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Procreation.

I am aware that it is customary among authors to treat of this subject under Generation; I shall however on this occasion dissent somewhat from the usual plan of procedure, and treat of it under the above head, as treated of by the able Professor of Obstetrics in this Institution. Among living beings, there is no function which more characterizes them from surrounding inorganic matter, than that of Reproduction. By this function it is, that each race of plants and animals are perpetuated, whilst the individuals composing them successively pass away, by the death and decay which are the common lot of all possessing organization.

This however may be considered as consisting of an aggregate of functions, each dependent upon a distinct but inseparable organism. It is from this fact that I propose to treat the subject under the above head, believing Generation to comprise a part and not the whole of this function.

The simplest kind of Reproduction is that requiring for its perfection no sexual organs. The animal or plant separating as it were into numerous fragments which grow to as many new beings.

This process is called Budding, Fissiparism or Fissiparous Generation. It is however Univiparous Reproduction that I propose to consider more particularly at present.

This being not a simple act but comprising several requires for each a separate

Consideration that we may more fully comprehend it in the aggregate. These may be thus enumerated.

1 Generation,	4 Conception,
2 Copulation,	5 Gestation,
3 Fecundation,	6 Parturition,

1 Generation.

By the term Generation I understand not that aggregate of actions which result in a new being, but simply the preparation of the materials requisite to its fabrication,

Procreation in man as in the animal and ~~vegetable~~ kingdoms, generally uniformally require the union of the contents of two distinct cells. Sperm-cells and germ-cells. To furnish these is the province of Generation. Generation then may be said to be a two

sold act requiring for its performance two distinct and separate organs. Such are the testes in the male and the ovaries in the female. The former the sperm cell producing apparatus, the germ cells being furnished by the latter. This leads us to a separate consideration of the actions of each sex in the Reproductive Function,

Action of the Male

The essential part in the Reproductive Function of Male Sex Consists in the formation and liberation of peculiar bodies termed Spermatozoa. These are prepared in certain cells termed Sperm-cells. These cells are either clustered together in certain glandular structures as the testes in man and the higher animals or as in the case in lower

animals. They are dispersed throughout the soft parenchyma of the body.

The testes in man and the higher animals are constructed in every essential particular after the plan of an ordinary gland. They are lobulated in structure, the lobules being separated by processes of fibrous membrane, the tunica albuginea testis. Each lobule is composed of an assemblage of tubuli seminiferi through which blood vessels are distributed. These lobules enter & form their secretions by means of the vasa recta into the rete testis. From the upper portion of this proceed from fifteen to twenty tubes, vasa efferentia and these unite to form the vas deferens the excretory duct of the testis through which the secretions enter the vesiculae seminales.

these like the gall and urinary bladders serve as receptacles until the proper time for its discharge.

The product of the action of the testes consists of a fluid through which are diffused the Spermatozoa, these latter bodies being usually set free by the rupture of the seminal cells prior to their leaving the tubuli of the testes.

It is difficult and perhaps impossible to ascertain the exact Chemical composition of this fluid, owing to its admixture with other secretions, as prostate and Cowpers glands, together with the secretions of the lining membrane of the vesiculae. A knowledge of its Chemical composition, as well as of the importance of these latter secretions would perhaps be of but little value, since its peculiar

properties are no doubt due to the spermatozoa it contains. They are described as having a flattened body and a filiform tail which gives them their power of motion from which fact they were long regarded as proper animalcules. These are subjects for microscopic consideration.

We seldom find the power of Procreation in the Human male earlier than from fifteen to sixteen years of age. Usually after this period the organs undergo increased development. blood is sent to them in great abundance. Sexual desires are awakened within the mind and the instinct which leads to their use is now with difficulty suppressed.

As are the secretions of other glands so that of the testes influenced by agents operating through the Will. We may by venerial

& chaste thoughts and habits increase or diminish their Secretion almost ad libitum.

The formation of this product is evidently a severe tax both to the corporeal and mental powers and more than moderate indulgence is injurious to the health both of mind and body.

As before stated the Secretions are carried to the vesiculae seminales there to remain until by the act of Copulation they are set free.

Action of the Female.

Generation in the Female consists in the preparation of Ova which being brought in contact with the Spermatozoa of the Male give rise to a Germ the rudiment of the future Man.

The essential part of the Female generative Apparatus is that in which Ova

are prepared. The other organs are more accessory and are wanting in many of the lower animals.

