

The strength of imagination in pregnant women examin'd : and the opinion that marks and deformities in children arise from thence, demonstrated to be a vulgar error. / By a member of the College of Physicians, London.

Contributors

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PREFACE.



THE design of this dissertation, is to prove, that the opinion which has long prevail'd, that the Marks and Deformities Children bring into the World are the sad effect of the Mother's irregular Fancy and Imagination, is nothing else but a vulgar Error, contrary to sound Reason and Anatomy.

U Am

I am sensible under what disadvantage this Treatise appears in the World, when I consider the strength of prejudices, and how little some persons can bear to be contradicted.

An objection does naturally present itself, That I write against Experience, That Imagination

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imagination is in quiet possession, and that to disturb it in the full enjoyment of its right is meer rashness, and an unwarrantable incroachment; besides, that's a certain maxim, Cum iis, qui negant principia, non est disputandum.

I own this a compendious way of arguing, to cut the Gordian Knot asunder, which 'tis impossible to untie. But this does not in the least discourage me.

Thus, in old times, Augurs pleaded with the same assurance and positiveness, an unquestionable and uncontroul'd experience of the danger from the screeking of an Owl, or from a black Dog crossing the road in sight of a Traveller. Thus some in our Days plead experience on the fatal consequences of Comets, Dreams, of the Fall of a Salt-seller, what they call the Death-Watch, and a great many other things.

I don't despair of success: Interest alone should prevail upon the party which is chiefly concern'd in the controversy; for what can be more scandalous and provoking,

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ing, than to suppose, that those whom God Almighty has endow'd, not only with so many charms, but also with an extraordinary love and tenderness for their Children, instead of answering the end they are made for, do breed Monsters by the Wantonness of their Imagination.

Sound arguments may perswade a great many of the truth I defend. If those who are for the Strength of Imagination upon the Fœtus, are so ingenious as to confess that they have nothing to say for their opinion, but that 'tis so because 'tis so, I hope they'll be so kind as to permit me to offer my Reasons, 'tis but justice and equity. I own the proofs I make use of are not every one conclusive and of the same strength; but they depend upon one another, and being all put together, amount, I believe, to a full Demonstration, which I must leave to the judgment of the Readers to determine; only I beg of them to take time to weigh the Reasons calmly, and without partiality, and not to pronounce hastily, and in an arbitrary way, before a sufficient hearing and examination. That's the prudent advice Lucretius gave to his Friend Memmius.

* Ne

P R E F A C E.

* Ne mea dona tibi studio disposta
fidei,
Intellecta prius quam sint, contempta
relinques.

It is also necessary to prevent superfluous and groundless objections, and to make a right judgment in this controversy, to have always in view the state of the question, as it is set down in the first chapter; for 'tis by the terms of it that whatever I write against the Strength of Imagination, and the impossibility of the Mother's doing the Child any injury, is limited, and is to be understood.

The sketch I have given of the true cause of Monsters is short, but I hope 'tis sufficient for the present to give a general, and yet a clear solution of those strange Phænomena.

* Receive right Reason's Voice with well purg'd ears,
Lest what I write, and send you for your good,
Be scorn'd, and damn'd, before well understood.

Creech's Lucretius.

P R E F A C E.

I design, the first opportunity, to draw up an exact List of Marks and Deformities on the human Fœtus, which are real, and not falsely reported to have been existent, and to account for every one in particular. In the mean time, I'll see the fortune of this Treatise, and judge by its fate, whether the other may be acceptable to the publick, before I dare to adventure it abroad.





PROPOSITIONS set down in this TREATISE.

- I. **T**HERE are not in the World two Atoms that be both alike.
- II. Chance cannot make an Organick Body.
- III. There's no Dissolutio Continuo without Force or Violence.
- IV. Imagination acts by some Means.
- V. Passion, in respect of the Mind, is a Modification of Thoughts, but in respect of the Body 'tis Motion.
- VI. Passions act upon the Body by accelerating, or diminishing the Velocity of the Blood, and Spirits.
- VII. Imagination cannot act beyond the Sphere of the Soul, and of the Body.
- VIII. There's no Sensation without Nerves.
- IX. Nerves being once divided can never reunite.
- X. A Ligature, or a Pression upon a Nerve, or a Blood Vessel, makes them useless so long as it lasts.
- XI. The longer is an Artery, the slower is the Motion of the Blood at the Extremity of the Vessel.
- XII. The Rudiments of all Plants and Animals are from the Beginning of the World.
- XIII. Conception is independent on the Mother's Will.
- XIV. The Ovum is for a long Time in the Fallopian Tube, and in the Uterus without Adhesion.
- XV. The Foetus has a Sensation, and Circulation of the Blood independent on the Mother.
- XVI. Monsters are less amazing than regular Bodies.



The STRENGTH of
 IMAGINATION
 IN
 Pregnant Women
 EXAMIN'D.

The State of the Question.



O proceed in a regular and methodical way, and to make a right Judgment in this Controversy, Whether the Mother's *Imagination* can, or cannot injure the Child *in utero*, it is necessary to settle the Question, and to determine, What is
 B allow'd

allow'd to be true, and what is doubtful and deny'd.

The question is not, Whether the prosperity of the *Fætus* does depend on the welfare of the Mother: For 'tis granted, 1. That the Child may suffer by the distempers of the Mother, by several accidents, as great falls, and blows she receives, by the irregularity of her diet, and of her actions, by dancing, running, jumping, riding, excess of laughing, frequent sneezing, and all other agitations of her body.

2. That a sudden surprise, a violent passion of anger, an extraordinary grief, or an apprehension of danger may be the cause of a miscarriage.

3. That the *uterus*, and the muscles of the *abdomen*, being in a strong convulsion, may knead the tender body of the child, bruise it in several parts, and cause either a mutilation, or a dislocation.

Lastly, That the disappointment of what the Mother longs for, making her uneasy and pine away, the Child may be depriv'd of sufficient nourishment, grow feeble and weak, and at last lose its life.

All this is not in dispute; but what I deny is, That the strong attention of the Mother's mind to a *determined* object, can cause a *determined* impression upon the body of the Child: As for instance, that her strong desire of a *peach* or of an *apricock* can cause
the

the colour and shape of a *peach*, or of an *apricock* upon a *determined* part of the Child's Body.

This I take to be a vulgar error, as I'll endeavour to prove, partly by reason, and partly by Anatomy.

General Reasons against the Opinion, That the Mother's Imagination is the Cause of Marks in Children.

I. IMAGINATION and no MARKS.

Imagination is not so malignant as 'tis commonly represented. How many Women have been disturb'd by strange desires, and odd passions during their Pregnancy, and yet the Children are well shap'd, without the least token relating to the Mother's *Fancy*.

Abundance of useless projects have been set up within these few years: I beg leave to propose one, which may serve to the establishment of truth, and to rectify our judgment. 'Tis to erect an *office* to ensure the Children *in utero* against such whim, or fancy the Mother should, in due time, declare to have had. I am apt to believe the insurers would run no great risque, and the good women would soon find themselves in a mistake.

II. MARKS without IMAGINATION.

There are abundance of Children that are born with some Marks or Deformities, and yet the Mother cannot remember any particular accident, or any surprize or longing, &c. to have been the occasion of them. Does not this prove that nature works some other way than by Fancy and Imagination?

III. IMAGINATION pleaded after the Child's Birth.

When there's accidentally any discoloration, or any irregularity on the body of the Child, *Imagination* is generally pleaded after the birth, though before no mention was made of it; then the Mother's memory is put to the rack to make her confess, that she long'd for this, or for that; or that she had the sight of some dreadful objects. Strange! if during the whole space of nine months, the Fancy had not wander'd to and fro upon a vast number of Things.

IV. The

IV. The same effect cannot come from two contrary causes.

The Imagination of the Mother is commonly referr'd to these few Heads.

1. A strong longing and desire of something in particular, in which the Mother is either disappointed or gratified.
2. A sudden surprise.
3. Fear, consternation, anger, &c.
4. The sudden sight of an ugly and frightful object.
5. The pleasure of looking on, and contemplating a particular object.
6. To which we must add this essential circumstance, which is very seldom omitted, *viz.* The application of the Mother's hand to any part of her body, which application, though accidental and not premeditated, is supposed to work *sympathetically* upon the same place of the *Fœtus*.

I desire the Reader to observe, that some of these passions are very opposite and contrary, as *anger* and *love*.

Some are calm and sedate, as the pleasure of looking upon a beautiful picture.

Some

Some are tumultuous, and capable to put the mind and body into very great disorders and confusion, as fear, frights, and a surprise.

Now if a pregnant woman happens to long, we'll suppose, for *Muscles*, or if, on the contrary, she has a great aversion to *Muscles*, yet 'tis all one, the Child is reputed to run a vast risque to have upon its body the resemblance of that shell-fish.

But is it not ridiculous and absurd to believe, that the very same effect can proceed from two contrary causes, from love and desire, and also from fear and abhorrence, from tumultuous passions, and from calm ones?

V. Authors to be suspected, and experience doubtful.

A strong prejudice against the common opinion, is, that the greater care nature takes to preserve the different Species of plants, and animals, from confusion, authors seem to be the more solicitous in collecting stories about Monsters, and the sad effects of Imagination, and to relate them with great zeal and positiveness.

Yet, if you weigh carefully these pretended facts, you'll easily find that some of them are silly and ridiculous, and carry their condemnation along with them: Some are
trump'd

trump'd up with a design, others are doubtful, and taken upon trust, and some are downright cheats and impostures.

Who cannot but be surpris'd at the credulity of *Thomas Bartholin*, who tells you very seriously, that * a *gentlewoman* of *Helsenor*, was deliver'd of a great Rat, which, to the great astonishment of the assistants, ran away with great celerity, and was never seen afterwards? Let the case be how it will, the proverb was made good.

Parturiunt montes, nascetur ridiculus Mus.

* *Th. Barth.* Gent. i. Hist. 10. Fæmina quædam Primaria, ante annos non ita multos, *Helsingoræ*, de tempore partus certa, ad puerperium omnia componit, sed tumidus venter ultimo mense subfidere visus, quem tamen, ne famam de se sparsam imminueret, factis vestibus in solitam amplitudinem auxit. Instante partus momento, prægressis consuetis parturientium doloribus, enixa est Animalculum gliri grandiori simillimum, quod magno astantium fæminarum stupore, ingenti celeritate, antra cubiculi petiit nec amplius visum.

Nolim certam fæminarum fidem suspectam reddi, quia monstrosos fætus multorum experientia confirmat. Narravit mihi *Basileæ Johannes Naborousky* nobilis Polonus, amicus magnus vidisse se in Patria Pisciculos duos sine squammis a muliere editos, qui simul ac ex utero prodiissent, in aquis vicinis, aliorum piscium more natabant.

If you dare dispute the truth of this, *Bartholin* seems to take it very ill.

I will not have, says he, *the undoubted veracity of Women to be called in question.* Then to make you swallow willingly this unaccountable story, he wraps it up with another of the same kind. *I have it from John Naborousky, a Nobleman of Poland, and my good friend, that a Woman of that country was brought to bed of two small Fishes without scales, which were no sooner born but they swam in the neighbouring Waters, as naturally as others do.*

Fienus has made a collection of such ridiculous Stories in his Book *de viribus Imaginationis*. This may serve as a Specimen of the rest. *Philip Meurs, Apostolical Protonotary and Canon of St. Peter's in Louvain, has affirmed unto me, says Fienus, that he had a sister compleat in the rest of her body, but without a Head; instead of which was joyn'd to her neck the likeness of a Shell-Fish, having two Valves, which shut and opened, and by which she took her nourishment from a spoon. Her Mother, it seems, had long'd for Muscles, but was unhappily disappointed. This sister lived to be eleven years old, and died then by an odd Accident; for happening angrily and very strongly to bite the Spoon they fed her with, and breaking these testaceous Valves, she died quickly after.*

ter. * Who ever heard the like? a *Muscle fed with a Spoon!* Credat Judæus Apella, non ego.

One would think these authors have nothing in view but to try the credulity of good people, or to ridicule and disgrace human nature, and affront the wisdom of our Maker.

