XCI. *An Hiſtorical Memoir concerning a Genus of Plants called* Lichen, *by* Micheli, Haller, *and* Linnæus; *and comprehended by* Dillenius *under the Terms* Uſnea, Coralloides, *and* Lichenoides: *Tending principally to illuſtrate their ſeveral Uſes. Communicated by* Wm. Watſon, *M. D. F. R. S.*

——*Natura nihil fruſtra creaverit. poſteros tamen tot inventuros utilitates ex* Muſcis *auguror, quot ex reliquis vegetabilibus.*

Cui bono? Amæn. Acad. III. p. 241.

Read Apr. 27 & May 4, 1758.

THE whole claſs of moſſes were taken but very little notice of by the revivers of botany in the ſixteenth century: they indeed took ſome pains to diſtinguiſh the particular ſpecies that the ancients had mentioned, but diſregarded almoſt all the reſt. Modern botaniſts however ſuppoſe, that they were but little ſucceſsful in general in their application of the ancient names to plants: nor is a failure in ſuch attempts to be wondered at, conſidering the too great conciſeneſs, and frequent obſcurity, of their deſcriptions. In the claſs of moſſes, as in many others, the accounts tranſmitted to us are little more than a ſcene of uncertainty and confuſion.

It is to the moderns we are indebted for the diſcovery of the far greater number of the plants of this claſs.

claſs. In this branch of botany our own countrymen Mr. Ray, Buddle, Dale, Doody, Petiver, and Dr. Moriſon, Sherard, Richardſon, and others, have diſtinguiſhed themſelves: and amongſt foreigners M. Vaillant, Sig. Micheli, and the very eminent Dr. Haller: but, beyond all, the late learned and indefatigable profeſſor at Oxford, Dr. Dillenius, has herein made the moſt ample diſcoveries and improvements, of which his elaborate hiſtory will ever remain a ſtanding proof.

The word *lichen* occurs in the writings of Dioſcorides and Pliny; and tho' it may be doubtful, there is nevertheleſs good reaſon to apprehend, that Dioſcorides meant to deſcribe under that name the very plant, or at leaſt one of the ſame genus, to which the commentators agreed to affix his deſcription. Since then the name has been variouſly applied by different authors: on which account it is neceſſary to premiſe, that the *lichen ſive hepatica Off.* or liverwort of the ſhops, does not fall under this generical term, as it is now formed by the three above-named authors. They comprehend under the term *Lichen*, and Dillenius under thoſe of *Uſnea*, *Coralloides*, and *Lichenoides*, the hairy tree-moſs or *uſnea* of the ſhops; the *muſcus pulmonarius*, tree-lungwort, or oak-lungs; the *lichen terreſtris cinereus*, or aſh-coloured ground liverwort; the coralline-moſſes; the cup-moſſes; horned moſſes; the *orchel*, or Canary-weed; the *muſcus iſlandicus* of Bartholine; and a multitude of others found upon trees, walls, rocks, and ſtones, in all parts of the world, and in many parts thereof in very great abundance.

Caſpar Bauhine in his *Pinax*, John Bauhine, and our

countrymen Gerard and Parkinſon, and their cotemporaries, as they wrote before the time that generical characters in botany were in uſe, included theſe lichens among the other herbaceous moſſes, under the general name of *muſcus*; adding to the name in general ſome epithet deſcriptive of its form, place of growth, or ſuppoſed virtue.

Mr. Ray, both in his Hiſtory of Plants, and in the Supplement, as he was uſually averſe to the forming of new names, has interſperſed them among other moſſes, under the character of *muſci ſteriles ſeu aſpermi*, retaining the ſynonyms of the two Bauhines, Gerard, and Parkinſon, to the general ſpecies.

Dr. Moriſon ſeems to have been the firſt, who ſeparated them intirely from the herbaceous moſſes; and, from the analogy he ſuppoſed they had with the fungus tribe, formed them into a genus, under the name of *muſco-fungus*. He enumerates fifty ſpecies and upwards under this term in the *Hiſtoria Oxonienſis*, and has divided them into five orders, according to their different appearances, as follows:

1. *Muſco-fungi e terra prominentes, latiores.* 5.
2. *Muſco-fungi pixidati.* 11.
3. *Muſco-fungi corniculati.* 26.
4. *Muſco-fungi cruſtæ modo adnaſcentes.* 37.
5. *Muſco-fungi corticibus arborum dependentes.* 53.

Table the 7th of his 15th ſection exhibits ſeveral good figures of ſome of theſe lichens.

Tournefort was the firſt, who adapted the generical term *lichen* to them; but it was in conſequence of his joining them to the lichen of the ſhops. He has however excluded the coralline-moſſes, and

forms them into a genus, by the name of *coralloides*; to which he has connected ſome plants, properly of the fungus tribe. In this diſtinction he is followed by Dr. Boerhaave in his *Index alter Plantarum.*

Dr. Dillenius firſt called them *lichenoides*, in the catalogue of plants growing about Gieſſen, chuſing to retain the word *lichen* to the liverwort of the ſhops. Under this name however, in this work, he does not comprehend the *uſneæ*, or hairy tree-moſſes, but refers them to the *confervæ*, adding the epithet *arborea* to each ſpecies, to diſtinguiſh them from the water kinds. He enumerates upwards of ſixty ſpecies of *lichenoides*, but has applied few or no ſynonyms to them.

Under the ſame generic term he has introduced them into the third edition of Ray's Synopſis of Britiſh Plants, taking in the *uſneæ*, and recounting upwards of ninety ſpecies, all found ſpontaneouſly growing in England. Many of theſe are undoubtedly only varieties. They are in this work very naturally divided into ſeveral orders and ſubdiviſions, for the greater eaſe of diſtinguiſhing them, as follows:

- *Lichenoides*
  - *cauliſera*
    1. *Capillacea et non tubuloſa ſcutellata.*
    2. *Coralliformia tuberculoſa plerumque.* — a. *Solida et non tubuloſa.* b. *Tubuloſa.*
    3. *Pyxidata.*
    4. *Fungiformia.*
  - *cauliculis deſtituta*
    1. *Mere cruſtacea.*
    2. *Cruſta folioſa ſcutellata ſeu foliis ſcutellatis arcte adnaſcentibus* — a. *Subſtantiæ gelatinoſæ.* b. *Subſtantiæ durioris.*
    3. *Foliis magis liberis nec tam arcte adnaſcentibus* — a. *Scutellatis et tuberculatis.* b. *Peltatis.*

M. Vaillant, in the *Botanicon Pariſienſe*, retains Tournefort's names. Many of theſe lichens, as well as other moſſes, are accurately repreſented in the elegant tables, which adorn that work. Dr. Haller tells

tells us he learnt to diſtinguiſh almoſt all the moſſes ſolely by the help of theſe tables, ſo well are they expreſſed. The lovers of botanic ſcience are greatly indebted to Boerhaave for his publication of that work.

Micheli, after Tournefort, adopts the term *lichen*, and comprehends all the ſpecies under it, except one or two, which he calls *lichenoides*. This author however does not take into this genus the liverwort of the *materia medica*; he deſcribes the ſpecies of that genus under the name of *marchantiæ*. Near twenty of the plates in his *Nova Plantarum Genera* are taken up in repreſenting various ſpecies of this genus. In this work they are divided into thirty-eight orders or ſubdiviſions; a circumſtance very neceſſary indeed, conſidering how greatly he has multiplied the number of the ſpecies. It is to be regretted, that ſo indefatigable an author, one whoſe genius particularly led him to ſcrutinize the minuter ſubjects of the ſcience, ſhould have been ſo ſolicitous to increaſe the number of ſpecies under all his genera: an error this, which tends to great confuſion and embaraſſment, and muſt retard the progreſs and real improvement of the botanic ſcience.

