

arteriarum membrana, ita tamen adhærentibus fibris carnis, ut passim calculosæ squamæ ductibus transversis inscriberentur. Nihil tamen hic petrosi. In omnibus arteriis corporis prædura et figurata teretia sanguinis crassamenta, suo canali tamen minora.

4. Vesicula fellea flava bile vix amara plena, et calculis ad viginti, exiguis, angulosis, quorum unus ita obsidebat ostium ductus cystici, propius paulum cholidochæ, quam prima cystici valvula, ut bilis, contra quam solet, ex vesicula premendo expelli non posset. Dulcedinem in bile, quando in calculos coivit, picrumque reperire soleo.

Hæc fere fuerunt, quæ observationem mererentur, et demonstrant arteriarum internam membranam ab ictibus repetitis cordis tandem partim indurescere, partim inter ossificata spatia rumpi, sic debilitari truncum aortæ, et ad aneurysmata reddi pronum. Demonstrat etiam in ipso sanguine ubique terram veram calculosam circumvehi, nec in renalibus solum viis deponi, sed ibi hære et congeri, ubi ruptæ sunt levissimæ membranæ vasorum, et adtractio terreorum molecularum ad asperas inæquales superficies major est.

XX. *A Letter from Mr. David-Erskine Baker to the President, concerning the Property of Water Efts in slipping off their Skins as Serpents do.*

S I R,

London, May 13. 1747.

Read May 14.
1747.

AS several little Particularities in the Production or Changes of Animals may be found of considerable Service to assist us in

in the Knowledge of Nature, and consequently are not unworthy a Philosopher's Notice, I take the Liberty to lay before you some Observations on the common *Lacerta aquatica*, *Water-Lizard*, *Newt* or *Eft*; a Creature which most People, tho' without any good Reason, have imagined to be venomous and mischievous, and, from a groundless Aversion have avoided and neglected much more than it deserves.

The Animal I speak of is to be found in the Spring, and during the whole Summer Season, in most Ditches and shallow standing Waters throughout *England*, and is, I believe, unknown to very few; but, lest it should possibly be mistaken for any other Creature, I beg Leave to lay a Picture of what I mean before you.

When fully grown, it is about 6 Inches in Length; The Head is like that of a Frog, with a Couple of fine large Eyes: It has four short Legs, the two foremost having four Toes, and the two hindmost five, resembling the Feet and Toes of a Frog; but not at all webbed, as the hindmost Feet of a Frog constantly are: The Tail is very thin and flat, and lies not horizontally, but stands up in a perpendicular Position, and serves as a Rudder to direct it in swimming. It is amphibious, but lives mostly in the Water, wherein, tho' it can swim, it most frequently crawls about at the Bottom, rising to the Surface only now-and-then, with a wriggling Motion, to throw out a Bubble of stale Air, and take in a fresh Quantity of new. There is some Difference in their Colour, but the Back is usually of a light brown, and the Belly yellowish spotted with black Spots. In
Winter-

Winter-Time they are seldom or never seen, and therefore may be supposed to retire into Holes, and lie torpid there, as Frogs, Snakes, and many other Creatures do.

Having several Times kept these Animals for many Months together in Glass Jars, and watched them very attentively from Day to Day, I am able to speak with much Certainty as to the wonderful Manner of their putting off their Skins without making the least Hole or Breach therein ; a Circumstance which has occasioned me to give you the Trouble of this Paper.

It has long been known, that most of the Serpent-Kind put off, or, as we commonly term it, cast their Skins at certain periodical Times ; tho' we are very little acquainted with the Manner of their performing this Work, since it is commonly done in their retiring Places, where we can seldom get a Sight of them ; nor should we indeed know that their Skins are changed at all, did we not often find the Skins they have cast off. But from this little Lizard, which I have more than once carefully attended during the whole Operation, a reasonable Guess may be formed as to most other Kinds ; and as it is a Creature easy to procure, may be kept in a Jar of Water for many Months, and the Intervals between the Periods are so short (for they shed their Skins every Fortnight or three Weeks), it is in every Body's Power to see with his own Eyes what I am now going to describe.

