An Eſſay on Superfœtation. *By* Dr. William Dewees.

THE poſſibility of ſuperfœtation is not a new idea: the preſent eſſay is an attempt to revive it, and to eſtabliſh its probability, as well by reaſoning as by facts. Many caſes have occurred ſince the hiſtory of medicine to countenance a belief in it, and it did for a long time prevail; but, like many other opinions that could not admit of abſolute demonſtration, it has long ſince been laid aſide, or in other words, held as a phyſical impoſſibility.

It has been urged that ſuperfœtation could not take place, firſt, from the indiſpenſible neceſſity of the male ſemen paſſing through the mouth of the uterus to produce conception; and ſecondly, as ſoon as this event has taken place, the os uteri cloſes, and becomes impervious to the ſemen ejected in ſubſequent acts of coition.

If theſe opinions are founded on facts, the impoſſibility of ſuperfœtation is eſtabliſhed beyond the power of controverſy; but theſe are the points to be inveſtigated.

Let us therefore inquire into the probability of this theory, and ſee how well it will accord with facts and reaſon.

Before we proceed, however, any further, let us for a moment conſider the anatomy and ſituation of the unimpregnated uterus: we ſhall find it a ſmall flattened body floating as it were in the middle of the pelvis; compoſed of muſcular fi-

bres, nerves, blood-veſſels, lymphatics, &c. divided in general by anatomiſts into body, fundus, and neck; having two ſmall perforations near its fundus, which are the paſſages to and from the fallopian tubes; with a cavity capable of admitting a bean if its ſides were diſtracted; but theſe ſides are, for the moſt part, if not always, when not mechanically ſtretched by ſome power or other, in a ſtate of collapſe or contact, or at leaſt as much ſo, as a pretty thick mucus with which it is conſtantly ſupplied, will admit of; having a neck pendant in the pelvis, which is pervious and capable of admitting a probe, and this, like the body, is alſo lined with a thick ropy mucus; the termination of this neck is the os tincæ, which has no fixed place in the pelvis or vagina; it is ſometimes found inclining to the right, at others to the left; now looking upwards and anteriorly, preſently dipping downwards and poſteriorly; but moſt frequently it is found (eſpecially in women who have borne children) lying or reſting on the internal face of the perineum; poſſeſſing no power that we are acquainted with, to fix its ſituation at any time, conſequently is ſubject to all the changes of place that the preſſure of the abdominal muſcles may give it, when exerted in making of water and going to ſtool; to all thoſe that may ariſe from the weight of the inteſtines and viſcera; from the full or empty bladder; from the diſtended or flaccid rectum, &c.

After having thus far conſidered the uterus, let us next attend to what muſt be effected by the male, that impregnation may take place agreeably to the theory juſt mentioned. It is, that the male organs of generation muſt have ſufficient vigour to puſh a thick tenacious fluid through the narrow aperture of the neck of the uterus, and make a lodgement of it within its cavity: can it for an inſtant be ſuppoſed they poſſeſs this power? we think they do not for the following reaſons.

1ſt. Becauſe they have not, in our opinion, ſufficient ſtrength for this purpoſe, if it even be admitted that the extremity of the male urethra and the os tincæ of the female were in a ſtate of perfect appoſition.

2dly. Becauſe they ſeldom or never are in a ſtate of appoſition, owing to the contingencies juſt mentioned on the part of the female; and alſo on ſome depending on the male; the penis being either ſo long as to reach beyond the mouth of the uterus, or the urethra ſo imperfect in its continuance along the penis, as not to reach beyond the labia. We have abundant examples of the former among blacks, and of the latter, *Morgagni** gives us ſome memorable inſtances.

3dly. Becauſe the male organs do not poſſeſs ſufficient power, when exerted even to their greateſt degree, and when free from all reſtraint, to effect this purpoſe; but their power is conſtantly diminiſhed, by the vagina for the moſt part ſurrounding and embracing the penis pretty firmly throughout its whole length, and by the end of the penis coming in contact with ſome of the ſoft parts within the pelvis;† conſequently, the impetus the ſemen derives from the parts deſtined to puſh it forward, muſt be very much abated; and its projectile force is not only thus nearly deſtroyed, but its direction is ſo altered, that it cannot effect a lodgement within the uterus.