Dr. Haller retains Micheli's term, and enumerates 160 kinds in his *Enumeratio Stirpium Helvetiæ*: he divides them into ſeven orders, according to the following titles:

1. *Lichenes corniculati & pixidati.*
2. *Lichenes coralloidei.*
3. *Lichenes fruticoſi alii.*
4. *Lichenes pulmonarii.*
5. *Lichenes cruſtacei ſcutis floralibus ornati.*
6. *Lichenes ſcutellis ornati.*
7. *Lichenes cruſtacei non ſcutati.*

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The extenſive number of the ſpecies, and the difficulty of diſtinguiſhing them with a tolerable degree of certainty, has deterred Dr. Haller from adding ſo full and complete a liſt of ſynonyms to the plants of this genus as he has elſewhere done in that ſplendid work. Plate the 2d exhibits ſeveral elegant ſorts of theſe lichens.

Linnæus, and the followers of his method, who ſeem to have eſtabliſhed their generical character from Micheli's diſcoveries, retain alſo his generical title. Micheli's paſſion for the multiplication of ſpecies is no-where more conſpicuous than in the plants of this genus, which he has moſt enormouſly augmented to the number of 298 ſpecies. The Swediſh profeſſor cannot be charged with this foible: it is one of the excellencies of his writings, that they inculcate the reverſe. He has ſo far retrenched this genus, that in his general enumeration of plants he recounts only eighty ſpecies belonging to it. They are in this work divided into eight orders, according to the difference of appearance which they form by their *facies externa*, little or no regard being had to what are uſually called the parts of fructification.

1. *Lichenes leproſi tuberculati.*
2. *Lichenes leproſi ſcutellati.*
3. *Lichenes imbricati.*
4. *Lichenes foliacei.*
5. *Lichenes coriacei.*
6. *Lichenes ſcyphiferi.*
7. *Lichenes fruticuloſi.*
8. *Lichenes filamentoſi.*

Dr. Dillenius, in his moſt elaborate work, intituled, *Hiſtoria Muſcorum*, has divided this Michelian genus into three, under the names of *uſnea*, *coralloides*, and *lichenoides*. Under the word *uſnea* he comprehends the hairy tree-moſſes, among which are the *uſnea* of

the ſhops, and the true *uſnea* of the Arabians. Of theſe he deſcribes ſixteen ſpecies. Under *coralloides* he deſcribes thirty-nine ſpecies, among which are the cup-moſſes, and many others, diſpoſed according to the following ſcheme:

Ordo I. *Fungiformia, non tubuloſa, nec ramoſa.* 5.
Ordo II. *Scyphiformia, tubuloſa, ſimplicia et prolifera.*
Series 1. *Scyphis perfectioribus.* 13. Cup-moſſes.
Series 2. *Scyphis imperfectis.* 20. Horned moſſes.
Ordo III. *Ramoſa fruticuli ſpecie ſummitatibus acutis multifariam diviſis.*
Series 1. *Species tubuloſæ.* 30. Tubulous coralline moſſes.
Series 2. *Species ſolidæ.* 39. Solid coralline moſſes; among which is the *orchel.*

The genus of *lichenoides* contains 135 ſpecies, diſpoſed according to the following ſcheme:

Ordo I. *Species aphyllæ mere cruſtaceæ.*
1. *Tuberculoſæ.* 8.
2. *Scutellatæ.* 18.

Ordo II. *Species folioſæ.*
1. *Gelatinoſæ tuberculoſæ et ſcutellatæ.* 35.
2. *Aridiores et exſuccæ, ſcutellatæ.* 100.
3. *Aridiores peltatæ et clypeatæ.* 121.

Theſe plants are not only largely deſcribed, and accompanied with the moſt perfect aſſemblage of ſynonyms; but every ſpecies is accurately figured, and many of them in various views, and at different ages of their growth; by which this laborious work, notwithſtanding it is converſant upon the minuteſt, and con-

conſequently the moſt abſtruſe parts of botany, may nevertheleſs be juſtly eſteemed, without any exaggeration, one of the moſt complete works extant of the kind.

Dr. Hill, in his Hiſtory of Plants, has diſpoſed them into five genera, under the following names: 1. *Uſnea*, comprehending the hairy tree-moſſes; 2. *Platyſma*, flat-branched tree-moſſes, the lungwort, and others; 3. *Cladonia*, containing the orchel and coralline-moſſes; 4. *Pyxidium*, the cup-moſſes; 5. *Placodium*, the cruſtaceous moſſes.

The plants of this extenſive genus are very different in their form, manner of growing, and general appearance: on which account thoſe authors, who preſerve them under the ſame name, ſaw the propriety and neceſſity of arranging them into different orders and ſubdiviſions, that the ſpecies might be diſtinguiſhed with greater facility. Upon the ſame principle Dr. Dillenius and Dr. Hill have formed them into ſeveral genera.

So far as the parts of fructification are diſtinguiſhable in theſe plants, they appear in different forms upon different ſpecies: on ſome, in the form of tubercles; on others, in the form of little concave diſhes, called *ſcutellæ*; on others, of oblong flat ſhields or pelts. All theſe are conceived by Micheli and Linnæus to be receptacles of male flowers. The female flowers and ſeeds are ſuſpected by the ſame authors to be diſperſed in the form of farina or duſt upon the ſame plants, and in ſome inſtances on ſeparate ones. Dillenius has not dared to determine any thing poſitively with regard to the real parts of fructification in theſe lichens: time will hereafter, it is to be hoped, throw more light upon the ſubject.

In order to convey a more diſtinct idea of the ſeveral plants of this genus, which enter into œconomical or medical uſes in the various parts of the world, we ſhall diſtribute them into ſeveral orders, according to the cuſtom of former writers: and as is not conſiſtent with our plan to deſcribe each of theſe ſpecies, we ſhall refer to the page of the more modern authors, where they may be found.

1. Lichenes filamentoſi.

Such as conſiſt of mere ſolid filaments, of a firm and ſolid but flexible texture, having the appearance of fructification in the form of ſcutellæ, *or flat round bodies growing from the ſides or extremities of theſe filaments.*

This order or diviſion comprehends the hairy tree-moſſes, or *uſnea* of Dillenius and Hill; ſeveral of the ſpecies of the fifth order of lichens of Micheli; and the *lichenes filamentoſi* of Linnæus.

Dr. Dillenius deſcribes ſixteen ſpecies under the term *uſnea*, ſeveral of which are found in England, tho' ſome of them, as the common *uſnea* of the ſhops, but very ſparingly, and none of them in any conſiderable plenty. The thick woods in many other parts of Europe, and the reſt of the globe, afford them in great plenty. They hang from the branches of various kinds of trees, like large tufts of hair, to a conſiderable length: ſome ſpecies grow ſeveral feet long. The rocks on the tops of high mountains afford ſeveral kinds. They are of various colours; ſome whitiſh, aſh-coloured, others grey or blackiſh, and two or three ſpecies have a yellow or orange hue.

