

Obstetrics: The Science and The Art, by Charles
D. Meigs, M.D.

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Obstetrics: The Science and the Art - Part II. The Physiology of Reproduction; Chapter VII. Amenorrhoea

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CHAPTER VII.

AMENORRHŒA.

A YOUNG woman sometimes is observed to reach the usual age at which the menstrua commence, without having any appearance of the discharge. In this case, she is in a state which is denominated *emansio mensium*, which is one form of amenorrhœa.

When a person who has before been regularly affected ceases to have the periodical returns, she is more properly to be said to have amenorrhœa; for the term *emansio* belongs to the former, and the other term, *amenorrhœa*, to the latter class of cases.

I have already, in letters to the class, fully expressed my opinions as to those puberic conditions that may interfere with the regular exercise of the catamenial office; those that can postpone the first exhibition of it, or derange or suppress it in those who have shown that they had once attained the full power of it.

Many people are met with who become alarmed if the young persons under their care fail to menstruate at the usual age; but I wish the Student to reflect that, while it is usual to look for the event when the girl is about fifteen years old, we have no reason to be alarmed even though she should advance to her sixteenth, or, indeed, to her seventeenth year without *changing*, provided her health should be in other respects good. It is only when the failure to menstruate coincides with some other evident sign of weakness or disorder, that the individual should be held to be, and be treated as a patient.

The power of ovulating should always be looked upon as the complement of the physical forces of the sex; and it is reasonable to believe that instances must now and then occur of girls who, having attained to the apparent perfection of all other physical forces, are unable to rise to the height of this last and finishing evidence of generic and genetic power.

I deem it to be quite consistent with the facts of the case to believe that where such failure to attain to what is called complete puberty (*pubertas plena*), is not clearly connected with some evident topical

lesion, the failure should be attributed to an hydræmic condition of the girl. The healthy constitution of the blood is expressed by 210. solid elements, and 790. aqueous portion. A rapidly growing girl, who, in approaching the period of puberty makes excessive demands upon the solid constituents of her blood for the purposes of nutrition and growth, is liable to call for a quantity beyond the power of supply, and so come at last to carry the figure for the aqueous constituent from 790 to 800, or even to 820 or 850, while the figure for the solid constituents, or the true blood, must go down to 200, 190, or even so low as 150.

It should be observed that the blood is in reality the solid constituent, the production of which cannot be effected save by a power of hæmatisis, appertaining to a living solid. The evolution of it must therefore bear some ratio to the powers of the special solid upon which it depends. Such power may be greater or less at different times, and therefore is liable to be more or less completely exhausted. As to the watery portion or diluting portion of the blood, it should be observed that it is not formed by the solids, but only taken in by absorption or endosmose, and therefore costs nothing to the constitution. But the solid elements, such as the fibrin, albumen, and corpuscles of the blood, are products of vital operations and living forces, that may be checked or exhausted by overtasking.

If six hundred ounces might be regarded as the mean quantity of blood in an adult in good health, then it will happen that, when the solid constituents are too rapidly consumed, though the whole quantity within the vessels shall not be less than six hundred ounces, yet the blood shall be weakened by the abstraction of a portion of its essential or solid part, and by the addition to the remainder of a sufficient quantity of water to keep the whole up to the figure of 600; for, in the extremest degrees of hydræmia, the vessels are to be supposed equally full as in the extremest cases of plethora. The difference between plethora and hydræmia is not a difference in the quantity, but only a difference in the proportion of the aqueous to the solid constituents.

I think the foregoing may serve to show that, where a growing girl, by using too abundantly the solid constituents, has obtained an excess of the watery element of the blood, she ought not to be expected to do more than carry on, and that very imperfectly or feebly, the ordinary operations of her physiological forces. It ought not to be expected that she could do this, and at the same time attain to the possession of her complement of forces.

A fruit-tree, in a soil too poor to afford ample nourishment, may live and grow, but it will not blossom and bear fruit, because it is

destitute of both the elements and the stimulus that are requisite to enable it to attain the blossoming and fruit-bearing complement of its living forces. The fruit-tree derives its nourishment from the soil in which it is planted. The blood, on the other hand, is the source whence all the solids of the girl are derived; if the blood becomes impoverished, by an inordinate addition of water to the solid constituents of it, the girl, like the fruit-tree, cannot attain to the complement of her powers.

