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MR. JOHNSON TO MR. RAY.

SIR,—I have inclosed a draught of our Branlin [the young of the salmon, *Salma salar*], which I took from the fish, which now I know comes too late; but I hope you found the other I sent you before, which was far more exact, being done by an excellent artist. On the back side you have the description of a new English bird [the Bohemian Waxwing, *Bombycilla garrula*]. It agrees in material points with your *Garrulus bohemicus*; and therefore I imagine it to be of that sort, for some birds vary much in colour. They came near us in great flocks, like Fieldfares [*Turdus pilaris*], and fed upon haws, as they do. I cannot but think that the wars in those parts have frightened them thence, and brought them hither this winter (which with us was above measure plentiful in haws), for certainly they are not natives. And now it is in my thoughts, I would intreat you, at your best leisure, to let me know if you can tell anything certain concerning the birds of passage, whither they go, when they leave us? If it be granted that the swallow kind, and such small birds, do hide themselves in rocks or trees, yet storks, soland-geese, and birds of great size, cannot possibly do so. The moon is too far a journey; and a new world in the south temperate zone methinks they can hardly reach, seeing Wild Geese [*Anser segetum*] from Ireland, and Woodcocks [*Scolopax rusticola*] from Norway, come often so tired to us; and yet how they should escape the eyes of so many diligent inquirers, both by sea and land, especially since our increase of trade and navigation, is to me a matter of no less difficulty.

Brignall, May 7, —86.

Mr. JOHNSON'S Descriptions.

Salmoneta. A Branlin.

LONGITUDO semipedalis, capitis gracilitate, dorsi colore cærulescente, et caudâ furcatâ salmonem æmulatur; linea lateralis 6 vel 7 notulis rubris insignitur. Pars superior ad dorsum usque nævis etiam nigricantibus aspergitur. Per latus umbræ 7 (plus minùs) nigricantes descendunt, quibus facillimè à truttâ distinguitur. Oculi ampli, aurei, protuberantes. Pupilla cærula. Os parvum denticellis repletum. Pinnæ, quales in salmonum genere, in ventre rubescunt. Branchiarum operculum notâ nigrâ quandoque duabus maculatur.

Capta in Teesâ flu. Mart. 10, 1688.
è vivâ delineavit R. J.

An Garrulus Bohemicus, sive Ampolis.*

Merulâ paulo minor, rostrum nigerrimum, passeris magnitudine, caput cristâ longiusculâ decoratum quæ versùs rostrum ex castaneo rubet, retro cinerescit. Sub mento macula nigra, ampla, supra oculos linea etiam nigra retrogreditur. Totum dorsum leucophæum, versùs uropygium tamen magis cinerescit. Cauda quæ 12 pennis constat, imâ parte cinerea, mediâ, nigra; extima pulchrè lutea. Alæ nigricant, è rectricibus 1ma tota nigra, 2da, 3tia, et 4ta, exteriori margine in album desinit, 4 proximæ in luteum deinde 8 in album, adeò tamen ut ex his 5 interiores appendices habent cinnaberinos. Alarum tegeres exteriores in album terminantur. Reliquæ leucophææ.

Pectus leucophæum, caudam versùs albicat. Sub caudâ plumæ castaneæ quasi alteram caudam minorem efficiunt, caro et plumæ tactu mollissimæ, nec linguam, nec pedes, nec rostra, nec barbam picorum vel lyngis habebat. Gregatim volitant.

Capt. mense Martio 1688.

* The Waxwing, called also the Bohemian Chatterer.

I saw another, perhaps the female, like the former in all things, save that the breast and belly were all of one colour (leucophæous), not growing whiter toward the tail, and that the two utmost rectrices had no white at all, nor scarce any appearance of yellow in the rest, and but four tagged or pointed with crimson; and which I did wonder at, there were indeed but ten feathers in the tail. Whether this was the natural number, or that two had been shot away, I could not satisfy myself.

DR. HANS SLOANE TO MR. RAY.

SIR,—In turning over my Paris Garden Catalogue, I found a catalogue of nondescript plants growing there in the year 1683. I saw and took notice of them there, most of the names being given by Dr. Tournefort, whom I expect to see here shortly. The catalogue I transmit you as follows:—

- Abrotanum femina foliis crethmi.* D. Fagon.
Abrotanum femina foliis rorismarini. D. Tournefort.
Betonica purpurea spicâ molliori, longiori, et seriùs florente. Tournefort.
Brunella alpina folio angusto integro. D. Tournefort.
Caucalis elegantissima pyrenaica. D. Fagon.
Cerithe major alpina. Tournefort.
Chamaesyce foliis hirsutis. Tournefort.
Cicutaria latifolia fetida. D. Fagon.
Cucumis Asininus folio Anguriae. D. Fagon.
Daucus pyrenaicus odore citri. D. Fagon.
Echium Creticum latifolium rubrum. Tournefort.
Erysimum siliquis quasi implicitis. D. Fagon.
Ferula folio latissimo. D. Fagon.
Horminum pyrenaicum anguriae folio viscosum. D. Fagon.
Laserpitium umbellâ contractâ et concavâ. D. Fagon.
Meum adulterinum longiori folio. D. Tournefort.
Nasturtium aquaticum maximum. D. Fagon.
Oenanthe capitulo longiori et hispidiiori. D. Tournefort.
Ruta arborea latifolia. D. Tournefort.
Salvia Cretica coccifera. Tournefort.
Scabiosa folio dipsaci. Tournefort.
Senecio Lamii folio. D. Fagon.
Seseli pyrenaicum Thapsiae folio. D. Fagon.

Succisa angustifolia alpina. Tournefort.

Stachys pyrenaica. D. Fagon.

Stachys Cretica major. Tournefort.

Tithymalus ranunculi radice. D. Fagon.

In our simpling journey to Sheppey we found a perennial Kali [*Salicornia fruticosa*, Sm.*], differing something from that on the Mediterranean shore, in that it creeps, whereas the other is erect. Then the green tops are thicker than that on the Mediterranean shores; and Mr. Watts assures me it is a perennial. It grows near King's Ferry, in Sheppey, where also is cast upon the shore the *Fucus spongiosus nodosus* Ger. emac. In the same place, in the ditch, grows plentifully an *Atriplex maritima folio sinuato candicante angusto*. It seems to differ from the common *Sinuato candicante pin.* as the common *Maritima* from the *Sylvestris altera*. I send you down specimens of them, and *Axtius de pice conficiendá*, and *Arboribus coniferis*, by the first carrier; as also that *Fucus* I formerly told you of, to look like a honeycomb, which I found cast upon the shore on Sheppey, as well as at Nesson. There is in town a bark come from Virginia, which has prickles, the bases of which resemble petrified Malta teeth. It stings the tongue in a very extraordinary manner; and he that brought it says it grows plentifully on the shore there. On Sheppey, searching for the coperas-stones, or *Pyrites*, I found that the most part of those taken up in that island are after north-easterly storms, that they are beat up by the waves, and taken up at low water. Among others I found one something extraordinary. It had been a *Buccinum* petrified, and after that turned into a *Pyrites*; so that you might see everything in it as in a *Pyrites*, viz. weight, colour, &c. I leave you to judge whether or no the difference between the *Atriplex maritimæ* and *sylvestres* may not be occasioned by the differing soil; for, considering that both the *maritimæ* are less in their leaves than the *sylvestres*,

* Not of Linn. It is a form of the *S. radicans*, Sm.

it is somewhat probable that the brackish aliment of the one does not mollify nor distend the cells of the leaves so well as the other; but that is but a conjecture. I wish you all health and happiness; and am, &c.

London, August 10, 1686.

Dr. ROBINSON to Mr. RAY.

SIR,—The other day I and Mr. Doody (an apothecary here) had occasion to go five or six hours down the river, we found many rare plants upon the chalk hills and marshes near Gravesend; but they are all mentioned by, and very well known to you. We observed in the long broad vesicles at the end of the leaves of the *Fucus maritimus latifolius vulgatissimus*, many small dark round bodies adhering to the inner membranes, which contained a mucous liquor; whereas the round bladders in the other parts of the leaves were void of liquor, and of those dark solid globules, which gave Mr. Doody and myself reason to fancy that this plant abounds with seed, which, upon drying, disappears. And this seems to me to be no extravagant conjecture, for I begin to conclude that the seed of this plant (and others of the same class) may in time appear as manifest as the seed of the capillary herbs.

London, August 24, —86.

Mr. JOHNSON to Mr. RAY.

SIR,—I did indeed once imagine a possibility of knowing the medicinal virtues of plants by their signatures, which project, if it could have been brought to perfection, might have been of great use to physicians, who know nothing of them but by quack and second qualities, I

was hereunto encouraged by the unaccountable variety of colours, forms of seeds and seed vessels, especially number, which I found the *Conjugata* religiously to observe in some plants to the very division of the pointel. Besides the *Galeata* of sweet smell being mostwhat cardiac, the *Scandentes* often cathartic, those of a lurid flower poisonous, &c. ; farther, I did consider that the Τεχνικα, or general terms of virtues, were not well ordered, but often did interfere one with another ; and that if they were reduced to a method truly natural, plants might be accommodated to them more easily. These considerations did some time encourage me to observe the analogy of plants of the same kind, and their minute differences, not without great pleasure and delight ; but when I found Dr. Grew had hit upon the same notion, and laid his inquiries much deeper than mine, viewing the internal as well as external parts of plants, and yet could conclude nothing, I quite desisted from farther search, despairing to meet with what others with more diligence had not found.

Brignall, October 29, —86.

Dr. ROBINSON to Mr. RAY.

SIR,—The Willows will sometimes drop and run prodigiously in dry and clear seasons at noon-day, as I have been told by several of good credit. In the year 1685 the willows wept so fast at noon-day in the month of March, near the neat-houses, that Dr. Plucknet passing on the road was extremely surprised, and almost wet to the skin ; yet it had been no rain for many weeks before, and the air and other trees were very dry at the same time. I have heard this relation confirmed by other persons that observed the same. Trees may now and then be subject to bleedings, sweatings, catarrhs, and other extravasations ; yet this is no very strong argument, I

confess, for the *Arbor aquam fundens*, because it is said to observe certain periods.

The Manchinelo is not only mentioned by Hughes and Lyon, but Rochefort. I think he hath misplaced it, for, as I remember, he hath put it amongst the animals. A planter tells me that they use the wood for beds and floors, because those insects, which eat and destroy all their other timber, will not touch this. Their beds and floors, and other wood-work, suffer extremely by an insect unless they are made of the manchinel wood.

The Cochineal* is a dried hexapode, that runs up and down a *Ficus indica*, and turns into a Lady-cow. I took it once for a Kermes, or Coccus of an Opuntia, or Tuna.

London, January 29, —87.

[Dr. HANS SLOANE to Mr. RAY.

