

just where this receives the *Canalis Arteriosus*; but observes, that the Knowledge of the Use and Action of the Nervous System is much more imperfect than any other Branch of the Animal Oeconomy.

There is a short Dissertation (with Four Figures of the Tongue, its Vessels, Glands, Muscles, and Nerves annexed) by the same Author; whose principal Intent is to shew, that the Vessels called salival Ducts by Coschwitzius, are not salival Ducts, but Veins.

VIII. *Some curious Experiments and Observations on a Beetle, that lived Three Years without Food: Communicated to the ROYAL SOCIETY in a Letter from Mr. Henry Baker to Alexander Stuart, M. D. F. R. S.*

S I R,

WHEN I had the Honour of waiting on you lately, and was mentioning, in Conversation, the uncommon and surprising Strength of Life bestowed by Providence on a certain *English* Insect, called by *Petiver*, *Scarabæus impennis tardipes*, the slow-legged Beetle. *Moff.* 139. Fig. id. Angl. 999. *Gaz.* Decad. 3^æ, Tab. xxiv. 7. (whose Natural History, as to that Particular, has never, I believe, been touched on) you was pleased to think it so extraordinary, as to desire I would write down the Observations I had made, since the Accidents that led me into them may perhaps never again occur: And you seemed of Opinion, that their being known may

may open a Way to more amazing Discoveries, and tend considerably towards enlarging our Notions of Animal Life in general. — In Obedience therefore to your Commands, I presume to lay before you a Series of plain Facts, without troubling you with my own Reflections, or endeavouring to set them off with any other Ornament than Truth.

In the Middle of the Month of *June* 1737. I happened to be at a Relation's House at *Tottenham* in the County of *Middlesex*; and whilst I was there, a large Cistern of Lead, that was placed in the Coach-house-yard, to receive by Pipes the Rain-water from some Out-buildings, fell down, through the Failure of a wooden Frame whereon it stood. My Curiosity led me to examine into this Cistern; and at the Bottom of it, I observed several black *Beetles*, plunging in a muddy slimy Sediment, which the Water had left. Taking out Two or Three of them, I found them of a middling Size, somewhat above an Inch in Length, having Six pretty long Legs, with Two little Hooks at the Extremity of each, in the Manner of the common *Beetles*: They were all over of a rusty black Colour, with *Antennæ* long and jointed; a Body covered with one strong Shell, forming an Appearance of Case-wings, but undivided, and without any filmy Wings underneath, and a Tail turning up a little: In short, they resemble very much a Sort of *Beetle* that is sometimes seen in Houses, but were of a stronger and much more firm Contexture.

As I have preserved most of our *English* Insects, (after a Manner I shall not here take up your Time in describing) I chose one of the largest of these *Beetles*, and threw it into a Cup full of common *Lamp-spirits*,
(that

(that being the Way of killing and preparing them for my Purpose) and in a few Minutes it appeared to be quite dead : Whereupon I shut it up in a round Pill-box of about an Inch and half Diameter, and carried it in my Pocket next Day to *London*, where I tossed it into a Drawer, and thought no more of it for above Two Months after ; when, opening the Box, I found it, to my great Surprize, alive and vigorous ; though it had nothing to eat for all that Time, nor received any more Air than what could be met with in so small a Box, whose Cover shut very close. Having, however, no Intention of keeping it alive, I again plunged it into *Spirit of Wine*, and let it lie considerably longer than the First time, till supposing it dead beyond any Possibility of Recovery, I put it into the said Box again, and locked it in my Drawer, without looking any more at it for a Month at least, when I found it again alive.——And now I began to imagine there must be somewhat extraordinary in this Creature, since it could survive the Force of *Spirit of Wine*, which soon kills most other Insects, and live for Three Months, without taking in any Sustainance.