4thly. Becauſe the tenacity of the male ſemen is ſuch, as renders its paſſage through the ſmall aperture in the neck of the womb impoſſible, even by a power or force much ſuperior to that which we may rationally ſuppoſe to reſide in the male organs of generation.

5thly. Becauſe the ſmall aperture through which the ſemen muſt paſs, is conſtantly lined, or rather filled, with a thick tenacious fluid, which alone would ſeem to offer an inſuperable barrier to its progreſs, were the penis and os tincæ in the moſt favourable ſtate of contact.‡

* Morgagni de cauſis et ſedibus morborum. Epiſ. xlvi. Art. 8, &c.

† This eſpecially happens in women who have had a number of children; for in them the uterus becomes habitually lower after each ſucceeding labour, ſo that their uteri lie for the moſt part juſt within the os externum: beſides, many women are ſubject to a prolapſus of the womb ſo that this viſcus occupies completely the vagina—yet impregnation takes place with them as readily, as with thoſe who are not ſubject to this accident.

‡ Beſides the reaſons juſt mentioned, we may urge caſes, where it was phyſically impoſſible for the ſemen to procure admiſſion into the uterus, through its

Some, however, have been determined to overcome every difficulty that may be urged againſt this direct conveyance of the ſemen, by ſuppoſing the uterus poſſeſſed a power of admitting the penis by the opening of its mouth.

The admiſſion, however, of this glaring ſtretch of probability, will not anſwer their purpoſe, unleſs they alſo ſhew us a power whereby the direction of the neck of the uterus may be conſtantly regulated; ſometimes to advance it or make it recede; to elevate or depreſs it, as circumſtances may require: for we have already ſaid they were ſeldom or never in a ſtate of appoſition.

Beſides, many caſes of impregnation have taken place, where the penis never entered the vagina: a few of which we will relate.

Mauriceaux * mentions a caſe of a woman who conceived and was delivered of a child, although her hymen was not broken by coition.

Ruyſch † relates a remarkable caſe of a woman being in labour whoſe hymen was entire, and againſt which the child's head preſſed and prevented its delivery. He cautiouſly made an inciſion through it, and then perceived another thick membrane, this he alſo divided and the woman was delivered.

Hildanus ‡ mentions a caſe ſomewhat ſimilar to the two juſt quoted. He ſays a young woman in Paris was married, but could not admit the embraces of her huſband; in conſequence

mouth, by the force exerted on it by the projecting organs. In one inſtance with which I am well acquainted, the opening of the urethra is not at the extremity of the penis, but under the glans and on one ſide of the frænum.—In another with which I am equally well acquainted, the impetus the ſemen receives, however powerful it may be, is effectually deſtroyed before it eſcapes from the canal, by a ſtricture in the urethra; a conſiderable time is therefore employed before the ſemen is diſcharged, and this is at laſt only effected guttatim. In both the above caſes the wives of theſe gentlemen bear children: nor is there the leaſt room to ſuſpect their fidelity. In theſe inſtances, how was the ſemen made to paſs through the neck of the uterus?

* Obſervat. 489. † Tom. 1. Obſervat. 22.

‡ Centuria III. Obſervat. 1x.

of which he ſued for a divorce; but the woman ſuſpecting herſelf pregnant, was examined by ſeveral eminent ſurgeons, who found the entrance of the vagina ſhut by a ſtrong, thick, callous membrane, in which were ſeveral ſmall openings ſufficient to allow of the diſcharge of menſtrual blood. The membrane was divided, and by proper means kept open; the huſband was ſatisfied, and in ſix months the woman was ſafely delivered of a full grown child.

Harvey* ſays, he "knew a woman, who had all the interior part of the neck of her womb excoriated and torne, by a difficult and painful delivery: ſo that her time of lying-in being over, though ſhe proved with child againe afterward, yet not onely the ſides of the orifice of the neck of the womb near the nymphæ did cloſe together, but all the whole cavity thereof, even to the inner orifice of the matrix, whereby there was no entrance even for a ſmall probe, nor yet any egreſs to her uſual fluxes. Hereupon the time of her delivery being arrived, the poor ſoul was lamentably tortured, and laying aſide all expectation of being delivered, ſhe reſigned up her keys to her huſband, and ſetting her affairs in order, ſhe took leave of her friends. When, behold, beyond expectation, by the ſtrong conteſt of a luſty child, the whole tract was forced open, and ſhe was miraculouſly delivered," &c.

