D. the middle of the Tower of *Montlehery*.
E. the top of the Pavillon of *Malvoyſin*.
F. a pole placed for this purpoſe on the ruins of the Tower of *Montjay*, with a lock of hay put upon it, that it might be ſeen at a greater diſtance.
G. the middle of the Hummock of *Mareuil*, where it was requiſite to have a fire made, to diſtinguiſh it at a diſtance.
H. the middle of the great Oval Pavillon of the Caſtle of *Dammartin*.
I. the Tower of St. *Sampſon* in *Clermont*.
K. the Mill of *Jonquieres* near *Compiegne*.
L. the Tower of *Coyvrel*.
M. a little Tree on the hill of *Boulogne* near *Montdidier*.
N. the Tower of *Sourdon*.
O. a little forked Tree upon the point of the *Griffon* neer *Villeneuve St. George*.
P. the Tower of *Montmartre*.
Q. the Tower near St. *Chriſtopher* at *Senlis*.

Thus we have given you, we hope, ſome ſatisfaction as to this point, at leaſt as to the material parts of it. As to all the particular niceties, (which it would be too tedious to deſcribe) the Book it ſelf, which ſurely ſome time or other will come abroad, may render that ſatisfaction compleat.

Mean time, I would by no means, that this ſhould put a ſtop to the Ingenuity and Induſtry of our Philoſophical Friends here in *England*, or deprive either them of the pleaſure of comparing their exactneſs with that of M. *Picarts*, or the world of the advantage of having ſo important a Problem reſolved by divers Artiſts in different Countries, by different wayes; that ſo, the whole comming to be reflected upon, one may be able to conclude from the accurateneſs of the Obſervers, who they are that are come the neareſt to truth in their Obſervations.

An Extract of the French Journal des Scavans, *concerning a New Invention of Monſieur* Chriſtian Hugens de Zulichem, *of very exact and portative Watches.*

THE Watches of this Invention being made in ſmall, ſhall ſerve for very exact Pocket-watches, and when made greater, ſhall

shall be useful every where else, and particularly to find the Longitudes both by Sea and Land, forasmuch as their movement is regulated by a principle of Equality, as that of Pendulum's is Cycloid, and that no kind of carriage shall be able to stop them.

The secret of the Invention consists in a Spiral Spring, fastned by its innermost end to the Axis or Arbre of a poised Balance (bigger and heavier then is usual) which turns upon its pivots; and by its other end to a piece that is fast to the watch-plate. Which spring, when the Ballance-wheel is once set a going, alternatly shuts and opens its spires, and with the smal help it hath from the watch-wheels, keeps up the motion of the Ballance-wheel, so as that, though it turn more or less, the times of its reciprocations are always equal to one another.

In Fig. 4. Tab. 1. the upper plate of the Watch is A B: The Circular Ballance-wheel, C D, of which the Arbre is E F: The Spring turned spirally, G H M, fastned to the Arbre of the Ballance-wheel in M, and to the piece that is fast to the Watch-plate, in G; all the spires or windings of the Spring being free without touching any thing. N O P Q is the Cock, in which one of the pivots of the Ballance-wheel turns; R S is one of the indented Wheels of the Watch, having a ballancing motion, which the Ballance-Wheel of rencontre gives to it. And this Wheel R S catches in the pinion T, which holds on the Arbre of the Ballance, of which by this means the motion is entertained as much as is necessary.

An Extract of a Letter, lately written to the Publisher by Dr. *Swammerdam*, of an unusual Rupture of the Mesentery.

Cum M ad vos iret Cl. Dn. C, & quæreret ex me an aliquid literarum per ipsum ad Te curare vellem, nec suppeteret aliud scribendi argumentum, præsentem casum rariorem vobis communicare volui.

Figura adjecta repræsentat Convolvulum sive Affectum Iliacum lethalem, ex ruptura & circumvolutione Mesenterii *intestina constringentis, ortum.*

* *A A Intestinum Ileum, chylo, flatu & ingestis mirum in modum turgens atq; inflammatum.* * V. Tab. 2.

B B. Mesenterium diruptum, constituens vinculum quoddam, intestina funesto fato circumligans. C C.

CC. Notatum Vinculum, ex rupto Meſenterio ortum, ac, capreoli ferè in modum, inteſtina nectens.

D D. Vinculum illud ſeorſim delineatum, unà cum ejus capreolo, duabus circumductionibus conſtans.