A few Days before this, a Friend had sent me Three or Four *Cock-Roches*, or as *Merian* calls them, *Kakkerlaccæ*, brought alive from the *West-Indies* : These I had placed under a large Glais of Six or Seven Inches Diameter, made on purpose to observe the Transformation of *Caterpillars* : And now I put my *Beetle* amongst them, that he might enjoy a greater Share of Liberty than he had done for Three Months before. I fed them with green *Ginger* moistened in Water, and they eat it greedily ; but I

could not find, nor do I believe, that the *Beetle* ever tasted it during the whole Five Weeks they lived under the Glas together. I often took notice, that the *Cock-Roches* would avoid the *Beetle*, and seem frightened at his Approach; but never observed any Tokens of his Liking or Dislike of them, for he usually stalked along, without regarding whether they came in his Way or not. Perceiving the *Cock-Roches* begin to decline in Vigour, I was afraid they would lose much of their Beauty, if I permitted them to die of Sicknefs, and would become unfit to be preserved as I proposed: Wherefore I put them into *Spirit of Wine*, and the *Beetle* their Companion with them. They appeared dead in a few Minutes, and I believe were really so: The *Beetle* seemed likewise in the same Condition: Whereupon, after they had lain in *Spirits* about an Hour, I took them out, and whelmed the Glas over them, till I should have Leisure to dispose of them as I intended. This was about Ten o'Clock in the Morning, and I saw them no more till Evening, but found the *Beetle* then creeping about as strong and vigorous as ever: And therefore I resolved to put him to a Trial I imagined he could not possible survive, which was to let him remain a whole Night in *Spirits*; but here too I found myself mistaken, for after he had been taken out a Day, he appeared as lively as if nothing had happened to him.

Since that time I have put him no more in *Spirits*, but have kept him under the Glas afore-mentioned, where he is alive at present: Though during the Two Years and half he has been in my Possession, I have never been able to discover, that he has drank or eaten any thing.

I must not conceal, however, that, by way of Experiment, I have put under his Glass, at different times, Water, Bread, Fruits, &c. but I never found them in the least diminished or touched by him. These Trials too were always made at many Months asunder, and I am pretty certain, there has been at least a Year together, during some Part of the aforesaid Time, wherein nothing has been offered him either to eat or drink.

The Question will then be, How this Creature has been wonderfully kept alive for Two Years and an half, without taking any visible Food?—And, Sir, your Supposition, that it finds its Nourishment in the Air, carries with it the highest Probability: Since, as you was pleased to observe, there are Particles in the Air which evidently supply a Growth to Plants of some particular Kinds, such as the *Sempervive*, *Orpine*, *House-leek*, &c. And the same or some other Particles therein contained may possibly be likewise able to afford a Nourishment to Animals of some certain Kinds.—There is a farther Reason also to believe, that something like this must be; for, in the amazing Plan of Nature, the *Animal*, *Vegetable*, and *Mineral* Kingdoms are not separated each from other by wide Distances, or broken off by sudden Starts, but differ from each other (near their Boundaries) by such minute and insensible Degrees, that it is impossible to find out certainly where the one begins, or where the other ends.—As the Air, therefore, yields Nourishment to some Kinds of Plants, it may probably do the same to some Kinds of Animals; for otherwise a Link would seem wanting in the mighty Chain of Beings.—And that *Chameleons*, *Lizards*, *Snakes*,

&c. can live for Months together without any visible Sustenance, is a Fact generally allowed to be true; the Cause of it too has been attributed to an exceeding flow Digestion, Circulation, and Distribution of Nourishment, in those Creatures; but as their Agility seems to imply a brisk Motion of their *animal Spirits*, I am inclined to think the Circulation of their other Fluids cannot be so sluggish as commonly is supposed: And, perhaps, it may not be unreasonable to believe, that their being able to live so long without visible Food, is rather owing to some other Nourishment they receive from the Air, which supplies the want of more substantial Diet.

I have met with no Instance I could give Credit to, of any Creature's living without Food for so long a time as the *Beetle* I have been mentioning; and yet I doubt not, (though it may have been kept alive by Air only) but that, in its natural State, it eats more solid Food; after somewhat the same manner as the Plants before-named thrive best when set in a little Earth, notwithstanding they may flourish a long while, and send forth Branches and Flowers, when they are suspended in the Air, and receive no Nourishment but from the Humidity or some other Qualities thereof.