To show how this impoverished state of the blood, or hydræmia, must act on the health, let me say that the whole class of the insects are supplied with their oxygen by means of tracheæ, the fishes are aërated by branchiæ, while some other animals are furnished with lungs. But whether the machinery of aëration consists of tracheæ, branchiæ, or lungs, the purpose of all this various machinery is clearly to afford a convenient access of oxygen to the molecules of the animal tissues, particularly to the nervous mass of the creature. In warm-blooded creatures, that have lungs, the oxygen can have no access to the tissues save as it reaches them in the blood. Hence the blood is, in such animals, the oxygeniferous medium or organ. It is the transporter or conveyer of oxygen. Where oxygen cannot go, in a living creature, there is asphyxia. If the nervous mass does not receive a due supply, the nervous force is not duly extricated. Nothing appears to me clearer in physiology than this, viz: that neurosity (nervous force, or innervative force) is the immediate product of the combination of oxygen with nervous mass or nerve-corpuscles. Certainly nothing is alive that is not in presence of oxygen, for no living thing can exist in carbonic acid gas, or azote, or hydrogen alone.

Now let the Student consider that the figure for healthy blood being 210 for the solid constituents, what must be the effect on its oxygeniferous power of reducing the 210 to 150? Will he not say that, as it is not the water of the blood that takes up the oxygen of respired air, then, when the figure becomes reduced from 210 to 150, there must be concomitant reduction of its oxygeniferous force, and consequent diminution in the evolution of the neurosity, as M. Cerise denominates it?

Under this aspect, he perceives that he has a clear rationale of the debility of the anæmical or chlorotic girl; he will say that her tissues, especially her nervous mass, being incompetently oxygenated, the fruits of such a state are manifested in great weakness, not of the limbs only, but of all the functions and powers of the economy. The hydræmic girl must hence be weak—weak as to all her functions—

quite too weak to afford us any reasonable expectations that she shall attain to the complement of her forces, while the hydræmia remains uncured.

Although it is quite true that an impoverished state of the blood strongly tends to produce amenorrhœa, there are individuals whose menstrual force is proof against the most excessive hydræmia. Miss —, a lady about 30 years old, was seized, March 24, 1853, with copious hæmatemesis that left her pale, faint, and much enfeebled. She had weak pulse, cold hands, and was so sunken as to require doses of brandy and water. On Thursday, the 30th, she was somewhat revived, but unable to sit up in bed. Friday, March 31, another very violent and alarming hemorrhage. On Saturday, April 1, no attack, but a violent one came on Sunday, the 2d, and another on Monday, the 3d. By these enormous effusions of blood she was reduced to almost hopeless exhaustion. On Tuesday, April 4, she had a hemorrhage, which was the fifth in the series, and which left her to the last degree hydræmical; yet notwithstanding these dreadful losses, and her almost dying state, her mensual evacuation commenced regularly on Wednesday, April 12, and exhibited the usual appearances for her. This case shows conclusively that a general plethora is by no means essential to the regular returns, and has nothing indeed to do in the establishment of a regular periodical menstruation. I cannot, therefore, see the reasonableness or the hopefulness of attempting the cure by the exhibition of emmenagogues. On the other hand, it is probable that success will crown our efforts, provided they be wisely directed to the removal of her hydræmic malady, for that is the cause of the delay.

This may be done by proper regulation of her diet, her digestion, her clothing, exercise; by change of scene, travelling, suspension of studies; by requisite lapse of time, and, as a medicinal agent, by iron. Attention to these points will very rarely fail to bring about the cure in such cases as I now speak of.

As to iron, I take this opportunity to say that it is iron which the patient requires, and not some certain salt of iron compounded by the chemist. As every act of digestion is accompanied by a process of acidification, the acid produced in the *primæ viæ* will always be capable of combining advantageously with the impalpable particles of iron-by-hydrogen. It is even probable that, where a salt of iron is exhibited by the practitioner, the article is always first decomposed during the chymification, and afterwards recomposed according to the state of the organs of digestion, and that is a work of supererogation for the physician to present to those vital organs a salt, when they want

only the base, to do with it what is right, of which their organical *entelechia* can judge better than any *man*. I have come to a conclusion that, since we have obtained the beautiful preparation of Messrs. Quévenne and Miquelard, I shall never hereafter think it necessary to prescribe my chalybeate doses in any other form than that of the impalpable powder procured by hydrogen from the oxides of iron; and that I shall always intrust to the vital chemistry the task of making up the salts for itself.