The

The commentators in general agreed in making the *bryon* of (1) Dioſcorides one of theſe hairy tree-moſſes, which they called *uſnea*. No wonder, therefore, that at the reſtoration of letters it became a matter of controverſy, which of them was the *uſnea* of the ancients. Dioſcorides recommends his as an aſtringent; and tells us, that "the beſt grew upon "the cedar; but that from whatever tree it was ga-"thered, the whiteſt and moſt fragrant was pre-"ferable to the black." The ſeveral *uſneæ* would undoubtedly in different countries be found upon different trees. In Italy, that of the larch-tree was the moſt odoriferous; and on that account Matthiolus (2) preferred it to all others. That kind, which at length obtained a place in the ſhops as the *uſnea* of the ancients, was a ſpecies commonly found in our countries on old oaks and other trees, and is called by Dillenius (3) ſtringy tree-moſs, or *uſnea* of the ſhops. Many excellent virtues have been aſcribed to it, on a ſuppoſition of its being the true *uſnea*; but it does not appear to have deſerved them: and the preſent practice, at leaſt in England, has quite expunged it, and that perhaps very juſtly.

Dr. Dillenius is evidently of opinion however, that this common *uſnea*, tho' it obtained a place in the ſhops as ſuch, is not the *bryon* of Dioſcorides and Pliny, or the *phaſeon* of Theophraſtus, ſince he has

(1) Lib. i. c. 20. See this ſubject largely diſcuſſed in Bodæus à Stapel Comment. in Theoph. p. 156. et ſeq.

(2) Opera omnia à C. B. edit. 1598. p. 64.

(3) *Uſnea vulgaris loris longis implexis* Hiſt. Muſc. p. 56. *Lichen plicatus* Lin. Sp. Pl. 1154. *Muſcus arboreus: Uſnea* Officin. C. B. Raii Syn. III. p. 64.

applied

applied theſe names from thoſe fathers of botany to another ſpecies, which he calls the *beard uſnea* (4). Nor does either of theſe ſpecies appear to be the true *uſnea* of the Arabians, whatever title they may ſeem to have to it, either from their colour or ſmell. Bellonius, as he is quoted by Dr. Dillenius, tells us, "that the true *uſnea*, or *bryon*, as he calls it, is ſold "at Conſtantinople under the name of *uſnech*; and "tells us we are deceived in believing ours to be "the true *uſnea*." Dillenius has therefore deſcribed another ſpecies (5), which he received from the Eaſt Indies, from Madagaſcar, and St. Helen's, as the *Uſnea Arabum*. This plant the Indians call *ſaliaga*; and Camelli aſſures us, that, while freſh, it has a very fragrant muſk-ſmell. He adds, that he had himſelf experienced what Serapio ſays of it; *viz.* that a vinous infuſion of it reſtrains fluxes, ſtops vomiting, ſtrengthens the ſtomach, and induces ſleep.

The common *uſnea* of the ſhops was ſaid to be the baſis of that fine perfumed powder, which the French called *corps de cypre gris*, and which formerly made a great article of trade at Montpelier. Dr. Brown hints (6), that the perfumers uſe it ſtill; but he does not add, where. John Bauhine gives us the whole proceſs (7) for making that power, which was vended in great quantities to all parts of France. It

(4) *Uſnea barbata loris tenuibus fibroſis* Hiſt. Muſc. p. 63. *Lichen barbatus* Lin. Sp. Pl. 1155. *Quercus excrementum villoſum* C. B. p. 422. Bauhine took this to be the true *Uſnea Arabum*.

(5) *Uſnea ceratoides candicans glabra et odorata* Hiſt. Muſc. p. 71. *Muſcus arboreus candicans et odorifer* Camelli Raii Hiſt. III. Append. p. 3.

(6) Civil and Natural Hiſtory of Jamaica, p. 80.

(7) Hiſt. Plant. I. par. ii. p. 88.

is nevertheleſs true, that other of the lichens had as great a ſhare in the compoſition as the *uſnea*; as the demand for that powder could not have been anſwered, if the makers had confined themſelves to the *uſnea* alone. It was neceſſary too, inaſmuch as other ſpecies are equally well adapted to the ſame uſes (8).

This *uſnea* is abundantly plentiful in the woods of Lapland; and Linnæus (9) relates, that the inhabitants apply it to their feet, when they are ſore and excoriated with much walking. The benefit they receive from it in this caſe is undoubtedly owing to its ſtyptic quality, which is remarked by Matthiolus, and by Mr. Ray (10) from the German Ephemerides.

The *beard uſnea* before mentioned, which is abundantly common upon the trees both in the northern regions of Europe and America, as well as in the eaſtern kingdoms, and is deſcribed by Mr. Ray as hanging to the length of two feet, the filaments of which are not thicker than a common thread, and of a greeniſh white colour, is uſed by the inhabitants of Penſylvania to dye an orange colour with. This information Dillenius received from Mr. Bartram.

The black *mane uſnea*, which grows in vaſt quantities in the Lapland woods, in a defect of the common coralline moſs makes part of the fodder, and is equally acceptable to the rein-deer in the winter time (11).

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(8) Flor. Lap. p. 342. ε. Flor. Suec. Ed. II. p. 416.
(9) Flor. Lap. p. 348.
(10) Hiſt. Plant. I. p. 115.
(11) *Uſnea jubata nigricans.* Dillen. Hiſt. Muſc. p. 64. *Lichen jubatus* Lin. Sp. Pl. 1155. *Muſcus corallinis ſaxatilis fæniculaceus*, Rock-hair. Raii Syn. III. p. 65. n. 7.

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The long beaded *uſnea*, or necklace-moſs (12), enters into the like œconomical uſes in Virginia, where it is very plentiful. The inhabitants find it a very agreeable fodder in the winter ſeaſon to both ſheep and cows (13).

The Norwegians appropriate one of theſe *uſnea* to a ſingular uſe. Pontoppidan tells us (14), "they "have a certain kind of yellow moſs hanging on "the branches of trees of the firs and pines, which "is very venomous, yet applied to a neceſſary uſe; "for being mixed in pottage, or with fleſh, as a "bait for the wolves, they infallibly die of it." That the ſpecies here referred to is the braſs-wired *uſnea* of Dillenius (15), or the *lichen vulpinus* of Linnæus, cannot be doubted, ſince this laſt author mentions (16) the ſame application of it with very little variation. In England it is very rare; in Sweden plentiful, eſpecially in the province of Smoland, where the natives dye woollen goods yellow with it.

John Bauhine deſcribes a very beautiful ſpecies, under the name of *laricus muſcus* (17), which gives a very elegant citron colour upon chewing, or upon maceration in water. Dillenius is doubtful, whether this is what he has deſcribed under the name of the orange-coloured forked *uſnea* (18).

(12) *Uſnea capillacea et nodoſa* Dillen. Hiſt. Muſc. 60. *Muſcus arboreus nodoſus* C. B. p. 361. Raii Syn. III. p. 65. n. 4.

(13) Raii Hiſt. Pl. III. p. 28.

(14) Natural Hiſtory of Norway, p. 148.

(15) *Uſnea capillacea citrina frutriculi ſpecie.* Hiſt. Muſc. p. 73; *Muſcus aureus tenuiſſimus* Merret. Pin. p. 79. Raii ſyn. p. 65. n°. 8.

(16) Flor. Suec. Ed. II. p. 427.

(17) Hiſt. Plant. III. P. ii. lib. 9. p. 273.

(18) *Uſnea dichotoma compreſſa ſegmentis capillaceis teretibus.* Hiſt. Muſc. 72. *Muſcus arboreus aurantiacus ſtaminibus tenuiſſimis* Pluk. Alm. p. 254. Raii Hiſt. III. 28.

