum pars, Linnæus. *Cryptogamia monoecia* and *dioecia*, Stokes. *Cryptogamæ calyptratæ*, Mohr.

Plants having true foliaceous expansions or leaves mostly distinct, rarely united into a broad herbaceous frond, affixed to their place of growth by fibrous roots by which they absorb their nourishment, propagated by budlike sporæ, or by seeds which are enclosed in capsules covered with calyptræ.

FAMILIES.

Capsule valvular; *columella* 0; *operculum* 0; *seeds* with elaters intermixed HEPATICÆ. 13.
Capsule operculated; *columella* distinct; *elaters* 0 ..... MUSCI. 14.

Fam. I. 13. HEPATICÆ. Jussieu. *Algarum pars*, Lin. *Cryptogamia dioecia*, Stokes. *Calyptratæ deoperculatæ*, Mohr.

Flowers unisexual.—MALE. *Anthers* oblong or sphærical, networked, bursting irregularly, either pedicelled in the axillæ of the perichetial leaves, or sessile on the frond or on a peculiar receptacle; *pollen* granular.—FEM. terminal, axillary, lateral or marginal; *ovaries* many, clustered, seldom more than one fertile, covered with a calyptra ending in a style, and surrounded generally with a calyx; *calyx* single or double, rarely 0, mostly surrounded with perichetial leaves; calyptra bursting and emitting the capsule; *capsule* mostly pedicelled, valvular, rarely bursting irregularly; valves 2, 4, 8 or 16, equal; *columella* 0; *operculum* 0; *seeds?* spherical, intermixed with elaters; *elaters* membranaceous, tubular, containing a single or double helix; *helices* twisted spirally. — *Plants* monoicous or dioicous, small, frondose or leafy; revive quickly after being dried by absorption of moisture; *leaves* undivided or simply cut, ribless, mostly bald; texture loosely cellular; *sporidia* budlike, roundish or lenticular, scattered on the leaves and frond, or collected in origomes of various shapes.

A. *Fruit solitary; capsule sessile, bursting; calyx* 0.
Ricciadeæ.

Thallus starlike ..... RICCIA. 315.

B. *Fruit solitary; capsule sessile, bursting; calyx* 2-*valved.*
Targionideæ.

Calyx closed above ..... TARGIONIA. 316.
Calyx perforated at top ..... SPHÆROCARPUS. 317.

C. *Fruit solitary; capsule pedicelled, linear; calyx tubular.*
Anthocerideæ.

Thallus oblong, lobed ..... ANTHOCEROS. 318.

D. *Fruit on a common receptacle; capsules pedicelled, roundish.* Marchantiadeæ.

Recept. crosslike; lobes tubular;
caps. 4-valved; *origomes* moonlike... STAUROPHORA. 322.
Recept. hemispherical; *calyx* 0;
caps. many-valved; *calyptra* tubular CYATHOPHORA. 321.
Recept. hemispherical; *calyx* 0;
caps. 4 or 5-valved; *calyptra* tubular ... STROZZIUS. 320.
Recept. peltate, lobed; *calyx* tubular;
capsule 6 or 8-lobed. ..... MARCHANTIA. 319.

E. *Fruit solitary; capsule pedicelled, roundish; calyx* 1-*leafed or* 0. Jungermannideæ.

Capsule bursting irregularly;
calyx simple; *helix* double ..... MAUROCENIUS. 328.
Caps. seeming 4-valved, irreg. cellular;
pedic. jointed; *cal.* 5-angular; *hel.* double
PANDULPHINIUS. 330.
Caps. seeming 4-valved, irreg. cellular;
pedic. jointless; *cal.* compressed;
helix double ..... CAVENDISHIA. 332.
Capsule 4-valved; *calyx* 0;
helix single; *calyptra* exserted ..... SCALIUS. 338.
Capsule 4-valved; *calyx* 0;
helix double; *perich. leaves* distinct ..... CESIUS. 339.
Capsule 4-valved; *calyx* 0;
helix double; *perich. leaves* united .... HERBERTUS. 340.
Capsule 4-valved; *calyx* double;
helix double ..... ~~HERVERIUS.~~ 324.
Pallavicinius

Capsule 4-valved; *calyx* lateral; *helix* double; *valves* of capsule spiral ..... KANTIA. 342.

Capsule 4-valved; *calyx* lateral; *helix* double; *valves* of capsule straight .... LIPPIUS. 341.

Capsule 4-valved; *calyx* basillary, triangular; mouth contracted; *helix* double ..... MARCHESINIUS. 331.

Caps. 4-valved; *cal.* basillary, compressed; mouth slit; *hel.* double .... MARTINELLIUS. 333.

Caps. 4-valved; *cal.* basillary, compressed; mouth 2-lipped; *hel.* double ..... MYLIUS. 334.

Caps. 4-valved; *cal.* basillary, ovate, immersed; mouth acute; *hel.* double ..... BLASIA. 327.

Caps. 4-valved; *cal.* basillary, ovate, imbedded; mou. open, toothed; *hel.* double NARDIUS. 335.

Caps. 4-valved; *cal.* basillary, ovate, exserted; mo. circular, mostly toothed; *helix* double ..... JUNGERMANNIA. 336.

Caps. 4-valved; *cal.* basillary, ovate, exserted; mo. slit on one side; *hel.* doub. .. ~~DONNIA.~~ 337.

Caps. 4-valved; *cal.* basillary, bell-like, very short; mo. expanded; *hel.* doub. ~~PALLAVICINIUS.~~ 326.

Caps. 4-valved; *cal.* basill. bellshape, very short; mo. expanded; *hel.* single, ends slender ..... RICCARDIUS. 323.

Caps. 4-valved; *cal.* basillary, 2-lobed, short; mouth expanded; *helix* single, ends smaller ..... ~~PAPA.~~ 325.

Caps. 4-valved; *cal.* basill. rev. heartshape, long; mouth contracted; *helix* single, ends expanded ..... SALVIATUS. 329.

A. RICCIADEÆ. Male ....? Fem. *Fruit* solitary; *capsule* spherical, sunk, opening irregularly? crowned with the exserted style.

I. 315. RICCIA. Micheli. *Riccio.*

Fruit solitary, immersed in the frond, spherical; *thallus* reverse-heartshape or forked, radiating from a centre, grooved on the upper surface.

1. *Riccia latifolia.* *Broad-leaved riccio.*

Thallus bluntly nicked at the tips, dotted in network.

Riccia minor latifolia pinguis, aspergine crystallina perfusa, *Micheli Nov. Gen. Pl.* 107, 1.

Riccia glauca, *Purton Midland Flora*, 5.

On damp sandy places; annual; Nov. and Dec.

2. *Riccia glauca.* *Greenish riccio.*

Thallus oblong, forked, lobes blunt, dotted in network.

Lichen sive Hepatica foliis crassis, rutæ murariæ aut chamædryos foliis laciniatis quodammodo similis, *Raii Syn.* 116, 1.

Riccia glauca, *Lin. S. P.* 1605; *Engl. Bot.* 2546.

On moist sandy heaths; annual.

3. *Riccia minima.* *Smallest riccio.*

Thallus forked, lobes pointed, very slightly networked.

Lichen omnium minimus, foliolis scissis, super terram expansis, *Dillen in Raii Syn.* 115, 2

Riccia minima, *Lin. S. P.* 1605.

Riccia bifurca, *De Cand. Fl. Gall.* 1127.

On inundated sandy places.

4. *Riccia natans.* *Swimming riccio*

Thallus reverse-heartshape; beneath ciliated, fibrous.

Lichen parvus vernus cordiformis, ima parte fimbriatus, lentis palustris modo aquæ innatans, *Dillen in Raii Syn.* 116, 2.

Riccia natans, *Lin. Syst. Nat.* 2, 708; *Engl. Bot.* 252.

Floating on pools.

β. *ovata.* *Thallus* reverse-ovate, rounded at the tip.

5. *Riccia? spuria.* *Bastard riccio.*

Thallus membranaceous, lobed, pellucid; fructification beneath the sinuses of the lobes, solitary, exserted, top-shape, toothed.

Riccia spuria, *Dickson Crypt.* 4, 20.

On turf bogs in mountains.

B. TARGIONIDEÆ. Male ....? Fem. *Calyx* globular, pitchershape, 2-valved; *capsule* nearly sessile, enclosed in the calyx, globular, bursting irregularly at the tip; *seeds* and *elaters* many.—Frondose.

II. 316. TARGIONIA. Micheli. *Targioni.*

Calyx globular, from the under side of the extremities of the thallus, closed, becoming 2-valved.

Targionia hypophylla. *Underlying targioni.*

Thallus dark-green, oblong ovate, beneath scaly, purplish.

Lichenastrum capitulo oroboide, *Dillen in Raii Syn.* 110, 2.

Targionia hypophylla, *Lin. S. P.* 1603; *Engl. Bot.* 287.

On heaths and sides of ditches; perennial; March to May.

III. 317. SPHÆROCARPUS Micheli. *Ball-fruit.*

Calyx on the upper surface of the frond, topshape, 2-valved; *tip* truncated, perforated.

Sphærocarpus Michelii. *Micheli's ball-fruit.*

Thallus nearly orbicular; *fruit* crowded together.

Sphærocarpus terrestris minima, *Micheli N. Gen. Pl.* 4, 1.
Sphærocarpus terrestris, *Eng. Bot.* 299.
Targionia Sphærocarpus, *Lin. S. P.* 1603.

In clover fields on sandy loams.

C. ANTHOCERIDEÆ. Male. *Anthers* sunk in the thallus. Fem. solitary; *calyx* tubular, 1-leafed, tip cut; *capsule* pedicelled, linear, 2-valved; *seeds* and *elaters* numerous, entangled together; *origomes* cupshape, sunk.—Frondose.

IV. 318. ANTHOCEROS. Micheli. *Flower-horn.*

Calyx tubular; *capsule* linear, 2-valved.

1. *Anthoceros punctatus.* *Dotted flower-horn.*

Thallus undivided, sinuated, edge waved.

Lichenastrum gramineum pediculo et capitulo oblongo, bifurco, *Dillen in Raii Syn.* 109, 1.
Anthoceros punctatus, *Lin. S. P.* 1606; *Engl. Bot.* 1537.

On moist sandy heaths; perennial; August to April.

2. *Anthoceros lævis.* *Smooth flower-horn.*

Thallus undivided, flat, edge scarcely waved.

Anthoceros lævis, *Lin. S. P.* 1606; *Engl. Bot.* 1538.

On damp shady places.

3. *Anthoceros multifidus.* *Many-cut flower-horn.*

Thallus bipinnately cut, lobes linear.

Anthoceros multifidus, *Dickson Crypt.* 3, t 3.

On damp shady places.

D. MARCHANTIADEÆ. Male. *Anther* oblong, imbedded in a flat, sessile or peduncled fleshy disk. Female. *Receptacle* peduncled, peltate; *fructification* under the receptacle; *calyx* tubular, 1-leaf or 0; *capsule* slightly pedicelled, 4 to 8-valved or toothed; *seeds* globular; *elaters* narrow at each end; *helices* double; *buds* lenticular, variously enclosed in origomes.—*Plants* frondose, networked, areoles ending in a pore at the top.

V. 319. MARCHANTIA. Micheli. *Marchant.*

Male. *Receptacle* of the anther peduncled, peltate, above wrinkled.—Fem. *Receptacle* of the capsule stellately lobed, lobes deep; *calyx* tubular, toothed; *calyptra* tubular; *capsule* globular, tip 5 to 8-lobed, lobes revolute; *elaters* tubular; *helices* double; *origomes* tubular, reverse-conical.

1. *Marchantia latifolia.* *Broad-leaved marchant.*

Thallus oblong, dark green, shining, in network; areoles porous; lobes blunt; *receptacle* of the capsule with round rays.

Lichen petræus latifolius sive Hepatica fontana, *Raii Syn.* 115, 1.
Marchantia polymorpha, *Lin. S. P.* 1603; *Engl. Bot.* 219.
Marchantia umbellata, *Scop. Carn.* 2, 354. Male.
Marchantia stellata, *Scop. Carn.* 2, 353. Female.

On damp places; perennial; midsummer.

2. *Marchantia minor.* *Small marchant.*

Thallus oblong, opake, scarcely in network, lobes blunt; *receptacle* of the capsule with round rays.

Marchantia polymorpha β, *Engl. Bot.* 210.

On the sides of houses; perennial; midsummer.

VI. 320. STROZZIUS. *Strozzi.*

Dioicous. Male..... Fem. *Receptacle* of the capsules hemispherical; *calyx* 0; *calyptra* tubular; *capsule* globular, tip 4 or 5-toothed? 4 or 5-valved; *receptacle* of the buds orbicular, flattish.—*Pedicells* from beneath the lobes of the thallus.

1. *Strozzius hemisphericus.* *Hemispherical strozzi.*

Receptacle of the capsules hemispherical, lobed; lobes 5 or 6, blunt; *capsules* 5 or 6, tip 4 or 5-valved.

Lichen pileatus parvus, foliis crenatis, *Dillen in Raii Syn.* 114, 2.
Marchantia hemispherica, *Lin. S. P.* 1604; *Engl. Bot.* 503.

On banks of rivers and ditches; perennial; Mar. Apr.

2. *Strozzius conicus.* *Conical strozzi.*

Receptacle of the capsules ovate, conical, rather pointed, nearly 5 or 7-lobed; *capsules* 5 to 7; tips 4 or 5-valved.

Lichen petræus pileatus, *Raii Syn.* 114, 1; *Park* 1314, 1315.
Marchantia conica, *Lin. S. P.* 1604.

On damp shady places; perennial; March and April.

VII. 321. CYATHOPHORA. *Cupbearer.*

Dioicous. MALE .... FEM. *Receptacle* of the capsules hemispherical; *calyx* 0; *calyptra* tubular; *capsules* globular, tip 4 or 5-toothed, many-valved, valves linear; *receptacle* of the buds orbicular, flattish.—*Pedicells* from beneath the lobes of the thallus.

Cyathophora angustifolia. *Narrow-leaved cupbearer.*

Receptacle of the capsules hemispherical, 4-lobed; *capsules* 4; *thallus* membranaceous, semi-pellucid; edge sinuated.

Marchantia androgyna, *Lin. S. P.* 1605.

On damp places.

VIII. 322. STAUROPHORA. Esenbeck. *Crossbearer.*

Monoicous. MALE .... FEM. *Receptacle* of the *capsules* 4-cut, crosslike; *calyx* 0? *capsules* ovate, 4-valved, valves spreading; *receptacles* of the buds crescentlike, flattish.—*Peduncle* of the fruit from the upper face of the thallus, surrounded by a tubular perithecium.

Staurophora pulchella. *Pretty crossbearer.*

Thallus oblong, forked, light green, opake, veinless.

Lichen sive Hepatica lunulata, ἐπιφυλλόκαρπος, *Raii Syn. ed.* 2; 41, 6.
Lichen pileatus parvus, capitulo crucis instar se expandente, *Dillen in Raii Syn.* 115, 2.
Marchantia cruciata, *Lin. S. P.* 1604.
Staurophora pulchella, *Esenb. in Berl. Mag.*

On shady places and garden walks; perennial; June to October.

E. JUNGERMANNIDEÆ. Male. *Anther* round, sessile, or globular, pedicelled, axillary. Female solitary: *calyx* tubular, single, double, sometimes 0; *capsules* pedicelled, 4-valved, very rarely valveless and bursting irregularly; *elaters* tubular; *helices* single or double; *buds* oblong, scattered.—*Thallus* frondose or leafy; areoles not ending in a pore.

IX. 323. RICCARDIUS. *Riccardi.*

..... MALE. *Anthers* spherical, on the upper face of the thallus, imbedded in it, or surrounded by a perithecium. FEM. from near the edge of the lower face; *calyx* single, bellshape, very short; mouth expanded, lobed,

fringed; *calyptra* exserted; *capsule* oblong, 4-valved; valves streaked lengthways and crossways; *elaters* in tufts, pencilshape, on the tip of the valves; *helices* single, spindleshape.—*Thallus* fleshy, ribless, compressed, branched.

1. *Riccardius multifidus.* *Many-cut riccardi.*

Thalli in crowded tufts, linear, ribless, compressed, branched pinnately; *calyx* marginal; *calyptra* tuberculated.

Lichenastrum ambrosiæ divisura, *Dillen Musc.*

Jungermannia multifida, *Lin. S. P.* 1602; *Engl. Bot.* 186; *Hooker Jung.* 45.

Jungermannia palmata, *Hedw. Theor.* 159.

On moist heaths and ditch sides; spring.

β. *sinuatus.* *Thallus* broad, branched; edge sinuated.

Ulva palustris foliis ivæ moschatæ instar divisis, *Dillen in Raii Syn.* 64, 10.

Jungermannia sinuata, *Dicks. Crypt.* 2, 16; *Engl. Bot.* 1476.

2. *Riccardius pinguis.* *Fat riccardi.*

Thallus oblong, ribless, lying down, above flattish, beneath swollen; branched vaguely, edges sinuated; *calyx* under the edge; *calyptra* smooth.

Jungermannia pinguis, *Lin. S. P.* 2, 1602; *Engl. Bot.* 185; *Hooker Jung.* 46.

In moist shady places and shallow pools; summer.

β. *angustior.* *Thallus* long, nearly linear, simple or rather pinnately branched.

3. *Riccardius dichotomus.* *Two-forked riccardi.*

Thallus linear, compressed, forked, branched.

Ulva palustris furcata, angustioribus et firmioribus segmentis, *Dillen in Raii Syn.* 63, 9.

Riccia fluitans, *Lin. S. P.* 1686; *Engl. Bot.* 251.

In ditches, stagnant waters, and damp places.

X. 324. ~~HERBERTUS.~~ *Pallavicinia* *Herbert.* v. 3

Dioicous. MALE. *Anthers* roundish, dispersed among the perigonial scales; *pedicells* short; *perigonium-scales* jagged.—FEM. *Calyx* from the upper surface of the midrib, double; outer short, jagged, herbaceous; inner nearly cylindrical, membranaceous; mouth cut on one side, rather toothed; *capsule* oblong, 3 or 4-valved; valves streaked lengthwise and crosswise; *seeds* spherical; *elaters* long, attached to the inner valves; *helices* double, closely twisted. —*Thallus* frondose, thin, mid-ribbed.

Pallavicinia

1. ~~*Herbertus*~~ *Hibernicus.* *Irish herbert.*

Thallus oblong, ribbed, forked, edge not in the least divided; *outer calyx* short, jagged; inner longly exserted, ovate, cylindrical; *calyptra* much shorter than the inner calyx.

Jungermannia Hibernica, *Hooker Jung.* 78.

Among mosses; April.

Pallavicinia

2. ~~*Herbertus*~~ *Lyellii.* *Lyell's herbert.*

Thalli in loose tufts, oblong, ribbed, rather branched, edge scarcely cut; *outer calyx* short, jagged, toothed; inner longly exserted, cylindrical, slightly plaited; *calyptra* rather longer than the inner calyx.

Jungermannia Lyellii, *Hooker Jung.* 77.

On bogs; May.

XI. 325. HERVERUS. *Herver.*

Dioicous. MALE. *Anthers* in a perigonium, ovate, spherical, clustered; *pedicells* very short, attached to the mid-rib.—FEM. *Calyx* on the lower face of the mid-rib, single, scalelike, becoming 2-lobed; lobes deeply conduplicate, fringed; *calyptra* reverse-ovate, spinous, irregularly torn; *capsule* ovate, 4-valved, valves streaked lengthways and across, twisted; *seeds* spherical; *elaters* long, on the top of the valves; *helices* single, small at each end.—*Thallus* frondose, mid-ribbed.

1. *Herverus furcatus.* *Forked herver.*

Thallus linear, ribbed, forked, membranaceous, above smooth, beneath and on the edge hairy.

Ulva saxatilis furcata, latiusculis et tenerioribus segmentis, *Raii Syn.* 63, 8.

Jungermannia furcata, *Lin. S. P.* 1602; *Engl. Bot.* 1632; *Hooker Jung.* 55 & 56.

On rocks, heaths, and trees; October to May.

β. *elongatus.* *Thallus* large, long, streaked.

γ. *æruginosus.* *Thallus* broad, tip dilated, very blunt.

2. *Herverus pubescens.* *Downy herver.*

Thallus linear, ribbed, forked, membranaceous, all over downy.

Jungermannia furcata, *Leers Herborn*, 25.
Jungermannia pubescens, *Schrank Salisb.* 231; *Hooker Jung.* 73.
Jungermannia tomentosa, *Hoffm. Germ.* 2, 91.

On wet alpine rocks.

XII. 326. PAPA. *Papa.*

Monoicous or dioicous, MALE. *Anthers* spherical, solitary; *pedicells* very short, deeply imbedded in the upper face of the mid-rib. FEM. *Calyx* on the upper face of the mid-rib, rather cylindrical; mouth rather dilated, cut, toothed; *calyptra* exserted; *capsule* spherical, 4-valved, valves streaked lengthways and across, bent back; *elaters* long, pencilshape, in tufts, attached to the base of the capsule; *helices* double, much twisted; *seeds* irregular.—*Thallus* rather membranaceous, scarcely mid-ribbed.

Papa epiphylla. *Overleaf papa.*

Thallus oblong, slightly ribbed, rather membranaceous, cut here and there, edge not cut, or sinuated; *fruit* from near the tips.

Lichenastrum capitulis rotundatis, e foliorum medio enascentibus, *Raii Syn.* 110, 3.

Jungermannia epiphylla, *Lin. S. P.* 1602; *Engl. Bot.* 771; *Hooker Jung.* 47.

In wet shady places; spring and autumn.

β. *longifolia.* *Thallus* long, simple, or with a few shoots.

Jungermannia endiviæfolia, *Dickson Crypt.* 4, 19.

Jungermannia epiphylla β, *Lamarcke Encycl. Bot.* 3, 286.

γ. *furcigera.* *Thallus* with narrow-forked shoots at the tips, twigs forked.

XIII. 327. BLASIA. Micheli. *Blasius.*

Dioicous. MALE. *Anthers* elliptical, sessile, 2 or 3, imbedded in the upper face of the mid-rib, covered by the cuticle. FEM. *Calyx* from the upper part of the mid-rib, oblong, lanceolate, enclosed in the thallus; mouth acute; *calyptra* enclosed; *capsule* ovate globular, 4-valved; valves ovate, streaked lengthways and across; *elaters* long; *helices* double, closely twisted; *seeds* girt with a pellucid border; *buds?* spherical, gelatinous, enclosed in an ovate receptacle, placed on the upper face of the mid-rib, and ending in a long cylindrical tube. — *Thallus* branched, beneath with tufted scales.

Blasia pusilla. *Dwarf blasius.*

Thallus oblong, ribbed, lobed, branched; beneath scaly, scales toothed.

Mnium lichenis facie, *Dillen Musc.* 237.

Blasia pusilla lichenis pyxidati facie, *Micheli N. G. P.* 14, 7.

Blasia pusilla, *Lin. S. P.* 1605, *Engl. Bot.* 1328.

Jungermannia Blasia, *Hooker Jung.* 82, 83, and 84.

On moist sandy alpine heaths; spring.

XIV. 328. MAUROCENIUS. *Mauroceni.*

Monoicous. MALE. *Anthers* spherical, pedicelled, scattered on the upper face of the stem, uncovered.—FEM. *Calyx* terminal, simple, bellshaped, jagged, surrounded by five bracteæ; *peduncles* continued; *capsule* spherical, very thin, networked, bursting irregularly; *seeds* spherical, rough; *elaters* short; *helices* double.--*Leaves* 2-rowed, many-cut, base parallel to the stem; *stipules* 0.

Maurocenius pusillus. *Tiny mauroceni.*

Stem lying down, nearly simple; *leaves* bluntly crenated.

Lichenastrum minimum capitulis nigris lucidis, *Dillen in Raii Syn.* 110, 5.

Jungermannia pusilla, *Lin. S. P.* 1602; *Engl. Bot.* 1175; *Hooker Jung.* 69.

Jungermannia angulosa, *Dickson Crypt.* 1, 7.

Jungermannia pygmæa, *Wulf in Berl. Mag.* 8, 151.

On moist banks in clayey soils; October to May.

Plant matted; *roots* deep purple; *perichetial leaves* 0; *odour* similar to calamus aromaticus.

XV. 329. SALVIATUS. *Salviati.*

Monoicous. MALE. *Anthers* spherical, olive-green, pedicelled, scattered, axillary; pedicells long, streaked across. —FEM. *Calyx* terminal or lateral, reverse ovate or reverse-heartshape, compressed below, triangular; mouth contracted, depressed; *peduncle* short; *capsule* spherical, 4-valved; internal base orbicular; valves regularly networked; *seeds* spherical, tuberculated; *elaters* tubular, attached to the tip of the valves; *helix* single.—*Thallus* creeping, branched; *leaves* 2-rowed, stipuled, 2-cut, segments unequal, conduplicate, lower segment smallest, sack-like, pressed close, inflated.

1. *Salviatus tamarisci.* *Tamarisk salviati.*

Stem pinnately branched; *leaves* upper lobes ovate, roundish, lower lobes reverse-ovate; *stipules* rather square, nicked, edge turned over; *fruit* terminal, on the branches; *calyx* reverse-ovate, smooth.

Lichenastrum imbricatum, tamarisci Narbonensis facie, *Dillen Musc.* 73, 31.

Jungermannia tamarisci, *Lin. S. P.* 1600; *Hooker Jung.* 6.

Jungermannia rubiginosa, *Neckar Pal.* 2, 447.

Jungermannia dilatata, *Roth Germ.* 3, 406.

Jungermannia nigricans, *Lamarcke Encycl.* 3, 283.

On exposed alpine hills.

2. *Salviatus dilatatus.* *Dilated salviati.*

Stem irregularly branched; *leaves* upper lobes roundish, lower lobes rounded; *stipules* rounded, flat, nicked; *fruit* terminal; *calyx* reverse-heartshape, tuberculate.

Lichenastrum imbricatum minus, *Raii Syn.* 111, 11.
Jungermannia dilatata, *Lin. S. P.* 1600; *Hooker Jung.* 5.
Jungermannia tamariscifolia, *Engl. Bot.* 1086.

On the trunks of trees; winter.

3. *Salviatus Hutchinsiæ.* *Hutchins' salviati.*

Stem branched; *leaves* upper lobes spinous, serrated; lower lobes minute, mostly toothed at the base; *stipules* rounded, ovate, slightly serrate, acutely 2-cut; *fruit* lateral; *calyx* reverse-heartshape, smooth.

Jungermannia Hutchinsiæ, *Hooker Jung.* 1; *Engl. Bot.* 2480.

On the side of mountain rivulets.

XVI. 330. PANDULPHINIUS. *Pandulphini.*

Monoicous. Male. *Anthers* spherical, pedicelled, solitary in the axillæ of the perichetial leaves.—Fem. *Calyx* lateral, ovate or reverse-ovate, slender at bottom, 5-cornered; mouth contracted, elevated, tubular, toothed; *peduncle* short, jointed; *capsule* spherical, seeming 4-valved; valves upright, irregularly networked; *seeds* roundish; *elaters* tubular, membranaceous, dilated at the end, adhering to the tip of the valves; *helices* double, slightly twisted.—*Thallus* creeping; *leaves* 2-rowed, stipuled, two-cut, segments unequal, conduplicate, lobes rolled in; *stipules* nicked.

1. *Pand. calyptrifolius.* *Calyptra-leaved pandulphini.*

Stem branched; *leaves* upper lobes calyptriform; lower lobes bluntly 4-sided, rolled up; *calyx* oblong, top flat, 5-toothed; mouth minute, contracted.

Jungermannia calyptrifolia, *Hooker Jung.* 43.

On the stems of dwarf furze, near the ground.

2. *Pand. minutissimus.* *Minutest pandulphini.*

Stem irregularly branched; *leaves* upper lobe hemispherical, lower lobe extremely minute; *stipules* ovate, rounded, 2-cut; *calyx* reverse-ovate, rounded, 5-sided.

Lichenastrum quod Jungermannia omnium minima, seu vix conspicua, serpylli aut herniariæ foliis auritis, floribus ex albo variegatis, vaginâ cordiformi Michelii, *Dillen Musc.* 72, 29.
Jungermannia minutissima, *Engl. Bot.* 1633; *Hooker Jung.* 52.

On rocks and trees.

Thalli in tufts like a green stain.

3. *Pand. hamatifolius.* *Hook-leaved pandulphini.*
Stem irregularly branched; *leaves* upper lobe ovate, pointed, tip mostly bent; *stipules* ovate, acutely 2-cut; *calyx* reverse ovate, 5-sided.

Jungermannia hamatifolia, *Hooker Jung.* 51.

On rocks and trees; March to May.

β. *echinatus.* *Leaves* elegantly spinous.

4. *Pand. serpyllifolius.* *Thyme-leaved pandulphini.*
Stem pinnately branched; *leaves* upper lobes rounded, lower lobes minute; *stipules* rounded, acutely 2-cut; *calyx* broad, reverse-ovate, 5-sided.

Lichenastrum quod Jungermannia minima, foliis auritis, ex rotunditate acuminatis, punctatis ac veluti perforatis, floribus virescentibus, vaginâ cordiformi, *Dillen Musc.* 72, 39.

Jungermannia serpyllifolia, *Dickson Crypt.* 4, 19; *Hooker Jung.* 42.

On trees and rocks; male in June; female in April or May.

β. *ovatus.* *Leaves* small, ovate, rather pointed.

XVII. 331. MARCHESINUS. *Marchesini.*

Monoicous. Male. *Anthers* spherical, pedicelled, solitary, in the axillæ of the perichetial leaves. Fem. *Calyx* lateral, sometimes terminal, reverse-heartshape, flattened, 3-sided; mouth contracted, elevated, 4-toothed; *peduncle* not jointed, short; *capsule* spherical, 4-valved; valves regularly networked, turned back; *seeds* roundish; *elaters* tubular, ends dilated, attached to the tips of the valves; *helices* double, loosely spiral.—*Thallus* creeping; *leaves* 2-rowed.

Marchesinius Mackaii. *Mackay's marchesini.*
Stem irregularly branched; *leaves* upper lobe roundish; lower lobe minute; *stipules* large, rounded, reverse-heartshape.

Jungermannia Mackaii, *Hooker Jung.* 53; *Engl. Bot.*

On lime-stone rocks and old trees; February and March.
Thalli in blackish green tufts.

