

mand a *specimen* of it, that it may be better examin'd by more skillful Naturalists.

2. There is an other Mineral Juycce in these parts of *England*, which I have much inquir'd after, and have longed to see; and now I am likely to be satisfied, as you may think by Mr. *Jessop's* words: *Captain Wain*, (saith he) *a diligent and knowing person in Mines*, gave me a *White Liquor*, resembling *Cream* both in colour and consistence, which he found in great quantities at the bottom of a *Coal-pit*, 49 yards deep, which I reserve for you. But this is not all the information that hath been given me about this *White Liquor*. Mr. *George Planton*, a curious and very intelligent person, writes thus to me from *Sheriff Hales* in *Shropshire*: *I shall trouble you with an Observation, I lately met with in our Iron-mines, especially that which the Country people here call the White Mine, which yields the best Iron-stone. The Miners do commonly, upon the breaking of a Stone, meet with a great quantity of a whitish milky Liquor, inclosed in the Center of it; they sometimes find a Hogshead contain'd in one cavity. 'Tis in taste sweetish; only it hath a Vitriolick and Iron-like twang with it.*

So far Mr. *Lister* and his friends, from whose generosity we have received a parcel of each of these substances for further examination.

A Description of certain Stones figured like Plants, and by some Observing men esteemed to be Plants petrified: Communicated to the Publisher, by the same Mr. Lister, from York Novemb. 4th. 1673.

S I R,

I N this paper I send you an Account of some of the Parts of certain *Stones* figured like *Plants*; which *Agricola* (5^o *Fossilium*) calls *Trochitæ*, and the compound ones *Entrochi*; we in *English*, St. *Cutberds beads*.

Agricola will have them akin for substance to the *Lapides Judaici*; and, indeed, these are of an opaque and dark coloured Sparr; though I have of them from some parts of *England* of a *white Sparr* or *Cawke*, as our *Miners* call it: They all break like *Flint*, polished and shining.

Put into *Vinegar* (saith he) they buble: *Atque etiam repe-*

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vivunt interdum qui se tanquam Astroites moveat de loco. But this is true of all Fossils of what figure so ever, that Vinegar will corrode and dissolve as a *Menstruum* ; provided they be broken into indifferent small grains, and the bottom of the Vessel hinder not, they will be moved from place to place by it.

The figure of the *Trochite* is cylindrical: the outmost round or Circle (we speak of one single joynt, which *Agricola* calls *Trochites*) is in general smooth, both the flat-sides are thick drawn with fine and small rayes, from a certain hole in the middle to the circumference. From the shooting of these rayes like Antimonie, and because a large Peice of this Stone of many joynts resembles the bole of a Tree, *Aldrovandus* (who yet elsewhere discourses of this Stone, after *Agricola* and *Gesner*, under the name of *Trochite* and *Entrochi*) not improperly terms it (*Musei Metallici lib. 1. pag. 188.*) *Stelechites Stibii facie* ; and there gives us a true figure of it. Two, three, or more of these *Trochite* joyned together, make up that other Stone, which he calls *Entrochos*. The *Trochite* or single joynts are so set together, that the Rayes of the one enter into the others Furrows, as in the Sutures of the skull. Hitherto we agree to what *Agricola*, *Gesner*, *Boetius*, *Aldrovandus* and *Wormius* have said of them: We proceed upon our own Observations, which go much further.

The Places where we find them very plentifully, are certain Scarrs in *Broughton* and *Stock*, little Villages in *Craven*. The Stones of the above said described Figure, as many as have yet come to my hands from those places, have afforded us these Particulars. As to their *bigness*, I never yet met with any much above two inches about; others there are as small as the smallest pin, and of all magnitudes betwixt those proportions. They are all *broken bodies*; some shorter Pieces, some longer, and some of them, indeed, *Trochite*, that is, but single joynts. I never found one intire piece much above two inches long, and that very rarely too; in some of which long pieces, I have reckned about 30 joynts. And as they are all broken bodies, so are they found *dejected* and lying confusedly in the Rock, which in some places, where they are to be had, is as hard as Marble, in other places soft and *shelly* (as they call it,) that is, rotten and perished with the wet and air.