SIR,—I have talked a long while of going to Jamaica with the Duke of Albemarle as his physician, which, if I do, next to the serving his grace and family in my profession, my business is to see what I can meet withal that is extraordinary in nature in those places. I hope to be able to send you some observations from thence, God Almighty granting life and strength to do what I design; but our voyage having been put off so often, I doubt it very much. I am glad to hear by Dr. Robinson that your elaborate and excellent work goes on so fast as to begin already to print the trees. Great feuds are like to be between the French and our philosophers about the magnitude of London and Paris, ours alleging that London is as big as Paris and Rouen both together; and being urged by them to give some proof for what they say, I intend to print certificates from hearthmen here, and ingenious men there, that in London are 100,000 houses, and in Paris but 24,000. There is no less a dispute on

* The Cochineal is the *Coctus Cacti* (Linn.), it is found on the *Cactus cochenillifer* (Linn.) It is scarcely necessary to add, that it does not turn into a Lady-cow, or *Coccinella*.—C. C. B.

another account. The French ambassador to the king of Siam, carrying a Jesuit with him, he made several observations, and found that that kingdom was misplaced in longitude, to the east, about 22 degrees; but Mr. Hally says that he long ago found that out, and gave an account of it in the 'Transactions.' But I am mistaken if there were not something rectified about that a great while ago by some learned men. I suppose you have had an account of Dr. Magnol's new appendix; it is but small and less worth than I thought, for when I was there he designed to simple the Pyrenees and Hortus Dei, or mountains of Auvergne, where are many curiosities. We are now mighty solicitous about the Jesuit's-bark, or *Cortex peruvianus*, it being so good a drug, that they begin to adulterate it with black cherry and other barks dipped in a tincture of aloes, to make it bitter; but the bitterness of the adulterated bark appears upon its first touch with the tongue, whereas the other is a pretty while in the mouth before it be tasted. I am, &c.

[London, Jan. 29, 1786.]

Mr. RAY to Dr. HANS SLOANE.

SIR,—I received yours of August 10th, and on Saturday last the specimens of plants by you discovered, with 'Antius de Pice conficienda' and 'Zaluzonius Methodus Herbaria,' which I have not as yet had time to turn over.

As to the plants, the *Fucus* is no other than that described and figured in J. Bauhine's history by the name of *Alga marina platyceros porosa* [*Flustra foliacea*, Linn., not a plant but a zoophyte], and is frequently found cast up on our shores; I take it to be that they call *silken wrack* in 'Phytologia Britannica.' I have entered it under J. Bauhin's name, and borrowed his description.

The *Kali geniculatum* [*Salicornia fruticosa* of Smith], I agree with you and Mr. Wattes to be different from that of the Mediterranean shores, and a new species, as

far as I can discern by the dried plant. The grass you sent I think is not the *Gramon aureum* of Dalechamp, for that is paniculate, and hath a pendulous panicle. We have discovered this grass hereabouts. The *Muscus* or *Conferva* I cannot say I have observed myself, but I think it hath been shown me by Mr. Newton. Your *Atriplex maritima folio sinuato candicante angusto* I am not satisfied in. You that saw it growing and green can better judge of it than I by a dried specimen; I make some doubt whether it be of that genus or not, and whether it may not be the *Atriplex angustifolia maritima dentata* [*Atriplex marina*, Linn.] described in our History, p. 193. The seed vessel I cannot discern, and so can affirm nothing, but incline to think it is that.

I thank you for your continued friendship, in so frankly affording me your assistance in carrying on this tedious work I have in hand, and desire you would quicken Mr. Wattes to hasten the accomplishing what he hath promised, that so the [matter] may not be deferred in expectation of his contribution. I do resolve (God granting life and health), with as much speed as strength and leisure will permit, to pursue the work, that so the subscribers may not have reason to complain of delay and frustration. I long to see Dr. Herman's book, which, as you well intimate, will in all likelihood much facilitate the work, and ease Mr. Wattes of much trouble in describing and giving the history of his rarer and non-descript plants.

I am, sir,

Your very humble servant,
JOHN RAY.

Black Notley, Aug. 24, —86.

[Mr. RAY to Dr. HANS SLOANE.

B. N., April 1, —87.]

SIR,—The last week the coachman brought me a second letter from you before I had acknowledged the

receipt of your former, which delay I hope you will impute rather to my incumbrances than negligence; for truly the prosecution of this work I have in hand leaves me but little time to spare. I thank you for the information and intelligence communicated in your first letter.

Were it not for the danger and hazard of so long a voyage, I could heartily wish such a person as yourself might travel to Jamaica, and search out and examine thoroughly the natural varieties of that island. Much light might be given to the history of the American plants, by one so well prepared for such an undertaking, by a comprehensive knowledge of the European. Nay (which is more), that history, we might justly expect, would not only be illustrated but much improved and advanced.

The fair specimen you sent inclosed in your last hath informed me concerning the Irish Dulsh,* for so I think you spell it. I own myself to have been mistaken in it; for it is not the *Alga membranacea purpurea parva* commonly thrown upon our shores, but a plant not observed by me though I take it to be the *Fucus membranaceus ceranoides*, C. B., both from the Scottish name *Dils*, and in that he makes it resemble the *Lactuca marina*, which this very much doth, so that I am in doubt, whether I ought to entitle it a *Fucus* or *Lactuca*. It may be denominated *Fucus membranaceus poluschidos Hibernicus viola odore*, which scent is very remarkable in it. In the appendix we may give a more full and perfect history and description of it. [I pray the continuance of your correspondence and rest,

Sir,

Your very humble servant,

JOHN RAY.

For Dr. Hans Sloane, at Mr. Wilkinson's
a bookseller, at the Black Boy, over against
St. Dunstan's church, in Fleet Street, London.

* The Dulse of Scotland and Dillesk of Ireland is, according to Greville (Brit. Alg. 94) the *Rhodomenia palmata* (Grev.) The *Iridaea edulis* is called Dulse in the south-west of England.

Dr. ROBINSON to Mr. RAY.

SIR,—Monsieur Bernier, who passed the Red Sea into Arabia, doth affirm in a private letter, that the Arabs assured him that the coffee fruit was sown every year under trees, up which it did climb and run, from which he concludes it to be a species of *Convolvulus*. I think he might as well have concluded it to be a *Phaseolus*, or some other scandent legume. If M. Bernier was truly informed of its annual sowing and climbing, then Alpinus never saw the true coffee plant. The Arabians are as careful in destroying the germinating faculty of the coffee fruit or seed, by boiling or burning, as the Dutch of the Moluccas are in their nutmegs. I have spoke with several curious persons that have been several times in Egypt, and they all said that they never saw the coffee plant; neither, as I remember, did Bellonius ever meet with it in that country or Arabia; for the coffee is said only to grow in that part of Arabia that lies within the tropic.

I have examined many coffee berries, as they call them, here at London, and am almost persuaded by my own observation, that they are neither berries nor the seeds of any *Convolvulus*, nor of any legume, but are rather of the nut kind: the entire fruit is covered with two skins, being round on one side and flat on the other; the exterior skin, or rather shell, being as thick almost as that of a pistachio, is of a dark colour; the second, or interior membrane, that covers the kernels, is much finer and of a yellowish-white colour, as the kernels themselves are. Under this second skin lies generally two kernels, sometimes one, round on one side and flat on the other: on the flat side of the kernel there is always a slit, or a mouth, so that every kernel doth exactly resemble a *Concha Veneris*. The fruit doth generally come to us decorticated, but I, finding some entire, have made this description.

London, May 21, —87.

Dr. HANS SLOANE to Mr. RAY.

SIR,—I send you here inclosed the specimen of a plant growing on Newmarket Heath, and in Surrey, known by the name of Star of the Earth in those parts. It is particularly taken notice of on the account of its extraordinary and admirable virtue in curing the bitings of mad dogs, either in beasts or men. One of his majesty's huntsmen having proved it a great many times, gave the king his way of using it, which was an infusion in wine with treacle, and one or two more simples. His majesty was pleased to communicate it to Gresham College to the Royal Society; and nobody knowing the plant by that name, some there present confirming its use in that disease in some places of England, and procuring the herb itself, it is as little known here as if it had come from the Indies. I told the Society I would let you have this best specimen of it, which I question not but it is known to you. If you please to give your sentiments about it, you will extremely oblige, &c.

London, June 21, 1687.

[Mr. RAY to Dr. HANS SLOANE.]

SIR,—I received your letter with the specimen inclosed, which seems to me to be the *Sesamoïdes Salamanticum magnum* of Clusius [*Silene otites*, Sm.], or *Lychnis viscosa flore muscoso* of C. B., which I have observed to grow plentifully upon Newmarket Heath, that part I mean that is in Suffolk, for on Cambridgeshire side I have not found it. I wonder it should have such a virtue as you mention, but it seems it is well attested. Dr. Hulse writes to me he finds it in Graye's 'Farrier.'

[If you go to Jamaica I pray you a safe and prosperous voyage. We expect great things from you, no less than

the resolving all our doubts about the names we meet with of plants in that part of America, as the Dildoe, Mammee, Mangrove, Manchinello, *Avellana purgatrix*, the Sower-sop, and Custard-apple. Of most of which, though I am pretty well informed and satisfied by Dr. Robinson, yet I shall be glad to be either confirmed or better informed by so knowing and curious an observer as yourself. I should be glad to know what manner of fruit the Mandioca bears; for, whatever some have written, that it is not without, I am confident. You may also please to observe whether there be any species of plants common to America and Europe, and whether Ambergrise be the juice of any sort of metal or aloe dropped into the sea, as Trapham would have it. What kind of Arundo it is the same author calls the Dumbcane, as also what his animal seeds may be. The shining barks of trees which he mentions deserve observation, because I find nothing of them in other writers. I shall not instance in more particulars. I wish your voyage had so long prevented the publication of my history, that I might have been satisfied and informed by you of these and a thousand other particulars, and had so great an accession of new and nondescript species as your inquisitions and observations would have enriched it withal. I take leave, and rest, &c.

2

RICH. WALLER, Esq. to Mr. RAY.

SIR,—I thought it might not be an unacceptable communication to tell you, that being this last summer at Keinsham, in Somersetshire, and making a search after the *Cornua ammonis*, I found, amongst several of the ordinary snake-stones in which the shelly diaphragms were very visible, one of the true nautilus shape, covered in some places with a shelly incrustation, with the diaphragms to be seen to the centre of the voluta; and in

each diaphragm the hole by which they communicate with one another, by a string or gut in the fish. This was of a very hard stone and large size, weighing at least twenty-eight pounds, though some part was broken off.

London, Feb. 4, 1687.

Mr. WALLER to Mr. RAY.