In the lowest classes of animals the ova like the seminal cells are scattered through the soft parenchyma of the body; but in the Human Female there are certain organs set apart for the formation of Ova. The Ovaries. These are two oval glandular structures, usually described as appendages to the Uterus. The uterus is however more correctly described as an appendage to the ovaries. They are situated loosely between the broad ligaments being attached to the uterus by a ligament peculiar to them. They have externally a covering of peritoneum and beneath this a fibrous: the tunica albuginea. These invest the proper substance of the

Ovary its Stroma. This is Cellular in its Structure containing numerous Cells in various Stages of Development. The larger being found near the Surface. These after Graaf who was the first to describe them have received the name of Graafian Vesicles. These Vesicles are found to exist in early life but they are most abundant after the age of puberty. Contained within these Cells is the part of the germ furnished by the female.

As has the Ovary so has the Graafian Vesicle two Coverings an external the Tunic of the Ovary and internal the Ovisac. Within the Ovisac, floating in an albuminous fluid is found the Ovum or egg. Enclosed within its capsule as a granular fluid. The yelk in the Centre of which there is a small vesicle

the Germinal Vesicle. and on the walls of this Vesicle a Spot. the Germinal Spot.

Ova thus matured rise as it were to the Surface of the Ovaries there to await the fecundating influence of the male Sperm.

It has been already stated that Ova are most abundant after the age of puberty. After this epoch the Genital organs usually undergo increased development and the power of Procreation becomes inherent in the female. This usually makes its appearance from the thirteenth to the Sixteenth year of age: it however varies much with physical and mental influences: elevation of temperature, luxurious habits and lascivious indulgence tending much to hasten its early occurrence in like the opposite of these retards.

The period during which the aptitude for Procreation is inherent in the Human Female is less than it is in the Male. it seldom being found in her after the fiftieth year of age and most usually it does not exceed the forty-fifth year. Its commence is usually invariably preceded by that of the Catamenial discharge and it is alike characterized by this during her whole period of aptitude for this function; inaptitude to the former being invariably attendant on the cessation of the latter.

Of Copulation.

By Copulation or Coition is meant the embrace or Carnal union of the two Sexes in the Reproductive Function. This perhaps is correct as the act takes place among the higher order of animals, but among certain tribes who are not satisfied with

of the body. no actual union or contact of the Sexual organs. It is the design of Copulation to effect a union of such materials as are furnished by each Sex towards Reproduction while the act consists in the liberation of these materials.
There is nothing in the consideration of this subject more than any other animal instinct that should shame even the most effeminate delicacy. It is that high and noble instinct implanted within our nature and without which Procreation would longer cease to be carried on and Oblivion Upon our race would overwhelm
Generation. unlike Copulation. though influenced in its action is nevertheless carried on independent either of Corporeal or mental influences. but not so with Copulation. and if exempt from the

influence of the instinct. not a man is there that would seek woman to impregnate her. The function of the female in this act is by many asserted to be passive; this however can be true, only where fecundation takes place within her parietes. Copulation as it takes place in some of the lower tribes being as essentially an act of the female as of the male. She first deposites the egg which afterwards becomes fertilized by the Spermatozoa of the male thrown upon it. It is highly probable that in all it is as much an act of the female as of the male and that both consonance and consciousness are requisite to fecundation. Among certain animals the susceptibility to this act exists only at certain periods of the year, but in others, as in man, it is found always existing at all. It is likewise found among

Certain insects. That the male dies immediately after the Copulative act. and the female after the deposition of the egg: thus living as it were only to propagate their species. Moderate indulgence in this act may be and perhaps is conducive to health yet excess no doubt often occasions early death or lays the foundation of future maladies.

It has already been stated that it is the design of Copulation to effect a union of such materials as are furnished by each sex towards reproduction. Where this union takes place within the maternal structure it is essential that actual contact or union of the parties should take place and that the part furnished by the male should be deposited or lodged somewhere within the female genitalia. The introduction

of a small quantity of the Spermatic
fluid just within the Vagina seems
to be all that is essentially necessary to produce
fecundation there being on record many
cases in which Conception has taken
place where the Vagina has remained
nearly closed by thick membrane: thus
disproving the opinion that the testes
dilate in the Copulative act and thus
admits the Spermatic fluid to enter.
That the Spermatozoa arrive at the
Ovaries is I believe a settled question
but the mode by which this is effected
is as yet not determined. It is by some
believed that the same action which
enables them to traverse the field of the
microscope is adequate to this end, while
others think it due to peristaltic action
in the uterus and Fallopian tubes

When fecundation takes place out of the body this union is seen to be due to the action of the Spermatozoa, thus favoring the opinion that a union in the higher animals is due to their action.

