

ON THE THEORY OF MENSTRUATION.

By G. F. GIRDWOOD, Esq. Surgeon, London.

IN a former communication on the "Theory of Menstruation,"* I directed the attention of physiologists to the following facts:—

1st. That cicatrices do not exist on the surface of the ovaries of females who have never menstruated.

2nd. That in those females in whom the catamenial discharge is known to have appeared a definite number of times, that number is found to correspond very closely with the number of cicatrices visible on the ovaries, and,

3rd. That in those females, who, having reached old age, and in whom, therefore, menstruation had occurred so many times as to render enumeration difficult, the ovaries present a surface seamed and scarred with cicatrices, so numerous and so aggregated as to prevent any longer their individuality being detected and enumerated.

These facts combine harmoniously to illustrate and confirm the beautiful theory of menstruation of Dr. John Power, as developed in his essay on the periodic discharge of the human female.†

As still further illustrative of the same theory, in the present communication it is proposed to shew that the function of menstruation is not confined, as is generally believed by the medical profession, individually to the human female, but that the analogue, nay, not the analogue only, but that the identical discharge, exists also in other animals of a lower type of organization. Having placed the facts demonstrative of this opinion in juxtaposition, the hope is indulged that some of the difficulties which have encompassed the study of this subject may be removed; and that it may be shewn, that so far from it being an isolated and startling fact in nature, the periodic discharge of the human female is to be viewed simply as a phenomenon placed at the head of a series of the same character, and the gradual development of which, like the development of all the other phenomena of animated life, is to be traced, in its progress upwards to our own species, through a series of beings progressively rising from a lower genus to a higher in the scale of the animal creation.

For this purpose it is proposed to shew, by microscopic observations, as well as by chemical analyses,

I. That in the lower animals the catamenia appear in them as well as in the human female; and that whilst the discharge is characterized in them, as in her, by a periodicity peculiar to each separate genus, it is, at least in the higher orders of mammals, equally sanguineous as it is observed to be in woman.

II. That in all animals in which the periodic discharge is apparent, in the human female as well as in other mammals, the discharge is indicative of the maturation of an ovum, and of its being on the point of elimination from the ovary; and that the capability for impregnation is, during menstruation, at its acmé.

III. That the periodicity of menstruation, indicative of this maturation and impregnability of the ovum, is precisely that quality which allies these phenomena to most of the leading phenomena of nature, vital as well as physical, dependent upon heat; and, like them, even in a being so far removed by civilization from physical influences as man; in him they are, as in other animals, affected by the seasons.

I.

It might be supposed, on a superficial view of this subject, that the domestic animals, from their relation to man, their habits being under his daily observation, would present the ready means of proving the periodicity of the catamenia in the lower animals. Such, however, is not the case, for a formidable difficulty in them is experienced in the outset of an inquiry for such a purpose. The value of the greater part of animals in a domestic state to man, is, in an economic point of view, so great, that their propagation is encouraged by him by every artificial means, so that, in most genera, no sooner does the desire for propagation become indicated, than means are taken to have the sensual appetite gratified.

I found opportunities of studying the phenomena in the dog, the rabbit, the ox, and the horse, more readily than in any other animals, and it is to them that the following observations principally refer.

Having examined circumstances in these animals, of which some will be proved, on inquiry, to be identical with those that exist in our own species, we compass more readily the phenomena of the periodic discharge of the human female. And thus, much of the wonderment with which menstruation has so universally been contemplated will be at an end. We wonder at events which we consider singular; when they are proved to be analogous to others with which we are conversant, our astonishment ceases. Physiologists wonder at the regularity with which the

* Published in THE LANCET, March 4th, 1843.

† Essays on the Female Economy. London, 1821.

periodic discharge of the human female returns, because, in respect to this phenomenon, they consider the female of our species is isolated from all the rest of the animal creation. Indeed, in the very last work on midwifery published in this country—by an author whose opinions on the subject of which he treats, from the industry shewn by him in his inquiries, merit much respect,—it is stated that “the function of menstruation is peculiar to the human species.”*

This observation, deliberately recorded as the opinion of a writer of extensive research in that branch of the profession to which he has especially directed his energies, whilst it embodies the opinions of most contemporary authors, is but a repetition of the previously announced opinions of Müller, in his “Elements of Physiology.” The words of the German physiologist are as follow:—“Menstruation, in the strict sense, is peculiar to the human female.” This distinguished writer, in the paragraph from which I quote, attempts to shew that the catamenial discharge is in no way allied to the sexual heat in the lower animals. He concludes his statement on this subject with the following remark:—“The menstruation of the human female is a phenomenon of a totally different nature, and has no connexion with sexual excitement.”†

These opinions respecting phenomena in the human female, considered to isolate her from all other animals, are those in which the medical profession in general participate. If these views have not the authority of nature for their support, they have, at the least, the authority of antiquity. “Woman is the only animal that menstruates.” “Solum autem animal menstruale mulier est,”‡ is the sentence with which Pliny commences, in his fifteenth book of his Natural History, his extraordinary opinions on this phenomenon in the human female—opinions, it may be added, that have had the widest and most popular dispersion, but which are now as void of interest, as they are of truth.

So far from the Stagyrte being of opinion that the *katamenia* exist only in woman, he demonstrates, in his “History of Animals,” their existence in various of the mammalia. In the nineteenth chapter of the third book, he mentions that they exist more in women than in other animals; and in the sixth book, in the eighteenth chapter, these evacuations are noticed by him to exist in the majority of domestic animals. He instances their appearance in the ass, the mare, the bitch, and the cow; and in the same chapter in which these opinions are recorded, he points out that the mare is an animal “which, according to her size, has but a slight indication of the catamenial discharge.”