And

And though in some places they are but sprinkled here and there in the Rock, yet there are whole *bedds* of Rock of vast extent, which are made up for the most part of these, and other figured Stones, as *Bivalve*, *Serpentine*, *Turbinate*, &c. as at *Braughton*.

As to the injuries they have received in their removal from the natural *posture*, if not place of their growth and formation, they are manifest. For, besides their being all broken bodies, we find many of them depressed and crushed, as if the joynt of a hollow Cave should be trod under foot: These Crushes being also real Cracks as of a stone or glass. Again these stones consisting of many *vertebræ* or joynts, they are many of them strangely dislocated; sometimes two, three, or more of the joynts in a Piece are slipped and out of order or rank, and sometimes a whole *series* of joynts, as when a pack of Crown pieces leans obliquely upon a Table. Further, others I have that are twisted like a Cord, if this possibly may be reckoned amongst the injuries. Lastly, some have their joynts, indeed, even and in file, but are yet stuffed with a forrain matter, as when bricks are layed in mortar.

There is great variety as to the thickness of the *Trochita* or single joynts: some are so thin, that they are scarce the full of the *24th*. part of an inch; others are a full quarter of an inch thick; of these latter I only found at *Stock*: These, I say, are the extream proportions, as far as my Observations have yet gone; there are joynts of all measures betwixt those two Extreams. This is true in divers Pieces, for mostly the joynts are of an equal thickness in one and the same Piece. Note, that there are slender and small *Entrochi* or Pieces, which have as thick joynts, as the biggest and fairest Pieces.

There is also some difference in the seams or closing of the joynts: Some are but seemingly joynted; which appears by this, that if they be eaten down a while in distilled vinegar, the seeming Sutures will vanish, as in some I had out of *Staffordshire*, from about *Beresford* upon the *Dove*: Others and all here at *Braughton* and *Stock* are really joynted, and the Sutures indented; which indentures being from the terminating of the rayes, they are more fair or large, according to the difference of the rayes, but even, equal, and regular.

We have said, that generally the outmost Circle of each joynt is flat and smooth; yet are there many other differences to be noted as to that Part: Very probably because they are Parts or Pieces of different *Species of rock-Plants*.

1. That the smooth-joynted (to say no more of them here) are of different thickneses as to the joynts.

2. On some *Entrochi* betwixt Suture and Suture in the middle of each joynt, are certain Knots in a Circle; the joynts thus distinguished are very deep and large, and are very frequent at *Stock*.

3. There are likewise of these with a circle of knots, which have many knots besides upon each joynt and look rugged.

4. Some with much thinner joynts, which yet have a Circle of knots in the middle of each joynt; and this also looks as though it was all over knotted, and these are found at *Braughton* only, as far as I know.

5. As some have but one Circle of knots, others are knotted all over the joynt and rough; so are there some others, which have a Circle of larger knots in the middle of each joynt, and a circle of lesser on each side close adjoining to the border or verge of the Suture. This is huge pretty, and they are found at *Stock*.

6. Others betwixt Suture and Suture in the middle of each joynt rise with a circular edge.

7. A smooth *Entrochos* with a large or much risen edge on the middle of one of the joynts, and a much smaller on the middle of another joynt and that alternatively.

8. The same alternate difference, the joynts only much rounder and blunt, and here the joynts are visibly one thicker than the other.

9. The same with alternate edges knotted.

10. A double edge in the middle of every joynt; this makes the joynts look as though they were exceeding thin and numerous, but indeed they are not so.

11. A double edge in the middle of every joynt knotted by intervals, or as it were serrate edges.

And these are some of the differences, that I have at present been able to make out. Some of the Pieces of most, if not all, of the differences of these *Entrochi* are ramous, having

ving lesser branches deduced from the greater, and that without order. Some have but few branches on a Piece; others I find so thick of branches, that they resemble a ragged Staff. These *Branches* are deep inserted within the stemm, and by being separated, leave great holes in the sides of it. The rayes in the joynts of the branches run cross to the rayes of the stemm. On thick stemms are sometimes very small branches, but mostly the bigger the stemm, the thicker the branches. Some of these branches are branched again: Yet I find not any of them above one inch intire, and yet adhering and inserted into its stock or bole, and for the most part not above a joynt or two. The Branches are known from the stemm, by being a little crooked and something tapering or Conic.