We ſhall now add another remarkable fact from the ſame author.†

"The queen," ſays he, "had an exceeding white mare, excellently ſhaped, preſented unto her: whoſe genital parts (leſt by going to horſe ſhee might endanger the beauty of her proportions, and become unfit for uſe) were, as the cuſtome is, locked up all with iron rings. Notwithſtanding which, this mare (by what accident I cannot tell, nor could the groomes inform me) was made big with foale; and at laſt, when they feared no ſuch matter, ſhe foaled by night, and the foale was found alive next morning by the mare's ſide."

* Harvey Exercit. lxxiii. page 492. † Harvey, loc. cit.

We might eaſily multiply inſtances of the like kind, but theſe we truſt will be ſufficient to prove that conception has taken place where the hymen was entire, and conſequently, where the penis did not enter the vagina to eject ſemen into the uterus, to form of itſelf a fœtus, according to the opinion of one ſet of theoriſts; to mix with the female ſemen as taught by a ſecond; to moiſten the womb and by its aura impregnate the ovum, agreeably to a third; nor to travel through the fallopian tubes to the ovaria in conformity with a fourth.

Beſides, Harvey and De Graaf diſſected animals at almoſt every period after coition, for the expreſs purpoſe of diſcovering the ſemen, but were never able to detect the ſmalleſt veſtige of it in the uterus in any one inſtance.

We are however well aware that Ruyſch has aſſerted, in the moſt unequivocal manner, that he found the ſemen in its groſs white ſtate in one of the fallopian tubes of a woman, who died very ſoon after, or during the act of coition.—But we conceive that this able anatomiſt muſt have been deceived as to the nature of the ſubſtance he found in the tube, and that it was not really ſemen: our reaſons for thinking ſo are, firſt, that the ſemen after it has eſcaped from the penis, very quickly loſes its albuminous appearance, and becomes as thin and as tranſparent as water. Secondly, if it be even admitted the ſemen has effected a lodgment within the uterus, what power exiſts there, to tranſport it in its original form to the fallopian tubes? we know of no ſuch power.

It may however be urged, that the fallopian tubes have the power of abſorbing, and by this means would be able to take up the ſemen, and conſequently, it might be found in them.

But ſeveral important objections may be made to this opinion. Firſt, How will the openings or mouths, if you pleaſe to call them ſo, of the tubes come in contact with the ſemen, or, in other words, how will the ſemen get to them, ſince it muſt occupy the lower part of the uterus, and conſequently be at leaſt an inch from them? Secondly, the ſtructure of the tubes is ſuch, as forbids us to ſuppoſe abſorption to be a part

of their uſe. Thirdly, it would be aſſigning two offices to them, diametrically oppoſite to each other; firſt, to abſorb and convey the ſemen to the ovaria; then to ſeize the impregnated ovum or ova and carry it or them to the uterus. Need we ſay this is abſurd? we have no analogy in the human body that we are acquainted with to ſupport it.

We are therefore inclined to think, nay we are certain, that Ruyſch was miſtaken; ſome alteration in the natural ſecretion of the parts was miſtaken for ſemen; this was nowiſe difficult for him to do, as he had a particular theory to ſupport—and more eſpecially, as this ſuppoſed diſcovery made ſo much for it. It is not merely ſpeculative, when we ſay that ſome change in the natural ſecretion of the parts may have been miſtaken for ſemen; for we have the teſtimony of Morgagni on our ſide. He tells us he has ſeen ſimilar appearances in ſeveral inſtances in virgins and others, who had been ſubject during their lives to leucorrhœa. Ruyſch's ſubject, though not a virgin, may have yet been troubled with this complaint.*

After having thus, we believe, rendered it more than probable that the ſemen never paſſes into the uterus, and in doing this, removed the objections founded on the contrary belief, to the poſſibility of ſuperfœtation; let us proceed and ſee how we can ſupport the idea of its taking place, when abſorption from the vagina is admitted as the means, by which the male ſemen is applied to the ovaria.