A Day or two before the Skin is to be changed, the Animal appears more sluggish than usual, takes no notice of the Worms you give it, which at other times it devours greedily ; the Skin in some Places appears loose from the Body, and its Colour not so

lively as it did before; and thus it continues till the great Work of putting off the old Skin is to be performed. It begins this Work by loosening with its fore Feet the Skin about its Jaws (which, when open, are wider than any Part of its own Body) and pushes it backward gently and gradually both above and below the Head, till it is able to slip out first one Leg, and then the other; which when it has done, it proceeds to thrust the Skin backwards as far as these Legs can reach; it is then obliged to rub its Body against Pebbles, Gravel, or whatever else it can meet with, till more than half its Body is freed from the Skin, which appears doubled back, and covering the hinder Part of the Body and the Tail. When the Business is thus far done, the Animal, turning its Head round to meet its Tail, takes hold of the Skin with its Mouth, and setting its Feet thereon, by degrees pulls it quite off, the hind Legs being drawn out as the fore ones were before.

If the Skin be then examined it will be found with its Inside outwards, but not having the least Hole or Breach; that Part which cover'd the hind Legs seeming like Gloves that are turned without pulling out the Tips of the Fingers, tho' intirely perfect and unbroken. The Coverings of the fore Legs remain within the Skin. They do not however put off the Coverings of their Eyes along with the Skin, as some Snakes are found to do; for the Skin of this little Creature has always two Holes at the Places where the Eyes have been.

It is very entertaining to observe it whilst engaged in this necessary Work, which sometimes takes up
near

near half an Hour, after which it appears full of Life and Vigour, as well as very sleek and beautiful.

These Observations have been made under the Inspection of my Father, and some other curious Friends, who are Witnesses of the Facts here mentioned. The Drawing (TAB. X. *Fig. 1. 2.*) added to this Account, and intended to represent one of the Animals getting rid of its Skin, may, it is hoped, assist to make the foregoing Description more fully understood. When the Skin is come off, if it be not taken away soon, it is very common for the Creature to swallow it whole, as it does all its other Food; and if it takes in the Head-Part, as frequently is the Case, the Tail-Part, being filled with Air and Water, becomes like a blown Bladder, and proves so unmanageable that it is very diverting to see the Pains it costs to discharge the Air and Water, and reduce it to a fit Condition to be got down its Throat.

Many Creatures of very different Kinds put off their Skins and Shells at certain Periods. All Serpents are supposed so to do; the Skins of several Kinds being oftentimes found whole. Crabs, Lobsters, Cray-fish, Shrimps, and probably most or all of the crustaceous Fishes, cast their Shells from time to time; and if one may guess of the rest by the fresh Water Shrimp, which I have kept several times and observed, their Shells are put off without any other Breach than one, longitudinally, in the Middle of the Belly Part, thro' which the Body, Tail, and Claws are pull'd out, and the Shell left in a Manner whole.

Of the Insect Tribe, every Caterpillar has three or four Skins before its Change into the *Aurelia*

State, in which the Place of creeping out is a little below the Head. The Spider throws off the Skin or Shell three or four times, getting out of it by a Rupture underneath, and leaving every Claw, and even the horny Covering of his *Forceps* intire. Even the little Mite casts its Skin also at several short Periods, and nearly in the same manner. But I fear I have been already too tedious; and therefore begging your Pardon, subscribe myself, with all possible Respect,

S I R,

Your most obedient humble Servant,

David Erskine Baker.

A Skin of the Water Lizard cast off in the above manner waits on you herewith, as represented in (TAB. X. *Fig. 2.*) the extreme Thinness of it makes it impossible to be got out of the Water, stretched out and dried, and therefore it was necessary to be preserved in Spirits.

I beg Leave likewise to shew you one of the living Animals, as figured in TAB. X. *Fig. 1.*

A Remark by the Publisher.

WM. Oliver the Viper-catcher, mentioned in No. 443. of these *Transactions*, made a Present to the *Royal Society* of a female Viper big with Young, which was kept alive in common

common green Mofs, 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 Mofs: For some of the Skins were torn, and Parts stuck in the Mofs.

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



Fig. 1.

p. 534.