We meet with but few Pieces (besides the branches) that are not exactly Cylindrical, setting aside the injuries above mentioned, that is, that are not as thick at one end as at the other, and perfectly round, notwithstanding that we said, that there are of them of all degrees of magnitude within the proportions above-named.

And, as we said, it is rare to meet with a Piece, that is not exactly cylindrical; so amongst those few that are not so, some we find tapering at both Ends, and much swelled in the middle. And this is the other *Species* of this Stone, according to the division of *Agricola: Entrochi dua sunt Species; aut enim aequaliter teres est; aut teres quidem, sed pars ejus media tumet, utrumque caput angustius est.* But this must not be understood, as though both ends were compleat; for, these are but broken Pieces, as the rest, more swelled in the middle.

Others there are figured like a kind of Fruit, or *Lapis Judaicus*; but these also are truly *Entrochi*, and are joynted notwithstanding this shape. Upon a small Stalk of two or three joynts is suddainly raised an Oval bottom, broken off also at both ends.

To these we shall add what seems to have been *summitates* or *fustigia*; long and slender Pieces with a little jointed button, hollow on the very top; which top seems not to have been divided or broken off from any thing else.

I must not forget, that as they are hollow in the middle (and so it was easy to string them like *beads*, which gave occasion

to the *Engliff* name ;) fo thefe hollows are fometimes filled with earth, and fometimes an other *Entrochos* is inclofed like a pair of fcrews, and which is (as it were) pith to the other. Of thefe inward *Entrochi* fome I have which are tranfparent. *Note*, that the hollows or piths are of different bores, but moft are round. And yet there are of them in great plenty at *Stock*, whofe hollow in the middle is in the elegant fafhion of a *Cinqufoil*; and the rayes of the joynts of thefe *Entrochi* are much deeper and fewer in number, than of any other yet obferved by me. Thefe alfo are fmooth-joynted. This is moft furprifing, and I know not any Vegetable, whofe Pith is perforate in fuch a manner.

Laftly we in thefe Rocks find certain *rude Stones*, of the bignefs of Walnuts, which have many impreffions of *Trochite* upon them, as though they had been the roots of them. And when thefe have been a little cleaned in Vinegar, thefe impreffions appear more than cafual; for, the fubftance that covers them (if not the Stones themfelves) is Sparr, and the impreffions are round holes with rayes, like thofe holes, which we faid above the Branches made in the fides of the *Stock*, when broken out from them. *Agricola* makes mention of thefe alfo: *Sæpe numero lapis informis reperitur unâ cum Trochite & Entrocho, Rotæ in fe continens figuram; quæ in eo quafi quadam radix, Trochitis jam abruptis, remanfit.*

Although there are indeed certain *lapides informes*, which may with fome colour be thought to have been the Roots, from whence fome *Entrochi* have been broken; yet are not all fuch lumps of Stone, on which we difcern the *Veftigia* of *Entrochi* to be called *lapides informes*, fome of them being moft elegantly figured. One or two of them, which I found intire and compleat at *Stock*, amongft very many others ftrangely flattered and defaced, I fhall defcribe to you.

1. The firft is in the fafhion of a Pine Apple or Cone, with a hollow bottom, about the half of an inch deep, and as much over at the bottom. On the very Top is the round figure of an *Entrochos* broken off; round about the bottom or *bafis* are five fingle feet at equal diftances, in the figure of *Crefcents*. This Stone is *incrufate* or made up of angular Places; *viz.* the bottom is compofed of five plates, which we call Feet; the middle

dle of the Stone of five other plates, all of a Sexangular figure; and the Top Stone. All other plates are smooth on the outside.