XVIII. 332. CAVENDISHIA. *Cavendish.*

Monoicous. Male. *Anthers* spherical, pedicelled, solitary, in the axillæ of the perichetial leaves. Fem. *Calyx* lateral, ovate, narrow at bottom, compressed, becoming

cylindrical; mouth truncated, serrate, slit on one side; *peduncle* short, not jointed; *capsule* spherical, seeming 4-valved; valves upright, irregularly networked; *seed* roundish; *elaters* membranaceous, tubular; *helices* double, loosely twisted; *leaves* 2-rowed, 2-cut, segments unequal, conduplicate.

1. *Cavendishia platyphylla.* *Broad-leaved cavendish.*

Stem lying down, bi-pinnately branched; *leaves* upper lobe roundish, ovate, scarcely cut; lower lobe and *stipules* straplike, uncut.

Lichenastrum arboris vitæ facie, foliis minus rotundis, *Dillen Musc.* 72, 32.

Jungermannia platyphylla, *Lin. S. P.* 1600; *Engl. Bot.* 798; *Hooker Jung.* 40.

Jungermannia cupressiformis β, *Lamarck Encycl.* 3, 383.

On old walls, rocks, and trees, even in towns; March and April.

β. *major.* *Stem* bipinnately branched; *leaves* large, smooth, yellowish green.

γ. *thujæformis.* *Stem* long, pinnately branched; *leaves* smooth, brownish.

Lichenastrum arboris vitæ facie, foliis rotundioribus, *Dillen Musc.* 72, 33.

Jungermannia Thuja, *Dickson Crypt.* 4, 19.

Jungermannia platyphylla β, *Weiss Crypt.* 126.

Jungermannia cupressiformis γ, *Lamarck Encyl.* 3, 283.

2. *Cavendishia lævigata.* *Smooth cavendish.*

Stem lying down; branches irregularly pinnate; *leaves* 2-rowed, unequally 2-lobed, thorny-toothed; upper lobes largest, rounded ovate, lower strapshape, flat, pressed close; *stipules* oblong, 4-sided, thorny-toothed.

Jungermannia lævigata, *Schrad. Samml.* 2, 6; *Hooker Jung.* 35.

On the ground, in mountain woods.

XIX. 333. MARTINELLIUS. *Martinelli.*

Monoicous. Male. *Anthers* spherical, pedicelled, 2 or 3 together, in the axillæ of the leaves. Fem. *Calyx* terminal, ovate oblong, bottom cylindrical, tip compressed, at first bent in; mouth truncated, slit on one side; *peduncle* long, not jointed; *capsule* ovate, 4-valved; valves streaked longways and across; *seed* spherical; *elaters* membranaceous; *helices* double; *buds* attached to the side of the leaves.—*Leaves* 2-rowed, undivided, or unequally 2-lobed; *stipules* 0.

a. *Leaves 2-lobed, lobes unequal, conduplicate; fruit terminal.*

1. *Martinellius complanatus.* *Flattened martinelli.*

Stem creeping, vaguely branched; *leaves* 2-rowed, imbricate above; upper lobe largest, orbicular, lower lobe ovate, flat; *calyx* oblong; *mouth* naked.

Lichenastrum imbricatum majus, *Raii Syn.* 111, 10.

Jungermannia complanata, *Lin. S. P.* 1133; *Engl. Bot.* 2499; *Hooker Jung.* 81.

On the trunks of trees; all the year.

Leaves flat, pale green.

β. *minor.* *Leaves* more convex, brownish green.

2. *Martinellius resupinatus.* *Lying-down martinelli.*

Stem lying down, seldom branched; *leaves* roundish, lobes nearly equal, edge not cut; *calyx* oblong; mouth toothed.

Jungermannia resupinata, *Lin. S. P.* 1598; *Hooker Jung.* 23.

On loamy heaths, under heath; May and June.

3. *Martinellius undulatus.* *Wavy martinelli.*

Stem upright, slightly forked; *leaves* lobes roundish, wavy, lower lobes largest; *calyx* oblong; mouth naked.

Lichenastrum pinnis auriculatis majoribus et non crenatis, *Dillen Musc.* 71, 17.

Jungermannia undulata, *Lin. S. P.* 1598; *Engl. Bot.* 225; *Hooker Jung.* 22.

On wet places, especially alpine; May to July.

4. *Martinellius umbrosus.* *Shady martinelli.*

Stem upright, two-forked; *leaves* lobes serrated at the end, lower lobes largest, ovate; upper roundish, ovate; *calyx* mouth naked.

Jungermannia umbrosa, *Schrader Samml.* 2, 5; *Hooker Jung.* 24.

On damp mountainous places; April and May.

5. *Martinellius planifolius.* *Flat-leaved martinelli.*

Stem upright, slightly branched; *leaves* nearly 2-parted at the base, toothed; lower lobe largest, ovate; upper heartshape, blunt.

Jungermannia planifolia, *Hooker Jung.* 67.

On damp places, in mountains.

Fructification unknown.

6. *Martinellius nemorosus.* *Grove martinelli.*

Stem upright, rather forked; *leaves* seeming 2-lobed, toothed, fringed, lower lobes reverse ovate, upper nearly heartshape, blunt; *calyx* mouth toothed, ciliated.

Lichenastrum auriculatum, pinnis minoribus, crenatis, *Dillen Musc.* 71, 18.

Lichenastrum auriculatum, pinnulis rotundis, crispum, *Dillen Musc.* 71, 19.

Jungermannia nemorosa, *Lin. S. P.* 1598; *Engl. Bot.* 607; *Hooker Jung.* 21.

Jungermannia nemorea, *Lin. Syst. Nat.* 2, 706.

Jungermannia resupinata, *Engl. Bot.* 2437.

In woods and hedge banks; April to August.

β. *purpurascens.* *Leaves* turning purplish.

Lichenastrum auriculatum ornithopodii minoris, pinnulis ciliatis, *Dillen Musc.* 71, 21.

Jungermannia purpurea, *Engl. Bot.* 1023, in part.

Jungermannia cochleariformis, *Withering Arr.* 3, 858.

γ. *recurvifolius.* *Leaves* with the lobes turned back.

δ. *denudatus.* *Leaves* with the lobes scarcely cut.

b. *Leaves undivided, toothed; fruit lateral and terminal.*

7. *Martinellius asplenioides.* *Spleenwort martinelli.*

Stem ascending, branched; *leaves* reverse-ovate, roundish, toothed, slightly bent back; *fruit* terminal and lateral; *calyx* oblong, mouth slightly fringed.

Lichenastrum trichomanis facie, capitulis e foliorum summitate enascentibus, majus, *Dillen in Raii Syn.* 112, 16.

Jungermannia asplenoides, *Lin. S. P.* 1597; *Engl. Bot.* 1061; *Hooker Jung.* 13.

In woods and moist shady banks, among mosses.

8. *Martinellius spinulosus.* *Thorny martinelli.*

Stem upright, branched; *leaves* reverse-ovate, bent back, tip toothed, spinous; *fruit* lateral and axillary; *capsule* roundish; mouth ciliated.

Lichenastrum pinnulis alternis, quasi spinosis, *Dillen Musc.* 489.

Lichenastrum ramosius, foliis trifidis, *Dillen Musc.* 489.

Jungermannia spinulosa, *Dickson Crypt.* 2, 14; *Hooker Jung.* 14.

Jungermannia serrata, *Roth Cat. Bot.* 1, 144.

On mountainous places.

The largest and handsomest of the jungermannideæ.

β. *tridenticulatus.* *Leaves* small, few; tips 3-spined.

Jungermannia tridenticulata, *Michaux Bor. Arr.* 2, 278.

9. *Martinellius decipiens.* *Deceiving martinelli.*

Stem upright, bent, scarcely branched; *leaves* lower smallest, ovate, not cut; upper rounded ovate or rarely 4-sided, with one or two spinelike teeth.

Jungermannia decipiens, *Hooker Jung.* 50.

On rocky places and heaths.

XX. 334. MYLIUS. *Mylius.*

Monoicous. Male. *Anthers* spherical, pedicelled, clustered, in the axillæ of the perichetial leaves. Fem. *Calyx* terminal, exserted, cylindrical, tip compressed, truncated, 2-lipped, slit on both sides, slightly toothed; *peduncle* short, not jointed; *capsule* ovate or spherical, 4-valved; valves streaked lengthways and across; *seed* spherical; *elaters* tubular, on the valves; *helices* double, closely twisted.—*Leaves* 2-rowed.

1. *Mylius Taylori.* *Taylor's mylius.*

Stem upright, scarcely branched; *leaves* all rounded; *stipules* broad-awlshape; *fruit* terminal; *calyx* ovate, mouth ciliated.

Jungermannia Taylori, *Hooker Jung.* 57.

On mountainous rocks.

2. *Mylius anomalus.* *Anomalous mylius.*

Stem lying down, not branched; *leaves* round, or rounded ovate, or ovate pointed; *stipules* broadish awlshape.

Jungermannia anomala, *Hooker Jung.* 34.

On bogs among mosses; October and November.

3. *Mylius polyanthos.* *Many-flowered mylius.*

Stem lying down, slightly branched; *leaves* horizontal, roundish, roundish 4-sided, flat, sometimes cut; *stipules* oblong, 2-cut; *fruit* lateral, peduncled, from the lower part of the stem; *calyx* half the length of the calyptra, 2-lipped, jagged.

Lichenastrum trichomanoides aquaticum odoratum fontis Sanctæ Winifridæ, *Dillen in Raii Syn.* 112, 118.

Jungermannia polyanthos, *Lin. S. P.* 1597; *Engl. Bot.* 2479; *Hooker Jung.* 62.

Jungermannia viticulosa β, *Weber Germ.* 133.

Jungermannia aquatica, *Schranck Bav.* 2, 496.

Jungermannia fragilis, *Roth Germ.* 3, 370.

Jungermannia pallescens, *Schrader Samml.* 2, 7.

On moist and very wet places.

4. *Mylius cuneifolius.* *Wedge-leaved mylius.*

Stem creeping, not branched; *leaves* rather distant, wedgeshape, not cut or very bluntly nicked at the tip; *stipules* small, ovate, pointed, rough.

Jungermannia cuneifolia, *Hooker Jung.* 64.

On salviatus tamarisci; gen. 329, sp. 1.

Plant extremely minute, like the filaments of a conferva; in loose clusters.

XXI. 335. NARDIUS. *Nardi.*

Monoicous. Male. *Anthers* spherical, pedicelled, clustered, in the axillæ of the perichetial leaves. Fem. *Calyx* terminal, ovate; mouth rather contracted, 4-toothed, imbedded in the perichetial leaves; *peduncle* long, not jointed; *capsule* roundish, 4-valved; valves furrowed lengthways and across; *seeds* spherical; *elaters* on the valves; *helices* double, closely twisted.—*Leaves* 2-rowed, uncut.

1. *Nardius scalaris.* *Stair nardi.*

Stem creeping, not branched; *leaves* roundish, hollow, not cut nor nicked; *stipules* broad-awlshape; *perichetial leaves* united together.

Jungermannia scalaris, *Schrader Samml.* 2, 4; *Hooker Jung.* 61.
Jungermannia lanceolata, *Engl. Bot.* 605.

On hedge-banks, on loamy soil, or woods.

2. *Nardius compressus.* *Compressed nardi.*

Stem upright, slightly branched; *leaves* round; uppermost kidneyshape, pressed close; *stipules* only on the shoots; *calyx* oblong.

Jungermannia compressa, *Hooker Jung.* 58.

In mountain rivulets.

Tufts dense, purplish; *roots* scarcely any.

3. *Nardius emarginatus.* *Nicked nardi.*

Stem upright, branched; *leaves* loosely tiledlike, spreading, reverse-hearted, nicked; *calyx* ovate.

Jungermannia emarginata, *Ehrhart Beitr.* 3, 80; *Engl. Bot.* 1022; *Hooker Jung.* 27.
Jungermannia macrorhiza, *Dickson Crypt.* 2, 16.

In very wet places, or alpine rivulets; early in summer.

β. *multiflorus.* *Capsules* 2 or 3 in the same calyx; *peduncles* short.

XXII. 336. JUNGERMANNIA. Ruppius. *Jungermann.*

Monoicous. Male. *Anthers* spherical, pedicelled, clustered or solitary in the axillæ of the leaves. Fem. *Calyx* terminal or axillary, ovate, cylindrical, mostly plaited; mouth contracted, exserted, toothed; *peduncle* long, not jointed; *capsule* ovate or spherical, 4-valved; valves regularly streaked lengthways and across; *seeds* spherical; *elaters* on the valves; *helices* double.—*Leaves* 2-rowed or tiledlike; *buds* at the tips of the branches.

a. *Stem compressed; leaves 2-rowed, 2-cut, lobes unequal, conduplicate, stipuled.*

1. *Jungermannia ciliaris.* *Fringed jungermann.*

Stem lying down, pinnately branched; *leaves* very convex, unequally 2-lobed, lobes ovate, 2-parted, fringed; ciliæ long, slender; *stipules* nearly 4-sided, 4 or 5-lobed at the end, with long ciliæ; *fruit* lateral; *calyx* reverse ovate; mouth contracted, toothed.

Lichenastrum scorpioides pulchrum villosum, *Dill. Musc.* 69, 3.
Jungermannia ciliaris, *Lin. S. P.* 1601; *Engl. Bot.* 2241; *Hooker Jung.* 65.
Jungermannia pulcherrima, *Weber Spic.* 151.
Jungermannia Leersii, *Roth Germ.* 2, 402.

On rocks and heaths.

2. *Jungermannia Woodsii.* *Woods' jungermann.*

Stem lying down, 2 or 3-pinnate; *leaves* very convex, unequally 2-lobed; upper lobe 2-parted, spinous, toothed; lower very minute, oblong, scarcely cut; *stipules* large, ovate, 2-parted, spinous, toothed; spurred on each side of the base.

Jungermannia Woodsii, *Hooker Jung.* 66.

On mountains.

b. *Stem compressed; leaves 2-rowed, 2 or 4-cut, lobes equal, stipuled.*

3. *Jungermannia reptans.* *Creeping jungermann.*

Stem creeping, stellately branched; *leaves* tiledlike above; rather 4-sided, bent in, acutely 5-toothed; *stipules* broad, 4-sided, 4-toothed; *fruit* radical; *calyx* oblong, plaited; mouth contracted, toothed.

Lichenastrum trichomanis facie, foliolis multifidis, capitulis ex imis cauliculis nascentibus, *Raii Syn.* 113, 22.
Jungermannia reptans, *Lin. S. P.* 1599; *Engl. Bot.* 608; *Hooker Jung.* 75.

In woods and shady places.

β. *pinnata.* *Thallus* large, branches 2-pinnate.

4. *Jungermannia albescens.* *Whitish jungermann.*
Stem creeping, branched; *leaves* very concave, nearly hemispherical; *stipules* ovate, lanceolate, blunt; *fruit* terminal, on short branches; *calyx* oblong, ovate; mouth toothed.

Jungermannia albescens, *Hooker Jung.* 72. *et Suppl.* 4.

On the ground in shady places.

5. *Jungermannia barbata.* *Bearded jungermann.*
Stem lying down, scarcely branched; *leaves* rounded, 4-sided, 3 or 4-cut; *stipules* lanceolated, acutely 2-cut, edge jagged; *fruit* terminal; *calyx* ovate; mouth contracted, toothed.

Lichenastrum trichomanis facie; foliolis multifidis, capitulis e summis ramulis nascentibus, *Dillen in Raii Syn.* 113, 21.
Jungermannia barbata, *Schreb. Lips.* 107; *Engl. Bot.* 25, 7; *Hooker Jung.* 70.
Jungermannia quinquedentata, *Hudson Angl.* 511.
Jungermannia Florkii, *Weber et Mohr. Germ.* 410.
Jungermannia dichotoma, *Schleich. Cent.* 2, 57.
Jungermannia gracilis, *Schleich. Cent.* 3, 6.
Jungermannia quadridentata, *Wulf in Berl. Mag.* 8, 154.

On subalpine rocks and in woods on them; March to May.

β. *minor.* *Stem* elongated at top, ascending; *lower leaves* open, upper very closely tiledlike, budbearing.

6. *Jungermannia Francisci.* *Francis' jungermann.*
Stem nearly upright, simple or branched; *leaves* ovate, concave, acutely nicked; *stipules* minute, ovate, 2-cut; *fruit* terminal, on short branches; *calyx* oblong cylindrical, slightly plaited; mouth toothed.

Jungermannia bifida, *Schmidel Icones*, 244 *et* 250.
Jungermannia Francisci, *Hooker Jung.* 49.

On moist ground; March to June.

7. *Jungermannia stipulacea.* *Large-stipuled jungermann.*
Stem lying down, simple; *leaves* round; tip acutely nicked, lobes pointed, straight; *stipules* large, ovate, pointed, toothed on one side, near the base; *fruit* lateral; *calyx* reverse-ovate, tip slightly plaited; mouth contracted, bluntly toothed.

Jungermannia stipulacea, *Hooker Jung.* 41.

On shady rocks in woods.

8. *Jungermannia bidentata.* *Two-toothed jungermann.*
Stem lying down, branched; *leaves* broad, ovate, decurrent, tip 2-cut, lobes very pointed, not jagged; *stipules* 2

or 3-cut or jagged; *fruit* terminal; *calyx* oblong, nearly three-cornered; mouth jagged.

Lichenastrum trichomanis facie, foliolis bifidis, majus, *Raii Syn.* 113, 19.
Jungermannia bidentata, *Lin. S. P.* 1598; *Engl. Bot.* 606; *Hooker Jung.* 30.

On moist ground in shady places; March to September.

β. *obtusata.* *Leaves* bluntly nicked, blackish green; *stipules* many-cut.

9. *Jungermannia heterophylla.* *Oddleaved jungermann.*
Stem lying down, branched; *leaves* rounded, ovate, decurrent, tip rarely acutely nicked, mostly bluntly, or undivided; *stipules* 2 or 3-cut, sometimes rather jagged; *fruit* terminal; *calyx* ovate, bluntly three-cornered; mouth jagged.

Lichenastrum pinnulis obtusioribus bifidis, minus, *Dillen Musc.* 488.
Jungermannia heterophylla, *Schrad. Jour. Bot.* 5, 66; *Hooker Jung.* 31.
Jungermannia bidentata minor, *Leers Herbon.* 249.
Jungermannia bicuspidata, *Engl. Bot.* 281, not the syn.

On rocks and the bark of trees; male, November; female, spring.

c. *Stem compressed; leaves 2-rowed, 2-lobed; lobes unequal, conduplicated; stipules* 0.

10. *Junger. cochleariformis.* *Snailshape jungermann.*
Stem lying down, scarcely branched; *leaves* closely tiled-like above; upper lobe largest, convex, tip 2-cut, toothed; lower lobes oblong, ovate, inflated.

Lichenastrum trichomanis facie, prælongum foliis concavis unam partem spectantibus, *Raii Syn.* 112, 17.
Mnium Jungermannia, *Lin. S. P.* 1579.
Jungermannia cochleariformis, *Weiss Crypt.* 123; *Engl. Bot.* 2500; *Hooker Jung.* 68.
Jungermannia purpurea, *Scop. Carn.* 2, 347.

On mountain-bogs.

11. *Jungermannia exsecta.* *Cut-out jungermann.*
Stem lying down, scarcely branched; *leaves* unequally 2-lobed, slightly folded together; lower lobe largest, ovate, pointed, concave; tip often 2-toothed; upper lobe minute, toothlike.

Jungermannia exsecta, *Schmidel Icon.* 241; *Hooker Jung.* 19.
Jungermannia globulifera, var. 1, *Roth Germ.* 3, 381.

On moist boggy heaths.

12. *Jungermannia minuta.* *Minute jungermann.*
Stem upright, rather two forked; *leaves* horizontally spread, slightly folded together; upper leaves equally two-lobed, lower leaves unequally, all rather pointed; *fruit* terminal; *calyx* reverse-ovate, slightly plaited at the tip; mouth contracted, toothed.

Lichenastrum, pinnulis minutissimis rotundis, *Dillen Musc.* 69, 2.
Jungermannia minuta, *Crantz Groenl.* 285; *Hooker Jung.* 44.
Jungermannia rupincola, *Schleich. Crypt. exsic.*
Jungermannia bicornis, *Mohr Crypt. Germ.* 423.

On alpine hills among mosses; April to July.

13. *Jungermannia Dicksoni.* *Dickson's jungermann.*
Stem ascending, seldom branched; *leaves* unequally two-lobed, folded together, lobes narrow, ovate, scarcely cut, pointed; lower lobe largest; *fruit* terminal; *calyx* ovate, plaited; mouth contracted, toothed.

Jungermannia Dicksoni, *Hooker Jung.* 48.

On dry rocks, among mosses.

14. *Jungermannia obtusifolia.* *Blunt-leaved jugermann.*
Stem ascending, simple; *leaves* unequally 2-lobed; lobes folded together, blunt, not cut; lower lobe largest, rather scymetarshape; upper ovate; *fruit* terminal; *calyx* reverse-ovate; mouth contracted, toothed.

Jungermannia obtusifolia, *Hooker Jung.* 26.

On damp rocky places; March and April.

15. *Jungermannia albicans.* *Whitish jungermann.*
Stem upright, slightly branched; *leaves* unequally two-lobed, lobes folded together; tip toothed, middle, pellucid, whitish; lower lobe largest, nearly scymetarshape, upper oblong, ovate, pointed; *fruit* terminal; *calyx* reverse-ovate, cylindrical; mouth contracted, toothed.

Lichenastrum trichomanis facie, capitulis e foliorum summitate enascentibus minus, *Dillen in Raii Syn.* 112, 14.
Lichenastrum foliis variis, *Dillen in Raii Syn.* 113, 23.
Jungermannia albicans, *Lin. S. P.* 1599; *Eng. Bot.* 2240 and 1023, left-hand fig.; *Hooker Jung.* 25.
Jungermannia varia, *Lin. S. P.* 1601.

On hedge-banks, in loamy soils.

β. *procumbens.* *Stem* lying down; *leaves* nearly upright.

d. *Stem compressed; leaves 2-rowed, equally 3 or 4 cut; stipules* 0.

16. *Jungermannia incisa.* *Cut jungermann.*
Stem lying down, depressed, seldom branched; *leaves* rather 4-sided, wavy, 3-cut, lobes toothed in places; *fruit* terminal; *calyx* reverse-ovate; mouth contracted, toothed.
Jungermannia incisa, *Schard. Samml.* 2, 5; *Hooker Jung.* 10; *Eng. Bot.*
On bogs, moors, and moist places on mosses.

17. *Jungermannia capitata.* *Headed jungermann.*
Stem lying down, seldom branched; *leaves* rounded, 4-sided; lower 2-cut; upper 3 or 4-cut; *fruit* terminal; *calyx* oblong, ovate, rather plaited; mouth contracted, toothed.
Jungermannia capitata, *Hooker Jung.* 80; *Engl. Bot.*
On bogs and dry mountainous places.

e. *Stem compressed; leaves 2-rowed, nicked or 2-cut; stipules* 0.

18. *Jungermannia curvifolia.* *Curve-leaved jungermann.*
Stem lying down, branched starwise; *leaves* roundish, very concave, 2-cut; lobes pointed, bent; *fruit* terminal, on very short branches; *calyx* oblong, slightly plaited; mouth slightly contracted, toothed.
Jungermannia curvifolia, *Dickson Crypt.* 2, 15; *Engl. Bot.* 1304; *Hooker Jung.* 16.
Jungermannia birostrata, *Schleicher Cent.* 3, 59.
On alpine rocks and decayed wood.

19. *Jungermannia connivens.* *Connivent jungermann.*
Stem lying down, branched starwise; *leaves* round, concave, tip nicked, crescentlike; *fruit* terminal, on short branches; *calyx* oblong ovate; mouth contracted, fringed.
Jungermannia connivens, *Dickson Crypt.* 4, 19; *Hooker Jung.* 15.
On damp shady places; April and May.

20. *Jungermannia byssacea.* *Byssus jungermann.*
Stem lying down, branchwise; *leaves* nearly 4-sided, bluntly 2-cut, lobes pointed; *fruit* terminal; *calyx* oblong, plaited; mouth open, toothed.
Jungermannia byssacea, *Roth Cat. Bot.* 2, 158; *Hooker Jung.* 12.
Jungermannia bifida, *Schmidel Icon.* 250.
Jungermannia divaricata, *Engl. Bot.* 719.
On sand-hills and exposed heaths.

21. *Jungermannia bicuspidata.* *Two-pointed jungermann.*
Stem lying down, branched starwise; *leaves* nearly four-sided, pointedly 2-cut; lobes pointed, straight, not cut; *fruit* terminal; *calyx* oblong, plaited; mouth open, toothed.

Lichenastrum trichomanis facie, foliolis bifidis minimum, *Raii Syn.* 113, 20.
Jungermannia bicuspidata, *Lin. S. P.* 1589; *Engl. Bot.* 2239; *Hooker Jung.* 11.
Jungermannia globulifera, *Pollich Pal.* 3, 182.
Jungermannia sphærocephala, *Roth Germ.* 1, 481.
Jungermannia fissa, *Scop. Carn.* 1345.
Jungermannia bicornis, *Fl. Dan.* 888. a.

On moist hedges and banks on heaths; Mar. and April.

β. *patens.* *Lobes* of the leaves spreading.
In marshy places.

22. *Jungermannia Turneri.* *Turner's jungermann.*
Stem lying down, bent, branched starwise; *leaves* broad ovate, acutely 2-parted; lobes folded together, spinous, toothed; *fruit* terminal; *calyx* linear, oblong, plaited lengthways; mouth rather contracted, toothed.

Jungermannia Turneri, *Hooker Jung.* 29.

On shady banks of mountain rivulets; March.

23. *Jungermannia ventricosa.* *Bellied jungermann.*
Stem lying down, slightly branched; *leaves* open, nearly 4-sided, bluntly and broadly nicked, sides bent in; *fruit* terminal; *calyx* oblong; mouth contracted, plaited, toothed.

Lichenastrum quod Jungermannia minima repens, foliis bifidis, vaginâ florum ventricosa Michelii, *Dillen. Musc.* 70, 14.
Jungermannia ventricosa, *Dickson Crypt.* 2, 14; *Hooker Jung.* 28.
Jungermannia bidentata globulifera, *Weber Goett.* 134.
Jungermannia bidentata, *Schmidel Jung.* 106.
Jungermannia globulifera, *Pollich Palat.* 3, 182.
Jungermannia bicornis, *Hoffm. Germ.* 2, 89.
Mnium fissum, *Necker Musc.* 237.

On boggy soils, and in woods; winter and spring.

24. *Jungermannia excisa.* *Cut-off jungermann.*
Stem lying down, nearly simple; *leaves* open, nearly 4-sided, very deeply nicked; *fruit* terminal; *calyx* oblong; mouth slightly contracted, plaited, toothed.

Jungermannia excisa, *Dickson Crypt.* 3, 11; *Hooker Jung.* 9.
Jungermannia globulifera, *Roth Germ.* 3, 379.
Jungermannia Funckii, *Mohrh Crypt. Germ.* 492.

In moist shady woods and hedge-banks.

β. *crispata.* *Leaves* wavy lengthways; lobes unequal, crisp.

25. *Jungermannia inflata.* *Blown-up jungermann.*
Stem lying down, simple or branched; *leaves* roundish, concave, acutely 2-cut; lobes straight, blunt; *fruit* terminal; *calyx* reverse pearshape; mouth contracted, toothed.
Jungermannia inflata, *Hudson Angl.* 511; *Hooker Jung.* 38.
Jungermannia bicrenata, *Schmidel Icon.* 246.
Jungermannia bidentata, var. 2, *Withering Arr.* 3, 853.
In moist boggy places; all the year.

26. *Jungermannia Orcadensis.* *Orkney jungermann.*
Stem upright, not branched; *leaves* closely tiledlike, upright or spreading, heartshape ovate, flat, tip notched, edge turned over.
Jungermannia Orcadensis, *Hooker Jung.* 71.
On moss, at the feet of mountains.

f. *Stem compressed; leaves 2-rowed, undivided; stipules* 0.

27. *Jungermannia hyalina.* *Transparent jungermann.*
Stem ascending, bent, forked; *leaves* rounded, wavy; *fruit* terminal; *calyx* ovate, cornered; mouth contracted, toothed.
Jungermannia hyalina, *Hooker Jung.* 63.
On boggy places, and rocks near waterfalls; April and May.

28. *Junger. sphærocarpa.* *Round-fruited jungermann.*
Stem ascending, not branched; *leaves* round; *calyx* oblong, reverse-ovate, cylindrical, 4-cut; *capsule* spherical.
Jungermannia sphærocarpa, *Hooker Jung.* 74.
On bogs; March to May.

29. *Jungermannia crenulata.* *Crenulate jungermann.*
Stem lying down, branched; *leaves* rounded, bordered; *fruit* terminal; *calyx* reverse-ovate, compressed, 4-cornered lengthways; mouth contracted, toothed.
Jungermannia crenulata, *Engl. Bot.* 1463; *Hooker Jung.* 37.
On bogs and wet places; October to April.

β. *gracillima. Stem* rather slender; *leaves* minute, distant.
Jungermannia gracillima, *Eng. Bot.* 2238.

30. *Jungermannia sphagni.* *Bog-moss jungermann.*
Stem lying down, seldom branched; bud-bearing shoots only stipuled; *leaves* round; *fruit* terminal, on peculiar

branches; *calyx* oblong, smaller at both ends; mouth contracted, slightly toothed.

Jungermannia sphagni, *Dickson Crypt.* 1, 6; *Engl. Bot.* 2470; *Hooker Jung.* 33.

In marshy places, among sphagna; October to April.

31. *Jungermannia cordifolia.* *Heart-leaved jungermann.*

Stem upright, bent, forked; *leaves* upright, hollow, heart-shape, rolled round; *fruit* terminal and axillary; *calyx* oblong ovate, slightly plaited; mouth minute, toothed.

Jungermannia cordifolia, *Hooker Jung.* 32.

On moist places in alpine mountains; August to March.

32. *Jungermannia pumila.* *Dwarf jungermann.*

Stem ascending, mostly simple; *leaves* elliptical, ovate; *fruit* terminal; *calyx* oblong, ovate, pointed; mouth contracted, slightly toothed.

