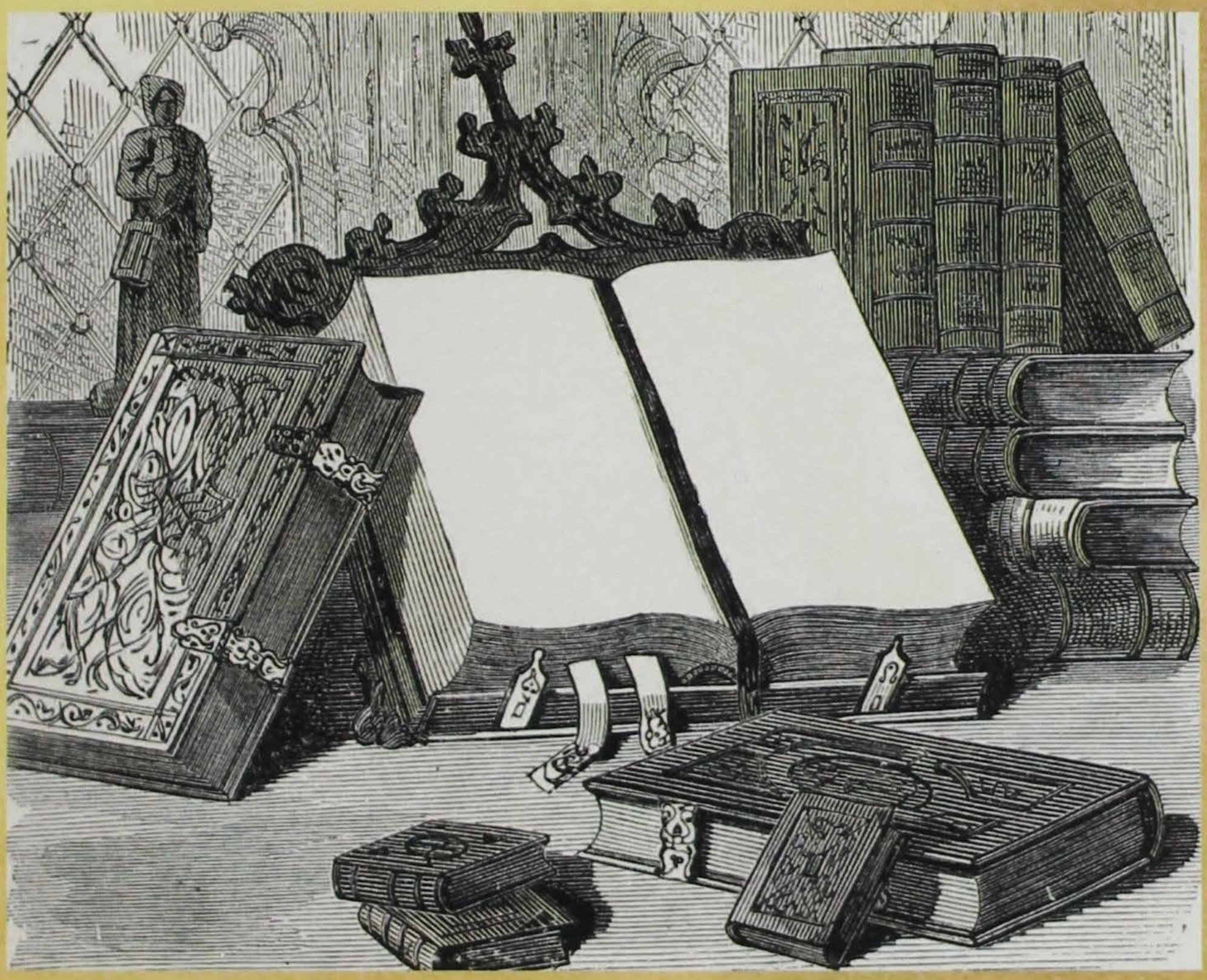
Coloured figures of marine plants, found on the southern coast of England; ... to which is prefixed an inquiry into the mode of propagation peculiar to sea plants. By Thomas Velley, ... = Plantarum maritimarum in oris Angliæ australibus sponte crescentium

Thomas Velley



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[2],9,[1],8,[18]p.,plates ; 2°

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COLOURED FIGURES
OF
MARINE PLANTS,
FOUND ON THE SOUTHERN COAST OF ENGLAND,
ILLUSTRATED WITH
DESCRIPTIONS AND OBSERVATIONS:
ACCOMPANIED WITH A FIGURE OF THE
ARABIS STRICTA
FROM ST VINCENT'S ROCK
TO WHICH IS ANNEXED
AN INQUIRY
INTO THE MODE OF PROPAGATION PECULIAR TO SEA PLANTS
By THOMAS VILLEY, Esq D C L
FELLOW OF THE LINNEAN SOCIETY &c

"——Cum rerum natura nil unum magis, quam in minimis versatur *Plin Nat Hist*

SOLD BY B AND J WHITE, FLEET STREET T EDWARDS PALL MALL LONDON S HAZARD, AND J BARRATT BATH

PLANTARUM MARITIMARUM
IN
ORIS ANGLIÆ AUSTRALIBUS SPONTE CRESCENTIUM,
ICONES PICTÆ;
DESCRIPTIONIBUS ET *OBSERVATIONIBUS*
ILLUSTRATÆ
NECNON
ARABIS STRICTÆ,
DE
RUPE S. VINCENTII,
AD VIVUM COLORATA
QUIBUS PRÆMITTITUR
DISQUISITIO
DE PLANTARUM MARITIMARUM PROPAGATIONE
AUCTORE
I VILLEY, Arm D C L

"——Cum rerum natura nihil unum magis, quam in minimis versatur *Plin Nat Hist*

BATHONIÆ
EX TYPOGRAPHIA S HAZARD
MDCCXCV
LONDINI Apud B ET J WHITE, FLEET STREET T EDWARDS, PALL MALL BATHONIÆ S HAZARD J BARRATT

AN INQUIRY INTO THE PROPAGATION OF SEA PLANTS.

It is an object of regret that the marine plants, all of which are well deſerving our notice, either for the beauty or ſingularity of their ſtructure, ſhould have been leſs attended to than the other branches of that extenſive claſs, under which Linneus has arranged all thoſe vegetable productions, which originate from latent ſources of propagation

If we except the hiſtory of the fucuſes written by Gmelin, who with much ingenuity and experimental knowledge, has endeavoured to elucidate the myſterious principle by which their propagation is effected, and the general obſervations of Gærtner on this head, with reſpect to the cryptogamous claſs, it may be difficult to point out the work from whence any material information is to be derived, reſpecting the Œconomy of Nature, in the origin and mode of increaſe peculiar to this numerous branch of the algas For while we have cauſe to lament that the remarks which caſually occur upon this particular ſubject in the celebrated work of Baſter, are ſo very few, and confined only to two or three ſpecies, we may find as little reaſon to be ſatisfied with the ingenious, but ſpeculative and unfounded theory, which Reaumur has given us in the Acta Gallica, upon the floreſcence of the fucus.

It muſt be allowed that the deſcriptions, which we ſometimes meet with in various botanical works, with reſpect to the fructification of the marine plants, appear rather to be founded on the analogy [1] ſuppoſed to exiſt between vegetables in general; than on any actual obſervations reſulting from a ſeries of experimental diſcoveries To this it may be added that much information cannot reaſonably be expected from the curſory remarks of thoſe, who pay ſhort and caſual viſits to the ſea-ſhore when the want of ſeaſonable opportunities to attend repeatedly to the gradual changes which theſe plants may undergo, muſt render doubtful the obſervations, and oftentimes fruſtrate the attempts of the moſt ingenious inveſtigators

1 The illuſtrations, which had been firſt thrown upon the numerous tribe of Moſſes and Lichens, by the incomparable work of Dillenius, were inſtrumental in bringing to perfection the ſcientific diſcoveries of Hedwig [illegible] have been followed by the accurate reſearches of our indefatigable countryman Dickſon, which have greatly contributed to diffuſe a general knowledge of the above plants — The Lichens, Sphærias, &c have been explored by Hoffman — The Britiſh Ferns, with their fructifications, by Bolton — The variable tribe of Fungus's have furniſhed an ample field for the inveſtigating talents of Buſch Bolton Schæffer, Bulliard, &

The works of all theſe authors [illegible] with highly finiſhed and characteriſtic figures delineated from Nature

The opinion ſeems to have been adopted by Wulfen, in his deſcription of the [illegible], which we meet with in the Collecta[illegible] of Jacquin "Veſiculis [illegible] hoc in fuco [illegible] detexi [illegible] hemiſphæricæ [illegible] [illegible] tempore Collect Vol 1 p 159

See alſo [illegible], in the ſame Vol p 15—3,8

We likewiſe find ſome of the Conferva [illegible] under the [illegible] claſs For inſtance, Conferva polymorpha — C [illegible] Sect 990—996) And in the ſame work, the C [illegible] referred, though [illegible] to the monœcian claſs

It

It ought not to be matter of ſurpriſe, that ſo ſmall a ſhare of information ſhould have been communicated to the Public, by Linneus, with reſpect to the extenſive genera of fucuſes and confervas.[1] It muſt rather excite our aſtoniſhment, that, in the immenſe Chaos of the vegetable World, which became harmonized and reduced to order by his arduous and unexampled aſſiduity, even the minuteſt parts ſhould have been brought forward, and ſeparated under ſuch judicious and well-adapted diſtinctions, that the progreſs of inveſtigation and arrangement, whatever theory may prevail as to the mode of propagation peculiar to each, muſt be unqueſtionably facilitated and promoted.

An appeal from any part of a ſyſtem, which from its diſtinguiſhed excellence has juſtly ſuperſeded all others, muſt appear under an unfavourable aſpect Yet it is to be obſerved, that the principle itſelf on which Linneus has eſtabliſhed his ſyſtem, did not by any means appear clearly aſcertained to its illuſtrious author, as far as relates to that particular part of vegetable hiſtory which comes under our preſent conſideration although from the definitions of the generic characters, which he has given of the ſea plants, as well as from data laid down in ſundry parts of his works, he ſhows how ſtrongly inclined he was to extend his hypotheſis, even to thoſe undefined parts of vegetation, which either from their extreme ſimplicity or minuteneſs, have vindicated the propriety of their being fixed under an anomalous arrangement, with reſpect to the ſexual ſyſtem [a]

We may not probably find in the whole circle of Natural Hiſtory, a work more adapted to convey inſtruction, or which carries with it a fairer claim to preeminence, than the PHILOSOPHIA BOTANICA of this author not merely as being the ground-work of the ſyſtem it is meant to eſtabliſh, or for the preciſion and beautiful mode of arrangement, which appears in every part of it, but as affording ſatisfactory proofs of the importance of that ſcience, which is ſo evidently calculated to diſplay the wonderful Œconomy of Creative Wiſdom It may in ſome meaſure counterbalance the regret which muſt naturally ariſe in the inquiſitive mind, from the very ſuccinct and compendious manner in which this work is compriſed, to find that many of the moſt important aphoriſms contained in it, have given riſe to ſeveral intereſting and philoſophical diſquiſitions, publiſhed under the auſpices and approbation of Linneus himſelf, in a well-known work, entitled AMŒNITATES ACADEMICÆ Among theſe, one tract in particular may be conſidered as a curious and ſatisfactory illuſtration of thoſe data on which the ſexual ſyſtem more immediately depends [b] Here we find exemplified the protecting influence of Nature, adapted to all the varied exigencies of Her extenſive families. Among the inſtances of this admirable Œconomy, we do not meet with one more ſingularly impreſſive than that which occurs in the ſubmerſed aquatic plants. Several of theſe at the critical period of their floreſcence, and at no other time, are obſerved to emerge juſt above the ſurface of the water, that the fertilizing effluvia, unobſtructed in the lighter medium of the atmoſphere, may without interruption attain its deſtined ſtation which end being accompliſhed, they ſoon after ſubſide If in plants of this deſcription, produced in tranquil waters, ſuch extraordinary proviſion for the

[1] Mr Hudſon, in his FLORA ANGLICA, has deſcribed a much greater number of marine plants, than Linnæus has given us from all the various parts of the World See Sp Pl Lin ed Holm

[a] Claſſ Cryptogamia

[b] Spondylia Plantarum

propagation

propagation of their ſeveral ſpecies is found to be expedient; and, on the other hand, the powers of Nature, according to the doctrine laid down in the ſyſtem,[a] continue to act by general and unvarying laws. it muſt neceſſarily occaſion ſome difficulty to account for the propagation of that numerous tribe of plants, which though permanently fixed, and frequently at conſiderable depths in the ocean, find an element congenial to their mode of increaſe

But here our inquiries are no longer ſupported by that analogy, which accompanies the known laws and progreſſive ſtate of vegetation Upon the firſt examination of a marine plant, it muſt appear, that the compariſon, which has been made between the lacteal veſſels in animals, and the fibres of roots in terreſtrial plants, does not in any degree extend to the former The roots of the fucus, ſo far from preparing and diſtributing the alimentary juices by abſorbent veſſels, ſeem by their durable and impervious texture, only calculated to ſecure to themſelves a ſtation We find them attached to the ſmootheſt ſtones and other bodies, utterly incapable of affording any kind of nutrition From the evident properties of their roots, as well as from their general ſtructure, theſe plants do not ſeem to poſſeſs a ſeries of veſſels, by which the fluids are propelled It is true, this defect is in many ſpecies amply compenſated for, by numerous pores variouſly interſperſed throughout the ſurface of the frons To aſcertain this fact, it has been ingeniouſly remarked, that if a dried ſpecimen be immerſed in water, it will ſoon acquire its former tone and ſtate but if the experiment be only partially applied, then that part, which is kept free from moiſture, will continue arid and lifeleſs —A concluſive argument that the fucuſes, as far as the experiment has been made, do not poſſeſs any veſſels, by which the fluids may be diſtributed, agreeably to the more ordinary proceſs of Nature

It may in this place not be improper to examine the theory laid down by a celebrated French Naturaliſt, in the early part of the preſent century, relative to the floreſcence, which has been aſcribed to theſe plants in common with all others,[c] and made a leading principle of the ſexual ſyſtem Reaumur, the author alluded to, imagined he had diſcovered in the Fucus veſiculoſus, and in the Fucus ſerratus, both flowers and ſeeds the former of theſe, indiſcriminately occupying the ſurface of the frons. He deſcribes each flower, as a tuft of extremely minute threads or filaments, the longeſt of them not being a line in length yet after the moſt accurate inveſtigation, he acknowledges he was not able to diſcover the ſummits at the extremities of theſe threads, ſo neceſſary to eſtabliſh the function of the ſtamens and of courſe was prevented from determining their preciſe character In order to get over this difficulty, he confidently maintains the probability of the ſummits having fallen off, at the time when the filaments firſt diſcloſed themſelves and further obſerves, that thoſe flowers only, which are ſituated at the extremities of the leaves, are inſtrumental in promoting the grains or ſeeds contained[d] therein The aperture, through which theſe threads appear, he conſiders as the

a 'Omnis ſpe[illegible] Vegetabilium [illegible] ... [illegible] eosdem non aſſequitur Philoſoph Bot Sect 139

[b] *Majorum* [illegible] *Nos* '

" [illegible] flores obſervavit *Reaumur* &c Ibid

[c] 'Florem [illegible] Antheræ et Stigmatibus ' Ibid Sect 140 et ſequent

Philoſoph Bot [d] Act Gall 1711 p 9.

calyx

calyx In ſeveral other ſpecies, he obſerved the ſmall veſſels or capſules contained in the ſwollen and diſtended ſummits of the leaves, but not the ſmalleſt appearance of thoſe threads or ſuppoſed floral parts In others again, theſe laſt were very viſible, without the former for inſtance, the Fucus nodoſus and Fucus canaliculatus exhibited very diſtinctly their ſeed-veſſels, but were entirely deſtitute of the filaments Our author therefore takes it for granted, that the plants were not examined at the time of their flowering—Again, in the Fucus palmatus, he found the ſurface in a manner covered with thoſe minute cluſters of hairs or flowers, obſervable in the Fucus veſiculoſus but, after the moſt acute inſpection, he was not able to trace out any reſemblance to ſeeds or capſules

Baſter and Gmelin have already ſhown that the theory of Reaumur is evidently expoſed to the following objections

Firſt That as the fine capillary filaments were always deſtitute of the antheras, they could not be conſidered as the flowers

Secondly That as the ſurface of the frons was, in ſome ſpecies, perfectly entire, without having the ſmalleſt appearance of thoſe filaments, and yet abounded with the granulated veſſels or ſeeds; while others again diſcovered not the leaſt ſigns of any grains or capſules, and yet were overſpread on every part with the faſcicles of flowers—it ſhould follow, that the parts in queſtion, are, with reſpect to the ſyſtem, entirely independent of each other [5]

But a more ſtriking and convincing proof of this being the fact, and which it was hardly poſſible could have eſcaped the obſervation of Reaumur, is, that thoſe filaments, contrary to the very nature and property of the ſtate of floreſcence, are diſtinctly ſeen on the ſurface of the plant, in its earlieſt and moſt tender ſtate, when it is ſo extremely ſmall as hardly to have attained its natural form They are alſo equally viſible, when the diſtended ſummits are in a final ſtate of decay and during the ſucceſſive periods, theſe ſmall filaments do not undergo any viſible kind of change ——Since then, they are deſtitute of thoſe parts, which conſtitute the eſſential properties of the flower, ſince they are ſo evidently repugnant to every principle of analogy ſome other uſe, in conformity to the ſtructure of the plant, muſt be aſſigned to them And from the experiment noticed above, and originally made by Reaumur, they may, with much more probability, be conſidered either as ſecretory ducts, or as veſſels deſigned for conveying nouriſhment to the frons And thus Nature may compenſate for the want of that ſupply, which land plants by means of their porous radicles, extract from the ſoil in which they are immoveably fixed, while the roots of the former, ſeem calculated merely to counteract the fluctuating ſtate, to which they are inceſſantly expoſed