E E. Convolvulus inteſtini, ſeu Ilei pars, vinculo fortiter coarctata, ac ſphacelo proxima; à quo alvus omninò adſtricta fuit, adeò ut tenuium inteſtinorum contenta, vomitu ferè continuo, ſurſùm propulſa fuerint.

F. Ilei pars, violentâ illâ at incomprehenſibili trajectione inteſtini per ligamentum D D contra naturam extenſa, atq; inteſtinum quoddam cæcum mentiens.

G. Ilei extremum, ubi in Colon degenerat.

H. Colon modicè contractum, & naturaliter ſe habens.

L. Inteſtinum cæcum.

Hanc obſervationem paucis abhinc diebus, præſentibus D D de Penyn & Dortmont, Noſocomii noſtri Medicis, nec non Clar. viro D. Oort, *habuimus. Vale. Dab. raptim, Amſtelodami, 9 Octob.* 1674.

A Letter of Mr. Martin Liſter, *containing his Obſervations of the* Aſtroites *or* Star-ſtones; *communicated to the Publiſher Jan.* 19. 167$\frac{3}{4}$.

SIR, You are pleaſed to tell me, that my Notes concerning certain Stones figured like Plants, found in the mountains of *Craven*, were well received *. This encourages me to give you the trouble of what I have obſerv'd of the *Aſtroites*; which are ſtones alſo pointed like the other, but not found, that I know of, in the ſame Rocks. And we muſt croſs the plain Country, and ſeek for them hard under the *Yorkſhire* Woolds: For, what ſtore I could procure of them, were brought me from *Eugthorp* and *Leppington*. At the former place, my ſelf have ſeen them dugg out of a certain *blew clay* on the banks of a ſmal rivulet, betwixt the Town and the foot of the Woolds. There are plenty of them waſhed into the brook; but the moſt fair and ſolid are thoſe we get out of the Clay.

* See N. 100. of theſe Tracts.

I pretend not, to diſcover to you their Original, no more than I did of the *Entrochi*; but having uſed ſome diligence in cauſing the places, where they are found, to be a litle more ſearched than

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is uſual, I was by that means furniſh't with a good quantity of them; which gave me the opportunity to make the following Obſervations. What light may be hence had, I leave to more judicious perſons, acknowledging my ſelf at preſent not to be able to demonſtrate (if they are not Stones of their own kind,) what they have been before petrification.

It is very litle and inconſiderable, what any Author, that I have yet ſeen, hath ſaid of them; ſave a very brief deſcription of them in *Geſner*, and the like in *Wormius*; in the reſt, all is tranſcribed.

The Matter and ſubſtance of theſe Stones, if broken, is flint-like, of a dark ſhining politure; but much ſofter, and eaſily corroded by an acid *Menſtruum*. Vinegar, indeed, makes them creep; but a ſtronger ſpirit, as of Niter, toſſes them. I doubt not, but they will readily calcine, as the *Belemnites*, to a very ſtrong and white Lime.

Theſe Stones (as we now find them) are all *Fragments*; as we have noted of the *Entrochi*: Either one ſingle joint, or 2, 3, or more joints ſet together, making a pentagonous Cylindrical figure or five-ſided column. And I have not yet had any piece much above one inch long, which conſiſted of 18 joints; but I have ſeen one piece, ſomewhat ſhorter than the former, which had 25 joints. Theſe laſt thin-jointed pieces are quite of a different make, as to all circumſtances, from the other, as will appear.

Every joint conſiſts of 5 Angles, which are *either* drawn out and ſharp, and conſequently the ſides of pieces, made up of ſuch joints, are deep-channeled; (and this is the condition of ſome of the thick-jointed pieces, as well as of all the thin-jointed ones;) *or* the Angles are blunt and round, and the ſides plain or very litle hollowed. There are as big, and as ſmal pieces of this ſort, as of any other more ſharp-angled; and therefore I account them a 3d. ſpecies of *Star-ſtone*. And of this ſort was, I gueſs, that piece which *Wormius* deſcribes; which therefore, he ſaith, is more like the blown Flower of *Pentaphyllum*, than a *Star*. Beſides, the manner of the engraving of the joints in every one of the 3 reſpective ſpecies is alſo very different, as will be declared.