Lichenastrum trichomanis facie, minus, ab extremitate florens, *Dillen Musc.* 70, 10.

Jungermannia pumila, *Withering Arr.* 3, 866; *Engl. Bot.* 2230; *Hooker Jung.* 17.

On alpine rocks and mountains; May and June.

β. *nigricans.* *Stem* branched; *leaves* distant, growing black.

33. *Jungermannia lanceolata.* *Spearshape jungermann.*

Stem lying down, seldom branched; *leaves* spreading, ovate rather rounded; *fruit* terminal; *calyx* oblong, cylindrical; tip depressed, flat; mouth contracted, slightly toothed.

Lichenastrum capitulis nudis, trichomanis facie, foliolis densius congestis, minus, *Dillen in Raii Syn.* 112, 13.

Jungermannia lanceolata, *Lin. S. P.* 1597; *Hooker Jung.* 18.

On moist places in woods, and trunks of rotten trees.

g. *Stem round; leaves scattered; stipules* 0.

34. *Jungermannia trichophylla.* *Hair-leaved jungermann.*

Stem creeping, irregularly branched; *leaves* tiledlike on all sides, in bundles, bristlelike, jointed, spreading, straight; *fruit* terminal; *calyx* oblong; mouth contracted, fringed.

Lichenastrum trichodes minimum, in extremitate florens, *Dillen Musc.* 73, 37.

Jungermannia trichophylla, *Lin. S. P.* 1601; *Engl. Bot.* 2252; *Hooker Jung.* 7.

On turfy heaths, and moist rocks.

35. *Jungermannia setacea.* *Bristlelike jungermann.*
Stem creeping, nearly pinnately branched; *leaves* tiledlike on all sides, in pairs, bristlelike, jointed, spreading, bent inwards; *fruit* terminal; *calyx* oblong; mouth open, fringed.

Lichenastrum multiflorum exile, foliis angustissimis, *Dillen Musc.* 69, 4.
Jungermannia setacea, *Weber Goett.* 155; *Hooker Jung.* 8.
Jungermannia multiflora, *Hudson Angl.* 510.
Jungermannia sertularioides, *Linn. Suppl.* 449.
Jungermannia pauciflora, *Dickson Crypt.* 2, 15.
Jungermannia trichophylla, var. 3, *Roth Germ.* 3, 366.

On bogs, amongst mosses.

h. *Stem round; leaves 2-rowed, stipuled.*

36. *Jungermannia tomentella.* *Fine-downy jungermann.*
Stem nearly upright, 2-pinnate; *leaves* nearly flat, unequally 2-lobed, many-cut, hairlike; upper lobes 2-parted, lower lobes very small; *stipules* nearly 4-sided, jagged; *fruit* axillary; *calyx* oblong, cylindrical, shaggy; mouth open, naked.

Lichenastrum filicinum crispum, *Dillen in Raii Syn.* 111, 7.
Jungermannia tomentella, *Ehrhart Beitr.* 2, 15; *Engl. Bot.* 2242; *Hooker Jung.* 36.
Jungermannia ciliaris, *Weiss Crypt.* 189.

On moist places; October to March.

i. *Stem round; leaves 2-rowed; stipules* 0.

37. *Jungermannia setiformis.* *Bristleshape jungermann.*
Stem upright, seldom branched; *leaves* 2-rowed, closely tiledlike, upright, 4-sided, 4-cut; edge irregularly thorn-toothed; *fruit* terminal and lateral; *calyx* oblong, plaited; mouth open, toothed.

Jungermannia setiformis, *Ehrh. Beitr.* 3, 40; *Hooker Jung.* 20.
Jungermannia concatenata, *Linn. Lapp.* 343.

β. *alpina.* *Leaves* small; segments not divided.

k. *Stem round; leaves 4-rowed; stipules* 0.

38. *Jungermannia julacea.* *Catkin jungermann.*
Stem nearly upright, irregularly branched, threadlike; *leaves* 4-rowed, ovate, closely tiledlike, upright, acutely 2-cut; lobes lanceolate, pointed, slightly serrate; *fruit* terminal; *calyx* oblong, plaited above; mouth open, toothed.

Lichenastrum alpinum, bryi julacei argentei facie, *Dillen Musc.* 73, 38.
Jungermannia julacea, *Lin. S. P.* 1601; *Engl. Bot.* 1023; *Hooker Jung.* 2.
Jungermannia concinnata, *Wahlenb. Lapp.* 384.

On wet places, on alpine heights.

β. *gracilis.* *Stem* long; *leaves* small, distant.

39. *Jungermannia laxifolia.* *Loose-leaved jungermann.*

Stem upright, scarcely branched, threadlike; *leaves* distant, 4-rowed, upright, spreading, ovate, slightly keeled, acutely 2-cut; *fruit* terminal; *calyx* oblong, slightly plaited; mouth contracted, toothed.

Jungermannia laxifolia, *Hooker Jung.* 59.

In mountain rivulets; April to June.

Perichetial leaves similar to the stem leaves, distant, often leaving the calyx quite exposed.

XXIII. 337. BAZZANIUS. *Bazzanio.*

Monoicous. Male. *Anther* spherical, pedicelled, in the axillæ of the perichetial leaves.—Fem. *Calyx* from the under side of the stem, pedicelled, oblong, tubular, narrow at top; mouth slit down on one side, toothless; *peduncle* long; *capsule* ovate, 4-valved; valves streaked regularly longways and across; *elaters* affixed to the valves; *helices* double; *seeds* spherical.—*Leaves* 2-rowed, stipuled, lobed; lobes equal.

Bazzanius trilobatus. *Three-lobed bazzanio.*

Stem creeping, bent, slightly branched; *leaves* tiledlike above, ovate, convex, bluntly 3-lobed; *stipules* broad, 4-sided, crenated.

Jungermannia trilobata, *Lin. S. P.* 1599; *Hooker Jung.* 76.
Jungermannia radicans, *Hoffm. Germ.* 2, 87; *Engl. Bot.* 2232.
Jungermannia Donniana, *Hooker Jung.* 39.

On alpine rocks, of moderate height.

β. *minor.* *Thallus* small.

Jungermannia triangularis, *Schleichler Cent.* 2.

γ. *minimus.* *Leaves* very minute, indistinct, distant, often 2-toothed.

XXIV. 338. SCALIUS. *Scalius.*

Monoicous. Male. *Anthers* spherical, pedicelled, clustered in the axillæ of the perichetial leaves.—Fem. *Calyx* 0. calyptra terminal, large, oblong, fleshy, bursting irregu-

larly; *peduncle* long; *capsule* ovate, 4-valved; valves regularly streaked lengthways and across; *seeds* spherical, clustered, in threes; *elaters* affixed to the tops of the valves; *helices* single, slenderer at each end.—*Root* fleshy, branched; *stipules* 0.

Scalius Hookeri. *Hooker's scalius.*

Stem upright; *leaves* distant, tiledlike, ovate, oblong or lobed and cornered.

Jungermannia Hookeri, *Engl. Bot.* 2555; *Hooker Jung.* 54.

On the sides of ditches; October to May.

XXV. 339. CESIUS. *Cesius.*

Monoicous. MALE. ——?— FEM. *Calyx* 0; *calyptra* terminal, ovate, bursting; *peduncle* long; *capsule* globular, 4-valved; valves regularly streaked lengthways and across; *seeds* spherical; *elaters* affixed to the valves; *helices* double, rather slender at each end.—*Leaves* 2-rowed; *stipules* 0; *perichetial leaves* embracing each other, and serving as a calyx.

Cesius concinnatus. *Braided cesius.*

Stem upright, branched, top enlarged and compressed; *leaves* 2-rowed, closely tiledlike, compact, upright, hollow, ovate, nicked; *fruit* terminal.

Jungermannia concinnata, *Lightf. Scot.* 2, 786; *Hooker Jung.* 3.
Jungermannia julacea, *Fl. Dan.* 1002.

On barren spongy places on mountains.

XXVI. 340. HERBERTUS. *Herbert.*

Monoicous. MALE. *Anthers* spherical, pedicelled, in clusters, in the axillæ of the perichetial leaves.—FEM. *Calyx* 0; *calyptra* terminal, ovate; *peduncle* long; *capsule* ovate, 4-valved; valves regularly streaked lengthways and across; *seeds* spherical; *elaters* affixed to the valves; *helices* double, slightly narrowed at each end.—*Leaves* 4-rowed; *stipules* 0; *perichetial leaves* united at bottom, calyxlike.

Herbertus aduncus. *Hooked herbert.*

Stem upright, bent, seldom branched; *leaves* 4-rowed, scythelike, facing one way, linear lanceolate, 2-parted, lobes straight, upright, pointed; *perichetial leaves* upright at the tip.

Jungermannia adunca, *Dickson Crypt.* 3, 12.
Jungermannia juniperina adunca, *Hooker Jung.* 4.

On shady spots of alpine mountains.
Tufts thick; *leaves* yellowish brown.

XXVII. 341. LIPPIUS. *Lippius.*

Monoicous? MALE. ——? FEM. *Calyx* from the side of the stem, subterraneous, affixed to the upper edge, cylindrical, pouchshaped; mouth circular, fringed with scales; *calyptra* enclosed; *peduncle* jointless, long; *capsule* oblong, 4-valved; valves streaked lengthways and across; *seeds* spherical; *elaters* affixed to the valves; *helices* double, rather closely twisted.—*Leaves* 2-rowed, stipuled.

Lippius viticulosus. *Sprigged lippius.*

Stem lying down, branched; *leaves* slightly tiledlike, horizontal, flat, ovate, nôt cut; *stipules* broad, ovate, irregularly toothed.

Lichenastrum capitulis nudis, trichomanis facie, foliolis densius congestis, majus, *Dillen in Rait Syn.* 111, 12.
Jungermannia viticulosa, *Lin. S. P.* 1597; *Engl. Bot.* 2513; *Hooker Jung.* 60.

On mountains on the ground, and on mosses and other jungermannideæ; spring.

XXVIII. 342. KANTIUS. *Kant.*

Monoicous? MALE. ——? FEM. *Calyx* from the side of the stem, subterraneous, affixed by the upper edge, cylindrical, pouchshape; mouth circular, crenated; *calyptra* enclosed; *peduncle* jointless, long; *capsule* oblong, 4 valved, valves spiral, streaked lengthways and across; *seeds* spherical; *elaters* affixed to the valves; *helices* double, rather closely twisted.—*Leaves* 2-rowed, stipuled.

Kantius trichomanis. *Trichomanes kant.*

Stem lying down, seldom branched; *leaves* tiledlike, horizontal, convex, ovate, sometimes nicked; *stipules* rounded, crescentshape.

Mnium trichomanis facie, foliolis bifidis, *Dillen Musc.* 31, 6.
Mnium trichomanis facie, foliis integris, *Dillen Musc.* 31, 5.
Mnium Trichomanes, *Lin. S. P.* 1579.
Mnium fissum, *Lin. S. P.* 1579.
Jungermannia trichomanis, *Dickson Crypt.* 3, 8; *Hooker Jung.* 79.
Jungermannia scalaris, *Schmid. Jung.* 20.
Jungermannia fissa, *Scopoli Carn.* 2, 348.
Jungermannia sphærocephala, *Withering Arr.* 3, 854.

On moist places in heaths and woods; summer.
Forms large patches of a glaucous green colour.

Fam. II. 14. MUSCI. Most botanists. *Cryptogamæ calyptratæ operculatæ*, Mohr.

Flowers unisexual MALE. *Anthers* oblong, spherical, networked, bursting irregularly, pedicelled, in the axillæ of the perichetial leaves; pollen granular. — FEM. *Flowers* terminal or lateral; *pistills* many, clustered, only one fertile, *style* terminal; *stigma* expanded; *calyptra* covering the pistills, bursting across at bottom, rising up with the capsules; *calyx* 0; *perichetial leaves* surrounding the calyptra; *capsule* pedicelled, valveless, operculated; columella central; mouth fringed, fringe single or double; lid mostly deciduous; *seeds* roundish, attached to the columella; *elaters* 0.—*Plants* small, texture compactly cellular; *leaves* mostly with a main rib, undivided or slightly toothed.

A. *Peristome* 0.

Capsule 4-valved ..... ANDRÆA. 343.
Caps. not cut, sessile; *recept.* pedicelled SPHAGNUM. 344.
Caps. not cut, pedicelled; *recept.* sessile; *lid* adnate ..... PHASCUM. 345.
Caps. not cut, pedicelled; *recept.* sessile; *lid* deciduous, at last jagged ..... SCHISTOSTEGA. 346.
Caps. not cut, pedicelled; *recept.* sessile; *lid* deciduous; *calyptra* bellshaped .. ANICTANGIUM. 347.
Caps. not cut, pedicelled; *recept.* sessile; *lid* deciduous; *calyptra* halved .... GYMNOSTOMUM. 348.

B. *Peristome single, formed of a membrane only.*

Peristome conoid, folded ..... DIPHYSCIUM. 349.

C. *Peristome single, formed of teeth or hairs.*

Teeth of the peristome 4 ..... TETRAPHIS. 350.
Teeth eight pair ..... SPLACHNUM. 351.
Teeth 16, cohering at the tip ..... CONOSTOMUM. 352.
Teeth 32, tips joined by a membrane POLYTRICHUM. 353.
Teeth 32, twisted, anastomosing at bottom ..... CINCLIDOTUS. 354.
Teeth 32, twisted, joined by a membrane ..... TORTULA. 355.
Teeth 16, not divided, straight, free; *calyptra* bellshape, or mitrelike, smooth ENCALYPTA. 356.
Teeth 16, not divided, straight, free; *calyptra* bellshape or mitrelike, furrowed GRIMMIA. 357.

Teeth 16, not divided, straight, free;
calyptra halved; *fruit* lateral ..... PTEROGONIUM. 358.
Teeth 16, not divided, straight, free;
calyptra halved; *fruit* terminal ..... WEISSIA. 359.
Teeth 16, two-cut, straight, free ..... DICRANUM. 360.
Teeth 16 pair, straight, free;
calyptra mitreshape ..... TRICHOSTOMUM. 361.
Teeth 16 pair, straight, free;
calyptra halved; *fruit* lateral ..... LEUCODON. 362.
Teeth 16 pair, straight, free;
calyptra halved; *fruit* terminal ..... DIDYMODON. 363.

D. *Peristome double; the internal formed of ciliæ not connected together.*

Fruit terminal; *teeth* oblique;
ciliæ opposite to the teeth ..... FUNARIA. 364.
Fruit terminal; *teeth* oblique;
ciliæ alternating; *calyptra* halved ..... ZYGODON. 365.
Fruit terminal; *teeth* oblique;
ciliæ alternating; *calyptra* mitrelike ORTHOTRICHUM. 366.
Fruit lateral; *calyptra* halved;
ciliæ from an interior membrane ..... NECKERA. 367.
Fruit lateral; *calyptra* halved;
ciliæ from the side of the teeth ..... ANOMODON. 368.
Fruit lateral; *calyptra* mitrelike;
ciliæ from the side of the teeth ..... DALTONIA. 369.

E. *Peristome double; the internal either membranaceous, or formed of connected ciliæ.*

Inter. perist. cancellated; *fruit* lateral FONTINALIS. 370.
Inter. perist. membranaceous, plaited BUXBAUMIA. 371.
Inter. perist. of 16 equal, 2-cut jags .. BARTRAMIA. 372.
Inter. perist. of 16 jags, not cut;
fruit lateral; *calyptra* mitrelike ..... HOOKERIA. 373.
Inter. perist. of 16 jags, not cut;
fruit lateral; *calyptra* halved ..... HYPNUM. 374.
Inter. perist. of 16 jags, not cut;
fruit terminal; *calyptra* halved ..... BRYUM. 375.

I. 343. ANDRÆA. Hedwig. *Blackmoss.*

Capsule 4-valved; valves cohering together at the tip, by the persistent lid; *calyptra* torn irregularly.— *Plants* alpine, dark brown, nearly black, differ from jungermannideæ by the central columella of the capsule.

1. *Andræa alpina.* *Alpine blackmoss.*
Stems branched; *leaves* obovate, suddenly pointed, straight, covering the stem on all sides tiledlike; main-rib none.

Lichenastrum alpinum atro-rubens teres, calycibus squamosis, *Dillen Musc.* 506.
Jungermannia alpina, *Lin. S. P.* 1602.
Andreas alpina, *Hedwig Sp. Musc.* 49.

On rocks; summer.

2. *Andræa rupestris.* *Rock blackmoss.*
Stem branched; *leaves* ovate, pointed by degrees; main-rib none; upper leaves sickleshape.

Jungermannia rupestris, *Lin. S. P.* 1601.
Andræa rupestris, *Hedw. S. Musc.* 47; *Engl. Bot.* 1277.

On rocky mountains.

3. *Andræa Rothii.* *Roth's blackmoss.*
Stems almost simple; *leaves* lanceolate, awlshape, sickle-like, one-rowed, main-ribbed; *perichetial leaves* oblong, ribless; edges turned in.

Lichenastrum alpinum nigricans; foliis capillaceis reflexis, *Dillen Musc.* 507.
Jungermannia rupestris, *Lin. S. P.* 1601.
Andræa rupestris, *Turner Musc. Hib.* 14.
Andræa Rothii, *Mohr. Crypt. Germ.* 11; *Engl. Bot.* 2162.

On alpine rocks.

4. *Andræa nivalis.* *Snow blackmoss.*
Stems slightly branched; *leaves* loosely tiled-like, lanceolate, slightly falcate, one-rowed, main-ribbed; *perichetial leaves* like the stem-leaves.

Andræa nivalis, *Hooker in Lin. Tr.* 10, 395; *Engl. Bot.* 2507.

On rocks.

II. 344. SPHAGNUM. Dillenius. *Bogmoss.*
Receptacle peduncled; *capsule* sessile, not valved; *lid* falling off; *mouth* toothless; *calyptra* irregularly torn.—*Leaves* whitish, with large network, meshes oblong, transversely streaked; main rib 0: grow in bogs, or water.

1. *Sphagnum obtusifolium.* *Bluntleaved bogmoss.*
Branches swollen; *leaves* ovate, blunt, closely tiledlike.

Sphagnum cauliferum et ramosum palustre molle candicans, reflexis ramulis, foliolis latioribus, *Raii Syn.* 104, 1.
Muscus terrestris vulgatissimus, *Park.* 1306.
Sphagnum palustre, *Lin. S. P.* 1569.
Sphagnum obtusifolium, *Ehrh. Crypt.* 241.
Sphagnum latifolium, *Hedwig. Engl. Bot.* 1405.
Sphagnum cymbifolium, *Swartz Suec.*

In bogs.

Very retentive of moisture, used to pack up live plants to send to a distance.

β. *minus.* *Stems* in close tufts; *leaves* closely tiledlike.

Sphagnum compactum, *Schwægr. Supp.* 3.

γ. *fluitans.* *Stems* very long, slender; *leaves* scattered, distant.

Sphagnum latifolium fluitans, *Turner Musc. Hib.* 6.
Old wives tow.

2. *Sphagnum squarrosum.*

Branches slender at the end; *leaves* ovate, pointed, scurfy, turned back.

Sphagnum squarrosum, *Weber & Mohr Reise*, 2, 1; *Engl. Bot.* 1498.

On bogs.

3. *Sphagnum acutifolium.* *Narrow-leaved bogmoss.*

Branches slender; *leaves* ovate, lanceolate, crowded.

Sphagnum cauliferum et ramosum palustre molle candicans, reflexis ramulis, foliolis angustioribus, *Raii Syn.* 104, 2.
Sphagnum acutifolium, *Ehrh. Crypt.* 72.
Sphagnum capillifolium, *Engl. Bot.* 1406.

On bogs.

4. *Sphagnum cuspidatum.* *Pointed bogmoss.*

Branches slender; *leaves* lanceolate, awlshape, weak.

Sphagnum cuspidatum, *Ehrh. Crypt.* 25; *Engl. Bot.* 2392.

In water, on bogs.

III. 345. PHASCUM. Haller. *Squat-moss.*

Receptacle sessile; *capsule* pedicelled; *pedicell* terminal; *peristome* 0; *lid* adnate, persistent; *calyptra* halved.—*Plants* often very minute.

a. *Shoots creeping, leafless, jointed, branched.*

1. *Phascum serratum.* *Serrated squat-moss.*

Shoots branched, leafless, jointed; *perichetial leaves* lanceolate, serrated, ribless.

Phascum serratum, *Engl. Bot.* 460; *Dicks. Crypt.* 1, 1.
Phascum stoloniferum, *Dicks. Crypt.* 3, 7? *Engl. Bot.* 2006.

On shady sandy banks.

Capsules large; *seeds* about 100 in a capsule, large.

b. *Creeping shoots* 0; *leaves awlshape.*

2. *Phascum alternifolium.* *Alternate-leaved squat-moss.*

Leaves uncut, lanceolate, awlshape; *shoots* long.

Phascum alternifolium, *Dicks. Crypt.* 1, 2; *Engl. Bot.* 2107.

On moist banks.

Perichetial leaves large, long; *seeds* about 16 in each capsule, very large, greenish, cornered, without any border.

3. *Phascum crispum.* *Crisp squat-moss.*

Leaves lanceolate, awlshape, bent, crisp when dry.

Phascum crispum, *Engl. Bot.* 1680.
Phascum multicapsulare, *Engl. Bot.* 618.

On banks and fields.

4. *Phascum subulatum.* *Awlshape squatmoss.*

Leaves awlshape, bristlelike, straight; main rib disappearing below the point.

Sphagnum acaulon trichoides, *Raii Syn.* 105, 6.
Phascum subulatum, *Lin. S. P.* 1570; *Engl. Bot.* 2177.

On dry banks.

5. *Phascum axillare.* *Axillary squat-moss.*

Leaves lanceolate, awlshape, straight; *main rib* disappearing below the point; *fruit* becomes lateral.

Phascum axillare, *Dicks. Crypt.* 1, 2.
Phascum nitidum, *Hedwig St. Crypt.* 1, 34.
Phascum strictum, *Dicks. Crypt.* 1, 2; *Engl. Bot.* 2093.

On moist banks.

c. *Creeping shoots* 0; *leaves ovate; pedicell immersed in the leaves.*

6. *Phascum patens.* *Spreading squat-moss.*

Leaves spread open, narrow, ovate, serrated; *main rib* disappearing below the point.

Phascum patens, *Hedwig. Crypt.* 1, 10; *Engl. Bot.* 1279.

On clay fields.

β. *recurvifolium.* *Leaves* very narrow.

Phascum recurvifolium, *Dickson Crypt.*

7. *Phascum muticum.* *Unarmed squat-mos.*

Leaves ovate, rounded, pointed, concave, connivent, serrated at the point; main rib reaching to the point.

Sphagnum acaulon, foliis in bulbi forma congestis, minus, *Dillen. in Raii Syn.* 105, 8.
Phascum muticum, *Schreb. Phasc.* 8, 1; *Engl. Bot.* 2027.
Phascum acaulon β, *Lin. S. P.* 1570.

On moist banks.

β. *minus.* *Plant* very small; *leaves* uncut.

On banks near the sea.

8. *Phascum cuspidatum.* *Pointed squat-moss.*

Leaves ovate, pointed, upright; main rib reaching the point.

Sphagnum acaulon, foliis in bulbi formam congestis, majus, *Raii Syn.* 105, 7.
Phascum acaulon, *Lin. S. P.* 1570.
Phascum cuspidatum, *Schreb. Phasc.* 1; *Engl. Bot.* 2025.
Phascum Schreberianum, *Dicks. Crypt.* 4, 2; *Engl. Bot.* 2026.
Phascum curvisetum, *Dicks. Crypt.* 4, 2; *Engl. Bot.* 2259.

On moist hedge-banks.

β. *piliferum.* *Leaves* ending in a hair.

Phascum piliferum, *Schreb. Phasc.* 1; *Engl. Bot.* 1888.

On barren pastures.

d. *Creeping shoots* 0; *leaves ovate; pedicells exserted.*

9. *Phascum bryoides.* *Bryum squatmoss.*

Leaves ovate, with a point; *capsule* elliptical.

Phascum bryoides, *Dicks. Crypt.* 4, 10; *Engl. Bot.* 1280.

On banks, and in fields.

10. *Phascum rectum.* *Straight squatmoss.*

Leaves ovate, with a short point; *capsule* globular; *peduncle* nearly upright.

Phascum rectum, *Withering Arr.* 4, 771; *Engl. Bot.* 330.

On moist banks, along with weissia Starkeana.

11. *Phascum curvicollum.* *Bent-necked squat-moss.*

Leaves narrow, ovate, pointed; *capsule* globular; *peduncle* bent.

Phascum curvicollum, *Hedwig Crypt.* 1, 11; *Engl. Bot.* 905.

On moist banks.

IV. 346. SCHISTOSTEGA. Mohr. *Slate-moss.*

Capsule valveless, pedicelled, terminal; *peristome* 0; *lid* jagged; jaggs fall off.

Schistostega pennata. *Feathered slate-moss.*

Schistostega osmundacea, *Mohr Germ.* 92.
Gymnostomum pennatum, *Hedwig Crypt.* 1, *Crypt.* 1, 29; *Engl. Bot.* 2213.
Mnium osmundaceum, *Dicks. Crypt.* 1, 1.

On banks.

V. 347. ANICTANGIUM. Hedwig. *Bell-moss.*

Capsule valveless, pedicelled, terminal; *peristome* 0; *lid* falling off; *calyptra* bellshape.—*Leaves* without a main rib.

1. *Anictangium ciliatum.* *Fringed bell-moss.*

Leaves ovate, longly pointed, points transparent; *perichetial leaves* fringed at the tip.

Sphagnum cauliferum et ramosum saxatile hirsutum incanum, capitulis virentibus, *Raii Syn.* 105, 4.
Bryum apocarpum β, *Lin. S. P.* 1579.
Gymnostomum ciliatum, *Swartz Suec.* 19; *Engl. Bot.* 1179.
Gymnostomum Hedwigia, *Hoffman Germ.* 2, 28.
Hedwigia ciliata, *Hedw. Crypt.* 1, 107.
Hedwigia Anodon, *Ehrh. Crypt.* 192.
Anictangium ciliatum, *Hedw. Musc.* 40.
Bryum ciliatum, *Dickson Crypt.* 4, 6.
Fontinalis albicans, *Weber Gott.* 38.
Phascum piliferum, *Withering Arr.* 4, 786.

On high rocks; autumn.

2. *Anictangium imberbe.* *Beardless bell-moss.*

Leaves ovate, pointed, coloured at the tip; *perichetial leaves* serrated at the tip.

Gymnostomum imberbe, *Engl. Bot.* 2237.
Hedwigia integrifolia, *Pal. de Beauv. Prod.* 60.
Anictangium imberbe, *Hooker & Taylor Musc.* 14.

On mountains.

VI. 348. GYMNOSTOMUM. *Plain-mouth.*

Capsule valveless, pedicelled, terminal; *peristome* 0; *lid* falling off; *calyptra* halved.

a. *Stem long, branched.*

1. *Gymnostomum Lapponicum.* *Lapland plain-mouth.*

Leaves linear, lanceolate, when dry crisp, edges turned in; *perichetial leaves* broad, ovate; *capsule* topshape, streaked.

Gymnostomum Lapponicum, *Hedw. Crypt.* 3, 5; *Engl. Bot.* 2216.
Anictangium Lapponicum, *Hedwig Sp. Musc.* 40.
Bryum Lapponicum, *Dickson Crypt.* 4, 10.

On alpine rocks.

2. *Gymnostomum æstivum.* *Summer plain-mouth.*
Leaves lanceolate, when dry twisted, edges turned in; *perichetial leaves* broad, ovate; *capsule* oblong, smooth.

Gymnostomum æstivum, *Hedw. Sp. Musc.* 32, 2.
Gymnostomum luteolum, *Engl. Bot.* 2201; not of Smith Fl. Brit.
Gymnostomum tristichon, *Wahlenb. Lapp.*
Anictangium compactum, *Schwægr. Suppl.* 11.

On wet rocks.

3. *Gymnostomum viridissimum.* *Greenest plain-mouth.*
Leaves broad, lanceolate; *capsule* ovate.

Gymnostomum viridissimum, *Engl. Bot.* 1583.
Bryum viridissimum, *Dicks. Crypt.* 4, 9.
Grimmia? Forsteri, *Engl. Bot.* 2225.
Bryum Forsteri, *Dicks. Crypt.*

On trees.

4. *Gymnostomum curvirostrum.* *Bent-beak plain-mouth.*
Leaves awlshape; *capsule* topshape, ovate, *lid* obliquely beaked.

Bryum angustissimis foliis crebrioribus, capitulis erectis brevibus, pediculis e surculis novis et longis enascentibus, *Dillen in Raii Syn.* 99, 38.
Bryum æstivum, *Lin. S. P.* 1585.
Gymnostomum curvirostrum, *Hedw. Crypt.* 2, 24; *Engl. Bot.* 2214.
Bryum palustre, *Huds. Angl. ed.* 1, 411.
Bryum stelligerum, *Dicks. Crypt.* 2, 3.
Gymnostomum stelligerum, *Engl. Bot.* 2202.
Gymnostomum æruginosum, *Engl. Bot.* 2200.
Gymnostomum luteolum, *Smith Fl. Brit.* 1163.
Gymnostomum rupestre, *Schwægr. Suppl.* 11.
Dicranum hyperboreum, *Engl. Bot.* 2552?

On moist rocks.

b. *Stem short, not branched.*

5. *Gymnostomum Griffitsii.* *Griffiths' plain-mouth.*
Leaves reverse ovate, rounded, networked; main rib not reaching to the point; *pedicell* fleshy, thick; *lid* hemispherical.

Bryum Griffithsianum, *Dickson Crypt.* 4, 8.
Splachnum Frœlichianum, *Withering Arr.* 794.
Gymnostomum Griffithsianum, *Smith Fl. Brit.* 1162; *Engl. Bot.* 1938.

On mountains; summer.
The appearance is that of a splachnum.

6. *Gymnostomum ovatum.* *Ovate plain-mouth.*

Leaves ovate, upright, concave, tip hairlike, main rib furnished with a granule-bearing membrane; *capsule* ovate; *lid* beaked.

Bryum ovatum, *Dickson Crypt.* 2, 4.
Gymnostomum ovatum, *Hedw. Sp.* 31; *Engl. Bot.* 1889.