SIR,—Since one of the chief ends of an herbal is thereby to attain a true knowledge of plants, I have adventured to propose my thoughts to you, how by a few tables, with iconisms, one wholly ignorant in plants may know how to find any unknown plant, together with the help of your method and tables in your most exact and elaborate 'Treatise of Plants,' lately published. My thoughts in short are these :

I would, according to your general table of herbs, inserted at page 58, take the two first divisions, imperfect and perfect ; giving the figure of any one imperfect plant, as of a fungus or the like. Of a perfect one I would do the same ; under the perfect another figure of the minute seeded, viz. a capillary, with a larger seeded plant. This should be my first table. In the second, coming to the larger seeded, I would give the figure of a seed coming out of the ground with two lobes or seed-leaves, beside the plant-leaves (referring the Unifolia to another table, as also all larger plants or trees) ; under this I would represent an imperfect or staminous flower, and against it a perfect or leafy flower, both compound and simple ; and so on throughout all the generic and specific divisions in several tables, which I suppose need not be many, with references to the books and chapters of your Treatise. The use of them will be this : taking any unknown plant, my first inquiry must be whether it has a seed or no ; if a seed, whether small or large ? if large, whether bivalve or not ? &c. By which method proceeding, I shall at

last be brought to find the very plant itself and the place where described at large in your book, my design in these tables being only to give an idea of the difference of plants by pictures (the representations of beings) rather than by words (the representations of pictures). This I submit to your censure before discovering it to others, requesting your thoughts upon it; for it is very possible, that being so unknowing as I am in plants, I may frame an image to myself of that, which, brought to the test, will prove a mere chimera. If so, pray pardon my rashness, and accept of my real desire of advancing knowledge.

I think fit to communicate, that being this last autumn at Bristol, in August the tide brought in floating some of the vesiculiferous sea-wrack; the bladders were some filled with air, some with a slimy water, and in some I found a round (as I suppose) seed, thinly dispersed in a tenacious matter. They were somewhat smaller than rape-seed, and of a brownish colour. This, if a new discovery, may be farther prosecuted. Thus having already troubled you with too large a letter, I beg leave to subscribe myself, &c.

London, April 5, 1688.

Mr. THO. LAWSON to Mr. RAY.*

MR. RAY,—*Acetosa scutata repens*, C. B. *Acet. rotundis*. *Westmerlandica* Mor. [*Oxyria reniformis*, Hook], by Buckbarrow Well, in Longsledale; also on little Harterfell Crag, *copiosè*, Westmoreland.

Adiant. petr. perpusillum, sc. [*Hymenophyllum tun-*

* Although the plants mentioned in this letter of Mr. Lawson may be met with in Mr. Ray's books, yet there being many of the northern plants put together in alphabetical order, with the places where they grow, I thought it might be acceptable to the northern botanists to publish the letter as I found it.—W. D[ERHAM.]

bridgense, Sm.],* on Buzzard rough Crag, close by Wrenose, in Westmoreland. I was with Ja. Newton when it was found.

Alchemilla alp. quinquefolia [*Alchemilla alpina*, Linn.], by Buckbarrow Well plentifully, as on the rocks between Thornwhait and Mardale, *copiosè*, Westmoreland.

Allium mont. bicornè [*A. carinatum*, Linn.], is doubtless *Al. syl. bic. pur. prol. Chab.*, in Trout Beck Holme, by Great Strickland, Westmoreland.

Alnus nigra baccifera, J. B. [*Rhamnus Frangula*, Linn.], in Thorny Holme, in Whinfield Forest, Westmoreland.

Saxifr. gram. sc. Cat. Cant. [*Sagina procumbens*, Linn.], called in your history, *Sax. gram. pusil. fl. parvo tetrapetalo*. Hereof I found another species, *Foliis brevioribus crassioribus et succulentioribus* [*Spergula subulata*, Sw.], on Whinneyfield Bank, by Cullercoats by Tynemouth, in Northumberland.

Anagallis aquat. minor fol. subr., C. B. [*Veronica Becabungia*, Linn.] *Anagal. aquat. min. fol. oblong.*, C. B. [*V. Anagallis*, Linn.] Both *fl. albo*, about Shap, in Westmoreland.

Anag. aquat. rotund., Ger., *Samolus Valerandi* [*Samolus Valerandi*, Linn.], at Marshgrange, in Furneis, and between Bare and Pulton, nigh Lancaster, on the sea-bank.

Anchusa degener fa. mil. solis [*Lithospermum arvense*, Linn.], on Lansmoor, near Great Strickland. It is not plentiful with us, Westmoreland.

Androsæmum vulg., Park. [*Hypericum Androsæmum*, Linn.], in the Lady Holme, in Winander Mear, Westmoreland.

Apium palustre seu off., C. B. [*A. graveolens*, Linn.], near Cartmall Medicinal Well, on the Marsh Ditches, Lancashire.

Armeria prat., Ger., *fl. albo* [*Dianthus Armeria*, Linn.], at Orton, Greatstrick, Westmoreland, and by Penigent, in Yorkshire.

* Perhaps more correctly *H. Wilsoni*, Hook. — C. C. B.

Aria Theophrasti, Ger. [*Pyrus Aria*, Sm.], Wither-slack, Consick Scar, Silverdale, Arnside, places in Lancashire and Westmoreland, where they call it Chess-apple and Sea-oulers. It is *Sorbus alpina*, J. B.

Asplenium, J. B. [*Ceterach Officinarum*, Willd.], on Troutbeck Bridge, near Winander Mear, *copiosè Barba Neptuni*. Mrs. Warde, of Gisborough of Cleinelayne, in Yorkshire, first observed this and called it Sea-bird: she showed it to me and after to Mr. Newton, who called it *Bar. Neptuni*. She is very knowing in plants.

Betonica aquat., Ger. [*Scrophularia aquatica*, Linn.], at Allythwait, nigh Cartmal, Lancashire, *copiosè*.

Bifolium minimum, J. B. [*Listera cordata*, R. Br.], by the Picts' Wall, in Northumberland.

Bistorta minor, Ger. [*Polygonum viviparum*, Linn.], at Crosby Ravensworth, in Westmoreland, *copiosè*.

Bryonia alba, Ger. [*B. dioica*, Jacq.], near Darlington, all along the horse-way to Thornton, in the bishopric of Durham, *copiosè*.

Buglossum luteum, Ger. [*Picris echioides*, Linn.], betwixt Stockton and Norton, in the bishopric of Durham, plentifully.

Bursa past. minor. Nastur. petr. Tab., [*Teesdalia nudicaulis*, R. Br.], by Common Holme Bridge, near Clibburn, in Westmoreland.

Campanula Cymbalariae fol., Ger. Emac. [*Wahlenbergia hederacea*, Reich.], in Bagley Wood, near Oxford, I observed it.

Cardamine, Ger. [*C. pratensis*, Linn.], *fl. pleno*, on Little Strickland pasture, Westmoreland.

Carduus nutans, J. B. [*C. nutans*, Linn.], by Hardindale Nab, Westmoreland.

Card. stellat., Ger. [*Centaurea Calcitrapa*, Linn.], betwixt the Glasshouses and Dent's Hole, nigh Newcastle-upon-Tyne, in Northumberland.

Card. monstrosus Imperati [*Carlina vulgaris*, Linn. ?] in a limestone quarry in Great Strickland field, Westmoreland.

Caryophyllata purpurea prolifera fl. amplo [a double-

flowered variety of *Geum rivale*, Linn.], by Great Strickland, Westmoreland.

Caryophyllus mar. minimus, Ger. [*Armeria maritima*, Willd.], in Bleaberry Gill, under Hincell Haugh, at the head of Stockdale fields in Craven, Yorkshire, far from the sea.

Caryophyllus virgin., Ger. [*Dianthus deltoides*, Linn.], on a sandy hill, a little below Common Holme Bridge, where the water is crossed near Great Strickland, Westmoreland.

Catanance leg. quorundam, J. B. [*Lathyrus Nissolia*, Linn.], between the Glasshouses and Dent's Hole, nigh the North Shore-house by Newcastle-upon-Tyne, copiosè.

Centaurium luteum perfol., C. B. [*Chlora perfoliata*, Linn.], in many places by Worcester and Gloucester.

Centaurium min., C. B., *fl. albo* [*Erythræa centaurium*, Pers.], by Cartmall Medicinal Well, Lancashire.

Cerasus syl. fructu min. cordiformi, Ph. Br. [*Prunus Avium*, Linn.],* nigh Stockport, in Cheshire, at Bery or Bury, in Lancashire, at Rosgill, in Westmoreland. In all these places it is called Merry-tree. I could observe no difference from other cherry-trees, save in its small cordiformous fruit.

Chamæcistus vulgaris fl. albo [*Helianthemum vulgare*, Gaert.] On Gogmagog's Hill I gathered it.

Alysson Dioscor. montanum, Col. [*Veronica montana*, Linn.], at Lartington, in Yorkshire, near Bernard Castle, in Buckham, belonging to Sir John Lowther, Westmoreland.

Chamæmorus, Ger. [*Rubus Chamæmorus*, Linn.], between Bannisdal Head and Water Sledale, as on Crossfece, Westmoreland.

Christophoriana, Ger. [*Actæa spicata*, Linn.], among the shrubs by Malham Cove, Yorkshire.

Cochlearia marina fol. anguloso parvo [*Cochlearia danica*, Linn.], in the Isle of Waney, Lancashire. I pur-

* See Leighton's 'Flora of Shropshire' (pp. 523-7) concerning this and the *P. Cerasus*, Linn., which have usually been confounded by English botanists.—C. C. B.

pose soon after Pentecost to send fair samples and seeds. I saw nothing to distinguish it from the rest but its little cornered leaves.

Conyza major Mat. sc. J. B. [*Inula Conyza*, De Cand.], by Cartmall Medicinal Well, Lancashire.

Conyza cær. acris, C. B. [*Erigeron acris*, Linn.], on the old walls by Sawley Abbey, Lancashire.

Cotula non fetida pleno fl. [*Pyrethrum inodorum*, Sm.], at Great Strickland, Westmoreland.

Cotyledon hirsuta, P. B. [*Saxifraga stellaris*, Linn.], by Buckbarrow Well, in Longsledale, Westmoreland, copiosè.

Crithmum mar. spinosum sc. Park. [*Echinophora spinosa*, Linn.], at Roosbeck, in Low Furneis, Lancashire.

Digitalis fl. albo [*Digitalis purpurea*, Linn.], in a close called Millbank, at Lorton Town End, in Cumberland, copiosè.

Dryopteris alba Dodonei, Ger. Emac. [*Cystopteris fragilis*, Bernh.]; *Dryopt. nigra* Dod. [*Asplenium Adiantum-nigrum*, Linn.]; *Dryopt. Tragi*. [*Polypodium Dryopteris*, Linn.]; these three I found plentifully in a place called Trowgill, near Clibburn, Westmoreland.

Echium mar., P. Br. [*Stenhammaria maritima*, Reich. ; *Pulmonaria maritima*, Linn.], by Whitehaven, in Cumberland, and also over against Bigger, in the Isle of Waney, copiosè.

Elæagus cordi [*Myrica Gale*, Linn.], by the rivulet between Shap and Anna Well, Westmoreland.

Elatine fol. acum., Park. [*Linaria Elatine*, Mill.]; *Elatine fol. subrot.*, C. B. [*L. spuria*, Mill.]; both these I observed on Stanhill, west of Henley Wood.

Equisetum sive hippuris lac. fol. mansu aren., Gesn. [*Chara hispida*, var. Linn.], in Hell Kettles, nigh Darlington, in Conzick Tarn ditches, Westmoreland.

Eruca marina, Ger., *Cakile* sc. [*Cakile maritima*, Willd.] at Roosbeck, in Furneis, as also in the Isle of Waney, Lancashire.