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We may here obſerve by the bye, that the *uſnea cranii humani*, which thro' the influence of ſuperſtition formerly obtained a place in the catalogues of the *materia medica*, does not belong to this diviſion of the lichens. The writers of thoſe times diſtinguiſhed two kinds of *uſnea humana*, under the names of *cruſtacea* and *villoſa*. Any of the cruſtaceous lichens, but more properly the common grey-blue pitted *lichenoides* of Dillenius, was uſed for the former of theſe; and, as Dale tells us, was held in moſt eſteem. The *villoſa* was a ſpecies of the genus of *hypnum*. Indeed it does not appear, that they were in thoſe days very curious in determining the exact kind; and doubtleſs any moſs, which happened to grow upon an human ſkull, was ſufficient for the purpoſes deſigned.

2. Lichenes fruticuloſi.

Such as conſiſt of a tough flexible matter, formed into ramifications, in ſome ſpecies almoſt ſimple, in others reſembling ſmall ſhrubs: in ſome of the ſpecies the branches are quite ſolid, in others tubular.

This order comprehends the third of Dillenius's genus of *coralloides*; the whole *cladonia* of Hill; the ſecond, and ſeveral ſpecies of the third order of Haller's lichens; ſeveral ſpecies of the fifth, and the whole ſixth, order of Micheli; and the *lichenes fruticuloſi* of Linnæus.

The plants of this genus grow principally upon the ground on heaths, foreſts, and mountainous bar-

ren places; except the *orcelle*, or Canary-weed, which is found upon the rocks on the ſea-coaſt.

To this diviſion belongs the horned moſs (19). It is found with us in rocky barren ground, and upon old walls not uncommon. It was formerly in great credit as a pectoral; but is now quite in diſrepute.

The common branched coralline-moſs (20) is one of the moſt uſeful plants of all the tribe of lichens. It is pretty frequent with us on our heaths, foreſts, and mountains. The northern regions afford it in abundance; and there it is peculiarly and ſingularly uſeful. It is indeed the very ſupport and foundation of all the Lapland œconomy, and without which the inhabitants could not ſuſtain their rein-deer in the winter time. Linnæus tells us (1), that Lapland affords no vegetables in ſuch plenty as this, and other of the lichens. Plains of ſeveral miles extent are totally covered over with it, as if with ſnow; and where no other plant will even take root, this will thrive and be luxuriant. Theſe dreary and inclement waſtes, theſe *terræ damnatæ*, as a foreigner would readily call them; theſe, are the Lapland fields and fertile paſtures. On this lichen the rein-deer, thoſe ſources of all their wealth, feed in the winter time, when it is in its moſt flouriſhing condition, and no

(19) *Coralloides corniculis longioribus et rarioribus.* Dillen. Hiſt. Muſc. p. 103. *Muſcus corniculatus* Ger. p. 1372. Park. 1308. Raii Hiſt. I. p. 112. III. p. 28. *Lichenoides tubuloſum cinereum minus cruſtaceum minuſque ramoſum* Raii Syn. 3. p. 67.

(20) *Coralloides montanum fruticuli ſpecie ubique candicans* Hiſt. Muſc. p. 107. *Lichen rangiferinus* Lin. Sp. Pl. 1153. *Muſcus corallinus.* Tab. Ger. em.

(1) Flor. Lappon. p. 332.

other

other vegetable is to be had: with this too they will even become fat. The riches of the Laplanders conſiſt in their number of theſe cattle: they are cloathed with their ſkins, fed with their fleſh, and from their milk they make both butter and cheeſe. Nature, by the inclemency of their ſeaſons, has almoſt denied them the cultivation of their earth: they neither ſow nor reap; but live a perpetual migratory life, tending their flocks of rein-deer, upon which their whole care is centered and employed.

The milk of the rein-deer is very remarkably fat and rich: it taſtes indeed like cow's milk, with which ſome butter, and a ſmall quantity of fat or ſuet, has been intimately united. Dr. Haller (2) ſuſpects, that this richneſs of the milk is owing to the animals feeding upon this moſs. Moſt of the plants of this family are of an aſtringent quality, which indeed they manifeſt to the taſte. This aſtringency of their food will doubtleſs contribute much to that effect.

The rein-deer are not the only animals that will feed upon the coralline moſs. The Novaccolæ (3) gather vaſt quantities of it to fodder their oxen with in the winter. They take the opportunity of raking it together in the rainy ſeaſons, when it is tough; for in dry weather it eaſily crumbles into powder. This they moiſten with a little water in the winter ſeaſon when they uſe it, and find it excellent fodder.

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(2) Enum. Stirp. Helv. p. 69. N°. 38.

(3) The Novaccolæ are a people originally ſprung from the Finlanders: they fixed themſelves in Lapland not long ſince, and traffick with the old inhabitants.

The coralline moſſes are ſubject to great variation: and altho' there are ſeveral really diſtinct ſpecies, yet they run ſo into one another, that it is no eaſy matter to fix upon the real ſpecific diſtinctions, in many inſtances. Some ſpecies are perfectly white; others have the extremities of the branches reddiſh, ſome brown, and others almoſt black. The common coralline moſs in Lapland not unfrequently grows to be ſeveral inches long, and even a foot high.

The tubular or hollow branched coralline moſſes are not the only kinds upon which the rein-deer will feed. Almoſt all the lichens are abundantly more plentiful in thoſe northern, than in theſe more ſoutherly climates. There are ſeveral ſpecies with ſolid branches; one, which Dillenius calls *The criſp warty Alpine coralloides* (4), which is almoſt as plentiful as the common ſort, and is equally acceptable to thoſe animals (5). It was before obſerved, that, in defect of theſe moſſes, the black *mane uſnea* is a ſubſtitute equally acceptable to thoſe animals.

Another of the moſt remarkable and uſeful plants of this diviſion is the *orchel* (6), or *argol*, as it is

(4) *Coralloides criſpum et botryforme Alpinum* Hiſt. Muſc. p. 114. *Lichen paſchalis* Lin. Sp. Pl. *Lichenoides non tubulum cinereum ramoſum totum cruſtaceum* Raii Syn. III. 66. N. 11. This moſs is not common in England. Dr. Dillenius found it upon ſome of the mountains in Wales. It is found in many places on Charley-foreſt, Leiceſterſhire.

(5) Flor. Lappon. N°. 489.

(6) *Coralloides corniculatum faſciculare tinctorium fuci teretis facie* Dillen. Hiſt. Muſc. p. 120. *Cladonia tophacea* Hill. Hiſt. Pl. p. 93. *Fucus capillaris tinctorius* Raii Hiſt. I. p. 74. *Lichen (Rocella) fruticuloſus ſolidus aphyllus ſubramoſus tuberculis alternis* Lin. Sp. Pl. 1154.

commonly

commonly called. This enters more into œconomical uſes among us than any other of the whole genus. How conſiderable an article it forms in the dying trade, in which its uſes are various and extenſive, is very well known. Its tinging property has been known from ancient times; and ſome of our moſt celebrated botanic writers are of opinion, that it was uſed as a dye even in the days of Theophraſtus. That father of botany mentions a *fucus*, which, he ſays, grew upon the rocks about the iſland of Crete; and that they dyed woollen garments of a purple, or rather a red colour, with it. It grows on the rocks by the ſea-coaſt in many parts of the Archipelago, and in the Canary Iſlands; from whence we generally import it, as well as from the Cape Verd, which afford it in plenty. The demand for *orchel* is ſo great, that Mr. Hellot (7), of the Royal Academy of Sciences, informs us, they gather yearly, upon an average, from the iſle of Teneriffe 500 quintals, which amounts to 25 ton weight; from the Canary Iſlands 400 quintals, from Forteventura 300, from Lancerota 300, the ſame from Gomera, and from Ferro 800.

