

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. 1.

### 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

brought about in a Manner pretty much alike. The animal and vegetable *Semina* are found to be alike the *Rudiments* of their future Offspring; and both alike require only a proper Repository to preserve them from Injuries, and proper Juices to advance their Growth, and bring them to Perfection.

Glasses (which the Moderns have so much improved) are the Means whereby these Secrets in Nature are discovered to us. The Eye, assisted by a good Microscope, can distinguish plainly, in the *Semen masculinum* of Animals, Myriads of *Animalcules* alive and vigorous, though so exceedingly minute, that it is computed three thousand Millions of them are not equal to a Grain of Sand, whose Diameter is but the one hundredth Part of an Inch: And the same Instrument will inform us beyond all Doubt, that the *Farina* of Vegetables are nothing else but a Congeries of minute *Granula*, whose Shapes are constant and uniform as the Plants they are taken from. And as the Seeds of Plants are found by repeated Experiments to be unprolific, if the *Farina* be not permitted to shed, it has been supposed, that all its *Granula* contain *Seminal Plants* of their own Kind.

The *Growth* of Animals and Vegetables seems to be nothing else but a gradual Unfolding and Expansion of their Vessels by a slow and progressive Insinuation of Fluids adapted to their Diameters, until, being stretched to the utmost Bounds allotted them by Providence at their Formation, they reach their State of Perfection, or, in other Words, arrive at their full Growth.—If this be granted, the Consequence must be, that all the Members of a perfect Animal *exist* really in every *Animalcule* of the *Semen animale*.

*animale masculinum*, and all the Parts of a perfect Plant in every *little Grain* of the *Farina Plantarum*, however minute either of them may be.

According to this *Theory*, it is supposed by some, that, in *Animals*, the *Semen* of the Male being received into the *Matrix* of the Female, some of the *Animalcules* it contains in such Abundance, find an Entrance into the *Ovaria*, and lodge themselves in some of the *Ova* placed there by Providence as a proper *Nidus* for them. An *Ovum*, becoming thus inhabited by an *Animalcule*, gets loosened in due time from its *Ovarium*, and passes into the *Matrix* through one of the *Fallopian Tubes*. The Veins and Arteries that fastened it to the *Ovary*, and were broken when it dropped from thence, unite with the Vessels it finds here, and compose the *Placenta*: The Coats of the *Ovum*, being swelled and dilated by the Juices of the *Matrix*, form the *Chorion* and the *Amnion*, Integuments needful to the Preservation of the *little Animal*, which, receiving continually a kindly Nourishment from the same Juices, gradually stretches and enlarges its Dimensions, becoming then quickly visible with all the Parts peculiar to its Species, and is called a *Fœtus*.

In *Plants*, say they, (which are incapable of removing from Place to Place, as Animals can) it was requisite a *Repository* for their *Farina* should be near at hand to prevent its being lost; and accordingly we find, that almost every Flower, producing a *Farina*, has likewise in itself a proper *Ovary* for its Reception; where the *Ova* thereby impregnated are expanded by the Juices of the *Parent Plant* to a certain Form and Bulk, and then, becoming what we call

call *ripe Seeds*, they fall to the *Earth*, which is a natural *Matrix* for them.

According to the above Supposition, a *ripe Seed*, falling to the *Earth*, is in the Condition of the *Ovum* of an Animal getting loose from its *Ovary*, and dropping into the *Uterus*: And, to go on with the Analogy, the Juices of the *Earth* swell and extend the Vessels of the *Seed*, as the Juices of the *Uterus* do those of the *Ovum*, till the *Seminal Leaves* unfold, and perform the Office of a *Placenta* to the Infant included Plant; which, imbibing suitable and sufficient Moisture, gradually extends its Parts, fixes its own Root, shoots above the Ground, and may be said to be born.

Others disapprove of this *Hypothesis*, and insist that no *Animalcule* can possibly enter the *Ovum animale*, nor any Particle of the *Farina* get into the *Embryo* of a Seed: But, say they, in Animals, either the finest Part of the *Semen* is taken in by the Vessels of the *Vagina* and *Uterus*, circulated with the Fluids, and carried into the *Ovaria*, and even into the *Ova*, by the Vessels that run thither; or else, Fecundation is occasioned by a *subtile Spirit* in the *Semen masculinum*, which passes the *Uterus*, enters the *Ovaria*, pervades the Female *Ova*, actuates and enlivens the *seminal Matter* in them contained, and produces all the various Symptoms of Conception:—In Plants too, say they, the same is effected by penetrating *Effluvia* from the *male Semen* or *Farina*.

This Account of animal and vegetable Generation is intended to introduce a Discovery, which may possibly some way lead to a greater Certainty about it.

