common green Moſs, in a Box with a glaſs Cover. She brought forth ſeveral young ones, who ſlipp'd off their Skins, and the outward Membrane of their Eyes along with them, in ſix Weeks after their Birth; and they ſhed them again two Months after: But being then put into Spirits of Wine to preſerve them, they were killed; but may ſtill be ſeen in the *Muſeum* of the *Society*. They firſt looſen the Skin about the Mouth, and ſo ſlip it off backwards, by wriggling themſelves thro' the Entanglement of the Moſs: For ſome of the Skins were torn, and Parts ſtuck in the Moſs.

C. M.

XXI. *An Improvement of the* Celeſtial Globe, *by Mr.* James Ferguſon.

Read May 14. 1747. ON the *Axis* of the Globe, (TAB. X. *Fig.* 3.) above the Hour-Circle, is fixed the Arch *A* at one End by the Screw *D*, ſo as to leave ſufficient Room for turning the Hour-Index occaſionally: The other End at *B*, being always over the Pole of the Ecliptic, has a Pin fixed into it, whereon the Collets *C* and *B* are moveable by their Wires *F* and *G*, when the Screw *E* is ſlackned, and may be made faſt at Pleaſure by this Screw; ſo that the turning of the Globe round will carry the Wires round with it, ſhewing thereby the apparent Motions of the Sun and Moon by the little Balls on their Ends at *H* and *I*. On the Collet *C*, in which the Sun's Wire is fix'd, there is alſo fix'd the circular Plate *L*, whereon the $29\frac{1}{2}$ Days of the Moon's Age are engraved, which have their Beginning juſt below the Sun's Wire; conſequently the Plate *L* cannot be turned without carrying the Sun's

Sun's Wire along with it; by which means the Moon's Age is always counted from the Sun: And the Moon's Wire being turned ſo as to be under the Day of her Age on this Plate, will ſet her at her due Diſtance from the Sun for that time. Theſe Wires being Quadrants from *C* to *H*, and from *B* to *I*, muſt ſtill keep the Sun and Moon directly over the Ecliptic; becauſe the Center of their Motions at *C* and *B* is perpendicularly over the Pole of the Ecliptic in the *Arctic* Circle. But, becauſe the Moon does not keep her Courſe in the Ecliptic, as the Sun appears to do, but has a Declination of $5\frac{1}{3}$ Degrees on each Side of it in every Lunation, ſhe is made to ſcrew on her Wire as far on both Sides as her Declination or Latitude amounts to. For this Purpoſe *K* is a ſmall Piece of Paſteboard, to be applied over the Ecliptic at right Angles; the middle Line *oo* ſtanding perpendicularly thereon. From this Line there is $5\frac{1}{3}$ Degrees marked on each Side upon the outward Limb; which reaching to the Moon, makes her to be eaſily adjuſted to her Latitude at any time. — *N. B.* The Horizon ſhould be ſupported by two ſemicircular Arches, inſtead of the uſual Way of doing it by Pillars; becauſe the Arches will not ſtop the Progreſs of the Balls, when they go below the Horizon in an oblique Sphere.

To rectify the Globe. Elevate the Pole to the Latitude of the Place; then bring the Sun's Place in the Ecliptic to the brazen Meridian, and ſet the Hour-Index to XII at Noon: Keeping the Globe in this Poſition, ſlacken the Screw *E*, and ſet the Sun directly over his Place in the Meridian; which done, ſet the Moon's Wire under the Day of her Age for that

that time on the Plate *D*, and ſhe will ſtand over her Place in the Ecliptic for that time, and you will ſee in what Conſtellation ſhe then is. Laſtly, faſten the Wires by the Screw *E*, and the Globe will be rectify'd.

To find the Riſing and Setting of the Sun and Moon, with their Amplitudes on the Horizon.