The way of manufacturing the *orchel* for the uſes of dying, was for a conſiderable time a ſecret in few hands; but it is now done in London, and other parts of Europe, to great perfection. Mr. Ray, from Imperatus, gives a brief account of the proceſs (8). Micheli has ſince delivered a more exact detail of it.

(7) L'Art de la Teinture des lains et des Etoffes de lain, Paris 1750, p. 543.

(8) Raii Hiſt. Plant. I. p. 74.

His,

His, at leaſt, ſeems to be the method (9), which the dyers at Florence uſed. From both theſe accounts, urine and pot-aſh appear to be the principal ingredients uſed in extracting its colour.

Many other plants of this genus contain the ſame tophaceous matter as the *orchel*; and upon trial have been found to ſtrike a good colour. Micheli, after he has related the preparation of the *orchel*, ſuggeſts the ſame thing; and M. Hellot, in the treatiſe before mentioned, tells us, there are many other moſſes, which will give as good a colour as the *orchel*. In fact, he adds, that M. Bernard de Juſſieu brought him ſome from the foreſt of Fontainbleau, which, upon experiments with urine and lime, took a purple colour. In the ſequel of this memoir we ſhall point out ſome of theſe kinds. M. Hellot has given us a proceſs, which he made uſe of for diſcovering whether any of theſe lichens would yield a red or purple colour. It is as follows: "Put about "two drachms of any of theſe lichens into a little "glaſs jar: moiſten it well with equal parts of "ſtrong lime-water, and volatile ſpirit of *ſal ammo-* "*niac*: tie a wet bladder cloſe over the top of the "veſſel, and let it ſtand three or four days. At the "end of this time, if the lichen is likely to anſwer, "that ſmall quantity of liquor, which you will find "in the glaſs, will be of a deep crimſon red; and "the plant will retain the ſame colour when the li- "quor is all dried up. If neither the liquor nor the "plant have taken any colour, it is needleſs to make "any further trials with it." This proceſs is ſimple

(9) Nova Plant. Gener. p. 78.

and

and eaſy, and well worth obſervation by all who are diſpoſed to proſecute experiments of this nature: and indeed it is worth the trial, whether ſeveral lichens, which we have plentifully enough in England, would not anſwer in this reſpect.

3. Lichenes pyxidati.

Such as conſiſt of a firm tough flexible matter, formed into ſimple tubular ſtalks, whoſe tops are expanded into the form of little cups.

This diviſion contains the cup-moſſes of authors; the ſecond order of *coralloides* of Dillenius; great part of the firſt order of lichens in Haller; the 7th, 8th, 9th, and 10th order in Micheli; and the *lichenes ſchyphiferi* of Linnæus. Dr. Hill has conſtituted a genus intirely of theſe cup-moſſes, under the name of *pyxidium*.

They are common with us on heaths, and other dry and barren places. Some of them are proliferous, even to the third degree, and form a very beautiful appearance. Some have tubercles on the edges of the cups, of a beautiful ſcarlet colour.

The cup-moſs (10) was a long time in great and eſtabliſhed uſe for coughs, and eſpecially for the whooping cough in children; for which it was long accounted a ſpecific. To this end it was given in various forms. Gerard and Parkinſon recommend

(10) *Coralloides ſchyphiforme tuberculis fuſcis* Hiſt. Muſc. 79. *Lichenoides tubuloſum pyxidatum cinereum.* Raii Syn. III. p. 68. *Pyxidium margine leviter ſerrato.* Hill. Hiſt. Plant. p. 94.

the

the powder to be taken for ſeveral days together. Dr. Willis was particularly one of its patrons. He has given us (11) ſeveral forms for its exhibition, as that of the powder, a decoction, and a ſyrup from it.

The preſent practice has quite exploded it, and very juſtly perhaps, as in any degree ſpecific in the above diſorder. Nevertheleſs, it ſeems to have ſuſtained that character with as great a reputation, and perhaps with as good a title to it, as almoſt any of the ſpecifics of that age. It has been obſerved before, on another occaſion, that this tribe of moſſes have in general an aſtringent property; as ſuch, the cup-moſſes are conſequently of a ſtrengthening nature: it is no wonder, therefore, that they ſhould be helpful in this diſorder, merely as corroborants. That they were uſeful in ſome meaſure can ſcarcely be doubted; and our very eminent Dr. Huxham (12), in treating upon this obſtinate complaint, ſeems to allow this of the cup-moſs in preference to other idle ſpecifics. Happily for us, the Peruvian bark ſupplies a remedy of infinitely more uſe, where ſuch analeptics are required.

Dr. Liſter, in ſome ingenious obſervations of his, printed in the Philoſophical Tranſactions (13), touching colours and dyes, obſerves, that the ſcarlet heads of theſe moſſes, upon the affuſion of lye, will ſtrike a purple which will ſtand.

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(11) Willis Pharm. Rational. ſect. I. cap. 6. *de tuſſi puerorum convulſiva.*

(12) De Aëre et Morbis epidemicis, p. 76, 77. vol. I.

(13) Lowthorp's Abridgment, vol. II. p. 660.

4. Lichenes cruſtacei.

Such as conſiſt of a dry and friable matter, more or leſs thick, formed into flat cruſts, very cloſely adhering to whatever they grow upon.

Some of the ſpecies of this diviſion conſiſt of an exceeding fine thin cruſtaceous, or rather, as Micheli calls it, farinaceous matter, the fructifications appearing in the form of tubercles. Others conſiſt of a thicker ſcabrous cruſt, having the fructifications in the form of little cups, called *ſcutellæ*.

This diviſion contains the firſt order of the *lichenoides* of Dillenius; the 5th, 6th, and 7th orders of Haller's lichens; the *lichenes leproſi* and *cruſtacei* of Linnæus; and ſeveral of the *placodium* of Hill.

The ſpecies are numerous, and moſt of them very common on rocks, ſtones, old walls, the bark of trees, old pales, *&c.* which are commonly covered over with them, in undiſturbed places. They form a very agreeable variety, and ſome of them have a very elegant appearance.

Dr. Dillenius deſcribes a ſpecies of this order, which he found upon the tops of the mountains in Caernarvonſhire in Wales; and which the inhabitants told him they uſed as a red dye, and found it preferable to the cork, or arcel, which they call *kenkerig*. He has intitled it, in Engliſh, *The white tartareous ſcarlet-dying lichenoides* (14). He is of opi-

(14) *Lichenoides tartareum tinctorium candidum tuberculis atris.* Hiſt. Muſc. p. 128.

nion, that this is the moſs which Martin mentions, in his account of the Weſtern Iſlands of Scotland, under the name of *corkir*; with which the inhabitants of the iſland of Sky dye a ſcarlet colour. They prepare it by drying, powdering it, and then ſteeping it for three weeks in urine. Linnæus queries whether this moſs be not the ſame as his *lichen calcareus* (15); a ſpecies ſo peculiar to limeſtone rocks, that where-ever that ſtone occurs among others, it may be diſtinguiſhed at the firſt view by this moſs growing upon it. This is a ſingularity which Dr. Dillenius has not mentioned in his moſs: on the other hand, Linnæus does not mention any tinging property in his.

The *pérèlle d'Auvergne*, or *orſeille de terre*, of the French, belongs to this order of lichens, and is called by Dillenius (16) *The crayfiſh-eye-like lichenoides*. It is gathered in large quantities in the province of Auvergne, and is uſed as *orchel*; to which however it is greatly inferior. They prepare it with lime and urine; and were acquainted with its uſe as a dye long before the Canary weed was known (17) to them; and it is at this day in more common uſe than the *orchel*. We have it frequent with us upon old walls, rocks, and ſtones; but it is to be had in larger quantities in ſeveral other parts of Europe.