Eruca Nasturtio cognat. tenuifolia, P. B. [*Vella annua*, Linn.], on Salisbury Plain.

Eruca monensis lacin. lutea [*Sinapis monensis*, Bab.], between Marshgrainge and the Isle of Waney, Lancashire, in Sella Fields, Sea Bank, Cumberland. I purpose to observe this in the Isle of Man, at Pentecost.

Eryngium vulg. J. B. [*E. campestre*, Linn.], on the shore called Fryer Goose, near Newcastle-upon-Tyne.

Ferrum equinum, Ger., *sil. in summ. sc.* C. B. [*Hippocrepis comosa*, Linn.], on the rocks by the rivulet that runs from Anna Well towards Shap, Westmoreland.

Filipendula, Ger., J. B. [*Spiræa filipendula*, Linn.], on the top of Conzick Scar, *copiosè*, Westmoreland.

Fumaria alba latifolia, Park. [*Fumaria claviculata*, Linn.], at Thornwhait, foot of Longsledale, on the thatched houses in Kentmeer, Isan Parles Cave mouth, *copiosè*, Westmoreland.

Fumaria major scandens [*F. capreolata*, Linn.], in Great Strickland, Westmoreland.

Fungus Phalloides, J. B. [*Phallus impudicus*, Linn.], in Croft Short Close, by Great Strickland.

Geranium batrachoides, fl. elegantè variegato [*G. sylvaticum*, Linn.], in Old Deer Park, by Thornwhaite, Westmoreland.

Ger. hæmatodes fl. elegantè variegato [*G. sanguineum*, Linn., β . *prostratum*; *G. lancastricense*, With.; *G. prostratum*, Cavan.] Thousands hereof I found in the Isle of Waney, and have sent roots to Edinburgh, York, London, Oxford, where they keep their distinction.

Gladiolus lacustris Clusii, sc. Park. [*Lobelia Dortmanna*, Linn.] This I found in Winander Mear, *copiosè*, and in Grayson Tarne, near Cockermouth, Cumberland.

Gladiolus palustris Cord., Ger. [*Butomus umbellatus*, Linn.] This I observed betwixt Tewksbury and Gloucester, in the ditches.

Glaux Dioscor., Ger. [*Astragalus hypoglottis*, Linn.], close by Huntcliff Rock, in Cleveland, Yorkshire.

Glaux vulg. Ad. Lob. [is this *Glaux maritima*, Linn. ?], on the shore called Fryer Goose, by Newcastle-upon-Tyne.

Gnaphalium mont. album, Ger. [*Gnaphalium dioicum*, Linn.], by the Force, between Anna Well and Shap, on Sir John Lowther's pasture, between Lowther and Hackthorpe, Westmoreland.

Gramen triglochis, J. B. [*Triglochis palustre*, Linn.], by the rivulet between Shap and Anna Well, Westmoreland.

Gramen sparteum capite bifido vel gemino,* betwixt Hackthorpe and Lowther, *copiosè*, Westmoreland.

Hederula aquatica, Ger. [*Lemna trisulca*, Linn.], in ditches between Warton and Cornforth, Lancashire.

Helleborine minor alba, Park. [*Cephalanthera grandiflora*, Bab.], in Sir John Lowther's wood, directly against Askham Hall, Westmoreland.

Helleb. flore atro rubente, Park. [*Epipactis ovalis*, Bab.], in the lane by Abbot Wood Close, near Great Strickland, Westmoreland.

Hieracium Macrocaulon hirsutum fol. rotundiore [*H. murorum*, Linn.] This I found by Buckbarrow Well, in Longsledale, and on the rocks by the rivulet between Shap and Anna Well, Westmoreland; expect fair samples and my description.

Hipposelinum, Ger. Emac. [*Smyrniium olusatrum*, Linn.], within and without the walls of Scarborough Castle, *copiosè*, Yorkshire.

Hypericum elegant. non ramosum fol. lato, J. B. [*H. montanum*, Linn.], on Conzick Skar, by Kendal, on the rocks by the rivulet between Shap and Anna Well, Westmoreland.

Hypericum pulchrum Tragi, J. B. [*H. pulchrum*, Linn.], in Trowgil, near Clibburn, Westmoreland.

Jacobæa latifol. palustris [*Senecio aquaticus*, Huds.], at Great Strickland, in the watery places by Clibburn Bridge, Westmoreland.

* This may be *Ammophila arenaria*, Link, *Arundo arenaria*, Linn., but the station requires examination.—C. C. B.

Juncus acutus cum caudá Leporiná, J. B. being *Gramen junceum montanum subscæruleá spicá Mer.* [*Eriophorum vaginatum*, Linn.] It is always *Spicá simplici*. Its bluish spikes appear soon after Christmas. After it turns white sheep are greedy after it; so it is called Moss-crops about Clibburn, Water Sledale, and in all places here—Westmoreland.

Lactuca Agnina, Ger. [*Valerianella olitoria*, Moench.], about the bank of the Roman fort Maburg, nigh Round Table, Westmoreland.

Ladanum segetum sc. J. B. [*Galeopsis Ladanum*, Linn.], on Lansmoor, near Great Strickland.

Lapathum pulchrum bononiense, sc. J. B. [*Rumex pulcher*, Linn.], betwixt the inn and the smithy at Sir John Lowther's new town, Westmoreland.

Lathyrus major latifolius, Ger. Emac. [*L. latifolius*, Linn.],* on the rocks by the Red Neese, by Whitehaven, cop. Cumberland.

Laureola, Ger. [*Daphne Laureola*, Linn.], by Thornton, in the bishopric of Durham.

Lilium convallium, Ger. [*Convallaria majalis*, Linn.], in Witherstack Park.

Lilium convallium angustifolium [*C. majalis*, var.], on the Skar, near Waterfall Bridge, by Great Strickland, and in other places, Westmoreland.

Linum syl. fl. cæruleis, Ger. Emac. [*Linum perenne*, Linn.], at Crosby Ravensworth, and between Shap and Threaplands, Westmoreland.

Lunaria ramosa, and *Lunaria crenata* [*Botrychium Lunaria*, Sw.], grow in Croft Short Close, by Great Strickland, Westmoreland.

Marrubium aquaticum [*Lycopus europæus*, Linn.], in the moss by Hawkshead, Lancashire.

Melilotus vulgaris, Parkinson [*Melilotus officinalis*, Lam.], by Langanby, Cumberland.

* It appears that the late Mr. Winch only met with the *L. sylvestris*, Linn., at the place mentioned by Mr. Lawson.—C. C. B.

Mentastrum folio rugoso rotund. sc. J. B. [*Mentha rotundifolia*, Linn.], by Marshgrainge, in Lancashire.

Millefolium aquaticum dictum Viola aquatica, J. B. [*Hottonia palustris*, Linn.], in the river Kent, by Kendal, Westmoreland.

Mil. palustre galeric. Ger. Emac. [*Utricularia vulgaris*, Linn.], and *Mil. pal. gal. minus fl. minore* [*U. minor*, Linn.], in the ditches by the causeway over the moss to the Fell-end, near Witherstack.

Millegrana minima, Ger. [*Radiola millegrana*, Sm.], on Clifton Moor and Clibburn Moor, Westmoreland.

Morsus Diaboli, Ger., *flore albo* [*Scabiosa succisa*, Linn.], at Great Strickland, Westmoreland.

Dendrobryon geniculatum, Col. [*Usnia barbata*, Ach.], near Kendal, Westmoreland.

Muscus cupressiformis, Park. [*Lycopodium alpinum*, Linn.], by Buckbarrow Well, in Longsledale, Westmoreland.

Muscus terrestris repens clavis singularibus, sc. J. R. [*Lycopodium inundatum*, Linn.], towards the foot of Longsledale, Westmoreland.

Muscus terrestris polyspermos [*Lycopodium selaginoides*, Linn.], by Buckbarrow Well, Westmoreland.

Myrrhis syl. seminibus asperis, C. B. [*Anthriscus vulgaris*, Pers.], on mud-walls at Blackwell, in the bishopric of Durham, on mud-walls in Burlington, Yorkshire.

Numularia minor, sc. C. B. [*Anagallis tenella*, Linn.], at the foot of Longsledale, and near the Cloven Stone, on Great Strickland Moor, Westmoreland, *copiosè*.

Enanthe Cicutæ-facie, Lob., Park. [*Enanthe crocata*, Linn.], about Kendal and Hiltondale, Westmoreland, *copiosè*, where it is commonly called Dead Tongue; in the water-course of St. John's Well, by St. John's Chapel, in or near Scelsmoor, three miles from Kendal.

Orchis palmata rubella cum longis calcaribus rubellis, J. B. [*Gymnadenia conopsea*, R. Br.], in Troutbeck Holme, by Great Strickland, Westmoreland, where it is also found *flore niveo, et fl. carneo*.

Orchis sphegodes sive fucum ferens, Park. [*Ophrys aranifera*, Huds.], in the close on the west side of Charlton church, in Kent, *copiosè*.

Orchis myodes, Ger. [*Ophrys muscifera*, Huds.], in the lane or way between Holm-park House and the crag; also in the wood there pretty plentifully, Westmoreland.

Ornithogalum luteum, C. B. [*Gagea lutea*, Ker.], in the bushes at Bander Bridge-end, by Cotherstone, near Rombald church, Yorkshire.

Ornithopodium minus, Ger. [*Ornithopus perpusillus*, Linn.], on Clibburn Ling, near Common Holm Bridge, *copiosè*, Westmoreland; nigh Ravenglass, Cumberland.

Pedicularis pratensis vulgaris fl. albo [*Pedicularis sylvatica*, Linn.], at Gunnerthwaite, in Lancashire; at Great Strickland, Westmoreland.

Pedicularis palustris elatior fl. albo [*P. palustris*, Linn.], in the lower end of Longsledale, Westmoreland.

Pentaphylloides fruct. [*Potentilla fruticosa*, Linn.], by Mickle-force, in Teesdale, *copiosissimè*.

Persicaria siliquosa, Ger. [*Impatiens noli-me-tangere*, Linn.], by the cloth-mill in Saterthwait parish, Lancashire, and in many places of Westmoreland.

Phyllitis multifida, Ger. [*Scolopendrium vulgare*, Linn.], on the rock by Cartmall Medicinal Well, Lancashire.

Plantago aquat. minor, Park. [*Alisma ranunculoides*, Linn.], near the Cloven-stone on Great Strickland Moor, Westmoreland.

Plantago aquat. minor stellata, Ger. Emac. [*Actinocarpus Damasonium*, R. Br.], on Clapham Heath, in Surrey.

Polygonum mar., J. B. [*Polygonum Raii*, Bab.], on the shore between Workington and Whitehaven, Cumberland.

Populus libyca, Ger. [*P. tremula*, Linn.], in St. Herbert's Isle, in Derwentwater, Cumberland.

Primula pratensis inodora lutea, Ger. *veris caulifera*, sc. J. B. [*Primula vulgaris var. umbellata* probably]. Great

Cowslips. This, in the north, is commonly called Lady Candlestick.