Hence we may obſerve the Wiſdom of Providence furniſhing to the different kinds of vegetables, properties adapted to their different ſituations And while we ſurvey the great diverſity in the form, ſize, and ſituation of ſeeds, in the vegetable productions of the Earth, we cannot fail to remark the general uniformity, in point of ſituation, as well as ſimilarity of form and ſize, in the organs of pro-

[5] [illegible] published before [illegible] to the male flowers [illegible]

pagation

pagation throughout this extenfive part of the algas In many of the fucufes, the feeds or capfules are found fixed in the fubftance of the leaf or frons And in others of a more filiform ftructure, as alfo, in many of the confervas, they are imbedded in the diftended fummits of the pinnulas on the fides, and at the extremities of the frons,[6] or in fmall axillary globules formed at the bafe of the finer branchlets.[7]

In as much then as relates to the production, fituation, and habit of thefe minute grains or feeds, the fucus and conferva do not feem to differ

It is not unufual to obferve in the fame fpecimen, by the affiftance of a microfcope, many of the opaque grains diftinctly formed and conglomerated together, beneath the furface of the frons, while in other branches, a faint cloudy appearance is the only fign, which marks an approaching tendency to the fame ftate of maturity If any florefcence preceded the fructification of thefe plants, it might be fought for in fimilar inftances yet not the fmalleft appearance, which could in reality juftify this generally received hypothefis, is to be found

It is worthy of notice, that Reaumur had not been able to difcover thefe floral parts, on more than five or fix fpecies, throughout the very numerous genus of the fucus and yet, circumfcribed as his theory undoubtedly is, and unfounded as it appears to be, the generic character of thofe plants has long been eftablifhed upon it[8] It was not probable, that Linneus fhould have neglected to avail himfelf of a difcovery, fo favourable to his fyftem, and under the fanction of that refpectable author.[9]

C

From

6 As for inftance, Fucus fpinofus—F [illegible] cartilagineus—F pinnatifidus—Conferva polycephala, &c &c

The principle on which the remark is founded remains the fame whether the fructification may be contained within the fwollen fummits of fome fpecies, or in the globular excrefcences, and diftended pinnulas of others

7 Fucus coccineus Hudsoni—Conferva plumofa—C nodulofa, & The globules, in which thefe grains are fixed, appear under diffection to be formed by a diftention of the medullary fubftance of the plants

8 "FUCUS" Reaum [illegible] 1711 [illegible] 9, 10 11

Mafculi flores

Veficulæ [illegible] pilis [illegible] adfperfæ

Feminei flores

Veficulæ [illegible] gelatina replete, adfperfæ punctis perforatis femine [illegible]

Linn Gen Pl Holmiæ 1764

"FUCUS MASC *Veficula* villis intertextæ

FEM *Veficulæ* adfperfæ [illegible] fpice [illegible]

Hudson—Lightfoot &c

In an edition of the Syft Nat not long fince publifhed, the generic character of the fucus appears to be eftablifhed on more probable grounds

"FUCUS—*Glandulæ* [illegible] *femina* [illegible] perforatis [illegible] Syft Nat Edit Gmel

The fubdivifions however of the fpecies, which the Editor of this work has taken from Gmelin History of the Fucuses, feem, in fome inftances to require correction —See Note 13 &c

9 The hypothefis may have derived additional weight from a reference, which has been made in favour of it, by fo great an authority as Butler,[1] to the well known work of Marfigli (Histoire Phys [illegible] p 160) in which we find a very circumftantial defcription of a marine plant in perfect flower, accompanied with an accurate engraving of its various parts Marfigli obferves, that it was difcovered oppofite a promontory

1 Butt Opuf Subs Tom 2, p [illegible] —See the reference of Butler, in the Latin tranflation of the note

From what has been advanced, it appears, that Nature, in the formation and ſtructure of this branch of the algas, has deviated from Her general mode of operation. and as there are not any proofs produced of a ſtate of floreſcence attending theſe plants, it is highly probable, that, in this inſtance, She may have recourſe to a ſimple and ſelf-efficient mode of propagation, independent of any external acceſſorial aid, and totally different from the principle, on which the ſexual ſyſtem is founded. It may be proper to obſerve, that this opinion is ſheltered under the authorities of Gmelin and Gærtner although the latter of theſe authors ſeems to extend his hypotheſis, in too general and excluſive a manner, as will poſſibly be ſhown in the ſubſequent pages.

Gmelin, in the courſe of his remarks, obſerves, that it would not be leſs abſurd to require, than difficult to attempt an explanation of the natural proceſs, which takes place, in the original formation of the granulated veſſels, diſcovered in the fucuſes. We muſt ever be at a loſs, when we approach towards the firſt principles of any efficient cauſe. The ſame inexplicable difficulties occur in the regenerating ſprings of animal life. All that can rationally be aſſerted, is, that from theſe and ſimilar obſervations, it appears, that it hath pleaſed the Great Author of Nature, to produce the ſame effects by a more ſimple proceſs in ſome inſtances, than in others and that, in the various ſpecies now under conſideration, it ſhould ſeem to be ordained, that a ſelf-efficient power, eſſentially exiſting in theſe plants, anſwers every purpoſe conducive to their propagation.

For a more particular elucidation of this ſubject, it may be proper to conſult the work of Gmelin, who further obſerves, that in the plants now under conſideration, a gradual proceſs may be traced from thoſe, which are UNISEXUAL,[10] to others ſtill more ſimple, and which are perfectly ASEXUAL.

To the firſt of theſe diſtinctions,[11] Gærtner attributes the fructification of the more perfect fucuſes, which he maintains are propagated by actual ſeeds. Under the latter diviſion, the ſame author has decidedly fixed many of the fucuſes, and all the conſervas without exception.

tory called Carnulle [illegible] in Provence, at the diſtance of [illegible] hundred fathom from the ſhore, and at the depth of forty, entangled in a fiſhing-net. The [illegible] of this plant [illegible] it appeared green, but without [illegible] of leaves. The corolla [illegible] is white, except the [illegible] which was ſomewhat red [illegible] and alſo ſome few longitudinal ſtreaks of a cheſnut colour. [illegible] noticed the expanded petals and filaments correſponding with them, he proceeds to the ſeed veſſels, which obſerve rather a diminiſhed proportion as they approach the ſummit. They [illegible] round, and [illegible] the upper part rather flat. Their colour inclines to a green, with a mixture of yellowiſh red. In the centre, [illegible] containing ſix ſeeds.

This ſingular deſcription excited my curioſity, as well as ſuſpicion with reſpect to the real exiſtence of ſuch a plant in the ocean and induced me [illegible] the opportunity of examining the figure of Marſigli, in the preſence of the preſent learned Regius Profeſſor of Botany in Oxford. At the very firſt ſight there remained not the ſmalleſt doubt of its being an ASPHODELUS. And the Profeſſor inſtantly recogniſed the Aſphodelus ramoſus, which he himſelf had [illegible] remarked, as one of the moſt common of the littoral plants on the coaſts of Italy, and of the ſmaller iſlands [illegible] South of Europe.

10 Should not the term unisexual [illegible] arbitrary and uſeleſs diſtinction? It is uſed by Adanſon, to expreſs a ſimple and ſelf efficient power in the [illegible] parts of ſome vegetables, and here applied to a particular diviſion of the fucuſes, in contradiſtinction to others named aſexual, as being ſuppoſed totally deſtitute of ſeed, and only [illegible] to a prolific mode of increaſe.

11 "In omnibus vero [illegible] ſola habentur [illegible] ſeminea, intra frondium corticem abſcondita; Maſculorum autem nullum adeſt veſtigium, &c." [illegible] de Fruct. [illegible]

It may be neceſſary briefly to notice the definitions, which Gærtner[18] has given of vegetable propagation, in order more clearly to underſtand that part of his theory, which is applied to the extenſive genus of confervas. He conſiders the ſource of vegetation, as dependent on a two-fold principle One of theſe, by virtue of an inherent vital force, operates without any impregnation, in producing a diſtinct and perfect epitome of the mature plant, ſimply from the medullary ſubſtance The other, by an operation of the organized parts, digeſts and ſeparates proper ſecretions from the general maſs, till at length by a more complex proceſs, an entire new organized body is produced, and the exact rudiments of plants are formed in diſtinct and appropriate parts. This, is termed fructification, as producing ſeeds. the former, is conſidered as a ſimple proliferous mode of increaſe The author then applies theſe principles, to the different parts of the cryptogamous claſs.

"All the confervas, whether capillary or beaded (moniliformes), he maintains are entirely deſtitute of ſeeds, and have not even the ſhadow of affinity to the ſexual ſyſtem The moniliform or beaded confervas, e g C corallinoides and others, throw out from their greater joints, ſmall lateral filaments of the ſame form and ſtructure which conſtitute the only ſource of propagation, by a proceſs very ſimple in itſelf, as one or ſometimes two of theſe joints (articuli), are by the mere intumeſcence of their internal ſubſtance, converted into a ſingle globule, which after it hath ſeparated from the original ſtock, immediately adheres to the rock or body on which it happens to light, and from the upper part extends itſelf into a new joint, till at length it grows up, into the exact form and ſimilitude of the proliferous parent plant

Theſe globules, Gærtner obſerves, have a very ſtrong reſemblance to the fructified parts of plants, in their texture as well as in their form and colour yet upon examination, he affirms, they will be found to be ſimple gems, conſiſting of mere medullary ſubſtance, contained in a homogeneous bark or covering from which circumſtance, as well as from the confluence of thoſe joints into a globule, our author maintains that they do not depend upon any other principle than the ſimple faculty of vegetation, for their mode of increaſe"

18 This author has lately publiſhed a valuable work in which he has not only eſtabliſhed permanent diagnoſtics of a great part of the known genera of plants, from their Fruits and Seeds, but has, with the united efforts of [illegible] and ſcience, at once exemplified the principal [illegible] [illegible], with reſpect to the anatomy, texture, uſe, and economy of thoſe myſterious parts of plants, which more immediately relate to the propagation [illegible] [illegible] [illegible], he appears to [illegible] [illegible] diſtinct [illegible] for inſtance he ſeparates the [illegible] plumoſus, [illegible] and other [illegible] named [illegible], as, in his opinion, not producing ſeed, but only [illegible] by a proliferous mode of increaſe. Gært de Fruct Introduct p [illegible]

* Gært de Fruct p 16

19 Although Gærtner aſſerts, that the confervas, as well as all thoſe [illegible], which are membranaceous (complanati) are ſubject only to a proliferous mode of increaſe yet we have the cleareſt proofs, that many of the latter derive their propagation from ſeeds, in every reſpect as unequivocally as thoſe [illegible], which have been deemed more perfect The Fucus rubens, [illegible] crenatus of Gmelin, is truly membranaceous, very thin in its texture and nearly tranſparent [illegible] which [illegible] the frons frequently branches off in oppoſite directions producing numerous leaves, which at firſt ſight, may appear as the deciduous offspring of the proliferous parent ſtock [illegible] of theſe leaves are often [illegible] cloſely fringed with minute ſpines, each of which in time becomes a kind of capſule, containing many ſeeds of a faint purple colour Not one of theſe ſeeds, when magnified, appears much larger than a particle of ſand

The Fucus criſpatus of Hudſon, although a delicate membranaceous ſtructure [illegible] contains within its ſegments numerous [illegible] veſicles, which abound with a remarkable quantity of [illegible] ſeeds, in every reſpect very ſimilar to thoſe, which are obſerved in the perfect plants of [illegible] [illegible] which have been (in the Syſt Nat) lately ſeparated from [illegible] being ſuppoſed ſubject only to a proliferous [illegible] [illegible] no reaſon to imagine that they are deſtitute of ſeeds Even Gmelin who in Hiſt Fucor [illegible] to have eſtabliſhed that [illegible], [illegible] of this order, the margins of which were ſurrounded with opaque globules and without being prejudiced in favour of his former opinion, [illegible] endeavours to account for the cauſe of this appearance, by attributing it to [illegible] [illegible] which [illegible] to the more ordinary courſe of Nature, had produced thoſe [illegible] ſeeds, on which the propagation of the ſpecies might probably depend

† Hiſt Fucor p 173 Note

Some

Some few ſtrictures upon the theory of Gærtner, as relative to the propagation of the confervas, will cloſe theſe remarks.

A proper generic diſtinction between the fucus and conferva does not yet appear to be eſtabliſhed, as the characters of both genera are ſometimes blended together The tranſverſe diaphragms and joints, the tenuity and capillary ſtructure are the common obvious marks of diſtinction in the confervas. Yet we find ſome ſpecies of the latter deſcribed as not being jointed, † while ſome of the fucuſes are furniſhed with diaphragms The genus ulva ſtill adds to the confuſion, by ſometimes partaking of the properties peculiar to each of the former The ULVA capillaris of Hudſon, for inſtance, has been frequently found with ſpherical veſicles in great abundance at the extreme branches, in which may be diſcovered ſeveral pear-ſhaped grains or ſeeds, hardly differing in colour from the reſt of the plant from this circumſtance it might rank with the fucus. The ULVA articulata, in its jointed appearance, approaches very nearly to the character of the conferva while the FUCUS FILUM exhibits a ſeries of diaphragms, which might juſtify its being added to the laſt-mentioned genus The FUCUS incurvus ſeems to unite the diſtinctions of both genera for the pinnulas, in the recent plant, when held to the light, frequently diſcover a regular courſe of ſeptas, which are not to be obſerved in the other parts of the fucus The inflated leaves of the FUCUS ſiliquoſus, which from their ſtrong reſemblance to pods, have furniſhed this plant with its trivial name, are ſubdivided by diaphragms that are even palpable.

It has frequently been remarked, that Nature proceeds, as by a regularly extended chain, from plants of the moſt ſimple and unorganized ſtate, to others, which from being more complex in their ſtructure, are therefore deemed more perfect This favorite idea of a connecting ſeries, ſeems to have been followed by a more appoſite compariſon of an ingenious author,‖ who obſerving in how cloſe and inſeparable a manner the orders of Nature are ſometimes blended together, illuſtrates the proceſs by a metaphor, drawn from the interwoven meſhes of a net, which are united together by a multifarious connection Without contending for the juſtneſs of the application to the plants in queſtion, and which are reckoned among the primary and moſt ſimple of the Natural Orders "‡ certain it is, that the conferva, ulva, and fucus, are not at preſent ſeparated by fixed and permanent generic diſtinctions, and that they ſometimes participate in properties peculiar to each §

Gærtner readily admits that the more perfect fucuſes are produced from ſeeds, and is confidently maintains, that the extenſive genus of confervas derive their propagation, from a totally-different ſource and that, in ſeveral ſpecies of the latter, it is effected ſolely by the ſmall lateral filaments, which from intumeſcence aſſume the form of globules, and falling off ſpontaneouſly from the branches, become in their turn, the ſources of a proliferous increaſe "‖

There are, however, beyond a doubt, many confervas, which at particular ſeaſons produce opaque granulated veſſels or ſeeds, contained within thoſe very globules, probably, which this author mentions

† See C[illegible] C[illegible] [illegible] Sco[illegible]   ‖ Donati

‡ "Plantæ omnium imperfectiſſimæ [illegible] Confervæ—in quibus Naturæ primordium [illegible]" [illegible] Hiſt. Fucor. p. 3.

§ The ULVA articulata, notwithſtanding it [illegible] the conferva, [illegible] fucus. The CONFERVA [illegible] of Dillenius, [illegible] ULVA confervoides. Sp. Pl. [illegible]

‖ ———[illegible] proxime, [illegible] in globulum [illegible] convertantur, [illegible] decidit, [illegible] parte [illegible], ex altera novum addit articulum. Gært. de Fruct. p. 16.

[illegible]

tions as being in themſelves, the original and only ſource of increaſe. He has unfortunately fixed upon the CONFERVA corallinoides—a ſpecies, of all others, leaſt favourable to his hypotheſis This conferva is of ſo ſimple a texture, that it has the appearance of a fine tubular tranſparent membrane, which at length acquires a beautiful crimſon fluid In this ſtate, it is ſometimes, but not frequently diſcovered with dark cluſters or protuberances ſurrounding the joints (as noticed by Mr Lightſoot) Theſe, when under a microſcope, are found to contain a great number of dark purple ovate veſſels, but whether the latter are ſeeds, or only pericarps containing more minute particles, does not appear If the plant at this time be placed between papers, it will ſoon diſcharge its interior crimſon fluid, leaving only a jointed tranſparent film, the veſſels at the joints excepted, which retain a degree of ſolidity and opacity, very different from the other part of the plant Now as theſe granulated bodies are ſo very diſtinct from the internal ſubſtance of the conferva, it is highly probable, they are formed by that proceſs and peculiar ſeparation of the general maſs, on which Gærtner ſcientifically eſtabliſhes the origin of ſeeds—in contradiſtinction to the ſimple increaſe of medullary ſubſtance, on which he has founded the principle of propagation by gems."[15] In ſhort, that by a ſecretion of the fluid, an entire new organized body is formed, or, in other words, the pericarps or ſeeds If then, according to this author's mode of reaſoning, the grains contained in the more perfect fucuſes are actual ſeeds, and the ſources of increaſe—it ſhould follow, from the inſtance juſt given, and from others which might be produced, that the confervas alſo, derive their propagation from the ſame principle

This opinion ſhould ſeem more probable than that laid down by Gærtner, becauſe the origin of all theſe plants is imperceptibly ſmall, ſince we find them growing upon the ſmootheſt and moſt gloſſy ſurfaces of plants, and as frequently upon the fineſt capillary branches of fucuſes, full as minute as the confervas that are attached to them. In theſe fine branches, however, there muſt be ſome nidus or repoſitory ſufficiently capable of affording ſhelter and protection to thoſe minute ſeminal atoms which eſcape from veſſels ſimilar to thoſe before deſcribed Neither is it eaſy to conceive in what manner the mode of propagation could ſucceed, according to Gærtner's theory for as the confervas are frequently of an equal ſize with thoſe branches which ſupport them, it is by no means probable, that the jointed globule of a conferva (if this may be the author's meaning) could ſo inſtantaneouſly attach itſelf to ſuch a body, and with tenacity ſufficient to reſiſt the conſtant colliſion of tides

That the globules conſiſt of the medullary ſubſtance of the plant itſelf is readily admitted at the ſame time, it muſt be allowed, that all the confervas, which produce the granulated veſſels or ſeeds imbedded in thoſe globules bear a ſtriking reſemblance, in their mode of propagation, to the more perfect fucuſes, and not being apparently ſubject to the laws of floreſcence, attain their ſtate of fructification in a manner exactly ſimilar to that, which has been aſcribed to the latter from an inherent ſelf-efficient principle, equivalent indeed, though entirely different to that, on which the ſexual diſtinction is founded

D

It might be almoſt ſuſpected from the above paſſage, that Gærtner had too haſtily embraced the opinion of Adanſon, without having duly attended to the plants through the different ſtages of their growth.—"On peut dire que dans le Conferva [illegible], qui n'a point de graine [illegible] [illegible] [illegible] d'abord par une extrémité qui ſert de racine, et [illegible] s'appliquant [illegible] contre, et enſuite par l'extrémité oppoſée [illegible] des tiges." Adanſ. Fam. Plant. pref. p. 104

15 "Quod gemma medullæ [illegible] pars [illegible] medullæ interna, dum contra ſemina medullæ, non poſſint niſi eſſe novellam [illegible] matris [illegible] Gært. de Fruct. p. 9

DE PLANTARUM MARITIMARUM PROPAGATIONE.