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(15) *Lichen (calcareus) leproſus candidus tuberculis atris* Spec. Plant. 1140.

(16) *Lichenoides leproſum tinctorium ſcutellis lapidum Caneri figura* Hiſt. Muſc. 130. *Lichenoides cruſtaceum et leproſum ſcutellare cinereum.* Raii Syn. p. 70.

(17) Tournefort's Voyage to the Levant, Eng. edit. Lond. 1741. in 8°. vol. I. p. 248.

The mealy tartareous *lichenoides* (18) with brown diſhes, forms an article of trade with the people of Weſt Gothland. They manufacture a beautiful red dye from it, which they ſell under the name of *byttelet* (19). Dr. Hill ſays we have this moſs abundantly in Leiceſterſhire and Warwickſhire.

The Welch make a red dye, with urine, from another moſs of this order, which Dillenius deſcribes (20) by the name of *The large leprous lichenoides with yellow plates.* Theſe are not the only ſpecies, which are endowed with a tinging quality: other kinds have been obſerved to give a red or purple colour to paper in which they have occaſionally been incloſed. Doubtleſs ſeveral would, upon ſufficient trials, be found to anſwer equally well with the *orchel.*

With regard to theſe cruſtaceous moſſes in general, it is highly worthy our regard, that in the œconomy of nature they anſwer ſingular and important uſes. To an unobſerving eye, no claſs of vegetables may appear more inſignificant, or leſs adapted to advantageous purpoſes in the creation, than theſe. This vulgar eſtimation of things is frequently erroneous; and it is certainly ſo in the inſtance before us. Theſe minute and ſeemingly inſignificant moſſes ſerve, under ſome circumſtances, to valuable purpoſes. No ſooner is a rock left bare by the ſea, but theſe lichens lay the foundation for its future fertility. Their ſeeds,

(18) *Lichenoides tartareum farinaceum ſcutellarum umbone fuſco.* Hiſt. Muſc. 132. *Placodium bracteis majuſculis limbo albo cinctis* Hill. Hiſt. Pl. p. 97.

(19) Flor. Suec. Ed. II. p. 407.

(20) *Lichenoides cruſtaceum et leproſum acetabulis majoribus luteis limbis argenteis* Raii Syn. p. 71. N. 46. Hiſt. Muſc. p. 132.

which are preſently brought thither by the winds, ſoon cover it all over. Theſe corrupting, preſently afford a ſoil ſufficient to nouriſh other ſmaller moſſes; which, in their turn, form one deep enough for larger plants and trees; and thus the rock becomes a fertile iſland (21).

5. Lichenes foliacei ſcutellati.

Such as conſiſt of a more lax and flexible matter, formed into a foliaceous appearance, having the parts of fructification in the form of ſcutellæ.

Some of the plants of this diviſion are interſperſed with the former in ſome of the ſyſtems of botanic authors. In general this diviſion contains the whole firſt ſeries of the ſecond order of *lichenoides* in Dillenius; the firſt diviſion of the ſecond ſeries, and the latter part of the ſecond diviſion, of the ſame: it comprehends the *lichenes imbricati* and *umbilicati* of Linnæus; and many of the *placodium* of Hill.

The plants of this order are many of them not leſs common in England than the foregoing, on rocks, ſtones, old pales, trees, *&c.* Some adhere very cloſely to what they grow upon, and ſeem to be only foliaceous about the edges: others adhere but looſely, and are much expanded and divaricated, ſo as to form ſomething like ramifications.

It was remarked, from Linnæus's obſervation, that one of the cruſtaceous lichens was ſcarcely ever found growing but upon limeſtone rocks. On the contrary,

(21) *Vide* Œconom. Natur. in Amæn. Acad. vol. II. p. 17.

the

the ſame author has obſerved of a folioſe lichen belonging to this order, that it will thrive on all kind of rocks but limeſtone rocks. This ſpecies (1) Dillenius calls *The common grey-blue pitted lichenoides.* It is very common with us upon trees, old wooden pales, *&c.* as well as upon rocks and ſtones. It is the *uſnea cranii humani* of the old *materia medica.* Linnæus adds, that it will dye a purpliſh colour.

Hither likewiſe muſt be referred the cork or arcel (2), which is uſed by the Scotch, and others, to dye a purple or ſcarlet colour. The preparation of it is by powdering, and making it into a maſs with urine. Parkinſon tells us (3) the poor people in Derbyſhire ſcrape it from the rocks, and make the ſame uſe of it. Mr. Ray (4) adds to this account, that the Welch, who call it *kenkerig*, have long been acquainted with this property, and have it in common uſe. The colour from this moſs is but very dull; but if the ſame methods were taken to improve it, as have been with the *orchel*, it would undoubtedly be rendered much better, and more durable. Linnæus relates (5), that there is an immenſe quantity of this moſs about the rocks of the

(1) *Lichenoides vulgatiſſimum cinereo-glaucum lacunoſum et cirroſum* Hiſt. Muſc. p. 88. *Lichenoides cruſta folioſa ſuperne cinereo-glauca, inferne nigra et cirroſa ſcutellis nigricantibus.* R. Syn. p. 72.

(2) *Lichenoides ſaxatile tinctorium foliis piloſis purpureis* Raii Syn. p. 74. N°. 70. Hiſt. Muſc. p. 185. *Lichen petræus purpureus Derbienſis* Park. Theat. p. 1315. *Lichen omphalodes* Lin. Spec. Pl. 1143.

(3) Park. Theat. Botan. p. 1315.

(4) Raii Hiſt. Plant. p. 116.

(5) Flor. Lappon. p. 343. V.

iſle

iſle of Aland in the Baltick; where the good women themſelves make a yellow dye with it from a ſimple decoction of the plant, without the addition of any ſaline article. He adds, that thoſe, who would heighten the colour, add a ſmall quantity of *roucou* (*) to the decoction.

Profeſſor Linnæus tells us, that the Gothlanders manufacture a yellow dye from the common curled *lichenoides* with yellow leaves and plates (6). He adds, that it is a celebrated medicine in the eſteem of the country people, as a ſpecific in the jaundice (7). Helwingius, in the Supplement to the *Flora Pruſſica*, affirms, that this moſs will tinge paper and linen of a lively carnation colour, which too will ſtand the teſt of being expoſed to the open ſun for a long time without fading. It ſeems very probable, however, that he muſt mean ſome other plant of this genus, as Dillenius tells us he made the experiment unſucceſſfully.

Sweden affords a moſs of this order, which, as far as hitherto appears, ſeems to be unknown to former botaniſts, and which Linnæus ſays will dye a deep purple colour (8).

(*) Otherwiſe called *arnotto*.

(6) *Lichenoides vulgare ſinuoſum foliis et ſcutellis luteis.* Hiſt. Muſc. p. 180. *Lichenoides cruſta folioſa ſcutellata flaveſcens.* Raii Syn. p. 72. N°. 59.

(7) Flor. Suec. Ed. II. p. 416. N°. 1093.

(8) Linnæus has intitled this moſs *Lichen (ſtygius) imbricatus, folio is palmatis incurvis atris.* Fl. Suec. I. 949. Spec. Plant. 1143. Fl. Suec. II. N°. 1079.