The opinions of Aristotle have, of late years, received extensive illustration by the acute and attentive observations of recent labourers in the science of zoology. It is much to be regretted that this science, more especially that branch of the science comprehended under the title of comparative anatomy, is not more generally cultivated by authors writing on the economy of our own species. Such a passage as the following, on the subject under examination, could not then escape the notice of the diligent searcher for truth. “Many of the quadrumania and the chiroptera are observed to menstruate periodically, like the human species; and F. Cuvier has observed the same in the genetrix among the carnivora.”§

The facts in the above sentence, recorded in the brevity and simplicity characteristic of genius, by the eminent naturalist from whose lectures it is taken, was, it may be relied upon, from the precision of the language in which the opinions are expressed, no vague hypothesis in his mind, but the result of great personal experience as well as extensive research into the writings, and intimate knowledge of the opinions, of other naturalists. The facts I have now to add, which have, for the most part, come under my own notice, will, it is presumed, add some further knowledge on this interesting inquiry.

Every ten days, as is generally noted by breeders, the rabbit indicates her desire for the male; she becomes riotous in her hutch, stamps with her feet on the floor, and kicks with great violence on the sides of her tenement. The external parts of generation become red, greatly swollen, and very vascular, and a moisture freely imbues the mucous membrane of the vagina. An examination of this discharge under the microscope indicates the presence of many thin, transparent masses, of a honey-comb appearance, such as usually characterizes the epithelium of mucous surfaces. Also may be seen a few corpuscular bodies, having, on comparing them with those existing in the circulation of the rabbit, the microscopic characters of the blood-disk of the animal. These last, however, are very few in number. The fluid, besides the epithelium, contains in it principally globular

bodies, of an ovoid form, transparent, and averaging the 1-6000th of an inch in diameter. The regularity of the return of these symptoms is greatest during the spring and summer; as the cold weather approaches, it becomes less so. The heat is not noticed during lactation, but returns as soon as this duty is over—the very next day the animal indicates her desire for re-impregnation.

The oestrus affects the horse, during the early part of summer, every fortnight; the desire gradually passes off as autumn approaches. I find it existing in the end of July, but it is rare. The heat lasts for two or three days, passes away, and returns in the period stated. The discharge is often profuse; it consists of a yellow, strong, odorous fluid, of the consistence of oil. Globules, various in size, some half a thousandth of an inch in diameter, abound in it; all have an ovoid form; no nucleus apparent.

“On standing, it separates into a transparent, yellow, serous-looking fluid, and a whitish flocculent precipitate: the fluid has a mild alkaline re-action, contains a little albumen, is rendered turbid, but does not coagulate by heat and nitric acid; it contains chloride of sodium and earthy phosphates: there is no fibrine present.”

I am indebted for the above analysis, as well as for that which follows, to the kindness of my friend, Dr. Day, whose contributions on the normal and diseased condition of the urine are well known and appreciated.

I have preserved the fluid for five months in a phial, corked, and as yet it shews no signs of putridity.

I observed a few blood corpuscles in the fluid escaping from a mare the day after she had received the male, but in all the examples I had for observation I did not detect any previous to copulation. In this case the sanguineous discharge may have been the result of introitus: it was a maiden mare.

I have found that during lactation in the horse, as in the ox, the cat, and, as is well known, in our own species, the development of ova occurs, and impregnation takes place. I am acquainted with a late example in the horse, where, six weeks after parturition, and during lactation, impregnation took place.

The ox comes into season every three weeks. In old animals the catamenia continue four or five days, but in general “not more than twenty-four hours, and at other times not more than five or six.”**

When the animal, as in London, is from one year's end to the other kept within doors, the discharge in many cases may be expected to a day; out of doors, although it be prolonged in duration, the discharge is less exact in periodicity.

I have notes of several animals in which I had an opportunity of watching this periodic secretion. They were all taken from cows during lactation, and therefore at a time when the secretion, as in other animals, might least of all have been expected to have been periodic. In some examples it was not so; in others, the general indications of the oestrus appeared at the usual period, but without the secretion; however, in general, the secretion was regular. But I was not able to trace in any one individual the periodicity more than three times, for the sexual appetite returning so regularly, and interfering with the secretion of milk, it was found necessary to have it gratified. For illustration, one example may suffice.

A cow was delivered in the third week of May; on the fifth of August she was noticed to have a discharge, of a sanguineous nature, proceeding from the vagina. The discharge was preceded by the restlessness, starting, and bellowing, and swelling of the external parts of generation, indicative of the periodic heat in the animal. These symptoms passed off in a few hours after the appearance of the secretion. On the 27th of the same month, after premonitory symptoms, similar to those described, a discharge of a similar nature was evacuated: in quantity it might be about two ounces. On the 16th of September, indications of the return of the catamenia were made manifest in the conduct of the animal. On this occasion, steps were taken to gratify the sexual appetite; the result of the intercourse that took place was, that the secretion on the expected day did not re-appear, and that the animal, evidently, from subsequent symptoms, had been then impregnated. I had about half an ounce of the secretion collected: it had the usual external indications of blood; the coagulum that was formed was firm. The fluid had the odour peculiar to the cow, strongly marked. The taste was saline and mawkish, like blood. Microscopic investigation of this discharge left no doubt in the mind in respect to its sanguinity. It possessed in it abundance of corpuscles of the same size and character as those visible in the blood of the animal.

Dr. Day thus describes the chemical characters of the clot I was able to procure:—

“I received thirty-six grains of the secretion, which in its physical characters resembled ordinary clotted blood. There was no serous fluid with it; it yielded water, 26.9; fibrine, 4.3;

* Skillet, Treatise on Parturition of the Cow, London, 1807.

* Lectures on the Theory and Practice of Midwifery, by Dr. R. Lee, (p. 39,) London, 1844.

† Müller's Physiology. Baly's Translation, vol. ii. p. 1481.