NATURALIUM rerum indagatoribus luctui diù fuit et opprobrio, maritimas plantas, non minùs formâ peculiares quam venuſtate eximias, in occulto plurimùm adhùc latuiſſe, reliquas autem Cryptogamiæ claſſis ſeries, quaſi notatu digniores, in lucem apertè prodiiſſe [1]

Si Gmelinum, qui fucorum hiſtoriam ingenii acumine æquè ac experimentorum copiâ illuſtravit, et Gærtnerum, qui plantarum fructus et ſemina inveſtigavit, è numero excipiamus, Scriptorem haud facilè inveniemus ullum, qui manum ad plantarum maritimarum propagationem è tenebris ſuis eruendam feliciter admoverit Baſteri etenim obſervationes perpaucæ admodùm, obiterque occurrentes unam tantùm alteramve ſpeciem huic generi ſubjectam reſpiciunt et ſubtiles Reaumurii de fucorum floreſcentiâ contemplationes in ACTIS GALLICIS oblatæ, infelicem potiùs conjecturam, quam veritatis ſimplicitatem, ſapiunt

Notandum porro eſt, quòd plantarum maritimarum deſcriptiones, quoad fructificationem, quæ botanicis libris interdum inveniuntur, haudquaquam, ut par eſt, experimentis ſæpius repetitis, ſimilitudine autem inter vegetabilia ut dicuntur perfectiora, potiùs aſſumptâ nituntur Nec multum equidem ſperare licet a perfunctoriis iſtorum obſervationibus, qui maritima loca raro adeunt, cito relinquunt quibus ſcilicet utcunque acutis ſolertibuſque indagatoribus, vix unquam tardos harum plantarum ad fructificationem progreſſus, et obſcuras formæ viciſſitudines obſervandi ſe præbet occaſio

Nil mirum eſt, quod celeberrimus ille omnium Botanices ſtudioſorum Linneus, vix quidquam certi expertivè de magnâ fucorum et conſervarum copiâ protulerit omnes enim horum ordinum plantas enumeraſſe,[2] et experimentis ſigillatim probaſſe admodùm fuiſſet difficile Quis autem non jure admiratus eſt præclaras illas ingenii vires, judicii acumen, mentiſque captum, quibus indigeſtam vegetabilium molem in certos ordines definitaſque claſſes compoſuit, enucleavitque adeo diſtinxit, ut quæcunque poſthac de propagatione plantarum invaluerint opinionum commenta, definiendi tamen et inveſtigandi facultates non potuerint non eſſe promotæ

A

1 Post [illegible] Dillenio [illegible] recenſum, [illegible] Muſcos et Lichenes detecta Nec [illegible] Lichen [illegible] Sphæriæ [illegible] Botanicis [illegible] — In [illegible] expectis, locupletantur

2 Huic opinioni, [illegible] Velut [illegible] et in ſolutum literibus [illegible] p 351 – 356
Vid. [illegible] polymorphum — [illegible] H Scot p 990 – 996, &c

3 Cf. Hudſonum in *Flora [illegible]* [illegible] plantas multò plures, quam Linneus [illegible] Vid Sp Pl Lin
[illegible]

A ſyſtemate tam accuratè digeſto, tam longè latèque recepto vel minimùm deflectere, ſuſpicionem temeritatis et novitatis ſtudii fortaſſe ſuggerat, in mentem tamen revocare par eſt, quòd principia iſta, quibus ſyſtema ſexuale innititur quoad plantarum genus, de quo nunc agitur, auctori ipſo laudatiſſimo haud extra controverſiam poſita eſſe videantur. Facile eſt tamen conjectari tam ex libro Linnei de Generibus Plantarum, quam ex aliis ejuſdem auctoris ſcriptis, quod doctrinam ſuam de efficaciâ ſexuali ad unamquamque Regni vegetabilis partem extendi voluerit, immò ad plantas ſcilicet de quibus nunc tractetur, quas ob exilitatem partium propagationi inſervientium ſub nomine Cryptogamicarum ſepoſuerat[a].

Inter varia auctorum opera, quæ Botanices rudimenta tyronibus tradunt, et fontes ſcientiæ aperiunt, nec elaboratum magis nec utilius eſt, quam PHILOSOPHIA BOTANICA, opus Viri nunquam ſatis laudandi, quod non ſolùm lucidiſſimo ordine conſtructum hujuſce ſcientiæ meritò habetur baſis et fundamen, ſed NUMINIS OPTIMI MAXIMI Sapientiam ante oculos manifeſtè profert et mirificè illuſtrat. Utcunque breve eſt hoc opus et ſuccinctum, ab illo tamen quaſi fonte et origine enata ſunt varia opuſcula, et utilitate ſummâ et ſcientiâ repleta, inter AMŒNITATES ACADEMICAS ejuſdem auctoris evulgata. Horum unum præſertim principia iſta plenè dilucidèque expedit, è quibus pendet de plantarum ſexibus doctrina[b]. In hoc etiam quampluria proferuntur exempla, quæ Naturæ Providentiam arguunt, quâ multiplices ſuæ Familiæ proteguntur; quorum quidem, vix præclariùs occurrit quàm quod obſervari liceat in Œconomiâ plantarum aquis alte ſubmerſarum. Harum quædam præfinito flores ſuos aperiendi, nequicquam autem alio, tempore, ſeſe ſuper aquas, ut farina per aerem liberè volitans deſtinatam ſuam obtineat ſedem, emergentes oſtendunt, denuòque ſubmerguntur. Si plantis aquas leniter-fluentes habitantibus tanta Providentiæ, ut genus ſuum propagent, adhibeatur Cura, ſi porrò communi quâdam et immutabili lege ut exiſtimandum eſt, agat Natura[c], operis haud exigui eſſe conſtabit, iſtarum plantarum, quæ, imo ſub oceano permanentèr et funditùs infixæ, nihilominus incunabula generationi ſuæ maxime idonea et amica inveniunt, propagandi rationem inveſtigare.

In hâc enim inveſtigatione mutuus vegetabilium inter ſe ſimilitudinis nexus, haud ampliùs præmonſtrat iter. Marinâ quâvis plantâ obitèr inſpectâ, nequaquam invenienda eſt præclara illa inter quaſdem animalium et vegetabilium partes cognatio, inter terreſtrium ſcilicet plantarum radicum fibras, et lactea animalium vaſa. Fucorum etenim radices, non ſolùm vaſis ullis abſorbentibus ſuccum coquere et diſtribuere, nullibi aſpicimus, verùm etiam ob duritiem ſuam et texturam coriaceam, ad nihil prorſùs niſi ad firmandam ſibi inter fluctus ſtationem videntur adaptatæ. Lævisſimis enim lapillis aliiſque corporibus ſuccum nutritium omnino denegantibus, hærent affixæ. Fuci equidem de quibus agitur, ſi vel radicum, vel aliarum partium ſtructuram contemplemur, vaſorum, quibus ſuccus propellitur, ſeriem habere nullam videntur. Horum autem vices ſupplent innumera quaſi plantarum cuti inter-

[a] Claſſis Cryptogamiarum. [b] Sponſalia Plantarum.

[c] Omnis ſpecies Vegetabilium flore et fructû inſtruitur, etiam, ubi viſus eoſdem non aſſequitur. Philoſoph. Bot. Sect. 139.

"*Muſcorum* ſemina Nos.

Fucorum flores obſervavit *Reaumur*, &c." Ibid.

Flores omnes inſtruuntur Antheris et ſtigmatibus. Ibid. Sect. 140 et ſequent.

ſperſa

ſperſa ſpuamenta vel pori Ad examen hoc facilè vocatur, ſiccata enim hujuſce generis planta ſi in aquâ tota immergatur, ad priſtinam redibit formam et ſtatum, ſi verò pars tantùm immittatur, reliqua manebit arida prorsùs et marcida —Hinc liquidò patebit, fucis hiſce nulla eſſe vaſa vel canales quibus per totam, ut plerumquè fit, plantam ſuccus diſtribuatur

Ut veritatem faciliùs aſſequamur, conjecturas inclyti cujuſdam philoſophi de plantarum harum floreſcentiâ ad examen revocare fas ſit, his enim fidem dederunt quidam recentiores, et ad firmandum ſexûs plantarum doctrinam, et methodum inde Linnæanam, hæc celebris viri detecta, ut putantur, adduxerunt Reaumurius, qui hic loci deſignatur, ſibi viſus eſt in Quercu marina,[4] atque in Fuco ſerrato, et flores et ſemina detexiſſe, flores quidèm frondis ſuperficiem ſine ullo diſcrimine occupantes unumquemque florem deſcribit ut faſciculum filamentorum capillarium, quorum longiſſimum, lineam haud æquabat ſummâ vero diligentiâ ſcrutatus, ſe libens confitetur nec faſtigii filamentis his, nec capita cernere poſſe quæ tamen, ſi filamenta, vera eſſent ſtamina, antheris ornari certè deberent Hunc nodum dirimere aggreſſus veriſimillimum eſſe hæc capita, quamprimùm ſe protrudebant filamenta decidiſſe auſus eſt affirmare et porro flores tantùm illos, qui extremas occupant frondes, inſtrumenta eſſe quibus feminiferi fucorum apices promoveantur Foramen etiam ex quo ſe trudunt filamenta, calycem eſſe ducit In quibuſdam ſpeciebus fructificationem affirmat ſummis frondibus ineſſe turgidulis et paulùm diſtenſis dum flores ſic enim has partes reputari nonnullis placuit omnino latebant In aliis contrà, hæ poſtremæ partes ſine ſuperioribus videndæ erant In Fucis ſcilicet canaliculato et nodoſo, globuli ea pomorphi ſeſe exhibebant, ſine ullis florum filamentis hi igitur, ait Reaumurius, floreſcendi tempore nunquàm oculis ſubjiciebantur Fuci palmati contra ſuperficies, florum iſtorum, vel ut ſibi videtur florum, faſciculis obtecta erat nihil autem vel ſeminibus vel capſulis ſimile attentiſſimâ inſpectione cernendum erat

A Baſtero et Gmelino dudum obſervatum fuit Reaumurii hypotheſin reprehenſioni quodammodo obnoxiam eſſe

Imprimis Quod filamenta capillaria ſemper antheris vel apicibus deſtituta, nunquam pro floribus haberi poſſint

Secundo Quod, in quibuſdam fucorum ſpeciebus, frondis ſuperficie, integrâ prorsùs et ſine ullis filamentis exiſtente, quandis vero tuberculis cumulate inſtructa, in aliis contra nulla illibi ſeminum præ ſe ferente florum autem, ut volunt, faſciculis cooperta —hinc potius quàm Reaumurii opinionem ſequeremur oportet nimirum, fucorum partes ſupradeſcriptas nullo inter ſe ſyſtematis vinculo connectas, unam nequaquam ab alterâ pendentes[5]

Quod autem plenius hoc et melius exprimit, Reaumurio vix ignotum, id pro certo ſtatuamus, ſcilicet iſta filamenta floreſcentiæ nullam ob rationem tam longè abeſſe, ut in ſuperficie plantæ enaſcentis, tenera et ad integram ſuam formam nondum perventæ videantur Apparent etiam haud obſcurius in frondis

[4] Fuco veſiculoſo

[5] Nec porro ſuperſ[illegible] Linnæi in operis ſui Genera Plantarum [illegible] Baſtero Reaumurii [illegible] Reaumurii de [illegible]

dis

dis ſuperficie, dum faſtigia ejuſdem cum ſuis pericarpiis jam ſeneſcere cœperint et marceſcere, et in hoc toto temporis intervallo nullam quamcunque quæ cernitur, mutationem ſubeunt Quandoquidem igitur filamenta hæc illis carent partibus, quæ flori ipſi eſſentiales ſunt, quandoquidem nullo cum aliis plantis ſimilitudinis nexu ſociantur, ad uſum quemnam alium plantarum harum ſtructuræ convenientem deſignata fuiſſe conſtat Experimento nupèr deſcripto, ea ductus eſſe ſecretorii, vel vaſa ſuccum nutritium frondi tranſmittentia, cenſenda ſunt. Hâc quidem ratione compenſetur iſtius nutrimenti deſiderium, quod terreſtres plantæ radicibus ſuis poroſis è ſolo quo fixæ permanent, nunquàm non derivant maritimarum intereà radicibus, fluctuum violentiæ, ne jactentur plantæ, ſeſe ſolùm opponentibus.

Hinc apparet Providentis Naturæ Sapientia, quæ unicuique generi partes ſuas et ſitus ſtatuit vegetationi aptiſſimos Dum in ſeminibus plantarum terreſtrium, formæ magnitudinis et ſitus diverſitatem contemplamur, non poſſumus non reſpicere ſimilitudinem organorum propagationi inſervientium, quoad formam, ſitum, et magnitudinem, plantas maritimas pervadentem In fucis pleriſque, ſemina aut capſulæ in frondium ſubſtantiâ inſeruntur Et in quibuſdam horum, ſtructuræ potiùs filiformis, et in confervis plurimis, aut diſtenſis plerumquè pinnularum faſtigiis, [6] aut ramuſculorum veſiculis axillaribus continentur [7]

Quod igitur grana carpomorpha, quoad ſitum, habitum, et originem reſpicit, confervas non multùm a fucis diſtare affirmetur

In uno eodemque ſpecimine ſæpe cernantur corpuſcula hæc granulata frondis dilatatæ parti ſimul conglomerata, dum in aliis ramulis, nebulæ quædam leviuſculæ ſola ullius cujuſpiam ad maturitatem progreſſûs ſigna produnt præcurſoria. Si floreſcentia ulla fructificationem harum plantarum anteiſſet, in hiſce et talibus ſpeciminibus dudum eam inventam fuiſſe credibile eſt nihil verò receptæ huic hypotheſi colorem daturum adhùc eſt repertum

Obſervandum eſt, quod Reaumurius hæc filamenta capillaria non niſi in paucis, quinque nempe aut ſex fucorum ſpeciebus cernere poſſet His pauculis tantùm et tam dubiis exemplis, charactēr generis fucorum numeroſiſſimi videtur niti [8] Nil mirum eſt, quod Linnæus huic dignissimo

6 Ut Fucus spinosus—F. obtusus—F. cartilagineus—F. pinnatifidus—Conferva polymorpha &c. &c.
Quod [illegible] in tumidis frondis [illegible] speciebus, sed in ramusculorum globulis, vel pinnulis distentis, [illegible] deprehenduntur granula

7 Fucus coccineus Hudsoni—C[illegible]—C. [illegible] lulosa, &c. Vesicula, in quibus hæc granula seminalia conspicienda se præbent, et [illegible] medulla [illegible] et [illegible]

8 * FUCUS * Reaum. A. G. 1711 T. 9, 10, 11
[illegible]
Vesiculæ [illegible] adspersæ
[illegible]
Vesiculæ [illegible] punctis perforatæ [illegible]
Linn. Gen. Pl. Holmiæ 1764
* FUCUS MASC. [illegible] intertexta
[illegible] adspersa [illegible] apice prominuli
Hudson—Lightfoot &c

nissimo auctori nimium fidens, sententiam, quæ honorem dabat methodo suæ acciperet ultrò et foveret.[8]

Cùm hæc contemplemur, clarius fortassè patebit, quòd dum harum structuram algarum moliretur Natura, paululùm deflexerit ab usitatâ suâ operandi ratione, et quòd nullis prolatis de florescentiâ harum plantarum testimoniis, verisimillimum duceretur in his propagandi modum simplicem esse et sibi ipsis vi insitâ restrictum, ab ullo exteriori adjumento nequaquam pendentem, et à principiis quibus sexuum distinctio assertur, prorsùs alienum. Notatu dignum videatur, quòd opinio hæcce Gmelini et Gærtneri auctoritate commendata se prodat, quanquam auctorum horum postremus hypothesin suam latè nimis et temerè extendisse videtur.