Ptarmica fl. pleno [*Achillea Ptarmaca*, Linn.], in the small holm in Winander Mear, Westmoreland.

Pyrola brasiliانا, Park. [*P. rotundifolia*, Linn. ?], by Guisborough, in Cleveland, Yorkshire. It grew in my garden several years; whether his *major* or *minor* I was not satisfied.

Ranunculus flam. major, Ger. *Lingua Plinii*, J. B. [*Ranunculus Lingua*, Linn.], in the water and ditches of the moss by Hawkshead, in Lancashire.

Ranunculus nemorosus dulcis secundus Tragi, Park. [*R. auricomus*, Linn.], in *dumetis*, *copiosè*, particularly in Sheriff Park, by Great Strickland, Westmoreland.

Ranunculus palustr. rotundifolius, Ger. [*R. sceleratus*, Linn.], by Robin Hood's Well, nigh Wentbridge, Yorkshire; by Middleton, near Lancaster.

Reseda vulgaris, C. B. [*R. lutea*, Linn.], by Clifford's Fort, at Tinnmouth Castle, in Northumberland, *copiosè*.

Rhamnus catharticus, J. B. [*R. catharticus*, Linn.], in the rocks and hedges by Great Strickland, Westmoreland, *copiosè*.

Rhamnus secundus Clusii, Ger. Emac. [*Hippophae rhamnoides*, Linn.], on the sea bank between Whitby and Lyth, Yorkshire, *copiosè*.

Ros solis fol. oblongo, C. B. [*Drosera longifolia*, Linn., Sm.]; *Ros solis fol. rotundo*, Ger. [*Drosera rotundifolia*, Linn.]; both these in Mosey Mire, in Witherslack, Westmoreland.

Rosmarinum syl. minus nostras, Park. [*Andromeda polifolia*, Linn.], in Brigsteer Moss, not far from Kendal, Westmoreland; in Middleton Moss, by Lancaster.

Rubia cynanchica, J. B. [*Asperula cynanchica*, Linn.], on Beltharrow, in Witherslack Park, and on the top of Conzick Scar, near Kendal, *copiosè*, Westmoreland.

Ruscus, J. B. [*R. aculeatus*, Linn.], on Westwood Common, nigh Sydenham, in Kent, not scarce.

Saponaria fl. pleno [*Saponaria officinalis*, Linn.], at Carnforth, in Lancashire.

Saxifraga palustris Anglica, Park. [*Spergula nodosa*, Linn.], in Troutbeck Holm, by Great Strickland, Westmoreland.

Scabiosa minor prat. fl. carneo, Park. [*S. columbaria*, Linn.], in the closes between Melkinthorp and Waterfall Bridge, Westmoreland.

Scrophularia major, Ger. [*Scroph. nodosa*, Linn.], by Waterfall Bridge, and in many other places in Westmoreland, where the common people call it Hastie Roger.

Sedum alpinum trifido folio, C. B. [*Saxifraga hypnoides*, Linn.], by Maltham Cove, Yorkshire; among the rocks south of Sir John Lowther's, Westmoreland.

Senecio hirsutus viscidus major odoratus, J. B. [*S. viscosus*, Linn.], about Sunderland; nigh Lancaster.

Serratula fl. albo [*Serratula tinctoria*, Linn.], in a close by Hampstead Heath, and on Sowfield, by Great Strickland, in Westmoreland.

Sium minimum, J. R. [*S. inundatum*, Linn.], near Cloven-stone, in the sike on Great Strickland Moor; in a watery place by the Roman fort called Maburg, Westmoreland.

Soldanella marina, Ger. [*Convolvulus Soldanella*, Linn.], in the Isle of Waney, Lancashire.

Ornus sive Fraæ. sylvestris, Park. [*Pyrus Aucuparia*, Gaert.], in the scars nigh Waterfall Bridge, in the north. It is known by the name of Rawn, or Rown-tree, or Rone-tree, Westmoreland.

Sorbus torminalis, Ger. [*Pyrus orminalis*, Sm.], in Levens Park, near the bridge, Westmoreland.

Stellaria aquatica, Park. [*S. uliginosa*, Murr.], in the ditches of Middleton Moss, Lancashire. Here I saw it in flower.

Thalictrum majus, Ger. [*T. majus*, Crantz], by Cartmall's Old Well, near the Medicinal Well, Lancashire.

Thalictrum minus, Ger. [*T. minus*, Linn.], in the Isle of Waney, copiosè, Lancashire.

Tormentilla fl. pleno [*Potentilla tormentilla*, Nesl.], at Temple Sourby, in Westmoreland.

Filix marina Anglica, Park. [*Asplenium marinum*, Linn.], under a shadowy sea rock by Middleton, near Lancaster.

Pneumonanthe, Ger. [*Gentiana Pneumonanthe*, Linn.], on Red, or Rud Heath, in Cheshire, *copiosè*. Also near Clapham, in Yorkshire.

Trachelium minus fl. albo [*Campanula glomerata*, Linn.], in Troutbeck Holm, by Great Strickland, Westmoreland.

Trifolium album umbellá sil., Mer. [a monstrosity of *T. repens*, Linn.], betwixt Virginia House and Nag-head Inn, in the way to Hackney, London.

Trifol. pumilum supinum flos. longis albis, P. B.; *Trifol. subterraneum tricoccon*, Mor. [*T. subterraneum*, Linn.], on Blackheath, in Kent. It grew in my garden.

Trepodium, sc. [*Aster tripodium*, Linn.], Isle of Waney, Lancashire.

Turritis, Ger. [*T. glabra*, Linn.], at Clibburn, Westmoreland.

Vaccinia nigra, Ger. [*Vaccinium myrtillus*, Linn.]; *Vac. nigr. fruc. maj.*, Park. [*Vaccinium uliginosum*, Linn.]; *Vaccinia rubra*, Ger. [*Vac. vitis-ideæ*, Linn.]; *Vac. palustris*, Ger. [*Vaccinium Oxycoccus*, Linn.],—all grow in the forest of Whinfield, Westmoreland.

Verbena vulg. J. B. [*Verbena officinalis*, Linn.], at Cockermouth, in Cumberland, plentiful.

Viola mont. lutea grandiflora, C. B. [*V. lutea*, Huds.], by Elden Hole, in Derbyshire; Malham Cove, in Yorkshire; on Stanmoor, in Westmoreland, abundantly.

Virga aurea, Ger. [*Solidago Virgaurea*, Linn.], in Clibburn Field, Westmoreland, abundantly.

Umbilicus Ven., Ger. [*Cotyledon Umbilicus*, Linn.], at Oxford, and about Bristol, *copiosè*.

As for *Orchis palmata pal. mac.*, Park., and his *Orchis pal. pal. draconias*, in my judgment you have truly referred them. I have consulted Park. and Ger. Emac., and see no reason to distinguish them. Pray consult

Park. and Lobel. Lobel I have not. Park., I suppose, distinguishes them upon his authority. I purpose to mind them in this following season.

Great Strickland, April 9, —88.

Mr. RAY to Dr. HANS SLOANE.

Black Notley, Jan. 8, —89.

SIR,—Not long since one Mr. Pratt, a gardener, a person (as himself told me) well known to you, who now lives with Sir Thomas Willughby, son and heir of my worthy friend and benefactor, Francis Willughby, Esq., being here with me, and hearing that you were returned from Jamaica, and had brought over with you, among many other natural varieties, divers seeds not common, by you discovered in that and the neighbouring islands, engaged me to write to you to entreat you, if you have not already disposed of them, to communicate some part to Sir Thomas, who, I know, will be very thankful to you for them. Mr. Pratt will take care of them, and part of the product you may command.

Being advised by Dr. Robinson that my first letter, in answer to yours, miscarried, I wrote a second, which I hope came to your hands. I should be glad to hear what progress you have made in order to the publishing your curious observations and discoveries, whereby you will much oblige the learned naturalists of this age, and erect a lasting monument to your own memory.

I am, sir,
Your very humble servant,

JOHN RAY.

For Dr. Hans Sloane,
to be left at Mr. Wilkinson's, at the Black Boy,
over against St. Dunstan's Church, in Fleet street, London.

Mr. RAY to Dr. HANS SLOANE.

Black Notley, October 21, —89.

SIR,—I was much troubled when I was advised by Dr. Robinson that my letter, in answer to yours of August 3, came not to your hands, the subject whereof was to give you thanks for your intended visit, and to tell you how glad I should be to see you (when your occasions should draw you this way) at my poor habitation at Black Notley, and be made partaker of some part of your discoveries and observations; to encourage you in your design of publishing the fruits of your travels in the New World; to offer you any assistance I could afford; and finally (which should have been first mentioned) to congratulate your safe return into England. I was long in hope and expectation of seeing you here, and wondered that you came not, nor sent any word of the alteration of your purpose, and the reason of it. I also (which I had forgot) in the same letter returned you many thanks for the present of seeds you designed me. The days are now so short, and the ways and weather so unfit for travel, that I have little hopes of seeing you here this winter, unless your occasions should engage you to take a journey to New Hall (which is not above eight miles from us), and then I entreat you would make a further step hither, where you shall be most welcome to,

Sir,

Your very humble servant,

JOHN RAY.

For Dr. Hans Sloane,
at Mr. Wilkinson's, a bookseller, at the Black Boy,
over against St. Dunstan's Church, in Fleet street, London.

Mr. LHWYD* to Mr. RAY.

HONOURED SIR,—The same varieties of Entrochi, with those you sent me, are found in Staffordshire, but I had none exactly like them; for, though I picked up some variety of them in Wales, yet they all differ from these in texture, consistence, and colour. About Oxford we have considerable variety of formed stones, more than Dr. Plot has mentioned in his history; but no Entrochi were ever found in this county that I have heard of. If any one of these formed stones may be acceptable to you, I can send you a parcel whenever you please to command it.

Dr. Morison's first tome, which, with the second already printed, contains all the herbaceous kind, is ready for the press. Pray excuse this hasty scribble, and repute me, &c.

Oxford, Feb. 25, 1688.

Mr. LHWYD to Mr. RAY.

HONOURED SIR,—Dr. Lister acquaints me that Mr. Charlton has lately received a land-snail from Surinam, not bigger than a hen's egg, which yet lays eggs as big as those of a sparrow; and the snails that are hatched of them are, he says, twice as large as the eggs.

Sir, I thank you for your pattern of the *Muscus denticulatus major*. One Mr. Richardson, a gentleman of Yorkshire (a person very curious about plants, and the other parts of natural history, and that has spent about six or seven years with Dr. Herman in that study), told me he was somewhat secure that plant grew in Yorkshire, under the heaths, and promised to send me patterns of it this summer.

I only expect your commands for some figured stones.

* See Appendix B.

Those that this country affords are chiefly in imitation of shells. We have none that resemble fish, or any other animals besides, nor that have the resemblance of any plants. *Cornu Hammonis*, *Asteriscus*, *Asteria S. Astroites*, and *Belemnites* of divers sorts, we have plentifully, as also some others that I cannot compare to any natural bodies that I have any notion of. One quarry within two miles of Oxford I have searched at least forty times, and sometimes had five or six with me; yet last Saturday I discovered there three varieties of *Glossopetra*, though none had ever been observed in this part of England before, for what I can learn. One of them is a *Tricuspis*, such as Dr. Lister's in one of the 'Phil. Transact.'