On banks and walls.

β. *gracile.* *Capsule* oblong.

7. *Gymnostomum truncatum.* *Truncated plain-mouth.*

Leaves ovate, sharp-pointed, spreading, nearly flat; *capsule* topshape; *lid* obliquely beaked.

Bryum parvum, erectis subrotundis majusculis capitulis subfuscis; foliis serpilli pellucidis, *Dillen in Raii Syn.* 93.
Bryum truncatulum, *Lin. S. P.* 1584.
Gymnostomum truncatum, *Hedw. Sp.* 30.
Gymnostomum truncatulum, *Hoffm. Germ.* 2, 27; *Engl. Bot.* 1975.

On banks and walls.

β. *intermedium.* *Capsule* ovate, long.

Bryum exiguum, erectis parvis subrotundis creberrimis capitulis rufis, foliolis serpilli angustis pellucidis, *Dill. in Raii Syn.* 94, 8.
Bryum truncatulum, *Ehrh. Crypt.* 14.

8. *Gymnostomum Heimii.* *Heim's plain-mouth.*

Leaves lanceolate, serrated at the point; *capsule* ovate, oblong; *lid* obliquely beaked.

Gymnostomum Heimii, *Hedw. Crypt.* 1, 30; *Engl. Bot.* 1951.
Gymnostomum obtusum, *Hedw. Sp.* 2, 34; *Engl. Bot.* 1407.
Bryum Heimii, *Dicks. Crypt.* 2, 4.
Bryum obtusum, *Dickson Crypt.* 2, 5.

On moist banks; annual; spring and summer.

9. *Gymnostomum conicum.* *Conical plain-mouth.*

Leaves oblong, ovate, sharp-pointed; *capsule* ovate; *operculum* conical, blunt.

Gymnostomum conicum, *Schwægr. Suppl.* 9.

In fields.

10. *Gymnostomum fasciculare.* *Bundled plain-mouth.*

Leaves oblong, pointed, nearly flat, slightly serrated, bordered; *capsule* pearshape; *lid* flat, slightly nipply.

Bryum Ægypti, *Hasselq. Iter.* 502.
Bryum fasciculare, *Dicks. Crypt.* 3, 3.
Gymnostomum fasciculare, *Hedw. Sp.* 4, 5; *Engl. Bot.* 1245.
The hyssop that groweth on the wall. English Bible.

On mountains and barren pastures; winter and spring.
Abundant on the walls of Jerusalem.

11. *Gymnostomum pyriforme.* *Pearshape plain-mouth.*
Leaves ovate, pointed, concave, serrated, not bordered; *capsule* roundish, ovate; *lid* convex, beaked, beak short.

Bryum parvum, erectis piriformibus majusculis capitulis, foliis serpilli pellucidis, *Raii Syn.* 93, 7.
Bryum pyriforme, *Lin. S. P.* 1580.
Gymnostomum pyriforme, *Hedw. Sp.* 38; *Engl. Bot.* 413.

On wet banks and sides of ditches; winter and spring.

12. *Gymnostomum tenue.* *Slender plain-mouth.*
Stem scarcely any; *lower leaves* very short, ovate, lanceolate; upper linear, lanceolate; all upright, blunt; *main rib* strong, not reaching the point.

Bryum paucifolium, *Dicks. Crypt.* 4, 7.
Gymnostomum tenue, *Hedw. Sp.* 4, 1.
Gymnostomum paucifolium, *Engl. Bot.* 2506.
Dicranum cylindricum, *Smith Fl. Brit.* 1221.

On sandstone rocks and ruins.

13. *Gymnostomum Donnii.* *Donn's plain-mouth.*
Stem very short; *leaves* awlshape, straight; *capsule* topshape.

Gymnostomum Donnianum, *Engl. Bot.* 1582.

On rocks.
Appearance very similar to that of weissia calcarea.

14. *Gymnost. microstomum.* *Small-mouth plain-mouth.*
Leaves broad, awlshape, edge turned in above, bent, crisped when dry; *capsule* elliptical, contracted at the mouth; *lid* awlshape, bent.

Gymnostomum microstomum, *Hedw. Sp.* 33; *Engl. Bot.* 2215.
Gymnostomum rutilans, *Hedw. Sp.* 3.
Gymnostomum tortile, *Schwægr. Suppl.* 10.

On banks.
Very like weissia controversa, but distinguishable by the mouth of the capsule, and short pedicell.

VII. 349. DIPHYSCIUM. *Double-hunch.*

Capsule valveless, gibbous, pedicelled; *pedicell* terminal; *peristome* single, membranaceous, conical, truncated, plaited; *calyptra* mitreshape.

Diphyscium foliosum. *Leafy double-hunch.*

Sphagnum acaulon maximum, foliis in centro ciliaribus, *Dillen Musc.* 253.
Buxbaumia foliosa, *Swartz in Lin. Meth. Musc.* 33; *Engl. Bot.* 329.
Buxbaumia sessilis, *Schmidel Buxb.* 22.
Phascum montanum, *Hudson Angl.* 466.
Phascum maximum, *Lightf. Scot.* 693.
Dicranum foliosum, *Mohr. Obs. Bot.* 34.

On low alpine rocks, and in woods; annual; July.
Capsule large, ovate, oblique.

VIII. 350. TETRAPHIS. Hedwig. *Four-tooth.*

Capsule valveless, pedicelled, *pedicells* terminal; *peristome* single; teeth four, equidistant, upright; *calyptra* mitreshape.

1. *Tetraphis pellucida.* *Transparent four-tooth.*

Stems long; leaves ovate, pointed; *perichetial leaves* lanceolate; *capsule* cylindrical.

Mnium minus non ramosum, angustioribus et pellucidis foliis, *Dillen in Raii Syn.* 78, 4.
Mnium pellucidum, *Lin. S. P.* 1574.
Bryum pellucidum, *Abbot Bedf.* 237.
Tetraphis pellucida, *Hedw. Spec.* 45.

On decaying trees, and on mountains.

2. *Tetraphis ovata.* *Ovate four-tooth.*

Stem very short; *leaves* few, linear, slightly thickened upwards; *perichetial leaves* ovate, blunt; *capsules* ovate.

Bryum Brownianum, *Dicks. Crypt.* 4, 7.
Orthotrichum Brownianum, *Smith Fl. Brit.* 1269.
Grimmia Browniana, *Engl. Bot.* 1422, very incorrect.
Tetraphis ovata, *Hoppe Deutsch. Fl.*

On rocks, especially granite.

IX. 351. SPLACHNUM. Linnæus. *Gland-moss.*

Capsule valveless, pedicelled; *pedicell* terminal; *apophysis* evident; *peristome* single; teeth 8, double; *calyptra* mitreshape, not furrowed.

a. *Leaves pointed.*

1. *Splachnum sphæricum.* *Spherical glandmoss.*

Leaves reverse ovate, rounded, pointed, slightly serrate; *apophysis* ovate, globular, wider than the capsule.

Bryum erectis gigantinis capitulis, foliis serpilli pellucidis obtusis, *Dillen in Raii Syn.* 93.
Phascum pedunculatum, *Huds. Angl. ed.* 1, 397.
Splachnum sphæricum, *Lin. Fil. Musc.* 33; *Engl. Bot.* 785.
Splachnum gracile, *Dicks. Crypt.* 4, 3; *Engl. Bot.* 1921.
Splachnum vasculosum, *Huds. Angl.* 469.
Splachnum ovatum, *Hedwig S. Musc.* 54, 8; *Engl. Bot.* 1590.
Splachnum rugosum, *Dicks. Crypt.* 4, 3; *Engl. Bot.* 2094.

On the dung of animals on alpine hills.

2. *Splachnum tenue.* *Slender glandmoss.*

Leaves reverse ovate, pointed, serrated; *apophysis* reverse conical, narrower than the capsule; *columella* exserted.

Splachnum tenue, *Dicks. Crypt.* 2, 2; *Engl. Bot.* 1133.
Splachnum serratum, *Hedwig S. Musc.* 8, 1.
Splachnum longicollum, *Dicks. Crypt.* 4, 4.
Grimmia splachnoides, *Smith Fl. Brit.* 1197; not of Engl. Bot.

On turfy soils, but not on dung, on high mountains.

3. *Splachnum mnioides.* *Mnium-like glandmoss.*

Leaves ovate, lanceolate, much pointed, concave, not serrated; *apophysis* reverse ovate, nearly as narrow as the capsule.

Splachnum mnioides, *Lin. Fil. Musc.* 6; *Engl. Bot.* 1539.
Splachnum urceolatum β, *Wahlenb. Lapp.*
Splachnum urceolatum, *Dicks. Crypt.* 2, 2.

Among mosses on high rocky mountains.

β. *majus.* *Thallus* pale; *stem* long.

Bryum ampullaceum, foliis et ampullis angustioribus, *Dillen Musc.* 345.
Splachnum fastigiatum, *Dicks. Crypt.* 3, 2; *Engl. Bot.* 786.
Splachnum Brewerianum, *Hedw. Crypt.* 2, 38.

4. *Splachnum angustatum.* *Narrowed glandmoss.*

Leaves ovate, lanceolate, much pointed, serrated; *apophysis* reverse ovate, rather narrower than the capsule; *peduncles* scarcely longer than the leaves.

Splachnum angustatum, *Lin. Fil. Musc.* 33; *Engl. Bot.* 1132.

On alpine hills, on turf and cowdung.

5. *Splachnum ampullaceum.* *Crewet glandmoss.*

Leaves ovate lanceolate, pointed, serrated; *apophysis* inverted crewetshape, twice as wide as the capsule.

Splachnum ampullaceum, *Lin. S. P.* 1572; *Engl. Bot.* 144.
Splachnum Turnerianum, *Dicks. Crypt.* 4, 3; *Engl. Bot.* 1116.

On the ground and on dung, on alpine hills.

b. *Leaves blunt.*

6. *Splachnum vasculosum.* *Vasculose glandmoss.*

Leaves rhomboid, rounded, blunt; main rib not reaching the point; *apophysis* globular, much wider than the capsule.

Splachnum vasculosum, *Hedwig Crypt.* 2, 15.
Splachnum rugosum, *Engl. Bot.* 2094, not of Dickson.

On alpine bogs.

7. *Splachnum Frœlichii.* *Frœlich's glandmoss.*

Leaves ovate, rounded at the points; main rib disappearing; *apophysis* reverse ovate, much narrower than the capsule.

Splachnum Frœlichianum, *Hedw. Crypt.* 3, 40.
Bryum reticulatum, *Dicks. Crypt.* 2, 4.
Splachnum reticulatum, *Engl. Bot.* 2507.

On alpine mountains.

X. 352. CONOSTOMUM. Swartz. *Cone-mouth.*

Capsule valveless, pedicelled; *pedicells* terminal; *peristome* single, toothed; teeth 16, equally distant, all united at the top; *calyptra* halved.

Conostomum boreale. *Northern cone-mouth.*

Stem rather short; *leaves* lanceolate, pointed, keeled, slightly toothed.

Conostomum boreale, *Swartz in Schrad. Journ.* 1, 24.
Grimmia Conostoma, *Engl. Bot.* 1135.
Bryum tetragonum, *Dicks. Crypt.* 2, 8.

On very high mountains.

XI. 353. POLYTRICHUM. Pliny. *Hairy-cap.*

Capsule valveless, pedicelled; *pedicells* terminal; *peristome* single, toothed; teeth 32 or 64, equally distant, bent; tips united by a horizontal membrane; *calyptra* small, halved.—*Leaves* generally thick, opake, winged.

a. *Calyptra naked.*

1. *Polytrichum undulatum.* *Wavy hairy-cap.*

Leaves lanceolate, wavy; edge flat, fine-toothed; main rib winged; *capsule* cylindrical, bent; *lid* awlshape.

Bryum capitulis oblongis rubentibus, foliis oblongis angustis pellucidis rugosis, *Raii Syn.* 95, 15.
Bryum undulatum, *Lin. S. P.* 1582.
Polytrichum undulatum, *Hedw. Crypt.* 1, 16; *Engl. Bot.* 1220.
Catharinea Callibryon, *Ehrh. Crypt.* 83.
Catharinea undulata, *Wehr et Mohr Reise.*
Oligotrichum undulatum, *De Cand. Fl. Gall.* 1201.

In shady places.

2. *Polytrichum Hercynicum.* *Hercynian hairy-cap.*
Leaves lanceolate, stiff, not toothed; sides turned in; main rib broad, furrowed; *capsule* oblong, nearly upright.

Polytrichum Hercynicum, *Hedw. Sp. Musc.* 94; *Engl. Bot.* 1209.
Catharinea Hercynica, *Ehrh. Crypt.* 12.
Bryum incurvum, *Hudson Angl.* 479.
Oligotrichum Hercynicum, *De Cand. Fl. Gall.* 1202.

On high mountains.

b. *Calyptra covered with succulent threads; leaves not cut; edges turned in.*

3. *Polytrichum pilifolium.* *Hair-leaved hairy-cap.*
Leaves lanceolate, awlshape; edges turned in, not cut; tip hairlike; *capsule* ovate, bluntly 4-sided, apophysed; *lid* conical.

Polytrichum quadrangulare minus, juniperi foliis pilosis, *Dillen. Musc.* 426.
Polytrichum commune γ, *Lin. S. P.* 1573.
Polytrichum piliferum, *Schreb. Lips.* 74; *Engl. Bot.* 1199.

On dry sandy heaths; perennial; spring.

4. *Polytrichum juniperinum.* *Juniper hairy-cap.*
Leaves lanceolate, awlshape; edge not cut, turned in; tip pointed, coloured, slightly serrate; *capsule* ovate, bluntly 4-sided, apophysed; *lid* conical.

Polytrichum montanum et minus, capsula quadrangulari, *Raii Syn.* 90, 2.
Muscus capillaris sive Adiantum aureum minus, *Ger. em.* 1559.
Polytrichum commune β, *Lin. S. P.* 1573.
Polytrichum juniperinum, *Hedw. Spec.* 80, 18; *Engl. Bot.* 1200.
Polytrichum juniperifolium, *Hoffm. Crypt.*
Polytrichum strictum, *Menzies in T. L. S.* 4, 77; *Eng. Bot.* 2435.
Polytrichum alpestre, *Schwœgr. Suppl.* 97.

On mountain heaths.

5. *Polytrichum septentrionale.* *Northern hairy-cap.*
Leaves linear, awlshape, blunt; edge slightly serrate and turned in, especially near the tip; *capsule* ovate, rather cornered, with a minute apophysis; *lid* conical, pointed.

Polytrichum septentrionale, *Swartz Musc. Suec.* 9, 18.
Polytrichum sexangulare, *Engl. Bot.* 1906.
Polytrichum Norvegicum, *Hedw. Spec.* 22.
Polytrichum crassisetum, *De Cand. Fl. Fr.* 1270.

On the highest mountains.

c. *Calyptra covered with succulent threads; leaves serrated; edges flat.*

6. *Polytrichum commune.* Common hairy-cap.

Stem long; *leaves* spread open, linear, awlshape; edges flat, serrated; keel serrated at the tip; *capsule* upright, 4-cornered, apophysed.

Polytrichum vulgare et majus, capsula quadrangulare, *Raii Syn.* 90, 1.
Muscus capillaris sive Adiantum aureum majus, *Ger. em.* 1559.
Polytrichum aureum majus, *Park.* 1052.
Polytrichum commune, *Lin. S. P.* 1573; *Engl. Bot.* 1197.
Polytrichum juccæfolium, *Ehrh. Crypt.* 214.
Great golden maiden hair. Golden locks. Goldilocks.

On heaths.

β. *attenuatum. Stem* short; *leaves* short; edge transparent; *capsule* bluntly quadrangular; *apophysis* indistinct.

Polytrichum attenuatum, *Menzies in T. L. S.* 4, 72; *Engl. Bot.* 1198.
Polytrichum formosum, *Hedw. Spec.* 92.
Polytrichum gracile, *Menzies in T. L. S.* 4, 73; *Engl. Bot.* 1827.
Polytrichum longisetum, *Swartz Musc. Suec.* 103.
Polytrichum aurantiacum, *Hoppe.*

7. *Polytrichum alpinum.* Alpine hairy-cap.

Stem long, branched; *leaves* spread open, awlshape lanceolate; edge flat, serrated; keel serrated at the tip; *capsule* nearly ovate; *apophysis* indistinct.

Polytrichum alpinum, *Lin. S. P.* 1593; *Engl. Bot.* 1905.
Polytrichum sylvaticum, *Menzies in T. L. S.* 4, 83.
Polytrichum aureum, *Swartz Musc. Suec.* 76.

On subalpine hills.

8. *Polytrichum urnigerum.* Urnbearing hairy-cap.

Stem long, branched; *leaves* slightly spreading, lanceolate, pointed; edge flat, serrated; *capsule* upright, cylindrical; *apophysis* 0.

Polytrichum ramosum, setis ex alis urnigeris, *Dillen. Musc.* 427.
Polytrichum urnigerum, *Lin. S. P.* 1573; *Engl. Bot.* 1218.

On the sides of mountain streams.

9. *Polytrichum aloides.* Aloe hairy-cap.

Stem short; *leaves* linear, lanceolate, blunt; edge flat, serrated especially at the tip; keel serrated at the end; *capsule* nearly upright, cylindrical; *apophysis* 0.

Polytrichum parvum aloes folio serrato, capsulis oblongis, *Dillen. Musc.* 429.
Mnium polytrichoides β, *Lin. S. P.* 1577.
Polytrichum aloides, *Hedwig. Crypt.* 1, 14; *Engl. Bot.* 1649.
Polytrichum rubellum, *Menzies T. L. S.* 2, 79; *Engl. Bot.* 1939.

On moist heaths.

β. *Dicksoni.* *Pedicells* very short; *stems* branched.

Polytrichum Dicksoni, *Turner M. Heb.* 90; *Engl. Bot.* 1605.

γ *nanum.* *Stem* short; capsules nearly upright, almost globular.

Polytrichum capsulis subrotundis, calyptrâ quasi lacerâ coronatis, *Raii Syn.* 91, 3.
Polytrichum nanum, *Hedw. Crypt.* 1, 13; *Engl. Bot.* 1625.
Polytrichum subrotundum, *Menzies in T. L. S.* 4, 69; *Engl. Bot.* 1624.
Polytrichum pumilum, *Swartz M. Suec.* 9, 19.

XII. 354. CINCLIDOTUS. Pal. de Beauvois. *Net-tooth.*

Capsule valveless, pedicelled; *pedicells* terminal; *peristome* single, toothed; teeth 32, threadlike, twisted, anastomosing at the bottom; *calyptra* mitreshape.—*Fruit* on such short branches as scarcely to leave room for more than the perichetial leaves.

Cinclidotus fontinaloides. *Fontinalislike net-tooth.*

Fontinalis minor, foliis triangularibus minus complicatis, capitulis in summis ramulis sessilis, *Dillen. in Raii Syn.* 79, 2.
Fontinalis minor, *Lin. S. P.* 1571; *Engl. Bot.* 557.
Trichostomum fontinaloides, *Hedw. Crypt.* 3, 36.
Cinclidotus fontinaloides, *Beauv. Prod. Æth.* 28.

On stones and wood in rivers; perennial; May to Aug.

XIII. 355. TORTULA. Hedwig. *Screw-moss.*

Capsule valveless, pedicelled; *pedicell* terminal; *peristome* single, toothed; teeth 32, threadlike, twisted, united at bottom by a tubelike membrane; *calyptra* halved.

1. *Tortula rigida.* *Stiff screw-moss.*

Stem scarcely any; *leaves* spread open, oblong, stiff; edge much turned in, main rib broad; *capsule* oblong; *lid* conical, pointed.

Bryum acaulon, ericæ tenuifoliæ Gerardi folio, *Dillen Musc.* 388.
Tortula rigida, *Swartz M. Suec.* 40.
Barbula rigida, *Hedw. Crypt.* 1, 65.
Bryum rigidum, *Huds. Angl.* 477; *Engl. Bot.* 180.

On rocks, clay-banks, and chalk-cliffs.

2. *Tortula muralis.* *Wall screw-moss.*

Stem short; *leaves* spread open, linear, oblong; edge turned over; main rib produced beyond the leaf into a white hairlike point; *capsule* oblong; *lid* conical, pointed.

Bryum minus, erectis minus falcatis capitulis, foliis latiusculis congestis, in pilum canescentem desinentibus, *Raii Syn.* 94, 11.
Bryum murale, *Lin. S. P.* 1581.
Tortula muralis, *Hedw. Spec.* 123; *Eng. Bot.* 2033.
Barbula muralis, *Moug. et Nestl.* 127.
Tortula æstiva, *Bridel.*

On walls and stones; perennial; winter and spring.

3. *Tortula ruralis.* *Country screw-moss.*

Stems long; *leaves* oblong, keeled, spread open, bent back; main rib ending in a long, usually transparent, serrated point; *capsule* oblong; *lid* awlshape; *teeth* of the peristome only united at bottom.

Bryum majus, erectis falcatis capitulis, foliis latiusculis extantibus, in pilum canescentem desinentibus, *Raii Syn.* 94, 10.
Bryum rurale, *Lin. S. P.* 1581.
Tortula ruralis, *Ehrh. Crypt.* 184; *Engl. Bot.* 2070.
Barbula ruralis, *Hedw. Sp. Musc.* 121.
Syntrichia ruralis, *Bridel.*

On banks, trees, and roofs.

4. *Tortula subulata.* *Awlshape screwmoss.*

Stem very short; *leaves* oblong, lanceolate, pointed; main rib protruded, often forming a point; *capsule* cylindrical; *lid* conical, awlshape; *teeth* of the peristome united nearly to the end.

Bryum erectis longis et acutis falcatis capitulis, calyptrâ subfuscâ, foliis serpylli pellucidis, *Raii Syn.* 92, 3.
Bryum subulatum, *Lin. S. P.* 1581.
Tortula subulata, *Hedw. Spec.* 122; *Engl. Bot.* 1101.
Barbula subulata, *Moug. et Nestl.* 126.
Syntrichia subulata, *Bridel.*

On banks; perennial; winter and spring.

5. *Tortula cuneifolia.* *Wedge-leaved screw-moss.*

Stem scarcely any; *leaves* broad, reverse ovate, concave; main rib protruded, forming a rather long and slightly serrated point; *capsule* oblong; *lid* with a short beak; *teeth* of the peristome united only at bottom.

Bryum humile, pilis careus, viride et pellucidum, *Dillen. Musc.* 386.
Tortula cuneifolia, *Roth Germ.* 3, 213; *Engl. Bot.* 1510.
Bryum cuneifolium, *Dickson Crypt.* 3, 7.

On banks, and in sandy fields.

6. *Tortula stellata.* *Starred screw-moss.*

Stem scarcely any; *leaves* ovate, concave; main rib protruded; *capsule* ovate, streaked; *lid* beaked.

Tortula stellata, *Engl. Bot.* 2384.
Bryum stellatum, *Dickson Crypt.* 2, 6.
Barbula agraria, *Hedw. Crypt.* 3, 6.

On banks and the edges of rivulets.

7. *Tortula tortuosa.* *Frizz'ed screw-moss.*

Stem long, branched; *leaves* linear, awlshape, keeled, wavy, when dry twisted; *capsule* cylindrical; *lid* beaked.

Bryum trichoides longifolium, crassiusculis cauliculis; capitulis erectis aduncis acutis, *Dillen. in Raii Syn.* 98, 35.
Bryum tortuosum, *Lin. S. P.* 1583.
Tortula tortuosa, *Hedw. Sp. M.* 124; *Engl. Bot.* 1708.
Barbula tortuosa, *Schwœgr. Supp.* 33.

On limestone rocks.

8. *Tortula fallax.* *Deceiving screw-moss.*

Stem long, branched; *leaves* lanceolate, awlshape, spread open or bent back; edge turned over; *capsule* oblong; *lid* beaked, nearly as long as the capsule.

Bryum perangustis foliis et cauliculis, foliis crebrioribus et circa extremitates magis congestis, capitulis erectis ad summitatem magis egredientibus, *Raii Syn.* 99, 40.
Bryum angustis viribus foliis, capitulis erectis, brevibus pediculis insidentibus, calyptra falcata vel avium unguiculas referente, *Dillen. in Raii Syn.* 96, 21.
Bryum imberbe, *Lin. Mant.* 309.
Tortula fallax, *Swartz M. Suec.* 40; *Engl. Bot.* 1708.
Barbula fallax, *Hedw. Crypt.* 1, 24.
Bryum fallax, *Dicks Crypt.* 3, 5.
Tortula unguiculata, *Turner M. Hib.* 47; *Engl. Bot.* 2316.
Tortula imberbis, *Engl. Bot.* 2329.

On walls and banks; or among grass; perenn.; spring.

9. *Tortula revoluta.* *Turned-over screw-moss.*

Stem short; *leaves* lanceolate, pointed; edges much turned over; *perichetial leaves* sheathing, sides turned in; *capsule* oblong; *lid* beaked, shorter than the capsule.

Tortula revoluta, *Bridel in Schr. Journ.* 1800, 1, 299.
Barbula revoluta, *Schwœgr. Supp.* 33.
Tortula nervosa, *Engl. Bot.* 2383.

On banks; perennial; March.

10. *Tortula unguiculata.* *Clawed screw-moss.*

Stem branched; *leaves* linear, lanceolate, blunt; main rib prolonged into a point; edges nearly flat; *capsule* oblong; *lid* beaked, nearly as long as the capsule.

Bryum unguiculatum et barbatum, tenuius et stellatum, *Dillen. Musc.* 384.
Bryum tenue barbatum, foliis angustioribus et rarioribus, *Dillen. Musc.* 385.
Barbula unguiculata, *Hedw. Crypt.* 1, 23.
Tortula mucronulata, *Swartz Musc. Suec.* 40; *Engl. Bot.* 1299.
Tortula aristata, *Engl. Bot.* 2392.
Bryum aristatum, *Dicks. Crypt.*
Tortula barbata, *Engl. Bot.* 2391.
Tortula humilis, *Turner M. Hib.* 45; *Engl. Bot.* 1663.
Tortula apiculata, *Turner M. Hib.* 46; *Engl. Bot.* 2494.

On banks and hedges.

11. *Tortula convoluta.* *Rolled screw-moss.*

Stem short; *leaves* oblong, rather blunt; main rib not prolonged; edge flat or only slightly bent; *perichetial leaves* sheathing, pointed, rolled up; *capsule* oblong; *lid* beaked.

Bryum trichoides exile pallidum, erectis capitulis e surculis annotinis egredientibus, *Raii Syn.* 96, 24.
Tortula convoluta, *Swartz M. Suec.* 41; *Engl. Bot.* 2382.
Bryum convolutum, *Dicks. Crypt.* 2, 6.
Barbula convoluta, *Hedw. Sp. Musc.* 120.
Bryum setaceum, *Huds. Angl.* 481.

On heaths, banks, and walls.

XIV. 356. ENCALYPTA. Hedwig. *Extinguisher-moss.*

Capsule valveless, pedicelled, *pedicells* terminal; *peristome* single, toothed; teeth 16; *calyptra* bellshape, smooth, entirely enclosing the ripe capsule.

1. *Encalypta streptocarpa.* *Streak-fruit extinguisher-moss.*

Stem long; *leaves* elliptical, lanceolate, rather blunt, main rib not prolonged; *capsule* cylindrical, streaked, spirally; *calyptra* toothed at the base.

Hypnum saxatile, erectum, ramulis teretibus, foliis subrotundis saturate viridibus, *Dillen Musc.* 335.
Encalypta streptocarpa, *Hedw. Sp. Musc.* 62; *Engl. Bot.* 2163.
Bryum ciliare, *Dicks. Crypt.* 4, 15.

On stony mountains.

2. *Encalypta vulgaris.* *Common extinguisher-moss.*

Stem short; *leaves* oblong, elliptical, blunt; main rib prolonged slightly; *capsule* cylindrical, smooth; *calyptra* not toothed at the base.

Bryum erectis capitulis calyptra laxa conica, foliis serpylli pellucidis angustioribus, *Raii Syn.* 92, 4.
Bryum extinctorum, *Lin. S. P.* 1581; *Engl. Bot.* 558.
Encalypta vulgaris, *Hedw. Spec.* 60.
Encalypta extinctoria, *Swartz M. Suec.* 24.
Leersia vulgaris, *Hedw. Crypt.* 1, 18.

On banks, limestone-rocks, and walls; annual; April.

3. *Encalypta ciliata.* *Fringed extinguisher-moss.*

Stem short; *leaves* oblong, pointed; main rib prolonged considerably; *capsule* cylindrical; *calyptra* toothed at the base.

Bryum calyptra extinctorii figurâ, majus et ramosum, *Dillen. Musc.* 350.
Bryum extinctorium β, *Lin. S. P.* 1581.
Encalyptra ciliata, *Hedw. Sp. M* 61; *Engl. Bot.* 1418.
Leersia ciliata, *Hedw. Crypt.* 1, 49.

On rocks; perennial; summer.

β. *alpina.* *Leaves* much pointed, points transparent; *capsule* smooth.

Encalypta alpina, *Engl. Bot.* 1419.
Encalypta affinis, *Hedw. fil. in Web. et Mohr. Beitr.* 4.

γ. *rhaptocarpa.* *Leaves* pointed, points of the same colour; *capsule* when old streaked lengthways.

Encalyptra rhaptocarpa, *Schwægr. Supp.* 16.

XV. 357. GRIMMIA. Hedwig. *Grimm.*

Capsule valveless, pedicelled; *pedicells* terminal; *peristome* single, toothed; teeth 16, entire or perforated, rarely cleft, equidistant; *calyptra* mitreshaped, shorter than the capsule.

1. *Grimmia apocarpa.* *Sessile-fruited grimm.*

Stem branched; *leaves* ovate, lanceolate, bent back, open; edges turned over; *main rib* of the perichetial leaves not prolonged; *capsule* ovate, nearly sessile; *lid* with a short beak.

Sphagnum cauliferum et ramosum saxatile hirsutum virescens, capitulis obscurè rubris, *Raii Syn.* 104, 3.
Bryum apocarpon, *Lin. S. P.* 1579.
Grimmia apocarpa, *Hedw. Cryp.* 1, 39; *Engl. Bot.* 1134.
Grimmia alpicola, *Swartz Musc. Suec.* 1.
Grimmia alpicola β & γ, *Wahlenb. Lapp.*
Grimmia rivularis, *Bridel in Schrad. Journ.* 5, 3.
Grimmia gracilis, *Schwægr. Supp.* 23.