The Globe being rectify'd as above to the given Time, turn it round in the uſual Way, and you will ſee the Sun and Moon riſe and ſet for that Day on the ſame Points of the Horizon as they do in the Heavens. The Times of their Riſing and Setting are ſhewn by the Hour-Index, which likewiſe ſhews the Time of the Moon's paſſing over the Meridian. If you want to ſee to greater Exactneſs the Riſing and Setting of the Moon, find her Latitude for that Day by the *Ephemeris*; and as it is South or North, ſcrew her ſo many Degrees from the Ecliptic, meaſuring them by the Paſtboard *K*, applying it to the Ecliptic as above mention'd; and then turning the Globe round you will ſee the Time of the Moon's Riſing and Setting by the Hour-Index, and her Amplitude on the Horizon for that time, as it is affected by her Latitude, which will ſometimes be very conſiderable.

This may be very uſeful, eſpecially in giving Lectures upon the Globes; becauſe a large Company at ſome Diſtance will eaſily ſee this Sun and Moon going above and below the Horizon as they riſe and ſet, and likewiſe their Appulſes to different fix'd Stars: Whereas in the uſual Way, when there is only the Sun's Place in the Ecliptic ſhewn, it is not eaſy

for any one to keep his Eye upon that Part of the Ecliptic as the Globe is turned round, unleſs it be in ſome remarkable Circle of Longitude; and it is not very eaſy to know the Moon's Place, unleſs at her Conjunction, Oppoſition, or Quadratures.

This ſimple *Apparatus* ſhews all the Varieties that can happen in the Riſing and Setting of the Sun and Moon, which are very curious, eſpecially about the Poles, where the Sun is preſent for one Half of the Year, and abſent for the other Half; the Moon in Winter ſhining conſtantly without ſetting from the firſt to the third Quarter, in the Sun's Abſence; and in Summer the full Moon is never ſeen at the Poles; for ſhe ſets at the firſt Quarter, and riſes not till the third, ſave what may happen on account of her Latitude.

All the *Phænomena* of the Harveſt-Moon become very plain by this additional Part; and in making ſome Trials I find, that, to ſome Places of the Earth, the Moon will not differ above an Hour in her Riſing for fifteen Nights together, but will differ ſometimes 23 Hours in her Setting, within the Compaſs of that fifteen Days; and for the next fifteen ſhe will ſet within an Hour of the ſame Time, and differ 23 Hours in her Riſing. This is taken in round Numbers, but may be conſider'd with more Exactneſs by thoſe who are better acquainted with the celeſtial Motions. I ſhall only add, that the Places of the Earth where theſe *Phænomena* happen, are thoſe lying under the Polar Circles.

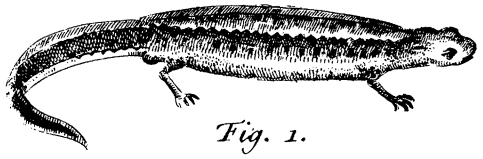
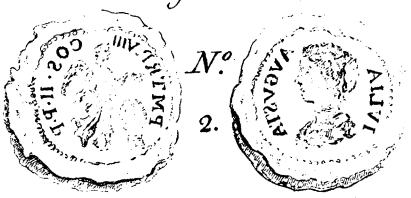


Fig. 1.

p. 534.

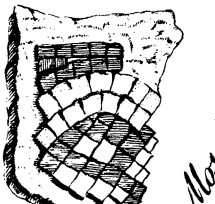
Fig. 2.

Clay Moulds



N°. 2.

N°3. p.558. N°1.



Fragments of the Mosaic Paver

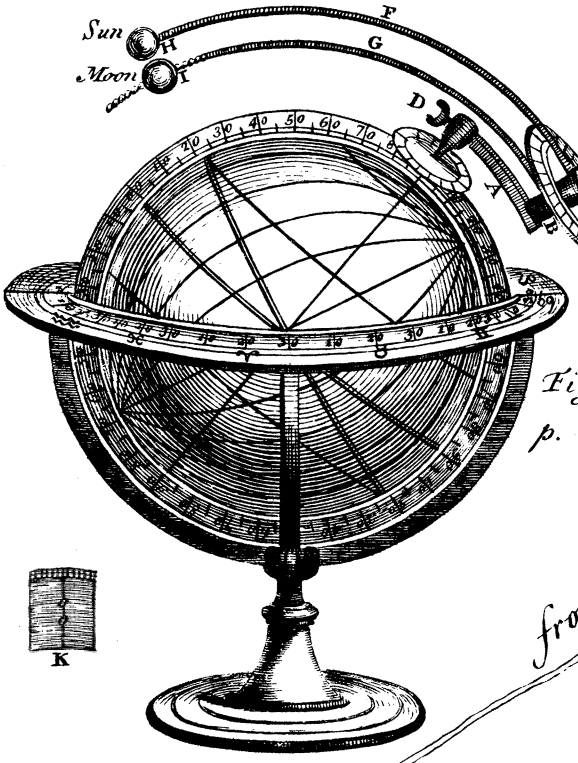


Fig. 3.

p. 535.