VI. Strength of Imagination pleaded to skreen the faults committed in the delivery.

Some Children are born with large and considerable wounds, which, according to custom, are reported to have been made without any immediate application of an instrument to bruise, divide, or delacerate;

* *Philppus Meurs* Protonotarius Apostolicus, & *Lovaniæ* in æde *S. Petri* Canonicus, vir tam senex, ut tria viderit secula; mihi & infinitis aliis narravit, se habuisse sororem toto reliquo corpore perfectam, quæ nullum habebat caput, sed loco capitis collo superpositam concham testaceam ad similitudinem mytuli constantem duabus valvis, quæ aperiebantur & claudebantur; per quas cibum cochleari ministratum sumebat; quam dicebat ita natam esse, ex eo quòd mater ejus tempore gestationis uteri musculos marinos quos in foro viderat venales, nimis intensè desiderasset & potiri non potuisset. Illud monstrum dicebat pervenisse usque ad annum undecimum ætatis, & mortuum esse ex eo, quòd semel præ iracundia cochlear, quo cibus ministrabatur, nimis fortiter præmordisset; unde congebant illas valvas testaceas frangi: quibus fractis ipsum moriebatur, p. 226.

but

but only by the Fancy and Imagination of the Mother at the sight of some dreadful object. But 'tis easy to perceive, that these reports are often raised to palliate and excuse the faults and accidents that happen in the delivery. We have two such cases in *Fabricius Hildanus* upon the Faith of *Ludovicus Hornicæus* a Physician of *Frankfort*. † *A Woman having been frightened with the firing of a gun, was deliver'd of a Child with a Wound in the back, of the same shape as if it had been done with a musket shot.*——*A Cooper's Wife having been present at the killing of a hog, was brought to bed of a Child whose entrails hang'd out of the abdomen.*

But two great difficulties present themselves, which make good Dr. *Hornicæus*, who is for Imagination, sweat, and which indeed are unanswerable.

† *Nuper matrona quædam explosâ bombardâ perterrefacta, cum prægnans esset, hac in urbe Infantulum peperit, plagam in dorso habentem, non aliter formatam, ac si a glande tormentaria inflicta fuisset.*——*Imo quid de tempore impressæ hujus plagæ, num imaginatio matris eam in terroris articulo (id quod ego sentio) an verò tempore exclusionis demum & partus quod alii malunt, cum alius propter inevitabilem Sanguinis affluxionem fœtus virus lucem aspicere non potuisset, fœtui impresserit?*

Ibid. Non ita pridem uxor viectoris, paulò postquam pocum mactari videret, Infantulum enixa est, cujus infimi ventris partes extra abdomen propendebant.

Hildan. cent. 6. Obs. 65.

I. How

1. How are these wounds made? Let Imagination be never so much arbitrary and tyrannical, yet it must make use of some means to execute its will and pleasure, and of some bodily force upon the flesh of the Child. Let the blood and spirits be in never so great a hurry, they can't do the office of a musket-ball, of a hammer, or of a knife: And what necessity is there to alledge chimerical causes, when there are fingers, and nails, or other tools near at hand?

2. The second difficulty is, When were these wounds made? If you say in the birth, *in partu*, 'tis what I plead for, and it was the opinion of many in *Hildanus's* time. If you say in *articulo terroris*, in the very *Instant of the Fright*, how can you suppose that the Child can live long after so great an effusion of blood; or why is it just to charge the Mother with the misdemeanors of other people?

Abominable Cheats.

SOME of those deformities attributed to the Strength of Imagination, are often the effects of impudence, and of the most villainous barbarity. Cruel Mothers have no pity nor mercy on their innocent Babes, cutting and slicing, and disfiguring of them with the greatest inhumanity, to move thereby the charity and benevolence of others, and live a lazy and indolent life.

To be plentifully provided for, without the trouble of working, is a great temptation ; besides every body knows how ingenious necessity is, and how far it will carry *mendicants* to the greatest excess. To be persuaded how much we ought to be jealous of those people, 'tis enough to read the treatise *Ambrose Parey* has left of the frauds of beggars in his time.

I have taken particular notice of several of them in the streets of *London*, and within the bills of mortality ; that many of the Children which they carry about with them have very odd and unusual deformities and mutilations, especially in their hands and feet.

If these irregularities were from the birth, and occasion'd by Strength of Imagination, why should they appear more on the body of beggars than of any other people ? There's certainly a mystery in this. I am afraid many of these vagrants deserve to be tried upon the *Coventry Act*.

Facts often misrepresented.

Two Cases mentioned by F. Malebranche, examined.

STORIES of Imagination are very seldom impartially represented. Fancy often strives to go beyond the Mother's Imagination, and
to

to supply, with great prodigality, what's wanting to compleat and finish the wonder, *Plus vident, quam quod vident.*

Father *Malebranche*, seems to have fallen into this mistake. He has publish'd two stories relating to the Strength of *Imagination*, with such an air of assurance, that he has imposed upon the credulity of his readers; but if they are well examined, 'tis easy to judge that he has not made a true and fair report.

The first story is about a Woman looking upon the picture of a *Papist* Saint. *Recherche de la verité.* Lib. 2. c. 7.

Not above a Year ago, says he, a Woman having consider'd, with too great application, the picture of St. Pius, had a Child perfectly resembling the representation of that Saint. The Child had the look of an old man, as much as 'tis possible, without a beard, his arms were crossed upon the breast, his eyes turn'd towards Heaven, his forehead small, because the image of St. Pius being raised towards the ceiling of the church, and looking to Heaven, he had almost no forehead. He had a sort of inverted Mitre upon the shoulders, with several round marks where Mitres are covered with stones. In short, this Child was like the Picture, by which the Mother had formed him through the Strength of her *Imagination*. 'Tis what all Paris may have seen as well as I, since it has been for a long time preserved in spirits of wine. There's nothing
in

in all this but meer Enthusiasm and Bigotry.

Pray consider how Father *Malebranche*, even in a book where he gives rules to enquire after truth, does readily give credit to the Woman's account, about the contemplation of the Image, upon her bare Word, when it was her interest to deceive.

Take notice how boldly he gives the name of an *Inverted Mitre* to some few discolorations, without entring into particulars, to make us judge better of the Fact.

I believe, had not the Woman been so cunning as to wheedle the bigots into her interest, for the honour of St. *Pius*, the Child had never been taken notice of. For, 1. Every body knows, that in the agony and struggle of death, the limbs take several odd positions; and the eyes being in Convulsions, are very often turned upwards. 2. That small bodies kept in spirits of wine will appear lank and wrinkled. 3. The decay of the *Cerebrum* will cause a depression of the bones, and make the forehead appear shorter. 4. When the limbs of a dead body are stiff, 'tis easy to mollify them with warm water, and to put them afterwards into any remaining posture, by the help of a strong ligature. 5. And who knows but the very discolorations upon the shoulders, which Father *Malebranche* does not describe, were artificial, the fraud not being discovered

ed by ignorant or credulous Spectators, who came with an implicit faith. How many People who travel into the Holy Land, and other parts of the *Levant*, have the Arms of *Jerusalem* wrought into their Flesh; and how easy is it to do the same upon a dead corps?

We cannot be too much upon our guard against cheats and impostors. I remember that about 25 years ago, I saw, at a House in *Moorfields*, a young lad, who had in one Eye, round the breadth of the *Iris*, the Word *Elohim* in *Hebrew* characters, and on the other eye, and on the same place, *Deus*. I was at first somewhat surpris'd; but there being a vast crowd of people, I had not time to make a thorough enquiry; nor did I think fit to do it then for fear of a Mob, in favour of the cheat; of which I had a great suspicion; for though all the letters were legible and tolerably well fram'd, yet the *Aleph* and the *Mem* in *Elohim*, and the *S*, in *Deus* were not compleat. I was then told, that there had been a solemn deputation from the synagogue to enquire into the pedigree of this young lad, in hopes he might prove the *Messias*: But afterwards I was informed, that the deceit was managed by two thin pieces of painted glass, commonly known by the name of ARTIFICIAL EYES.

A Child in utero broke upon the Wheel at Paris, the Mother's Imagination being the Executioner.

I now come to *F. Malebranche's* second story, which has made a great noise in the world, chiefly upon his recommendation. I'll translate it into *English* from his own words with the greatest fidelity.

Seven or eight years ago, was seen in the hospital of the incurables, a young man, who was born distracted, and whose body * was broken, in the same places where Malefactors are broke; he has lived near † twenty years in that condition, and has been seen by several persons. The late ‡ Queen Mother, in visiting that house, had the curiosity to see him, and even to touch the arms and legs of that young man, where they were broke — † the cause of that sad misfortune was, that his Mother hearing a Criminal was to be broke, went to see the Execution.

a Ibid. lib. 2. ch. 7.

* Dont le corps étoit rompu, dans les memes endroits, dans lesquels on rompt les criminels.

† Il a vécu près de vingt ans en cet état.

‡ Anne of Austria, Lewis the 14th's Mother.

† Dr. Marcot, Fellow of the Royal Society of Montpellier, in his Letter to the Royal Academy of Sciences at Paris, says, the Mother had been suspected to have broke the Limbs of the Child, to move the Pity and Compassion of charitable People. *Histoire de l'Academie des Sciences*, 1716.

Father Malebranche proceeds in good earnest to explain this strange and unaccountable accident. *Children*, says he, *see what their Mothers see*, they hear the same cries, they receive the same impressions of the Objects, and are moved by the same Passions — all the blows given to the malefactor did violently strike the Mother's Imagination, and, by a counter-blow, the tender and soft brain of the Child — the fibres of the Child's brain, not being able to resist the torrent of the spirits, were broken: That's the reason why he came into the world without understanding — the violent course of the Mother's animal spirits went, with force from her brains to the several parts of her body which answered to the parts of the malefactor. 'Twas the same in the Child — but because the bones of the Mother were capable to resist the violence of the spirits, they were not wounded — perhaps she did not feel the least pain — but this rapid stream of the spirits was capable to carry away the soft and tender parts of the bones of the Child, — and 'tis to be observed, that if the Mother had determined the motion of her spirits towards any other part of her body by a * strong titulation, her Child had not had its bones broke, but that part

* Si cette mere eut determiné le mouvement de ses esprits vers quelqu' autre partie de son corps, en se chatouillant avec force, son enfant n'auroit point eu les os rompus.

which answered to the part, towards which the Mother had determined her spirits, had been sorely wounded, as I have said already.

I think it had been better for Father Malebranche to be certain of the matter of fact before he had spent himself in such *romantick* reasons, so contrary to *Anatomy*, as I'll shew afterwards.

1. Father Malebranche seems to give us this Relation upon trust. He does not say, that he himself had examin'd the young man.

2. 'Tis true, he makes use of the *Queen's* name, but what is that to the purpose? Was she a competent judge? The testimony of an honest and skilful *Bone-setter* had been of greater Weight.

3. Who has ever seen *fractures*, and especially so many as these were, to last without any *callus* for twenty Years? for it is what Father Malebranche does assert, *He has lived near twenty years in that Condition. The Queen had the curiosity to touch the Arms and Legs* (not, where they had been broke, but) *where they were broke.* Father Malebranche spoke *French* very politely, and could not here mistake the expressions. Really this is too great an imposition upon our Faith.

4. In

4. In that dreadful Execution, the criminals receive *le coup de grace*, to shorten, if possible, their misery. If the Imagination of the Mother had been able to break the arms and legs of the Child, how came it to stop there, and not *fracture* the breast-bone, which alone had prevented the Child from living twenty years in pains and misery? Was the Mother's Imagination less merciful to the Child than the Executioner to the Criminal?