On trees, and alpine rocks or rivulets.

β. *stricta.* *Stem* long; *leaves* narrow, reddish.

Grimmia stricta, *Turner M. Hiber.* 20.

2. *Grimmia maritima.* *Sea-shore grimm.*

Stem short, cushionlike; *leaves* lanceolate, pointed, nearly upright, crisp when dry; edge turned over; *main rib* of the perichetial leaves prolonged; *capsule* ovate, nearly sessile; *lid* with a short beak.

Grimmia maritima, *Turn. Musc. Hib.* 23; *Engl. Bot.* 1645.
Grimmia alpicola δ, *Wahlenb. Lapp.*

On rocks by the sea; perennial; Septem. and October.

3. *Grimmia saxicola.* *Rockloving grimm.*

Stem scarcely any; *leaves* linear, awlshape, crisp when dry; *pedicells* long, bent, kneed; *capsule* ovate; *lid* beaked, beak straight.

Dicranum saxicola, *Mohr.*
Grimmia geniculata, *Schwægr. Supp.* 22.

On rocks.

4. *Grimmia pulvinata.* *Cushioned grimm.*

Stem short, cushionlike; *leaves* narrow, elliptical; edge turned over; points transparent, hairlike; *pedicells* long, bent; *capsule* ovate, streaked; *lid* conical, pointed.

Bryum trichoides hirsutie canescens; capitulis subrotundis reflexis, in perbrevibus pediculis, *Raii Syn.* 100, 46.
Bryum pulvinatum, *Lin. S. P.* 1586.
Grimmia pulvinata, *Engl. Bot.* 1728.
Dicranum pulvinatum, *Swartz Musc. Suec.* 32.
Fissidens pulvinatus, *Hedw. Sp. Musc.* 40.

On walls and rocks.

5. *Grimmia Daviesii.* *Davies' grimm.*

Stem short; *leaves* lanceolate, pointed, keeled, not cut, very crisp when dry; edge turned over; *perichetial leaves* broad, rolled in; *pedicells* longer than the leaves, straight; *capsule* topshape; *lid* beaked.

Grimmia Daviesii, *Turner M. Hibern.* 24.
Bryum Daviesii, *Dickson Crypt.* 3, 3.
Encalypta Daviesii, *Engl. Bot.* 1281.

On rocks by the sea; perennial.

6. *Grimmia ovata.* *Ovate grimm.*

Stem slightly branched; *leaves* lanceolate, awlshape, points long, transparent, hairlike; edge turned in; *pedicells* long, straight; *capsule* ovate; *teeth* of the peristome often perforated and split; *lid* beaked.

Grimmia ovata, *Weber & Mohr. Suec.* 2, 4.
Dicranum ovatum, *Hedw. Crypt.* 3, 34.
Dicranum ovale, *Hedw. S. Musc.* 140; *Engl. Bot.* 2165.
Trichostomum ovatum, *Mohr.*
Bryum ovale, *Dickson Crypt.* 4, 14.
Grimmia obtusa, *Schwægr. Supp.* 25.

On alpine rocks.

7. *Grimmia Donnii.* *Donn's grimm.*

Stem short; *leaves* lanceolate, awlshape; points long, transparent, hairlike; edge turned in; *pedicells* long, straight; *capsule* ovate; *teeth* of the peristome entire; *lid* beaked; *beak* short.

Grimmia Donniana, *Engl. Bot.* 1259.
Grimmia sudetica? *Schwægr. Suppl.* 24.

On rocks, in alpine regions.

XVI. 358. PTERIGONIUM. Swartz. *Wing-moss.*

Capsule valveless, pedicelled; *pedicells* from the side of the stem; *peristome* single, toothed; teeth 16, not cut, equidistant; *calyptra* halved.

1. *Pterigonium Smithii.* *Smith's wing-moss.*

Stem much branched; branches pinnate; *leaves* tongue-shape, blunt, not cut, crisp when dry; edge turned over, main rib reaching more than half way up; *pedicells* very short; *lid* beaked.

Pterogonium Smithii, *Swartz in Schrad. Jour.* 2, 173; *Engl. Bot.* 1326.
Hypnum Smithii, *Dickson Crypt.* 2, 10.
Polytrichum Smithii, *Hull. Engl. Fl.* 249.

On the trunks of trees; perennial; spring.

2. *Pterogonium gracile.* *Slender wing-moss.*

Branches in bundles, bent; *leaves* broad, ovate, pointed, concave; edge flat; tip serrated; base slightly 2-ribbed; *lid* conical.

Hypnum gracile ornithopodioides, *Dillen. Musc.* 320.
Hypnum gracile, *Lin. Mant.* 310.
Hypnum ornithopodioides, *Huds. Angl.* 508.
Pterogonium gracile, *Swartz M. Suec.* 26; *Engl. Bot.* 1085.
Pterigynandrum gracile, *Hedw. Sp. Musc.* 80.
Encalypta gracilis, *Roth Germ.* 3, 154.
Grimmia ornithopodioides, *Mohr.*

On subalpine rocks.

3. *Pterogonium filiforme.* *Threadlike wing-moss.*

Stem irregularly branched, bent; *leaves* ovate, rather pointed, concave; edges turned over, serrate; main rib single or forked, short, faintly marked; *lid* conical.

Hypnum cylindricum, *Dickson Crypt.* 2, 12.
Pterogynandrum filiforme, *Hedw. Crypt.* 4, 7.
Pterogonium filiforme, *Engl. Bot.* 2297.
Pterogonium cæspitosum, *Engl. Bot.* 2526.
Grimmia filiformis, *Mohr.*

On mountains.

XVII. 359. WEISSIA. Hedwig. *Weiss.*

Capsule valveless, pedicelled; *pedicells* terminal; *peristome* single, toothed; teeth 16, entire, equidistant; *calyptra* halved.

a. *Capsule with an apophysis.*

1. *Weissia splachnoides.* *Splachnumlike weiss.*

Leaves tongueshape, tip rounded; main rib not reaching the tip; *capsule* reverse ovate; apophysis reverse-conical; *lid* convex, rather pointed.

Weissia Splachnoides, *Schwægr. Suppl.* 17.
Grimmia splachnoides? *Engl. Bot.* 2164, leaves differ.
Splachnum lingulatum, *Dicks. Crypt.* 4, 4; *Engl. Bot.* 2095.

On alpine bogs.

2. *Weissia Templetoni.* *Templeton's weiss.*

Leaves ovate, lanceolate, pointed; *capsule* with the apophysis narrow, pearlike; *lid* nearly flat.

Weissia Templetoni, *Hooker Fl. Lond. ed.* 2.
Funaria Templetoni, *Engl. Bot.* 2524.

On wet banks.

b. *Apophysis* 0; *leaves without a main rib.*

3. *Weissia nuda.* *Naked weiss.*

Stem scarcely any; *leaves* ovate, lanceolate, ribless; *capsule* ovate, bunched on one side, nodding.

Bryum nudum, *Dickson. Cryp.* 4, 7.
Grimmia nuda, *Turner M. Hib.* 25; *Engl. Bot.* 1421.
Weissea rosea, *Wahlenb. Lapp.* 19.
Weissia incarnata, *Schwægr. Suppl.* 18.

On clay soils.

c. *Apophysis* 0; *leaves main-ribbed, ovate or lanceolate.*

4. *Weissia nigrita.* *Negro weiss.*

Stem long; *leaves* lanceolate, pointed; *capsule* reverse-ovate, nodding, bunched, furrowed; *lid* hemispherical, blunt-pointed.

Weissia nigrita, *Hedw. Sp. Musc.* 72.
Bryum nigritum, *Dicks. Crypt.* 3, 9.
Grimmia nigrita, *Engl. Bot.* 1825.

On moist banks on mountains.

5. *Weissia Starkeii.* *Starkey's weiss.*

Stem very short; *leaves* ovate; main rib prolonged into a point; *capsule* ovate, upright; *teeth* of the peristome awl-shape, acute; *lid* conical.

Weissia Starkeana, *Hedw. Sp. Musc.* 65.
Bryum minutum, *Dickson Crypt.* 4, 7.
Grimmia Starkeana, *Roth Germ.* 3, 146; *Engl. Bot.* 1490.
Bryum Starkeanum, *Hoffm. Germ.* 2, 32.

In meadows; autumn.

6. *Weissia affinis.* *Kindred weiss.*

Stem very short; *leaves* ovate; main rib prolonged; *capsule* ovate, upright; *teeth* of the peristome short, broad, blunt; *lid* conical.

Weissia affinis, *Hooker & Taylor Musc. Brit.* 44.

On gravelly banks and in fields.

7. *Weissia lanceolata.* *Lanceolate weiss.*

Stem rather long; *leaves* ovate; main rib prolonged nearly into a hair; *capsule* ovate; *lid* beaked, beak oblique.

Leersia lanceolata, *Hedw. Sp. Musc.* 63.
Grimmia lanceolata, *Engl. Bot.* 1408.
Grimmia aciphylla, *Mohr.*
Encalypta lanceolata, *Turner M. Hib.* 19.
Bryum lanceolatum, *Dickson Crypt.* 3, 4.

On heaths and banks; perennial; May.

d. *Apophysis* 0; *leaves main-ribbed, linear or awlshape.*

8. *Weissia striata.* *Streaked weiss.*

Leaves linear, fine-toothed, crisp when dry; *capsule* ovate, topshape, furrowed, upright; *lid* oblique, awlshape.

Grimmia striata, *Schrad. Diar. Bot.* 2, 57.
Weissia fugax, *Hedw. S. Musc.* 13.
Bryum crispatum, *Dickson Crypt.* 3, 3.
Weissia striata, *Hooker & Taylor Musc.* 45.

On alpine banks.

β. *major.* *Leaves* broad, linear.

Weissia denticulata, *Schwægr. Suppl.* 19.

9. *Weissia trichodes.* *Hairlike weiss.*

Stem scarcely any; *leaves* awlshape, bristlelike, not cut; *capsule* ovate, streaked; *lid* beaked.

Gymnostomum trichodes, *Mohr. Cr. Germ.*
Anictangium trichodes, *Schwægr. Supp.* 12.
Grimmia trichodes, *Engl. Bot.* 2563.

On rocks.

Resembles weissia pusilla and gymnostomum tenue.

10. *Weissia cirrata.* *Tendrilled weiss.*

Leaves broadly awlshape; crisp when dry; edges turned over; *capsule* ovate; *lid* beaked.

Bryum trichoides exile, erectis capitulis in pediculis longioribus rubris, *Dillen. in Raii Syn.* 97, 25.
Mnium cirrhatum, *Lin. S. P.* 1576.
Weissia Dicksoni, *Wilden. Berol.* 303.
Weissia cirrata, *Hedw. S. Musc.* 69.
Encalypta cirrata, *Swartz M. Suec.* 25.
Afzelia cirrhata, *Ehrh. Crypt.* 232.
Bryum Dicksoni, *Dickson Crypt.* 3, 4.

On rails and posts, rarely on banks.

11. *Weissia curvirostra.* *Bentbeak weiss.*

Leaves linear, awlshape; *capsule* ovate, cylindrical; *lid* beaked.

Bryum stellare, lacustre, foliis rubris capillaceis, *Dillen. Musc.* 382.
Grimmia recurvirostra, *Roth Germ.* 3, 144; *Engl. Bot.* 1438.
Bryum curvirostrum, *Dicks. Crypt.* 2, 7.
Weissia recurvirostra, *Hedw. S. Musc.* 71.
Bryum recurvirostrum, *Withcr. Arr.* 829.
Bryum setaceum β, *Hudson Angl.* 432.
Weissia curvirostra, *Hooker & Taylor Musc.* 46.

On moist banks in woods.

Resembles the tortulæ, and accompanies them; *leaves* very stiff.

12. *Weissia crispula.* *Small-crisped weiss.*

Stem divided; *leaves* broad at bottom, lanceolate, awlshape, crisp when dry; edges turned in; *capsule* ovato-elliptical; *lid* beaked.

Weissia crispula, *Hedw. S. Musc.* 68
Grimmia crispula, *Turner M. Hib.* 28; *Engl. Bot.* 2203.

On rocks; perennial; summer.

Resembles w. cirrata, but is smaller, and darker green.

13. *Weissia controversa.* *Controverted weiss.*

Stem nearly simple; *leaves* linear, awlshape; crisp when dry, edge turned in; *capsule* ovate, elliptical; *lid* beaked.

Bryum trichoides exile, erectis capitulis in pedicellis brevissimis, *Dillen. in Raii Syn.* 97, 26.
Grimmia controversa, *Sibth. Ox.* 277; *Engl. Bot.* 1367.
Bryum virens, *Dicks. Crypt.* 1, 4.
Bryum viridulum, *Huds. Angl.* 478.
Weissia controversa, *Hedwig Crypt.* 3, 5.

On banks.

14. *Weissia calcarea.* *Limestone weiss.*

Stem scarcely any; *leaves* broad at bottom, linear, blunt, thick, main rib very broad; *capsule* topshape; *lid* beaked.

Weissia calcarea, *Hedw. S. Musc.* 66.
Bryum calcareum, *Dickson Crypt.* 2, 3.
Grimmia calcarea, *Turner M. Hib.* 25.

On chalk; perennial; spring and summer.

Resembles very strongly polytrichum aloides, but is smaller.

15. *Weissia recurvata.* *Bent-back weiss.*

Stem scarcely any; *leaves* awlshape; *capsule* broad, ovate; *pedicells* bent; *lid* beaked.

Grimmia recurvata, *Hedw. S. Musc.* 75; *Engl. Bot.* 1489.
Bryum recurvatum, *Dickson Crypt.* 2, 7.
Bryum setaceum, *Wulf in Jacq. Misc.* 2, 96.

On sandstone-rocks.

16. *Weissia pusilla.* *Dwarf weiss.*

Stem scarcely any; *leaves* awlshape; *capsule* ovate; *pedicells* upright; *lid* beaked.

Bryum paludosum, *Lin. S. P.* 1584.
Grimmia pusilla, *Roth Germ.* 3, 147; *Engl. Bot.* 2551.
Weissia pusilla, *Hedw. S. Musc.* 61.
Afzelia pusilla, *Ehrh. Crypt.* 183.

On limestone-rocks.

17. *Weissia verticillata.* *Whirled weiss.*

Stem branched; *leaves* broad, awlshape, nearly flat, rather weak; *capsules* ovate; *lid* beaked.

Bryum trichoides brevifolium, angustis cauliculis, capsulis erectis parvis et minus aduncis, *Dillen. in Raii Syn.* 98, 36.
Bryum verticillatum, *Lin. S. P.* 1585.
Bryum fasciculatum, *Dickson Crypt.* 3, 3.
Weissia verticillata, *Schwægr. Supp.* 20.
Grimmia verticillata, *Turner M. Hib.* 31; *Engl. Bot.* 1258.

In alpine rivulets, on limestone.

Stem frequently encrusted at bottom with carbonate of lime.

18. *Weissia acuta.* *Pointed weiss.*

Stem branched; *leaves* awlshape, bristlelike, nearly one-rowed, stiff, grooved; *capsule* topshape; *lid* beaked.

Bryum pilosum, sphagni subulati facie, *Dillen. Musc.* 374.
Weissia acuta, *Hedw. Crypt.* 3, 35.
Weissia rupestris, *Hedw. S. Musc.* 14.
Bryum verticillatum, *Lightfoot Scot.* 733.
Bryum acutum, *Hudson Angl.* 484; *Dickson Crypt.* 17, 20.
Bryum splachnoides, *Dickson Crypt.*
Bryum fulvellum, *Dickson Crypt.* 4, 11.
Dicranum fulvellum, *Engl. Bot.* 2268.
Grimmia acuta, *Turner M. Hib.* 29; *Engl. Bot.* 1644.

On alpine rocks.

XVIII. 360. DICRANUM. Hedwig. *Fork-moss.*

Capsule valveless, pedicelled; *pedicells* mostly terminal; *peristome* single, toothed; teeth 16, mostly two-cut, equidistant; *calyptra* halved.

A. *Leaves in two rows.* Fissidens.

1. *Dicranum bryoides.* *Bryumlike fork-moss.*

Peduncles terminal; *perichetial leaves* resembling the stem-leaves.

Hypnum repens filicifolium non ramosum, pediculis brevioribus, versus foliorum summitatem egredientibus, *Raii Syn.* 88, 42.
Hypnum bryoides, *Lin. S. P.* 1588.
Bryum viridulum, *Lin. S. P.* 1584.
Dicranum bryoides, *Swartz M. Suec.* 2, 4; *Engl. Bot.* 625.
Fissidens bryoides, *Hedwig Crypt.* 3, 29.
Dicranum viridulum, *Swartz M. Suec.* 2, 3; *Engl. Bot.* 1368.
Fissidens exilis, *Hedw. S. Musc.* 38.
Dicranum osmundioides, *Turner M. Hib.* 55; *Engl. Bot.* 1662.
Fissidens osmundioides, *Hedw. S. M.* 40.
Hypnum asplenioides, *Dickson Crypt.* 2, 5.
Grimmia viridula, *Roth Germ.* 3, 141?
Dicranum paucifolium, *Withering Arr.* 814.

On moist banks and in woods.

β. *nutans.* *Capsule* drooping.

Dicranum tamarindifolium, *Turner M. Hib.* 55.
Dicranum incurvum, *Mohr.*
Fissidens incurvus, *Schwægr. Supp.* 49.
Fissidens palmatus, *Hedw. Crypt.* 3, 30.
Fissidens longifolius, *Bridel.*

2. *Dicranum adiantoides.* *Adiantumlike fork-moss.*

Peduncles lateral; *perichetial leaves* ovate, slightly convolute, pointed.

Hydnum erectum filifolium ramosum pinnulis acutis, *Raii Syn.* 87, 39.
Hypnum adiantoides, *Lin. S. P.* 1588; *Engl. Bot.* 264.
Dicranum adiantoides, *Swartz M. Suec.* 31.
Fissidens adiantoides, *Hedw. Crypt.* 3, 62.
Fissidens taxifolius β, *Wahlenb. Lapp.*

On wet banks and bogs.

3. *Dicranum taxifolium.* *Yew-leaf fork-moss.*

Peduncles from the bottom of the stem among the roots; *perichetial leaves* ovate, sheathing, rolled in, pointed.

Hypnum repens filicifolium non ramosum; pediculis brevioribus, ad radicem egredientibus, *Raii Syn.* 88, 41.
Hypnum taxifolium, *Lin. S. P.* 1587: *Engl. Bot.* 416.
Dicranum taxifolium, *Swartz M. Suec.* 31.
Fissidens taxifolius, *Hedw. S. Musc.* 155.

On moist shady spots.

b. *Leaves all round the stem; main rib* 0.

4. *Dicranum glaucum.* *Glaucous fork-moss.*

Stem branched; branches level-topped; *leaves* upright, spread, ovate, lanceolate, straight, ribless, not cut; *capsule* ovate, drooping; *lid* beaked.

Bryum trichoides, erectis capitulis, albidum, fragile, *Raii Syn.* 97, 29.
Bryum glaucum, *Lin. S. P.* 1582.
Dicranum glaucum, *Hedw. S. Musc.* 135; *Engl. Bot.* 2166.

On heaths and mountain pastures.

c. *Leaves not two-rowed, main-ribbed, with a point or hair at the tip.*

5. *Dicranum latifolium.* *Broadleaf fork-moss.*

Stem short; *leaves* oblong, concave, not cut, tipped with a point or hair; *capsule* upright, ovate, oblong; *lid* beaked.

Dicranum latifolium, *Hedw. Crypt.* 1, 33.
Bryum piliferum, *Dickson Crypt.* 4, 10.
Trichostomum piliferum, *Engl. Bot.* 2535.

On shady mountain banks.

d. *Leaves not 2-rowed; main rib very broad; tip not pointed.*

6. *Dicranum longifolium.* *Long-leaf fork-moss.*

Stem long; *leaves* very long, awlshape, bristlelike, sickle-like, bent one way, slightly serrate; main rib very broad; *capsule* oblong, ovate, nearly upright; *lid* beaked.

Dicranum longifolium, *Hedw. Crypt.* 3, 9.
Dicranum flagellare, *Funk.*

On wet rocks.

7. *Dicranum cerviculatum.* *Necked fork-moss.*

Stem short; *leaves* lanceolate, awlshape, not cut, slightly facing one way; main rib very broad; *capsule* ovate, slightly nodding; *lid* beaked.

Dicranum cerviculatum, *Hedw. S. Musc.* 149; *Engl. Bot.* 1661.
Bryum cerviculatum, *Dickson Crypt.* 3, 7.
Dicranum pusillum, *Hedw. S. Musc.* 139; *Engl. Bot.* 2491.
Bryum parvulum, *Dickson Crypt.* 3, 7.
Dicranum flavidum, *Schwægr. Supp.*
Dicranum uncinatum, *Engl. Bot.* 2261.

On banks and bogs.

8. *Dicranum flexuosum.* *Bending fork-moss.*

Stem scarcely branched, stiff; *leaves* lanceolate, awl-shape, pointed, straight; main rib very broad; *pedicells* bending; *capsule* ovate, streaked; *lid* beaked.

Bryum trichoides, capitulis erectis, pediculis intortis tenuibus virentibus, *Raii Syn.* 97, 30.
Sphagnum subulatum viridissimum; capsulis ovatis, *Dillen. Musc.* 245.
Bryum flexuosum, *Lin. S. P.* 1583.
Sphagnum alpinum, *Lin. S. P.* 1570.
Dicranum flexuosum, *Hedw. S. Musc.* 38; *Engl. Bot.* 1491.
Bryum immersum, *Dickson Crypt.*
Bryum fragile, *Dickson Crypt.* 3, 5.

On wet rocks, turf-bogs, and on pastures.

e. *Leaves not two-rowed, not tipped with a point or hair; main rib narrow; capsule with a tumour at the base.*

9. *Dicranum virens.* *Greenish fork-moss.*

Stem long; *leaves* awlshape, crisp when dry, pointing every way; base broad, sheathing; edges turned over; *capsule* smooth, oblong, cylindrical, slightly drooping, with a tubercle at bottom; *lid* beaked.

Dicranum virens, *Hedw. Crypt.* 3, 32; *Engl. Bot.* 1462.

On mountain-bogs.

10. *Dicranum strumiferum.* *Strumous fork-moss.*

Stem long; *leaves* awlshape, not cut, crisp when dry, pointing every way; base broad, sheathing; edge flat; *capsule* furrowed, oblong, ovate, slightly drooping, with a tubercle at bottom; *lid* beaked.

Dicranum strumiferum, *Ehrh. Crypt.* 74; *Engl. Bot.* 2410.
Fissidens strumifer, *Hedw. S. Musc.* 160.
Bryum strumiferum, *Dickson Crypt.* 3, 8.

On alpine bogs; perennial; summer.

11. *Dicranum falcatum.* *Sickleshape fork-moss.*

Stem scarcely branched; *leaves* long, lanceolate, awl-shape, sicklelike, facing one way, scarcely cut; *capsule* ovate, slightly drooping, with a tubercle at the base; *lid* beaked.

Dicranum falcatum, *Hedw. S. Musc.* 150; *Engl. Bot.* 1989.
Bryum longifolium, *Dickson Crypt.* 3, 7.

On alpine rocks, by the banks of streams.

12. *Dicranum Starkii.* *Stark's fork-moss.*

Stem rather branched; *leaves* lanceolate, awlshape, sicklelike, facing one way, not cut; *capsule* oblong, ovate, nearly upright, with a tubercle at the base; *lid* beaked.

Dicranum Starkii, *Schwægr. Supp.* 46; *Engl. Bot.* 2227.

On alpine rocks.

f. *Leaves not two-rowed, not tipped with a point or hair; main rib narrow; capsule not tubercled at bottom.*

13. *Dicranum flavescens.* *Yellowish fork-moss.*

Stem branched; *leaves* long, lanceolate, finely serrated, pointing every way, crisp when dry; *capsules* oblong, upright; *lid* beaked.

Dicranum flavescens, *Engl. Bot.* 2263.
Bryum flavescens, *Dickson Crypt.* 2, 4.
Dicranum gracilescens, *Schwægr. Supp.* 46.

On wet sand, on the banks of alpine streams.

14. *Dicranum squarrosum.* *Scurfy fork-moss.*

Stem rather branched; *leaves* lanceolate, blunt, bent over, spread open, crisp when dry, pointing every way; base broad, sheathing; *capsule* ovate, slightly drooping; *lid* beaked.

Bryum erectis capitulis brevibus, foliis reflexis, *Raii Syn.* 95, 18.
Bryum pellucidum β, *Lin. S. P.* 1583.
Dicranum squarrosum, *Schrad. Journ.* 1802; *Engl. Bot.* 2004.
Bryum palustre, *Dickson Crypt.* 4, 11.

On mountains, in wet situations; perennial; spring.

15. *Dicranum pellucidum.* *Transparent fork-moss.*

Stem branched; *leaves* lanceolate, rather blunt, pointing every way; edge slightly waved, serrated; *capsule* ovate, slightly drooping; *lid* beaked.

Bryum erectis capitulis subrotundis fuscis foliis minoribus pellucidis rugosis, *Raii Syn.* 96, 19.
Bryum pellucidum, *Lin. S. P.* 1583.
Bryum aquaticum, *Hoffm. Germ.* 2, 35.
Mnium pellucens, *Withering Arr.* 802.
Dicranum pellucidum, *Hedw. S. Musc.* 142; *Engl. Bot.* 1346.
Dicranum aquatium, *Ehrh. Crypt.* 213.

On banks of streams in shady places; perennial; spring.

16. *Dicranum spurium.* *Bastard fork-moss.*

Stem long; *leaves* in bundles, concave, upright, rather spreading, pointing every way, ovate; upper leaves lanceolate, finely serrate; *capsule* oblong, bent; *lid* beaked.

Dicranum spurium, *Hedw. S. Musc.* 141; *Engl. Bot.* 2167.
Bryum spurium, *Hoffm. Germ.* 2, 38; *Dickson Crypt.* 4, 13.

On bogs; perennial; May and June.

Teeth of the peristome sometimes 3-cut.

17. *Dicranum crispum.* *Crisp fork-moss.*

Stem short; *leaves* nearly 2-rowed, zigzag, turned back, crisp when dry; base bristlelike; *capsule* ovate, upright; *lid* beaked; beak long.

Dicranum crispum, *Hedw. S. Musc.* 132; *Engl. Bot.* 1151.
Bryum vaginale, *Dickson Crypt.* 3, 8.

On moist banks and bogs; perennial; July.

18. *Dicranum Scottii.* *Scott's fork-moss.*

Stem branched; *leaves* upright, spreading, pointing every way, awlshape, crisp when dry; edge flat, slightly serrate; *capsule* ovate cylindrical, nearly upright; *lid* beaked, beak long.

Dicranum Scottianum, *Turner M. Hibern.* 6, 1.
Dicranum flagellare, *Engl. Bot.* 1977, not of Hedwig?
Dicranum strictum, *Schwægr. Supp.* 43.
Dicranum montanum, *Hedw. S. Musc.* 35?

On rocks.

19. *Dicranum polycarpum.* *Many-fruited fork-moss.*

Stem branched; *leaves* spread open, pointing every way, lanceolate, awlshape, crisp when dry; edge turned over, zigzag, slightly serrated; *capsule* reverse ovate, slightly drooping; *lid* beaked.

Dicranum polycarpum, *Ehrh. Crypt.* 84; *Engl. Bot.* 2269.
Fissidens polycarpos, *Hew. S. Musc.* 159.
Dicranum Bruntoni, *Engl. Bot.* 2509.

On alpine rocks.

Teeth of the peristome irregularly divided.

20. *Dicranum undulatum.* *Waved forked-moss.*

Stems long; *leaves* nearly flat, lanceolate, narrow, waved across, finely serrated at the tip; *capsule* cylindrical, drooping; *lid* beaked, beak long.

Dicranum undulatum, *Ehrh. Crypt.* 271; *Engl. Bot.* 2260, not of Schrader.
Dicranum polysetum, *Swartz M. Suec.* 34.
Bryum rugosum, *Hoffm. Germ.* 2, 39.

Perichætium encloses 1 to 4 peduncles.

21. *Dicranum scoparium.* *Broom fork-moss.*

Stem long; *leaves* narrow, awlshape, grooved, facing one way; *capsule* cylindrical, arched, drooping; *lid* beaked, beak long.

Bryum erectis capitulis angustifolium, caule reclinato, *Raii Syn.* 95, 14.
Bryum scoparium, *Lin. S. P.* 1582; *Engl. Bot.* 354.
Dicranum scoparium, *Hedw. S. Musc.* 126.
Dicranum majus, *Engl. Bot.* 1490.
Mnium scoparium, *Withering Arr.* 799.

In woods and hedges: perennial.

β. fuscescens. *Plant* only half as large; *leaves* scarcely if at all facing one way, narrow, much crisped when dry.

Dicranum fuscescens, *Turner M. Hib.* 60; *Engl. Bot.* 1597.
Dicranum congestum, *Schwægr. Supp.* 42.

On mountains.

22. *Dicranum varium.* *Variable fork-moss.*

Stem short; *leaves* narrow, hastate, lanceolate; *capsule* ovate; *lid* beaked.

Bryum simplex, *Lin. S. P.* 1587.
Bryum rubrum, *Huds. Angl. ed.* 1. 413.
Dicranum varium, *Hedw. S. Musc.* 133; *Engl. Bot.* 1215.
Dicranum rigidulum, *Swartz M. Suec.* 3, 7.
Dicranum callistomum, *Smith Fl. Brit.* 1211.
Bryum callistomum, *Dickson Crypt.* 3, 5.
Bryum pusillum, *Dickson Crypt.* 2, 6.
Dicranum simplex, *Sibthorp Ox.* 232.

On moist banks; annual; spring and summer.

Leaves point every way, green; *capsules* slightly drooping.

β. rufescens. *Leaves* rather facing one way, lanceolate, awlshape, reddish; *capsules* upright.

Dicranum rufescens, *Engl. Bot.* 1216.
Bryum rufescens, *Dickson Crypt.* 3, 6.
Bryum trichodes, capsulis rubris cernuis, *Dillen Musc.* 390.