We have not, indeed, as yet, many Instances of this Sort in Animals; nor is it probable any of the larger Kinds can live long without Supplies of Food: But there may be several Insects capable of subsisting on minute Particles carried about every-where with the Air, though, for want of sufficient Experiments, we are not acquainted with them.

Its reviving so often after being seemingly killed by *Spirit of Wine*, shews a Strength of Life I never found in any other Insect: Some Kinds, indeed, will come to Life again, if taken out as soon as they appear dead; and the *Ear-wig*, in particular, after continuing so some Minutes: But half an Hour in *Spirits* puts a final End to the Life of all the *Insects* I ever tried, except this *Beetle*.

It walks not much about under the Glass that covers it, but is usually found with its Nose thrust close down to the Bottom thereof, perhaps to suck in the Air. On removing the Glass, it appears robust and vigorous, and would willingly run away. A strong aromatic kind of Smell issues from it, agreeable enough when there is not too much of it; and the same Scent hangs about the Fingers a long while after touching it.—Since the Weather has been so excessive cold, it is grown somewhat torpid; but till now has always appeared as lively in cold as in hot Weather, and I have observed its Smell to be stronger in Winter than in Summer. In the exhausted Receiver, where I have kept it sometimes for half an Hour, it seems perfectly unconcerned, walking about *in Vacuo* as briskly as in the open Air; but, upon Admission of the Air, it shrinks its Legs together, and appears in a Surprise for near a Minute.

We know the *Egyptians* had a high Veneration for the *Beetle*, by their many Images thereof, which are still preserved in the Cabinets of the Curious, and Historians tell us it was one of their Deities: But, as the *Egyptians* were a wise and learned People, we cannot imagine they would shew so much Regard to a Creature of such a mean Appearance, without some extraordinary Reason for so doing:

And

And is it not possible they might have discovered its being able to subsist a very long time without any visible Sustenance, and therefore have made it a Symbol of the Deity? In the same Manner as it is probable the *Onion* was held sacred by them, for representing the *Orbits* of the *Planets*.—But these Conjectures may seem impertinent to one so used to curious Disquisitions, and therefore I shall not dare intrude on your Time any longer, than to profess myself, with the greatest Respect,

S I R,

Your most humble Servant,

Strand, Jan. 2. 1739-40.

H. Baker.

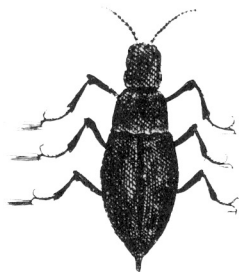
P.S. This *Beetle* (after being kept half a Year longer) was permitted to get away, by the Carelessness of a Servant, who took down the Glass to wipe it.

See the Figure of this Insect, in TAB. II. Fig. I.

IX. *The Discovery of a perfect Plant in Semine; by Mr. Henry Baker.*

SINCE the antient Supposition of *equivocal Generation* has been rejected, for a more reasonable Belief, that every Thing proceeds from Parents of its own Kind, Numbers of curious People have busied themselves in Search of Experiments, whereby to demonstrate the Truth of the latter, and consequently the Falsity of the former Opinion. For this Purpose the *Animal* and *Vegetable* Worlds have been examined, and such Analogy found between them, as proves convincingly, that their *Generation* and *Increase* are brought

Fig. 1.



*Fig. 2. **

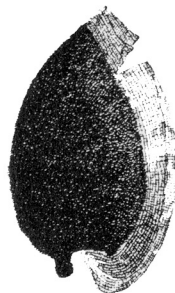


Fig. 2.



A



Fig. 3.

B



C



A

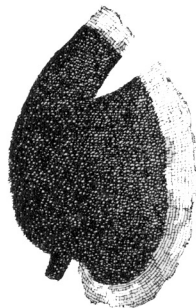


Fig. 4.

B



C