5. 'Tis very probable, this young man being troubled with the Rickets, the bones of the *Carpus* and *Tarsus* had never come to their full perfection, but did remain *Cartilaginous*, the Ligaments were relaxed, and the Articulations so loose, as upon the least touch to give way. * *There are three sorts of Luxations, says Fabricius ab aquapendente. — the Second is, when the bones recede from one another, because of the softness, laxity and elongation of the ligaments, the head of the bones is partly out of its cavity. I have often observed this luxation upon Mendicants — the bones seem to hold as by a thread, moving to and fro very irregularly — There's round about the articulation, a ca-*

* Fabric. ab aquapendente, ch. 1. part 1. lib. 5. ch. 1.

vity, which sometimes is so big as to receive one's finger. This is also, according to Dr. Glisson, one of the diagnosticks of the Rickets, † *Articuli facile flexiles sunt, sæpeque corpori sustinendo impares : unde erecto corpore Antrosum, vel sinistrosum non nihil inflectitur.* The Joints are very flexible, the body bends forward, backwards, to the right and to the left. How easily then in the case of the lad, might these symptoms pass, in the judgment of ignorant people, for such fractures as are usually made near the same parts upon criminals, and give the Mother an opportunity to frame that idle story, to move people's charity and compassion?

Mr. BOYLE imposed upon by an Irish Officer.

The case of the *Irish Officer*, whose hair is reported to have changed colour in a short time, has directly nothing to do with the present question, yet as Mr. Boyle's undeniable integrity has given to that history a great reputation, and that it is always taken notice of, when-ever authors speak of the Strength of *Imagination* in pregnant Women, I beg leave to make this small digression to shew how far Mr. Boyle's good na-

† Glisson de Rachitide chap. 21.

ture was imposed upon. These are his own words. †

I remember, that being four or six years since in the county of Cork, there was an Irish Captain, a man of middle age and Stature, who coming with some of his followers, to render himself to your Unkle Broghill, who then commanded the English forces in those parts, upon a publick proffer of pardon to the Irish that would then lay down their arms; he was casually, in a suspicious place, met with by a party of the English, and intercepted, and my brother being then absent upon a design, he was so apprehensive of being put to death by the inferior officers, before your Unkle's return, that the anxiety of mind, quickly changed the colour of his Hair after a particular manner; of which, I being then at that castle of your Unkle's, whereunto he was brought, had quickly notice given me, and had the curiosity to examine the captain, and found that the hair of his head had not, as in the instances I had met with in histories, uniformly changed its colour, but that here and there certain peculiar tufts and locks of it, whose Bases might be about an inch in diameter, were thus suddenly turned white all over: The rest of

† *The usefulness of experimental natural philosophy.*
p. 245. Oxford 1664.

his Hair, of which you know the Irish use to wear good store, retaining its former reddish colour.

I wish this honourable gentleman had been so kind as to tell us what other proofs he had of that *sudden Change*, besides the bare word of a stranger, and of his men: What assurance had Mr. Boyle that these few Tufts and locks, about the diameter of an inch, were not *naturally* white all over before the Captain was apprehended?

I remember a school-fellow of mine, who had from his birth a lock of *white Hair* on one side of his head: and *Tancred Duke of Rohan*, who in his infancy had been kidnapped, was partly known again by that token.

It was certainly no bad policy in the Captain, in his dangerous and pressing circumstances, to deceive such a merciful and tender-hearted gentleman as Mr. Boyle was, the only person in that place, his own brother's castle, fit to interpose his authority in favour of the prisoner, during the absence of the governor.

Dolus aut virtus, quis in hoste requirit?

Besides, the improbability of this, and of all other such Stories, appears from the nature of the Hairs.

They

They depend so little on life, and consequently on Fancy and Imagination, that they grow even upon dead bodies.

They are of a horny substance, which lengthens as the nails do, each part near the root thrusting entirely forward that which is immediately above it, and not by any liquor running along the hair in tubes as plants grow; so that, whatever hair is of one colour, does remain so till it drops off, and a new crop of a different colour is pushed on from the root.

And except the hair of the *Irish* officer could have shed, and grown again in a few hours, I don't see how it was possible to alter the colour of those which were already produced.

JACOB'S Policy, in placing Rods of a certain Colour before the Cattle, explained.

Before I go any farther, 'tis necessary to remove an objection, which is taken from *Jacob's* placing rods of a particular colour before the cattle.

Gen. xxx. 38, 39.

And he set the rods, which he had pilled, before the flocks in the gutters in the water-troughs, when the flocks came to drink, that

that they should conceive when they came to drink.

And the flocks conceived before the rods, and brought forth cattle ring-straked, speckled, and spotted.

This, at first view appears to be an invincible argument against my hypothesis, and being taken from scripture, for which we ought to have the greatest respect, may easily impose upon unthinking people; yet it has no foundation nor solidity in it.

1. 'Tis a certain axiom in logick,

Quod nimis probat, nihil probat:

an argument which proves too much, proves nothing; for if the words above-mentioned are to be understood literally, and without any modification, they would also imply, that the cattle *conceived* by virtue of the rods, without the usual means of Generation.

2. There's good reason to suspect the exactness of the translation, and that the divines in King James's time were guided more by their prejudices, than by the original; for the proper *Hebrew* word for *concupere* is *קָנָה*, which is
not

not used in this Place. *וַיִּחַם* in the Text signifies *Incalescere*, to grow hot, * and if we take it in a metaphorical Sense, *Coitum appetere*. All which is antecedent to *Conception*.

I am therefore of opinion, that the text should have been thus rendered.

“ And he set the Rods in the Ducts, in
 “ the channels of the waters which the
 “ Flocks came to drink, and they were *rut-*
 “ *ting* when they came to drink.
 “ And the flocks grew hot towards the
 “ rods, and brought forth cattle ring-strak’d.”

3. As the scripture does not tell us in what manner the rods were placed, we may lawfully suppose, that they made afar off a rough representation of a speckled ram, or he-goat.

4. This was very useful to *Jacob's* Design, but upon a very different Account from what the favourers of *Imagination* believe. It was, in all probability to incline the ewes, in *rutting* time, to take the Rams that were speckled before others. experience shewing, that animals are taught abundance of tricks, in expectation of their victuals: And, as the

* Vide Pagnin. Thesaur.

ews, in that hot country, could have no water, except they drank it where the party-coloured rods were placed, that colour became very pleasant to them, and naturally determined their inclination towards the speckled rams preferable to others.

5. That the colour of the new cattle did not proceed from the rods by virtue of Imagination, but from a more prevailing cause, viz. from the colour of the rams, I have for my vouchers, no less persons than *Jacob* himself, and the angel of God, whom I rather believe than all the commentators in the world.

Gen. xxxi. 10, 11, 12.

And it came to pass at the time that the cattle was rutting, that I lift up mine eyes, and saw in a dream, and behold, the rams which leaped upon the cattle were ring-straked.

And the Angel of God spake to me in a dream, saying, Jacob — lift up now thine eyes, and see all the rams which leap upon the cattle are ring-straked.

This is so plain, that I cannot conceive what answer my opponents will give to this interpretation.

Arguments

*Arguments from Reason and Anatomy against
the power of the Mother's Imagination upon
the body of the Fætus.*

What has been said before, was chiefly to prove, that those, who are for the power of the Mother's Imagination upon the body of the *Fætus*, are not so much grounded on experience as they pretend, and that the instances they produce, are either ridiculous or without any foundation.

Now I come to closer arguments, to shew, both by Reason and Anatomy, that 'tis impossible Children should be marked by virtue of the Mother's Fancy, in all which I'll alledge nothing but what is certain and known, or demonstrable by experiments.

No Equivocal Generation.

There's no *Equivocal* Generation. Animals, which are composed of so many different parts, can never be the result of chance, and of Atomes meeting accidentally, and joining one with another. Nature keeps to certain laws of uniformity, and does not go two different ways in the formation of one and the same animal. 'Tis now looked upon as a fable, that dead bodies turn into worms, that the flesh of a bullock is changed into bees, and that serpents can be produ-

ced out of the *spinal* marrow of a man, according to *Pliny*, who had, in all probability, taken it from *Ovid*, *Metamorph.* Lib. 15.

*Sunt qui, cum clauso putrefacta est spina sepulchro,
Mutari credant humanas angue medullas.*

Sir *Kenelm Digby* has given a receipt in due form to raise *Lobsters* out of their own salt artificially prepared; but what shall we say to *Paracelsus*, who has been so mad, as to offer a process for the propagation of mankind in chymical vessels? *Francis Redi* * in his Book *De Generatione Insectorum*, does remark, That *these false stories have been transmitted from one author to another, but with some addition, as if interest were to be paid for the original invention: To which he adds, That since the beginning of the world, when the first plants and the first animals were produced by the command of God, the earth, had never yielded any other plants, or trees or animals, perfect or imperfect: And that whatsoever has been upon earth, in preceeding Ages, or is at this time, came from the true and real*

* *Nugæ sunt, antiquitus casu ab hoc vel illo inventæ, & ab iis postea pro veris habitæ, ac non sine additamento aliquo in literas relatæ,*

seed of plants and animals ; and that by means of the seed, they preserve their species. †

The Parts of the Fœtus præexistent to Conception.

All parts of the *Fœtus* are actually existent somewhere, and delineated even before Conception, as a plant which is contain'd in the seed, before the seed be put in the ground. This will easily appear by examining the several systems relating to this subject.

The Ancients had but confused notions relating to Generation, and what they said upon it is not worth while to mention, being inconsistent with sense and reason.

Dr. *Harvey*, who has made his Name immortal by the discovery of the Circulation of the Blood, is the first who discover'd the proper place of the formation of the

† Non reticebo, me sæpius repetitis observationibus eo deductum esse, ut credam, terram, post primas illas plantas, & prima illa animalia, quæ sub ipsa mundi primordia supremi creatoris jussu produxit, per se, nec herbas, nec arbores, nec animalia qualiacunque perfecta aut imperfecta produisse : Et quod omnia illa, quæ vel præteritis seculis nota sunt, vel hoc tempore est, vel ex terra nasci videntur, ex semine plantarum reali & vero, nec non ipsorum etiam animalum nascantur, ut quæ, mediante semine proprio, species conservant.

chick

chick in the *cicatricula* of the egg, and the formation of the parts, so far as it was discernable by the naked eyes; and who also asserted, that all Animals are *ex Ovo*, as may be seen in his 62d Exercitation, whose Title is *Ovum esse primordium commune omnibus animalibus*. But the misfortunes of the civil war, and the barbarous treatment he had from brutish and ignorant foldiers, * who burnt all his papers, to the great detriment of learning, did not permit that worthy gentleman to finish his system, which he left somewhat obscure and intricate.

Dr. *Harvey's* System was much improved by *Regnerus de Graef*, who made several Experiments upon that subject: He not only asserted, that Eggs are the first and true origin of all Animals, both *oviparous* and *viviparous*, but also that they † actually exist

* Atque hæc dum agimus, ignoscant mihi nivæ animæ, si (summarum injuriarum memor) levem gemitum effudero. Doloris mihi hæc causa est. Cum inter nuperos nostros tumultus, & bella plusquam civilia, serenissimum regem (idque non solum permissione senatus, sed & jussu) sequor, rapaces quædam manus, non modo ædium mearum suppellectilem omnem expilarunt, sed etiam (quæ mihi causa gravior querimoniæ) adversaria mea, multorum annorum laboribus parta, è musæo meo summanarunt: quo factum est, ut observationes plurimæ (præsertim de generatione insectorum) cum reipublicæ literariæ, ausim dicere, detrimento, perierint. Exercit. 63.

† Sed ex *Ovo* ante *Coitum* in mulieram testibus existente originem sumere.

in *fæmineis Testibus* before Conception, and that they are *fecundated*, and do come down through the *fallopian* tube into the bottom of the *uterus*, as the *vitelli* in Birds get into the *oviduct*.

That these *Ovo* are absolutely necessary for the formation of Animals is demonstrated by this, that *generation* becomes impossible as soon as the *Ovary* is extirpated.

According to this Hypothesis, all the parts of the *Fætus* are in the *Ovum* at one and the same time, both small and great, both internal and external: and tho' some appear perfect before the others, yet they have been *existants*, and have had their beginning at the same time: As an *Acorn*, which even before it be set in the ground, does, in *epitome*, contain the *Oak*, with all its roots, branches and leaves.

The *Semen Masculinum* is the proper and only means that nature uses to *manure* the *Ovum*, by throwing a new ferment in the blood, which does enable the *Lympha* to enter more easily into the pores of the *Ovum*, to open the several passages, promote the motion of the juices, and cause insensibly an increase of all the parts. And indeed the sudden appearance and displaying of all the parts of the *Chick*, after incubation, makes it clear, that they are not then actually form'd out of a Fluid, but that the *Stamina* of them have been formerly there existent, and are then unfolded.