γ. luridum. *Leaves* rather facing one way, awlshape, lurid; *capsules* slightly drooping.

Dicranum varium γ, *Hooker & Taylor Musc. Brit.* 58.

23. *Dicranum heteromallum.* *Odd-sided fork-moss.*

Stem branched; *leaves* awlshape, sicklelike, facing one way, scarcely cut; *capsule* ovate, slightly drooping; *lid* beaked; beak long.

Bryum trichoides, reclinatis cauliculis, capitulis erectis acutis, *Raii Syn.* 96, 23.
Bryum heteromallum, *Lin. S. P.* 1583.
Dicranum heteromallum, *Hedw. S. Musc.* 128; *Engl. Bot.* 1272.
Dicranum orthocarpum, *Hedw. S. Musc.* 130.
Dicranum interruptum, *Hedw. S. Musc.* 129; *Engl. Bot.* 2508.
Mnium heteromallum, *Withering Arr.* 801.

On mountains; spring.

24. *Dicranum subulatum.* *Awlshape fork-moss.*

Stem branched; *leaves* awlshape, bristlelike, facing one way, not cut; base broad, sheathing; *capsule* ovate, slightly drooping; *lid* with a long beak.

Dicranum subulatum, *Hedw. S. Musc.* 34; *Engl. Bot.* 1273.

On moist banks.

XIX. 361. TRICHOSTOMUM. *Hairy-mouth.*

Capsule valveless, peduncled; *peduncles* terminal; *peristome* toothed; teeth 16, equal, divided to the bottom, or 32, placed in pairs; *calyptra* mitreshape.

a. *Peduncles bent*

1. *Trichostomum patens.* *Spreading hairy-mouth.*

Stems long; *leaves* lanceolate, pointed, keeled; edges turned over; capsule ovate; *peduncles* bent; *lid* conical.

Bryum hypnoides alpinum, operculis obtusis, *Dillen. Musc.* 371.
Trichostomum patens, *Schwægr. Supp.* 37.
Dicranum patens, *Engl. Bot.* 1990.
Bryum patens, *Dickson Crypt.* 2, 6.
Fissidens patens, *Wahlenb. Lapp.*
Trichostomum obtusum, *Bridel Musc.* 1, 125.
Bryum hypnoides ?, *Hudson Angl.* 480.
Trichostomum funale, *Schwægr. Supp.* 37 ?

On mountains.

b. *Peduncles straight; leaves with transparent points.*

2. *Trichostomum lanuginosum.* *Woolly hairy-mouth.*

Stems long; branches rather pinnate; *leaves* lanceolate, awlshape, pointed; points long, transparent, serrated; edges turned over; *capsules* ovate; *peduncles* short, on the side branches; *lid* beaked.

Bryum hypnoides, capitulis plurimis erectis, lanuginosum, *Raii Syn.* 97, 28.
Bryum hypnoides, *Lin. S. P.* 1584.
Trichostomum lanuginosum, *Hedw. S. Musc.* 109; *Engl. Bot.* 1348.
Trichostomum serratum, *Ehrh. Crypt.* 94.
Bryum lanuginosum, *Hoffm. Germ.* 2, 41.

On mountains.

3. *Trichostomum canescens.* *Hoary hairy-mouth.*

Stem long, irregularly branched; *leaves* ovate, lanceolate, pointed; points transparent, slender, slightly serrated; *capsule* ovate; *teeth* of the peristome very long, threadlike; *lid* awlshape.

Bryum trichoides, erectis capitulis, lanuginosum, *Raii Syn.* 97, 27.
Bryum hypnoides, capitulis plurimis erectis, non lanuginosum, *Dillen in Raii Syn.* 478.
Bryum hypnoides γ, *Lin. S. P.* 1585.
Trichostomum canescens, *Hedw. S. Musc.* 111; *Engl. Bot.* 2534.
Trichostomum erichoides, *Schrad. Germ.* 62; *Engl. Bot.* 1991.

On mountain heaths, and the sea coast.

4. *Trichostomum heterostichum.* *One-sided hairy-mouth.*
Stem long, branched; *leaves* ovate, lanceolate, pointed; points transparent, slender, slightly serrated; *capsule* oblong; *teeth* of the peristome rather short; *lid* beaked.

Trichostomum heterostichum, *Hedw. S. Musc.* 109; *Engl. Bot.* 1347.
Bryum heterostichum, *Dickson Crypt.* 4, 14.
Bryum hypnoides, hirsutie canescens, vulgare, *Dillen Musc.* 368, fig. A, F, and G.

On stones in mountainous countries.

5. *Trichostom. microcarpon.* *Small-fruited hairy-mouth.*
Stem long, branched; *leaves* lanceolate, pointed; points transparent, slender, slightly serrated; *capsules* ovate; *teeth* of the peristome rather short; *lid* beaked.

Bryum hypnoides alpinum, setis et capsulis exiguis, *Dillen Musc.* 370.
Bryum hypnoides δ, *Lin. Fl. Suec.* 392.
Trichostomum microcarpon, *Hedw. S. Musc.* 112; *Engl. Bot.* 1440.
Dicranum aciculare γ, *Turner M. Hib.* 67.
Bryum macrocarpon, *Withering Arr.* 822.

On alpine rocks.

c. *Peduncles straight; leaves not transparent at the points.*

6. *Trichostomum aciculare.* *Needlelike hairy-mouth.*
Stem long, branched; *leaves* lanceolate, blunt, tip finely serrated; main rib not reaching the tip; *capsule* oblong; *lid* beaked.

Bryum hypnoides erectum montanum, erectis capitulis acutis, *Dillen in Raii Syn.* 94, 12.
Bryum hypnoides repens aquaticum, erectis capitulis acutis, *Raii Syn.* 94, 13.
Bryum aciculare, *Lin. S. P.* 1583.
Dicranum aciculare, *Hedw. S. Musc.* 135; *Engl. Bot.* 1978.
Trichostomum aciculare, *P. de Beauv. Prod.* 90.

On wet stones, or in water; perennial; spring.

7. *Trichostomum fasciculare.* *Bundled hairy-mouth.*
Stem long, branched; *leaves* lanceolate, not cut; tips never transparent; *capsule* ovate, oblong; *lid* beaked.

Bryum hypnoides, hirsutie virescens, fasciculare alpinum, *Dillen Musc.* 370.
Bryum hypnoides β, *Lin. S. P.* 1585.
Trichostomum fasciculare, *Schrad. Germ.* 61; *Engl. Bot.* 2005.
Bryum fasciculare, *Hoffm. Germ.* 2, 42.
Bryum lutescens, *Dickson Crypt.* 4, 14.

On mountain rocks.

8. *Trichostom. polyphyllum.* *Many-leaved hairy-mouth.*
Stem branched; *leaves* lanceolate, awlshape, edges turned over; tips serrated, very much crisped when dry; *capsules* oblong; *lid* beaked.

Bryum trichoides erectis sublongis capitulis, extremitatibus per siccitatem stellatis, *Raii Syn.* 98, 33.
Trichostomum polyphyllum, *Schwægr. Supp.* 39.
Dicranum polyphyllum, *Engl. Bot.* 1217.
Bryum polyphyllum, *Dickson Crypt.*
Bryum cirratum β, *Hudson Angl.* 486.
Trichostomum cirratum, *Smith Fl. Brit.* 1239.
Encalypta crispata, *Hedw. S. Musc.* 10.

On mountains and rocks.

9. *Trichostomum ellipticum.* *Elliptical hairy-mouth.*
Stem short, nearly simple; *leaves* lanceolate, straight, main rib broad, edge flat; *capsule* elliptical; *lid* beaked.

Dicranum ellipticum, *Turner M. Hib.* 76; *Engl. Bot.* 1901.

On rocky mountains.

XX. 362. LEUCODON. Schwægrichen. *White-tooth.*
Capsules valveless, peduncled; *peduncles* lateral; *peristome* single, toothed; teeth 32, closely united in pairs; *calyptra* halved.

Leucodon sciuroides. *Squirrel-tail white-tooth.*

Hypnum trichoides erectum, ramulis recurvis, obscuri coloris, *Raii Syn.* 83, 22.
Hypnum sciuroides, *Lin. S. P.* 1596.
Dicranum sciuroides, *Swartz M. Suec.* 32; *Engl. Bot.* 1903.
Fissidens sciuroides, *Hedw. S. Musc.* 161.
Trichostomum sciuroides, *Mohr.*
Pterogonium sciuroides, *Turner M. Hib.* 32.
Leucodon sciuroides, *Schwægr. Supp.* 2, 1.
Leucodon Morensis, *Schwægr. Supp.* 2, 1.

On the trunks of trees.

XXI. 363. DIDYMODON. Hedwig. *Twin-tooth.*
Capsule valveless, peduncled; peduncles terminal; *peristome* single, toothed; teeth 16 or 32, closing together in pairs, or united at the bottom; *calyptra* halved.

a. *Capsules inclined.*

1. *Didymodon purpureum.* *Purple twin-tooth.*

Stem scarcely branched; *leaves* lanceolate, pointed, keeled; edge turned over, not cut; *capsule* ovate, cylindrical, oblique, with a slight tubercle, furrowed when dry; *lid* conical.

Bryum perangustis crebrioribus foliis, capitulis erectis, longiusculis pediculis e surculis annotinis innascentibus, *Dillen in Raii Syn.* 99, 41.
Bryum Celsii, *Lin. S. P.* 1585; *Dickson Crypt.* 3, 7.
Mnium purpureum, *Lin. S. P.* 1575; *Wither. Arr.* 802.
Dicranum purpureum, *Hedw. S. Musc.* 136; *Engl. Bot.* 2262.
Dicranum intermedium, *Hedw. S. Musc.* 138.
Bryum bipartitum, *Dickson Crypt.*; *Engl. Bot.* 2357.
Bryum strictum, *Dickson Crypt.* 4, 13.
Bryum tenue, *Dickson Crypt.* 3, 8.
Bryum papillosum, *Dickson Crypt.* 4, 12.
Dicranum strictum, *Engl. Bot.* 2294.
Dicranum Celsii, *Hedw. S. Musc.* 149; *Engl. Bot.* 2418.
Trichostomum papillosum, *Engl. Bot.* 2533.
Red shanks.

On moist banks.

2. *Didymodon inclinatum.* *Inclined twin-tooth.*

Leaves in two rows, awlshape, sheathing at bottom; *capsule* ovate, inclined; *lid* conical.

Didymodon inclinatum, *Swartz M. Suec.* 28.
Bryum inclinatum, *Dickson Crypt.* 3, 9.
Swartzia inclinata, *Hedw. Crypt.* 2, 74.
Cynontodium inclinatum, *Hedw. S. Musc.* 58.
Grimmia inclinata, *Engl. Bot.* 1824.

On rocky mountains; perennial; summer.

b. *Capsules upright.*

3. *Didymodon nervosum.* *Ribbed twin-tooth.*

Leaves reverse-ovate, main rib thickened above; tip short; *capsules* ovate, upright; *lid* beaked; beak short.

Grimmia atrovirens, *Engl. Bot.* 2015.

On dry banks by the sea.
Resembles weissia lanceolata, gen. 359, sp. 7.

4. *Didymodon flexifolium.* *Bent-leaf twin-tooth.*

Stem long; *leaves* oblong, ovate, bent, deeply serrated at the tip; *capsules* upright, cylindrical; *lid* beaked.

Bryum flexifolium, *Dickson Crypt.* 3, 5.
Trichostomum flexifolium, *Engl. Bot.* 2490.

On barren banks, or roofs.

5. *Didymodon rigidulum.* *Stiffish twin-tooth.*
Leaves closely tiledlike on all sides, lanceolate, very pointed, keeled; main rib stiff, running beyond the point; *capsules* oblong, ovate, upright; *lid* beaked.

Didymodon rigidulum, *Hedw. S. Musc.* 104.
Bryum rigidulum, *Dickson Crypt.* 4, 12.
Trichostomum rigidulum, *Turner M. Hib.* 34; *Engl. Bot.* 2178.
Bryum lineare, *Dickson Crypt.* 3, 6.
Trichostomum lineare, *Engl. Bot.* 1598.

On rocks and walls; perennial; April.
Very similar to tortula fallax, gen. 355, sp. 8.

6. *Didymodon trifarium.* *Three-rowed twin-tooth.*
Leaves rather distant, somewhat three-rowed, lanceolate, bluntish, keeled; main rib scarcely reaching the tip; *capsule* oblong, ovate, upright; *lid* beaked.

Didymodon trifarium, *Swartz M. Suec.* 28.
Cynontodium trifarium, *Hedw. S. Musc.* 57.
Swartzia trifaria, *Hedw. Crypt.* 2, 76.
Bryum trifarium, *Dickson Crypt.* 3, 8.
Trichostomum trifarium, *Engl. Bot.* 1707.
Trichostomum linoides, *Engl. Bot.* 2295, not of Dickson.

On moist banks.

7. *Didymodon capillaceum.* *Hairy twin-tooth.*
Stem long; *leaves* nearly 2-rowed, awlshape, bristlelike; *capsule* upright, ovate, cylindrical; *lid* conical.

Trichostomum capillaceum, *Engl. Bot.* 1152.
Cynontodium capillaceum, *Hedw. S. Musc.* 57.
Swartzia capillacea, *Hedw. Crypt.* 2, 72.
Didymodon capillaceum, *Schrad. Germ.* 64.
Bryum capillaceum, *Dickson Crypt.* 1, 4.
Bryum æstivum, *Hudson Angl.* 485.

On mountain banks.

8. *Didymodon heteromallum.* *Odd-sided twin-tooth.*
Stem rather short; *leaves* mostly facing one way, awlshape; *capsule* ovate, cylindrical; *lid* conical.

Grimmia heteromalla, *Roth Germ.* 3, 145; *Engl. Bot.* 1899.
Weissia heteromalla, *Hedw. S. Musc.* 71.
Afzelia heteromalla, *Ehrh. Crypt.* 173.
Bryum Weissia, *Dickson Crypt.* 2, 5.
Didymodon heteromallum, *Hedw. S. Musc.* 23.

On mountains.

XXII. 364. FUNARIA. Schreber. *Cord-moss.*

Capsule valveless, peduncled; *peduncles* terminal; *peristome* double, oblique, outer 16-toothed, inner 16-toothed, teeth opposite to those of the outer.

1. *Funaria hygrometrica.* *Hygrometric cord-moss.*

Leaves very concave, ovate, pointed, not cut; main rib excurrent; *peduncle* bent, twisted.

Bryum aureum, capitulis reflexis piriformibus, calyptrâ quadrangulari, foliis in bulbi formam congestis, *Raii Syn.* 101, 49.
Polytrichum aureum minus, *Park.* 1052.
Mnium hygrometricum, *Lin. S. P.* 1575.
Funaria hygrometrica, *Hedw. S. Musc.* 172; *Engl. Bot.* 342.
Bryum hygrometricum, *Huds. Angl.* 488.
Little golden-locks. Golden maiden-hair.

On old walls and barren soils.

Peduncle twists and untwists by the least change of dryness or moisture.

2. *Funaria Muhlenbergii.* *Muhlenberg's cord-moss.*

Stem short; *leaves* concave, ovate, suddenly tapering, serrated; main rib not reaching the point; *peduncles* straight.

Funaria Muhlenbergii, *Schwægr. Supp.* 66; *Engl. Bot.* 1498.

On sub-alpine limestone rocks.

3. *Funaria calcarea.* *Limestone cord-moss.*

Stem long; *leaves* flat, ovate, lanceolate, gradually tapering, serrated, main rib disappearing; *peduncles* straight.

Funaria calcarea, *Wahlenb. in Act. Holm.* 1806.
Funaria Muhlenbergii, *Mohr. Crypt. Germ.* 380.
Funaria Hibernica, *Hooker in Fl. Lond. ed.* 2.

On thatched roofs.

XXIII. 365. ZYGODON. Hooker. *Paired-teeth.*

Capsule valveless, peduncled; *peduncle* terminal; *peristome* double; outer of 16 teeth, in pairs; inner of 16 ciliæ lying horizontally over the mouth; *calyptra* halved, smooth.

Zygodon conoideum. *Conical paired-teeth.*

Bryum conoideum, *Dickson Crypt.* 4, 9.
Mnium conoideum, *Engl. Bot.* 1239.
Gymnocephalus conoides, *Schwægr. Supp.* 2, 87.

On trunks of trees.

XXIV. 366. ORTHOTRICHUM. Hedw. *Bristle-moss.*

Capsule valveless, peduncled; *peduncles* terminal; *peristome* double; outer of 16 teeth, in pairs; inner of 16 or 8 ciliæ lying horizontally over the mouth, sometimes 0; *calyptra* mitreshape, furrowed, hairy.

a. *Peristome without ciliæ.*

1. *Orthotrichum anomalum.* *Odd bristle-moss.*

Leaves lanceolate, upright, rather spreading; *peduncles* longer than the leaves; *peristome* of 8 double teeth; *calyptra* slightly hairy.

Polytrichum capsulis subrotundis, pediculis brevissimis insidentibus, calyptrâ striatâ, arboreum et terrestre, minus ramosum et breve, *Raii Syn.* 91, 5.
Bryum striatum β, *Lin. S. P.* 1580.
Orthotrichum anomalum, *Hedw. S. Musc.* 162; *Dickson Crypt.* 4, 6.
Bryum tectorum, *Wither. Arr.* 810.
Polytrichum striatum β, *Hudson Ang.* 471.
Polytrichum tectorum, *Hull Br. Fl.* 248.
Weissia anomala, *Sibthorp Ox.* 287.

On rocks and walls.

2. *Orthotrichum cupulatum.* *Cupped bristle-moss.*

Leaves lanceolate, upright, slightly spreading; *capsule* nearly sessile; *peristome* of 16 double teeth; *calyptra* slightly hairy.

Orthotrichum cupulatum, *Hoffm. Germ.* 2, 26.
Orthotrichum nudum, *Dickson Crypt.* 4, 6; *Engl. Bot.* 1325.
Bryum sessile, *Withering Arr.* 310.
Orthotrichum anomalum, *Engl. Bot.* 1423.

On woods and stones.

b. *Peristome with* 8 *ciliæ.*

3. *Orthotrichum crispum.* *Crisp bristlemoss.*

Leaves lanceolate, awlshape, much crisped when dry; *peduncles* very long; *capsule* streaked; *peristome* with eight ciliæ; *calyptra* very hairy.

Polytrichum capsulis oblongo-rotundis, calyptris pilosissimis, *Raii Syn.* 91, 6.
Bryum striatum δ, *Lin. S. P.* 1580.
Orthotrichum crispum, *Hedw. S. Musc.* 162; *Engl. Bot.* 996.
Bryum crispum, *Withering Arr.* 827.
Polytrichum striatum δ, *Hudson Ang.* 471.
Polytrichum capillaceum, *Hull Fl. Br.* 249.
Neckera ulophylla, *Mohr.*

On trees and stones.

Teeth apparently 8, but marked down the middle with a dark line; *ciliæ* threadlike, jointed.

4. *Orthotrichum Hutchinsiæ.* *Hutchins' bristle-moss.*

Leaves lanceolate, upright, nearly straight when dry; *peduncles* very long; *capsule* streaked; *peristome* with eight ciliæ; *calyptra* very hairy.

Orthotrichum Hutchinsiæ, *Engl. Bot.* 2523.

On rocks.

Teeth eight, when turned over cleft deeply and regularly down the middle.

5. *Orthotrichum affine.* *Kindred bristle-moss.*

Leaves spreading, broadly lanceolate; *capsules* sessile; *peristome* with 8 ciliæ; *calyptra* rather hairy.

Polytrichum capsulis sessilibus, foliis brevibus, rectis, carinatis, *Dillen Musc.* 432.
Orthotrichum affine, *Schrad. Germ.* 67; *Engl. Bot.* 1323.
Orthotrichum striatum, *Schwægr. Supp.* 49.
Orthotrichum rupestre, *Schwægr. Supp.* 53.
Weissia affinis, *Roth Germ.* 3, 217.

On the trunks of trees, and palings.

Stem long; *calyptra* hairy, especially at top; *peristome* of 8 teeth marked with 3 lines lengthways, but not split even when turned over.

β. *pumilum.* *Stem* very short; *calyptra* bald.

Orthotrichum pumilum, *Swartz M. Suec.* 42; *Dickson Crypt.* 4, 5; *Engl. Bot.* 2168.

c. *Peristome with* 16 *ciliæ.*

6. *Orthotrichum diaphanum.* *Transparent bristle-moss.*

Stem short; *leaves* lanceolate, pointed; points transparent; *capsules* sessile; *peristome* with 16 ciliæ; *calyptra* rather hairy.

Orthotrichum diaphanum, *Schrad. Germ.* 69; *Dickson Crypt.* 4, 5; *Engl. Bot.* 1324.
Orthotrichum aristatum, *Turner M. Hib.* 100.

On walls, roofs, pales, and trees.

7. *Orthotrichum pulchellum.* *Pretty brittle-moss.*

Stem short; *leaves* spreading, narrow, lanceolate, crisped when dry; *peduncles* long; *peristome* with 16 slender ciliæ; *calyptra* rather hairy.

Orthotrichum pulchellum, *Engl. Bot.* 1787.

On trees.

Teeth red.



8. *Orthotrichum rivulare.* *River bristle-moss.*

Stems long, much branched; *leaves* broad, lanceolate, blunt; *capsules* sessile; *peristome* with 16 slender ciliæ; *calyptra* smooth.

Orthotrichum rivulare, *Turner M. Hib.* 96; *Engl. Bot.* 2188.

On rocks and in streams.

9. *Orthotrichum striatum.* *Streaked bristle-moss.*

Stem long, branched; *leaves* lanceolate, spreading, slightly twisted when dry; *capsule* sessile, ovate, smooth; *peristome* with 16 irregular strung-bead-like ciliæ; *calyptra* rather hairy.

Polytrichum capsulis subrotundis, pediculis brevissimis insidentibus, calyptrâ striatâ, arboreum ramosum majus, *Raii Syn.* 91, 4.
Bryum striatum, *Lin. S. P.* 1579.
Polytrichum striatum, *Huds. Angl.* 471.
Weissia striata, *Sibthorp Ox.* 287.
Orthotrichum striatum, *Hedw. S. Musc.* 163; *Engl. Bot.* 2187.

On trees.

Ciliæ have frequently other joints attached to the side of the real ones.

10. *Orthotrichum Lyellii.* *Lyell's bristle-moss.*

Stem long, much branched; *leaves* long, linear, lanceolate, bent back, open, much crisped when dry; *capsule* oblong, streaked; *ciliæ* 16, rather broad, distinctly jointed; *calyptra* very hairy.

Orthotrichum Lyellii, *Hooker & Taylor Musc.* 76.

On trees.

XXV. 367. NECKERA. Hedwig. *Necker.*

Capsule valveless, peduncled; *peduncles* lateral; *peristome* double; outer of 16 teeth; inner of 16 ciliæ, connected at the very base only by a short membrane; *calyptra* halved. —*Leaves* 2-rowed.

1. *Neckera pumila.* *Dwarf Necker.*

Leaves ovate, pointed, slightly concave, edges turned over; *peduncles* scarcely longer than the perichetial leaves; *capsule* oblong, ovate.

Fontinalis pennata, *Hudson Angl.* 468.
Neckera pumila, *Hedw. S. Musc.* 205; *Engl. Bot.* 1443.
Hypnum pennatum, *Dickson Crypt.* 1, 5.

On trees, and in woods.

2. *Neckera crispa.* *Crisp necker.*

Leaves oblong, pointed, wrinkled across; *peduncles* very long; *capsule* ovate.

Hypnum repens crispum, ramulis compressis, filicinorum more dispositis, *Raii Syn.* 89, 47.
Hypnum crispum, *Lin. S. P.* 1589; *Engl. Bot.* 617.
Neckera crispa, *Hedw. S. Musc.* 206.

On trees and chalk-hills.

XXVI. 368. ANOMODON. Hooker & Taylor. *Odd-tooth.*

Capsules valveless, peduncled; *peduncles* lateral; *peristome* double, of 16 teeth, and 16 ciliæ placed between the teeth.

1. *Anomodon curtipendulum.* *Short-hanging odd-tooth.*

Leaves ovate, pointed, finely serrated, main rib disappearing below the point; *peduncle* twice as long as the perichetial leaves; *capsule* ovate.

Hypnum arboreum repens, capitulis reflexis, brevibus, pediculis incidentibus, *Raii Syn.* 89, 49.
Hypnum curtipendulum, *Lin. S. P.* 1594.
Neckera curtipendula, *Hedw. S. Musc.* 209; *Engl. Bot.* 1444.
Anomodon curtipendulum, *Hooker & Taylor Musc.* 79.

On trees, rocks, and the ground; perennial; spring.

2. *Anomodon viticulosum.* *Spriggy odd-tooth.*

Leaves ovate, lanceolate, blunt, not cut; main rib reaching the tip; *peduncles* very long; *capsule* cylindrical.

Hypnum repens trichoides arboreum majus, capitulis et surculis erectis, minùs ramosis, *Raii Syn.* 85, 30.
Hypnum viticulosum, *Lin. S. P.* 1592; *Engl. Bot.* 265.
Neckera viticulosa, *Hedw. S. Musc.* 209.
Anomodon viticulosum, *Hooker & Taylor Musc.* 79.

On trees and rocks, rarely on the ground.

XXVII. 369. DALTONIA. Hooker & Taylor. *Dalton.*

Capsules valveless, peduncled; *peduncles* lateral; *peristome* double, consisting of 16 teeth, and 16 ciliæ one from the side of each tooth; *calyptra* mitreshape.

1. *Daltonia splachnoides.* *Splachnumlike dalton.*

Leaves oblong, lanceolate; *peduncles* long; *calyptra* fringed at bottom.

Neckera splachnoides, *Engl. Bot.* 2564, not of Schwægrichen.

On mountains, by the sides of streams.

2. *Daltonia heteromalla.* *Odd-sided dalton.*
Leaves broad, ovate, pointed; *capsules* sessile, sunk in the perichetium; *calyptra* scarcely cut.

Sphagnum cauliferum, et ramosum minùs hirsutum, capitulis crebris pilosis per ramulorum longitudinem adnascentibus, *Raii Syn.* 105, 5.
Sphagnum arboreum, *Lin. S. P.* 1750.
Fontinalis secunda, *Lin. Fil. Meth. Musc.* 30.
Neckera heteromalla, *Hedw. S. Musc.* 202; *Engl. Bot.* 1180.
Phascum repens, *Withering Arr.* 785.

On the trunks of trees.

XXVIII. 370. FONTINALIS. Dillenius. *Spring-moss.*
Capsule valveless, peduncled; *peduncles* lateral; *peristome* double; the outer of 16 teeth; the inner of 16 ciliæ connected by cross bars, forming a cone of network; *calyptra* mitreshape.

1. *Fontinalis antipyretica.* *Fireproof spring-moss.*
Leaves ribless, usually folded, keeled.

Fontinalis major, foliis triangularibus complicatis, capitulis in foliorum alis sessilibus, *Raii Syn.* 79, 1.
Fontinalis antipyretica, *Lin. S. P.* 1571; *Engl. Bot.* 859.
Water-moss.

In slow rivers, pools, and on floating wood.
Used in Sweden to line wooden chimneys, to prevent the wood from taking fire, because very difficult to burn.

2. *Fontinalis squamosa.* *Scaly spring-moss.*
Leaves ribless, flat, or very slightly concave.

Fontinalis squamosa tenuis sericea atrovirens, *Dillen. Musc.* 258.
Fontinalis squamosa, *Lin. S. P.* 1571; *Engl. Bot.* 1861.

In swift alpine streams and waterfalls.

3. *Fontinalis? capillacea.* *Hairlike spring-moss.*
Leaves with a main rib, slightly concave.

Fontinalis capillacea, calycibus stili instar cuspidatis, *Dillen. Musc.* 260.
Fontinalis capillacea, *Dickson Crypt.* 2, 1; *Engl. Bot.* 2432.

In alpine rivulets.

XXIX. 371. BUXBAUMIA. Linnæus. *Buxbaum.*
Capsule valveless, oblique, bunched; *peristome* double; the outer of numerous, threadlike, jointless ciliæ; the inner membranaceous, conical, folded; *calyptra* mitreshape.

Buxbaumia curiosa. *Curious buxbaum.*

Muscus capillaceus aphyllus, capitulo crasso bivalvi, *Dillen Musc.* 477.
Buxbaumia aphylla, *Lin. S. P.* 1570; *Engl. Bot.* 1596.

In woods.

Stem 0; *leaves* palmately jagged; *perichetium* radical, bulblike; *peduncles* long, red; *capsule* large, ovate, greenish.

XXX. 372. BARTRAMIA. Hedwig. *Bartram.*

Capsules valveless, nearly globular, peduncled; *peduncles* terminal; *peristome* double; the outer of 16 teeth; the inner membranaceous, divided into 16 segments, each of them 2-cut; *calyptra* halved.

a. *Peduncles long, straight.*

1. *Bartramia pomiformis.* *Appleshape bartram.*

Leaves spreading, awlshape, strongly serrated; main rib reaching the tip; twisted when dry.

Bryum trichoides virescens, erectis majusculis capitulis maliformibus, *Raii Syn.* 97, 31.
Bryum pomiforme, *Lin. S. P.* 1580.
Bartramia pomiformis, *Hedw. S. Musc.* 164; *Engl. Bot.* 998.
Bartramia crispa, *Swartz M. Suec.* 73.
Bryum vulgaris, *Mong. & Nestl.* 137.

On heaths and dry banks.

Stem short; *leaves* bent.

β. *major.* *Stem* long, branched; *leaves* long, crisped especially when dry.

Bartramia crispa, *Bridel Musc.* 2, 3; *Engl. Bot.* 1526.
Bartramia pomiformis elongata, *Turner in Ann. Bot.* 1, 1526, β.

2. *Bartramia ithyphylla.* *Stiff-leaved bartram.*

Stem short; *leaves* stiff, upright, rather spreading, awlshape, bristlelike, scarcely cut, main rib spreading into the substance of the leaves when about half-way up, straight when dry; *peduncles* very long.

Bartramia ithyphylla, *Bridel Musc.* 2, 1; *Engl. Bot.* 1710.
Bartramia pomiformis, *Swartz M. Suec.* 73.

On dry mountain banks.