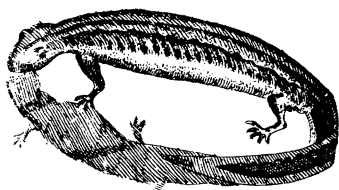
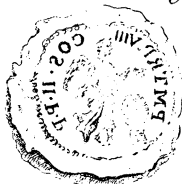


Fig. 2.

Clay . Moulds



N^o.

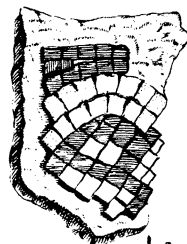
2.



N^o 3.

p. 558.

N^o 1.



Mosaic Pavement

Fragments of the

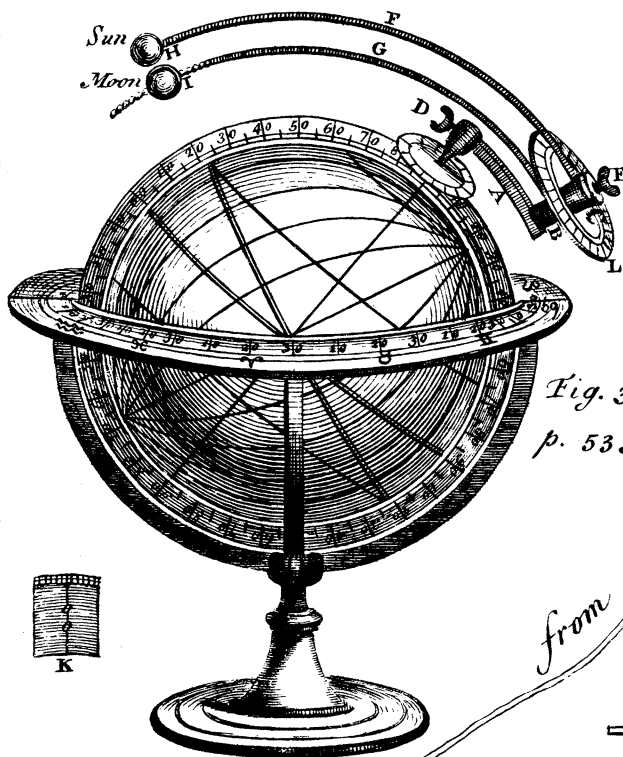


Fig. 3.

p. 535.



YORK.

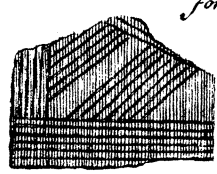
Road

from York to
Stanford Burgh



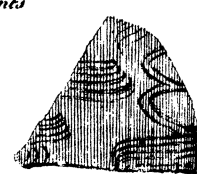
Part
of a
Flue
p. 548.

A Scale of Inches.
for the Pavements



and
Tyles

p. 548.