‡ C. Philol Nat. Hist. lib. 15, de mensuribus mulierum.

§ Dr. Robert Grant's Lectures, LANCET, 1833-34, p. 1034.

fixed salts, 0.9; albumen, and other matter destructible at a red heat, 3.9. The fibrine was digested in water for a considerable time, and then in boiling alcohol and ether: it was afterwards dried till it ceased to lose weight. The quantity is remarkable."

I have stated that the catamenial fluid in the ox is not always sanguineous. It is often transparent, remarkably viscid, and has the appearance and consistence of jelly. In new-born calves, the cornua and uterus are filled with this transparent secretion. It is endowed with great plasticity, and I apprehend it is from this quality (when the periodic discharge of oxen, in addition to this glairy character, has that of sanguinity superadded) that the blood corpuscles so readily and universally assume the linear and moniliform arrangement which I have attempted to portray in the unpretending sketch taken from the microscope, and accompanying this communication.

In the dog, the periodic discharge occurs generally every twelve or sixteen weeks, and remains for several days; eight or ten, commonly. The dog is generally in heat three times a-year, and the catamenia follow at intervals, less distant in summer than in winter. In many individuals, two periods annually only are experienced; in a few, only one period. I have, again, found other individuals having the secretion appearing every eight or nine weeks.

The sanguineous nature of the discharge in the dog is strongly characterized. I have submitted the secretion to a microscopic comparison with normal blood, taken from a puncture in the ear of an animal whilst menstruating.

The colourless as well as the red corpuscles were as evident in the menstrual fluid as in the blood: of course, the admixture of mucus made them appear, in the field of sight, fewer in number than in the latter fluid, whilst the existence of masses of epithelium floating with them in the fluid characterized the secretion.

Superadded to these appearances, I noticed what I have not remarked to have existed in any normal blood—the existence of corpuscles of the same diameter as the blood discs, but differing from them in shape. Those I allude to are perfectly spherical, transparent, colourless—or, at least, much paler than the red blood corpuscles. Their outline, instead of being smooth, as in the blood disc, is studded regularly with prominences; and these prominences exist over the surface generally, as was ascertained by repeated examinations; for this apparent animalcule, in its free and rather rapid evolution through the fluid, from rolling over and over, presented every portion of its periphery for inspection. Donné states, that the addition of water to blood occasions the discs to become globular. This being the case, the menstrual fluid, so much thinner than blood, may, acting like water, account for the globular appearance of these bodies, but will not explain their apparent tubercular surface; nor will their spherical shape allow them to be considered simply as blood discs, assuming the usual mulberry outline of corpuscles becoming desiccated.

The following sketches* give a faithful representation of the microscopic appearances in the catamenial fluid of the horse, the ox, the rabbit, the dog, and man.



THE HORSE.



THE OX.



THE RABBIT.



THE DOG.



MAN.

I am indebted for an interesting communication respecting quadrumania to Dr. John Percy, of Birmingham.

Dr. P. states that he has had constant opportunities of observing the female mandril and drill (*papio morma* and *P. leucophaea*) during the last four years. "At intervals of about six or eight weeks, the labia become uncommonly distended, red, and shining. The swelling proceeds gradually, and attains its maximum in about five days or a week. It then gradually declines, and a small quantity of sanguineous discharge makes its appearance generally, though, so far as I have observed, not uniformly." "I have kept a female Chinese bonnet monkey, (*ceropatheus radiatus*), during five years, in apparent perfect health. At intervals of about six or eight weeks, after passing much mucus, exactly resembling transparent jelly, a sanguineous discharge generally appears." Dr. Percy's experience is confirmed by that of others to whom I have applied for information.

These phenomena existing in the lower genera of mammalia are such as ought to remove the human female from the state of isolation in the animal creation in which physiologists are, in general, with regard to this secretion, disposed to place her. It is evident the secretion in the lower animals is as periodic as in her. She has her cycle of time; they each have theirs. Although the cycle of our species may, as the normal standard, be stated to be twenty-eight days, yet there exists so much variety, that each individual woman may be said to have a cycle of her own. It is seldom we meet with two women who are simultaneously unwell for any number of periods together, and yet,

* These sketches are not drawn on the same general scale. Mr. Gulliver (in his Appendix to Gerber's Anatomy) has rendered us familiar with the relative size of the blood corpuscles of various animals. The object in view in these sketches was, to give the best idea I could, in the space, of the relative size of the different things seen in each separate group; thus, whilst the secretion from the rabbit is sketched from the appearances seen by a Powell's one-sixteenth of an inch focus glass, and long eye-piece, the others are all taken by the use of the one-eighth of an inch focus glass—the secretion of our own species being seen through the short, the others, through the long eye-piece. In all may be seen, abundantly, scales of epithelium. In the dog and ox, the form of these scales is more definite than in the other sketches. In the latter, they are often nearly a perfect circle, and the nucleus well defined, probably from being more recent than those which present a polyhedral outline.

I have not had any specimens from man or the ox, shewing any signs of vitality. In the former, in the sketch, may be observed the grouping of the discs into rouleaus, so often noticed in human blood, and which, to save a periphrasis, may be termed their *nummiform* arrangement. In the sketch from the dog, the secretion of which animal has always shewn the usual vital phenomena, may be noticed discs of a perfectly normal, vital character; whilst others indicate the collapsed and shrivelled outline caused by desiccation. The minute objects so abundant in this secretion, represent the primary condition (?) of the blood discs; whilst in the disc, apart from the others, the attempt has been made to delineate the appearance of the disc of normal size alluded to in the text, as studded with granular looking bodies on the periphery.