Where the joints are thin or deep, they are *ſo* equally throughout the whole piece; yet are there ſome, but very few, exceptions to this alſo, of pieces which conſiſt of joints of unequal thick-

neſs.

neſs. Many of the thick-jointed pieces have certain joints a thought broader, or a very litle ſtanding out at the Angles, and thereby the joints are diſtinguiſh't into certain Conjugations of 2, 3, or more joints: And theſe Conjugations are very obſervable in the thin-jointed ſtones, and are marked out with a ſett of Wyers; of which by and by.

The thickeſt piece, which hath yet come to my hands, is not above one inch and a half about, and thoſe very rare too: From which ſize to that of a ſmal pin, I have all the intermediat proporons; and theſe ſo exceeding ſmal pieces are as exactly ſhaped, as the greateſt. Moſt pieces, if not all, of any conſiderable length, are not ſtraight, but viſibly bent and inclining. All the pieces of any ſort are much of an equal thickneſs, or but litle tapering; yet one of the ends, by reaſon of a Top-joint, is viſibly the thickeſt.

This Top joint hath 5 blunt Angles, and is not hatched or engraven, or but very faintly, on the outſide. Every joint elſe of a piece (ſave the top-joint) is an *Intaglia*, and deeply engraven on both ſides alike; and will accordingly ſerve for a Seal. The middle of each angle is hollow, and the edges of the angles are thick furrowed: The terminations of theſe hatchings are the indented ſutures, by which the joints are ſet together; the ridges of one joint being alternately let into the furrows of the other next it. The Hatchings of the flat-ſided pieces are in circular lines; but of the other two ſpecies, they are ſtraight lines, or near the matter.

In the very center of the 5 angles is a ſmal hole, conſpicuous in moſt joints. Note alſo, that in the middle of each joint, betwixt angle and angle; in the very ſuture, is another ſuch like ſmal pin-hole very apparent, if the ſtones be firſt well ſcoured.

Beſides all the former particulars, there may be obſerv'd, in the deep-jointed pieces, juſt under the top-joint, above deſcribed, the *Veſtigia* of certain Wyers rather than branches; and ſometimes 2, 3, or more of the joints of the Wyers yet adhering. Theſe Wyers are ever *five* in number, viz. one in the middle or hollow part betwixt angle and angle. Again, in *thin*-jointed pieces there are ever *five* of theſe Wyers, or a *ſett* of them inſerted into every conjugation of joints; ſo that it were ſome repreſentation of the thing, to imagine the ſtalk of *Aſperula* or *Equiſetum*. Alſo I have ſeen, but that very rarely, (not in one piece amongſt 500,) a ſett of Wyers

Wyers in the middle of a *deep*-jointed piece. One thin-jointed piece I have by me, where a Wyer of 20 joints and upwards (and how much longer they may be, I know not,) lyes double within the hollow side, and by that accident was preserved in its natural place. Further, some lumps of Quarry I have from the same place above-nam'd, where the Wyers as well as the Stones themselves are seen in long pieces. It is no wonder, that these Wyers are knocked off, and but very rarely found adhering to the Stones they belong to, being very small and slender, of a round figure and smooth-jointed, being sett together *per harmoniam* and not indented suture. Nothing that I can think of, is so like these Wyers, as the *antennæ* of Lobsters. Lastly, some of these Wyers are knotted, and others of them fairly subdivided or branched.

I have, by the assistance of Mr. *Lodge*, illustrated all these particulars with *Figures*: Of which this is the Explication; * * See Tab. 2.

1. The Top-joint of an *Astroites*, figur'd on both sides; on the one it is deep engraven, on the other the hatches are scarce visible. Also the ends of the 5 Angles are very blunt.

2. A second or sharp-angled joint with fair hatchings on both sides.

3. A piece with very narrow and sharp angles. Also the Top-joint designed, as it naturally appears smooth and without hatchings.

4. A round-angled joint.

5. A flat-sided piece; where the hatchings are somewhat Circular.

6. A thin-jointed piece: Where note also, that the angles are much narrower, and of a protracted Oval figure.

7. The biggest piece I have yet seen. Note also its bending.

8. The smallest piece I have yet met with.

9. The longest piece; where every 4th joint is a thought bigger or more prominent than the rest; as in the 7th fig. also is well designed.