It appears also, by a just consequence from this *Hypothesis*, that the *Fætus* must have been somewhere from the very beginning of the world, *viz.* in the *original Ovum*; as all Plants that are, or shall be, were in the *original Seed*; so that, if *Solomon* was to come again into the World, and learn this philosophy, he would be mightily surpris'd, that what he said as a common proverb in respect of virtues and vices, that *there's nothing new under the Sun*, is more extensively and literally true in relation to plants and animals.

This *Hypothesis* of *R. de Graef*, so rational and so plain, and grounded upon the simile of plants, which are actually contain'd in the Seed, did not seem to want much to be brought to perfection, especially since ocular inspection could trace the *Ova* from the *Ovary* down to the *Tube*, and the bottom of the *Uterus*. When this grand mystery of Nature was set in another light by the laborious *Mr. Leewenhoeck*, who first discover'd, with his Microscopes, a vast number of *Animalcula in Semine masculino*. It is surpris'ing to see the prodigious number of those *Vermiculi*, like so many *Tad-poles*, swimming every way: They are so small, that several thousands of millions of them are not equal to a grain of sand, whose diameter is but the hundredth part of an inch. He has carry'd the nicety so far, as to discern in the
same

same *Sperm*, two sorts of *Animalcula*, which he judges to be for the difference of the sex.

That these *Animalcula* are necessary to the formation of the *Fœtus* is plain from this, *viz.* That those Men whose *Semen* is deprived of them, prove incapable of getting Children. All this, *Leewenhoeck* has made evident by so many observations, that the truth of it cannot be call'd in question.

So that according to his opinion, all Animals are *ex Animale*, which have all their parts pre-existent to conception according to their different kinds.

This discovery seems at first view, to overthrow *R. de Graef's Hypothesis*, and condemn the reality of the *Ova*, as chimerical; but as the opinions of *de Graef* and *Leewenhoeck* have both a great deal of truth in them, and are partly grounded upon many undisputable experiments, and ocular demonstration; 'tis better to reconcile them as *Dr. Gardener* has happily done, by asserting, that the Female *Ovum* is the proper *Nidus*, in which the *Animalcule* lodges it self, and by which it is nourished for some time.

By what *ducts* or passages the *Animalculum* gets into the *Ovum* is not yet discovered; the *Fallopian Tube* seems the most probable way, if it was not contrary to nature, that the same should serve for two opposite purposes, *viz.* to convey the *Animalcule*

malcule to the *Ovary*, and afterwards to bring it back from thence. But let it be done how it will, the *Vermiculi* are certainly lodged there, as appears by the *oviparous* animals.

This answers to *Malpighius's* observation, who has often seen in the *Cicatricula* of an Egg, before incubation, as it were the rudiments of an animal, in the shape of a *Tadpole*, but could discern no such things in those which were not fecundated. And a long time before *Malpighius* and *Leewenboeck*, something like it was discovered by Dr. *Harvey*, with great admiration, in the formation of a chick. * *It appears, says he, in the Shape of a small Worm or of a Maggot, as we observe the beginning of Worms upon the leaves of trees, &c. especially in the oak-galls, in the center of which a limpid liquor, insensibly*

* Apparet nempe forma vermiculi, sive Galbæ sicut in frondibus arborum — præsertim vero in gallis quercinis quarum in centro — liquor limpidus continetur, qui sensim crassescens & coagulatus, subtilissimis lineamentis distinguitur galbæque formam induit.

Nos vero quorumlibet animalium generationem eodem modo fieri docebimus: omnia nimirum animalia, etiam perfecta, similiter ex vermiculo gigni.

Est equidem quod miremur animalium omnium præsertim sanguineorum, puta canis, equi, cervi, bovis, gallinæ, serpentis, hominis denique ipsius primordia, tam plane galbæ figuram & consistentiam referre ut oculis internoscere nequeas. *Harvey Exercit. 18.*

grows

grows thick, and takes the form of a Maggot. ——— We'll shew afterwards that the generation of all animals is made the same way, and that they are generated from a Worm. ——— 'Tis very wonderful that all sanguineous animals, even Men themselves, have in their beginning the shape and consistence of a Maggot.

Thus you have three different systems about the formation of the Child, the most rational that can be contrived: I do not pretend to determine which of them is the best, or to pronounce between *De Graef*, *Leewenhoeck* and *Dr. Gardener*. Let the reader judge for himself; only I'll observe, that 'tis certain they all agree in this particular, that the parts of the *Fætus* are existent somewhere before conception, upon which I propose these questions.

1. By what means can the Mother's *Imagination*, on a sudden, and without her consent, obliterate the lineaments of the *Fætus*, which were pre-existent to conception, and subsisting, even since the creation of the World, and, in an instant produce new limbs, new articulations, new arteries and veins, new glands with *lymphaticks*, and other excretory vessels, such as we see very often in some monstrous births, when

she is entirely ignorant of the structure of the body.

2. If *Leewenboeck's* or *Dr. Gardener's* notion be true, by what right has the Mother's Fancy any influence upon the body of the *Fætus*, which comes from the *Semen virile*, and which is, in respect to her, but a *Passenger*, who has taken there his lodging for a short time? If the Father could not cause, by the Strength of Imagination, any change in the Animalcule which was originally in his body; I desire to know, why the Mother should plead that privilege in exclusion to the Father?

Conception Independent on the Mother's Will.

Conception, by the providence of God, does never depend on the Mother's mere will and pleasure. How many virtuous Women do heartily wish to have Children, and yet their vows prove unsuccessful, when some others *conceive*, and go their full time, in spite of many violent preparations they willingly take to destroy the *Fætus*?

The nutrition and increase of the *Embryo* goes on according to the laws of nature, whether the Mother's inclination be for it, or against it.

'Tis not also in the Woman's power to chuse a boy or a girl, or to have one or two at a birth, to make the Child fair or brown, big or small, weak or strong, to resemble the Father, or to be like Her in features.

If it be granted, that the Mother cannot, by the Strength of Imagination, promote or delay conception, how can any body suppose, without a reflection upon the wisdom of God, that the circumstances of it should be left to her, not so much to do good, in framing a beautiful Child, as to disfigure it, and spoil the regular work of nature?

The Mother cannot have a greater Power over the Fœtus, than upon her own Body.

The common opinion is, that a *determined* thought of the Mother can produce a *determined* effect in the *Fœtus*; but is it not absurd, to believe that the Mother, by her *Imagination*, has a greater influence over the Child, than upon her own body?

I own the effects of Imagination are very considerable. Fancy contributes now and then to the cure of distempers; a favourable opinion of the physician and of the remedy, is very useful. On the other hand, grief, and trouble of mind may be followed by a Consumption, an Atrophy, a Dropsy, Distraction, Madness, &c. Violent passions will cause Convulsions, Shortness of Breath, Fevers,

Fevers, Epilepsy, Apoplexy, and even Death it self. There's a story of a Man, who being upon a scaffold, in order to his execution, died instantly by the gentle stroke of a wet cloth, instead of an ax.

But who will believe, that the fear of the *Gout* gives that distemper? How many melancholy people do imagine themselves to be lame, or to have a long nose, or to be so big, as not to be able to get through a door, and yet, for all their strong Fancy, they have no alteration in their nose, no bulkier body, nor any dislocation of their limbs.

I have never heard, that the fear of being shot to death has ever been able to make any wound in the flesh; that the notion of being run through with a sword, has ever cut the skin, or made any dissolution of the continuity; the Fancy of being made of glass, does not in the least alter the nature of the flesh.

Mr. Boyle's *Irish* Officer might wish heartily a hundred and a hundred times, without any success, for a pair of wings to favour his escape, or an alteration in the colour of his hair, to move pity and compassion.

'Tis reported indeed, that the fear of the *Plague*, or of the *Small-pox*, has been the occasion of those distempers, but who can be positive, that they were not got by *contagion*? since experience shews, that many who have had a violent apprehension of them,

them, when they were rife, have notwithstanding escaped.

* *Fancy does not cause the distemper, fays Fienus, but the distemper gives occasion to the Fancy. 'Tis true, there may be no visible symptoms of the indisposition, but 'tis already begun, and is felt by the patient, who complains of it, and fears it. All this while he is not thought by other people to have the sickness, but when it appears outward, then he is reputed to have got it by the power of Imagination.*

If the Mother, by the Strength of her Fancy, cannot make any mark or signature in her body, if she cannot change the figure, situation, quantity and number of her limbs: In short, if she cannot make a *determined* alteration in her own body by a *determined Imagination*, why should we believe, that she is able to do it in the Child?

* Quod quidam in morbos inciderint, quos imaginati fuerunt, factum fuisse, non quod phantasia illum morbum fecerit; sed contra, quod morbus fecerit phantasia. Et enim non ideo homines morbum acquirunt, quia imaginantur se eum habere, sed quia eum habent, vel jam ejus aliquod principium in se sentiunt, ideo se eum habere imaginantur, eumque timent, & de eo conqueruntur. Verum quia interdum morbus tantum incipit, & adhuc non prodit se externis symptomatibus, unde homines judicant eos non ægrotare, ideo, postquam jam vident eos in morbum, de quo antea fuerant conquesti, incidisse, putant eos illum per vim imaginationis contraxisse. *Fienus, Quæst. 10.*

It

It is said indeed, that the Mother's body is strong and hard and capable of resistance, and that the *Fætus*, is like soft wax, which does easily receive any impressions : But is not the Mother the nearest to the *Impetus* of Imagination? And don't we find that things that are soft and pliable are broke with much greater difficulty than those which are of a great consistence. A large rope, with a knot, is easier separated than without it. But this will appear more, by what follows.

The Nature of Passions, and their Seat, how they affect the Mother ; the Impossibility for the most turbulent Imagination to reach the Body of the Fætus.

'Tis granted by the advocates of Imagination, that it does not act purely by itself alone, and by a *Nod*, but by certain natural means, *viz.* by *Passions*, which disturb the blood, and the animal spirits ; so that to have a right and true notion of the power of the Mother's Imagination over the *Fætus*, 'tis very proper to determine what is passion, and how, and where it affects the body.

Passion, says Mr. Locke, in respect of an intellectual being, is a modification of thoughts ; in respect of a corporal being, motion.

According

According to that definition, *Passion* in respect to *pregnant Women*, is a strong attention to a particular object, sometimes with pleasure and satisfaction, and a great desire of it, and sometimes with uneasiness and abhorrence.

In respect of the body, 'tis the motion of the blood, and spirits, the velocity of which is altered, being either diminish'd, or accelerated.

I have observed before, there are calm and tumultuous passions; I add now that the organs of respiration are properly the seat of violent passions, and that from their disorder, their chief symptoms arise; as the Inarticulation of the voice, the difficulty of breathing, the palpitation of the heart, blushing or paleness, which appear in the Face, Convulsions, Deliquium, Apoplexies, &c.

If the Mother is affected with a mild passion, I don't know how it can any ways be an injury to the Child, because she has little or no emotion her self; the alteration in the blood and spirits is not considerable, nor can come to any height, though it should be lasting. The whole scene seems to be confined within the Mother's mind. She takes a great delight in contemplating the picture of a Man who is of a black or fair complexion; what harm can follow from it? Does the picture fright her, when, it may
G be,

he, she is familiarly acquainted with the original?

The case is not the same in respect to violent passions, which disorder the Mother, since the blood and spirits are then in the most rapid motion that can be imagined; and yet, I say, they cannot affect the *Fœtus* and produce, in the sense that I have settled the question, those strange and unaccountable Metamorphoses of its body. 'Tis what I am going to prove, giving in the mean time full liberty to my opponents to make any supposition they think fit, and order the blood and spirits to gallop at what rate they please for the good of their cause.

- i. Passions are grounded upon the knowledge of the object, a quick thought, and some ratiocination.

What is surprize, but a sort of a sudden comparison between an ordinary object we are used to, and an extraordinary one we are not acquainted with?

Sudden fear is an instantaneous comparison of strength on both sides, and a consciousness of debility, and weakness.