The first, second, and last sketches are rude efforts of my own. I am indebted to the practised pencil of Mr. Lens Aldhous for the others.

when periodicity is well established in an individual, how unerringly, generally, can she calculate on the re-appearance of the periodic discharge! Some look for its arrival every thirty days; some, every 28th; some, every 25th day; and some can depend with confidence on its return every 21st day. One young lady lately under my care had it regularly, for several periods in succession, every Monday three weeks; another experienced the phenomenon every third Sunday, for months together. A lady I attended last year had a discharge every fortnight; each alternate period she looked upon only to be the catamenia; her reason for this opinion was, because it was doubly profuse to the one preceding.

From the facts that have been collected, it would appear that in passing up through the series of animal beings, the nearer we approach man, the more the catamenial discharge approximates in character that of our own species. It would appear, that in all it consists of a profuse periodic flow of the usual mucous secretion of the organs of generation, with, in the higher genera of animals, the super-addition, generally, of some portion, more or less, of blood diffused in the secretion, and from this, its diffusion, deprived of its usual quantity of coagulation. By some authors, indeed, the menstrual fluid of women is stated never to coagulate. This peculiarity, in their opinion, stamps the secretion with a character peculiar to it. By other authors, it is, on the contrary, stated to possess this usual quality of the blood. It must be familiar to every practitioner in midwifery to have seen the secretion sometimes present the one character, sometimes the other. The disposition to coagulation exists the strongest in those individuals in whom the secretion is the most profuse. At the present time there is under my examination the menstrual fluid of a patient in which coagulation is unequivocally demonstrated.

It has been said not to become putrid, and that in cases where, the hymen being imperforate, on an operation laying open the canal to the os uteri, the fluid for years pent up in the vagina has indicated no symptom of putridity. In the opinion of some, this has been viewed as an inexplicable phenomenon. But those who consider the non-putridity of this fluid, under such circumstances, inexplicable, forget its nature. It is but blood mixed with, and rendered thin by mucus. Chemists have discovered in the secretion the constituent elements of blood; some have detected fibrine in it, whilst others, whose accuracy is unquestionable, have been unable to detect it in the specimens they have subjected to examination.* Microscopic examination leads to the conclusion that it is blood attenuated by the local secretions. Such being the case, it is not remarkable that it should indicate, under such circumstances, no putridity. Blood extravasated in uninjured cellular membrane shews no disposition to putridity. In simple ecchymosis it is there deposited, coagulates, and in the course of time is re-absorbed. It is only when the structure around is injured or unhealthy that it takes on the character of putridity. But in the catamenia, the blood is so mixed with the increased, although natural, glairy mucous secretion of the surfaces of the uterus and vagina, that it remains fluid; and as there is no disposition in blood itself, when deposited within a healthy structure, to decay, what is there in mucus to excite putridity? When do we find the secretion natural to a surface, ever in that surface a cause of unhealthy excitement? The bile pent up in the gall bladder becomes inspissated, not putrid. The glairy secretion of the salivary glands arrested in the duct, and constituting ranula, on puncture, invariably is healthy and transparent.

It ought not, therefore, to be a matter of surprise that the natural discharge of the catamenia retained within a sac formed by the healthy mucous membrane of the vagina should remain an indefinite period uncorrupted and unproductive of local disturbance.

It may be well here to add the latest chemical analyses of the human menstrual fluid.

The following is an analysis by Denis:†—

Water	82.50
Fibrine	0.05
Hæmatosin	6.34
Mucus	4.53
Albumen	4.83
Oxide of iron	0.05
Red phosphoric, and traces of white phosphoric grease	0.39
Osmazome and cruorine, of each	0.11
Subcarbonate and hydrochlorate of soda, and hydrochlorate of potash, each	0.95
Carbonate, and phosphate of lime	0.25
Traces of phosphate of magnesia	—

TOTAL {	Aqueous particles	82.50
	In suspension and in globules	10.90
	In solution	6.58

Dr. Rainy, Professor of Forensic Medicine in the University of Glasgow, and Dr. Macconechy, analyzed a quantity of menstrual blood, obtained by puncturing an imperforate hymen: it was beginning to get putrid, and evolved ammonia on the addition of potash. Under the microscope, the globules were seen as numerous as in ordinary blood, but their shape was somewhat irregular, as is the case with putrid blood. It was composed of—

Water	885.5
Solid residue	114.5

The serum was composed of—

Water	912.8
Solid residue	87.2

Hence Dr. Rainy concluded that the blood consisted of—

Serum	972.2
Globules	27.8

No fibrine could be detected. The serum contained—

Water	912.8
Albumen	77.0
Chloride of sodium	6.0
Soda	0.2
Animal matter and earthy phosphates	4.0*

The following is the analysis of Simon, of Berlin.† The fluid was taken at a time when it contained scarcely any epithelium scales. It did not coagulate; it contained some vaginal mucus, but it was not putrid, nor of an unpleasant odour.

It contained in 1000 parts—

Water	785.00
Solid constituents	215.00
Fat	2.58
Albumen	76.54
Hæmatoglobulin	120.40
Extractive matter and salts	8.60

Simon observes, that "the most striking peculiarities of this blood are, the total absence of fibrine, and the increase of the solid constituents caused by the excess of the blood corpuscles. The colouring matter amounted to 8.3 per cent. of the hæmatoglobulin."

The facts that have now been submitted to the reader, as illustrative of the catamenia in other female mammals besides the human female, will have their full weight with the physiologist; and yet, even after all that has been adduced in proof of their identity, there may still exist in his mind the startling objection referred to as being that of Müller, and he may, like him, consider the analogies still to be imperfect, inasmuch as, whilst in the lower animals the period of the catamenia is among them the period only in which, in general,† they admit sexual intercourse, it is, on the other hand, the time when woman shuns the society of the male. The experience of society, however, leads to a conclusion the reverse of this opinion of Müller, and the knowledge possessed by the observant man of the world more truly illustrates the matter than the speculations of the philosopher. Were the latter to leave his closet, and enter society in search of truth, he would, if of the opinion of Müller, soon perceive that he was mistaken; and when his mind had compassed the philosophy of the subject, if not a misanthrope, but a lover of his species, he would re-enter his cabinet with his philanthropy augmented, and more especially with his respect for the sex profoundly exalted. Before he returned to his privacy, he would be struck with admiration of the influence exercised by moral culture on the feelings and passions of humanity, and he would more especially not fail to observe the marvellous power exercised by civilization§ on the mind of her who, from her social position, is rendered the charm of man's existence. Her social position has rendered woman keenly perceptive of every thought or action beautiful or graceful, and her

* Thomson's Chemistry, p. 375. Ed. 1842.