Absurdum esset, ut ait Gmelinus ipse, sperare, æquè ac difficile proferre granorum istorum fucis se prodentium primæ formationis explicationem. Semper enim necesse est a spe decidamus, cùm ad primarias rerum causas expediendas nos accingamus. Hæc eadem et de vitâ animalium et vegetabilium ubique constant. Pudoris est æquè ac prudentiæ intra hos limites nosmetipsos sistere —"Neque plus novi," inquit, "quam quod ejusmodi observationibus edoceor, simpliciori methodo voluisse hic CREATOREM eundem finem adsequi, voluisse nimirum per sola grana in se fœcunda h[illegible]c vi insita, nec aliena indigente, prædita, fucorum procreationi prospicere."

Si materiam hanc subjectam contemplari velimus fusiùs explicatam, Gmelini opus curiosiùs evolvendum est. Ille enim Naturæ notat progressum, quem quidèm hisce algarum generibus convenire affirmat: in quibus plantis pedetentìm descendendum est ab istis, quæ UNISEXUALES,[10] ad illas, quæ prioribus simpliciores prorsùs ASEXUALES oriuntur.

Horum primis "perfectiorum fucorum fructificationem tribuit Gærtnerus, quos fidentèr affirmat veris seminibus propagari. Sub postremis, fucos plurimos, et omnes omninò conservarum species annumeravit.

In editione Syst. Nat. nuperrime evulgatâ, character Fuci generis [illegible] profertur:

"FUCUS—Globuli carpomorphi, vel femina [illegible] sub punctis perforatis [illegible]." Syst. Nat. Edit. Gmel.

Specierum vero distributio ex [illegible] Gmelini Historia Fucorum, [illegible]. Vid. Not. 13. &c.

9 Hæc forsan Reaumurii hypothesis [illegible] Comitis Marsilii celeberrimo HISTOIRE PHYSIQUE DE LA MER [illegible] p. 160 [illegible] Quamvis magnus Botanicus RAJUS [illegible] non tamen hoc sine exemplo esse [illegible] Comes MARSI[illegible] plantam describit et delineat, [illegible] ad Promontorium Canalie dictum, in PROVINCIA, [illegible] et marcidos flores et fructu[illegible] Flores habebant sex petala, [illegible] Apex plantæ multos [illegible] habebat flores [illegible] Opusc. Subsec. Tom. [illegible] I. p. 170.

[illegible] Oxon. Professore [illegible] Plantam, Asphodelum [illegible] Asphodelum [illegible] Europæ [illegible], perfrequentem.

10 [illegible] Adansonii [illegible] Asexuales nominantur, [illegible] et per gemmas propagantur.

11 "In [illegible] nominis Fucis, [illegible] habentur organa feminea, intra frondium corticem abscondita. Masculorum [illegible] &c. Gært. de Fruct. p. [illegible]

Si iſtam hypotheſeos ſuæ partem, quæ hoc plantarum genus tractat, animo velimus comprehendere necesse forſan ſit definitiones, quibus vegetabilium propagationem incluſit Gærtnerus,[11] inſpicere. Vegetationis originem duplici ex fonte derivatam eſſe affirmat. In altero, "Materies vegetabilis ſolis adjuta vitæ viribus, ſecundum inquilinum cujuſlibet plantæ creſcendi ſchema, in novas formas mutatur, atque ſua ſponte adultarum ſtirpium nova producit exempla." In altero, "tenuiores fluidioreſque ejus partes, miniſterio propriorum organorum, a reliqua maſſa ſecernuntur atque ita elaborantur ut ex harum demum congrua miſcela, mutuaque inter ſe actione, novum prorſus emergat corpus organicum, veriſque in diſtinctis conceptaculis excitentur plantarum fœtus." Hunc poſteriorem naſcendi modum, Fructificationem appellat, quia ſemina hinc trahunt originem: priorem illum, Gemmificationem, et unicam propagationis proliferam rationem ducit. Hæc principia poſtea ad diverſa cryptogamiæ claſſis genera ab auctore noſtro adaptantur.

"Conſervæ omnes," ait ille, "tam capillares, quam moniliformes, ſexu et ſeminibus in perpetuum deſtitutæ ſunt. Priores, e ſponte ſolutis, nequidquam mutatis articulis ſuis regerminant . Conſervæ autem moniliformes ut corallinoides—et variæ aliæ adhucdum innominatæ, promunt ex juncturis majorum ſuorum articulorum brevia quædam filamenta lateralia, quæ et ipſa ex parvis articulis conſlata ſunt, et ex quibus ſolis, earundem propagationis organa, hac ſimplici formantur methodo, ut nunc unicus, nunc duo ſibi proximi, lateralium filorum articuli, per meram ſubſtantiæ ſuæ carnoſæ intumeſcentiam, in unicum globulum ſolidum convertantur, qui poſtea ſponte decidit, et dum ex altera parte ſcopulis agglutinatur, ex altera novum trudit articulum, atque ſic ſenſim in plantam conyaleſcit matri ſuæ prorſus ſimilem." Ingens eſt, ait Gærtnerus, horum globulorum cum vero quodam fructu vel ſemine ſimilitudo, quoad duritiem formam et colorem: "his tamen non obſtantibus, quilibet libenter eis inter ſimplices gemmas locum concedet, qui vel internam globulorum rimatus fuerit fabricam, utpote ex mera medulla atque cortice compaginatam: vel qui eorundem imprimis ſpectaverit ortum, quippe qui, ex confluente ſæpius duorum articulorum in unum globulum medulla, excitatus, nonniſi vegetationis, nequaquam vero fœcundationis opus eſſe poteſt."[12]

Quædam in Gærtneri hypotheſin de conſervarum propagatione obſervationes, libellum huncce ad finem producent.

Generis fucorum et conſervarum idonea diſtinctio inter deſiderata adhuc manet: utpote ſine diſcrimine utrumque genus alterius characterem nonnunquam affectare et perſonam induere videtur. Tranſverſa enim ſepta, articuli, et tenuitas fabricæ filiformis obvium conſervis diſtinctionis characterem

11. [illegible] Gærtnerus [illegible]

* Gært. de Fruct. Introduct. p. 19. † Gært. de Fruct. p. 16.

12. [illegible] Gærtnerus. [illegible]

DE PLANTARUM MARITIMARUM PROPAGATIONE.

NATURALIUM rerum indagatoribus luctui diù fuit et opprobrio, maritimas plantas, non minùs formâ peculiares quam venuſtate eximias, in occulto plurimùm adhùc latuiſſe, reliquas autem Cryptogamiæ claſſis ſeries, quaſi notatu digniores, in lucem apertè prodiiſſe.[1]

Si Gmelinum, qui fucorum hiſtoriam ingenii acumine æquè ac experimentorum copiâ illuſtravit, et Gærtnerum, qui plantarum fructus et ſemina inveſtigavit, è numero excipiamus, Scriptorem haud facilè inveniemus ullum, qui manum ad plantarum maritimarum propagationem è tenebris ſuis eruendam feliciter admoverit. Baſteri etenim obſervationes perpaucæ admodùm, obiterque occurrentes unam tantùm alteramve ſpeciem huic generi ſubjectam reſpiciunt et ſubtiles Reaumurii de fucorum floreſcentiâ contemplationes in ACTIS GALLICIS oblatæ, infelicem potiùs conjecturam, quam veritatis ſimplicitatem, ſapiunt.

Notandum porrò eſt, quòd plantarum maritimarum deſcriptiones, quoad fructificationem, quæ botanicis libris interdum inveniuntur, haudquaquam, ut par eſt, experimentis ſæpiùs repetitis, ſimilitudine autem inter vegetabilia ut dicuntur perfectiora, potiùs aſſumptâ nituntur.[2] Nec multúm equidem ſperare licet à perfunctoriis iſtorum obſervationibus, qui maritima loca raro adeunt, citò relinquunt: quibus ſcilicet utcunque acutis ſolertibuſque indagatoribus, vix unquam tardos harum plantarum ad fructificationem progreſſus, et obſcuras formæ viciſſitudines obſervandi ſe præbet occaſio.

Nil mirum eſt, quod celeberrimus ille omnium Botanices ſtudioſorum Linneus, vix quidquam certi expertivè de magnâ fucorum et conſervarum copiâ proferret: omnes enim horum ordinum plantas enumeraſſe,[3] et experimentis ſigillatim probâſſe admodùm fuiſſet difficile. Quis autem non jure admiratus eſt præclaras illas ingenii vires, judicii acumen, mentiſque captum, quibus indigeſtam vegetabilium molem in certos ordines definitaſque claſſes compoſuit, enucleatèque adeo diſtinxit, ut quæcunque poſthàc de propagatione plantarum invalebunt opinionum commenta, definiendi tamen et inveſtigandi facultates non poterunt non eſſe promotæ.

A

1 Per [illegible] Dillenii [illegible] Hedwigii in Muscos et Lichenes [illegible] Nec noſtratis Dickſoni opera [illegible] Lichenes et Sphærias, [illegible] Hoffmannum, necnon Filices Britannicas Boltonii. — In Fungos [illegible] plurimi Botanici: inter alios, Batſchius, Boltonus, Schæfferus, Bulliardus. Horum omnium opera, [illegible] exquiſitiſſime elaboratis, [illegible] expreſſis, locupletantur.

2 Hanc opinionem, [illegible] Wilſon, [illegible] "Veſiculas [illegible] in [illegible] detexi, [illegible] tempore." (Collect. Tom. I. p. [illegible]) [illegible] p. 451—456.
Vid. CONFERVAM polymorpham—C. [illegible]—et C. nodulosam. Fl. Scot. p. 990—996, &c.

3 Cl. Hudſoni in *Flora ſua Anglica* [illegible] plantas multò plures, quam Linnæus [illegible] Vid. Sp. Pl. Edit. 2ᵈᵃ Holm.

A ſyſtemate tam accuratè digeſto, tam longè latèque recepto vel minimùm deflectere, ſuſpicionem temeritatis et novitatis ſtudii fortaſſe ſuggerat, in mentem tamen revocare par eſt, quòd principia iſta, quibus ſyſtema ſexuale innititur quoad plantarum genus, de quo nunc agitur auctori ipſo laudatiſſimo haud extra controverſiam poſita eſſe videantur. Facile eſt tamen conjectari tam ex libro Linnei de Generibus Plantarum, quam ex aliis ejuſdem auctoris ſcriptis, quòd doctrinam ſuam de efficaciâ ſexuali ad unamquamque Regni vegetabilis partem extendi voluerit immò ad plantas ſcilicet de quibus nunc tractetur, quas ob exilitatem partium propagationi inſervientium ſub nomine Cryptogamicarum ſepoſuerat.[a]

Inter varia auctorum opera, quæ Botanices rudimenta tyronibus tradunt, et fontes ſcientiæ aperiunt, nec elaboratum magis nec utilius eſt, quam PHILOSOPHIA BOTANICA opus Viri nunquam ſatis laudandi, quod non ſolùm lucidiſſimo ordine conſtructum hujuſce ſcientiæ meritò habetur baſis et fundamen, ſed NUMINIS OPTIMI MAXIMI Sapientiam ante oculos manifeſtè profert et mirificè illuſtrat. Utcunque breve eſt hoc opus et ſuccinctum, ab illo tamen quaſi fonte et origine enata ſunt varia opuſcula, et utilitate ſummâ et ſcientiâ repleta, inter AMŒNITATES ACADEMICAS ejuſdem auctoris evulgata. Horum unum præſertim principia iſta plenè dilucidèque expedit, è quibus pendet de plantarum ſexibus doctrina.[b] In hoc etiam quamplurima proferuntur exempla, quæ Naturæ Providentiam arguunt, quâ multiplices ſuæ Familiæ proteguntur: quorum quidem, vix præclariùs occurrit quàm quod obſervari liceat in Œconomiâ plantarum aquis altè ſubmerſarum. Harum quædam præfinito flores ſuos aperiendi, nequicquam autem alio, tempore, ſeſe ſuper aquas, ut farina per aerem liberè volitans deſtinatam ſuam obtineat ſedem, emergentes oſtendunt, denuoque ſubmerguntur. Si plantis aquas leniter-fluentes habitantibus tanta Providentiæ, ut genus ſuum propagent, adhibeatur Cura, ſi porrò communi quâdam et immutabili lege ut exiſtimandum eſt, agat Natura[c] operis haud exigui eſſe conſtabit, iſtarum plantarum, quæ, imo ſub oceano permanentèr et funditùs infixæ, nihilominus incunabula generationi ſuæ maximè idonea et amica inveniunt, propagandi rationem inveſtigare.

In hâc enim inveſtigatione mutuus vegetabilium inter ſe ſimilitudinis nexus, haud ampliùs præmonſtrat iter. Maritimâ quavis plantâ obiter inſpectâ, nequaquam invenienda eſt præclara illa inter quaſdem animalium et vegetabilium partes cognatio, inter terreſtrium ſcilicet plantarum radicum fibras, et lactea animalium vaſa. Fucorum etenim radices, non ſolùm vaſis ullis abſorbentibus ſuccum coquere et diſtribuere, nullibi aſpicimus, verùm etiam ob duritiem ſuam et texturam coriaceam, ad nihil prorſùs niſi ad firmandam ſibi inter fluctus ſtationem, videntur adaptatæ. Læviſſimis enim lapillis aliiſque corporibus ſuccum nutritium omninò denegantibus, hærent affixæ. Fuci equidem de quibus agitur, ſi vel radicum, vel aliarum partium ſtructuram contemplemur, vaſorum, quibus ſuccus propellitur, ſeriem habere nullam videntur. Horum autem vices ſupplent innumera quaſi plantarum cuti inter-

a Claſſis Cryptogamia. b Sponſalia Plantarum.

c "Omnis ſpecies Vegetabilium flore et fructu inſtruitur etiam, ubi viſus eoſdem non aſſequitur." Philoſoph. Bot. Sect. 139.

d Muſcorum [illegible]

e Fucorum flores [illegible] &c." Ibid.

Per omne inſtrumentum Antheras et Stigmata [illegible] Ibid. Sect. 150. et ſequent.

ſperſa

ſperſa ſpiramenta vel pori. Ad examen hoc facilè vocatur, ſiccata enim hujuſce generis planta ſi in aquâ tota immergatur, ad priſtinam redibit formam et ſtatum, ſi verò pars tantùm immittatur, reliqua manebit arida prorsùs et marcida —Hinc liquidò patebit, fucis hiſce nulla eſſe vaſa vel canales quibus per totam, ut plerumquè fit, plantam ſuccus diſtribuatur

Ut veritatem faciliùs aſſequamur, conjecturas inclyti cujuſdam philoſophi de plantarum harum floreſcentiâ ad examen revocare fas ſit, his enim fidem dederunt quidam recentiores, et ad firmandam ſexûs plantarum doctrinam, et methodum inde Linneanam, hæc celebris viri detecta, ut putantur, adduxerunt. Reaumurius, qui hìc loci deſignatur, ſibi viſus eſt in Quercu marina,* atque in Fuco ſerrato, et flores et ſemina detexiſſe, flores quidèm frondis ſuperficiem ſine ullo diſcrimine occupantes unumquemque florem deſcribit ut faſciculum filamentorum capillarium, quorum longiſſimum, lineam haud æquabat ſummâ vero diligentiâ ſcrutatus, ſe libens confitetur nec faſtigia filamentis his, nec capita cernere poſſe, quæ tamen, ſi filamenta, vera eſſent ſtamina, antheris ornari certè deberent Hunc nodum dirimere aggreſſus, veriſimillimum eſſe hæc capita, quamprimùm ſe protrudebant filamenta, decidiſſe auſus eſt affirmare et porro flores tantùm illos, qui extremas occupant frondes, inſtrumenta eſſe, quibus ſeminiferi fucorum apices promoveantur Foramen etiam ex quo ſe trudunt filamenta calycem eſſe ducit In quibuſdam ſpeciebus fructificationem affirmat ſummis frondibus meſſi turgidulis et paulùm diſtentis, dum flores, ſic enim has partes reputari nonnullis placuit omninò latebant In aliis contra, hæ poſtremæ partes ſine ſuperioribus videndæ erant In Fucis ſcilicet capillaceo, et nodoſo, globuli carpomorphi ſeſe exhibebant, ſine ullis florum filamentis Hi igitur, ait Reaumurius, floreſcendi tempore nunquam oculis ſubjiciebantur Fuci palmati contra ſuperficies, filorum aſtorum, vel ut ſibi videtur florum, faſciculis obtecta erat nihil autem vel ſeminibus vel capſulis ſimile attentiſſimâ inſpectione cernendum erat

A Baſtero et Gmelino dudum obſervatum fuit Reaumurii hypotheſin reprehenſioni quodammodo obnoxiam eſſe

Imprimis Quod filamenta capillaria ſemper antheris vel apicibus deſtituta, nunquam pro floribus haberi poſſint

Secundo Quod in quibuſdam fucorum ſpeciebus, frondis ſuperficie, integrâ prorsus et ſine ullis filamentis exiſtente, granulis vero in tuberculis cumulate inſtructa, in aliis contra nulla uſſibi ſeminum præſe ferente, florum autem, ut volunt, faſciculis coopertâ—hanc potius quam Reaumurii opinionem ſequeremur oportebat, nimirum fucorum partes ſupradeſcriptas nullo inter ſe ſyſtematis vinculo connecti, una nequaquam ab alterâ pendente ¹

Quod autem pleniùs hoc et melius eximeat, Reaumurio vix ignotum, id pro certo ſtatuamus, ſcilicet illa filamenta floreſcentiæ naturâ et ratione tam longè abeſſe, ut in ſuperficie plantæ enaſcentis, teneræ et ad integram ſuam formam nondum pervenientis videantur Apparent etiam haud obſcurius in Fon-

* Fuco veſiculoſo

¹ [illegible]

dis

dis ſuperficie, dum faſtigia ejuſdem cum ſuis pericarpus jam ſeneſcere cœperint et marceſcere; et in hoc toto temporis intervallo nullam quamcunque quæ cernitur, mutationem ſubeunt. Quandoquidem igitur filamenta hæc illis carent partibus, quæ flori ipſi eſſentiales ſunt, quandoquidem nullo cum aliis plantis ſimilitudinis nexu ſociantur, ad uſum quemnam alium plantarum harum ſtructuræ convenientem deſignata fuiſſe conſtat Experimento nupèr deſcripto, ea ductus eſſe ſecretorii, vel vaſa ſuccum nutritium frondi tranſmittentia, cenſenda ſunt Hâc quidem ratione compenſetur iſtius nutrimenti deſiderium, quod terreſtres plantæ radicibus ſuis poroſis è ſolo quo fixæ permanent, nunquàm non derivant maritimarum interea radicibus, fluctuum violentiæ, ne jactentur plantæ, ſeſe ſolùm opponentibus

Hinc apparet Providentis Naturæ Sapientia, quæ unicuique generi partes ſuas et ſitus ſtatuit vegetationi aptiſſimos Dum in ſeminibus plantarum terreſtrium, formæ magnitudinis et ſitus diverſitatem contemplamur, non poſſumus non reſpicere ſimilitudinem organorum propagationi inſervientium, quoad formam, ſitum, et magnitudinem, plantas maritimas pervadentem In fucis pleriſque, ſemina aut capſulæ in frondium ſubſtantiâ inſeruntur Et in quibuſdam horum, ſtructuræ potiùs filiformis, et in conſervis plurimis, aut diſtenſis pleruMquè pinnularum faſtigiis,[6] aut ramuſculorum veſiculis axillaribus continentur[7]

Quod igitur grana carpomorpha, quoad ſitum, habitum, et originem reſpicit, conſervas non multùm a fucis diſtare affirmetur.