Longing is grounded upon the judgment we make of the usefulness of what we long for.

All these reflexions Children are not capable of; their thoughts, if they have any
are

are limited by their state, and the narrow bounds of sensation. The Mother's thoughts are peculiar to her, and without the reach of the Child's mind, which is unacquainted with the several objects that disturb the Mother. She is afraid of a naked sword, because she knows or apprehends the rashness of the Man in whose hands it is; she is moved at the sight of a cat, or of a dog, because she's timorous and does not know but she'll be bitten or scratched: She is disturbed at the sight of a butcher, who kills a beast, because she is of a merciful temper; but in the mean time, the Child is in a state of neutrality, because it has not yet the necessary Idea's of things, and how should it have them *in Utero*, when several months must pass after the birth, before it comes to some little knowledge and understanding?

To say, with Father *Malebranche*, that the Children see what the Mothers see, that they hear the same cries, &c. 'tis to say, in other words, that Children see without light, and hear without the vibration of the air, and when their ears are stop'd: In short, 'tis to speak at random: How should she communicate her thoughts to the Child? Is not her soul distinct from the soul of the *Fœtus*? Is there any communication of nerves between her brain, and the brain of the other? If there be any, let them be shewn?

2. Children *in Utero* have the organs of respiration in a state of *Inaction*, and consequently the dreadful symptoms, that affect the Mother, and which I have already mentioned, cannot come within their reach: They can neither grow pale, nor blush; no asthma, no inarticulate voice, no confusion and disorder in their countenance, and other such accidents, incident to passions can affect them, because they are altogether inconsistent with their present condition.
3. Pregnant Women have often high Fevers, in which the blood and spirits are put in a greater motion, and more lasting than the hurry which comes from any passion, and yet the Children are born without any particular Marks or Deformities.
4. There's no *immediate* communication of blood and spirits between the Mother and the Child, without which 'tis not possible for the Mother's Imagination to act upon the *Fætus*. This I'll prove hereafter, when I come to consider the state of the Child *in Utero*.

The different stages of the Child in Utero.

To put this in a true light, and determine how far 'tis possible for the Mother's Imagination to reach the Child, 'tis very necessary to consider the different changes the *Fætus* undergoes, from the very first beginning of Conception till it comes into the World. There are three several stages.

1. When the *Ovum* is still engaged in the *Ovary*.
2. When the *Ovum*, being actually separated from the *Ovary*, remains for some time loose, and without adhæſion, either in the *Fallopian Tube*, or in the bottom of the *Uterus*.
3. The last stage is, when the *Ovum* is ingrafted in the *Uterus*, by means of the *Placenta*, and the umbilical vessels.

These several stages being well considered, it will appear, that the *Fætus*, in respect of the Mother, is all along no more to her than a Child that is in a nurse's arms, and at her breast, by which it receives nourishment, but is not reputed to be part of her body. This at first may be look'd upon as a
great

great *Paradox*, but, I hope, 'tis clearly demonstrable.

The first stage of the Fœtus considered.

The first stage of the *Fœtus* is when the *Ovum* is still in the *Ovary*.

1. The *Ovaria* are two Fingers breadth distant from the bottom of the *Uterus*. In Women, who are come to age of maturity, they are each of them about the bigness of a pidgeon's egg, and covered with a proper membrane, which sticks close to their substance, and is not easily separated. However, when it is removed, they appear soft and whitish, having, in the interstices of their Fibres, several small and round *Vesiculæ* full of a clammy liquor, which, being boiled, has the same smell, taste, colour, and consistence as the white of an egg when 'tis hardened.

The blood vessels, which are very small, make a great many turnings and windings, and spend themselves upon the membranes of the *Vesiculæ*.

It is to be observed, that, in the narrow center of each *Vesicula*, is lodged a small round body, which being pricked, affords also a limpid water, like the other. This
small

Small body is properly the human *Ovum*, made up of two Coats, of the *Colliquamentum*, or the humours designed for the nourishment of the *Fætus* of the *Cicatricula*, the apartment designed for it; and of the *Secundines*. This is the state of the *Ovum* before *Fecundation*.

2. I now proceed to examine the *Ovum* after *Fecundation*. 'Tis not here my business to determine, when, by what mechanism, and where it is fecundated. I know learned Men are not agreed upon that subject amongst themselves. But to give my opponents as much room as they can desire to defend their cause, I'll suppose for the present, that the fecundation is done in the *Ovary*, and indeed I know nothing to the contrary: Then, afterwards, if they think fit, they'll give that office to the *Tubes*: And lastly, if they please to the bottom of the *Uterus*; 'tis all one to me, I hope, to beat them out of all their entrenchments. I proceed:

After fecundation, the liquor, in which the *Ovum* swims, does insensibly grow thick and tough, like a glandulous substance, and pressing the *Ovum* on all sides, and chiefly on the lower part, where it may be joined
to

to the Ovary, forces the tender *Pediculus* (if there be any) to give way. In the mean time, the fibres of the *Vesicula*, being pulled downwards by a strong contraction, open on the top a small *Foramen*, like a *Papilla*, through which the *Ovum* makes its Passage: On the other side, the extremity of the *Fallopian Tube* embracing the Ovary, does, by a vermicular motion, suck in the *Ovum*, and receive it into its cavity, to be conveyed afterward into the bottom of the *Uterus*.

Reflections upon the first stage of the Fœtus.

'Tis easy to see, that the Mother's Imagination can have no effect upon the *Fœtus*, when the *Ovum* is in the Ovary.

1. 'Tis not likely to be at the very beginning of Conception, for which * *Finus* gives this reason, *Parentes rei veneræ operam dantes, ita ei toti sunt intenti, ut nihil aliud cogitant: & vel sit nox, vel sint sejuncti a rebus externis & ita non habeant occasionem quid externum imaginandi, vel tale aliquid imaginandi, ex quo magnum aliquod desiderium, aut terror sequi possit.*

* Quest. xx.

Pray, take notice of the great care nature has taken to preserve the *Ovum* against the *Impetus* of the blood and spirits, by enclosing it in a soft substance, which breaks the shocks and blows that might happen, and also observe, that the *Cicatricula*, where the rudiments of the *Fætus* are to make their appearance, has a double mote, or intrenchment, *viz.* the liquor in which the *Ovum* swims, and the *Colligumentum* contained in the coats of the *Ovum* it self.

3. The branch of the artery which goes to the *Ovary* is small, and makes so many windings and turnings, that the *Impetus* of the blood is broke before it can reach the *Ovum*.
4. This is not a mere conjecture; but is proved by experience; for Dr. *Harvey* has observed, that a certain *Passion*, the most violent of all others, and the likest to affect the *Ovary*, can neither make it swell, nor increase its bulk, at no time whatsoever. *Tum maxime, quod Coitus tempore, quando maribus testiculæ turgent, & humore seminali replentur in cervis, & damis, cæterisque viviparis omnibus, in quibus reperiuntur, uteri cornua*
H
immutentur,

immutentur, testiculi antea dicti nec turgeant, nec quicquam a solitâ constitutione, sive ante coitum sive post ipsum turgeant ——— *tempore coitus testiculi, qui dicuntur, neque ampliores, nec repleti magis, quam antea nec à pristinâ suâ constitutione mutati.** Now if that passion, which is here hinted at, tho' the most powerful, cannot, by increasing the velocity of the blood and spirits, cause the Ovary to swell, why should any other passion do it?

5. The fecundated *Ovum* comes out of the *Vesicula* with such a facility, that 'tis very doubtful, whether they be joined together by any *continuous* vessels and nervous fibres: 'Tis more likely, that the *Ovum* has no stronger adhesion to the *Vesicula*, than by *apposition* and *contiguity*.

1. That method is the most consonant to nature which loves simplicity and uniformity; and why should the *Ovum* be here in a much different condition than it is in the second *Stage*, where, as I'll describe it in a little time, it is own'd by every body, to be nourished, and to increase considerably with-

* Harv. Exer. 67.

out the least adhesion to the tubes, or to the bottom of the *Uterus*.

2. In Hens, the *Ova* have no other connexion to the *Vitellary*, than by contiguity.
 * ‘ *The stalk of the Vitellus is hollow and membranaceous, and extends, from the root of the bunch, to the Vitellus, which it has no sooner reached but it dilates, and giving it an outward coat, embraces almost the whole Vitellus, except in the most remote part from the stalk, where a large line appears, and where no arte-*

* Est enim hic *pediolus* nexus membranaceus, qui a racemi fundamento ad *vitellum* producitur, quem cum contingit, dilatatur, & *vitellum* extrema tunica obducit, ambit enim fere integrum vitellum, nam in parte vitelli exteriori, sive a pediculo maximè remotâ, lata quædam linea apparet, in quâ nullæ arteriæ aut venæ facilè conspiciuntur, quapropter etiam colorem minus rubicundum refert, atque hæc est sola vitelli pars, quæ exteriori membrana non obducitur, quemadmodum clarè innotescit, si immisso in pedunculum tubulo, flatu exterior tunica distendatur, quæ in non maturis ovis interiori firmiter adheret, in maturis verò ita dissolvitur, ut vitellus, aut sponte suâ decidat, aut contrahentibus sese exterioris membranæ fibris expellatur, qui ab infundibulo, sive membranosa oviductus expansione exceptus, remanente exteriori tunica cum pedunculo racemo affixa, quam, propter similitudinem *Calicem* cum *Fabricio*, & *Harvæo* vocamus. *R. de Graef. cap. 13. de mulier. org.*

ries, nor veins are conspicuous: Upon
 that account it is not so red there. This
 is the only place of the *Vitellus*, which
 is not covered with the outward coat.
 As appears clearly by blowing into the
 hollow of the stalk, for immediately the
 outward coat swells, and though it sticks
 firmly to the eggs which are not ripe, yet
 in others that are come to maturity, it
 gives way, and the *Vitellus* drops of itself,
 or is expelled by the contraction of the fi-
 bres of the external membrane, and con-
 vey'd by the *Infundibulum* into the *Uterus*,
 the external membrane remaining adherent
 to the stalk, therefore, after *Fabricius* and
Harvey, we call it *Calix* upon the account
 of their likeness.

This observation may appear at first view
 to be of too great nicety, and I frankly own,
 I should think so in any other case, but in
 this, where the knowledge of the species of
 union is very material, and in a manner the
Jugulum causa, I hope not to be condemned
 for inquiring into it; for if the *Ovum* is only
 lodged in the *Vesicula*, as a ball in a socket,
 without any stronger ties than those of *Con-*
tiguity, I see no reason, though it is inclosed
 in the Mother's body, why it should not be
 reputed to be originally a distinct *Individu-*
um, nor why the Imagination should have
 more power and authority over that inno-
 cent

cent and harmless *Lodger*, than upon the *Lumbricus Latus*, which according to *Nicholas* * *Andry's* Judgment, is of the same origin and age as the patient, who is troubled with it.

6. Now to please every body, I am very willing to allow, that the *Ovum* is firmly tied to the *Ovary* by many vessels and sinews, &c. and that it is one of the *Partes Integrantes* of the Mother's body, yet upon that supposition 'tis impossible for her Imagination to make any impression upon it.

For if a ligature or a hard pressure be made upon a Sinew, or an Artery, the part underneath entirely loses its communication with the Heart and the *Cerebrum*, and is for that time wholly deprived of motion, and feeling, and if the cause be not soon removed, it may remain useless for ever.

For that very reason, 'tis not in the power of *Fancy* to affect the *Ovum* after Conception ; since as I have observed before, the Liquor in which it swims, growing tough and of a glandulous substance, presses like a *Tourniquet* upon the tender *Pediculus*, and strangling the vessels and the nervous fibres,

* *N. Andry*, de la generation des vers.

cuts off all manner of communication between the Mother and the *Ovum*. It is, as if it was, entirely separated. Imagination does command it no more than a Man paralytical can move his limbs.

The second stage of the Fœtus examined : The Ovum no longer a part of the Mother's Body.

The second stage of the *Fœtus*, is when the *Ovum* is passing through the *Fallopian Tube* into the bottom of the *Uterus*, and is then, in both places, visibly *loose* and without adhesion for a considerable time, which makes me believe, that the favourers of Imagination will be so prudent, as to give us no great trouble hereafter, but rather submit, and own their mistake.