† Anthropol. p. 231. Berlin, 1842.

‡ The monkey is observed to receive the embrace of the male at all times, and Aristotle states, that the mare is disposed to sexual intercourse even after impregnation; so that the satirical Dean of St. Patrick was in error when he stated the "yahoo" to be the only animal that would admit the male whilst she was pregnant.

§ It may be considered that the influence of civilization is here too highly rated. But Locke has shewn us how there can be no innate ideas. All mental phenomena must depend on the senses; all moral, on education. The knowledge of sex itself, may it not rest on education? Two years ago, an aggravated case of hypospadias (or hermaphroditism) came under my observation. On account of this peculiarity of arrested development, the young man had been brought up from infancy as a female. All the mental phenomena that were exhibited in this individual were those of the female, not of the male sex. Timidity, gentleness, and bashfulness, existed in excess.

* Vide Warwick's Essay on this subject in the *Medical Gazette*, March 29, 1844, p. 562. Mr. W. has shewn great research in his essay, and has given an analysis of most of the conflicting opinions on this subject.

† No. 333. L'Experience, Rakiborski's Essay.

mind is always sensitively on the watch to shut out from contemplation everything of an opposite character. Taught from infancy to subjugate her passions and affections, her thoughts, her looks, her language, are kept under control. She simulates health when ill, ease when in pain, and contentment is expressed by her smile when her heart is torn with agony. Need it be a matter of wonder, when we see her capable of such self-restraint in general, that she should retire within herself, and exercise that control we find her continually exerting over all her thoughts and actions, the more energetically, at a time when she is taught that a stray thought of desire would be impurity, and its fruition pollution.* To aid her in such a duty, nature has wisely provided her with the sexual appetite slightly developed.†

In this respect she may be placed in the same category as the females of all other mammals. Man, on the other hand, and the males of all mammals, must be placed, in respect to sexual desire, in a category of their own. In him, as in them, the passion exists in a state of exaltation, hurrying him, when uncontrolled, into a state of degradation, and frequently into crime.

(To be continued.)

ON THE THEORY OF MENSTRUATION.

By G. F. GIRDWOOD, Esq. Surgeon, London.

(Continued and concluded from p. 316.)

II.

PASSING from a subject more properly a matter of inquiry for the metaphysician than the naturalist, let it be borne in mind that the periodic discharge, whether sanguineous—even to being hæmorrhagic—as in women, or with its sanguineous character less distinguishable, from the greater preponderance of the secretion of mucus, as it is in the lower animals, yet is still essentially the same in them all. In all it is indicative of the maturation of an ovum, as far as, unaided, the female can minister to its development. Now is indicated by this, as it were, the outpouring of the efforts of Nature, her readiness to take the next step in the elaboration of the future being. Hitherto the ovum has been but an hydatid;* its capacity for a more elevated condition of entozootic existence is now at its height. A new phase in the parasitic existence of the future being is at hand; impregnation may now convert it into an embryo, and the catamenial fluid arrested, and speedily organizing itself into a decidua membrane,—and thus forming a bond of union with the maternal economy,—be the means, by endosmosis, of nourishing the future being until it be capable of assuming its next phase of existence independent, æro-respiratory, and final.

That the human female is no exception to the general law, that

* Burdach, vol. ii. p. 820.

animals during menstruation are fittest for impregnation, was a fact known to Aristotle. He expresses clearly his opinion that some women are capable at *this time only* of conception, not at any other, on account, as he is of opinion, of the womb immediately closing after the cessation of the catamenia.

Και γινόμενα ἐν τῇ ἐνδομήτρῳ συλλαμβάνουσιν ὕστερον δ' οὐ συλλαμβάνουσιν, ὅσαι ἐνθὺς μετὰ τὴν κάθαρσιν αἱ ὑστεραί συμμύουσιν.*

Probably the idea of the closing of the human uterus was suggested by what really does occur in some of the lower animals. In the sheep, the os uteri is gristly and cartilaginous; and when the animal is not in heat, is hermetically sealed by the close approximation of its edges in the manner of a volute, or rather, like two of the letters c placed one within the other; thus, . In such a condition it is impossible to pass a probe into the uterus. When, however, the sheep is shedding ova, relaxation of the os uteri takes place, and then a probe may be passed without much difficulty.

Raciborski, in *L'Experience*, a Parisian medical journal, has, during the last winter, contributed several papers on the period of impregnation. He relates some cases in which impregnation had evidently taken place at the time of menstruation.

The Jews, as well as Aristotle, were not ignorant that conception might take place during the flow of the catamenia. To children borne from intercourse at such a time they applied the same epithet they bestow on the other sex whilst menstruating. The offspring, like them, was unclean, and the learned Rabbis alleged many diseases as having their origin dependent on conception during the catamenia.†

It is undoubtedly either immediately before menstruation,‡ during its flow, or immediately after its cessation, that in all animals, in man as well as in the lower mammalia, impregnation takes place. The laws of all civilized countries relative to legitimacy of offspring, or respective of the honour of the sex, are based on such a conviction, and daily experience confirms the opinion. At the end of nine calendar months, or of ten lunar months, from 276 to 280 days, reckoning from her last menstruation, the pregnant woman may expect to be a mother. Every practitioner of midwifery must be familiar with cases illustrative of this fact.