2. The second is a large Stone of the bigness of a Walnut, much after the pyramidal fashion of the other; the bottom convex, about one inch and a quarter over; on the top is the lively impress of an *Entrochos* broken off, or rather a *Trochites* yet remaining; round the *Basis* are five *double points* or Feet at equal distances, all broken off and somewhat in the figure of Crescents. This Stone also is incrustate or covered with Sex-angular plates, which are rough. I can compare the incrustating of these stones to nothing so well, as to the skins of the *Piscis Triangularis*, which *Margravins* describes: *Cujus Cutis (nam caret squamis) figuris Trigonis, tetragonis, pentagonis, hexagonisqae mire distinguitur & notatur.*

Of these figured plates I find so great variety in the Rocks, both as to the number of Angles and other beautiful Ornaments, that it has caused in me great admiration. And it will not be amiss, since they manifestly belong, as parts, to the above described stones, to enumerate them, at least, as many as have yet come to my hands. Some of these *angular plates*, I said, are yet visible in their natural place and posture, in the described stones: But I find the greatest part of them broken up and heaped together in great confusion in the Rocks. And it will be as hard to set them together, as to skill to tell you, what the figure of an intire *Entrochos* (or the stone to which all the above described parts seem to belong) is: But we will omit no part, that we can justly say belongs unto it. We shall begin with *Pentagonous* plates.

1. The first is a *Pentagonous* Stone, as broad as my thumb-nail (we speak of the fairest of them,) hollow on the one side, like a Dish; convex on the other side, where are certain eminent knots, about the bigness of small pinn-heads, set in a kind of square order: This plate is somewhat thinn at the edges and yet blunt.

2. The second is also *Pentagonous*, and not much narrower than the other: It is, indeed, somewhat convex above, but not hollow underneath; it is smooth on both sides, at least without those eminent knots, which are so remarkable in the other

plate: The edges of these are as thin as of a knife, and sharp.

3. The third *Pentagonous* Plate is not near so broad, as either of the former; yet one I found amongst a 100 of this sort, that is full as large as any of the above described: These are all convex on the one side and somewhat hollow on the other; thick edged; one of the 5 sides only is indented; the indented side is ever the thinnest, and the stone is most sloped towards that side, *Note*, that there are many amongst these last indented sorts of plates, which are channelled on the concave side and otherwise notched.

4. All these *Pentagonous* plates are to be found plentifully at *Broughton* or *Stock*. But I shall not omit in this place the mentioning of one, I by chance espied amongst certain figured Stones, which I had out of the Quarrie near *Wansford*-bridg in *Northamptonshire*, and it probably belongs to these kind of plates I am now in hand with. It has one of the five sides thick indented; the convex part has in the middle a raised *Umbo*, like some antient shields, and round about the sides a list of smaller Studds. We have since had some plates much like this from *Bugthorp* under the Woods in *Yorkshire*. We proceed to remark some differences in the *sex-angular* plates.

5. All these stones are but small, save here and there one: The first of them is but little hollow on the one side, and convex on the other; having the convex-side most elegantly wrought with raised or embossed work, that is, with an equilateral triangle besfriding each Corner, and a single right line in the midst; or, if you will, two Triangles one within another. These we found at *Broughton-fear* only.

6. That Plate-stone which is most common in these Rocks, there being a 1000 of these to be found for one of the other, is *sexangular*, a little hollow on the one side and convex on the other: They are for the most part smooth on the convex side or scabrous only; some are much thicker than others; some being as thick as broad, but most are Plate-like; the sides are very unequal, as in Crystals; sometimes five broader sides and one very small; again two sides broad and four much narrower, and infinite other differences as to the inequality of sides.

Words are but the arbitrary symbols of things, and perhaps

haps I have not used them to the best advantage. Good Design (and such is that I send you, done by that ingenious young Gentleman and excellent Artist, my very good friend, Mr. *William Lodge*,) or the things themselves, which I have all by me, would make these particulars much more intelligible and plain to you.

The Explication of the Figures. See Tab. I.

1. A *Trochites* or single joynt with very fine and small *Rayes*.
2. A *Trochites* or single joynt with the pith bored through, in the fashion of cinquefoil.
3. A *Trochites* or single joynt, of an Oval figure, the *rayes* scarce apparent and a very small point in the place of the Pith.
4. A single joynt of two of a middle size, with the pith exceeding large.
5. A pack of single joynts dislocated, and yet adhering in their natural order.
6. A very long *Entrochos* or a piece of many smooth joynts with the branches broken off.
7. An *Entrochos* with smooth joynts not branched.
8. The biggest *Entrochos* I have yet seen, with stumps of branches.
9. A smooth *Entrochos* with very thin and numerous joynts.
10. The largest or deepest joynted *Entrochos*, save the oval one noted in the third figure.
11. An *Entrochos* with very many disorderly knots in each joynt.
12. An *Entrochos* with only one single Circle of knots in the middle of each joynt.
13. An *Entrochos* with three Circles of knots.
14. A smooth *Entrochos*, with a large and much risen edge in the middle of each joynt.
15. Alternate joynts round or blunt.
16. A double edg in the middle of each joynt.
17. Alternate joynts, edged.
18. 19. 20. Certain other differences noted in the Paper, but not perfectly express'd in the Design.
21. An *Entrochos* with a branch of a good length,