In uno eodemque ſpecimine ſæpe cernantur corpuſcula hæc granulata frondis dilatatæ parti ſimul conglomerata, dum in aliis ramulis, nebulæ quædam leviuſculæ ſola ullius cujuſpiam ad maturitatem progreſſûs ſigna produnt præcurſoria. Si floreſcentia ulla fructificationem harum plantarum anteiſſet, in hiſce et talibus ſpeciminibus dudum eam inventam fuiſſe credibile eſt nihil verò receptæ huic hypotheſi colorem daturum adhùc eſt repertum

Obſervandum eſt, quod Reaumurius hæc filamenta capillaria non niſi in paucis, quinque nempe aut ſex fucorum ſpeciebus cernere poſſet His pauculis tantùm et tam dubiis exemplis, character generis fucorum numeroſiſſimi videtur niti[8] Nil mirum eſt, quod Linnæus huic dignissimo

6 [illegible] —CONFERVA polymorpha, &c &c
Qu[illegible] ramuli.[illegible]

7 [illegible] Vesiculæ, in quibus [illegible]

8 FUCUS [illegible] A C 1711 [illegible] 9 10 11
[illegible]
FUCUS MAS [illegible]
[illegible]
[illegible] &

In

niſſimo auctori nimium fidens, ſententiam, quæ honorem dabat methodo ſuæ acciperet ultrò et foveret.[9]

Cùm hæc contemplemur, clarius fortaſsè patebit, quòd dum harum ſtructuram algarum moliretur Natura, paululùm deflexerit ab uſitatâ ſuâ operandi ratione, et quòd nullis prolatis de floreſcentiâ harum plantarum teſtimoniis, veriſimillimum duceretur in his propagandi modum ſimplicem eſſe et ſibi ipſis vi inſitâ reſtrictum, ab ullo exteriori adjumento nequaquam pendentem, et à principiis quibus ſexuum diſtinctio aſſeritur, prorsùs alienum. Notatu dignum videatur, quòd opinio hæcce Gmelini et Gærtneri auctoritate commendata ſe prodat, quanquam auctorum horum poſtremus hypotheſin ſuam latè nimis et temerè extendiſſe videtur.

Abſurdum eſſet, ut ait Gmelinus ipſe, ſperare, æquè ac difficile proferre granorum iſtorum fucis ſe prodentium primæ formationis explicationem. Semper enim neceſſe eſt à ſpe decidamus, cùm ad primarias rerum cauſas expediendas nos accingamus. Hæc eadem et de vita animalium et vegetabilium ubique conſtant. Pudoris eſt æquè ac prudentiæ intra hos limites noſmetipſos ſiſtere.—"Neque plus novi," inquit, "quam quod ejuſmodi obſervationibus edoceor, ſimpliciori methodo voluiſſe hic CREATOREM eundem finem adſequi, voluiſſe nimirum per ſola grana in ſe fœcunda hac vi inſita, nec aliena indigente, prædita, fucorum procreationi proſpicere."

Si materiam hanc ſubjectam contemplari velimus fuſiùs explicatam, Gmelini opus curioſiùs evolvendum eſt. Ille enim Naturæ notat progreſſum, quem quidèm hiſce algarum generibus convenire affirmat, in quibus plantis pedetentìm deſcendendum eſt ab iſtis quæ UNISEXUALES,[10] ad illas, quæ prioribus ſimpliciores prorsus ASEXUALES oriuntur.

Horum primis[11] perfectiorum fucorum fructificationem tribuit Gærtnerus, quos fidentèr affirmat veris ſeminibus propagari. Sub poſtremis, fucos plurimos, et omnes omnino conferuarum ſpecies annumeravit.

In editione Syſt. Nat. nuperrimè evulgata, [illegible] generis [illegible] profecta.

"FUCUS.—[illegible] ramiformia [illegible] Syſt. Nat. Edit. Gmel.

Specierum vero diſtributionis [illegible] Gmelini HISTORIA FUCORUM, [illegible]

[illegible] reddat. Vid. Not. 13. &c.

9 [illegible] Reaumuri hypotheſis [illegible] p. 160 [illegible] "Quamvis [illegible] Botanicis RAJUS [illegible] planta [illegible] PROVINCIÆ, [illegible] Opuſc. [illegible] p. 180.

[illegible] Oxonii [illegible] Alphodelum [illegible]

10 [illegible] unſexualis [illegible] propagantur.

11 "In omnibus vero nominis Fucis, [illegible] fœmineæ, intra frondium corticem abſconditæ, [illegible] &c. [illegible] p. 32.

Si iſtam hypotheſeos ſuæ partem, quæ hoc plantarum genus tractat, animo velimus comprehendere, neceſſe forſan ſit definitiones, quibus vegetabilium propagationem incluſit Gærtnerus,* inſpicere Vegetationis originem duplici ex fonte derivatam eſſe affirmat In altero, "Materies vegetabilis ſolis adjuta vitæ viribus, ſecundum inquilinum cujuſlibet plantæ creſcendi ſchema, in novas formas mutatur, atque ſua ſponte adultarum ſtirpium nova producit exempla " In altero, " tenuiores fluidioreſque ejus partes, miniſterio propriorum organorum, a reliqua maſſā ſecernuntur atque ita elaborantur ut ex harum demum congrua miſcela mutuaque inter ſe actione, novum prorſus emergat corpus organicum, verique in diſtinctis conceptaculis excitentur plantarum fœtus " Hunc poſteriorem naſcendi modum, Fructificationem appellat, quia ſemina hinc trahunt originem priorem illum, Gemmificationem, et unicam propagationis proliferam rationem ducit. Hæc principia poſteà ad diverſa cryptogamiæ claſſis genera ab auctore noſtro adaptantur

† "Conferve omnes," ait ille, " tam capillares, quam moniliformes, ſexu et ſeminibus in perpetuum deſtituta ſunt Priores, e ſponte ſolutis, necquidquam mutatis articulis ſuis regerminant Conſervæ autem moniliformes ut coralloides—et varia aliæ adhucdum innominatæ, promunt ex juncturis majorum ſuorum articulorum brevia quædam filamenta lateralia, quæ et ipſa ex parvis articulis conflata ſunt, et ex quibus ſolis earundem propagationis organa, hac ſimplici formantur methodo, ut nunc unicus, nunc duo ſibi proximi, lateralium filorum articuli, per meram ſubſtantiæ ſuæ carnoſæ intumeſcentiam, in unicum globulum ſolidum convertantur, qui poſtea ſponte decidit, et dum ex altera parte ſcopulis agglutinatur, ex altera novum trudit articulum, atque ſic ſenſim in plantam convaleſcit matri ſuæ prorſus ſimilem " Ingens eſt, ait Gærtnerus, horum globulorum cum vero quodam fructu vel ſemine ſimilitudo, quoad duritiem formam et colorem " his tamen non obſtantibus, quilibet libenter eis inter ſimplices gemmas locum concedet, qui vel internam globulorum rimatus fuerit fabricam, utpote ex mera medulla atque cortice compaginatam, vel qui eorundem imprimis ſpectaverit ortum quippe qui, ex confluente ſæpius duorum articulorum in unum globulum medulla, excitatus, nonniſi vegetationis, nequaquam vero fœcundationis opus eſſe poteſt " ‡

Quædam in Gærtneri hypotheſin de conſervarum propagatione obſervationes, libellum huncce ad lucem producent

Generis fucorum et conſervarum idonea diſtinctio inter deſiderata adhuc manet utpote ſine diſcrimine utrumque genus alterius characterem nonnunquam affectare et perſonam induere videtur Tranſverſa enim ſepta, articuli, et tenuitas fabricæ filiformis obvium conſervis diſtinctionis characte-

rem

† [illegible] plantarum generum [illegible], fructibus [illegible] [illegible] characteres [illegible] per papillulas e vertice [illegible] [illegible] ſemina.

* Gært. de Fruct. Introduct. p. 19 ‡ Gært. de Fruct. p. 16

† [illegible] propagari [illegible] eſt affirmare Gærtnerus [illegible] habeat propagationis [illegible] haud raro plurima [illegible] intermedio, more proliferum promunt, [illegible]

rem videntur imponere Quaſdam tamen conſervarum articulis deſtitutas notant botanici, † dum ſucorum nonnullos ſeptis inſtructos, cernimus Genus ulva tenebras haſce nequicquam diſcutit, quod ſcilicet naturam et diſtinctiones ſuas cum utroque genere participat. ULVA capillaris Cl Hudſoni veſiculis extremos ſuos ramulos haud rarò inſtructa eſt, in quibus ſemina pyriformia aut capſulæ, colore ſuo haud aliis plantæ partibus diſſimilia, aſpiciantur. Hinc in fucorum genere adſcribi poſſit ULVA articulata, conſervarum fabricæ apprimè propinqua eſt dum FUCUS FILUM diaphragmatum ſeriem exhibet, quæ illum ad hoc genus proximum annumerandum deſignant FUCUS quidem incurvus in ſe videtur diſtinctiones utriuſque generis continere pinnulæ enim in recenti plantâ oppoſito lumine examinatæ, ſeptorum ſeries frequentèr produnt, quæ in aliis frondis partibus nuſquam videnda ſunt In foliis FUCI ſiliquoſi inflatis, diaphragmata etiam tactu percipi poſſint

Complures dudum animadverterunt Naturam à ſimplicioribus plantarum elementis, ad implicatiorem et perfectiorem earundem ſtructuram, arctâ quaſi catenâ pedetentìm progreſſam eſſe. Eandem verò ſententiam accuratiore forſan ingenio ſcriptor[c] aptiſſime illuſtrat, qui Regni Naturalis primordia vix et ne vix quidem ſecerni notans, non in ſcalam et ſeriem continuata eſſe, ſed in rete cohærere Naturæ opera, aſſirmat Ne plantas haſce hoc modulo metiamur, quæ naturalium ordinum primæ[14] et ſimpliciores cenſendæ ſunt id pro certo ſtatuamus, nempè ut ulvæ, fuci, et conſervæ, in præſenti haud inter ſe certis fixiſque notis decernantur, et ut quibuſdam characteris proprietatibus unicuique convenientibus nonnunquam participant *

Gærtnerus,[f] ullam eſſe conſervarum generi per ſemina propagationem, quæ quidem ſucorum nonnullis quodammodo attribuit, omnino negat aſſeritque porrò quaſdam harum plantarum ſpecies lateralibus ſolùm filamentis propagari, quæ per intumeſcentiam ſubſtantiæ ſuæ in globulos converſa, et à ramulis ſponte decidentia, fiunt tandem vice ſuâ prolifera, "et dum ex altera parte ſcopulis agglutinantur, ex altera, novum trudunt articulum "[15] Generis tamen iſtius numeroſiſſimi permultæ plantæ proculdubio, quæ globulos minutos copioſè producunt, in quibus (quantulicumque ſint) plurima opaca granula vel ſemina quibuſdam anni temporibus, aſpiciantur CONFERVAM ille corallinoidem exemplum hypotheſi ſuæ maximè repugnans, malis avibus ſepoſuit hæc enim conferva fabricæ eſt

[illegible] ... Hæc ſubiola [illegible]
[illegible]

FUCI [illegible] et ULVA [illegible] ... in SYSTEMA NATURÆ introductis videmus, [illegible] ... Hill Fucor p 1,5 No [illegible]

† C rivularis, C fontinalis &c Fl Scot [illegible] Donati

14 "[illegible] omnium imperfectiſſimæ Byſſi et Conferva, in quibus Natura primordium inſtituiſſe videtur" Conf Hill Fucor p 3

* ULVAM articulatam cum Fuco [illegible] et CONFERVAM fiſtuloſam Dillenii, t 6 f 39 (i e C tubuloſam Hudſoni) cum [illegible] Linnæi conjunctim videmus ULVA conferv[oi]de, Sp Pl 163

f Cert de Fruct p 16

15 Annon ſuſpicari licet, quod Gærtnerus in opinionem Adanſoni, quoad conſervæ propagationem, temere nimis inciderit "On peut dire que dans la Conferve [illegible] ... Adanſon Fam Plant p 1 pag 30.

tam ſimplicis ut pellucido tubulo ſimilem ſe exhibeat, liquore tandem coccineo rubentem. Hujuſce plantæ ita ſe habentis, circa articulos (ut ait rectiſſimè Lightfootius) verrucularum ſubfuſcarum congeries rarò admodùm aſpicitur Hæ verruculæ microſcopio ſubjectæ, atro-purpurea ſemina vel grana conoidea amplecti videbuntur Si planta in hoc ſtatu albâ circum implicatur chartâ, liquorem ſuum coccineum ſtatim ejiciet, relictâ ſolùm in chartam pellucidâ quâdam cuticulâ, granulis circa articulos exceptis, opacitatem ſuam et ſoliditatem aliis plantæ partibus prorsùs diſſimilem, retinentibus Quandoquidem igitur hæcce granula ab internâ confervæ ſubſtantiâ tam latè diſcedunt, veriſimile eſt ea, ex miſcelâ fluidorum vel ſecretione, a quâ ſeminum originem pendere cenſet Gærtnerus, formata eſſe et nequaquam ex maternâ medullâ, quæ ſola, ut ſtatuit auctor materiam pro gemmis ſuppeditat [16] Sed ut res paucis abſolvatur, fluidarum partium ſecretione novum corpus organicum,[s] pericarpia ſcilicet aut ſemina generata eſſe Si igitur ſecundum auctoris hujuſce ratiocinandi modum, granula, quæ in perfectioribus fucis continentur, vera credenda ſunt ſemina; ab exemplo ſupradeſcripto et quamplurimis aliis conſimilibus liquebit, quòd confervæ etiam modo haud diſpari propagentur

Hæc probabilior opinio eſt, eo quòd plantarum harum initia minutiſſima ſunt, et quòd ad læviſſimas ſuperficies, fucorum etiam ad pinnulas capillares ſeipſis minimè ampliores, hæ ſolent adhærere. In his tamen nidulum aliquem protecturum ineſſe, ubi granula hæcce ſeminalia decidentia, tutò recipiantur neceſſe eſt et foveantur Nec animo facile eſt concipere, quomodo ſecundum Gærtneri opinionem propagandi modus ad finem ſuam perduci poſſit, utpote harum confervarum ramuli nec minus capillares ſunt quam iſtorum ramulorum pinnulæ è quibus enaſcuntur, adeò ut haud veriſimile videatur articulatum confervæ globulum tam ſubitò ſe tali ſubſtantiæ adjungere, et tenacitate æſtûs maris violentiam perlaturâ adhærere Dum facilè admittatur hos globulos ‡ à medullâ plantæ formatos eſſe, pro conceſſo ſumendum eſt tamen, illas confervarum ſpecies, quæ corpuſcula ſeminalia gerunt in globulis ſupradictis, ſummam per totum propagationis modum habere affinitatem cum fucis perfectioribus et quandoquidem his nulla floreſcentiæ apertiora ſigna edant, veriſimillimum eſt eas etiam fructificationem ſuam, à vi ſimplici ſibi ipſis inſitâ, principiis iſtis quibus opinio de ſexuum diſtinctione pendet prorsùs diversâ, illis tamen ipſis æquipollente, derivare

[16] "Quæ, inter medullam, ut *partis identicæ* medullæ interit, dum contra ſeminis medulla, non poſſit non eſſe noviſſima et a matre ſua *diſtincta*" Gært de Fruct p 9

[s] Gært de Fruct p 6

‡ Hi globuli ante fructificationem ſuam nonnunquam ad veſiculas tum propè accedunt, ut fecerint ab his et internoſci vix poſſint Vid Not 7

ERRATA

Page 1 Line 1	Not	1	Line	6	— Bullard *read* Bullard.
		7		13	— *read* ſub punctis, &c
		15		6,	— un *read* une
Same Line last	Page	6	Line ult		— fabricæ filiformis *lege* fabricæ capillaris
	Note	13	Line	3	— complanatâ *lege* complanatæ
Line vehe deſcripto				6	— ſuperficei *lege* ſuperficies

FUCUS vesiculosus.