After Copulation we are unable for a considerable time to ascertain whether fecundation has or has not been effected. Many females however assert that Copulation resulting in fecundation gives a much more voluptuous sensation than ordinary Copulation. Dryness of the semen together with absence of discharge from the Vagina are said to be indications that fecundation has been the result.

Of Fecundation.

By Fecundation is meant the union of such materials in the reproductive act as are furnished by each sex whereby

vitality is imparted to the new being.

Owing to the stupendity of its results the brightest lights in physiology have long sought to ascertain the mutual influence of the seed and ovum or which of the two that in this generative encounter furnishes the nucleus of the new entity about to start on the career of development. These are mysteries beyond human ken and owing to the hidden nature of its action will most likely ever so remain.

We know from observation that two distinct systems of genital organs are indispensable to animal generation and further observation among hybrids goes to prove that these furnish each an equal share in the construction of this germ.

Much has been said and written as to the most favorable time for Coitus to result in fecundation and most authors I believe are of the opinion that Coitus immediately on the cessation of the menstrual discharge is most conducive to this act. while others include a few days preceding with a few following it as being most Conducive Whatever Circumstances be most favorable to this act there is one and without which fecundation never can be the result. I allude to a union of the Sperm-cells with the Germ-cells these <u>ones</u> being insufficient.
Much discussion has taken place with regard to the exact point at which the fertilization of the Ovulum takes place. The probability however is that this is

not a fixed point but that it may vary even in the same animal at different times. first occurring at the ovaries and afterwards within the Fallopian tubes and according to some even within the uterus itself.

How these cells unite and commingle their contents it is difficult to know. observation however seems to favor the opinion that just at the time of their union the Spermatozoa undergo dilution and thus become absorbed within the interior of the ovum. After this union the first change that takes place within the Mammalian ovum is the "segmentation" or splitting up of the yelk first into two and then into four segments. In this way the whole of the interior of the vitelline sack or zona

pellucida is converted into a mulberry-like mass. Each of these segments afterwards becomes converted into a cell. which cells become surrounded by a kind of secondary envelop the Germinal membrane and since the whole structure of the future embryo originates within this it has received by Bischoff the name of the Blastodermic vesicle. Soon after its formation the blastodermic vesicle presents at one point an opaque roundish spot and within this the area germinativa it is that all the permanent structures of the organism originate.

Mean while these important changes are taking place the ovum is making its transit through the Fallopian tube. During its passage it receives a layer of albuminous matter secreted from the walls of the

tube which layes is afterwards surrounded by one of fibrous membrane. This in the egg of birds is further consolidated by the deposition of particles of Carbonate of lime in its areola. This new envelop the Chorion is in Mammalia a structure of great importance being the medium through which nutrition is derived subsequent to the consumption of that furnished in the yelk and prior to the development of the Placenta.

The time occupied by the fecundated ovum in arriving at the uterus is said to be ten or twelve days and during the whole of this period the uterus is actively engaged in making preparation for its reception. The mucous membrane lining its interior swells and becomes [illegible] its capillaries increase in size and

the whole interior becomes covered with a pulpy fluid which afterwards becomes hard and resembles coagulable lymph. It has received the name of the decidua vera. Thus wisely does nature provide for the reception of this small and almost inconceivably delicate structure.

For the further consideration of the changes which the ovum undergoes in its development and for the consideration of its sources of aliment we are driven to another division of our subject least in this we should proceed unsafely.

4 Conception.

Conception I conceive to be the fixation or lodgement of the fecundated ovum in some portion of the mothers structures where it remains during its

period of development. This in relation to different ova is by no means a fixed point as at one time it may occur within the uterus as in normal uterine conception and afterwards within the Fallopian tube or elsewhere as in extra uterine conception.

Conception being an act purely organic in its nature it is not productive of any sensation on the part of the mother. It is however in certain systems said to produce various sensations such as vertigo faintness &c whereby the mother is able to fix upon the particular time at which it has taken place.

After this the mother has no direct consciousness of the changes going on in the uterus aside from the effects of its increased pressure on the surrounding parts

until the recurrence of the sensation due to the motions of the foetus termed "quickening". To deny vitality as some do to the foetus prior to this period is not less absurd than to deny humanity to the infant because it is not an adult. He then that would produce abortion, after fecundation or conception has taken place. Yea he who would prevent the course of nature and interrupt her in her perfect work is not less guilty of homicide than was wicked Cain.