Bridlington and Flan



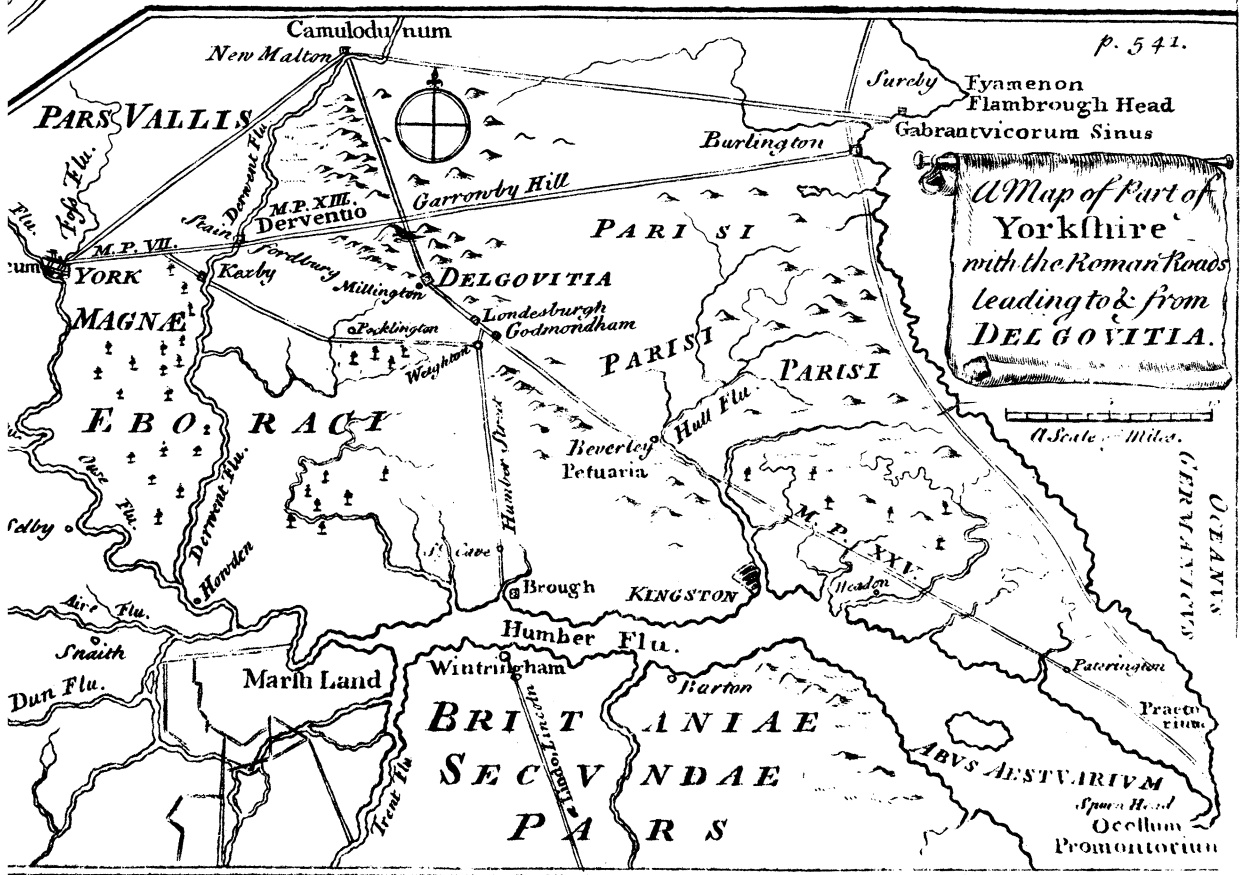
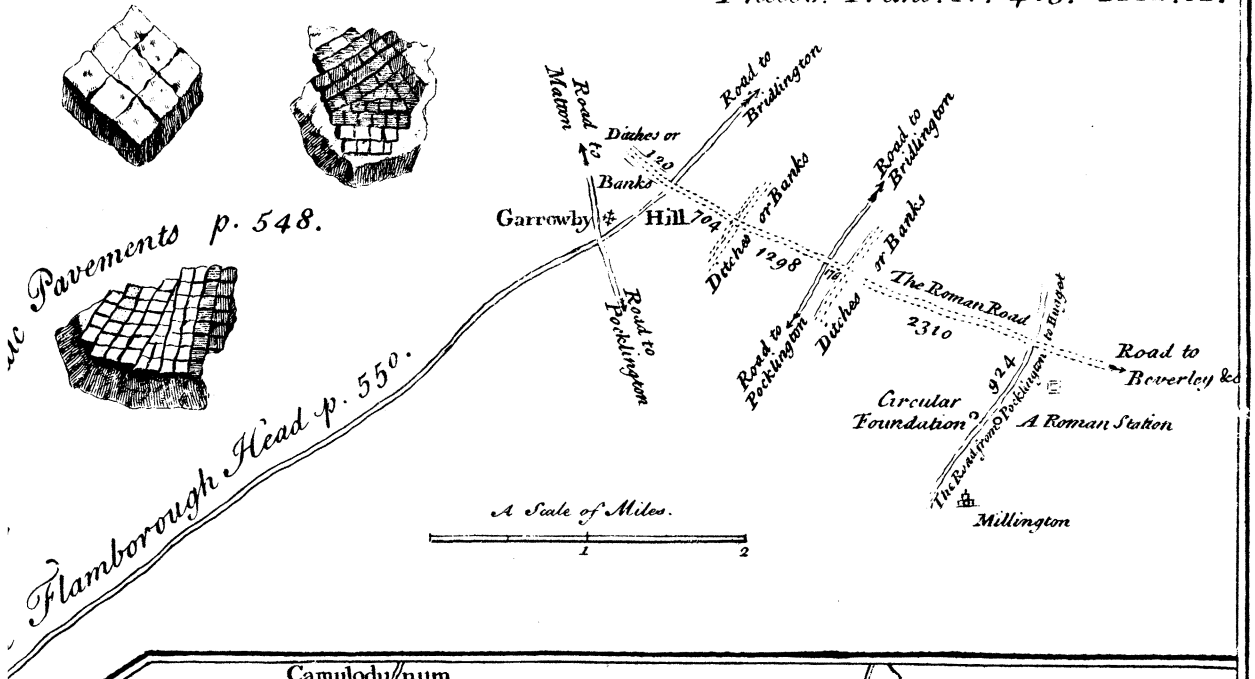