3. *Bartramia gracilis.* *Slender bartram.*

Stem long; *leaves* turned over, spreading, lanceolate, grooved, serrated; *peduncles* lateral from young shoots.

Bartramia gracilis, *Florke in Schrad. Journ.*; *Engl. Bot.* 1836.
Bartramia Œderiana, *Swartz in Schrad. Journ.*
Bartramia Œderi, *Schwægr. Supp.* 59.
Bartramia longiseta, *Brid. Musc.*
Bartramia grandiflora, *Schwægr. Supp.* 58.

On alpine rocks.

4. *Bartramia fontana.* *Spring bartram.*

Stems eventopped; *leaves* closed tiledlike, stiff, upright, broad, ovate or lanceolate, pointed, nearly flat, serrated; *peduncles* lateral from young shoots.

Bryum quod Muscus palustris adianto aureo affinis, scapis tenuibus, foliolis brevibus, editionis primæ, *Raii Syn.* 98, 28.
Mnium fontanum, *Lin. S. P.* 1574.
Bryum fontanum, *Hudson Angl.* 475; *Engl. Bot.* 390.
Bartramia fontana, *Swartz in Schrader Journ.*
Grey marsh-moss.

Stems 6 inches long; *leaves* ovate.

β. *Marchicum.* *Stem* an inch long; *leaves* lanceolate.

Bartramia Marchica, *Swartz in Schrad. Jour.*; *Engl. Bot.* 2074.
Mnium Marchicum, *Hedw. Crypt.* 2, 39.
Bartramia fontana pumila, *Turner M. Hib.* 107.

On turf bogs.

b. *Peduncles very short, bent.*

5. *Bartramia Halleri.* *Haller's bartram.*

Stem very long, proliferous; *leaves* long, awlshape, bent variously, serrated above; *peduncles* lateral, from young shoots very short, bowed.

Bryum laterale, *Hudson Ang.* 483.
Mnium laterale, *Hoffm. Germ.* 2, 54.
Bartramia Halleriana, *Hedw. S. Musc.* 164; *Engl. Bot.* 997.

On mountain rocks, near streams.

6. *Bartramia arcuata.* *Bowed bartram.*

Stems very long, proliferous; *leaves* horizontal, spreading, ovate, lanceolate, pointed, serrated, streaked; *peduncles* very short, bowed, become lateral; *capsule* smooth.

Hypnum palustre erectum, comâ lutcâ, basi nigricante, *Dillen. in Raii Syn.* 83, 21.
Bartramia arcuata, *Engl. Bot.* 1237.
Mnium arcuatum, *Dickson Crypt.* 3, 2.
Mnium chrysocomum, *Hedw. S. Musc.* 74.
Hypnum chrysocomum, *Dickson Crypt.* 2, 12.

On mountain bogs and wet rocks.

XXXI. 373. HOOKERIA. Smith. *Hooker.*

Capsules valveless, peduncled; *peduncles* lateral; *peristome* double; the outer of 16 teeth; the inner membranaceous, divided into 16 uncut segments; *calyptra* mitreshape.

1. *Hookeria lucens.* *Shining hooker.*

Leaves broad, ovate, uncut, blunt, ribless.

Hypnum repens filicifolium ramosum, foliolis majoribus, magisque crebris, *Dillen. in Raii Syn.* 88, 45.
Hypnum lucens, *Lin. S. P.* 1589.
Hookeria lucens, *Smith in Lin. Tr.* 9, 276.
Leskea lucens, *De Candolle Fl. Gall. Syn.*

On moist banks and rocks.

2. *Hookeria lætevirens.* *Light-green hooker.*

Leaves ovate, rather pointed, bordered, very obscurely serrated at the tip, main ribs 2, reaching nearly to the end.

Hookeria læte-virens, *Hooker & Taylor Musc.* 89.

On bogs.

XXXII. 374. HYPNUM. Dioscorides. *Feather-moss.*

Capsules valveless, peduncled; *peduncles* lateral; *peristome* double; the outer of 16 teeth; the inner membranaceous, segments 16, equal, sometimes with threads between them; *calyptra* halved.

a. *Stem with the leaves flat; capsules upright.*

1. *Hymnum trichomanoides.* *Trichomanes feather-moss.*

Leaves broad, scymetarshape, serrated at the point, main-ribbed to the middle; *capsule* ovate, upright; *lid* beaked.

Hypnum erectum filicifolium ramosum, pinnulis obtusis, *Dillen. in Raii Syn.* 87, 40.
Hypnum trichomanoides, *Schreb. Lips.* 88; *Engl. Bot.* 1493.
Hypnum complanatum β, *Huds. Angl.* 495.
Leskea trichomanoides, *Ehrh. Crypt.* 234.

On trunks of trees.

2. *Hypnum complanatum.* *Flattened feather-moss.*

Leaves oblong, pointed, uncut, ribless; *capsule* ovate, upright; *lid* beaked.

Hypnum repens filicifolium ramosum, ramulis appressis et magis complanatis, *Raii Syn.* 87, 38.
Hypnum complanatum, *Lin. S. P.* 1588; *Engl. Bot.* 1492.
Leskea complanata, *Hedgw. S. Musc.* 231.

On trees.

b. *Stem with the leaves flat; capsules drooping, or inclined.*

3. *Hypnum riparium.* *Shore feather-moss.*

Leaves ovate, lanceolate, pointed, uncut, main-rib nearly reaching the tip; *capsules* oblong, drooping; *lid* conical.

Hypnum ramosum fluitans pennatum, *Raii Syn.* 81, 6.
Hypnum riparium, *Lin. S. P.* 1595; *Engl. Bot.* 2060.

On river-banks, and inundated places.

4. *Hypnum undulatum.* *Wavy feather-moss.*

Leaves ovate, pointed, waved across; ribs 2 at the bottom, faint; *capsule* oblong, furrowed, drooping; *lid* beaked.

Hypnum repens crispum, cauliculis compressis, lycopodii in morem per terram sparsis, *Raii Syn.* 88, 46.
Hypnum undulatum, *Lin. S. P.* 1589; *Engl. Bot.* 1181.

On woods, and dry heaths.

Leaves white, membranaceous.

5. *Hypnum denticulatum.* *Fine-toothed feather-moss.*

Leaves ovate, inclining to lanceolate, pointed; ribs 2 at the bottom, short; *capsule* oblong, cylindrical, inclined; *lid* conical.

Hypnum repens filicifolium non ramosum, pediculis et capitulis longioribus ad radicem egredientibus; foliolis utrinque duplicatis, *Raii Syn.* 88, 43.
Hypnum repens filicifolium ramosum, pediculis et capitulis longioribus e foliorum alis egredientibus, foliolis utrinque simplicibus, *Dillen. in Raii Syn.* 88, 44.
Hypnum denticulatum, *Lin. S. P.* 1588; *Engl. Bot.* 1260.
Hypnum sylvaticum, *Lin. Mant.* 2, 310.

In woods.

Leaves ovate, lanceolate, distant, quite flat.

β. *obtusifolium.* *Leaves* ovate, blunt, slightly concave.
Hypnum denticulatum obtusifolium, *Turner M. Hib.* 146.
Hypnum obtusatum, *Wahlenb. Lapp.* 371.
Hypnum Donnianum, *Engl. Bot.* 1446.

On mountains.

c. *Stems with the leaves not flat; leaves all round the stem, uniform in their direction, not serrated, main rib reaching to or beyond the point.*

6. *Hypnum medium.* *Middling feather-moss.*

Leaves ovate, blunt, concave, uncut; main rib reaching the tip; *capsule* cylindrical, nearly upright; *lid* conical.

Hypnum trichoides, capsulis oblongis in setis brevioribus, *Dillen. Musc.* 331.
Hypnum heterophyllum aquaticum, polycephalum repens, *Dillen. Musc.* 293.
Hypnum medium, *Dickson Crypt.* 2, 12; *Engl. Bot.* 1274.
Leskea polycarpa, *Ehrh. Crypt.* 96.
Hypnum inundatum, *Dickson Crypt.* 4, 17; *Engl. Bot.* 1922.

On trees near the ground.

7. *Hypnum tenellum.* *Tender feather-moss.*

Leaves in bundles, upright, lanceolate, awlshape, uncut, main rib reaching the tip; *capsule* ovate, drooping; *lid* beaked.

Hypnum tenellum, *Dickson Crypt.* 4, 16; *Engl. Bot.* 1859.

On limestone rocks and old walls.

8. *Hypnum serpens.* *Crawling feather-moss.*

Leaves ovate, lanceolate, rather blunt, spread open, uncut, main rib reaching to the point; *capsule* cylindrical, crooked, drooping; *lid* conical.

Hypnum repens trichoides terrestre minimum, capitulis majusculis oblongis erectis, *Raii Syn.* 85, 27.
Hypnum serpens, *Lin. S. P.* 1596; *Engl. Bot.* 1037.
Hypnum tenue, *Schrader.*
Hypnum contextum, *Hedw. S. Musc.*
Hypnum spinulosum, *Hedw. S. Musc.* 269.
Hypnum subtile, *Dickson*; *Engl. Bot.* 2496.

On moist banks, trees, pales, and decayed wood.

d. *Stems with the leaves not flat; leaves all round the stem, uniform in their direction, serrated; main rib reaching to or beyond the point.*

9. *Hypnum populeum.* *Poplar feather-moss.*

Leaves lanceolate, pointed, serrated, edge slightly turned over; main rib reaching the point; *capsule* ovate, nearly upright; *peduncles* rough; *lid* conical.

Hypnum populeum, *Hedw. S. Musc.* 70.
Hypnum implexum, *Swartz Act. Holm.* 1793; *Engl. Bot.* 1584.
Hypnum plumosum, *Swartz M. Suec.* 66.

On trees and rocks.

10. *Hypnum reflexum.* *Turned-over feather-moss.*

Leaves heartshape, pointed, serrated, main rib reaching the point, edge slightly turned over; *capsule* ovate, drooping; *peduncles* rough; *lid* conical.

Hypnum reflexum, *Web. & Mohr Crypt. Germ.* 306 & 476; *Hooker & Taylor Musc.* 95.

On mountains.

e. *Stem with the leaves not flat; leaves all round the stem, uniform in the direction, ovate or elliptical, uncut; main rib shorter than the leaf or* 0.

11. *Hypnum molle.* *Soft feather-moss.*

Leaves loosely tiledlike, rounded, ovate, blunt, concave, uncut, faintly 2-ribbed at bottom, or with one short rib; *capsule* ovate, drooping; *lid* conical.

Hypnum molle, *Dickson Crypt.* 2, 11; *Engl. Bot.* 1992.
Hypnum alpestre, *Swartz M. Suec.* 63.

In alpine rivulets.

12. *Hypnum Schreberi.* *Schreber's feather-moss.*
Leaves closely tiledlike, nearly upright, elliptical, pointed, concave, uncut, faintly 2-ribbed at bottom; *capsule* ovate, drooping; *lid* conical.

Hypnum longum erectum, foliis angustis caulibus appressus, *Raii Syn.* 83, 20.
Hypnum Schreberi, *Willd. Berl.* 325; *Engl. Bot.* 1621.
Hypnum purum, *Ehrh. Crypt.* 311.
Hypnum compressum, *Schreb. Lips.* 96.
Hypnum muticum, *Swartz M. Suec.* 60.

On banks in woods.

13. *Hypnum moniliforme.* *Bead-necklace feather-moss.*
Leaves closely tiledlike, rounded, ovate, blunt, very concave, bellied, ribless; *capsule* ovate, nearly upright.

Hypnum moniliforme, *Wahlen. Lapp.* 376.
Leskea julacea, *Mohr.*
Hypnum julaceum, *Schwægr. Supp.* 89.
Pterogonium? rotundifolium, *Engl. Bot.* 2525.

On the ground, among other mosses.

14. *Hypnum catenulatum.* *Chained feather-moss.*
Leaves rather spreading, ovate, slightly pointed, nipply on the back and edge, rib very short; *capsule* ovate, inclined; *lid* conical, pointed.

Hypnum catenulatum, *Schwægr. Supp.* 218.
Pterigynandrum catenulatum, *Bridel Musc.* 64.
Grimmia catenulata, *Mohr.*

On wet rocks.

15. *Hypnum stramineum.* *Straw feather-moss.*
Leaves loosely tiledlike, upright, spreading, oblong, ovate, blunt, uncut, rib reaching halfway; *capsule* oblong, ovate, curved, drooping; *lid* conical.

Hypnum stramineum, *Dickson Crypt.* 1, 6; *Engl. Bot.* 2405.

On bogs and banks among other mosses.

16. *Hypnum murale.* *Wall feather-moss.*
Leaves nearly upright, tiledlike, oval, concave, uncut, point very short, main rib reaching halfway; *capsule* ovate, drooping; *lid* beaked.

Hypnum myosuroides brevius et crassus, capsulis cernuis, *Dillen. Musc.* 318.
Hypnum murale, *Necker Gallobelg.* 479; *Dickson Crypt.* 3, 10.
Hypnum confertum, *Engl. Bot.* 1038.
Hypnum abbreviatum, *Hedw. S. Musc.* 65.

On walls and stones.

17. *Hypnum purum.* *Pure feather-moss.*

Leaves closely tiledlike, oval, very concave, point very short, main rib reaching halfway; *capsule* ovate, drooping; *lid* conical.

Hypnum terrestre erectum, ramulis teretibus, foliis inter rotunda et acuta medio modo se habentibus, *Raii Syn.* 81, 7.
Hypnum purum, *Lin. S. P.* 1594; *Engl. Bot.* 1599.
Hypnum elegans, *Ehrh. Crypt.* 242.
Hypnum illecebrum, *Smith Fl. Brit.* 1314; *Engl. Bot.* 2189, not of Hedwig.

In fields and moist woods.

f. *Stem with the leaves not flat; leaves on all sides, uniform in their direction, lanceolate or awlshape, uncut, without streaks; main rib shorter than the leaf or* 0.

18. *Hypnum fluitans.* *Floating feather-moss.*

Leaves loosely tiledlike, lanceolate, awlshape, scarcely serrated at the tip, main rib reaching more than halfway; the upper leaves sickleshape, one-rowed; *capsule* ovate, oblong, bent, drooping; *lid* conical.

Hypnum erectum aut fluitans aquaticum, foliis oblongis perangustis acutis, *Raii Syn.* 82.
Hypnum fluitans, *Lin. Fl. Suec. ed.* 2, 399; *Engl. Bot.* 1448.

In water, and inundated places.

19. *Hypnum plumosum.* *Plumose feather-moss.*

Leaves upright, spreading, ovate, lanceolate, pointed, slightly serrated, main rib reaching above halfway; the upper leaves sometimes one-rowed; *capsule* ovate, drooping; *lid* conical.

Hypnum plumosum, *Lin. S. P.* 1592; *Engl. Bot.* 2071; not of Hedwig.
Hypnum pseudoplumosum, *Bridel Musc.*
Hypnum alpinum, *Turner M. Hib.* 192; *Engl. Bot.* 1496.
Hypnum flagellare, *Hedw. S. M.* 282.

On rocks.

20. *Hypnum pulchellum.* *Pretty feather-moss.*

Leaves loosely tiledlike, lanceolate, pointed, uncut, ribless; upper leaves slightly one-rowed; *capsule* ovate, cylindrical, nearly upright; *lid* conical.

Hypnum pulchellum, *Dickson Crypt.* 2, 13, fig. bad, having a ribbed leaf; *Engl. Bot.* 2006; not of Hedwig.
Hypnum nitidulum, *Wahlenb. Lapp.*
Leskea pulchella, *Hedw. S. Musc.* 220.

On rocks and in woods.

g. *Stem with the leaves not flat; leaves on all sides, uniform in their direction, lanceolate or awlshape, streaked; main rib shorter than the leaf or* 0.

21. *Hypnum rufescens.* *Reddish feather-moss.*
Leaves upright, spreading, lanceolate, pointed, uncut, streaked, faintly 2-ribbed at the bottom; *capsule* ovate, nearly upright; *lid* conical.

Hypnum rufescens, *Dickson Crypt.* 3, 9; *Engl. Bot.* 2296.
Leskea rufescens, *Schwægr. Supp.* 88.

On alpine rocks.

22. *Hypnum sericeum.* *Silky feather-moss.*
Leaves upright, spreading, lanceolate, pointed, uncut, streaked, main rib reaching to three quarters of the length; *capsule* ovate, cylindrical, upright; *lid* conical.

Hypnum repens trichoides terrestre luteo-virens vulgare majus, capitulis erectis, *Raii Syn.* 84, 23.
Hypnum sericeum, *Lin. S. P.* 1595; *Engl. Bot.* 1445.
Leskea sericea, *Hedw. S. Musc.* 223.

On rocks, walls, and trees.

23. *Hypnum lutescens.* *Yellowish feather-moss.*
Leaves upright, spreading, lanceolate, pointed, uncut, streaked, main rib not reaching the tip; *capsule* ovate, drooping; peduncles rough; *lid* conical, pointed.

Hypnum lutescens, *Hudson Angl. ed.* 1, 421; *Engl. Bot.* 1301.
Hypnum sericeum γ, *Hudson Angl.* 506.

On banks and trees.

24. *Hypnum nitens.* *Shining feather-moss.*
Leaves upright, spreading, narrow, lanceolate, pointed, scarcely cut, streaked, main rib nearly reaching the tip; *capsule* oblong, ovate, bent; *peduncles* smooth; *lid* conical.

Hypnum palustre erectum trichoides, ramulis crebris, luteo et rufo-virentibus, glabris, *Dillen. Musc.* 303.
Hypnum nitens, *Schreb. Lips.* 92; *Engl. Bot.* 1646.

On bogs and marshes.

25. *Hypnum albicans.* *Whitish feather-moss.*

Leaves upright, spreading, ovate, lanceolate, pointed, streaked, uncut; main rib reaching halfway; *capsules* ovate, drooping; *peduncles* smooth; *lid* conical.

Hypnum terrestre erectum humilius albicans, ramulis teretibus, *Dillen in Raii Syn.* 83, 19.

Hypnum albicans, *Necker Musc.* 180; *Engl. Bot.* 1300.

On sandy open places.

h. *Stem with the leaves not flat, lower part bare; leaves on all sides, uniform in their direction, serrated; main rib shorter than the leaf or* 0.

26. *Hypnum alopecurum.* *Foxtail feather-grass.*

Stem upright; below simple, naked; above branched, branches in bundles; *leaves* concave, ovate, elliptical, pointed, serrated, main rib nearly reaching the tip, edge turned over; *capsule* ovate, drooping; *lid* beaked.

Hypnum palustre erectum, arbusculam referens, ramulis subrotundis, *Raii Syn.* 81, 8.

Hypnum alopecurum, *Lin. S. P.* 1594; *Engl. Bot.* 1182.

On shady banks, in woods.

27. *Hypnum dendroides.* *Treelike feather-grass.*

Stem upright; below simple, naked; above branched, branches in bundles; *leaves* ovate, lanceolate, streaked, serrated at the tip, main rib nearly reaching the tip; *capsule* upright, ovate, cylindrical; *lid* beaked.

Hypnum erectum, arbusculam referens, ramulis subrotundis confertim nascentibus, *Raii Syn.* 81, 9.

Hypnum dendroides, *Lin. S. P.* 1593; *Engl. Bot.* 1565.

Leskea dendroides, *Hedw. S. Musc.* 228.

Neckera dendroides, *Swartz M. Suec.* 71.

Climacium dendroides, *Mohr. Germ.*

In woods and moist pastures.

Columella in dry weather raises the lid spirally, and allows the escape of the seeds, moisture contracts the columella in the same spiral manner, and again closes the capsule: inner peristome segments cleft at the base.

i. *Stem with the leaves not flat, leafy below; leaves on all sides, uniform in their direction, serrated, main rib shorter than the leaf or* 0; *capsules upright.*

28. *Hypnum curvatum.* *Bent feather-moss.*

Branches in bundles, bent; *leaves* ovate, elliptical, concave, serrated at the tip; main rib disappearing beyond the middle; *capsule* ovate, upright; *lid* beaked.

Hypnum repens, triangularibus angustis foliis, ramulis subrotundis, *Dillen. in Raii Syn.* 83, 16.
Hypnum curvatum, *Swartz M. Suec.* 64; *Engl. Bot.* 1566.
Hypnum myosuroides, *Hedw. S. Musc.* 266, not of Linnæus.
Hypnum myosuron, *Withering Arr.* 865.

On rocks and trees.

29. *Hypnum myosuroides.* *Mousetail feather-moss.*
Branches in bundles, bent; *leaves* lanceolate, pointed, serrated, edges turned over at bottom; main rib reaching to the middle; *capsule* ovate, cylindrical, upright; *lid* beaked.

Hypnum polyanthon, triangularibus angustis foliis, *Dillen. in Raii Syn.* 83, 17.
Hypnum myosuroides, *Lin. S. P.* 1596; *Engl. Bot.* 1567, not of Hedwig.
Hypnum myosurum, *Schrad. Krypt.* 17.

On limestone-rocks, and trees.

k. *Stem with the leaves not flat, leafy below, 2 or 3-pinnate; leaves on all sides, uniform in their direction, serrated; main rib shorter than the leaf or 0; capsules drooping.*

30. *Hypnum splendens.* *Splendid feather-moss.*
Stems tripinnate; *leaves* ovate, concave; point suddenly acuminated, serrated; main ribs 2, faint, at the bottom; edge turned over at the base; *capsule* ovate, drooping; *lid* beaked.

Hypnum repens filicinum, veluti spicatum, *Raii Syn.* 86, 35.
Muscus filicinus, *Ger. em.* 1372; *Park.* 1309.
Hypnum splendens, *Hedw. S. M.* 262; *Engl. Bot.* 1424.
Hypnum parietinum, *Hudson Angl.* 499.
Hypnum proliferum, *Ehrh. Crypt.* 95.

In dry woods and heaths.

31. *Hypnum proliferum.* *Proliferous feather-moss.*
Stem tripinnate; *leaves* serrated, nipply on the back; stem-leaves heartshape, pointed, streaked, main rib running nearly to the tip; branch-leaves more ovate, with a single or double rib at the bottom.

Hypnum repens filicinum minus, luteo-virens, *Raii Syn.* 86, 36.
Hypnum proliferum, *Lin. S. P.* 1590; *Engl. Bot.* 1494.
Hypnum tamariscinum, *Hedw. S. Musc.* 261.
Hypnum tamariscifolium, *Necker Musc.* 158.
Hypnum delicatum, *Ehrh. Crypt.* 301.
Hypnum delicatulum, *Schrader Germ.* 73.
Hypnum recognitum, *Hedw. S. Musc.* 261.
Hypnum parietinum, *Willd. Berol.* 322.

On heathy banks and in woods.

32. *Hypnum prælongum.* *Very-long feather-moss.*
Stem nearly bipinnate; *leaves* distant, open, heartshape or ovate, pointed, serrated; main rib disappearing below the tip; *capsule* ovate, drooping; *lid* beaked.

Hypnum repens filicinum, triangularibus parvis foliis, prælongum, *Raii Syn.* 80, 5.
Hypnum prælongum, *Lin. S. P.* 1591; *Engl. Bot.* 2035.
Hypnum Stokesii, *Turner M. Hib.* 159.
Hypnum Swartzii, *Turner M. Hib.* 151; *Engl. Bot.* 2034.
Hypnum atrovirens, *Swartz M. Suec.* 65.

On banks and decaying trees.

1. *Stem with the leaves not flat, pinnate or irregularly branched; leaves on all sides, uniform in their direction, serrated, main rib shorter than the leaf or* 0; *capsules drooping.*

33. *Hypnum flagellare.* *Whip feather-moss.*
Stem pinnate, or irregularly bipinnate; *leaves* thickly set, heartshape, pointed, serrated, very faintly 2-ribbed at bottom; *capsule* oblong, drooping; *lid* conical.

Hypnum flagellare, *Dickson Crypt.* 2, 12.
Hypnum umbratum, *Engl. Bot.* 2565, not of Hedwig.

On alpine rocks.

34. *Hypnum abietinum.* *Fir feather-moss.*
Stem pinnate; *leaves* serrated, nipply on the back, edge turned over, main rib nearly to the tip; stem-leaves heartshape, sharp-pointed; branch-leaves heartshape, pointed; *capsule* cylindrical, inclined; *lid* conical.

Hypnum repens filicinum trichoides montanum, ramulis teretibus lutescentibus non divisis, *Dillen in Raii Syn.* 86, 34.
Hypnum abietinum, *Lin. S. P.* 1591; *Engl. Bot.* 2037.

On dry chalk-hills.

35. *Hypnum Blandovii.* *Blandoff's feather-moss.*
Stem pinnate; *leaves* serrated, smooth on the back, edges turned over; stem-leaves heartshape, pointed, with a short main rib; branch-leaves ovate, sharp-pointed, main rib disappearing beyond the middle; *capsule* cylindrical, inclined; *lid* conical.

Hypnum Blandovii, *Weber & Mohr Germ.* 332.

On rocks.

36. *Hypnum piliferum.* *Hairy feather-moss.*

Stem rather pinnate; *leaves* ovate, serrated; tip long, narrow; main rib not reaching the middle; *capsule* ovate, drooping; *lid* beaked.

Hypnum piliferum, *Schreber Lips.* 91; *Engl. Bot.* 1516.

On moist shady banks.

37. *Hypnum rutabuliforme.* *Rakeshape feather-moss.*

Stem variously branched; *leaves* open, ovate, pointed, serrated at the tip, streaked; main rib reaching halfway; *capsule* ovate, drooping; *peduncle* rough; *lid* conical.

Hypnum repens triangularibus minoribus foliis, *Raii Syn.* 80.
Muscus terrestris vulgaris, *Ger. em.* 1370.
Hypnum Rutabulum, *Lin. S. P.* 1590.
Hypnum brevirostre, *Engl. Bot.* 1647, not of Ehrhart.
Hypnum crenulatum, *Engl. Bot.* 1261.
Ground-moss.

On banks and trees.

38. *Hypnum velutinum.* *Velvet feather-moss.*

Stem variously branched; *leaves* upright, spreading, ovate, lanceolate, pointed, serrated, streaked; main rib reaching halfway; *capsule* ovate, drooping; *peduncle* rough; *lid* conical.

Hypnum repens trichoides terrestre viridius minus, capitulis tumidioribus cernuis, *Raii Syn.* 84. 24.
Hypnum velutinum, *Lin. S. P.* 1595; *Engl. Bot.* 1568.
Hypnum intricatum, *Schreber Lips.* 99; *Engl. Bot.* 2421.
Hypnum Teesdalii, *Dickson Crypt.* 4, 16.

On hedge-banks, and in woods.

39. *Hypn. ruscifolium.* *Butchers'-broomleaf feather-moss.*

Stem variously branched; *leaves* loosely tiledlike, rather spreading, broad, ovate, pointed, serrated, concave, main rib reaching to the tip; *capsule* ovate, drooping; *lid* beaked.

Hypnum repens, triangularibus minoribus foliis, pediculis et capitulis brevioribus et tumidioribus, majus, *Dillen. in Raii Syn.* 80, 3.
Hypnum ruscifolium, *Necker Musc.* 181; *Engl. Bot.* 1275.
Hypnum rusciforme, *Necker Gallob.* 481.
Hypnum Rutabulum β, *Hudson Angl.* 497.
Hypnum riparioides, *Hedw. S. Musc.* 242.
Hypnum prolixum, *Dickson Crypt.* 2, 13.
Hypnum Atlanticum, *Desfont. Fl. Atl.*

On wood and stones in rivers and pools.

40. *Hypnum striatum.* *Streaked feather-moss.*

Stem variously branched; *leaves* open, heartshape, pointed, serrated, streaked; main rib reaching beyond the

middle; *capsule* oblong, ovate, drooping; *peduncle* smooth; *lid* beaked.

Hypnum repens triangularibus minoribus foliis, pediculis et capitulis brevioribus et tumidioribus, minus, *Raii Syn.* 80, 4.
Hypnum striatum, *Schreb. Lips.* 91; *Engl. Bot.* 1648.
Hypnum longirostrum, *Ehrh. Crypt.* 75.
Hypnum Rutabulum γ, *Hudson Angl.* 497.
Hypnum Rutabulum β, *Relhan Cant.* 433.

In woods.

41. *Hypnum confertum.* *Crowded feather-moss.*

Stem variously branched; *leaves* upright, spreading, ovate, pointed, concave, serrated, main rib reaching halfway; *capsule* ovate, drooping; *peduncle* smooth; *lid* beaked.

Hypnum confertum, *Dickson Crypt.* 4, 17; *Engl. Bot.* 2407.
Hypnum serrulatum, *Hedw. S. Musc.* 60; *Engl. Bot.* 1262.

On banks, trees, and old rails.

m. *Stem with the leaves not flat; leaves on all sides, very irregular in their direction.*

42. *Hypnum cuspidatum.* *Dagger feather-moss.*

Leaves loosely set, ovate, concave, ribless, uncut; lower leaves irregular; top-leaves closely tiledlike into a sharp point; *capsule* oblong, bent, drooping; *lid* conical.

Hypnum repens palustre, foliis triangularibus per caules expansis, extremitatibus convolutis et acuminatis, *Raii Syn.* 82, 14.
Hypnum cuspidatum, *Lin. S. P.* 1595; *Engl. Bot.* 2407.

On bogs.

43. *Hypnum cordifolium.* *Heartshape-leaf feather-moss.*

Leaves loosely set, irregular, heartshape, ovate, blunt, concave, uncut, main rib running to very near the tip; *capsule* oblong, bent, drooping; *lid* conical.

Hypnum cordifolium, *Hedw. S. Musc.* 254; *Engl. Bot.* 1447.
Hypnum cuspidatum β, *Turner M. Hib.* 177.

On bogs.

44. *Hypnum polymorphum.* *Many-formed feather-moss.*

Leaves loosely set, irregular, heartshape, sharp-pointed, uncut, main rib disappearing halfway up; *capsule* oblong, ovate, bent, drooping; *lid* conical.

Hypnum polymorphum, *Hedw. S. Musc.* 66, rib omitted in fig.
Hypnum chrysophyllum, *Bridel Musc.* 2, 2.

On limestone and chalk.

45. *Hypnum stellatum.* *Starry feather-moss.*

Leaves loosely set, irregular, heartshape, sharp-pointed, uncut, ribless; *capsule* oblong, ovate, bent, drooping; *lid* conical.

