

the Plow: So we made an easy Purchase of about a dozen ancient Manuscripts on Parchment.

As to your Queries: The *Mackinboy* is the *Tithymalus Hibernicus* (or *latifolius sylvaticus*) *Cat. Hort. Oxon.* Their *Shamrug* is the common Clover. The *Potato* is not indigenous of *Ireland*. The *Arbutus* is, for what I can yet understand, the same with the Common: And for the *Sabina*, I doubt my Friend I sent to *Kerri* (whom I have not yet seen) will bring me no News of it.

I have the Account of the living Fossil Muscles attested and signed by the four Persons present at the finding them; so that nothing but its being a singular Instance makes me scruple the Relation: But the Labourers have such a Character for Veracity, that I rather incline to believe it, than to doubt: I am,

Honoured Sir,

Your most obliged Servant,

E. LHWYD

V. *An Account of Experiments concerning the Proportion of the Power of the Load-stone at different Distances.* By Mr. Fr. Hauksbee, F. R. S.

WITHOUT mentioning the many Difficulties that attend the making of Experiments of this Nature, I shall immediately give an Account of their Success, and the manner of proceeding; which was as follows. I took a Quadrant of 4 Feet Radius; and having fix'd it to the Floor, in the Position of the Needle, whose South

South Point directed itself to no Degrees, I then fix'd a Board (likewise on the Floor) in a direct Angle from from the same, the Graduations on which Board were 3 Inches distant from each other. The Needle was suspended on a Point arising from the Center of the Quadrant, from whence were measured the several Stations of the Magnet. The Magnet was laid on a thin piece of Board; under which to one side was nail'd a narrow slip of Wood, to slide it along the side of the fore-mention'd graduated Board, whereby the Stone might be always kept in the same Direction to the Needle. The Stone that I used weigh'd about six Pounds; was rough, and of an irregular Figure; yet I could discover no Inconveniency in the Experiment arising from the same, it being, and acting at all Distances in the same Position as it is first plac'd on the Board: And I see no reason to doubt, but the Proportions of its Power will be regular, and agreeable to the several Distances; as more than once I have observ'd. For when the Stone hath been differently posited on the fore-mentioned thin board, different Angles of the Needle would ensue at the same Stations; yet their Proportions one to another would be nearly the same. My meaning is this: Suppose the Stone was so plac'd, as at 3 Inches from the Needle it would give the Needle an Angle of 90 Degrees, the Stone being continued in the same Direction at the several Stations, the Proportions of its Power one to another would be much the same, as if the Angle of the Needle at the first beginning made but 87, or even but 80 Degrees on the Quadrant; for upon a small alteration of the Poles of the Stone, such diversity of Angles will arise.

In these Experiments I made use of two Needles; one of a *Radius* of 6 Inches, the other but of one Inch: Which last, after abundance of tryals, I found to be most accurate; besides the Advantage it gave in begin-

ning the Experiment 6 Inches nearer the Stone than the other: And from two Feet distance from the same, it became nearly agreeable to the Angles made by the long Needle to all the farther Distances; as you will find by the following Tables, which were made with the several Needles in the same direction of the Stone. I measured the Angles by a Silk thread strained directly over the Needle to that part of the Quadrant to which it was directed; which was the best way I could contrive to come nearest the truth.

It may be observ'd from the following Tables, that the long Needle at 9 Inches from the Stone, made somewhat a larger Angle than the short Needle at 3 Inches distance from the same; that the short Needle at the distance of 9 Inches, made an Angle of 9 Degrees less than the long one at the same place. But this odds will easily be accounted for, if we consider the disproportions of the Needles lengths; for the Point of the long Needle at 9 Inches, was brought within an Inch as near the Stone, as the Point of the short Needle was, when but 3 Inches distant from the same: The Point of the short Needle at 9 Inches from the Stone, was 5 Inches farther from it, than the long one at the same Station. These disproportions being consider'd, it is no wonder such difference of Angles should ensue upon the Use of the several Needles near the Stone; for at two Feet, and the farther distances, they become nearly agreeable, as I said before: When I speak of Distances from the Needle, I always mean from the Center of it.

Farther it is observable, that the Stone at 5 Feet distance from the Needle made an Angle of 2 Degrees with one, and with the other of two and a half; yet upon the absence of the Stone they would return to no Degrees, as at first: Which plainly shews, that the Influence of the Stone extended farther; altho' Observations, at remoter Stations, could not easily be determined.