The ovum on arriving at the uterus meets with the newly formed membrane which lines its interior, the decidua vera. This it pushes as it were before it, thus giving to it that reflexion, which, in contra distinction to the true membrane, has received the name of the, decidua reflexa. Thus entering, it attaches itself for the

supply of nourishment in its further development
Reverting again to its early development there
was seen enveloping the substance of the yolk
and in close contact with the Zona pellucida
the germinal membrane. At a point on
the surface of this was seen an opaque roun-
dish spot. At this spot the area germinativa
it is that the embryo first appears.
About the same time the germinal mem-
brane becomes divisible in the direction
of its thickness into two distinct lamina.
an inner mucous and an outer serous,
between which is subsequently developed
the vascular layer. The external becomes
the integument, the middle the vascular
system, and the internal the digestive apparatus
Rising up on each side from the point
where the embryo is developing itself is seen
the serous layer forming the amniotic sac.

which contains a fluid of variable quantity.
This is a highly important structure as
it subserves several important ends both in
relation to the maternal structures and the
safety of the foetus.
We are frequently asked how this germ
which is so very small and delicate derives
materials out of which to develop itself and
frequently this is answered by means of its
placental attachment with the mother:
but since this does not exist in its
ovule condition, we must look to other
resources previous to the development of
this organ.
We have seen that there is within the
Graafian vesicle and surrounding the
germinal vesicle, the vitellus or yolk
out of which the ovum by its own
plastic power is enabled to develop itself

This in the egg of birds is large and leaves during the whole period of incubation but in Mammalia it is very small and exists only in the early development. Enclosing the yelk. Situated between the amnion and Chorion and communicating with the alimentary tract is the umbilical vesicle This as the store of nutriment is absorbed gradually disappears. traces of it however may be detected upon the Cord up to a later period of pregnancy. This together with the absorption by means of its Choroid villi afford supplies of nourishment in the early stage of its development.

It now becomes necessary for the further development of the foetus that it should have a more direct communication with the maternal circulatory system. With the evolution of the Circulatory apparatus

it becomes necessary that a respiratory apparatus should also be provided for depurating the blood from the Carbonic acid with which it becomes charged during the course of its Circulation. Subservient to this end is the placenta, the development of which merits our notice.

Arising from the inferior or caudal extremity of the foetus at a point corresponding with the urinary bladder is the allantois a delicate membranous sac. which is formed from the mucous layer and has distributed on its surface from the vascular layer a number of blood-vessels. This gradually extends itself between the amnion and chorion carrying with it the ramifications of the umbilical arteries and vein, until it comes in contact with that portion of the uterine

surface where the villi of the chorion are most abundant. When these vessels have reached the chorion they ramify in its substance and send filaments into its villi. The Allantois thus having performed its office ceases longer to be seen as a distinct sack. It must however not be supposed that there is any direct communication between the vessels of the foetus and those of the mother whereby the blood can pass directly from one to the other the foetal lungs being merely bathed in the maternal blood and thus deriving its nourishment by its own cells which have the power of selecting and of elaborating their own materials. Entering into the formation of the foetal portion of the placenta are the vessels of the funis which ramify minutely where

They enter and form by their subdivision a large portion of its surface. Each subdivision terminates in a villus; these villi have each a capillary vessel which communicates by a series of loops with an artery on one side and a vein on the other. While the foetal portion of the placenta is thus being developed, the maternal portion is undergoing a corresponding development by the enlargement of the uterine vessels. These vessels form sinuses which sinuses communicate with each other thus giving to it the appearance of a large sac. Against the foetal portion of this surface the tufts of the chorion thrust themselves so as to dip down into it, carrying before them a portion of its thin wall which constitutes a sheath to each tuft. By means of the funis which usually

arises from the centre of the placenta and which consists of two arteries and one vein with other foetal structures imbedded in the Whartonian jelly the foetus is attached to the placenta which supplies it with arterial blood.

5° Gestation.

Gestation from gero to carry when applied to child bearing, signifies the act of carrying young from the time of Conception to delivery. The female during this period is usually spoken of as being pregnant. That she is during the whole of this period in a most highly interesting condition will seem obvious when we for a moment reflect that she has developing itself within her the germ of a living soul.