This regularity in reckoning the period of parturition, I consider, depends on the circumstance that impregnation takes place generally antecedent to the appearance of the last menstrual discharge, and the following cases are chosen, out of many that have fallen under my observation, as illustrative of this opinion:—

Mrs. B.—, on the 2nd of June, 1830, would have had the catamenia. Her husband was daily expected home from New Holland; on the 31st May he arrived. Mrs. B. had eighteen months previously been a mother, and since she had weaned her child had been regular to a day. On the 2nd of June no symptoms of the menstrual discharge appeared, but by-and-by the usual indications of pregnancy were manifest, and on the 1st March next year, that is to say, at the end of ten calendar months from her last period of menstruation, I attended her in her confinement.

A young unmarried female, devotedly attached to the object of her affections, had her periodic illness every twenty-one days. The discharge had invariably been of the slightest character, scarcely sanguineous, and lasting only for a few hours. A day or two previous to her expected period, her first intercourse with the male sex occurred. On the day expected, the discharge appeared, but not, as ordinarily, in small quantity, but with unusual profusion, so much so as to cause her to consult me, for it had rendered her faint and hysterical; it lasted several days. Three weeks passed by; there was no return;—another three weeks, and still no re-appearance of the catamenia. Two months elapsed from the first connexion before an opportunity for its repetition occurred. Two weeks after this second opportunity, I attended this delicate female at the abortion that took place. The embryo had all the appearance of a fetus between two and three months old. The lover was a gentleman, in whose veracity I can confide. He informed me the subsequent interviews which he had with his mistress, which were few in number, happened fortuitously to be at a period of time equidistant from the menstrual periods. The lady, for the two years I had the opportunity of becoming acquainted with her history, did not become pregnant again.

A lady, living in Maida Vale, and whom in childhood I have four times attended, led me to expect her accouchement always four weeks before it really arrived. Reckoning from the last menstrual period, ten calendar months always were nearly over

before my services as accoucheur were required by my patient. I am entitled to suppose the case of this lady to be similar to that of Mrs. B., already mentioned. Suppose that Mrs. B. had enjoyed, like the lady I have just alluded to, the society of her husband, the former, like the latter, would have been a month out of her reckoning. The phenomena in both are alike; they are readily explained. In general, it will be found in pregnant women that the menses, the last time they appeared, were somewhat unusual in character. On inquiry, they will be found to have been sometimes less than usual, (as is generally the case;) sometimes more profuse; (as in the case of the delicate female related.) Occasionally they fail to appear altogether, and then (as in the case of the lady in Maida Vale) the parturient woman is a month out of her reckoning, or is supposed to have gone ten months with child.

"Matri longa decem tulerunt fastidia menses."§

That conception takes place about, and most probably antecedent to, the time of the periodic discharge, is illustrated, on a great scale, by the nation of the Hebrews. It is the custom amongst Jews, who are scrupulous, for the wife to retire from the society of her husband for a period of thirteen days, reckoning from the first day of being "nyddar"—that is to say, by those who are strict, five days are kept, as prescribed by the Rabbinical law, (for the purpose of making security doubly sure,) in addition to the eight days enforced by the law of Moses. I have it from most excellent authority, from individuals of this nation, for whose probity of conduct and veracity I have the highest respect, that after extensive inquiries made amongst their friends and relations, they find, that no pregnant female, observant of this Rabbinical law, can calculate within fifteen days when to expect her accouchement. In fact, that event generally takes place a fortnight later than expected; and this is accounted for when we learn that the Jewesses reckon their gestation from the day of their purification, and not, as the Christians, from the time that the catamenia were last evident—that is to say, from the time when the impregnability of the ovum was last at its acmé. I was led to this inquiry, from having remarked, that an Israelitish married woman I had for years attended during her confinements, gave birth always later than the period of her reckoning. I may add, as a fact, that in general, among this singular people, no female is found to be a mother before at least nine calendar months and a half have elapsed. After marriage, among Christians, of whose continence no suspicion dared be entertained, we daily meet with examples of the female becoming a mother at the end of the ninth calendar month after marriage.

As a further illustration of the theory of menstruation, and still more convincingly to prove that the flow of the menses is to be regarded as indicative of the maturation and elimination of an ovum in the female economy, I was led to examine into those cases in which, from an arrest of development in the accessory parts of generation, menstruation could not exist. I refer to cases in which the uterus had been found wanting, and the Fallopian tubes imperforate. In the collection of Dr. Boyd, of the Marylebone Infirmary, is a preparation, consisting of the parts of generation of a woman in which there is no uterus.† The woman was well advanced in years. The ovaries in this preparation have a smooth and polished surface, and present an appearance as unbroken as those of a young female who has never menstruated. This woman died in the workhouse from disease of the lungs; and the peculiarity of structure remained undiscovered till after death. Her history is unknown. However, we may conjecture it to be like to that of another female, whose organization was precisely similar, that fell under my own notice some years ago. I allude to the case of Hannah Brown, whose headless and legless trunk, as a matter of medico-legal investigation, came under my observation in the winter of 1836-37. Here, also, there was no uterus; and I was informed by the sister that, although Mrs. Brown once or twice experienced a hæmorrhage from the vagina, yet that she never had any indication of a periodic discharge.‡ In her, as in the case of Dr. Boyd's, the surface of the

* May not the fact related in the line I quote from Virgil, which has puzzled commentators, and is referred to by the poet, of course, as something marvellous, be explained, by supposing the wife of Pollio to have conceived, as I have no doubt my patient in Maida Vale did, immediately antecedent to her menstrual period? The wife of Pollio was, at the time referred to, enjoying, like my patient, the society of her husband, for it was during his consulship that he became a father; and we know that at least during the fulfilment of that office he was at Rome.