CHAR. GEN. FUCUS—*Globuli* carpomorphi, vel *semina* graniformia sub punctis perforatis latentia. *Syst. Nat. Edit. Gmel.*

FUCUS. fronde plana costata integra vesiculosa: tuberculis seminiferis apicibus tumidis, inclusis.

FUCUS. fronde plana dichotoma costata integerrima, vesiculis axillaribus geminis: terminalibus tuberculatis. *Linn. Syst. Nat. Edit. Gmel. p.* 1380.—*Gmel. Hist. Fucor. p.* 60.—*Fl. Scot.* 904.

FUCUS vesiculosus jam nascens è basi glutinosâ saxis et conchis firmitèr adnixâ exoritur, folio simplici et perexiguo consistens. Maturescentis pars frondis foliacea æstûs vi haud rarò obteritur, dum nervus mediam longitudinem percurrens stipitem solidum et subcylindricum plerumquè æmulatur, nudus omninò a basi suâ sesquipedalis et ultra Frons interea modo dichotomo multùm pergit augescere, ramis numerosis supernè conferta, et vesiculis aeriferis ut fluctibus innataret instructa mox apices substantiâ tenaci et gelatinosâ distensi terminantur, dum plurima tubercula interiori eorundem superficei infixa apparent * Maturâ ætate gelatinosa substantia muciflua esse incipit, et armato oculo filamentis capillaribus sine ordine reticulatis implicari videtur. Nunc per exteriorem apicis cutem punctura seu foramina aliqua perrumpunt, et nunc etiam magis conspicienda sunt tubercula, fortasse ob gelatinosi humoris jam in mucum transeuntis dissolutionem Punctura quævis superiori unius alicujus tuberculi parte subtenditur, et proculdubiò transitus habeatur per quem semina transmittantur

Fuci maturati jam et penè marcescentis inspecto apice, capillaria illa et reticulata filamenta pulvere quodam aspergi invenichantur, plantarum farinæ haud absimili Ut causa hujusce plenius investigaretur, granula in tuberculo inclusa tenui quodam instrumento sub microscopio cautè submovebantur, cùm unum horum explosione statim frangebatur, vi elasticâ pulverulenta corpuscula dispergens, iflorum adinstar quæ à Lycoperdo dimissa sunt Extrema objectorum tenuitas facultatem nobis ultra investigandi invisit nec dedit hoc experimentum licentiam pro certo asserendi atomos hos seminibus fuisse analogos, utpote quæ granulorum putrescentiâ et dissolutione originem suam ducere forsan potuissent Nec tamen quod priori favet opinioni tacendum est, nempè pulverem à Lycoperdo bovista displosum, haud ullis calculis supputandum, ab acutissimi ingenii viro, Lightfootio scilicet, illius plantæ semina esse duci Si igitur minuta ista granula, tuberculis nidulantia, (quæ in quibusdam fucorum speciebus admodùm perpauca sunt) capsula demùm, atomisque illa ipsa, seminalibus repleta, evaderent, ratio forsan magis in propatulo esset, cur hæ plantæ tenuissimis alteræ alterius marginibus aque ac durissimis lævissimisque corporibus accrescerent.

* Vid [illegible]

Nervus vitæ viribus præcipuè inſtructus eſt, namque ab illo, foliaceâ abruptâ parte, nova frons ſtatim incipit pullulare Multùm variat hæc ſpecies Gmelinus rectiſſimè obſervavit characterem ſpecificum conſiſtere in bullis ſuis et in verrucis fructiferis terminalibus: cauſaſque merè accidentales eſſe, cur illa modo inflatam, modo divaricatam, vel alitèr conſpiciendam ſe præbeat.

Color olivaceo-vel-luteo-viret.

FUCUS vesiculosus.

Bladder Fucus or Sea Oak.

SPECIFIC CHAR. Frond * flat ribbed entire vesicular: with tubercles containing seeds, included in distended summits.

FUCUS. fronde plana dichotoma costata integerrima, vesiculis axillaribus geminis: terminalibus tuberculatis. *Linn. Syst. Nat. Edit. Gmel. p* 1380.—*Gmel. Hist. Fucor. p.* 60.—*Fl. Scot p.* 904.

This fucus, in its earliest state, consists of a single leaf, and grows on the surfaces of rocks and shells. Its base appears like a thin glutinous substance, strongly adhesive to the body on which it is fixed. In the further stages of its growth, the foliaceous part is frequently worn away by the force of the surge, and the middle rib or nerve acquires all the appearance of a solid stem, being entirely bare and nearly cylindrical, for the space of half a foot or more above the base The frond in the mean time continues increasing in a dichotomous mode of growth, to a considerable extent, furnished with numerous branches. It has also air-bladders for the purpose of buoyancy, and at length terminates with distended summits, containing a tough gelatinous mass, around which a number of callous globular tubercles are fixed to the interior side (as represented in the largest horizontal section), each of which is furnished with many seeds. When the plant arrives at maturity, the mass becomes mucilaginous, and by the help of glasses appears to be enveloped with fine capillary vessels, irregularly reticulated At this period, several small punctures or perforations are frequently visible on the surface of the summit, and the tubercles now have a more prominent appearance This latter circumstance is in some measure owing to the dissolved state of the gelatinous substance. Each puncture is subtended by the upper part of its respective tubercle, and is no doubt the channel, through which the sources of propagation are dispersed

A specimen of this fucus in its last stage of maturity and approaching to decay, being examined; the capillary vessels in the summit were found to be aspersed with a substance not unlike the farina of a plant In order to discover the cause of this appearance, a single tubercle detached from the summit, was placed under the microscope, and cautiously pressed with a fine instrument, when one of the minute grains contained within it was seen to explode, and with an elastic force seemed to discharge a pulverized substance, somewhat similar to the particles which proceed from a Lycoperdon The extreme minuteness of the objects defeated all attempts to prosecute the experiment And we are not authorized upon an accidental appearance to assert that the particles in question were analogous to

* The originally word *Frons* has been frequently introduced in the preceding trifol as we have not in English one uncontracted, expressive of the meaning, which Linnæus has affixed to it We find it explained, in the admirable work which Priestley and Maurice have published upon the Language of BOTANY—*as a kind of trunk or stem, which has the branch united with the leaf and frequently with the fructification* In the translation of the specific characters into English, the term *frond* is substituted under the direction of the above-mentioned author

seeds

† See Explanation

ſeeds: ſince they might poſſibly be aſcribed to the decayed and putreſcent ſtate of thoſe granulated bodies And yet in favour of the former opinion, it may not appear improper to obſerve, that the powder proceeding from the LYCOPERDON boviſta, and which exceeds all calculation, is, according to the late ingenious Mr Lightfoot, conſidered as the ſeeds of that plant If then theſe minute grains, which in ſome ſpecies of marine plants are but few in number, ſhould prove at laſt not to be the actual ſeeds, but only pericarps containing the ſeminal atoms, we may be enabled more readily to account for the promiſcuous growth of thoſe plants on the fineſt edges of each other, as well as on the ſmootheſt ſurfaces of hard extraneous bodies ——The central nerve ſeems indued with an active vital principle, from whence, upon any fracture, new leaves ſhoot forth. There are ſeveral varieties of this ſpecies. One of them is repreſented in the figure, to which the CONFERVA fucicola is attached. They have been conſidered by ſome as diſtinct ſpecies, under the trivial names—F. divaricatus, F. inflatus, &c Gmelin very properly brings them back to one ſpecific character.

Colour varies from an olive to a muddy ſordid green.

FUCUS serratus.

FUCUS. fronde plana dichotoma coſtata ſerrato-dentata, tuberculis ſeminiferis ad apices terminata.

FUCUS. fronde plana dichotoma coſtata ſerrato-dentata, veſiculis terminalibus tuberculoſis. *Linn Syſt Nat. Edit. Gmel. p.* 1380

Alga latifolia major dentata. *Morif. Hiſt. p.* 648. *S.* 15. *T.* 9. *F.* 1.—*Gmel Hiſt Fucor. p* 57.—*Fl. Scot p.* 902

Hic fucus frondis margine ſerratâ facile dignoſcatur Origine ſuî et creſcendi ratione non multùm à F. veſiculoſo diſtat Nervus mediam frondem percurrens, ab eâdem cauſâ cauliformis fit, verùm haud iſdem vitæ viribus, cùm foliaceæ ejus partes abrumpantur, inſtructus Apices ſolidi ſunt et tenaces nec ullo modo inflati, ut in F veſiculoſo, et lanatis iſtis reticulatiſque filamentis carent Pericarpia, (tubercula ſc') ferè ovata ſunt, et interiori apicis ſuperficiei vix adhærent,* matureſcenti tamen plantâ eorum nonnulla minutis perforationibus arctè ſuffixa inveniantur Hæcce calloſa eſſe videntur, et grana aliqua continere globoſa, numero pauciora, et minùs opaca quàm iſta quæ ſuprà fuerunt deſcripta *In omnibus*, hujuſce fuci et veſiculoſi, quæ examini noſtro ſubjiciebantur, ſpeciminibus, medius nervus ſemper in iſtâ parte terminabatur ubi tubercula emergere obſervata ſunt, ramorum verò infœcundorum ad ſummas extremitates protendebatur Color primùm olivaceo-flaveſcens ſæpe ſubfuſcatur

Cùm hæ utræque plantæ ad magnitudinem creſcant haud exiguam, fatiùs ſit ramorum ſuorum partem tantummodò, quàm diminutam utriuſque figuram integrè referre cùm tabulæ noſtræ præcipua ſit intentio, propagationis hujuſce generis modum in quam plurimis obtinentem, illuſtrare

Gmelinus, (in Hiſt Fucor) de Fuco ſerrato ita loquitur "*Veſiculas aeriferas* nullas habet, nullo unquam tempore *Tubercula* ſeminalia nunc crebrius ad frondium extremitates congregata ſunt, nunc per omnem earum ſuperficiem undulantia ſubinde obſervantur, utraque nuda, *abſque veſiculis*, lana repleta" Fucus ceranoides eſt in eodem ferè ſtatu hos tamen cum *veſiculoſis* conſociatos vidimus ———Fucorum denique ordo *Veſiculoſos* continens, definitione ludit ancipiti, quæ modo ad *tubercula ipſa*, ut in Fuco ſerrato, modo ad *apices tumidos* et *bipartitos*, ut in F canaliculato, modo ad *veſiculas* propriè ſic dictas, ut in F. veſiculoſo, frondem inflantes, attinet

* Vid I . h

FUCUS ſerratus.

Serrated Fucus or Sea Wrack.

SPECIFIC CHAR. FUCUS frond flat dichotomous ribbed ſerrate-toothed: with tubercles at the ſummits containing ſeeds

FUCUS fronde plana dichotoma coſtata ſerrato-dentata, veſiculis terminalibus tuberculoſis *Linn. Syſt. Nat. Edit Gmel p* 1380.

Alga latifolia major dentata. *Moriſ. Hiſt. p.* 648 *S* 15. *T.* 9. *F.* 1.—*Fl. Scot p.* 902.—*Gmel Hiſt. Fucor. p* 57

The ſerratures on the margin of this fucus render it very diſtinct In its origin and mode of growth, it hardly differs from the F veſiculoſus. The nerve in the centre of the frond, from the ſame cauſe frequently acquires the ſtem-like form, obſervable in the latter, but does not however appear to poſſeſs its prolific tendency, when the foliaceous part is broken off The ſummits in their ripened ſtate are tough, ſolid, and not inflated, neither do they contain any woolly ſubſtance. The tubercles or pericarps are nearly of an ovate form and at firſt ſeem ſcarcely attached to the ſides of the ſummit,* although in maturity ſeveral of them are found cloſely united to minute perforations in the exterior ſurface of the fucus Theſe veſſels conſiſt of a callous ſubſtance, not much darker than that in which they are imbedded, and contain ſeveral round grains, which are neither ſo opaque, or ſo numerous as thoſe before deſcribed The middle nerve in this, as well as in the Fucus veſiculoſus, appeared to terminate preciſely at the part where the fructifications commence but it reached the extremity of the barren ſummits —The colour varies through ſeveral ſhades of olive and yellowiſh-brown

As both of the above plants grow to a very extenſive ſize, it was judged better to delineate a part of their reſpective branches, than a reduced figure of each eſpecially as the deſign of this plate is merely to illuſtrate the mode of propagation, obſervable in many of this genus

Gmelin, in his deſcription of this fucus, obſerves, that it is at all times deſtitute of veſicles or air-bladders, and that the tubercles containing the ſeeds are imbedded in the ſurface of the plant, and *not in bladders* —The Fucus ceranoides is membranaceous, and never has been found with diſtended ſummit —Yet both theſe, are placed in the order which contains the *veſiculoſi* fucales The character of this diviſion ſeems to reſt on an ambiguous definition, which at one time relates to the *tubercles only* as in the F ſerratus—at another time to the *diſtended ſummits*, as in the F canaliculatus—and again to the *veſicles* or air-bladders properly ſo called, and which occur in the frond of the F. veſiculoſus

FUCUS canaliculatus.

FUCUS. fronde dichotoma integerrima canaliculata lineari: tuberculis feminiferis, apicibus tumidis, inclusis.

FUCUS. fronde plana dichotoma integerrima canaliculata lineari, vesiculis tuberculatis bipartitis obtusis. *Linn. Syst. Nat. Edit. Gmel. p.* 1381.—*Fl Scot. p.* 917.—*Gmel. Hist. Fucor. p.* 73 *tab.* 1. *A f.* 2.—*Fl. dan. t.* 214.

Canalis seu sulcus per alterum cujusque rami latus in longum ductus, hunc fucum designat Frons à duabus ad sex uncias fastigiatim porrigitur, et insistit basi densi et coriaceâ, è quâ stipites aliqui simul procedunt, horum quisque ramos in dichotomâ serie producit, qui ipsi suâ vice subdividuntur, et bifidis apicibus haud rarò terminantur Fructificatio, distenso frondis apice nidulantibus, globosis et tenacibus absolvitur tuberculis In quibusdam horum ad maturitatem perductis, quiddam punctulæ adinstar apicis foramini accuratè adaptatum nonnunquam cernendum est Hoc idcò inesse videtur, ut seminum dispersio facilius reddatur Unumquodque tuberculum, grana pauca modò oblongo-ovata, modo ovata, colore castaneo vel olivaceo, continet Hic fucus primùm quidem olivaceo-flavescens per desiccationem nigrescit demùm

FUCUS canaliculatus.

Furrowed Fucus.

Specific Char. FUCUS. frond dichotomous very entire, channelled, linear with tubercles containing seeds, included in the distended summits

FUCUS fronde plana dichotoma integerrima canaliculata lineari, vesiculis tuberculatis bipartitis obtusis. *Linn Syst. Nat Edit. Gmel p* 1381.—*Fl Scot. p.* 917 —*Gmel. Hist. Fucor p* 73. *tab.* 1 *A f* 2.—*Fl dan t* 214

The distinguishing character of this fucus, is a channel or furrow, passing through every branch on one side, in a longitudinal direction The frond is from two to six inches in extent, and has a compact coriaceous base, from whence several branches suddenly originate, each one producing stems, in a dichotomous series, which in their turn also are subdivided, and frequently terminate with bifid summits The plant has in general a fastigiate appearance

The fructification is fixed in the interior part of the swollen summit, consisting of tough elastic globular tubercles In some of these when perfectly mature, an appearance like a puncture, closely fitted to the perforation in the surface of the frond, may sometimes be observed, which seems designed to facilitate the dispersion of the seeds

Each tubercle contains several grains, either more or less in number These latter, notwithstanding their minuteness, vary as to their form, which is sometimes more or less ovate The colour of the grains is a bright chesnut, and on some shores, a light olive green

The fucus, when fresh from the sea, has a yellowish hue, which afterwards turns to a black

EXPL. TAB.

Fig. 1 Fucus veſiculoſus è conchâ enaſcens, et nervum, mediam longitudinem percurrentem, parte foliaceâ ſuborbatum exhibens.

2 Pars frondis matureſcentis apicibus diſtenſis, naturali magnitudine.

3. Sectiones tranſverſales Harum una per apicis medium junioris, naturali magnitudine altera, ætate paulo provectioris, ad augmentum Inhâc conſpiciuntur tuberculi, cortici apicis interiori arctè adhærentes

4 Apicis maturi abſciſſa de cute portio, perforationem magis auctam exhibens.

5. Tuberculum ſeorſum, naturali magnitudine, et granum ſinapis haud exuperans idem etiam velutì ſe ſub microſcopio prodebat

6. Pars ejuſdem, granula fuſca præſentans, maximè aucta.

7 Frondis portiuncula penicillos referens, a Reaumurio maſculos flores denominatos

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a Pars frondis Fuci ſerrati,* naturali magnitudine

b Segmentum apicis tranſverſum tubercula ſeminifera exhibens auctum

* Lineolæ tranſverſæ in imo fere ramulo, incuriâ Pictoris leviuſculâ ſunt effectæ

A Pars frondis Fuci canaliculati naturali magnitudine

B Apicis maturi ſectio tranſverſalis cum tuberculis ſeminiferis—aucta

C. Tuberculum ſeorſum, tum naturali magnitudine, tum maximè auctum.

D Semina tuberculo incluſa.

EXPLANATION OF THE FIGURES.