Oxford, April 14, 1690.

Mr. RAY to Dr. ROBINSON.

SIR,—Concerning the Catalogue of Local Words, I shall add nothing till I hear farther from you, save that a friend, whom casually I met withal last week, asked me concerning that catalogue, and told me that he had made a collection of a few words proper to this county, which he was willing to communicate, in case the book came to a second edition.

Upon this occasion I cannot but take notice that, as if Divine Providence governed even such small matters, when I have been about to publish, or in publishing a work, there have been casually offered to me, without my own or friends' procurement, at that very time, some assistance or contributions by mere strangers, and such as knew nothing of the present publication, or at least such as I made no address to, nor expected anything from. Mr. Lhwyd lately wrote me word of a strange snail Mr. Charlton had received from Surinam, which was not above the bigness of a pullet's egg, yet laid an

egg as big as a sparrow, and that the young one hatched of it was twice as big as the egg, of which particulars I desire confirmation from you.

Black Notley, May 16, —90.

Dr. ROBINSON to Mr. RAY.

SIR,—Mr. Charlton has such a snail-shell, as you mention, with eggs and young ones, which are the wonder of our philosophers here; but I being naturally too jealous, do almost suspect (though I durst never declare my suspicion, the thing appearing clear to everybody besides myself) that the eggs and young ones have been severally, and very artificially added to the snail, though indeed the snails are oviparous, and peradventure perfect-shelled animals may be observed in the eggs themselves; so that I may be under an unreasonable doubt.

London, May 17, —90.

Dr. PLUKENET'S Observations on Mr. RAY'S Synopsis Stirp. Britan.*

Page 57. SIR,—The laborious Parkinson was indeed mistaken when he confounded the *Chamæm. vulg.* [*Matricaria Chamomilla*, Linn.] that grows among corn with the *Nobile* [*Anthemis nobilis*, Linn.], or Roman kind; and we are not a little obliged to your learned and piercing observation for the discovery of it; but I cannot readily submit that the *Chamæm. flor. pl.* (which we have so common in gardens, or the naked sort) should either of them be varieties of this *Amarum* [*Matricaria Chamomilla*, Linn.], kind, since they are both very fra-

* It is the first edition of the 'Synopsis,' published in 1690, to which this letter refers.—C. C. B.

grant, and creeping upon the ground, and nothing different, but in those very accidents of flowering, from that which grows trailing on our commons, which, however erroneously styled *vulgar.*, yet in reality is the Roman, or noble sort of *Chamæm.* But that which ordinarily goes under the name of *Cotula foetida fl. plen.*, which I once found in some plenty on the high road from London to Barnet, about half a mile short of the town, is both upright in its stalk, and of no scent at all; and this I dare pronounce to be the double of the *Chamæm. arbor. vulg.*, which I take also to be different from the *Cotula foetida Dod.* [*Anthemis Cotula*, Linn.], or *Chamæm. inodorum*, C. B. P., of which sort I never yet beheld any with a double flower. I must needs own that Dr. Morison, in 'Prælund.' 249, relating there how frequently this *Cotul. inod. sem. nigr.* did occur to him upon the coasts of Bretagne, in France, assigns our double flowering to a variety of this, assuring it also to produce seed of a like hue. I will not question the doctor's seeing the seed (though double-flowering plants seldom bear any), because he seems to be very positive in it; nor indeed was I ever so curious to observe it, not having seen a growing plant for above these twenty years, and so am ignorant of its colour; but the mien and air, the total habit of this multiplex kind, of which I still retain a firm idea in my mind—the lower stature of it, though upright, the brisk and vivid colour of its leaves, the fewer branchings of its stalk, the lesser compass of its double flowers, and shorter lengths of its fine-cut leaves—in all which the *Chamæm. vulg.* differs from the *Cotula inodora*, which bespeak it to appertain rather to the former; of which in my Catalogue I have made it a more immediate variety.

Page 61. There is a *Limonium minus* [*Statice spathulata*, Desf.] said to grow with us in the north of England, and which I have observed in gardens: perhaps the same sort that Parkinson asserts Lobel to have found about Colchester. The most peculiarity that I could

observe, beside that of its being smaller than our common, was a foliaceous wideness on the pedicle of each leaf, even to its insertion to the root or stalk; whereas our common has a slender, round, and nervous pedicle, for a considerable distance towards the leaf.

Page 64. Although you seem to suspect the *Archangel. Dod.*, Clus., to be the same growing on mountainous places with the common *Angel. sylv.* [*A. sylvestris*, Linn.] in our meadows, and so difference of place only to make the diversity, I assure myself they are specifically diverse; and the *Scandiaca** has this peculiar, that it produces its umbels not only a-top, but also on the side of the stalk, two or three *ex alis foliorum*, and sometimes one or two along the upper stalks without any leaf at all; and I have seen it above seven feet high.

Page 247. Among the *emendanda* I find a query about the *Cnicus spinosior* of the Parisian Catalogue, which I take to be no other than that perennial sort you set down in your incomparable 'Cat. Angl.,' and observed it to grow plentifully at lesser distances from the sea, both in Italy, Sicily, and the more southern tracks of France, whose resemblance, though it come well nigh that figure in Clus., under the title of *Carlina sylv.*, which I esteem no more than our spontaneous annual sort, yet certainly it seems more nearly to respond the *Heracantha*, Tab. Ic. 697, both as to its figuration and manner of growing, putting forth its flowers in the way of an umbel. And though this be made use of as a synonyme to express the foregoing common kind, as we find it even in C. Bauh. himself, yet I am inclined to believe this very *Heracantha* is nothing different from the *Cnicus* of the Parisians, and in all likelihood the same with the *Cnicus sylv. spinosior polycaph.* of the same C. Bauh.; not, therefore, to be accepted for our common kind, nor indeed the *Acarna S. Acorna altera Apula column.*, which latter, both from the Fabian description

* This appears to be a mountain form of *Angelica Archangelica*, Linn., but not a native of Britain.—C. C. B.

of it, and synonyme of C. Bauh., which seems by him particularly adapted from the parvity of its flowers and heads, must be quite another thing. But what this is I cannot determine, as never having seen the plant, and therefore do submit it to your most excellent and discretive judgment.

The *Polygala repens nivea*, C. B. P., *repens nuperor*, Lob., I do readily grant is a *Polygonum*, but extremely differing from the *Polyg. Serpylli folio verticillat.* Cat. Angl., *parvum fl. albo verticillat.*, J. B. [*Corrigiola littoralis*, Linn.], which comes under a much nearer resemblance to the *Polyg. muscosum*, P. Bocc., though it be very different from this too, as by collating the plants themselves, I having them by me, you will easily perceive.

That pretty *Polygonum* [*Glauca maritima*, Linn.] Mr. Newton found in Cornwall, myself upon the Severn shore, cannot be the — *Pusillo vermiculato Serpylli folio*, J. B., *Serpylli folio*, Lob., Park. [*Frankenia laevis*, Linn.], if at least the figure of it among authors does any way agree with the thing, since the leaves of this are round and shining, but nothing of a Stonecrop shape; and, therefore, as you have given it the honour of a place in the Appendix of your learned Synopsis, you may find I have given it a different name, viz. *Polygonum maritimum longius radicatum nostras Serpylli folio circinato crassonitente*; and perhaps it is the same with the *Polygon. minus lentifolium*, C. B. P. [*Herniaria lenticulata*, Linn.*], as I have there set down my suspicion.

The *Gnaphalium maritimum* [*Diotis maritima*, Cass.] you have ranged, without any remark, among the pappescent† of that kind, when Breynius, in Prodr. 2, assures it hath solid seed.

Page 54. The *Carduus leucographus hirsutus capitulo*

* To which Linnæus has also erroneously referred this plant of Plukenett, in the Sp. Pl. ed. II.—C. C. B.

† It has no pappus.—C. C. B.

minori, Moris. [*Carduus leucographus*, Linn.], I take to be very different from the *Card. Mariæ hirs. maculatus* [*Silybum marianum*, Gaert.], growing so copiously about Clerkenwell, whose head is little inferior for bulk to the more common with milky veins.

Page 120. *Quær.* Whether the *Anagallis aquatic. major folio oblongo*, C. B. P. [*Veronica Anagallis*, Linn.], be not clearly omitted. As for the *Aquatica major foliis subrotundis* [*Veronia Beccabunga*, Linn.], perhaps it may be only a luxuriance of the *minor* under the same denomination.

Page 108. *Quær.* Whether the *Leucoïum luteum* [*Cheiranthus Cheiri*, Linn.], upon walls, be not a different plant from the *Leuc. vulgar. fl. simpl.* [*Cheiranthus Cheiri*, Linn.] growing in gardens. It seems to me to be much more woody, with larger flowers: the leaves glaucous, and extremely rigid or stiff, qualities not to be observed in the garden kind.

Page 133. I ever took the *Trifol. pumilum supin. flosc. long. alb.*, Phytol. Brit. [*Trifolium ornithopodioides*, Linn.], to be very applicable to the *Trif. siliquis ornithopodii nostras*; and perhaps the author of this name meant no other thing by it. The flowers are long, slender, and piped; they are of a most immaculate white (though your description seems to put them to the blush), and often with three on a stalk; which number of short and curved pods succeeding, does make out a pretty resemblance of a bird's claw; and I am fully persuaded the *Trifolium parvum album monspeliac. cum paucis floribus*, J. B.* is no other than this Bird's-foot Trefoil, which in my Catalogue I have made a synonyme for it. As for the *Trif. subterr. tricocc.*, whereunto you incline to apply the phytologist's title, it is true it has indeed the same sort of white fistulous flowers; but withal it has such a singularity in the mode of growing, as thrusting the stalks

* This name, and *T. pumilum supin. fl. &c.*, a few lines back, are now referred to *T. subterraneum*, Linn., in common with *T. subterr. tricocc.*—C. C. B.

of its flowers, even while it is in flower, into the bosom of the earth, that I cannot but think this very peculiarity could not possibly have escaped the observation of its first explorers, who could not be so deficient in their way of imposing names, as to neglect such a remarkable note, so signal a characteristic in the composition of its title, as alone might serve to distinguish it from all the *Terra filii* and Trefoils in the world. After this manner it was that the famous Dr. Magnol accommodated his name for it; so did Dr. Morison his, who indeed pretended to be the first discoverer of it, or at least assigned it to his princely patron, whose badge (*Gastonium*) was annexed unto its other titles in memory of its first invention, though I find it (yet still by names expressive of this peculiar) in authors before him, as in Vallot, Joncquet, and other catalogue writers, before that of the 'Garden of Blois,' by Morison, had any being in the world; so that I only hence infer that, had the authors of the 'Phyt. Brit.,' or the most learned J. Bauhine (but he saw not the growing plant), in their denominations intended the subterranean trefoil, they would not have contented themselves with lodging their discriminating character upon the flowers alone (that are intercommon with others of the same genus), but would certainly have taken along with them this wonderful property, which, while the plant was flowering, could hardly have evaded their notice; and therefore I presume they understood by those stated names no other than the *Trif. ornithopod. siliq.* [*T. ornithopodioides*, Linn.], which they might observe in flower, not heeding the pods; or perhaps finding the plant before it was podded, they were content to transmit such a diversity in its name as was derivative only from its flowers. Both these pretty trefoils grew in great abundance in Tothill Fields, by Westminster.