Bridlington and Flam

Stanford Burgh

Part of a Flue

p. 548.

from York to

A Scale of Inches.

1 5 10

for the Pavements and Tyles

p. 548.

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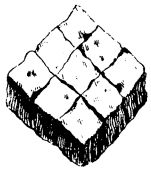

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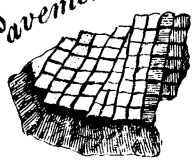
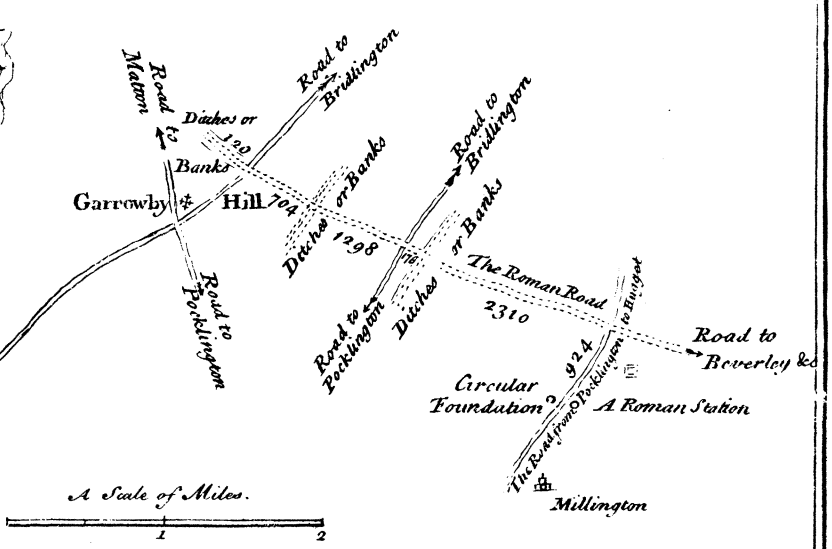


Flamborough Head p. 550.



p. 541.