The *Tubes* are situated on the right and left side of the *Uterus* ; they rise from its bottom by a narrow beginning, which scarcely admits of a hog's bristle. As they go upwards, they dilate so much as to be able to receive the end of one's little finger, and winding about, they encompass one half of the *Ovary*, at some distance. At their extremities they contract again into a small orifice, from whose circumference they spread into a pretty broad and thin membrane, representing the wing of a bat, and like the expansion of the *Oviduct* in birds, which is joined to the *Ovary* ;
except

except that in a human body this membrane is deeply jagged and fringed. These *Fimbriae* are very useful to make the Tube embrace more closely the *Ovary*, and prevent the *Ovum* from falling into the cavity of the *Abdomen*. Though the upper orifice be very narrow, yet 'tis never shut up but by accident, as when the *Fimbriae* enter into it; for, if from the *Uterus* you blow into the Tubes, the wind has immediately a free passage through. Their substance is composed of two membranes, which come from the internal and external membranes of the *Uterus*. The internal is full of wrinkles, by the help of which the Tubes have a sort of *Peristaltick* motion, and by their contraction, both orifices come nearer to one another. Besides, these wrinkles enable the orifices to enlarge upon occasion.

Some have doubted of the passage of the *Ovum* through the Tube, under pretence, that 'tis too far distant from the *Ovary*, and that the orifices are too narrow, as if the same objections could not be made against the *Oviduct* in birds, and as if the *Orificium Uteri* was not much narrower in proportion to the bigness of the Child.

It is certain that the *Ovum* passes from the *Ovary* into the Tube: 1. Because several observations upon human bodies, and upon brutes have made it evident, that the Tubes embrace exactly the *Ovary*, and must receive
whatever

whatever comes from it. 2. Because the *Ova* are always found loose in the *Tubes*, in the very same number as there are *Papillæ*, and empty places in the *Ovary*. 3. Not only the *Ova* are seen in the *Tubes*, but many accidents demonstrate the truth of it; for sometimes the *Fimbriæ* not embracing the *Ovary* long enough, and missing their hold, the *Ovum* drops into the cavity of the *Abdomen*; or at another time being stop'd in their way by some obstructions, the *Tubes* dilate so far as to burst, to the loss of the Mother's life, of which you have several instances.

The *Ovum* does not stay a little while in the *Tube*, or in the bottom of the *Uterus* without adhesion; but it remains in that condition at least twelve or thirteen weeks after fecundation. * *I have dissected* (says Harvey) *several Embrions of three months, and of the bigness of a goose egg, and distinct in all their parts. During that whole time, no Placenta was to be*

* *Ejus ætatis (trium mensium) abortum sæpe dissectui, ad ovi anserini magnitudinem, cui inerat foetus omnibus suis partibus distinctus ————— toto hoc temporis spatio (trimestri scilicet) vix quicquam placenta, sive hepatis uterini conspicitur ————— nullum indicium reperiri licuit, quo conceptum illum sive ovum, utero adhuc connexum fuisse crederem, solummodo parte ovi obtusiore, externa superficies ————— rugosior, crassiorque apparuit, tanquam placenta jam futuroe rudimentum. Harv. exercit. 56.*

seen ——— nothing to make me believe that the Ovum was adhering to the Uterus, only the superficies on the flattest side, appeared thicker and rougher, as the first rudiments of the Placenta.

† In some brutes, that adhesion is not performed till towards the middle of gestation, notwithstanding the increase and bulk of the animal.

So long as the Ovum is without adhesion it imbibes an albugineous liquor, which at that time bedews the external superficies of the tube, and of the Uterus.

The Ovum, in this stage may be compar'd to those plants which shoot their roots into water or mud, and draw from thence their nourishment.

This nutritious juice is supposed by some to be suck'd in and attracted thro' the pores

† Inspecxi uterum Ovis, quinque septimanis impregnatum, & inveni conceptum nullibi utero junctum. *Wilhelm. Langley, de generat. animal.*

Sues & Equæ carnosam hujusmodi copulam non habent. *Harv. de uteri membranis.*

Equa Sui proxima est ——— Uterus primæ gestationis mensibus apertus, suilli instar, fœtum nondum coherentem dimittit, nec ulla placentæ aut glandularum prodit. *Needham cap. 7.*

In Sue, cujus uterus omnium simplicissimus, si in prioribus septimanis fere usque ad Medium gestationis tempus sectionem institueris, invenies membranam hanc tenue serum paulatim exudantem, quod a chorio confestim imbibitur, minime tamen adhæret utero chorion. *Ibid.*

of the membranes, but that does not seem agreeable to nature: For as *Diemerbroeck* has well observed, how should that moisture understand to go this or that way? 'Tis most rational to believe, that 'tis taken up by a vast number of *Fibrillæ* annex'd to the *Placenta*, which though not visible to our eyes, upon the account of their minuteness, are notwithstanding actually existent in the *Ovum*.

But, let it be how it will, this is certain, that whatever is suck'd in by the *Ovum* does never come back to the Mother, and consequently that it has but a slow and languid motion, or else the *Fætus* could not contain it, and it would prove its destruction. 2dly, That attractive faculty is in the *Ovum*; there's no impelling force on the Mother's side. 3dly, 'Tis the work of the *Fætus* to assimilate to its body whatever is received from the Mother. I am so long upon these particulars, because they will be hereafter of great use to remove some objections.

Reflections on the second stage of the Fætus, in which the Ovum is no part of the Mother's Body.

'Tis plain, that in the second stage, the *Fætus* is an *individuum* distinct, and separate from the Mother's body, and consequently
that

that her Imagination can have no effect upon the Child.

1. It has not only no connexion with the *Uterus*, but all the several functions relating to life are performed independently on the Mother. The heart moves, the blood, such as it then is, circulates, juices are filtrated, the body is nourished and increases; the limbs have a motion, and consequently the *Cerebrum* and the *Genus Nervosum* do their duty, and all this without the least adhesion to the *Uterus*.
2. Upon which I beg leave to repeat Dr. *Harvey's* * strong and beautiful expressions, which do not only relate to this present state of the *Fœtus*, but also to the first, when it was in the *Ovary*. *Certè concludendum est, ovum, etiam in ovario dum est, matris animâ non vivere; sed esse instar filii emancipati, à primâ statim origine; sicut arborum glandes, & semina à plantis ablata, haud ulterius earundem partes æstimanda sunt; sed sui juris facta; quæ propriâ, insitaque potentiâ vegetativâ, jam vitam degant.* 'Certainly we must conclude, that the *Ovum*,

* Exer. 26.

‘ even when it is in the *Ovary*, does not
 ‘ live by the soul of the Mother, but
 ‘ that from its first origin, it is as a
 ‘ son removed from the tuition of his
 ‘ guardian, like acorns, and seeds,
 ‘ which being once separated from the
 ‘ plants they came from, are no more
 ‘ to be esteemed any part of them,
 ‘ but are their own masters, subsisting
 ‘ by their proper and natural vegeta-
 ‘ tive power.

3. There's no communication of blood
 vessels, nor of sinews, between the *Fæ-*
tus and the Mother: Whence then shall
 come that dreadful inundation of spirits
 that father *Malebranche* and some others
 speak of? How can the Mother's Imagi-
 nation reach the *Cerebrum* of the *Fætus*
 and disturb it?

4. All our faculties are limited; there
 are certain bounds, beyond which they
 can't exert their strength; let our pas-
 sions be never so violent, yet they are
 confined within the sphere of the mind
 and of the body. By what magick,
 then, is the Imagination of one be-
 ing, capable to affect another, which
 is wholly and entirely a different *Indi-*
viduum?

If this be well considered, and weighed by the favourers of Imagination, I hope they'll abandon their cause, and cease to be so uncharitable, as to fright honest Women with bug-bears, and frightful stories, at least during the non-adhesion of the *Fætus* to the Tube, and the bottom of the *Uterus*. I beg of them to distinguish times, and to be so fair, as to declare roundly to timorous people, ' Now Imagination is not in season ;
' now you may, for a whole quarter of a
' year, long without any ill consequence,
' the Child shall not receive any bad impression from your rambling fancy.'

The third stage of the Fætus examined.

I am now come to the third and last stage of the *Fætus*, when the *Ovum* does strongly adhere to the *Uterus* by the help of the *Placenta* and the umbilical vessels. This is the longest of them all, since it lasts till the time of the birth, about four and twenty weeks, more or less, but it does not essentially differ from the second; the *Fætus* remains still a distinct *Individuum* from the Mother, with whom it is united but by *Contiguity*, and is consequently out of the sphere of her Imagination.

In one, as I have observ'd before, the *Fætus* is like a plant, which is loose in the waters, where it spreads its fibres and attracts
its

its nourishment, the water all the while permitting, but not promoting the suction.

In the other, the *Fætus* being increased, and requiring a greater quantity of nutritious juice, besides the danger of its being tost to and fro, and pressing too hard upon the neck of the *Uterus*, is like the very same plant, which does by its bulk require to be remov'd from the water, and to be set in the ground for a greater support, and for sufficient nourishment.

In this stage, if the *Fætus* may be reputed a part of the Mother, 'tis in the same sense as an ivy-tree is said to be part of the tree, or of the wall to which it cleaves, and from which it cannot be separated without difficulty, and some detriment.

For notwithstanding the strong adhesion of the *Ovum* to the *Uterus*, no vessels go from the Mother to the *Fætus*; there's no circulation of blood between them, no communication of nerves and spirits, their sensation is different; the *Fætus*, 'tis true, draws its nourishment from the *Uterus*, but 'tis insensibly and without return. In short, the Child is as distinct from the Mother, as a Child at the breast is, as I have said before, separate from its nurse, upon whom it feeds, and 'tis no more possible for the Mother's Imagination to act upon the Child in *utero*, than for a nurse to make by her Fancy upon the suckling babe any Mark or Impression:
Or

Or 'tis no more possible, than for the two *Hungarian* girls, which were seen in *London* some Years ago, and were joyn'd together, to have, by their Imagination, done any injury to one another.

All these particulars will better appear by a short description of the parts, and by the following observations.

Of the Funis Umbilicalis.

The length of the *umbilical* string is very uncertain, it depends on the age and bigness of the *Fætus*. 'Tis commonly about half an ell long, and about a finger thick; it goes from the Child to the *Placenta*, and contains under a thick coat, two arteries, a vein and the *Urachus*. The arteries come from the *Iliac*, the vein joins the *Vena porta* in the substance of the liver; 'tis bigger than the arteries, and does appear a long time before them. The arteries have several *anastomoses* with the arteries, and the veins with the veins. Both * vessels don't go straight for-

* Vena interim ipsa modo indivisa ad distributionem usque permanet, modo in duas dividitur, simulque cum duabus arteriis, duplici membranâ obvoluta, per trium vel quatuor ulnarum longitudinem producuntur vena interim in hoc longo itinere variè capreolorum vitis, hederæve modo serpit, & varicum in modum conterquetur.

ward,

ward, but wind and turn about, making a most admirable texture like a net; and lastly, they spend themselves by a vast number of ramifications into the *placenta*; but they go no farther as I'll prove afterwards.

The use of the *umbilical* arteries is to nourish and feed the *placenta*, and all its moist minute fibres, which enter into the *Uterus*. The umbilical vein brings back the redundant blood, and also the nutritious juice (let it be what it will) which has been attracted by the *Fibrillæ*, like the left subclavian vein, which return to the heart the blood from the artery, and also the chyle from the *Ductus Thoracicus*.

The use of the umbilical *Funis* is to sustain those vessels which had been of themselves too weak in such a long progress. 2. To permit the free motion of the Child, without any injury to the *Placenta*, like a cable which the longer it is, gives the more liberty to the tossing of the ship, without having any stress upon the anchor. 3. 'Tis also useful in the delivery.

Placenta.

The substance of the *Placenta* is brittle and soft, its *parenchyma* is partly glandulous; 'tis circular, two fingers thick, and about a foot diameter when the *Fœtus* is come to maturity, and ready for the birth.