Page 145. The *Alsine tetrapetalos caryophylloides quibusdam Holost. minim.*, D. Rap. [*Maenchia erecta*, Pers.], that grows frequently about London in upland pastures, is very different, in my opinion, from the *Alsine*

montan. capillac. folio C. B. P. [*Mæhringia muscosa*, Linn.], which indeed is a foreigner to us, but has a leaf as fine as a hair, and four white leaves to the flower, as the name imports, and is a pretty upright plant, of about a small span in stature, and not much unlike the *Alsin. tenuif. muscosa ejusd.* C. Bauh. [*M. muscosa* β , Linn.]

The *Auricula muris pulchro flore*, J. B. [*Cerastium arvense*, Linn.], omitted in the Synopsis, but inserted among the *Supplenda*, might perhaps have been supplied by the the *Alsine myosotis lanuginosa alpina grandiflora* *S. Auricula muris villosa flore amplo membranaceo*, D. Lhwyd [*C. latifolium*, Linn.], as being the same, or a variety of it.

Page 150. As for the *Sedum parvum acre flore luteo* [*Sedum acre*, Linn.], it is multisiliquous, or multicornous in its capsule, divided into five points, and when ripe makes a pretty resemblance of a star; and therefore, in my opinion, ought not to be disjoined from the *Sedums*, properly so called. Under this banner does the *Sedum minimum acre* march, and, if I mistake not, the *Minus teretifol. album* [*Sedum album*, Linn.]; but I have not yet thoroughly examined it, and therefore am not positive therein; nor can I say, without a peradventure, the like of the *Alpinum ericoides cæruleum*, G. B. P. [*Saxifraga oppositifolia*, Linn.]. Indeed your *Sedum min. Alpinum luteum nostras* [*Saxifraga aizoides*, Linn.] is, to the best of my memory, only bicornous, and is rightly disposed with the *Sedum Alp. trifid. folio*, C. B. P. [*Saxifraga hypnoides*, Linn.], which, in my Catalogue, goes under the name of *Sanicula aizoides tridactylites*; and for the better distinguishing it from the *Sedums*, I have made bold (and I hope not without your good leave) to alter your name, and prefix another to that elegant plant of your own happy discovery, which, with all its synonyma, I must submit to your approbation, viz. *Sanicula aizoid. Alp. fl. majuscul. lut. punctis croceis guttato. Sedum minus Alpinum luteum nostras*, D. Raii. *Sedum parvum montanum lut.* J. B. *Sedum Alpinum*

flore pallido, C. B. P., Park., and *fortè Sedum montanum Coris cæruleæ fol.*, Cat. H. R. P. [*Sax. aizoides*, Linn.]

Among other of our vegetable English rarities, I should think the *Sedum minus lato et crasso caule*, Cat. H. R. P. *Portlandicum Belgarum* might have deserved some place in your well-instructed Synopsis. I never was upon the island myself, but I have had it from very worthy persons that have seen it grow there. It is a vermiculate kind, but I could not learn that it ever flowered. Perhaps the grossness of its fascial stalk absorbs the nourishment that might otherwise have contributed to the production of its flowers.

The *Sedum Alpinum trifid. folio*, C. B. P. [*Sax. hypnoides*, Linn.], must be allowed the same with the *Sedis affinis trisulca Alpin. fl. albo*, J. B., and yet I have seen it in a dry season notably correspond both with the description and figure of the *Sedum Alpin. hispidum ferè spinosum* [*Sax. aspera*, Linn.] of the same author, and perhaps the same thing.

Page 151. The *Cotyledon hirsuta*, Ph. Br. [*Sax. stellaris*, Linn.], though to my own knowledge it be very different from the *Sedum minus*, Clus., yet methinks it bears a very favorable resemblance to the *Saniculæ Alpinæ aliquatenus affinis*, J. B.

I must needs acknowledge that I am not a little entangled in my thoughts about the *Juncus parvus cum pericarpis rotundis*, J. B. [*Juncus compressus*, Linn.], which, though you are pleased to make the same with the *Gram. junc. marit.*, Lob., I cannot easily obtain with myself a compliance herein, but do rather accept it as the *Juncus acutus Cambro-Britannic.*, Park., and which I take to be a true and genuine Rush, as you most truly have observed. But unto this you are pleased to apply the *Junc. Cambrobr.*, Park. (h. e.), *Gr. junc. maritim.*, Lob., whose Icon of it (and indeed so do those of all other authors) agrees exactly with our Moss-rush, the capsules whereof are somewhat elongated and pinched in towards the top, resembling more a cone than

a globe, the capsules of the former being more accurately round, according as its name imports.

Page 213. I must here beg leave to excuse the celebrated Dr. Herman, who in 'Cat. Hort. Acad. Ludg.' with good reason separates the *Abies conis sursùm spectantibus* *S. mas*, C. B. P., *Taxifoliis* [*Pinus picea*, Linn.], from the *Abies alba* *S. fam. ejusd.*, C. B. P. [*P. abies*, Linn.] And, indeed, this male-kind does in nothing differ, as I could observe from the short specimen (and it was all that he had) I received from that ingenious and worthy gentleman, Dr. Tancr. Robinson, who gathered it in some noted garden there, and brought it over into England, when with the present Marchioness of Winchester he last came out of Holland; I say, from what I could observe, it does nothing differ from the female but in the colour of its pectinated leaves, which in our pattern are green on both sides; in this, of a silver and gaudy hue underneath. And, perhaps, from this lovely gaiety of its silver colour, it might at first challenge to itself the annex of female, since men are generally apt to appropriate the most amiable and lovely, and indeed the most excellent of every kind, to the more elegant sex, as we see the more masculine arts and sciences are feminine in their names, and, by an universal suffrage, submitted to the dominion of the Muses.

Casting my eye upon your most curious index at the latter end, which is indeed of necessary use both as to the virtues of those plants contained in the Synopsis, as also in respect of those references you make from the less to their more proper denominations, I found in your account of the *Cannabis sativ.* the received opinion of an untoward faculty it has of emasculating mankind, and making impotent by extinguishing the fluid principles of generation, and which in some degree hath staggered your resolution what to determine about the *Bangüe indorum*. This, from the testimony of Olearius Acosta, and others, being of frequent use, both among Persians and Indians, to exstimulate and incite to venery, and therefore

very unlikely to be of the cannabine order. I confess I cannot determine how far it may conduce to this purpose, or the other to the contrary effect, but so much I know of the *Bangüe* (the seed whereof I have by me, and is very little differing from that of our hemp), that it will certainly cause a dementia, or frantic and ludicrous sort of madness, which runs the body into all the idle gesticulations and postures of the most lascivious, when in the mean time they are only the effects of present distemper, and not any lustful pruritions. And that nature is in distress, and under distemper, till the force and powers of the seed be dissipated and vanquished, will appear by this, that if you overdose your patient, it will certainly kill. I have known, where upon too liberal a dose, the effects have continued for almost a week, and had like to have put the poor soul to have sought for a Bethlem in another world. And why may not the *Cannabis* prove an incentive in the same unlucky sense, especially if that be true, as authors have alleged, that its seed, if freely taken, will induce an *ἀφροσύνη*, and, as Herodotus attests, a fumigation of the seed being cast upon hot coals, is said to affect the Scythians with raving and a sort of frenzy, that was attended with frightful ejaculations and howlings; so that they well enough agree in this particular. And it cannot surely but be allowed on all hands, that this Indian *Bangüe* is a true and genuine hemp, though in the mean time I must pronounce it specifically distinct from our European sort. I confess I was perfectly surprised to find Dr. Herman, in his 'Academic Catalogue,' so peremptorily assert it among the race of *Althæas*, and to promise the world an entire history of it under that head in his desired Musæum Ceylanicum, till calling to mind a mistake that had crept into the Garden of Chelsea, where, some time before the Catalogue came out, the *Sabdariffa* *Clus.* (which is no other than an Indian Alcea) was with mighty ostentation exposed to view for the *Bangüe indorum*. I presently bethought, that as that demonstrator had imposed upon Dr. Lister and other worthy gentle-

men here at home, so, holding at that time a correspondence in Holland, he might in all probability have transmitted the occasion for Dr. Herman's most palpable hallucination abroad.

June 3, 1690.

Mr. LHWYD to Mr. RAY.

HONOURED SIR,—The formed stones were very acceptable. The *Oculi serpentum* are, indeed, of the same kind with those they call Toadstones. The Cats-heads seem to me to be arches or joints of some *Cornu Hammonis*. *Baculi S. Pauli* are of the same substance with those stones that resemble the bristles of some American Echini, which, as I mentioned in my last, Dr. Plot has called *Lapides judaici*; nor is the Doctor much mistaken therein, for the real *Lapides judaici* seem to be nothing else but overgrown stones of this kind, as your large *Glossopetra* is amongst the rest of that sort; whereof I have seen one found in Sheppey much larger than that elegant one you sent me. When I say overgrown, I mean a large sort, or variety, much exceeding those of its family; which puts me in mind of a current report, how that in the county of Antrim, in Ireland, there are divers large pillars of star-stones able to support a church. How your bastions of St. Paul differ from our bristle-stones, you will best judge from some I shall send you. The vertebræ seem to be so indeed, and to have undergone but a small alteration. Those inscribed *Dentes serpentum* and *Ova*, I can say nothing to.

A Synopsis Method. of the Animals and Fossils of England would, doubtless, prove very instrumental to the advancement of natural history; and though a complete enumeration of those things would require much time, labour, expense, and travail, yet I doubt not but such a

catalogue as you could give us would be very grateful to the public, and prove a direction to several others to make farther observations of that kind, as well as your Catalogue of Plants has done. I question not but you may give us a great deal of information in the Catalogue of Insects, as well as you have done already in the Histories of Birds and Fish. I shall be very forward to give in my contribution, which will be some observations on Formed Stones and of the *Ewanquia marina*. Dr. Plot will be likewise as ready.

We have performed our visit to Mr. Cole, and received abundant satisfaction in our journey. He received us, though all unknown to him, very friendly, and spent six hours in showing us his collection, without any interruption, or the least sign of being weary. It consists altogether of natural things, and seemed to us a very extraordinary collection for one person (and who, perhaps, had not the advantage of a liberal education to invite him to such studies) to be able to amass together.