Amongst numberless Inquirers, whom the Opinion, that every Seed includes a real Plant, has set at work to open all Kinds of Seeds, and try by Glasses to find evident Proofs thereof, I have not been the least industrious: But after repeated *Experiments*, in every Manner I could think of, and with the utmost Nicety in my Power, I began to despair of ever attaining an ocular Demonstration of it. If by moistening the Seed it began to vegetate, I could indeed discern the *seminal Leaves*, and the *Germen* or *Bud*, whence the future Plant should arise; but was able to go no further, unless I waited till the Moisture gradually extending its Vessels made the little *Root* shoot down, the *Stalk* rise up, and the *minute Leaves* expand, and bring themselves to View. This, however, was not the Thing I sought for: But, some Days ago, mere Accident, when I thought nothing about it, favoured me with a Discovery I had so often searched after to no purpose.

Endeavouring with a fine Lancet to dissect a Seed of the *Gramen tremulum*, (a Seed whereof is placed in the Hole, marked Fig. 1. of the Ivory Slider herewith presented, and as it appears in TAB. II. Fig. 2. prefixed to this *Transaction*) with Intention to examine the several Parts of it with a Microscope, imagining I might find somewhat curious in the Contexture of its Husk, the Edges of which I observed to be transparent, I opened it the long Way exactly in the Middle, and took notice of something exceeding small between the Two Sides, which I had separated. I stuck the Point of the Lancet into it, with no other Design than to take it up, and place it in the Microscope to see what it might be; which I had no sooner done,  
 than,

than, to my great Surprize and Joy, I found the Lancet had fortunately opened a membranous Case, that included a *perfect Plant*, arising from a double Root in the Basis of its said Case, with Two Stems of an equal Height, each whereof had many Leaves upon it, like the Grass from whence it was produced. This was a Sight I little expected to meet with; and being aware how much Imagination has frequently had to do with microscopical Observations, I distrusted my own Eyes, and examined it every way I could contrive, to prevent being deceived; but in all Positions I found it a Reality. Wherefore having secured it between Two Pieces of *Isinglass*, together with the Cases that inclosed it, (as in the Hole of the same Slider, Fig. 2. (*see* TAB. II. Fig. 3.) I afterwards cut open a great many Seeds of the same sort, in hopes I might be able to separate one of these *minute Plants* intirely from its *Theca*; which at last I successfully effected, and placed as in the Hole (*see* TAB. II. Fig. 3, 4).

Having never met with any Experiment, that so plainly proved the Existence of a real and perfect Plant *in Semine*, I imagined an Account thereof might be acceptable to this most learned SOCIETY, which encourages every Endeavour for the Advancement of true Knowledge: And I beg Leave, with all Submission, to recommend to your Consideration, how far this Discovery may conduce towards ascertaining the Manner of Generation.

A Dozen Lines, in a little Poem called *The Universe*, are so adapted to the present Subject, that, if a Quotation from myself may be excused, I shall conclude with them.

*Each Seed includes a Plant: that Plant, again,  
Has other Seeds, which other Plants contain:  
Those other Plants have All their Seeds, and Those  
More Plants again, successively, inclose.*

*Thus, ev'ry single Berry that we find,  
Has, really, in itself whole Forests of its Kind,  
Empire and Wealth one Acorn may dispense,  
By Fleets to sail a thousand Ages hence.  
Each Myrtle Seed includes a thousand Groves,  
Where future Bards may warble forth their Loves.  
Thus Adam's Loins contain'd his large Posterity,  
All People that have been, and All that e'er shall be.*

Henry Baker.

An Explanation of the Figures. See T A B. II.

Figure 1.

*The Beetle, mentioned in the preceding Paper.*

Figure 2.

*A Seed of the Gramen tremulum intire, of the  
natural Size.*

Figure 2 \*.

*The same magnified.*

Figure 3.

*A Seed of the Gramen tremulum dissected, viz.*

A. *One Lobe or Side of the Seed.*

B. *A membranous Case containing a minute Plant,  
which arises with Two Stems bearing many  
Leaves*

*Leaves from its Radicle in the Basis of the said Case : This Case lies between the Two Lobes, and, before it is opened, seems to be the Germen of the Seed.*

*C. A Piece of the Case cut off in opening.*

Figure 4.

*A. A Lobe of the Seed.*

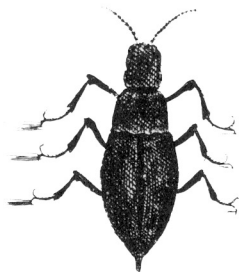
*B. The minute Plant extracted from its Case, that its Root and Branches may be seen to better Advantage.*

*C. The Case whence the minute Plant was taken.*

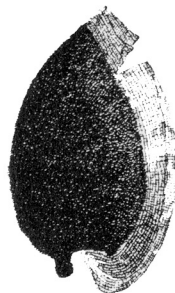
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*Fig. 1.*



*Fig. 2. \**



*Fig. 2.*



A



*Fig. 3.*

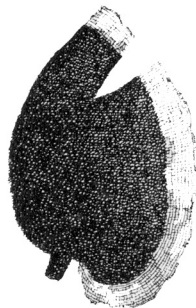
B



C



A



*Fig. 4.*

B



C