This abſorption may be effected in one of two ways; firſt, either by the common abſorbents of the vagina taking up the ſemen and going the route of circulation; or ſecondly, by a particular ſet of veſſels which we ſhall call ſeminal abſorbents, and which have a direct communication with the ovaria. We are inclined to believe it to be in the latter way; as it would ſeem to agree better with the general ſimplicity of nature. No

* Morgagni indeed expreſsly tells us, when ſpeaking of the natural ſecretion of the fallopian tubes, that it had been miſtaken by ſome for the ſemen virile. *See Morgagni Epiſt.* xxvi. *Art.* 13.

one to be ſure has ever demonſtrated theſe veſſels (or as far as we know intimated a belief of them:) but this does not do away their exiſtence, or invalidate our opinion of them. No one has yet ever ſhewn the lymphatics of the brain; yet it is admitted on all ſides they exiſt; no one has ever traced them on the amnion; yet there is every reaſon for ſuppoſing them plentifully ſpread upon it; no one has ever followed them into the ſubſtance of bones, yet we have abundant proof of their conſtituting a part of them; no one has ever developed the muſcular fibres of the uterus, yet the phenomena of labour puts it out of all doubt that it poſſeſſes them.

We ſhall therefore, notwithſtanding we cannot demonſtrate them, take it for granted they exiſt. We ſuppoſe them ſituated juſt within the vagina; ſome may be even external to it, and juſt within the labia; moſt probably they are in ſome inſtances pretty abundant here, as we ſee conception taking place when the ſemen could only have been applied to theſe parts. After the ſemen has been thrown from the penis into the vagina, it is confined there a longer or ſhorter time by means of the rugæ; theſe rugæ anſwer a double purpoſe, firſt, they ſerve to retain the ſemen that it may liquefy and more eaſily ſpread over the ſurface of the vagina; and, ſecondly, by their means a much larger ſurface is offered to be abſorbed from. It is more than probable that theſe are the real uſes of the rugæ. They may perhaps contribute in a degree to increaſe venereal pleaſure, but this is certainly not their only uſe as ſome have imagined; for the doe, according to Harvey, has them in abundance; and he affirms, ſhe always takes the male with reluctance and ſeeming pain. Moreover, we ſee immodeſt women enjoying the venereal congreſs, when their vaginas, from the long continuance of their debilitating habits, have the rugæ deſtroyed.

It may be aſked, if there be this particular ſet of veſſels within the vagina for the expreſs purpoſe of taking up the ſemen, why do they not alſo abſorb the matter of gonorrhœa or lues, and thus produce the deſtruction of the ovaria by conveying

it to them? To this we might anſwer, that, ſuch may be their economy or diſpoſitions, that they are only rouſed to abſorption by their own particular ſtimulus, namely, the male ſemen.

This arrangement is not unique; we have many inſtances of this kind in the animal ſyſtem; thus, light admitted to the tongue produces no ſenſation; yet let fall upon the eye, powerfully affects it; the vibration of a muſical chord, or the tones of a flute, induce no change on the eye; but the ear is inſtantly influenced by them. But perhaps a more ſtriking and juſt example may be taken from the economy of the lacteals of the inteſtines; they refuſe admiſſion to the excrementitious parts of our food, or in other words are only excited to action by their own proper ſtimulus, namely the chyle. It perhaps may be objected here, that various other ſubſtances are taken up by them beſides chyle, ſuch as the colouring matter of madder, mercury, &c. But we muſt recollect, that mercury never has been detected in the circulatory ſyſtem; and Dr. Phyſick's experiments* go very far to prove it never is taken up. As to ſome other ſubſtances, we grant they may be, but muſt believe that, they either are not in ſufficient quantity or quality to make the chyle loſe its peculiar ſtimulus. Nay, perhaps the arteries and veins may be juſtly conſidered in point; as we think it more than probable that, no other fluid than blood would influence them to carry on the circulation. And we have arrived almoſt to a certainty, that no fluid ſave the male ſemen, will influence the ovaria ſo as to produce the phenomenon of a conception. It is true there are inſtances upon record, of hair and teeth being found in the ovaria of virgins, which might ſeem to contradict this belief; Dr. Baillie† and others furniſh us with examples of this kind; but in theſe caſes we agree with the Doctor that they are not the produce of conception; ſince, agreeably to Ruyſch,‡ they have alſo been found in a man's ſtomach; if they are thus accidentally pro-

* In a paper read before the Academy of Medicine.