*Experiments by the short Needle.*

Distances of the Loadstone from the Needle in Inches.	The several Angles of the Needle at the several Distances. D. /	The differences compared one with another, at the several Observations, in Minutes.
3	87—00	180
6	84—00	330
9	78—30	570
12	69—00	735
15	56—45	795
18	43—30	630
21	33—00	540
24	24—00	360
27	18—00	270
30	13—30	150
33	11—00	135
36	8—45	105
39	7—00	90
42	5—30	60
45	4—30	40
48	3—50	30
51	3—20	20
54	3—00	15
57	2—45	15
60	2—30	00

*Experiments by the long Needle.*

Distances of the Loadstone from the Needle in Inches.	The several Angles of the Needle at the several Distances.	The differences compared one with another, at the several Observations, in Minutes.
	<i>D.</i> <i>l</i>	
09 ———	87—30 ———	345
12 ———	81—45 ———	570
15 ———	72—15 ———	1135
18 ———	53—20 ———	1100
21 ———	35—00 ———	660
24 ———	24—10 ———	380
27 ———	17—50 ———	280
30 ———	13—10 ———	180
33 ———	10—10 ———	130
36 ———	8—00 ———	90
39 ———	6—30 ———	75
42 ———	5—15 ———	65
45 ———	4—10 ———	40
48 ———	3—30 ———	30
51 ———	3—00 ———	25
54 ———	2—35 ———	20
57 ———	2—15 ———	15
60 ———	2—00 ———	00

At greater Distances, and even the more remote in these Tables, the Power of the Stone is so weak, and the measuring the Angles at all times exactly so difficult, that 'tis well if we come sometimes within 10 or 20 Minutes of Truth: The Correction of which I shall wholly leave to the Determination of such Gentlemen, whose Province such an Experiment as this most peculiarly belongs to.

*A Description of the Loadstone made use of in the foregoing Experiments.*

This Stone weighed exactly 6 Pound, one Ounce and  $\frac{1}{4}$  Averdupois Weight. Its Form resembled *Figure 4*. Its breadth at the North Pole was 4 Inches; at the South Pole 5 Inches; the Poles running thro' the Stone in the direction of the prick'd Line. The length of the shortest side was 6 Inches  $\frac{1}{2}$ , of the longest side 7 Inches  $\frac{1}{2}$ . Its thickness at the North Pole was one Inch and a half, and at the South Pole one Inch.

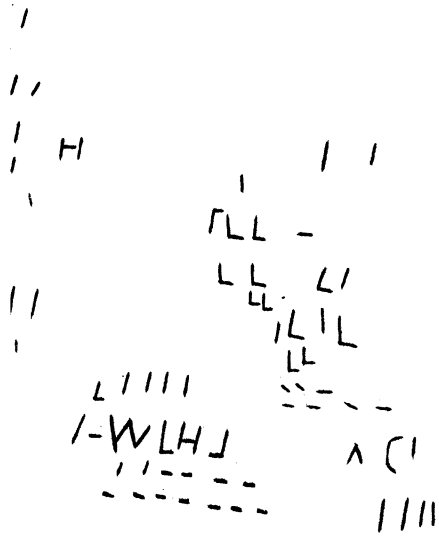
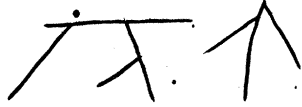
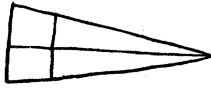
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*VI. The Specifick Gravities of several Metalline Cubes, in comparison with their like Bulks of Water. By Mr. Fr. Hauskbee, F. R. S.*

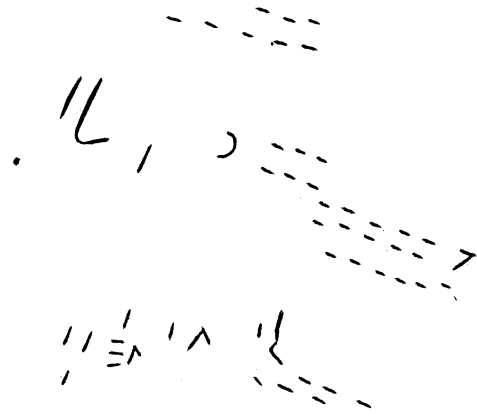
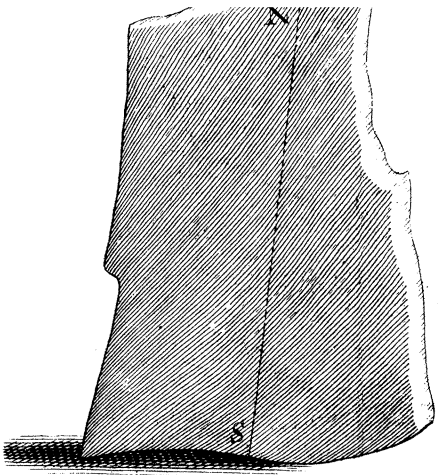
THESE Cubes were deliver'd to me by Dr. Sloane, and supposed to be extraordinary in their several kinds, except the Gold. Their workmanship was very accurate; and they were exactly of a size, altho' they differ'd a little from our Measure. Six of them being laid on a Rule, Side by Side, measured about a tenth more than 6 Inches; and if their Sides were chang'd, they still made the same measure. And it farther appeared that they were exact, by their agreeableness in the Weight of their respective Bulks of Water, as may be observed by comparing them in the following Table.



nh. Transact Numb 335.