Let us now advert to other circumstances that may prevent a young woman from menstruating when she has reached the usual age for the appearance of the menstria.

I need not here speak of those cases in which some considerable disorder of another and important organ or part serves to concentrate upon itself the powers of the living economy, which they divert from a general to a particular use or determination. Among these are all those affections that tend to set up a hectic irritation in the system, such as consumption, chronic rheumatism, or painful and long-continued inflammations of the articulations. These causes of amenorrhœa are too self-evident to require more than an allusion to them; and any sensible man, even in the very beginning of his career, might be supposed capable of seeing in them the causes of the failure, and of trusting upon the cure of them to find the function in question at liberty to establish itself.

It is of more importance that the Student should know that some women are now and then met with who have emansio mensium from the want of a womb with which to menstruate, or of ovaria to provide the sources of menstruation in a regular periodical ovulation.

It happens that organs become blighted, during the embryonal or the foetal life, and never grow nor develop themselves after the birth of the child.

If these organs are not essential to the mere animated existence of the infant, it may grow up in the apparent possession of all its faculties and attributes. Should such a blight or abortion of an ovary, a womb, or vagina occur, it would be very likely to escape detection until the age of puberty, and then disclose the remarkable truth by a state of emansio mensium.

I have already mentioned several married women, neither of whom had ever menstruated, and both of whom were wholly destitute of any discoverable traces of a womb. Yet each of them was in all other respects a highly sexual creature, being fully provided with all other sexual attributes and marks. But they can never admit of the consummation of marriage, nor menstruate. Their strong sexual pro-

pensities gave evidence of the perfection of their ovaries. I have no doubt that all those women performed, with the utmost regularity, the monthly acts of their ovulation, nor that they were the subjects of the monthly ovarian and vaginal hyperæmia; but they gave no visible signs by the mensual discharge of blood. Such cases admit of no medical treatment.

Again, certain women grow up and attain to a good old age, without experiencing any, the least sexual excitement, and without once menstruating during their whole lives. Upon examination after death, it is found that the ovaria were wholly wanting, or that their development having been arrested in the foetal stage, they had never been evolved beyond their foetal form and nature. Such cases are also beyond the powers of the medical art.

In some young women, the canal of the neck of the womb, or the cavity of the body and fundus uteri, is found to be annihilated in consequence of inflammation, that has filled the cavities with plastic exudation resulting in a fusion of the walls into one common substance. Such women cannot menstruate, save where the astresia affects only the canal of the cervix. When that is the case, the womb may pour out the blood of the menses, which is retained within its distended cavity. Another and another menstruation adds to the accumulation, until the uterus, pregnant as it were, and distended with the product of repeated menstruations, either causes the barrier to give way through over-distension, or until the surgeon, become aware of the truth, perforates the obstructed canal with his bistoury or his trocar, after which the courses are regularly seen to return with every ovulation.

The uterus and ovaries may be healthy while the vagina may be closed by want of development in the embryonal stage, or in consequence of inflammation ending in cohesion and artretism. Here, as in the case last spoken of, the menstrua are regularly poured into the womb and vagina, and retained until relieved by accident or by means of the surgeon's art. The same may be said as to the cases of imperforate hymen.

All these causes of *emansio mensium* are to be remembered in extraordinary examples of failure to menstruate at the proper age; and when the time arrives to make the needful inquiries, those inquiries should be made with the greatest care, in order to avoid mistakes in diagnosis.

Such are my views in general as to *emansio mensium*. But I do not intend to deny that some of the cases of it do depend upon a torpid, sluggish, or obtuse nature of the bleeding organ, the womb

itself. It must, however, be always a very difficult task to verify such a diagnosis, except by means of experimental prescription.