It

It has an innumerable number of fibres and small vessels, which come from the umbilical *Funis*, which spread into it. On that side next to the womb, it is very unequal, and full of a vast number of *Fibrillæ*, it does not stick to the *Uterus* every where, but where these *Fibrillæ* are found.

* *Placenta muliebris, gibbâ sui parte, quâ utero adhæret, plurimis tuberibus inæqualis est, videturque istorum operâ eidem adnasci, adeò ut non ubique utero affigatur, sed iis solùm locis, ubi vasa in eam porrecta nutrimentum eliciunt, & in quibus propterea vasorum quasi fines abrupti cernuntur.* In brutes 'tis spongy, full of an albugineous juice, which is sent to the *Fætus*. The veins and arteries grow smaller and smaller as they come to the margin. When the *Ovum* is first received into the *Uterus* there's no appearance of the *Placenta*; 'tis discovered but when the *Fætus* is almost formed, then its rudiments are seen, and they increase as the *Fætus* grows bigger.

Uterus.

The substance of the *Uterus* before impregnation is whitish and membranaceous. The arteries and veins come from the sper-

matick and hypogastrick vessels. The branches of the arteries communicate by several *Anastomoses* with one another, and the veins on their side do the same; they don't go in a straight line, but wind about and make several turnings.

The *Uterus* in pregnant Women, is fungous and spongy; its vessels are so large that their cavity may receive the end of one's finger. The more it dilates the thicker it is, and 'tis easy to conceive, that the *Uterus* being so much dilated the blood cannot circulate through the Tubes with the same velocity as before, and consequently, that the several uterine glands being swelled have an opportunity of separating a sort of juice for the nourishment of the *Fætus*; as the length of the spermatick arterys in Man is very useful to the separation of the *Semen*.

That it is so, two reasons prove it. 1. That as soon as the *Uterus*, after the birth, does contract its fibres and return to its former shape, and its membranaceous substance, then the milk, which the blood is full of, and which was separated in the *Uterus*, flies to the breast in great abundance. 2. By comparative anatomy we know, that in glanduliferous animals the *Uterus* is found to be full of that lacteal juice, as appears by Dr. *Harvey's* observations.

observations, *De cervarum & damarum u-*
tero. *

The *Uterus* being spongy and dilated, 'tis easy for the *Fibrillæ* which are in the under part of the *Placenta*, and in a vast number, to creep and penetrate into the widened pores of the *Uterus*, to which they stick firmly for several months, as we see roots of herbs, shrubs and trees, make their way thro' thick planks, hard stones and walls, and strongly *adhere* to them. From thence the *Fibrillæ* do insensibly attract the nutritive juice into the sides of the capillary vessels of the umbilical vein, where it is mixed with the blood, and is convey'd into the body of the *Fœtus*.

Reflections upon the third Stage of the Fœtus.

I. I am willing for the present to suppose, though I don't grant it, that there is an immediate circulation of the blood

* *Uterus crassior redditur & carunculæ jam tumidi-
diores mulierum papillas referunt, lacti profundendo
paratas crederes. Exercit. 67.*

In acetabulis externis hiantibus materia alba & mu-
cilaginosa reperiébatur quæ, ut mel favos, carunculam
totam implebat, eratque colore, consistentiâ, ac Sapore
albumini ovi persimilis. Ex. 70.

Carunculæ, ut dixi, sanguinem ne mulsæ quidem aut
compressæ emittunt: quippe non tam illo, quam albu-
mine plenæ sunt.

between the Mother and the Child ; yet I don't see by what means her Imagination can reach the *Fœtus* in the third *stage*, let her passions put the blood and spirits into never so great a disorder.

1. I desire the reader to mind the spongiousness of the *Uterus*, the length of the umbilical string, and of the blood vessels, and how many circumvolutions they make, by all which the *impetus* of the blood is broke, and cannot consequently make any Impression upon the Child.

2. When the blood enters the Child, it must go first through the heart before it can be distributed to any other part of the body, and if it was brought in too great quantity there it would stop, the heart not being able to receive more than the small capacity of the right ventricle, and the diameter of the *Foramen ovale* can allow.

3. The blood flows in an uniform stream, and is afterwards, by its circulation, equally distributed to the several parts of the *Fœtus*. Why then is one part more affected by the Mother's Fancy than another ? Has the blood sense and reason to chuse one limb before another, and to know the intent and meaning of Imagination ?

What must happen when there are two or three Children in *Utero*, Why should one escape the Marks and not the other? * A Woman, says *Langius*, did heartily desire to have three bites from the brawny shoulders of a baker. She had fairly two Morfels, but the uncharitable fellow denying the third, though he had been paid handsomely for it, the Woman being disappointed was delivered of two living Children, and of one dead.' This is such a lamentable story, that I draw the curtain upon it, and proceed to another less frightful. † A good Woman telling her friends, says *Cornelius Gemma*, that she expected to be delivered about the *Epiphany*; they all wished her a good time, and also three kings, which compliment was so very pleasant to the Woman, that she was brought to bed of three sons, one of which was black, as the painters are pleased to represent the history of the *Wise Men*, and the others white.' Now let these three Children be called *A*, *B*, *C*, how must Imagination go to work, when the Mother herself did not know the number of the Children? Why should Fancy be partial, and affect in a particular manner *A* more than *B* and *C*, or *C* or *B* more than others?

* From *Fienus*, quæst. 13.

† Ibid.

*No Communication of Spirits and blood between
the Mother and Fœtus.*

II. Now I withdraw the supposition I have made, and am going to prove that there's neither communication of spirits between the Mother and the *Fœtus*, nor circulation of blood from one to the other, and consequently that they don't make one and the same *Integrum*.

I. 'Tis certain, that whatever sinews were passing (if there were any) from the Mother to the *Fœtus*, have been entirely cut off when the *Ovum* came into the second Stage, and was loose in the *Tube* and the *Uterus*. This has been prov'd before, and cannot be denied.

Now, whenever nerves are divided, they cannot be re-united, and therefore the communication of spirits between the Mother and the *Fœtus* is wholly and entirely ceased. Let the *Uterus* be supposed to shoot nervous fibres into the *Placenta*, and let the *Placenta* do the same into the *Uterus*, yet there are two sensations. What the Mother feels is nothing to the *Fœtus*; one may be in pain when the other is free from it; one sleeps when the other is awake; one is often dead when the other is alive: Since then there is no communication
of

of the *Genus Nervosum* between the Mother and the *Fætus*, I think I have a right to conclude, that they are two different beings, and that the effect of the Mother's Imagination cannot be transmitted to the Child.

2. The *Secundines*, viz. the membranes the *Fætus* is wrapped in, the umbilical vessels, and the *Placenta* are not the growth of the *Uterus*; but they are originally in the *Ovum*, and come gradually to perfection.

That's easily proved by the structure of the umbilical string, which, by ocular demonstration, appears not only to be continuous to the *Fætus*, but it is seen in the *Ovum*, even before any adhesion to the *Uterus*.

The same is to be said of the *Placenta*, the first rudiments of which are like a woolly substance on the outside of the *Chorion*, about the eighth or ninth week; and upon which a red carnos and soft substance grows but inequally, and in little Knots, and then it presently sticks to the Womb, and is very conspicuous about the twelfth or thirteenth week. Dr. *Harvey* has observed the *Fibrillæ* of the *Placenta* to spread like small threads, *Mucosa quædam filamenta, tanquam aranearum telæ ducuntur*; filaments like cobwebs.

On

On the other side, the *Uterus* does not seem to send any blood vessels into the *Placenta*; for as * *Arantius* has well observ'd, there would be in every birth too considerable a dilaceration, which could not be cur'd without a great deal of difficulty, and I dare say impossibility, so much blood the Arteries, though never so small, but very numerous, would discharge.

3. From thence I dare draw this consequence, that there's no direct and immediate communication between the vessels of the *Uterus* and the *Placenta*.

This is the opinion of several learned Anatomists. † *Clare constat, vasorum umbilicalium extrema, cum vasis uterinis per anastomosis non jungi, neque sanguinem ex illis hauriri, sed in mucagine istâ terminari, atque obliterari, indeque sibi alimentum sumere.* 'Tis plain, that the extremities of the umbilical vessels are not joined with those of the *Uterus* by *Anastomosis*, nor draw any blood from them, but they terminate, and are obliterated in a slime.

This communication of blood vessels appears to be superfluous and unnecessary, since

* *Arant. ch. 7.*

† *Harv. Ex. 70.*

in the second stage of the *Fætus*, it is nourished and increases without it: Its nature on a sudden become fickle and inconstant in its proceedings, contrary to its usual custom?

The under part of the *Placenta* is full of a vast number of *Fibrillæ*. If we look upon them as *Tendrels*, 'tis easy to conceive, that they have no great difficulty to make their way into the pores of the *Uterus*; but as soon as we suppose them to be of two different kinds, *viz.* arteries and veins, then 'tis impossible for us to understand how the uterine arteries can meet with the umbilical veins, and *vice versa* the umbilical arteries with the uterine veins, except they have sense and reason, and know one another.

Besides, let us consider, that the Flux of the arterial blood, which generally is very strong, must in course prevent the union of the arteries with the veins at their first approach.

4. Another consequence follows, that there's no common circulation of blood between the Mother and the *Fætus*.

Is it consonant to reason to believe, that in the third stage of the Child the circulation of the blood does depend upon two different powers, when there is but one in the second?

The pulsation of the heart in a *Fætus* is weak and obscure, and the motion of the blood flow and languid: On the contrary, the circulation in the Mother is performed with strength and velocity: How then can the *Fætus* keep pace with the Mother?

It is plain that the uterine arteries would fling into the *Fætus* more blood than can be reconvey'd to the Mother by the umbilical vessels.

That the circulation in the *Fætus* is distinct from the Mother's, appears by the difference of the pulse in one and the other. ' Certum est, * arterias illas, non matris, sed cordis proprii virtute agitari, quippe Rhythmum, sine ordinem a matris pulsu diversum obtinent: idque facile experiri licet, si manum alterum carpo matris, alteram umbilici funiculo admoveris. *It is certain, that the arteries of the Fætus are moved by the power of its heart, and not of the Mother, because the pulsation is not the same, as 'tis easy to observe, if you put one hand upon the Mother's Pulse, and the other upon the umbilical string.*

But, what seems to be a strong and invincible argument is, that if there was such a Continuity of vessels, and such Transfusion of blood, the *Fætus* must necessarily perish by loss of blood upon the separation of the

* Harv. Exer. de umbil.

Placenta from the *Uterus*; but on the contrary, no visible flux of blood does follow, while the *Fœtus* continues adhering to the *Placenta*, in which condition it may be kept alive for a considerable time: What greater proof can we have that the circulation is not in partnership?

'Tis objected, I know, that a great flux of blood does constantly follow upon drawing the *Placenta* from the *Uterus*, as a demonstration of the continuity of the vessels; but this proves only that the *Fibrillæ* of the *Placenta* are so blended with the uterine vessels that they cannot be separated without a *dissolutio continui*; the like we see in walls which lose some part of the mortar when you pull off the plant which adheres to them.

* I find another objection in Dr. James Drake's discourse upon respiration, delivered to the Royal Society. Mr. Cowper, says he, to whose happy industry we owe the confirmation of many ancient discoveries, and the benefit of some new ones; has the honour to re-establish this old, but long exploded truth, [of the uterine and umbilical vessels communicating one with another] for by pouring Mercury in a Branch of the uterine Artery of a Cow that went into one of the Cotyledones of the Uterus, he filled those branches of the umbilical Veins

* Miscellanea Curiosa. pag. 198.

which went from that Cotyledon to the Navel of the Fœtus, which, with a part of the Uterus, he keeps prepared by him.

To which I answer, 1. That Mr. Comper making his experiment upon the *Uterus* of a *Cow*, does seem to intimate as if he expected no such success upon an human body. 2. This shews how deceitful mercurial injections may be now and then, and how unhappy Dr. Drake has been in the choice of his proofs, since 'tis very well known, that the umbilical string in a calf does terminate in certain bodies, divided into a multitude of carneous *Papillæ*, as I may so call them, which are received into so many sockets of the Cotyledones growing on the Womb, which carneous *Papillæ* may, without force or laceration, and effusion of blood, be drawn out of those sockets. *Unde patet, vasa sanguinea matris non continuari cum vasis sanguineis fœtus.*
 ' It appears by this, says Stenon, that the blood
 ' vessels of the Mother are not continuous with
 ' those of the Fœtus.