† Morbid Anatomy, page 265.

‡ Ruyſch, Tom. II. Averſar. Anatom. Decad. tert.

duced, they may with as little ſurpriſe be formed in the ovaria as elſewhere: we therefore cannot admit them as exceptions to this laſt poſition.

Since then we know, that certain parts of the body obey only certain or ſpecific ſtimuli, why may there not be a ſet of veſſels that are obedient only to the ſtimulus of the male ſemen? for our own part we ſee no difficulty in admitting the idea.

Is not this opinion ſtrengthened, by obſerving ſome women who have been barren with their firſt huſbands, prolific with their ſecond, and vice verſa? The ſemen, in theſe unſucceſsful inſtances, wanted that ſufficient energy to call the ſeminal abſorbents into action.

Beſides, the very ſudden effect which is ſometimes produced by the male ſemen upon the female conſtitution, ſuch as violent ſickneſs, retchings, vomitings, nervous affections as they are termed, &c. will ſcarcely admit of explanation, on the ſuppoſition that it muſt go the tedious route of circulation before it arrives at the ovaria to produce its effects. And it will perhaps be difficult to conceive then, how it can be ſucceſsfully applied to the ovum or ova, as it muſt ſtill be contained in blood-veſſels, whoſe ſides are impervious in the living animal; whereas, the ſeminal abſorbents moſt probably terminate on the ova, and thus, as ſoon as fit, will be ſubjected to the influence of the male ſemen whenever abſorbed.

However, be this as it may, the male ſemen ſeems abſolutely neceſſary to the production of the animal, and is in ſome way effectually applied to the ovum or ova, and thus produces the phenomena of impregnation.

Should there be but an ovum fit for the male influence, we ſhall have but one fœtus, if two, we ſhall have twins, and ſo on. But for the moſt part there is only one; nature kindly providing againſt the neglect that muſt neceſſarily ariſe from ſeveral being produced at a birth.

It would appear in general alſo, that a regular period elapſes between the perfecting of each ovum; and hence we ſee women bearing children at ſtated intervals: for inſtance, every

thirteen or eighteen months; every two, three, four, five, ſix, or ſeven years. Two, three, or four ova may chance to ripen (if we may ſo term it) at the ſame time; or in other words, may be in a condition to receive ſucceſsfully the male influence; then we ſhall have, as we obſerved before, a correſponding number of children.

This law of perfecting the ova, however, is not immutable; there may ſometimes happen a conſiderable variation in the term, but when in a condition, may receive the ſtimulus of the male ſemen, and this may happen during the reſidence of a fœtus in utero; hence ſuperfœtation. But the time which elapſes, for the moſt part is pretty uniform; and it would appear neceſſary alſo, that the firſt ovum or ova ſhould be diſplaced before others can be perfected. This is a wiſe regulation of nature; otherwiſe, women who have lived long ſingle, or been a long time deprived of commerce with man, would be ſubject to ſerious inconvenience; they would be liable to a litter of children. This rule obtains in other animals beſides man.*

Let us ſuppoſe now, a fœtus to be occupying the uterus; the woman to have a ſubſequent connection with her huſband; the ſemen to be abſorbed and to meet with another ovum capable of being influenced by it; what will be the conſequence? the ovum will be impregnated, and the ordinary changes will take place in the ovarium; the ovum will eſcape into the fallopian tube, and through it paſs to the uterus; here it will meet with a feeble reſiſtance from the membranes which already line the uterus, and conſequently cover the openings of the tube; this reſiſtance will however be ſoon overcome; either by the ordinary efforts of the tube, or by the ovum reſting unuſually long, and beginning to develope, obliging the mouth of the tube to open, while it contracts with unuſual violence behind, from the ſtimulus of diſtention, and thus forces it forward and diſplaces the ſlightly adhering membranes, and by

* See Harvey, Spallanzani, &c.

this means will effect a lodgement in the uterus by the ſide of the other, where it will be as completely developed for the period of its ſtay, as though it had been placed there at the ſame inſtant with the other. It will have its own membranes, water, and placenta; having nothing in common with the other but its nidus.