† The case is described in the Med. Chir. Trans., vol. xxiv. p. 187.

‡ It may be recollected, there was much difficulty to obtain the identity of the murdered female. The head was not discovered till three weeks after the trunk, and the extremities not for several weeks after that. Meantime, attention was drawn to the fact that the female, whose trunk was examined, could never have menstruated. Such a peculiarity was likely to be noticed by relatives, and therefore likely to assist in the identification of the woman. The expression of the sister descriptive of the non existence of the secretion is too poetic to be passed by. When asked by the magistrate if her sister, who had been married, had ever had children, "No," she replied; "trees bear no fruit that never blossom."

* Aristotelis H. A. ex Recens. Im. Bekkeri, Oxon, 1837, tom. iv. fol. 241.

† The children of Ammon were in this predicament. They were a race accursed, inheriting, as was the belief of the Jews, pollution of blood, from the circumstances under which the grandson-son of Lot, their great progenitor, received his origin.

‡ A case of Dr. Dewees is mentioned by Dr. Montgomery in his valuable essay on the Signs of Pregnancy in the "Cyclopædia of Pract. Med.," exactly in point. (p. 471.)

ovaries was smooth and regular, and no cicatrix could be detected. The stroma of the ovary was subjected to the microscope, and although abounding in ova, all the ova were found to be in an atrophied condition.

III.

The influence of the annual return of heat to our planet, is the foundation of the third proposition. To that annual return may be traced the periodic spawning of fishes, the deposition of the egg in birds, and the heat or rut of the lower mammalia appearing only during the spring and summer. But this influence, so strongly marked in them, fails not to be evident also in those animals more removed by domestication from the influence of heat and climate. There exists in them, as in the lower genera, a greater desire for sexual enjoyment; and the female in all is more apt for conception during the months of summer, than those of winter.

This is a great law of nature, which, were it with regard to man dormant or annihilated, an explanation might easily be advanced, and as readily admitted. Man, by the exercise of his intellect, has made himself, to a great degree, independent of the physical agents of the universe. He opposes nature in her wisest regulations: "He eats when he is not hungry, and drinks without the provocation of thirst." But, so far from the influence of the seasons, in respect to generation, being lost in the human being, we find in him, also, that nature is exercising silently, although greatly modified, her universal control.

It is said, that in some cold countries women do not menstruate. Such an extreme opinion requires to be most cautiously received. In the Alpine regions of Patagonia,† among savages badly fed, and without the protection of the warm clothing with which, in the opposite arctic regions of the globe, the human being has fortified himself against the rigours of the climate, the discharge may be irregular, and, in its character, less sanguineous than is remarked to be in nations affected by civilization, and thus it may have escaped notice. We have daily under our eyes the cases of delicate females, in whom the suspension of the catamenia takes place for months; and even when it does appear, has its character as slightly sanguineous as is the discharge of the rabbit or the guinea-pig. Recently, under the microscope, the catamenia of these animals were compared with the menstrual fluid of a young woman, who, although she be periodic every three weeks, is so only for an hour or two. In the menstrual fluid I describe, the blood corpuscles were of as limited a number as in those of the animals with which it was compared.

Perhaps there may exist still in the Nomade tribes of Central Asia, or among the naked savages of the South Seas, instances of the influence of heat and cold in retarding or rendering more frequent the menstrual cycle.‡ I was in expectation—though not in Petersburg, where heat, artificially communicated, is as familiar to the dwelling of the artisan as to the palace of the autocrat, yet in the family of the serf, far removed from the influence of the city and civilization—to find the catamenia retarded during the winter by the influence of the climate. But I understand, from as high an authority§ as can be adduced on such a subject, that even in the humblest dwelling in the country, there also, artificial means are employed to sustain the temperature of summer in the depths of winter. So warm is his dwelling, that, when within it, the Russian peasant is in the habit of being not simply in *cuerpo*, but of divesting himself of all his external clothing, to his shirt and drawers. To expect any retardation of the catamenia in females fostered in such an artificial climate, as, under the circumstances related, must necessarily exist, would be unreasonable. The young Russian female, in country as in town, has her catamenia as early as in more genial climates. Indeed, it would appear from the tables of Mr. Robertson, of Manchester, that the habits of luxury so generally spread over society in this country has occasioned, at least in large communities, and warmly heated dwellings, the development of the catamenia at as early a period of age as was hitherto considered only as existing in latitudes near the equator.

It is not improbable, that, even with all the artificial warmth we employ during winter, some retardation of the development of ova during the cold months may be noticed as a general rule.

Statistical information on this subject is a desideratum, but it is scarcely possible to obtain it in a community like our own, where so few young women remain long unmarried. One thing that is certain is this, that even although menstruation may be as periodic in cold as in warm weather, the ovum eliminated with it has its capabilities for fructification less developed in winter than in summer.

In the *British Medical Almanack* for 1835, there is the following interesting table, compiled by the ingenious Mr. Farr:—

TOWN AND COUNTRY CONCEPTIONS.