5. Lastly, considering that in the third stage the *Fœtus* is not essentially different from what it was in the second, that it has a distinct *Genus Nervosum*, and a distinct and separate circulation of the blood within it self, and proper vital functions on its own account, I think, I may draw the same conclusions as before, and declare, that the *Fœtus*
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in this last stage is no part of the Mother, but a distinct *Individuum*, and consequently the Mother's Imagination cannot do it the least Injury at any time whatsoever.

A Sketch of the Causes of Monsters.

THIS subject is so copious, that I hope the reader will be satisfied with a few and general remarks, upon which all others depend, till another opportunity offers itself to be more particular.

What necessity is there to have recourse to *imaginary* causes, when Marks and Deformities can be accounted for in a natural Way?

Why should we be surprized at some irregularities on the skin, and other parts of the human body? Don't we see the like every day upon vegetables, though they are not capable of Imagination? They have their Moles, their hairy Parts, their Discolorations, their Excrecences, and now and then such odd Shapes, as to make strange representations, sometimes of animals, sometimes of other things, and all this without the help of Fancy.

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If a due catalogue was drawn of such irregularities in the body of Children, as are supposed to proceed from the Mother's Imagination, would they not appear to be the same over and over again, with no great difference, and capable to be reduced into certain classes? does not this intimate, that they proceed from the laws of motion, and the structure of the body?

Monsters ought to be less amazing than the wonderful *Uniformity* that does commonly reign among living creatures of all kinds. This may be taken at first for a *Paradox*, but the truth of it will appear plain, if we consider, that the original rudiments of animals in the creation being infinitely small, and composed of a prodigious number of very minute parts, which the least shock might put out of order, have consequently been all along threatened with ruin, and dissolution, and yet they have persisted whole and entire, except in few extraordinary cases, which are accounted for by these four reasons: 1. The variety of particles and of their combinations. 2. The distempers of Children in *Utero*. 3. The interruption of the increase of some parts of the Child. 4. force and violence upon the body of the *Fœtus*.

The Variety of Particles and of their Combinations, the first Cause of Marks in Children.

'Tis the opinion of very learned philosophers, that there are not in the whole world two atoms, that be both alike. If it is so, 'tis easy to conclude, that two combinations of an equal number of atoms on each side will never make two bodies exactly the same; as for instance, there are not two leaves of the same dimensions, and though they have similitude enough to entitle them to such a denomination, yet they differ somewhat in shape and bigness.

'Tis the same in Men : As we differ in the look, so the several particles that make up the fibres, and the fibres that make up the body of one, do differ from those of all others.

We observe easily the truth of this upon bones and blood vessels. Take never so many bones of the same kind, and of the same bigness, as near as possible, yet you'll find a vast difference in their shape, in their cavities, in their heads, in their *Apophyses*, or Protuberances, and what is more remarkable, in the number and place of the *Foramina*, thro' which the blood vessels come in and go out. This also proves, that arteries and veins have not in all Men the very same diameter, situation and branches, which now and then causes Phlebotomy to be

be difficult and dangerous: In some the artery is so deep, that the pulse can't be felt; in others it creeps upon the superficies of the skin, and sometimes 'tis so framed, that the pulse appears to be intermittent.

This is called *Lusus Naturæ*, which does easily account for some few singularities, and especially for those discolorations which receive divers names, either of an Apricock, of a Peach or a Mulberry, according to People's Fancy. And, as they depend upon the blood vessels being too superficial, there's no wonder if they make a greater shew in summer time, when the blood is rarified and in a ferment, than in winter, when it is more concentred.

Distempers of Children in Utero, the second Cause of Marks and Deformities.

The *Fætus* is a distinct *Individuum*, as I have shewn before; it has the circulation of the blood independent on the Mother, its own *Genus Nervosum*, a separate secretion of juices, and all the functions of the animal *OEconomy* by itself.

'Tis upon that account, we see that a weak Mother has sometimes a very strong and lusty Child, and *vice versâ*, that Children are feeble and sickly when the Parents are in good health. For there's no manner of doubt but the *Fætus* in *Utero* is as liable to distempers,

tempers as if it was born. It is subject to the yellow Jaundice, which it brings often into the world ; to the Palsy, to Apoplectick Fits, and several others, as obstructions, which deprive some parts of due nourishment, and turn the humours too much upon others. All these are the true consequences of the organs of the body, and of the motion of the several juices.

* If *Fabricius Hildanus* had well consider'd this, he would never have made his endeavours, as he did, to perswade a young woman, that the *Hydrocephalus*, her Child was born with, was the effect of Imagination, by an object she had seen several years be-

* Anno 1608, cum Aquilam ad Rhodanum fluvium a generoso quadam vocatus fuisset, puerulus *Hydrocephalo* laborans adductus mihi fuit, quemadmodum videre poteris cent. 3. obs. 17. Erat autem inter domesticos puella, undecim vel duodecim circiter annorum ætatis, quæ circa infantulum versabatur, & caput tractabat : hæc cum post annos aliquot viro nupsisset, & infantem *Hydrocephalo* laborantem enixa fuisset,——in consilium ego vocatus fui. Cum itaque eâ, qua fieri potuit, diligentia ex matre investigarem, quænam possit esse causa morbi, nullam verò satis validam reperirem, in mentem veniunt, quæ Cent. 3. Obs. 17. de Hydrocephalico puero commemoravi : ex matrona itaque perquiro, ane aliquandò dum utero gestaret, puerum istum Hydrocephalicum in memoriam sibi revocaverat ? respondit, sæpissimè imaginationem itaque hujus malipræcipuam fuisse causam, apud me nullum est dubium Cent. 4. Obs. 3.

fore. He had been ashamed of his weakness, and of his proceedings; for if at any other time that distemper is very common, why should Imagination be the only cause of it in the *Fœtus*.

The Increase of some parts of the Fœtus being interrupted, is the third Cause of Marks and Deformities in Children.

The parts of the *Fœtus* are delineated at once in the *Ovum*, but they don't all increase in the same proportion, some making their appearance very soon, when others are not observed till a long time after. At first, the *Cerebrum* and *Cerebellum* look like two watery bladders, they are only covered with a thin membrane. The arms and legs are very short — the *Thorax* and the *Abdomen* are opened: The bones are like soft threads, and by degrees grow cartilaginous till they grow hard; there are neither lips nor cheeks; the mouth is wide from ear to ear. There are many other remarkable things in the growth of the *Fœtus*, but not necessary to be taken notice of here.

Now if the *Fœtus* be distempered, and if accidentally the obstruction of some vessels does put a stop to the nutrition of any part, which remains as it was at first without any considerable improvement, while others are come to their full perfection, then
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the Phænomena appear so odd, that they are immediately decreed and pronounced to be monstrous, and put to the score of the Mother's *Imagination* ; though there's nothing, but what is according to the course of nature in its beginning, and before it comes to its accomplishment, of which I'll give some few Instances.

- I. What's the reason that some Children are born without any visible *Cerebrum* ? You have this case in Blegny's journals, *April 1680. Obs. 3. Puella sine cerebro nata. In tota cranii capacitate nihil præter aquam limpidam deprehendere licuit, omnino adimplentem membranas, nullo præsentē Cerebro, aut substantia solida. A Girl born without brain, and lived five days. There was in the cavity of the cranium, nothing but clear water, which filled the membranes, without brain or any solid substance.* I answer, 'That the brain appears at first like a waterish substance, and that upon the account of some obstructions the *Cerebrum* of this Girl remained in the same state. † *In capite, circum crescente membranâ, ex aquâ limpidissimâ Cerebrum concinnatur.*
 — Cerebrum & Cerebellum, ex

† Harv. Exer. 56.

limpidissimâ aqua in coagulum callosum densantur. The brain is made up of a very clear water ——— The Cerebrum and Cerebellum are changed from a very clear water into a Coagulum.

2. What's the reason that the Cooper's wife was brought to bed of a Child, whose *Viscera* were hanging out of the *Abdomen*? I answer, That they are so in the *Fœtus* for a considerable time, and that this Child had probably had some distemper, which hindered the growth of the Integuments. ' *Viscera* * *omnia,*
' & *intestina, intra corporis cavum*
' *non reconduntur, sed foris, pendula,*
' & *quasi venulis annexa, prominent:*
' *imo vero, & cor ipsum.*' All the *viscera* and the *intestines*, even the heart itself, are not shut up in the cavity of the body, but they hang out as if they were tied by the veins.

3. What's the cause of *Hare Lips*? I answer, 'Tis the same, viz. an Interruption in the growth of the *Cutis*. ' In
' † *Humano Fœtu, cutis, partesque*
' *omnes cutaneæ, ultimo loco perfici-*

* Fabri. Cent. 6. Obs. 65.

† Harv. Exer. 56.

‘untur, ideoque inter initia, nec labia,
 ‘nec buccæ, nec auriculæ, nec palpe-
 ‘bræ, nec nasus discernuntur.’ *In a human Fœtus, the skin and all skinny parts come last to perfection, and therefore the lips, the cheeks, the ears, the eye-lids and the nose, are not seen in the beginning.*

4. Why do these Monsters have sometimes the look and figure of a *Monkey*, and even of a *Devil*? I answer, that the lips and the cheeks not being come to perfection, and the Mouth opened from ear to ear, appear frightful to the spectators, and give room to those silly Notions.

5. What’s the reason of spots upon the cheek of the colour of red wine? I answer, ’tis easy to perceive that they are not the effects of *Imagination*; for why should Women long only for red wine, and not sometimes for white; is this last so despicable, or proof against strength of Fancy? I answer, ’Tis not difficult to discover the origin of that colour. It proceeds very often from the *Cutis* wanting its due thickness, and appearing, if most of these cases be well observed, as if it had been flead or pared off, whereby the blood is more
 conspicuous

conspicuous upon the superficies: Sometimes the defect is not so much in the skin as in the structure of the arteries and veins, the capillary branches of the first being numerous and dilated, and those of the others few and narrow, and discharging the blood but slowly: And why should such a thing be astonishing in new born Children, when we see every day, Men, who were before naturally of a white and fair complexion, to get in few months a red face, or a red nose.

Force and Violence upon the Body of the Fœtus, one of the Causes of Marks and Deformities.

This is so plain, that I shall not insist much upon it, since it brings its own demonstration along with it: 1. 'Tis easy to conceive, that the body of the *Fœtus* being soft and tender, is liable to be bruised, and dashed in pieces by the strong convulsions of the *Tubes*, and those of the *Uterus*, and by the violent contraction of the muscles of the *Abdomen*, which press upon it with great force. 2. In that struggle, 'tis possible for two or three *Ova* to be so intermixed with one another, as to make an odd and monstrous composition, and to fix upon a single Child the fragments of the others. 3. The
Fœtus

Fætus may also suffer much by the falls of the Mother, or by the blows and wounds she does receive. 4. But what is more remarkable and wonderful is, that the true cause of these strange accidents is not always confined within the narrow compass of nine months, but is now and then of very old date, for since the rudiments of all animals are *a principio*, let us suppose, that an *Ovum*, which existed four or five thousand years ago, has had at that time, an accidental bruise, or some other damage, either by sickness or by poison, yet it may be, the Child that came first, and immediately from that *Ovum*, has been well shaped, and regular in its limbs, and a great many also of its posterity, when on a sudden, and after several *Evolutions*, a monstrous Child may be born with great deformities, upon account of the old misfortune some few particles of its body, which were *infinitely* small in the primitive *Ovum*, having been then displaced, confused or dilacerated.

Thus you see the Mother's Imagination is wrongfully brought in guilty of faults of which it is innocent, and these very often owing to remote causes, which had taken effect even a long time before she came into the world.

My arguments, which are very numerous, strengthen and support one another, and, I hope, if they are well weighed and considered, the reader will be persuaded, that the common opinion is nothing else but a vulgar error.

F I N I S.