The average duration of gestation in

The Human female is usually computed to be about 280 days or 40 weeks. This however is subject to great variation and it is not unfrequently prolonged for several days or weeks. There are also various authenticated cases recorded in which it has fallen far short of this period lasting to not exceeding the 27th week.

Upon what circumstances this departure from the general rule is dependent has not yet been ascertained. There is no doubt from observation among inferior animals but that it is in some measure due to influences derived from the male parent.

Susceptibility to impressions on the part of the female parent no doubt tends more to hasten Labour than does other influences. It is however said to be influenced by the recurrence of the regular menstrual period

As gestation advances the uterus is observed to enlarge and become more vascular. its arteries, veins, and lymphatics being much increased in size if not in number. So great is this enlargement that its solid contents at the end of parturition are found to be about twenty four times greater than the virgin uterus With this increase in size, there is a corresponding change in its position So that at the end of gestation the fundus presents as high as the sacro sciatic cordis. With this increase in the size and variation in the position of the uterus various signs and sympathetic affections make their appearance by which the woman knows herself to be pregnant. Among these is the non appearance of the catamenia at the proper time. but this of itself is by no means conclusive since it is liable to occur from other causes.

Another symptom is due to the intimate sympathy existing between the uterus and stomach shown by the irritability of the latter soon after conception. Most women suffer more or less from nausea and vomiting especially on rising in the morning hence the term "Morning Sickness".

Salivation though not of frequent occurrence is sometimes a distressing symptom of pregnancy.

There is usually more or less irritation of the mamma with uneasy sensation of fulness, throbbing and a tingling sensation about the nipple the areola of which is usually more or less discolored, which constitutes a diagnostic symptom of considerable value in a first pregnancy.

The enlargement of the abdomen is so gradual and liable to seem from other causes that it as a symptom of pregnancy is not very reliable.

Quickening as a Symptom of pregnancy is one of considerable importance. The term was applied to the mothers perception of the first movements of the foetus under the erroneous belief that it was its first movement as it then become alive and quick.
If in any case we should meet with all the Symptoms above enumerated we need have no hesitancy in saying that the woman is enceint. Unfortunately we do not usually find it thus easy to diagnose when a woman is pregnant and then comes in to our aid Auscultation by the aid of which our diagnosis is frequently made clear.

6 Parturition

We come now to the last of the divisions of our subject but though last it is far from being least in importance.
Generation, Copulation, Fecundation Conception

and Gestation may each have preceded with wonderful precision. but only to be lost in a failure of this process. No wonder is it then. that a subject so important. should so long have claimed the attention of men of science.

Parturition or Labor. may be defined to be. "the process by which the contents of the Gravid Uterus are expelled". Many have attempted and in various ways. to explain the causes of Labor or of its onset. but as yet there has been no theory offered to which there is not an objection. We have already seen that it takes place most usually at the end of 280 days. As to the reason why the period of Parturition should be just 280 days after the occurrence of Conception we know nothing more than

we do of that of similar periodical phenomena in the history of the life of man and other living beings.

There is not wanting some who attribute its onset, to inability of the neck of the uterus to bear further distension. If it be true that it is due to the mechanical distension of its contents, there would certainly be a greater variation in the time of its occurrence. Since the distension would be much less in a poorly developed foetus than in one of large size and also less in a single than in a twin pregnancy.

It is thought by many that the excitement attendant on the recurrence of the regular menstrual period is in some measure sufficient to induce the onset of labor. It was at one time thought that the foetus in its struggles might assist the process of labor but since

the dead foetus is expeled as readily as the living it is hardly probable that in any thing it assists.

When the apple ripens we know that it falls to the earth. We might here ask the apparently simple question What causes it thus to descend? Gravity is the prompt reply. Yet Jobe-like we are not satisfied with this imperfect explanation of the cause and we are led further to seek after the causes of that which we know not.

Gravity we know to be the attraction existing between masses at a distance and this descent is merely the effects of Gravity with which all are familiar. but when we come to inquire into the causes of this Gravity and how it is generated if we may so speak or upon what

peculiar property of matter it depends we can only say that it exists by a law of Nature of which we know nothing. In like manner we may reason on the causes of labor. What is Labor? This we have seen is the process by which the contents of the Lavish utensils are expelled.

What is it that in this process expels the contents of the utensils? It is evident that the utensils itself is of all others the chief agent concerned in this process. Since it has been known to expel its contents when all auxiliary means could be of no avail. This however is only giving the effects attendant on the existing cause which we are lead to refer with the causes of gravity to a law of Nature of which in like manner we know nothing.