Fig 1 The *Fucus* veſiculoſus growing on a ſhell, with the nerve pervading the frond nearly ſtripped of its foliaceous part

2 Part of the frond in maturity, with diſtended ſummits, in its natural ſize

3 Tranſverſe ſections The firſt taken from a ſummit in its premature ſtate, and natural ſize the latter, from one approaching to maturity, with the tubercles fixed in the interior part

4 A ſmall part of the ſummit magnified, preſenting the perforation through which the ſeeds are diſperſed

5. A tubercle in its natural ſize, and *ſcarcely* larger than a grain of muſtard The ſame alſo as it appeared when highly magnified

6 Part of the ſame containing the ſeeds or grains

7 A ſmall part of the frond magnified, repreſenting the fine hairs, which were conſidered as the male flowers by Reaumur

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a A branch of the Fucus ſerratus * in its natural ſize

b A tranſverſe ſection with the tubercles containing the ſeeds. magnified

* The ſmall tranſverſe lines on the lower part of the branch, have been added, through a light miſtake of the Colourift

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A Part of the Fucus canaliculatus in its natural ſize

B A tranſverſe ſection of a ſummit in maturity, with the tubercular pericarps—magnified

C A ſingle tubercle in its natural ſize, and as it appeared when magnified.

D. Part of the tubercle with the ſeeds

FUCUS purpuraicens.

FUCUS. fronde filiformi ramoſiſſima, ramulis confertis: pericarpiis ſubgloboſis innatis.

FUCUS. fronde filiformi ramoſiſſima, ramulis confertis ſetaceis fructificationibus globoſis innatis. *Hudſ. Fl. Ang. Edit.* 2^da^ *p.* 589

Hujuſce fuci frons ramoſiſſima eſt, cujus longitudo à ſex ad decem uncias extenditur Stipes ad baſin obtusè terminatur, et radiculas nonnullas inverſas plerumquè demittit, quibus quaſi materiam cui adhæret, conatur firmiùs amplecti. Nec rami, nec folia certo ordine emittuntur. Hæc, modò brevia ſunt et ſubulata, ut in icone referuntur, modò tenuia et filiformia Planta hæcce à mari nuperè deſumpta ſæpiſſimè olivaceo-viret cauſis forſan temerè accidentibus purpuraſcit. Sub his varietatibus dignoſcatur tamen globulis innatis, qui foliorum expanſione, ut videtur, formati ſunt.

In nonnullis ſpecimnis noſtri foliis, globuli vix cernendi erant, in aliis, integrè formati, in plurimis, gibboſi et parùm prominentes Horum tamen omnes ſub microſcopio aucti nihil videbantur niſi ſubdiaphanam et calloſam ſubſtantiam continere Inſpectis quibuſdam ſpecimnibus, Autumno ineunte, opaci inveniebantur globuli quam plurimis granulis ovalibus fuſcioribus abundantes

FUCUS purpuraſcens.

Purpliſh Fucus.

Specific Char. FUCUS frond filiform greatly branched, branches crowded: ſeed-veſſels ſomewhat globular, formed within the ſubſtance of the leaves.

FUCUS. fronde filiformi ramoſiſſima, ramulis confertis ſetaceis fructificationibus globoſis innatis. *Hudſ. Fl Ang. Edit.* 2^da^ *p* 589

The frond of this fucus is greatly branched, and meaſures from ſix to ten inches or more in length The main ſtem terminates obtuſely at the baſe, from whence it throws out ſeveral inverted radicles, as if for the purpoſe of claſping more firmly the object to which it is fixed The branches as well as the leaves do not ſeem to grow in any regular order The latter are ſometimes ſhort and ſubulate, as repreſented in the figure, at other times, they are very ſlender and filiform The plant, when freſh from the ſea, has in general an olive-green colour it may probably acquire its purple hue from accidental cauſes Under theſe variable circumſtances, it may eaſily be diſcovered by the ſmall globular pericarps which are formed in the very ſubſtance of the leaves themſelves

In the ſpecimen here repreſented, ſome of theſe globules were ſcarcely apparent, while others were completely formed, and many appeared to be gibbous or prominent They were found however to contain nothing more than a clear callous ſubſtance Upon examining ſome ſpecimens of the ſame plant, at a later period, an innumerable quantity of dark coloured oval grains or ſeeds were diſcover

F U C U S concatenatus.

FUCUS. fronde ſiliformi ſubdichotoma ramoſiſſima veſiculoſa; veſiculis monili-formibus innatis.

FUCUS. fronde filiformi ramoſiſſima; ramulis dichotomis, veſiculis moniliformibus diſtantibus innatis fol. ſubulatis. *Linn. Syſt. Nat Edit.* 14. *p.* 968?—*Fl. Scot. p* 923.

Frons ſeſquipedalis et ultrà è baſi tenaci et incraſſatâ exoritur, nodis tribus vel quatuor nigris ſupernè circumdatâ, unde rami virgultorum more linearium egerminant, foliis tereti-ſubulatis quaquaverſum obſiti Folia, plantâ matureſcente, pro parte ratâ ramuli evadunt, ramuſculorum ſeriem invicem emiſſuri. Horum fere omnes, de formâ lineari ſenſim decedentes, in veſiculos oblongos et ſeriatim-concatenatos dilatantur, ſiliquas æmulantes, ab his tamen alieniſſimos, utpote ſubſtantiâ gelatinosâ ſolummodo confertos ——Granula plurima undequaque ſub ramorum cute, verrucularum adinſtar congeſta conſpiciuntur. Hæcce microſcopio aucta orbiculatim inſita apparent, minutâ in centro parte pellucidâ, provectâ verò ætate paululum prominentia Tum ſpatium granulis incluſum diminutam puncturæ formam cepiſſe videbitur Nonne hoc, ut in nonnullis auſim affirmare, tranſitus ſit foramen unde grana exiverint?—— Adoleſcentiores rami perquam tenues et filiformes nonnunquam evadunt matureſcentes, et in veſiculos concatenatos abeuntes, ſpinulis perbrevibus et inermibus, extra, ſuffulti intùs, ex ſolido ſubcavati aſpiciuntur ——Hicce Fuco concatenato Lightfootii videtur eſſe haud abſimilis at mihi ſcrupulus reſtat, an idem cum illo ſit, quem Linneus ſub *eodem* nomine deſcripſit Quoad colorem, ex olivaceo-ſubfuſcatur, et demùm nigreſcit

F U C U S concatenatus.
Necklace Fucus.

Specific Char. FUCUS. frond filiform, nearly dichotomous, much branched veſicular. veſicles necklace-form innate.

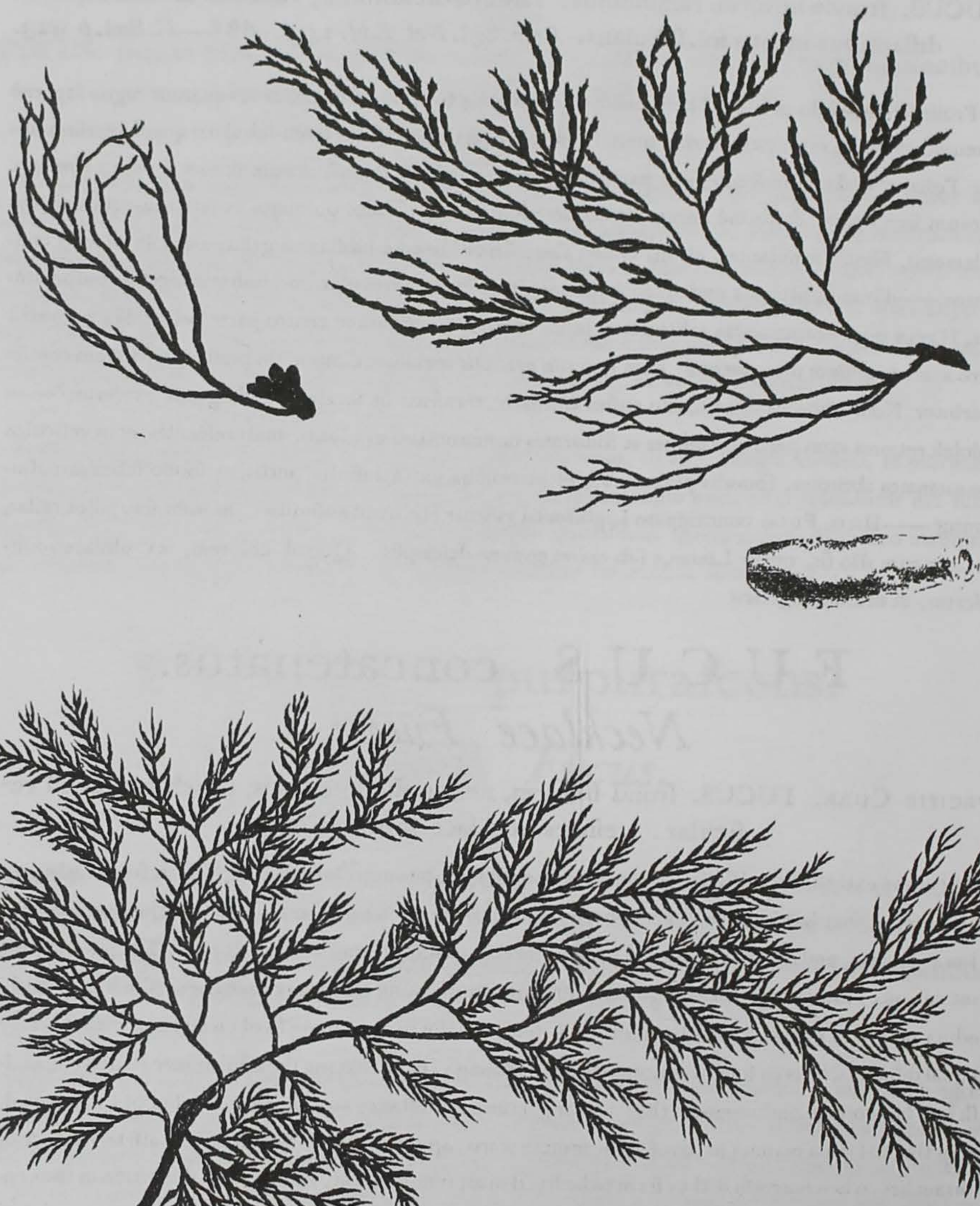
The frond extends to half a foot or more in length from a tough clubbed baſe, which frequently produces three or four hard obtuſe excreſcencies, from the ſides of which the branches originate in the form of linear ſhoots, and theſe throw out in various directions ſhort round ſubulate leaves The latter, as the plant advances towards maturity, extend in proportion, forming ſecondary branches, which frequently produce others Theſe branches ſoon loſe their former habit by becoming ſwollen and contricted nearly at equal diſtances, ſo as to form a concatenation of oblong veſicles, having the appearance of pods or ſeed-veſſels They contain nothing more than a clear gelatinous ſubſtance ——A great number of ſeeds crowded together in ſuch a manner as to reſemble minute warts, appear in every direction beneath the ſurface of the branches, when magnified, they ſeem to be fixed in an annular form, leaving a ſmall portion in the centre ſomewhat tranſparent In maturity they become rather prominent, while the central ſpace is reduced to a kind of puncture, which probably may be deſigned for the ſame purpoſe as thoſe that have been already noticed in the former fucuſes ——The branches when young are ſometimes very ſlender and filiform in their mature and diſtended ſtate they are furniſhed with very ſhort and tender ſpinules, and when diſſected are found to be in part hollow ——This fucus and its deſcription ſeem to agree with the F concatenatus of Lightfoot Whether it may be the fucus which Linneus has deſcribed under that name, remains a more doubtful circumſtance The colour of this fucus varies from a darkiſh olive to a black

EXPL. TAB.

Fig. ſuperior Fucus, naturali magnitudine. In proximo, [illegible] ramuli veſiculoſi granula exhibens aucta

EXPLANATION OF THE FIGURES

The upper figure repreſents the fucus in its natural ſize. Near it is a part of a veſicular branch [illegible]



FUCUS obtusus.

FUCUS. fronde filiformi ramosa duplicato-pinnata, lacinus obtusis suboppositis: seminibus oblongo-ovatis laciniarum apicibus, insitis.

FUCUS. fronde cartilaginea filiformi compressa subduplicato-pinnata, laciniis obovatis apice tuberculatis. *Hudſ Edit.* 2^da *p* 586.

Hujusce fuci frons duplicato-pinnata est, et longitudine tri-vel-quincuncialis Stipites incerto ferè ordine à basi glutinosâ procedunt, ramis lateralibus conferti, e quibus ramuli enascuntur, qui ipsi, in lacinias obtusas dissecti sunt Hæ laciniæ æquè ac ramuli longitudine se pedetentim contrahunt versus frondis extremitates, et in alterno vel dichotomo se trudunt modo

Hæc species non rarò simplicior evadit, ad marginem Fuci Fili, vel ad alias plantas se adjungens Tum frondis stipes simplex est et unicus, sescuncialis, ramusculos protrudens laterales perpaucos sub-dichotomos

Plantarum magis luxuriantium stipites, ad crassitudinem sili emporetici crescunt, ichthyocollæ colorem admodum referentes Cuticula vero qua ramulos vestit et lacinias amœnissimè rubra Substantia est tenera et recens planta vi quâdam elasticâ est prædita Quanquam magnitudine incertâ est, dignoscatur tamen hic fucus ex obtusis laciniarum apicibus, et sæpissimè, ex odore fragranti quem emittit, violarum adinstar

Semina oblongo-ovata interiori laciniarum medullâ infixa aspiciantur, quæ, plantâ matureſcente, formâ atque colore suo, verruculis minutissimis sunt consimillima

---

EXPL. TAB.

F 1 Frons naturali magnitudine

a Pars stipitis, è basi plantæ junioris, exoriens.

b Eadem aucta

c Pars ramuli extrema cum lacinis, granula congesta exhibens, magis aucta

d—e Laciniarum sectiones, cum granulis substantiâ medullam nidulantibus

f Granulorum unum de laciniâ descriptum, seorsum maximè auctum

FUCUS obtuius.

Obtuſe Fucus.

SPECIFIC CHAR. FUCUS. frond filiform branched doubly-pinnate, ſegments obtuſe nearly oppoſite oblong-ovate grains or ſeeds fixed in the ſummits of the ſegments.

FUCUS fronde cartilaginea filiformi compreſſa ſubduplicato-pinnata, lacinius obovatis apice tuberculatis. *Hudſ. Edit.* 2^da^ *p* 586.

The frond of this fucus is doubly-pinnate, and from three to five inches in length The ſtems proceed from a compact glutinous baſe, and are ſubdivided into lateral branches, which produce a third ſeries, conſiſting of the obtuſe ſegments The latter, as well as the branchlets on which they grow, become gradually contracted in length, as they approach the ſummit of the frond and they both ſeem to obſerve rather an alternate or dichotomous mode of growth

This fucus frequently grows in a more ſimple ſtate upon the edge of the FUCUS FILUM, or on other plants The frond only conſiſts of a ſmall ſingle ſtem, an inch and half in length, with a few dichotomous lateral ſhoots

In the more luxuriant plants, the ſtems are as large as common packthread, and reſemble iſinglaſs in colour but the cuticle, which ſurrounds the ſecondary branches and the ſegments, has a beautiful pink colour The interior ſubſtance of the plant is tender . and, when the fucus is freſh, it has a kind of elaſticity It may always be diſtinguiſhed by the obtuſe terminations of the ſegments, and frequently by a powerful perfume which it imparts, not unlike that of violets

The fructification conſiſts of oblong-ovate grains or ſeeds, fixed in the interior part of the ſegments In a ſtate of maturity, they appear like minute opaque warts upon the ſurface

EXPLANATION OF THE FIGURE.

1 The frond in its natural ſize

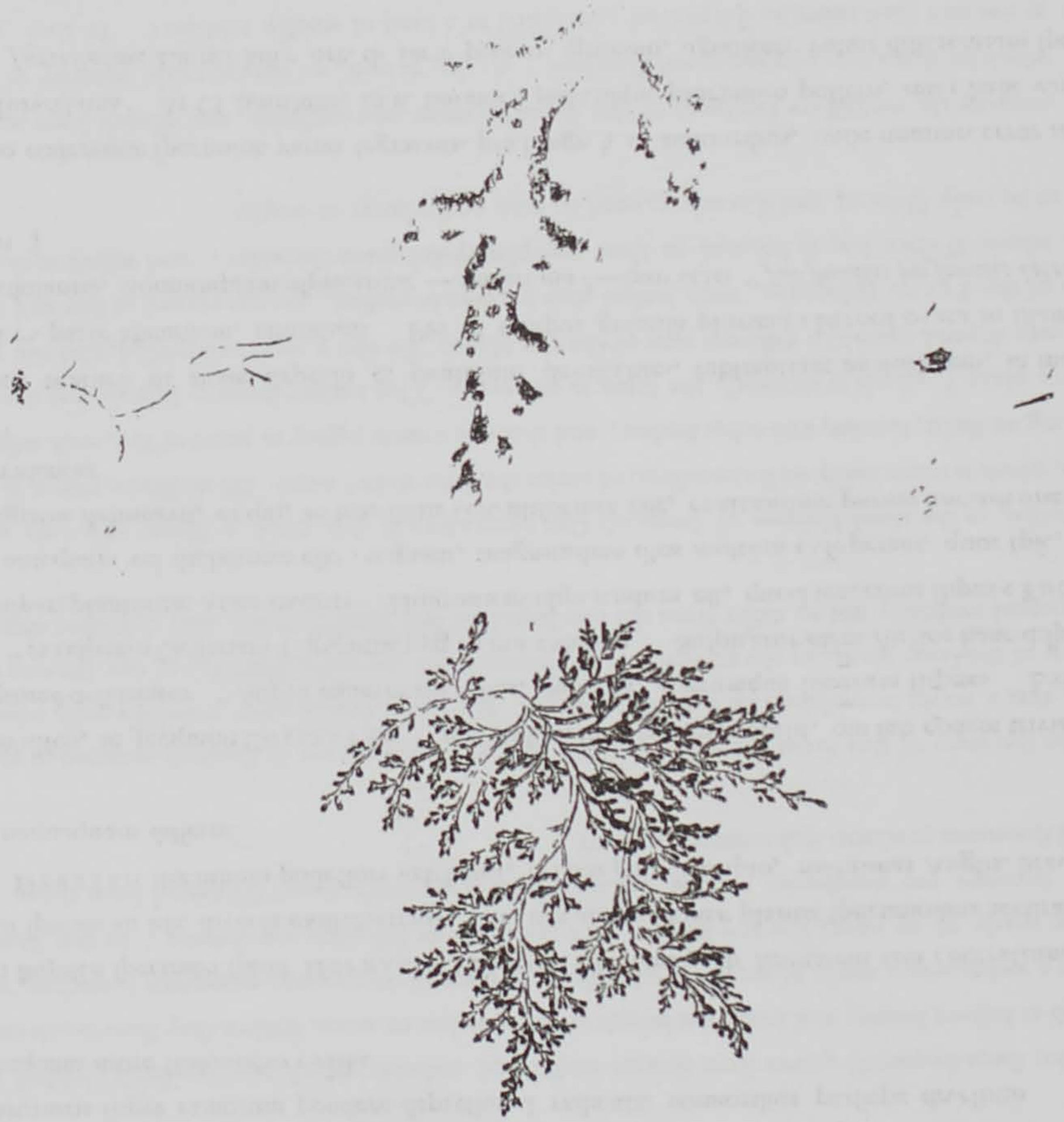
a Part of the ſtem and baſe of a younger plant

b The ſame magnified

c The end of a branch with the ſegments, conſiderably magnified

d—e Parts of the ſegments, with the grains or ſeeds imbedded in the medullary ſubſtance, magnified

f A ſingle gram taken from one of the ſegments, greatly magnified



FUCUS fastigiatus.