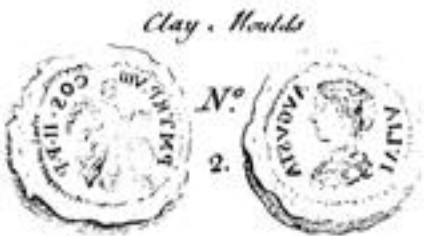


Fig. 1.

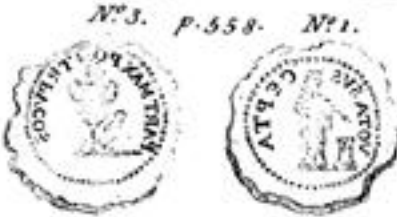
p. 534.



Fig. 2.



N^o. 2.



N^o. 3. p. 558.

N^o. 1.



Fragments of the Mosaic Pavements p. 548.



Bridlington and Flamborough Head p. 550.



A Scale of Miles.

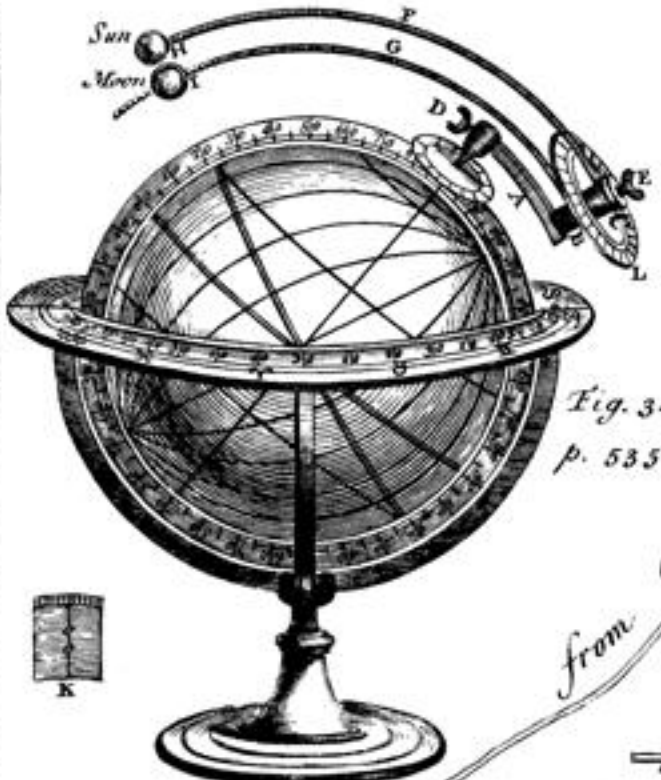
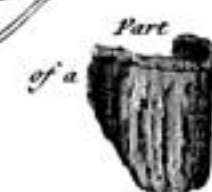


Fig. 3.

p. 535.



Stanford Burgh



p. 548.

from York to

A Scale of Inches.

for the Pavements

and

Tyles

p. 548.



p. 541.

A Map of Part of Yorkshire with the Roman Roads leading to & from DELGOVITIA.

A Scale of Miles.

YORK.