Hypnum coma lutescente, extremitatibus stellatis, *Dillen. Musc.* 302.
Hypnum stellatum, *Schreb. Lips.* 92; *Engl. Bot.* 1302.
Hypnum protensum, *Bridel Musc.*

In marshes.

β. *minus.* *Plant* smaller, less upright, greener; *leaves* more turned over.

Hypnum squarrulosum, *Bridel Musc. Engl. Bot.* 1709.

On rocks and stone walls.

46. *Hypnum loreiforme.* *Thongshape feather-moss.*

Leaves turned over, irregular, lanceolate, much pointed, concave, serrated, streaked, faintly 2-ribbed at bottom; *capsule* globular, ovate, drooping; *lid* conical.

Hypnum repens, surculis magis erectis, foliis reflexis longioribus, cinctis, operculo capituli magno, *Raii Syn.* 82, 12.
Hypnum Loreum, *Lin. S. P.* 1593; *Engl. Bot.* 2072.

On heaths among bushes.

47. *Hypnum triquetrum.* *Three-cornered feather-moss.*

Leaves irregular, heartshape, pointed, serrated, faintly streaked, 2-ribbed at bottom; *capsule* globular, ovate; *lid* conical.

Hypnum repens, triangularibus majoribus et pallidioribus foliis, *Raii Syn.* 80.
Hypnum triquetrum, *Lin. S. P.* 1589; *Engl. Bot.* 1622.

In woods.

β. *minus.* *Plant* small.

Hypnum brevirostrum, *Ehrh. Crypt.* not of Smith.

48. *Hypnum squarrosum.* *Scurfy feather-moss.*

Leaves irregular, wide, heartshape, very much pointed and turned over, serrated, faintly 2-ribbed at bottom; *capsule* ovate, globular, drooping; *lid* conical.

Hypnum repens, triangularibus reflexis foliis, majus, *Raii Syn.* 82, 10.
Hypnum repens, triangularibus reflexis, foliis, minus, *Dillen. in Raii Syn.* 82, 11.
Hypnum squarrosum, *Lin. S. P.* 1593; *Engl. Bot.* 1953.

In woods and on heaths.

n. *Stem and leaves not flat; leaves facing one way,* 1-*ribbed.*

49. *Hypnum filicinum.* *Fern feather-moss.*

Stem rather pinnate; *leaves*, especially the upper, sicklelike, facing one way, broad, ovate, pointed, serrated, main-rib reaching to the tip; *capsule* oblong, ovate, bent, drooping; *lid* conical.

Hypnum repens filicinum crispum, *Raii Syn.* 85, 32.
Hypnum filicinum, *Lin. S. P.* 1590; *Engl. Bot.* 1570.
Hypnum dubium, *Engl. Bot.* 2126.
Hypnum fallax, *Bridel Musc.* 3, 2; *Engl. Bot.*

On bogs and the side of streams.

50. *Hypnum atrovirens.* *Dark-green feather-moss.*

Stem variously branched, lying down; *leaves* slightly facing one way, broad, ovate; tip narrow, blunt; main rib running nearly to the tip; *capsule* ovate, drooping; *lid* conical.

Hypnum atrovirens, *Dickson Crypt.* 2, 10; *Engl. Bot.* 2422.
Hypnum filamentosum, *Dickson Crypt.* 2, 11.
Hypnum attenuatum, *Dickson Crypt.* 2, 13; *Engl. Bot.* 2420.
Leskea incurvata, *Hedw. S. Musc.* 53.

On mountain rocks and trees.

51. *Hypnum palustre.* *Marsh feather-moss.*

Leaves facing one way, ovate, rather pointed, concave, uncut, edges turned in above; main rib short, often forked, sometimes faint; *capsule* oblong, ovate, drooping; *lid* conical.

Hypnum heterophyllum aquaticum polycephalum repens, *Dillen. Musc.* 293.
Hypnum palustre, *Lin. S. P.* 1593; *Engl. Bot.* 1665.
Hypnum luridum, *Hedw. S. Musc.* 291.
Hypnum fluviatile, *Turner M. Hib.* 192; *Engl. Bot.* 1303, not of Hedwig.
Hypnum adnatum, *Turner M. Hib.* 165; *Engl. Bot.* 2406, not of Hedwig.

On wet rocks, and banks of rivers and of pools.

52. *Hypnum aduncum.* *Crooked feather-moss.*

Leaves sicklelike, facing one way, lanceolate, awlshape, concave or almost semicylindrical, uncut; main rib not reaching the tip; *capsule* oblong, ovate, bent, drooping; *lid* conical.

Hypnum palustre erectum, summitatibus erectis, *Raii Syn.* 80, 15.
Hypnum aduncum, *Lin. S. P.* 1592.
Hypnum revolvens, *Swartz M. Suec.* 58; *Engl. Bot.* 2073.

On bogs.

β. *rugosum.* *Leaves* wide, slightly sickleshape, wrinkled.

Hypnum lutescens crispum, lycopodii facie, *Dillen. Musc.* 289.
Hypnum rugosum, *Lin. Mant.* 131; *Engl. Bot.* 2250, not of Hedwig.
Hypnum lycopodioides, *Schwægr. Supp.* 2, 300.

53. *Hypnum uncinatum.* *Hooked feather-moss.*

Leaves sickleshape, facing one way, lanceolate, awlshape, serrated, streaked, main rib not reaching the tip; *capsule* cylindrical, bent, drooping; *lid* conical.

Hypnum uncinatum, *Hedw. S. Musc.* 289; *Engl. Bot.* 1600.

On moist banks and walls, in hilly countries.

54. *Hypnum rugulosum.* *Slightly-wrinkled feather-moss.*

Leaves facing one way, ovate, lanceolate, serrated, nearly flat, crisped across when dry; edges turned over; main rib reaching halfway.

Hypnum rugulosum, *Weber & Mohr Cr. Germ.* 366.
Hypnum rugosum, *Hedw. S. Musc.* 293, not of Linnæus.

On heaths.

55. *Hypnum commutatum.* *Changed feather-moss.*

Stems pinnate; *leaves* sicklelike, facing one way, heart-shape, very sharp-pointed, serrated, edges turned over; main rib not reaching the tip; *capsule* oblong, ovate, drooping; *lid* conical.

Hypnum repens filicinum crispum, var. B. C. D. *Dillen. Musc.* 283.
Hypnum commutatum, *Hedw. S. Musc.* 284; *Engl. Bot.* 1569.

On wet places, especially in chalky ground.

o. *Stem and leaves not flat; leaves facing one way, ribs very indistinct, or* 0.

56. *Hypnum scorpioides.* *Scorpion feather-moss.*

Leaves facing one way, broad, ovate, bellied, blunt, uncut, ribless; *capsules* oblong, ovate, bent, drooping; *lid* conical.

Hypnum scorpioides, *Lin. S. P.* 1592; *Engl. Bot.* 1039.

On bogs.

57. *Hypnum Silesianum.* *Silesia feather-moss.*

Leaves loosely tiledlike, facing one way, narrow, lanceolate, pointed, serrated, ribless or very slightly 2-ribbed; *capsule* cylindrical, rather drooping; *lid* conical, blunt.

Hypnum Silesianum, *P. de Beauv. Prod.* 70; *Engl. Bot.* 2016.
Leskea Seligeri, *Brid. Musc.*

On mountains.

58. *Hypnum cupressiforme.* *Cypresslike feather-moss.*
Leaves closely tiledlike, sicklelike, facing one way, lanceolate, pointed, uncut, except the tip which is serrated, very faintly 2-ribbed at bottom; *capsule* cylindrical, slightly drooping; *lid* conical, pointed.

Hypnum repens crispum cupressiforme, *Raii Syn.* 89, 48.
Hypnum myosuroides sericeum tenuius, capsulis erectis, *Dillen. Musc.* 318.
Hypnum cupressiforme, *Lin. S. P.* 1592; *Engl. Bot.* 1860.
Hypnum nigro-viride, *Dickson Crypt.* 4, 18.

On banks, and trees, also on walls.

β. *compressum.* *Stem* slender, compressed; *leaves* sicklelike, facing one way.

Hypnum filicinum sericeum, molle et pallidum, mucronibus aduncis, *Dillen. Musc.* 286.
Hypnum compressum, *Lin. Mant.* 2, 310.

In shady woods.

γ. *tenue.* *Stem* very slender; *leaves* very slightly curved, narrow, lanceolate, uncut.

Hypnum repens trichoides terrestre viridius minus, capitulis cernuis minus tumidis, *Raii Syn.* 84. 26.
Hypnum polyanthos, *Engl. Bot.* 1664, not of Schreber.
Hypnum filiforme, *Hudson Angl.* 497.
Hypnum filifolium, *Withering Arr.* 862.
Leskea filiformis, *Sibthorp Ox.* 303.

On trees.

59. *Hypnum cristæforme.* *Crestlike feather-moss.*
Stem closely comblike; *leaves* sicklelike, facing one way, ovate, lanceolate, pointed, finely serrated, streaked, faintly 2-ribbed at bottom; *capsule* oblong, ovate, bent, drooping; *lid* conical.

Hypnum Crista-castrensis, *Lin. S. P.* 1591; *Engl. Bot.* 2108, not of Hudson.

In woods.

60. *Hypnum molluscum.* *Softish feather-moss.*
Stem comblike; *leaves* sicklelike, facing one way, heart-shape, sharp-pointed, serrated, not streaked, faintly 2-ribbed at bottom; *capsule* oblong, ovate, bent, drooping; *lid* conical.

Hypnum quod Muscus filicifolius luteus, folio crasso et undulato D. Richardsoni, *Raii Syn.* 86, 32.
Hypnum molluscum, *Hedw. S. Musc.* 289; *Engl. Bot.* 1327.
Hypnum Crista-castrensis, *Hudson Angl.* 498, not of Linnæus.

On dry chalk-hills.

XXXIII. 375. BRYUM. Theophrastus. *Thread-moss.*

Capsule valveless, peduncled; *peduncles* terminal; *peristome* double; the outer of 16 teeth; the inner membranaceous, segments 16, equal, sometimes with threads between them; *calyptra* halved.

a. *Capsule furrowed.*

1. *Bryum androgynum.* *Androgynous thread-moss.*

Stem nearly simple; *leaves* lanceolate, serrated, edges turned over; *capsule* nearly upright, cylindrical, furrowed; *lid* conical.

Mnium perangustis et brevibus foliis, *Raii Syn.* 78, 1.
Mnium androgynum, *Lin. S. P.* 1574; *Engl. Bot.* 1238.
Bryum androgynum, *Hedw. S. Musc.* 178.
Gymnocephalus androgynus, *Schwægr. Supp.* 2, 87.
Cluster-headed golden locks.

On banks, in woods.

2. *Bryum palustre.* *Marsh thread-moss.*

Stem much branched; *leaves* lanceolate, blunt, uncut, edges rolled up; *capsule* ovate, blunt, furrowed; *lid* conical.

Mnium majus, ramis longioribus bifurcatis, *Raii Syn.* 78, 2.
Mnium palustre, *Lin. S. P.* 1574.
Bryum palustre, *Roth Germ.* 3, 233; *Engl. Bot.* 391.

On bogs.

b. *Capsule not furrowed; outer teeth of the peristome shorter than the inner.*

3. *Bryum trichodes.* *Hair-leaved thread-moss.*

Stem rather branched; *leaves* linear, blunt, uncut, networked; *capsule* reverse-ovate, bent back, slightly drooping; *peduncles* very short.

Bryum trichodes aureum, capsulis incurvis obtusis in setis longis, *Dillen. Musc.* 389.
Bryum trichodes, *Lin. S. P.* 1585; *Eng. Bot.* 1517.
Meesia uliginosa, *Hedw. S. Musc.* 173.
Mnium uliginosum, *Withering Arr.* 800.
Mnium trichodes, *Hoffm. Germ.* 2, 47.

On mountain bogs.

4. *Bryum triquetrum.* *Three-cornered thread-moss.*

Stem long, branched; *leaves* lanceolate, keeled, pointed, serrated, networked; *capsule* pearshape, slightly drooping; *peduncles* very long.

Mnium triquetrum, *Lin. S. P.* 1578.
Meesia longiseta, *Hedw. Crypt.* 1, 21.
Diplocomium longisetum, *Weber & Mohr Cr. Germ.* 874.
Bryum triquetrum, *Turner M. Hib.* 115; *Engl. Bot.* 2394.

On the edges of lakes.

5. *Bryum dealbatum.* *Whitened thread-moss.*

Stem short; *leaves* lanceolate, pointed, flat, serrated at the tip, networked; *capsules* pearshape, nearly upright.

Bryum dealbatum, *Dickson Crypt.* 2, 8; *Engl. Bot.* 1571.
Meesia dealbatum, *Swartz M. Suec.* 44.

On mountain-bogs.

c. *Capsule not furrowed; outer teeth of the peristome as long as the inner; leaves awlshape.*

6. *Bryum pyriforme.* *Pearshape thread-moss.*

Stem slightly branched; *leaves* awlshape, bristlelike, bent, serrated, rib very broad; *capsule* pearshape, hanging.

Bryum trichodes aureum, capsulis pyriformibus nutantibus, *Dillen. Musc.* 391.
Mnium pyriforme, *Lin. S. P.* 1576.
Bryum aureum, *Schreb. Lips.* 81; *Engl. Bot.* 389.
Bryum mnioides, *Withering Arr.* 838.
Bryum pyriforme, *Swartz M. Suec.* 45.
Webera pyriformis, *Hedw. S. Musc.* 169.

On sandstone-rocks, and the mould of pots in greenhouses.

d. *Capsule not furrowed; outer teeth of the peristome as long as the inner; leaves not awlshape, very blunt, edges not thickened.*

7. *Bryum julaceum.* *Catkin thread-moss.*

Stem branched; *leaves* closely tiledlike, broad, ovate, uncut, blunt, main rib nearly reaching the tip; *capsule* reverse ovate, cylindrical, hanging.

Bryum pendulum, surculis teretibus viridibus, *Dillen. Musc.* 394.
Bryum argenteum β, *Lin. S. P.* 1586.
Bryum julaceum, *Schrad. Germ.* 70; *Engl. Bot.* 2270.
Bryum filiforme, *Dickson Crypt.* 4, 16.

On mountains.

e. *Capsule not furrowed; outer teeth of the peristome as long as the inner; leaves not awlshape, pointed; edges not thickened.*

8. *Bryum crudum.* *Raw thread-moss.*

Stem simple; *leaves* stiff, lanceolate, flat, finely serrated,

main rib not reaching the tip; upper leaves narrowest, longest; *capsule* oblong, pearshape, drooping.

Bryum pendulum hornum molle, foliis et lanceolatis et gramineis, *Dillen. Musc.* 401.
Mnium crudum, *Lin. S. P.* 1576.
Bryum crudum, *Hudson Angl.* 491; *Engl. Bot.* 1604.

On mountain banks, and in the crevices of rocks.

9. *Bryum carneum.* *Flesh thread-moss.*
Stem simple; *leaves* lanceolate, networked, slightly serrated at the tip; main rib not reaching the tip; *capsule* reverse ovate, hanging.

Bryum nitidum, foliis serpylli pellucidis angustioribus, reflexis capitulis subrotundis, carnei coloris, in pediculis brevioribus, *Dillen in Raii Syn.* 102.
Bryum carneum, *Lin. S. P.* 1587; *Eng. Bot.* 360.
Bryum delicatulum, *Hedw. S. Musc.* 179.
Bryum pulchellum, *Hedw. Crypt.* 3, 38.

On banks.

10. *Bryum argenteum.* *Silvery thread-moss.*
Stem branched; *leaves* closely tiledlike, broad, ovate, suddenly pointed, slightly serrated, very concave, main rib not reaching the point; *capsule* ovate, pearshaped, hanging.

Bryum capitulis subrotundis reflexis, cauliculis teretibus argenteis, *Raii Syn.* 100, 47.
Bryum argenteum, *Lin. S. P.* 1586; *Engl. Bot.* 1602.

On open ground, rocks, walls, and roofs.
Leaves green at bottom, dry and white at the tip.

11. *Bryum Zierii.* *Zier's thread-moss.*
Stem branched; *leaves* closely tiledlike, broad, ovate, rather pointed, very concave, networked, main rib reaching nearly to the point; *capsule* clublike, drooping.

Bryum Zierii, *Dickson Crypt.* 2, 8; *Engl. Bot.* 1021.

On mountains.

f. *Capsule not furrowed; outer teeth of the peristome as long as the inner; leaves not awlshape, pointed, edges not thickened; main rib reaching the tip or beyond it.*

12. *Bryum roseum.* *Rose thread-moss.*
Leaves reverse ovate, spatulashape, pointed, serrated, main rib reaching the point; *capsule* oblong, ovate, hanging.

Bryum roseum majus, foliis oblongis, *Raii Syn.* 92.
Muscus parvus stellaris, *Ger. em.* 1563; *Park.* 1308.
Mnium serpyllifolium γ, *Lin. S. P.* 1578.
Bryum roseum, *Schreb. Lips.* 84.
Bryum serpyllifolium δ, *Hudson Angl.* 492.
Bryum proliferum, *Sibthorp Ox.* 292.
Mnium roseum, *Hedw. S. Musc.* 194.
Mnium proliferum, *Withering Arr.* 806.

On banks and hilly heaths.

13. *Bryum capillare.* *Hair-pointed thread-moss.*

Stem short; *leaves* reverse ovate, twisted when dry, uncut, main rib produced into a hairlike point; edges slightly thickened; *capsule* oblong, hanging.

Bryum capitulis reflexis, foliolis latiusculis congestis, *Raii Syn.* 100, 45.
Bryum capillare, *Lin. S. P.* 1586; *Engl. Bot.* 2007.
Mnium capillare, *Lin. Fl. Suec.* 385; *Withering Arr.* 805.
Bryum stellare, *Engl. Bot.* 2434? not of Hedwig.

On woods, and on heaths and banks.

14. *Bryum cæspiticium.* *Tufted thread-moss.*

Stem short; *leaves* ovate, pointed, uncut or very slightly serrated at the point, edges slightly turned over; main rib reaching to or beyond the point; *capsule* ovate, pearshape, hanging.

Bryum trichoides capitulis reflexis, pediculis imâ mediétate rubris, summâ luteo-virentibus, *Raii Syn.* 100, 44.
Bryum cæspiticium, *Lin. S. P.* 1586; *Engl. Bot.* 1904.
Bryum Wahlenbergii, *Schwægr. Supp.* 70.
Mnium cæspiticium, *Withering Arr.* 807.
Mnium lacustre, *Schwægr. Supp.* 77.
Bryum erythrocarpum, *Schwægr. Supp.* 70.

On sandy banks, walls, and roofs.

β. *minor.* *Plant* small.

Bryum bicolor, *Dickson Crypt.* 4, 16; *Engl. Bot.* 1601.

15. *Bryum turbinatum.* *Topshape thread-moss.*

Stem short, branched with young shoots; *leaves* ovate, pointed, scarcely cut, edges slightly turned over; main rib reaching beyond the tip; *capsule* long, pearshape, hanging.

Bryum nitidum rubens, capitulis reflexis, foliis angustis pellucidis, caulículis proliferis, *Dillen in Raii Syn.* 102, 55.
Bryum turbinatum, *Swartz M. Suec.* 49; *Engl. Bot.* 1572.
Mnium turbinatum, *Hedw. S. Musc.* 191.
Pohlia inclinata, *Schwægr. Supp.* 63.
Bryum boreale, *Schwægr. Supp.* 69.
Bryum pallens, *Schwægr. Supp.* 72.
Bryum Schleicheri, *Schwægr. Supp.* 73.
Bryum longisetum, *Schwægr. Supp.* 74.
Webera intermedia, *Schwægr. Supp.* 75.
Bryum pallescens, *Schwægr. Supp.* 75.
Bryum nigricans, *Engl. Bot.* 1528.
Bryum triquetrum γ, *Hudson Angl.* 491.
Mnium nutans, *Withering Arr.* 803.

In wet sandy places.

16. *Bryum nutans.* *Nodding thread-moss.*

Stem short; *leaves* upright, lanceolate, pointed, serrated above, main rib reaching to the tip; *capsule* oblong, pear-shape, hanging.

Bryum trichodes læte virens capitulis cernuis oblongis, *Raii Syn.* 100, 43.
Bryum nutans, *Schreber Lips.* 81; *Engl. Bot.* 1240.
Webera nutans, *Hedw. S. Musc.* 168.
Bryum compactum, *Dickson Crypt.* 4, 15; *Engl. Bot.* 1527.
Bryum sericeum, *Withering Arr.* 839.
Mnium nutans, *Hoffm. Germ.* 2, 49.

On mountain heaths and walls.

17. *Bryum elongatum.* *Long thread-moss.*

Stem short; *leaves* upright, long, lanceolate, pointed, serrated, main rib reaching to the tip; *capsule* long, club-like, inclined.

Bryum elongatum, *Dickson Crypt.* 2, 8; *Engl. Bot.* 1603.
Pohlia elongata, *Hedw. S. Musc.* 171.
Mnium Pohlia, *Hoffm. Germ.* 2, 48.
Pohlia minor, *Schwægr. Supp.* 64.
Bryum longicollum, *Swartz M. Suec.* 6.
Webera longicolla, *Hedw. S. Musc.*
Bryum cylindricum, *Dickson Crypt.* 4, 12.

In caves and clefts of rocks.

18. *Bryum alpinum.* *Alpine thread-moss.*

Stems stiff, long, branched; *leaves* closely tiledlike, upright, lanceolate, rather blunt, slightly serrated at the tip, edge turned over, main rib reaching to the tip; *capsule* oblong, ovate, hanging.

Bryum hypnoides pendulum sericeum, comâ insigni atro-rubente, *Dillen Musc.* 394.
Bryum alpinum, *Lin. Mant.* 2, 309; *Engl. Bot.* 1623.

On rocks.

19. *Bryum ventricosum.* *Bellied thread-moss.*

Stems long, branched with young shoots; *leaves* oblong, pointed, very slightly serrated; edges turned over; main rib reaching beyond the tip; *capsule* oblong, reverse ovate, hanging.

Bryum nitidum, foliis serpylli angustioribus, majus, *Dillen in Raii Syn.* 102, 56.
Bryum nitidum, foliis serpylli pellucidis angustis, capitulis tumidis nutantibus, prælatis pediculis e surculis annotinis egredientibus, *Dillen in Raii Syn.* 102, 54.
Bryum ventricosum, *Dickson Crypt.* 1, 4; *Engl. Bot.* 2270.
Bryum bimum, *Schreb. Lips.* 83; *Engl. Bot.* 1518.
Bryum cubitale, *Dickson Crypt.* 2, 9.
Mnium pseudotriquetrum, *Hedw. S. Musc.* 190.
Bryum triquetrum, *Hudson Angl.* 490.
Bryum pseudotriquetrum, *Roth Germ.* 3, 243.
Mnium triquetrum, *Abbot Bedf.* 235.
Mnium bimum, *Hoffm. Germ.* 2, 48.

In marshes and wet crevices in rocks.

g. *Capsule not furrowed; outer teeth of the peristome as long as the inner; leaves not awlshape, toothless, edges thickened.*

20. *Bryum punctatum.* *Dotted thread-moss.*

Stem long; *leaves* reverse ovate, rounded, very blunt, networked, uncut, edges thickened; main rib not reaching the tip; *capsule* ovate, hanging; *lid* with a short beak.

Bryum nitidum, serpylli rotundis et latioribus foliis pellucidis, *Raii Syn.* 103, 59.
Mnium serpyllifolium α, *Lin. S. P.* 1577.
Bryum punctatum, *Roth Germ.* 3, 245; *Engl. Bot.* 1183.
Bryum serpyllifolium, *Swartz M. Suec.* 51.
Mnium punctatum, *Hedw. S. Musc.* 193.

In marshy places, about the roots of alders and other trees.

Leaves large.

h. *Capsule not furrowed; outer teeth of the peristome as long as the inner; leaves not awlshape, toothed, edges thickened.*

21. *Bryum ligulatum.* *Strap thread-moss.*

Stem long; *leaves* wavy, straplike, networked; edges thickened, toothed; main rib reaching a little beyond the tip; *capsule* ovate, hanging; *lid* conical.

Bryum nitidum, foliis oblongis undatis, capitulis cernuis, arbusculam referens, *Raii Syn.* 103, 60.
Mnium serpyllifolium δ, *Lin. S. P.* 1578.
Bryum ligulatum, *Schreber Lips.* 84; *Engl. Bot.* 1449.
Bryum undulatum, *Sibthorp Ox.* 292.
Mnium undulatum, *Hedw. S. Musc.* 195.

On moist banks and in woods.

22. *Bryum rostratum.* *Beaked thread-moss.*

Stem long; *leaves* broad, ovate, networked; edge thickened, blunt, toothed; main rib reaching a little beyond the point; *capsule* ovate, hanging; *lid* beaked.

Bryum pendulum, serpilli folio longiore pellucido, capsulis oblongis cuspidatis, *Dillen. Musc.* 416.
Bryum rostratum, *Schrader Germ.* 72; *Eng. Bot.* 1475.
Mnium rostratum, *Schwægr. Supp.* 79.
Bryum serpyllifolium β, *Hudson Angl.* 492.
Bryum punctatum 2, *Hull. Fl.* 266.
Mnium ellipticum, *Hoffm. Germ.* 2, 52.
Mnium punctatum 2, *Withering Arr.* 806.

On mountain bogs.

23. *Bryum marginatum.* *Bordered thread-moss.*

Stems long; *leaves* ovate, pointed, networked; edges thickened, serrated; main rib reaching a little beyond the tip; *capsule* ovate, hanging; *lid* with a short beak.

Bryum marginatum, *Dickson Crypt.* 2, 9; *Engl. Bot.* 1493.
Mnium crudum, *Lightf. Scot.* 712.
Bryum serratum, *Schrader Germ.*
Mnium serratum, *Schwægr. Supp.* 78.

On shaded banks, and in woods.

24. *Bryum hornum.*

Stem long; *leaves* lanceolate, pointed, networked; edges thickened, toothed; main rib seldom reaching the point; *capsule* oblong, ovate, hanging; *lid* hemispherical, with a short point.

Bryum nitidum, capitulis majoribus reflexis, calyptrâ imùm vergente, pediculis oblongis e cauliculis novis egredientibus, *Raii Syn.* 102, 51.
Mnium hornum, *Lin. S. P.* 1576.
Bryum hornum, *Huds. Angl.* 491; *Engl. Bot.* 2271.

In wet woods.

25. *Bryum cuspidatum.* *Pointed thread-moss.*

Stems long; *leaves* reverse ovate, pointed, networked; edges thickened, toothed at top; main rib reaching beyond the tip; *capsule* ovate, hanging; *lid* conical, hemispherical, blunt.

Bryum pendulum, foliis variis pellucidis, capsulis ovatis, *Dillen. Musc.* 413.
Mnium serpyllifolium β, *Lin. S. P.* 1577.
Bryum cuspidatum, *Schreber Lips.* 84; *Engl. Bot.* 1474.
Mnium cuspidatum, *Hedw. S. Musc.* 192.
Bryum serpyllifolium γ, *Hudson Angl.* 492.

In woods, and on shady walls.

ADDITIONS AND CORRECTIONS.

Page 340, l. 6 from bottom. For Frattinickia read Trattinickia.

P. 371, l. 4 from bottom. For gigartinus pistillatus read gigartina pistillata.

P. 372, l. 10. For gigartinus read gigartina.

P. 373. The varieties of gigartina cornea, β, γ, ε, η, θ, and ι, to be made feminine by changing the final us into a, as filicinus into filicina, &c.

P. 394. For flagellaria lubricalis read furcellaria lubricalis.

P. 412. 4. *Isidium microsticticum. Small-footed isis-lichen.*
Crust cracked, tartarlike, rather smooth, nearly even, brownish cream-colour; edges thin; *podetia* scattered, short, hemispherical, not branched, same colour as the crust; *apothecia* brownish.

Lichen microsticticus, *Engl. Bot.* 2243.

On rocks.

P. 429, l. 12 from bottom. For lichenoides lichen facie read lichenoides lichenis facie.

P. 447. 4.* *Placodium elegans.* *Elegant placodium.*
Crust rather tiledlike, plaited, wrinkled, orange-yellow; surface not mealy; lobes linear, jagged, waved, convex, rather distant, radiating; *apothecia* slightly concave, nearly the same colour as the crust; *thalloid border* slightly waved, not in the least cut.

Lecanora elegans α. *Achar. Lich.* 435.
Parmelia elegans, *Achar. Meth.* 195.
Lichen elegans, *Link Ann.* 1, 57; *Engl. Bot.* 2181.

On rocks, especially near the sea.

P. 450. spec. 7. For lecanora sophodes read rinodina sophodes.

P. 451. 8.* *Rinodina subfusca.* *Brownish rinodine.*
Crust cartilaginous, smooth, grows granulated, uneven, white and greyish; *apothecia* flat, slightly convex, brownish and black; *thalloid border* swollen, not cut, at length wavy, and crenated.

Lichen subfuscus, *Lin. S. P.* 1609.
Verrucaria subfusca, *Hoffm. Germ.* 180.
Parmelia subfusca, *Achar. Meth.* 167.
Lecanora subfusca, *Achar. Lich.* 393.

On the bark of trees and old timber work.

P. 460, l. 13 from bottom. For lichen versicularis read lichen vesicularis.

P. 476, l. 14 from bottom. For gyrophora, *Achar.* read gyrophora glabra, *Achar.*

P. 556, l. 11 from bottom. For cladospermium read cladosporium.

P. 656, line the first. For ramalaria read ramaria.

P. 678, line the last. For Herverus read Pallavicinius.

P. 679, l. 20. For Donnia read Bazzanius.

P. 679, l. 22. For Pallavicinius read Papa.

P. 679, l. 28. For Papa read Herverus.

P. 684. Change the name of the genus Herbertus into Pallavicinius—in English, Pallavicini.

P. 724, l. 21. For viribus read viridibus.

" ———— The fall of kings,
The rage of nations, and the crush of states,
Move not the man, who, from the world escaped,
In still retreats, and flowery solitudes,
To nature's voice attends; from month to month,
And day to day, through the revolving year;
Admiring sees her in her every shape."

THOMSON.—*Autumn.*

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END OF VOL. I.

C. Baldwin, Printer,
New Bridge-street, London.