FUCUS. frons dichotomus ramofiſſimus teres uniformis faſtigiatus. *Sp. Pl. p.* 1631 *Edit* 2da—*Gmel. Hiſt. Fucor. p.* 106.

Fucus faſtigiatus haud raro nonnullis è radiculis ut plurimùm implicatis exoritur, qui, ſtipites ad longitudinem trium unciarum omninò ſimplices, vel apice obtuſo bifidos producunt. Tum autem ho rum aliqui in ramos multiplices dichotomos, longitudine æquales et verè faſtigiatos aſſurgunt Fron dis maturioris ſtipes ramorum pondere depreſſus à radiculis tenuioribus perſæpe divellitur Frons nonnunquam more ſtolonifero evadit

Fuci hujuſce ſpecimen quod HERBARIO Linneano aſſervatur, ob ſiccitatem tam contractum vide mus, ut ſpecies ab hâc diverſa exiſtimaretur, ſed cum aliis ipſiſſimæ plantæ ſpeciminibus accuratè col latum, HERBARII doctiſſimo poſſeſſori videbatur, à fuco jam deſcripto, maritimas Angliæ oras habi tante, nequaquam differre.

Cl Wulfen, in Jacquinii COLLECTAN * minutiſſimi fuci iconem protulit, qui ſub eodem triviali no mine optimè deſcribitur "Supra cancrorum teſtas, conchas, aliorumque fucorum ſtipites Exilem," inquit, "et reſpecto Oederiani † gigantis pygmæum exhibeo Suſpicatur idem Auctor hanc diſparita tem a diſpari plantarum ætate exoriri Huic autem objiciendum eſt, quod tenerrimi ſtipites Fuci faſ tigiati, antequam vel dichotomi eſſe incipiant, magnitudine illos multùm exſuperant, quos Ipſe, inte grè faſtigiatos delineavit, et qui, in hoc ſtatu verè filiformes eſſe, et altitudine parum unciam unam ex cedere videntur

Apices, maturâ in ætate depreſſi et paululum deliſcentes, ſubſtantiam medullarem, in mucum maximâ ex parte abeuntem, effundunt Per id tempus granula plurima eburnea ovata in filamentis laneis nidulantia, nonnunquam aſpiciantur —An ſemina ?—non vero "*ſub punctis perforatis latentia*," apparent ‡

In uno eodemque ſpecimine variat ſegmentis prælongis § et acutioribus, unde nominis error manet Fucus furcellatus At Cl Smithius, in re botanicâ judicioſque plurimum pollens, inter hanc varieta tem, et *furcellatum* Linnei hiſce oris de facie prorsus ignotum, agnoſcere voluit differentiam ſpecifi cam

* Tom 3 I 14 / † [illegible] Tab 393, quæ procul dubio noſtram refert ‡ Vid Fucor Char [illegible] § Hanc vari etatem primus obſervavit Cl Woodwardius, qui in plantis inveſtigandis non exiguam navavit operam

FUCUS fastigiatus.

Fastigiated Fucus.

SPECIFIC CHAR. FUCUS. frond dichotomous greatly-branched round uniform fastigiate. *Sp. Pl. p.* 1631. *Edit.* 2^da^—*Gmel. Hist. Fucor. p.* 106.

This fucus frequently grows from several implicated radicles, which produce small clubbed stems These at first are simple, and attain the length of three inches or more, before they show much tendency to a dichotomous mode of growth, when some of them strike out into numerous branches, which, being nearly of an equal size and length, give the fucus its fastigiate appearance In this state, the stem becomes too ponderous for the radicles, and is generally found separated from them. The frond sometimes produces stoloniferous runners

The specimen of this fucus preserved in the Linnean HERBARIUM is so much reduced in its dried state, that it might be mistaken for a distinct species, but upon comparing it carefully with other specimens of the same plant, in the presence of the learned and ingenious Possessor of the HERBARIUM, it appeared evidently not to differ from the one found on our English coasts, and described above

Wulfen, in the third Volume of Jacquin's COLLECTANEA,* has given a figure of a very minute fucus, which is remarkably well characterized under the same trivial name He observes, that it is found growing on shells, fucuses, and other bodies, and that it is a mere pigmy in point of size, with respect to Œder's plant, † which is evidently the same as our own This author seems to suspect that the difference may depend upon the different ages of the two plants. To this it must be objected, that the young stems of the Fucus fastigiatus, even before they become branched, greatly exceed in size and extent those which Wulfen has delineated in their completely-fastigiate character, and which in this state seem to be truly filiform, and scarcely exceed an inch and quarter in height

In maturity the medullary substance of this fucus becomes mucilaginous and escapes from the summits, which burst open in a longitudinal direction At this period, an innumerable quantity of white ovate grains may sometimes be discovered enveloped in a kind of woolly substance If these grains are considered as the seeds, they do not appear connected *with any perforation* ‡ *in the summit* and which in this instance would be useless

This fucus has frequently been found to vary in the same specimen with long acuminated segments, § from which circumstance it has been confounded with the F furcellatus of Linnæus but in the opinion of Dr Smith, which may be considered as decisive, the latter remains a distinct species, and at present an entire stranger to the English shores

* [illegible] † Flor. Dan. 993 ‡ See the essential Character of the Genus § The variety spoken of here
[illegible] Mr Woodward, to whose [illegible] the botanical World is much indebted

CONFERVA fucicola.

CONFERVA. filamentis ſimpliciſſimis capillaribus geniculatis breviſſimis confertis.

Hæc minuta admodum conferva eſt, et nunquam deſcripta fuiſſe videtur. Verno tempore, Fuco veſiculoſo vel nodoſo ceſpitoſa adnaſcitur Non amat ſicut aliæ maritimæ plantæ, ullis oblatis corporibus promiſcuè ſe adjungere nunquam enim per ſpatium trium menſium, ſaxis ſubmarinis, conchis aliiſque rejectamentis accreſcens inveniebatur Numeroſis conſtat filamentis vix ad unciæ dimidium longitudine extenſis, ad baſin denſè implexis, et ab illinc quaquaversùm ferè divergentibus Filamenta, ſimplicia, tubuloſa, apicibus obtuſa, et tranſverſa ſepta dilucidè exhibentia ſeparatim pallide-flaveſcentia vel ſubdiaphana apparent. conjunctim ſubfuſciorem et luteo-flaveſcentem referunt colorem Fructificatio adhuc eſt incognita

EXPL. TAB.

Fig 2 CONFERVA fucicola Fuco veſiculoſo accreſcens *a* Filamenta plurimùm aucta in quibus diaphragmata apparent

CONFERVA fucicola.

SPECIFIC CHAR. CONFERVA. filaments moſt ſimple, capillary jointed very ſhort crowded together.

This is a very minute conferva, and does not appear to have been deſcribed It is found in the Spring, growing in thick tufts upon the Fucus veſiculoſus or nodoſus It does not ſeem to poſſeſs that indifference, with reſpect to the place of its growth, which marine plants generally do for in the courſe of two or three months it was never diſcovered on rocks, ſhells, or other extraneous bodies It conſiſts of numerous filaments ſcarcely half an inch in length, cloſely matted together at the baſe, from whence they diverge ſometimes in a circular direction

The filaments appear ſimple and unbranched They are tubulous, and have numerous diaphragms their termination is obtuſe When viewed ſeparately they are almoſt tranſparent, or have a light yellow tint In the maſs their colour is deeper, and partakes of a muddy-yellow or brown

This

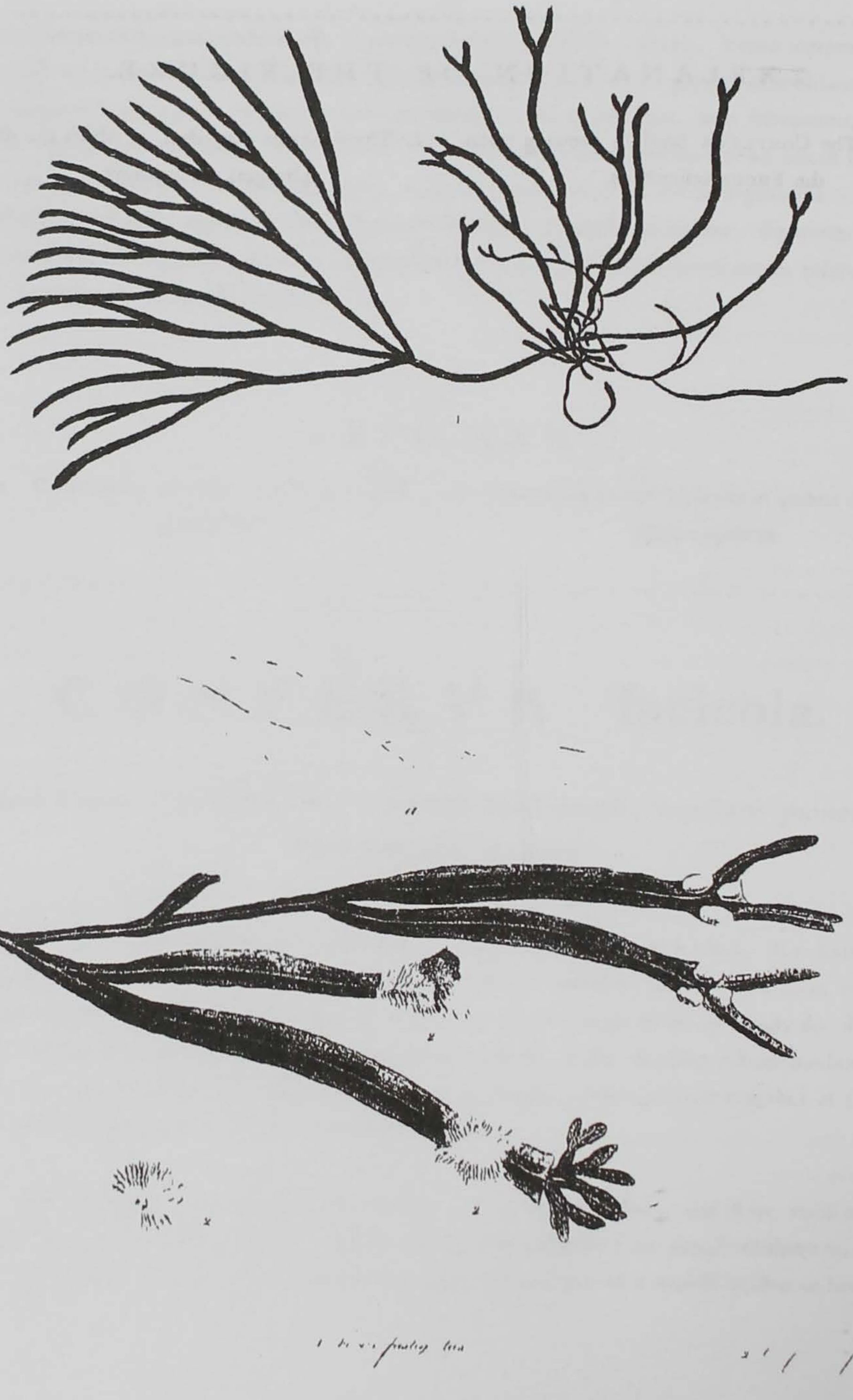
This conferva is found in great abundance under an elevated Cliff near Weymouth, called the *Look-out:* particularly in the Spring Months. The fructification has not yet been discovered.

The Fucus obtusus and many other marine plants may be found near the spot above-mentioned.

EXPLANATION OF THE FIGURE.

Fig. 2. The Conferva fucicola growing upon the Fucus vesiculosus.

a. The filaments magnified, in which the diaphragms are apparent.



ARABIS stricta.

TETRADYNAMIA Siliquoſa.

CHAR. ESSENT. *Glandulæ* melliferæ quatuor, ſingulæ intra calycis foliola, ſquamæ inſtar reflexæ.

ARABIS. foliis ſinuato-dentatis hiſpidis: radicalibus ſpatulatis, caulinis ſemiamplexicaulibus ſiliquis tenuibus ſuberectis.

ARABIS. foliis dentatis hiſpidis. radicalibus ſpatulatis, caulinis ſemiamplexicaulibus oblongis, ſiliquis ancipitibus erectis. *Hudſ. Fl. Angl.* 292.—*With. Bot. Arr.* 702.

RADIX ſimplex vel ſubramoſa, ad imum ſæpe fibroſa

CAULES plures ſubramoſi teretes, biunciales uſque ad ſemipedales et ultra circa baſin hirſuti, ſupernè glabri

FOLIA dentata hiſpida. *Radicalia* ſinuato-dentata, ſpatulata, deorſum anguſtata. *Caulina* dentata, ſemiamplexicaulia.

CALYX Perianthium tetraphyllum, foliolis concavis, ſupernè conniventibus, ad baſin truncatis. *fig* 1 4.

COROLLA Petala quatuor, integra, apice obtuſa, dilatata, longiorum ſtaminum baſi affixa calyce duplo longiora *fig* 2. 5

STAMINA *Filamenta* ſex, quorum duo paululùm breviora *fig* 6 *Antheræ* flavæ *fig* 7

PISTILLUM *Germen* teres, longitudine ſtaminum *Stylus* nullus * *Stigma* obtuſum, pilis perbrevibus pubeſcens

PERICARPIUM. *Siliqua* tenuis ſeſquuncialis bivalvis ſemina continens. *fig* 3—et aucta, *fig.* 8

Glandulis melliferis intra calycis foliola ſcrutatus ſum, ut potui, et quæſivi fruſtra Neque ſiliquam ad baſin *quadrangularem* elle, affirmare auſim

* Vid Linn Cor P.

ARABIS stricta.

TETRADYNAMIA Siliquosa.

ESSENT. CHAR. Four melliferous *glands* · one within each leaf of the calyx resembling a reflected scale.

SPEC. CHAR. Leaves sinuate-toothed hispid those near the root somewhat spatulate. the cauline leaves half-embracing the stem. Pods slender, nearly upright.

ARABIS. foliis dentatis hispidis: radicalibus spatulatis, caulinis semiamplexicaulibus oblongis siliquis ancipitibus erectis *Hudſ. Fl. Angl.* 292.—*With. Bot. Arr.* 702.

ROOT simple, or somewhat branched, fibrous at the end

STALKS several, somewhat branched, round, from two to six inches and more in height, hirsute near the base, smooth upwards

LEAVES toothed, hispid those near the root sinuate-toothed, spatulate, and gradually reduced in breadth towards the base the upper leaves toothed, and half-embracing the stem

CALYX a Perianth of four leaves concave, connivent at the top, the base of each truncate *fig* 1.*a*

COROLLA of four Petals, entire, dilated, obtuse at the summit, apparently inserted at the base of the longest stamens twice the length of the calyx *fig* 2 5.

STAMENS six *filaments*, two of which are in a small degree shorter than the others. *fig.* 6. *Anthers* yellow *fig* 7

PISTIL *Germ* round, the length of the stamens. *Style* none * *Stigma* obtuse, covered with hairs.

PERICARP a *Silique* slender, two-valved an inch and half in length *fig.* 3—and magnified *fig* 8.

The melliferous Glands I have not yet been able to discover The seed vessels do not appear to be quadrangular.

* See Linn Gen 11

The Author is obliged to the Hon Mrs Broderick for an elegant and characteristic drawing of the ARABIS stricta, which has been ranked among the scarce British plants, and not described by Linnæus The specimen here represented, exceeds in size the plant, as it is usually found on the more accessible parts of St Vincent's Rock yet as it was brought from thence in its native soil, and was perfect in all its parts, no apology, it is presumed will be necessary, for the preference now bestowed upon it We seem from mistaken synonyms to have adopted as a native plant one, which probably has never been discovered in this Country, and belonging to the same *natural class* as the ARABIS stricta, namely, the CARDAMINE bellidifolia Ray, in his Synopsis p 300, describes a plant from St Vincent's Rock in the following words "Cardamine pumila Bellidis folio Alpina And at the same time refers to Gerard p 860, fig 8, which clearly shows it is not the plant in question The leaves in Gerard's figure being nearly sessile and the stalk according to that Author, 'some handful high'—both which circumstances prove it to be as different as possible from the CARDAMINE bellidifolia of Linnæus See *Fl Lap edit. el Smith*, 1 9 We frequently find the DRABA hirsuta on that part of St Vincent's Rock to which Ray alludes

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