6. Lichenes erecti ramoſi plani.

Such as conſiſt of a firm tough matter, diſpoſed into flat and thin ramifications growing erect, and bearing their ſcutellæ *upon the edges, ſurfaces, and at the extremities.*

This diviſion comprehends the flat branched tree-moſſes of authors; many of the fourth order of Haller's lichens; the firſt part of the ſecond diviſion of ſeries the ſecond in Dillenius; and the *platiſma* of Hill.

The plants of this diviſion grow upon old trees, eſpecially in thick and unfrequented woods; ſome of them upon rocks: they are many of them extremely common in England upon all kinds of trees. As they were ſome of the moſt obvious, ſo they were ſome of the firſt lichens noticed by the old writers, by whom they were called *lichenes arborum.*

The moſſes of this order were ſubſtituted in the room of the *uſnea* in the compoſition of the *pulvis cyprius.* The very ſpecies, which was moſt frequently uſed for this purpoſe, was the channel-leaved *lichenoides* of Dillenius (9), on account of its being eaſily reduced into a fine powder, of a good white colour. Nevertheleſs, others are undoubtedly as well adapted to the ſame purpoſes: and, if it was of importance

(9) *Lichenoides coralliforme roſtratum et canaliculatum.* Hiſt. Muſc. 170. *Lichenoides arboreum ramoſum anguſtioribus cinereo-vireſcentibus ramulis.* Raii Syn. 75. *Lichen calicaris* Lin. Spec. Plant. 1146.

enough

enough to employ them to any purpoſes of the like nature in our own country, they might be procured in ſufficient plenty.

One of the plants of this order is applicable to the ſame uſes as the Canary-weed, and is reckoned not much inferior to it; and as it is found in the ſame places, it is very often packed up with it in conſiderable quantities. Dillenius calls it *The flat dyers lichenoides with longer and ſharper horns* (10). It is truly and properly a plant of the lichen genus, tho' the older writers of the laſt century called it a fucus. They were led into this miſtake by its having flat ramifications, and from its growing on the rocks by the ſea ſide. It is found in the Eaſt Indies upon trees, and is frequent on the coaſts of the Mediterranean, as well as about the Canary Iſlands.

7. Lichenes peltati.

Such as conſiſt of a tough or coriaceous matter, diſpoſed into a foliaceous appearance; on the edges of which, in general, the parts of fructification are placed, in the form of flattiſh oblong bodies, in theſe moſſes called ſhields *or* pelts.

This diviſion contains the third ſeries of the ſecond order of Dillenius's *lichenoides*; the *lichenes coriacei* of Linnæus; and ſeveral of the *placodium* of Hill.

That celebrated and well-known plant, the aſh-

(10) *Lichenoides fuciforme tinctorium corniculis longioribus et acutioribus.* Hiſt. Muſc. 168. *Platyſma corniculatum.* Hill Hiſt. Plant. 90. *Lichen fuciformis* Lin. Sp. Pl. 1147.

coloured

coloured ground liverwort (11) of Ray belongs to this order. It is very common all over England on dry and barren ground; and indeed almoſt all Europe, and America too, ſeems to afford it in ſufficient plenty, as we find it obſerved by almoſt all the the botanic writers ſince Ray, who was one of the firſt that deſcribed it.

The earlieſt account we have of its uſe for the bite of a mad dog is in the Philoſophical Tranſactions (12), from Mr. Dampier, in whoſe family it had been a ſecret for a number of years. It was communicated firſt to Sir Hans Sloane, as a kind of fungus, or Jew's-ear; and, at the requeſt of Dr. Mead, was ſome years afterwards received into the London diſpenſatory. Scarce any of the boaſted ſpecifics of former ages ever acquired ſo great reputation as this plant has done in modern times, for its prevalence againſt the bite of a mad dog; and the patronage of the late learned Dr. Mead made it ſufficiently known throughout all the world. Happy would it be indeed, if it fully deſerved the high encomiums, which have been beſtowed upon it. A great and eminent phyſician (13) has doubted its efficacy at all in ſuch caſes; and it is well known, that Boerhaave even laughed at it. Dr. Mead had certainly an high opinion of it: he tells us it never failed, thro' the courſe of thirty years experience, where it was duly given

(11) *Lichenoides digitatum cinereum lactucæ foliis ſinuoſis* Dillen. Hiſt. Muſc. 200. *Platyſma ſinuoſum ſcutellis ovato-rotundis* Hill Hiſt. Pl. 89. *Lichen caninus* Lin. Sp. Pl. 1149.

(12) See Lowthorp's Abridgment, vol. III. p. 284.

(13) Dr. Van Swieten. See Comment. in Boerh. Aphor. §. 1147.

before the *hydrophobia* came on (14). Later inſtances have ſhewn, that it is not infallible; and Dr. Van Swieten's ſuppoſition is but too likely to prove true. It muſt be confeſſed, that Dr. Mead's exhibition of it ſeems too much complicated with other means to leave room for judging fully of its real efficacy; and it may really be queſtioned, whether bleeding, pepper, and cold-bathing, have not had more to do in the caſe than the lichen.

The *muſcus pulmonarius officinarum* (15), tree-lungwort, or oak-lungs, belongs to this order. It is found about old oaks, and upon rocks and ſtones overgrown with moſs, in many of our thick woods in England; but not in any great plenty.

Few, perhaps, of the antiquated ſimples were in more repute, in their day, than this plant. It was celebrated for ages, on account of its ſuppoſed prevalence in pulmonary complaints of almoſt all kinds; and yet, upon inquiry into the original of its uſe in ſuch caſes, it would probably appear, that it aroſe more from a fanſied reſemblance they found in the plant to the lungs themſelves, than from any real and well-grounded proofs of its efficacy. As a gentle aſtringent, like moſt other ſpecies of the family, it would doubtleſs contribute to relieve in many caſes where the lungs were affected, as in *hæmoptoës*, and ſome others: but it does not ſeem, by any means, to deſerve that high character in medicine which has been given to it.

(14) Mechanical Account of Poiſons, ed. 4th, p. 156.

(15) *Lichenoides pulmonium reticulatum vulgare marginibus peltiferis* Dill. Hiſt. Muſc. 212. *Lichenoides peltatum arboreum maximum.* Raii Syn. p. 76. *Muſc. pulmonarius* C. B.

The

The people in Herefordſhire, where this moſs is called *rags*, dye their ſtockings of a brown colour with it. This is done by a very ſtrong but ſimple decoction in water, and the colour ſtands well (16).

The fine green *lichenoides* with black warts (17), is a celebrated medicine, and in very frequent uſe, with the country people about Upſal, for the thruſh in children: to this end they give an infuſion of it in milk. A medicine of this kind is of great importance in thoſe countries, where that diſorder occurs much more frequently than with us (18). It is not received into the Swediſh diſpenſatory; but is known however in the ſhops, under the name of *muſcus cumatilis*. We have it not in England; and Dillenius found it but in one place about Geiſſen: in the woods of Sweden it is more plentiful. A ſingular caſe, which is related in the *Amœnitates Academicæ* (19), has given riſe to an opinion of its uſefulneſs in the worms alſo. The caſe briefly was this: A country girl had, for near half a year, complained of excruciating pains in her ſtomach and bowels, which were attended with vomiting, anxiety, and great watchfulneſs. All that had been preſcribed for her by Profeſſor Linnæus and others, who took her caſe for the worms, proved altogether fruitleſs. Being afterwards left to the care of her neighbours and relations, ſome good women gave her a decoction of this moſs, which the Uplanders call

(16) Dillen. Hiſt. Muſc. p. 213.

(17) *Lichenoides digitatum læte virens verrucis nigris notatum.* Ibid. p. 207.

(18) Boerhaav. Aphoriſm. §. 982.