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111  
111  
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Fig: 1.

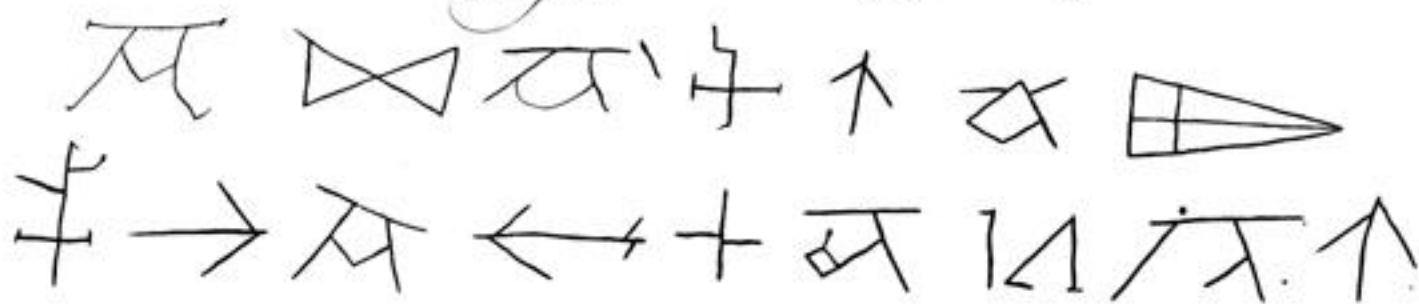


Fig: 2.

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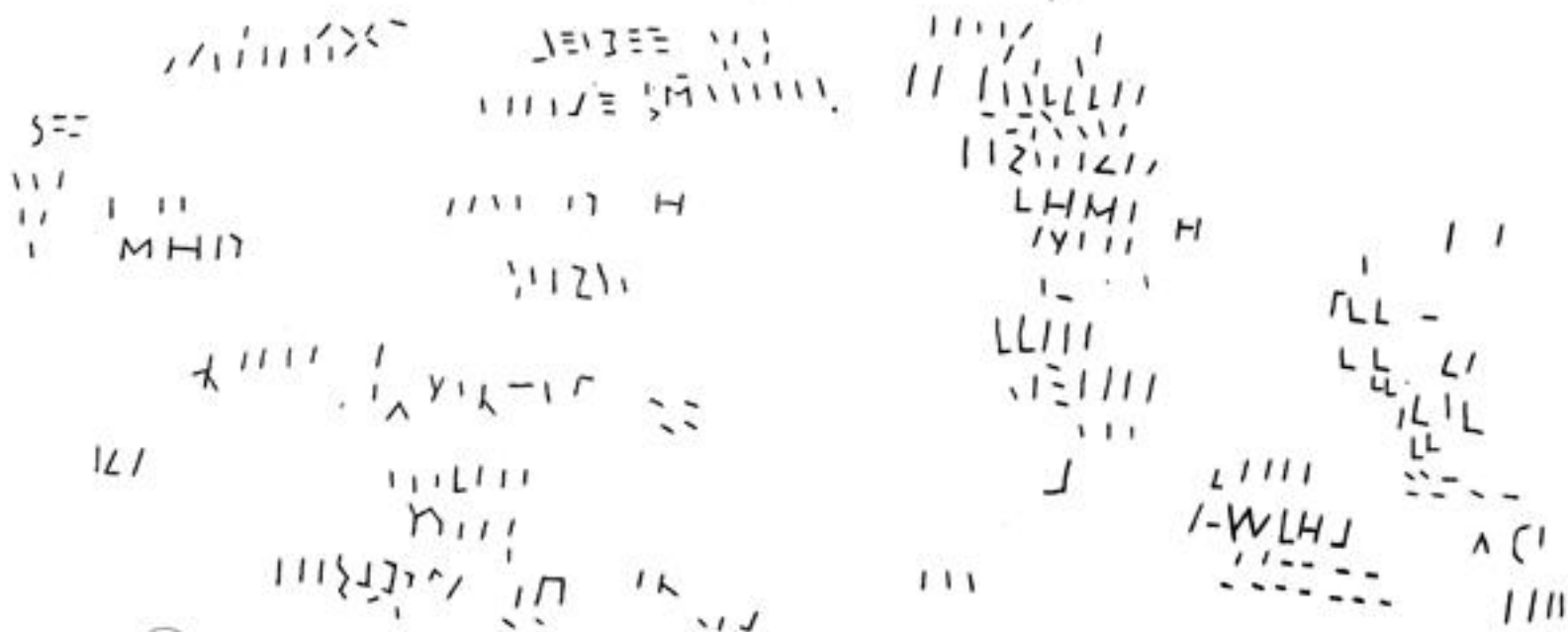


Fig: 3.



Fig: 4.