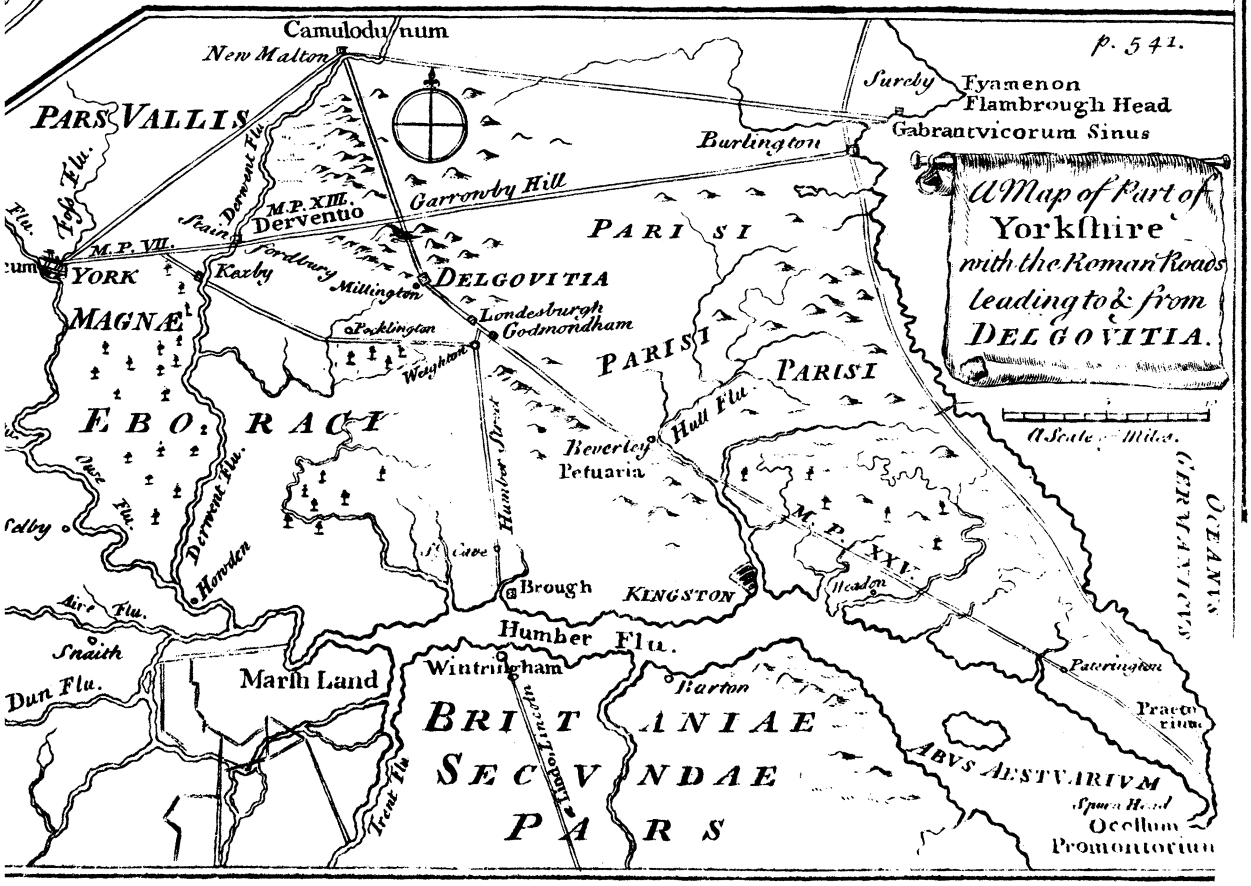
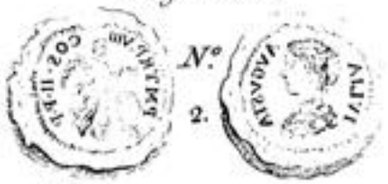


Fig. 1.

p. 534.

Fig. 2.

Clay. Moulds



N°. 2.

N°3. p. 558. N°1.

Fragments of the Mosaic Pavements p. 548.

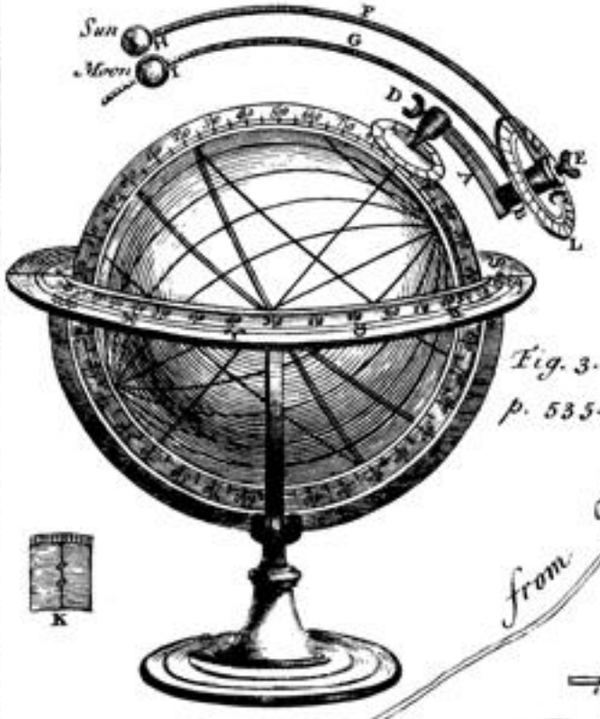


Fig. 3.

p. 535.

Bridlington and Flamborough Head p. 550.

from York to

Stanford Burgh

Part of a Flue

p. 548.

A Scale of Inches.

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p. 548.

Road

YORK.