(19) Vol. II. p. 69. *De Tœnia.*

elſnefwer. After ſhe had taken it a few days, ſhe vomited up ſix or ſeven roundiſh worms, and was cured. Theſe were found, upon examination, to be the maggots of a kind of brown bee-fly, deſcribed by Mr. Ray (20), and by Linnæus (1).

However inſufficient this hiſtory may be, to prove the uſefulneſs of this plant as a vermifuge, it will at leaſt ſerve to exemplify this fact; namely, that other animals of the inſect kind, beſides the *teniæ*, *lumbrici*, and *aſcarides*, may ſubſiſt a long time in the *primæ viæ* of the human body, and be the cauſe of great diſturbances therein (2).

Neceſſity is frequently the parent of the moſt uſeful and important diſcoveries: and the uſes to which a plant of this order is appropriated by the natives of Iceland, is a ſtanding proof of the truth of this obſervation. That climate will ſcarcely permit the cultivation of any kind of grain; but the want of it is in a great meaſure happily ſupplied by the eryngo-leaved *lichenoides* (3), which is abundant in the northern regions; and in that iſland particularly the natives have long been acquainted with the methods

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(20) *Muſca apiformis, tota fuſca, cauda obtuſa, ex ejula caudata in latrinis degente orta.* Raii Hiſt. Inſect, p. 272.

(1) Faun. Suecica, N°. 1084.

(2) See two caſes nearly of this kind obſerved by Dr. Liſter. Lowthorp's Abridgment, vol. III. p. 135.

(3) *Lichenoides rigidum eryngii folia referens* Dillen. Hiſt. Muſc. p. 209. Raii Syn. p. 77. *Lichen foliis oblongis laciniatis marginibus conniventibus ciliaribus.* Flor. Lappon. Hall. Helv. 75. *Lichen (iſlandicus) foliaceus adſcendens laciniatus marginibus elevatis ciliaribus* Lin. Flor. Suec. I. 959. II. 1085. Mat. Med. N°. 493. Spec. Plant. 1145.

of applying it both to the purpoſes of food and of phyſic.

Ray has long ſince informed us (4), from Bartholine, that in the ſpring time, while it is young, it will purge; in conſequence of which it is uſed as common ſpring phyſic. This quality it loſes in a ſhort time; and what ſerves for phyſic in the ſpring, is converted the remaining part of the year into food. They collect large quantities of it, grind it into meal, and make both pottage and bread of it. It is in common uſe not only with the iſlanders, but in ſeveral parts of Sweden alſo, where it is found to be a very appropriate diet in phthiſical caſes (5). Theſe accounts of the excellent uſe of this lichen correſpond perfectly well with the laſt accounts of it in Mr. Horrebow's Natural Hiſtory of Iceland, juſt publiſhed; and which I ſhall take the liberty of tranſcribing, as follows: "There is another herb, "called *muſcus catharticus iſlandiæ*, or mountain-"graſs, which they cook up into a delicate diſh. I "have often eat of it; at firſt out of curioſity, but "afterwards for its palateableneſs and wholeſomeneſs. "The excellent qualities of this herb are deſcribed "in the Memoires of the Society of Arts and Sci-"ences in Sweden. It grows in great abundance; "and thoſe that live near the places, where it is "found, gather great quantities for their own uſe, "and to ſend to market. People that live at a "great diſtance will ſend and fetch horſe-loads "away. Many uſe no meal or flour at all, when

(4) Raii Hiſt. Plant. p. 114.
(5) Flor. Lappon. N°. 445.

"they

" they are ſtocked with this herb, which in every " reſpect is good and wholeſome food" (6).

This moſs is not very common in the ſouthern countries of Europe. England affords it but very ſparingly. Mr. Newton and Dr. Dillenius found it in Wales; Sibbald, in Scotland. It is frequent on the Alps of Switzerland; and Dr. Haller mentions it in his *Iter Hercynium*. Sweden and Lapland have it in plenty: and on account of its great abundance and uſefulneſs in Iceland, Bartholine, and after him others, called it *muſcus iſlandicus*.

Conclusion.

I cannot help remarking, by way of concluſion, that we have in this genus of plants a convincing inſtance of the utility which may reſult from the ſtudy of natural ſcience in general, and even of its minuter and hitherto moſt neglected branches. From a view of the foregoing memoir it is evident, I preſume, that the œconomical uſes of the lichens, in the various parts of the world, are already very conſiderable and important: and altho' it does not appear, that the ſenſible qualities of any of them, or the experience of former ages, will warrant our aſcertaining any ſingular powers to them in a medicinal way, yet poſterity will doubtleſs find the means of employing them to many valuable purpoſes in human life to us unknown.

It will at once be acknowleged, that the vegetable kingdom ſupplies us with the far greater ſhare of the

(6) Horrebow's Natural Hiſtory of Iceland, p. 36.

neceſſaries,

neceſſaries, the conveniencies, and even the elegancies, of life. The cultivation of that knowlege, which leads to the inveſtigation of its ſubjects, cannot, therefore, but be highly uſeful and neceſſary: and altho' the bare ſcience of natural knowlege is of itſelf worthy of applauſe, yet it ought to be conſidered, in reality, as the neceſſary means only of applying the ſubjects of nature's kingdoms to their true ends and purpoſes, the ſervice of mankind. To know and diſtinguiſh, by determined and ſpecific characters, even but a ſmall ſhare of that amazing multitude of objects, with which the great Parent of nature has furniſhed our globe, is a taſk far more than equal to the duration of human life. To inveſtigate and aſcertain their various qualities and uſes is equally arduous and impracticable. While the naturaliſts, therefore, are employed in diſtinguiſhing the forms of things, let others exert the united efforts of genius and application to inveſtigate their various properties and uſes. I need not ſay the field for both is boundleſs: it doubtleſs will be ſo for ages yet to come. The hopes of diſcovering ſome latent property, which may turn out to the advantage of his fellow-creatures, will animate the man, whoſe mind is truly formed for reliſhing the pleaſures of natural ſcience; and however the reſult may be, the inſpection and contemplation of nature's productions will ever afford that ſatisfaction, which will amply repay him for his trouble. The minuter, and, as they are commonly eſtimated, the moſt abject and inſignificant things are not beneath our notice; and an attentive mind will readily conceive how much farther, and more extenſively uſeful, every branch of nature's kingdom

may

may yet prove in the œconomy of human life. The man, therefore, whom a genius and love for natural hiſtory has allured into its purſuits, and whoſe leiſure permits his gratification in ſuch reſearches, if he is not happy enough to be crowned with ſucceſs, at leaſt deſerves it, and merits the thanks of his fellow-creatures for his application and diligence.

XCII. *An Account of the foſſile Bones of an Allegator, found on the Sea-ſhore, near* Whitby *in* Yorkſhire. *In a Letter to* John Fothergill, *M. D. from Capt.* William Chapman.

Whitby, 20th of 1ſt mo. 1758.

Read May. 4, 1758. A Few days ſince we diſcovered on the ſea-ſhore, about half a mile from this place, part of the bones of an animal, appearing as in the annexed figure (*See* TAB. XXII.). The ground they laid in is what we call allum-rock; a kind of black ſlate, that may be taken up in flakes, and is continually wearing away by the ſurf of the ſea, and the waſhing of ſtones, ſand, &c. over it every tide.

The bones were covered five or ſix feet with the water every full ſea, and were about nine or ten yards from the cliff, which is nearly perpendicular, and about ſixty yards high, and is continually wearing away, by the waſhing of the ſea againſt it; and, if I may judge by what has happened in my own memory,