	Town.	Country.
January	81	84
February	84	84
March	85	85
April	89	92
May	93	98
June	90	95
July	86	85
August	82	77
September	76	72
October	75	70
November	77	75
December	82	83
	1000	1000

The influence that the warmth and luxurious living of the city exercises on the female economy is made evident in the above table. It is interesting to compare it with the effects resulting from the colder climate and more temperate living of the country. In both lists the warm months shew an increase in the number of conceptions over the cold ones. But it may be remarked, there is a higher maximum and a lower minimum in the country than in the town. The heat of summer and the cold of winter are more evident. This result is exactly what might have been theoretically anticipated. In another table Mr. Farr states, as follows, the results of his inquiries:—

	Sweden. Illegitimate.	Montpeller.	Paris.	Eminent. Writers.
January	78	88	82	70
February	75	96	80	87
March	85	89	76	88
April	90	94	89	100
May	92	91	94	108
June	97	82	90	74
July	96	73	86	80
August	91	72	81	74
September	84	71	77	83
October	63	77	78	41
November	63	83	83	85
December	83	84	84	80

But more extensive as well as more accurate data are now at the service of the physiologist, and on examining them, the same influence of increased temperature is evident in the re-production of our species; I allude to the elaborate tables constructed in the office of the registrar-general, and published by the authority of Government.*

The total number of births registered in England for the years 1839-40-41, are given quarterly. From these, for examination, I have been advised, by Mr. Farr to select the years 1840 and 1841 as giving more correct data than 1839. In these tables, unfortunately for my purpose, the gross number of births is given quarterly. It has been therefore necessary for me to analyze the sums, reduce the quantities into months, graduate the ratio as it is ascending or descending, and thus obtain a maximum and a minimum as far as possible approximating the truth. Having done so, and retaining only the three primary figures, we have the following result:—

BIRTHS.			
January	852	July	838
February	889	August	812
March	920	September	787
April	875	October	815
May	864	November	819
June	852	December	824
TOTAL . . . 10,147			

I am reminded that the registration of the infant being allowed to be made within six weeks of its birth, the numbers registered in each separate month may be taken to indicate the number of births occurring in the preceding month. To find out the num-

* Swift—Gulliver's Travels—Voyage to the Houyhnhnms, chap. vi.

† Elliotson's Physiology. For an ingenious explanation of this phenomenon, see Dr. Power's Essay, ut sup.

‡ I have tried in the colder districts of Scotland to obtain information on this subject. The hardy disposition of the inhabitants, their dwellings less appropriate to keep out the cold than that of the Russian, led me to make my inquiries there. As yet, I have been unsuccessful in obtaining information on which I can rely.

§ Dr. Thomas Walker, of Polmont Bank, Stirlingshire, physician to the late emperor.

* Fifth Annual Report of the Registrar-general.

ber of conceptions in each month, we have, then, but to make each month change places with that which is the second in advance of it. The following table shews the results of this transposition:—

CONCEPTIONS.*

January.....	819	July	864
February.....	824	August	852
March	852	September.....	838
April	889	October.....	812
May	920	November.....	787
June	875	December.....	815
TOTAL . . . 10,147			

Various authors have given statistical tables, all of them leading to the conclusion that the impregnability of animals is greater in the warm than in the cold season of the year.

At the commencement of this communication, the object in view was briefly stated. The facts and opinions bearing on the theory of menstruation have now been passed in review. The analogies of this discharge have been traced, and its identity in other animals has been, by its most essential characters, proved. Its character of sanguinity in man has been shewn not to be singular; as in other animals the discharge exists with this character impressed on it in as an exalted a degree as in the human species. Its periodicity, so far from being a quality marvellous, is precisely that which links it with almost all other vital and physical phenomena. Motion is universal; it is around us, within us, and is everywhere subjected to periodicity. Far from this quality of periodicity calling on us to remove menstruation from the category of natural events, it is the feature the most evident, the most prominent, that entitles us to place it there as one of them.

Southwick Crescent, Hyde Park-square,
1 Oct. 1844.

NOTE.—In THE LANCET of 20th April last,† Dr. Robert Lee has published a correspondence, in which the honours due to Dr. John Power are alleged to be due to himself. Dr. Power has, however, taken up the pen, and has ably and satisfactorily vindicated his claims as a discoverer.‡

In my former communication on the subject of menstruation, there is a simple and uncontradicted statement of what occurred in my communications with Dr. Robert Lee on this subject, in 1832, and subsequent years, and of the failure to induce that gentleman to entertain the views I did, and which I afterwards found to be identical with those developed, many years previously, in the classical essay of Dr. Power. Dr. Lee, in 1834, *two years after the period to which the correspondence he has published refers*, records his opinions of this theory, and describes it to be merely “an hypothesis.”§ From the correspondence in THE LANCET Dr. Lee appears now to adopt the theory of Dr. Power, but labours under the hallucination that he is its discoverer.

What an overwhelming proof of the truth of an opinion is the conversion of an opponent!

As far as I am personally concerned in this correspondence, I refer again to the uncontradicted statement above alluded to. I have in my possession, in corroboration of that statement, documents from my pupils and professional friends and neighbours, to be published, if rendered necessary. These will demonstrate, that at the time Dr. Lee describes this theory of Dr. Power's as a mere “hypothesis,” the views it embodies were employed by me as explanatory of the cicatrices visible on the surface of the ovary, as well as of that much-discussed and most perplexing phenomenon, the *corpus luteum*. The distinction of this substance into *true* and *false* was described by me as a distinction without a difference.¶ I trust, on the completion of an extended inquiry, now in progress, to be able to satisfy others as well as myself of this fact.

Meanwhile, as a caution to enter into no controversy at present on the matter, the last of a series of elaborate papers on the subject of the *corpus luteum*, by Dr. Paterson,¶ may be consulted with infinite advantage. Science has gained much by the controversy detailed by him, and it shews us the imprudence of confiding too much in appearances, even when we have to direct us the eyes of those who, like Dr. Paterson's antagonist, are prepared, “upon oath,” to attest their opinions.

* For further information on this subject, may be consulted with advantage Dr. Laycock's essays in THE LANCET, and his work on Nervous Diseases. In Quetelet's “Treatise on Man” are also some interesting statistics.

† See THE LANCET, April 20, 1844, p. 126.

‡ Medical Gazette, 1844, p. 217.

§ Cyclopædia of Medicine, Art. Diseases of Ovaria.

¶ LANCET, March 4, 1843. Vide former Essay.

¶ Ed. Med. and Surg. Journal, No. 161.