We observed a Virginia animal of the cat-kind, seven foot and a half long, and another of the colour and bigness of our wild cats, which he told us was the common House-cat of Virginia; also a Skunk, which he rendered *Putorius virginianus*. This he told us would stink several miles, and sometimes so infect the air as to cause a pestilence. He showed us the horn of a Narhual, curiously wreathed, and about five feet long. A Danish gentleman told me he had seen a Narhual that had been taken by some Hamburghers at Groneland, an. 1684, having two very long horns, and that he suspected they generally have so, and that the Unicorns of them are but monsters. We also observed some of the *Cornea lamina* of a whale, about three feet long and one broad, of a black colour. We have some at our Museum of a whitish colour, and about nine inches long; also the blade of a Sword-fish [*Xiphias gladius*], caught about Swansea, in Glamorgan-shire. He has several curious figured stones and shells, found in the west of England and in South Wales; very

elegant trees of the *Abrotanoides Planta Saxea Clusi*, with considerable variety of other Pori, Corals, Horny Sea Plants, &c. I admired a sort of *Cornu Ammonis*, found somewhere in Somersetshire, resembling a nautilus, but having two prominences each side of the aperture, about as thick and taper as the end of a walking-staff to be screwed in and out. Another Cornu, of a rainbow colour, about six inches diameter, and as thin as a shilling, composed of a sort of Selenitis or Tale. The resemblance of several exotic plants (as it should seem to me) in a kind of cole-slat, found somewhere near Bristow; they seemed to be of several capillaries, and one particularly like the *Capillus Ven. verus*; the signatures of the leaves as curiously veined as the real plants have. I have room to add no more at present.

Oxford, July 1, 1690.

MR. LEWYD TO MR. RAY.

HONOURED SIR,—Considering your local words since I read your letter, I find some amongst the north-country words to bear affinity with the Welsh, both in sound and signification, which possibly may be some remains of the British tongue continued still in the mountainous parts of the north. Of these, if you please, I shall hereafter send you a catalogue; but in the mean time I must confess, that although they may agree in sound and sense, it will yet be difficult to distinguish whether they have been formerly borrowed from the Britons, or whether they are only an argument that the ancient British language had much affinity with those of Germany, Denmark, &c. I omit the supposition of the Welsh borrowing them from the English, in regard I find them not (at least but very few of them) used by the borderers of both nations; and the Britons might leave them in Westmoreland, Cumberland, &c., having heretofore lived there; but the

English of those parts could communicate nothing of their language to the Welsh, in regard they have never lived in Wales nor have bordered on them. Moreover, some of these words are in the 'Armorican Lexicon,' and the Britons that went to Armorica left this country before the Saxons came in.

The *Pectinites Amphiotis latiusculè sulcatus*, and the *Echinites rotularis minor angusticlavius*, with some others, are commonly found in beds of sand, which lie under the vein of stone at the bottom of the pits, though sometimes I have found the former in the stones by breaking them; but those usually of a different colour from the sandshells. Whether they were ever the tegumenta of animals or are only primary productions of nature in imitation of them, I am constrained to leave in medio, and to confess I find in myself no sufficient ability or confidence to maintain either opinion, though I incline much to the latter. However it be, it seems an extraordinary delightful subject, and worthy the inquiry of the most judicious philosophers. On the one hand, it seems strange if these things are not shells petrified, whence it proceeds that we find such great variety of them so very like shells in shape and magnitude, and some of them in colour, weight, and consistence; and not only resemblances of sea shells should be found, but also of the bones and teeth of divers sea fish, and that we only find the resemblances of such bodies as are in their own nature of a stone-like substance. On the other hand, it seems as remarkable that we seldom or never find any resemblance of horns, teeth, or bones of land animals, or of birds, which might be apt to petrify, if we respect their consistence; inso-much that I suspect few formed stones are found (at leastwise in England), except in some extraordinary petrifying earth, but what a skillful naturalist may, and that perhaps deservedly, assimilate to some marine bodies; but yet when we confer them with those bodies they seem most to resemble, they appear generally but as mockshells and counterfeit teeth, differing from them little less

than the works of art do from those of nature, which we endeavour to imitate, as if the earth in these productions (to speak vulgarly) should only ape the sea. To find out the truth of this question, nothing would conduce more than a very copious collection of shells, of the skeletons of fish, of corals, pori, &c., and of these supposed petrifications.

The figures of plants in the Cole-slat I have formerly mentioned to you, is clearly a different thing from the *Pictra Imboschata* of Imperatus. Indeed I have hitherto seen imperfect pieces of it; but whereas the *Pictra Imboschata* (of which kind of figures we have also some variety in England and Wales) represents only rude branches imitating rather some coralline or sea-moss than trees; the Cole-slat exhibits whole branches with leaves, and distinction of the veins and texture of them. I have a small piece which seems to resemble a branch of the *Filix fem.* very much, but the specimen is very imperfect.

Mr. Bobart tells me the *Gymnocrithon* is the very same with the London *Triticum Spica hordei*. The *Alsine myos. lan. Alpina grandiflora* [*Cerastium latifolium*, Linn.] I do not question at present to be a distinct plant from the *Aur. muris pulchro fl. albo*, J. B. [*C. arvense*, Linn.], which is very common in these parts, but nowhere in North Wales (supposing this no mistake) that ever I could find. The plant I mean I never saw but at the highest part of all Snowdon: it is very woolly, but more especially before it comes to flower, which is extraordinary membranaceous, or thin; the calyx very long, crooked, and transparent, and divided at the top with many notches; the whole plant every way bigger than the *Auricula muris*. Since I sent you the collection of stones, I have discovered several new ones, whereof you may hereafter expect some farther account from, &c.

Oxford, Nov. 25, —90.

MR. RAY to Dr. ROBINSON.

SIR,—The Essay you propound concerning the ancient and modern learning were not difficult to make; but I think you are better qualified for such an undertaking than I, and therefore shall refer it to you. In summe the ancients excel the moderns in nothing but acuteness of wit and elegance of language in all their writings, in their poetry and oratory. As for painting and sculpture, and music and architecture, some of the moderns I think do equal, if not excel, the best of them, not in the theory only, but also in the practice of those arts; neither do we give place to them in politics or morality; but in natural history and experimental philosophy we far transcend them. In the purely mathematical sciences abstracted from matter, as geometry and arithmetic, we may vie with them; as also in history; but in astronomy, geography, and chronology, we excel them much. No wonder they should outstrip us in those arts which are conversant in polishing and adorning their language, because they bestowed all their time and pains in cultivating of them, and had but one, and that their native tongue to mind. But those arts are by wise men censured as far inferior to the study of things, words being but the pictures of things; and to be wholly occupied about them, is to fall in love with the picture and neglect the life; and oratory, which is the best of these arts, is but a kind of voluptuary one, like cookery, which sophisticates meats and cheats the palate, spoiling wholesome viands, and helping unwholesome.

Black Notley, Dec. 15, —90.

MR. RAY to DR. ROBINSON.

SIR,—Your last letter, of March 3d, expresses such excess of kindness, as one that did not well know you to be alien from all flattery or dissimulation would hardly think you wrote your own sense, especially seeing no merit of the object could induce you. I cannot but thank you for your great though undeserved (that I say not ill-placed) affection, which must needs enkindle an answerable flame of reciprocal love in the breast of any man that hath the least sense of gratitude or spark of good nature in him.

Of English Serpents, I never knew nor heard of above three kinds; and though one cannot be sure of a negative, yet I verily believe there are no more: those are,

1. *Natria Torquata*, or the Snake, so called because it hath a pale yellow spot or streak on each side of its neck, though not encompassing it.

2. *Vipera*, or the Adder. I am well assured that Viper and Adder are two names of the same species, having taken exact notice of the viper beyond sea, and our adder at home. The differences between the Adder and the Snake are, that the former is much shorter for its bigness, especially his tail below the vent; that he is marked on the back with black lines or spots, which the snake wants; that his belly is blackish and of one colour, whereas the snake's is particoloured, of a pale yellow and blue. That the adder never grows to the bigness that I have seen some snakes attain to; and lastly, that the adder is viviparous, as I myself can testify, having taken seven young ones out of the belly of a female, come to their full perfection, as big almost as some women's little finger.

3. *Cacilia*, the Blind-worm, or Slow-worm, which again are two names of the same sort of animal. It is much less than the adder, and streaked with blackish lines

along the body. All these kinds are plentifully in my own fields.

As for outlandish serpents, I saw but one kind beyond seas different from ours. Indeed I have such a natural abhorrence of that sort of animal, that I was not very inquisitive after them. That I saw was bought at Rome by Sir Philip Skippon, of a man that brought them about to sell: it was very gentle and innoxious, and I suppose the *Anguis Esculapii*; but I described it not. After a while it escaped out of the box wherein we kept it, and hid itself that we could find it no more.

Besides these I have mentioned, I doubt not but there are divers species of European and African serpents; but know little of them of certainty which we may confide in but their names. Of the American serpents described by Piso, Marcgrave, and Hernandez we have more assurance, among which the Rattle-snake, whose exuvia are common in museums, is most noted and best known.

Since my last, viewing the Mosses growing about my house, to see whether they were as yet come to the head, I found some of them were; of which I observed no less than four sorts of such as Dr. Plukenet and Mr. Doody call *Musci trichoides*, but herbarists generally *Adianta*, or *Polytricha aurea*, two with erect heads, and three with reflex, besides one which was not come yet to the head; so that I have already discovered six species growing upon my own house.

Meeting yesterday with Mr. Dale, and examining him about serpents, he confidently affirmed to me that he had twice seen the *Amphisbæna* in this country, and named the places: not that there is any serpent that hath two heads, or a head at each end, but only that it hath a faculty of going backward as well as forward; and the tail is turrit, and somewhat resembles a head. I confess I did formerly distrust the very being of an *Amphisbæna*, but considering that worms, and some *Eruca*, can and do move nimbly backward and forward, I see no reason but some serpents may do so too, and we have pretty

good authority that there are such. I was a little staggered at his assertion, but yet must suspend my belief till I have better assurance.

March 10, —90.

DR. PLUKENETT to MR. RAY.

SIR,—Your kind acceptance of my poor present is an addition to former favours, and I give my hearty thanks for the pains you took in the perusal of my Botanic Icons. I shall think mine the better bestowed on their production, in that you are pleased to give so great a character of them. I am only sorry anything of the desirable exactness, in reference to yourself, should escape my notice; for though I have industriously designed to avoid all exposing others mistakes, the omissions here are purely humane, and slips of frailty, without the least partiality or any sinister design of derogating from the felicity of your parts, or the honour that is due to the painful discoveries you have so freely communicated to the world.

1. Your first particular is an instance in the *Alsine Caryophylloides tenuifol.*, &c. [*Arenaria verna*, Linn.] of my Phytography, and its reference to that of the *Liniflore* in your general history. I confess I did make it a question of doubt, and the want of a closer application to yourself was the occasion of the misconjuncture; and since it was only my doubt, which is not without a scope and latitude, that being always allowed to questions of this nature, though there be not an exact concurrence of every nice particular, it will I hope seem more tolerable, especially when I have so good an example as yourself to warrant me herein; for I observe, even in the very same plant, you are pleased by way of question to annex the *Auricula muris pulchro flore folio tenuissimè diviso*, J. B., as a proper synonyme thereto, which does as little answer it in the petala of its flowers as mine, and perhaps much less in its leaves.