In confirmation of the above doctrine, we ſhall beg leave to relate a couple of caſes, complete we conceive, in all their parts, to force the belief of the poſſibility of ſuperfœtation; or in other words, that the caſes we ſhall detail, are really and bona fide caſes of ſuperfœtation.

CASE I.

On the 10th October 1799, at 5 o'clock P. M. I delivered a lady of a fine healthy boy after a labour of ſome hours. After a careful delivery of the placenta, I examined my patient by the vagina, and alſo by a hand upon the abdomen, to diſcover if there was another child, (for it was ſuppoſed by the lady's friends ſhe was pregnant with twins) but could diſcover nothing like one. She was therefore put to bed, and enjoyed a ſleep of ſeveral hours: ſhe was rouſed from this at length, by ſevere and regular pains; after they had continued ſome time ſhe felt ſomething protruding from the vagina: this gave great alarm to her nurſe and friends, and I was immediately ſent for. When I arrived I found them in the greateſt alarm; they ſuppoſing it was the uterus which had paſſed out. I immediately examined my patient, and found, inſtead of the uterus, an ovum complete. I extracted it carefully and entire. Upon opening the membranes, an embryo of between three and four months preſented itſelf, looking freſh and almoſt tranſparent; the funis large, white, and ſhining; the placenta healthy and entire; the blood on its maternal ſurface rather florid, a proof it had not long been detached from the uterus; the waters clear, abundant and gelatinous; in a word, every thing looked as though the child had juſt parted with

life. Thoſe who are in the habit of ſeeing abortions, very readily diſtinguiſh between thoſe which have juſt been deprived of life, and thoſe which have parted with it a long time; this bore every mark of freſhneſs. I was therefore much ſtruck with its ſingularity.

The following conſiderations will, I think, eſtabliſh beyond doubt that, it was a caſe of ſuperfœtation.

Firſt, the abſence of hæmorrhagy during the whole period of geſtation; which would not have been the caſe, had the placenta been any time detached before the period of labour.

Secondly, the ovum having nothing in common with the full-grown fœtus; on the contrary it had its own membranes, water, placenta, &c.

Thirdly, the freſh and ſound appearance of the ovum.

Fourthly, it having maintained its attachment to the uterus, after the birth of the other child; or at leaſt it did not deſcend, ſo as to be diſcoverable by a careful examination by the vagina and otherwiſe, which renders its attachment more than probable, ſince this muſt and would have happened by the common tonic contraction of the uterus* after the birth of the other child and placenta; and that the uterus did contract is certain, as no hæmorrhage followed the extraction of the placenta.

CASE II.

A white woman, ſervant to Mr. H. of Abington townſhip, Montgomery county, was delivered about five and twenty years ſince of twins; one of which was perfectly white; the other perfectly black. When I reſided in that neighbourhood I was in the habit of ſeeing almoſt daily, and alſo had frequent converſations with Mrs. H. reſpecting them. She was preſent at their birth, ſo that no poſſible deception could have been practiſed reſpecting them. The white girl is delicate,

* By tonic contraction we mean that regular and conſtant contraction whereby the uterus is reduced to its original ſize, after the diſtending cauſes are removed.

fair ſkinned, light haired, and blue eyed, and is ſaid to very much reſemble the mother. The other has all the characterizing marks of the African; ſhort of ſtature, flat, broad noſed, thick lipped, woolly headed, flat footed, and projecting heels; ſhe is ſaid to reſemble a negro they had on the farm, but with whom the mother never would acknowledge an intimacy; but of this there was no doubt, as both he and the white man with whom her connexion was detected, ran from the neighbourhood ſo ſoon as it was known the girl was with child.

We might produce other inſtances of ſuperfœtation from the moſt reſpectable authorities, ſuch as Ariſtotle, Harvey, &c. but ſuppoſe the above two ſufficient, as it ought perhaps to be more a matter of ſurpriſe, why it does not more frequently take place, than that it ſhould occaſionally happen; as its occurrence or non-occurrence, entirely depends on the contingency of the ſooner or later arriving at maturity, of the ova, and the abſorption of ſemen.

PHILADELPHIA,
October 9th, 1804.