10. A large and round-angled or flat-sided piece; to which belongs that single joint noted fig. 4.

11. A flat or not hollow-sided piece; of which sort also is the 5th figure: The 10th and 4th not much differing.

12. A thin-jointed piece; where the conjugations are marked

out by the *vestigia* of the several sets of Wyers or branches.

13. A piece where the joints are un-equal in thickness.

14. A piece with some part of the Wyers yet adhering in their natural order at the biggest end of the piece.

15. A thin-jointed piece; where note on the left side a single Wyer accidentally preserved in its natural place, though snapt asunder.

16. A thick-jointed piece with a set of Wyers in the middle of it.

17. A good long piece of a Wyer, and a single joint thereof.

So far Mr. *Lister*: To which we cannot but add Mr. *Rays* Notes upon these very Observations.

I was much taken, (*saith he* to Mr. *Lister*) with your Observations concerning the Star-stones, and inform'd in several particulars. For, although I had often seen, and my self also sometimes gather'd of those bodies; yet I did never curiously note the texture, parts and differences of them. As for their *Original*, if you can allow the *Trochites* and *Entrochi* to have been fragments of Rock-plants, I see not, why you should make any difficulty of admitting these to have been so too; the several *internodia* being alike thin in both, and the Commissures not much different; only the external figure doth not correspond. But it is to be considered, that many of the *Trochites* have a pentagonous hole in the middle of them, which if we admit for the receptacle of the pith, it will be as hard to exemplifie such a figur'd pith, as such a figur'd stalk in Land-plants. Your note concerning the Wyers springing out of the furrows or concave angles of some of the *internodia*, and encircling the stalk like the leaves of *asperula* or *equisetum*, was surprising; and seems to me to argue these bodies to belong to the *genus* of Vegetables; no less than Coral, Coralline, and the several sorts of *Pori*; some of which are also jointed: But no vegetable, either of Land or Sea, that I know of, hath such frequent joints and short or thin *internodia*; and so they are things of their own kind, whose *species* is, for ought we know, lost. If they were Vegetables, I guess they were never soft; but grew upon the rocks like Coral, and the other Stone-plants, just now mention'd; hard as they are.

As for *Equisetum*, we know, that the Leaves of some sorts of it are jointed, as well as the Stalk: Else I know no plant that hath jointed leaves; except some sorts of *Rush-grass*; though those bristles of *equisetum* surrounding the stalk, neither these reputed leaves of *Rush-grass*, can properly be call'd Leaves, being round, and having no difference

ference of upper and lower ſuperficies. Now that I have upon this occaſion mention'd *equiſetum*, give me leave to mind you of what I have already publiſh'd to the world; That I have found, on the banks of the river *Tanar* in *Piedmont*, plenty of the fragments of the ſtalks of *equiſetum* perfectly petrified, with litle or no increaſe of bulk, ſo exactly like the plant, that all the *ſtriæ* did all along clearly appear. The colour of theſe petrified ſtalks was white.

An Accompt of two Books:

I. *Les dix Livres d' Architecture de VITRUVE, corrigez, & traduits nouvellement en Francois, avec des Notes & des Figures; par* Claude Perrault, *de l' Academie Royale des Sciences, & Medecin dela Faculté de* Paris. *Imprimé à* Paris, 1673. *in fol.*

THE Ingenious and Learned Author of this Verſion of *Vitruvius*, and of the Notes upon him, conſidering with himſelf, that one of the Obſtacles to the advancement of Architecture was the want of being able to draw the Precepts of that Art out of its true and genuine ſource, by reaſon of the great obſcurity of *Vitruvius*, who is the only Writer of the Antients that we have upon this ſubject; did undertake, by a Tranſlation into the French tongue, and by Notes upon the difficult places, and alſo by illuſtrating all with Figures, to render this Author more clear and uſeful to thoſe, that embrace the profeſſion and practice of that Noble Art.

This Interpreter found, that in effect moſt of the matters contained in *Vitruvius* being ſo little underſtood as they are, had need of an Explication more clear and more exact than the Text we have remaining; foraſmuch as the Author did not, in his opinion, ſo much endeavour to make it clear as ſuccinct, in the confidence he had that the *Figures*, added by him would ſufficiently explain the matter, and thereby ſupply what ſeems to be wanting in the Diſcourſe.

Theſe *Figures*, ſaith M. *Perrault*, were loſt by the negligence of the firſt Tranſcribers, that could not deſign, and that probably alſo did not judge them altogether ſo neceſſary; becauſe the con-