22. A branch of an *Entrochos* knocked off.
 23. An *Entrochos* fruit-like.
 24. A *fastigium* or *Summitas*.
 25. A *radix* of an *Entrochos* in *Prospective* : where A is a joynt or *Trochites* yet remaining, whence an *Entrochos* was broken off. C. E. F. D. are four of the double feet ; the 5th. being hid.
 26. The same *radix* to be seen at the best advantage : A the *Trochites* or *basis* : C. B. D. E. F. the five double Feet, Note also the sex-angular rough plates, which incrustate the stone or cover it all over.
 27. A smaller *Radix* with smooth plates and five single Feet : H. the top stone. I. one of the five Feet. K. one of the five angular plates which incrustate the middle of the stone. G. the *basis*, Also the same stone in *prospective*. G. the same with the hollow bottom upwards.

Figures of Plates supposed to incrustate divers roots,

28. A pentagonous plate knotted.
 29. A thinn edged smooth pentagonous plate.
 30. An indented pentagonous plate.
 31. The Northamptonshire pentagonous plate.
 32. A large pentagonous smooth plate.
 33. An hexagonous plate imbossed with angles.
 34. An hexagonous plate, as deep as broad.
 35. 37. Odd figured plates.
 36. A quadrangular plate ribbed and indented.

So far this Letter ; which was soon after followed by another, containing the Learned Mr. Ray's annotations upon the same, which were these :

I received (saith Mr. Ray) your accurate Observations about *St. Cuthberds beads*. A strange thing it seems to me, that the broken pieces of those bodies, which you find, I mean, of the main stems, should be of equal bigness from the top to the bottom, and not at all tapering, if they be indeed the bodies of Rock-plants. There are found in *Malta* certain stones, called *St. Pauls Batoons*, which I suppose were originally a sort of Rock-plants, like small snagged sticks, but without any joints ; the trunks whereof diminish according to the propor-

proportion of other plants after the putting forth of their branches. Those Roots, that you have observed, are a good argument, that these Stones were originally pieces of Vegetables. Wonderful it is, that they should be all broken, and not one plant found remaining entire : And no less wonderful, that there should not at this day be found the like vegetables growing upon the Sub-marine rocks ; unless we will suppose them to grow at great depths under water. And who knows but there may be such bodies growing on the rocks at this day, and that the Fishers for Coral may find of them ; tho' being of no use they neglect and cast them away. Certain it is, there is a sort of Coral jointed.

A farther Description and Representation of the Icy Mountain, called the Gletscher, in the Canton of Berne in Helvetia ; which was formerly taken notice of in Numb. 49. of these Tracts.

THis account was imparted to us from *Paris* by that worthy and obliging person, Monsieur *Justel*, who had received it from a trusty hand living upon the place, as follows ;

The Icy Mountain, of which I have sent you the Scheme *, deserves to be view'd. The letter *A* signifies the Mountain it self, which is very high, and extends it self every year more and more over the neighbouring meadows, by increments that make a great noise and cracking. There are great holes and caverns, which are made when the Ice bursts ; which happens at all times, but especially in the Dog-days. Hunters do there hang up their game they take during the great heat, to make it keep sweet by that means. Very little of the surface melts in summer, and all freezeth again in the night. When the Sun shineth, there is seen such a variety of colors as in a Prism.

* See Tab. 2.

B. is a rivolet, issuing forth from under the Ice, which is pretty deep and extremely cold.

C. are the Huts, that were built at the beginning, at a considerable distance from the Mountain ; but at present they are nigh to it by reason of the continual increas which this Ice maketh.

There is such an other Mountain near *Geneva* and upon the

Alps