If, upon scrupulous inquiries as to all the possible causes of the emansio hereinbefore described or alluded to, the Student should be left to the reasonable and indeed only remaining conclusion, that the fault rests with such a torpid and insensible uterus, then he might well attempt to excite within it a more active, vigorous life, by means of the stimulating articles that are called emmenagogues. Let him provoke a frequent, moderate tenesmus, by means of aloetics and gum-resins of various kinds; let him stimulate the nerves of the pelvic region, both internal and external, by baths, fomentations, cataplasms, embrocations, sinapisms, dry cupping or blisters, used as the endermic part of the treatment, while, at the same time, he stimulates the internal nerves of the pelvic region with Dewees's vol. tinct. of guaiacum, compound tinct. of aloes and canella, elixir proprietatis, Lady Webster's pills, tincture of black hellebore, tinct. of cantharides, etc. etc. Forasmuch as all the above-named medicines and means do tend to increase the vital activity of parts about the pelvis, a reasonable probability exists that they may usefully coincide with general constitutional measures in arousing the dormant sensibilities of the womb, and placing them in just relation to the powers of the ovary in its acts of ovulation.

In my opinion, though the causes now enumerated are not rarely to be regarded as lying at the foundation of amenorrhœal affections, most of the examples are dependent, not on the womb, but upon a lessening or cessation of the force by which ovarian vesicles are evolved and matured. Patients suffering with chronical maladies, attended with protracted amenorrhœa, exhibit, in the ovarian stroma, no vestiges of the Graafian vesicles. I lately examined the ovaria of a girl who died after some eighteen months of severe chronical ailments, during which she did not menstruate. Those ailments had no primary connection at all with any state of the reproductive organs, yet, upon carefully examining the ovarian stroma of both the ovaries, it was found to be a compact, whitish tissue, very similar to that which we observe in women long past the change of life. No trace of the ovarian vesicle existed in either of them. It is generally so.

It was clear from the dissection that this lady could not possibly have menstruated, if the *doctrine* be true; and further, that, in case her health could have been restored as to her chronic malady, many days, weeks, or months must have elapsed before the ovarian stroma could have developed the vesicles, or matured and discharged them, so as to give rise to the sanguineous sign of the mensual act. It is useless to

ask, in this place, what powers are possessed by the menagoga, speedily to restore the discharge in such cases of amenorrhœa.

Having in the earlier part of this chapter expressed the opinion that most of the cases of *emansio* ought to be regarded as results of a real hydræmia, or watery state of the blood, I feel disposed, before I close the subject, to lay before the Student some further views, and especially certain opinions on that subject, that appear to me likely to throw light upon his path in the study of those strange disorders, and I therefore proceed by calling his attention first to a few simple propositions.

I beg him to weigh them, and judge whether they appear to him to be consistent with truth, or with a high degree of probability as to the truth, which it should be the object of all men to know.

These opinions, that I am now to utter again in this place, have not been favorably received in certain quarters, though in others they have made such impressions as I expected them to make. But, whether accepted or not, all that I desire in regard to them is that they may be received and spread abroad if they be true, while I hope they may be utterly confuted and rejected if they be untrue. Truth belongs to no man. Truth is God's; he is the sole source and fountain of truth. Any man who boasts, saying this is *my truth*, this is my fact, is a fool and a braggart; since the utmost that man can do is to perceive and recognize truths which, themselves, are mere proclamations or acknowledgments of God's law and will as to physical and psychical things.

The first proposition that I shall here offer to the Student is this, *videlicet*:—

The living body consists of fluids and solids—which might be otherwise expressed by saying that it consists of the tissues and the blood.

The blood contains all the materials out of which the tissues are to be constructed; so that it is true to say, with a celebrated physiologist, the blood is the fluid body, the body is the solidified or concremented blood.

The body is separated from the blood by a membrane or tissue which serves as its outward boundary, and prevents the blood from mixing with the whole mass of the tissues. So that, while the blood permeates all the tissues, it is confined within certain strict channels of the blood-vessels.

This delimitary membrane is generally known as the *membrana vasorum communis*, or common membrane of the vessels, and is the inner lining of all the arteries, veins, and sinuses of the living body.

It might be regarded as a multilocular cyst or sac—the several arteries, veins, or capillaries representing each a separate *loculus* or cell of the general sac. This sac is the only living tissue with which the blood ever comes in contact.

As long as the blood remains in contact with, or in normal relation to this sac, it retains its health, its vigor, and crasis; because, as the blood exists only by its connection with and through its dependence upon the nervous mass, this membrane is the organ of induction into it of the nervous force, or life-force.

It is certain that, whenever the connection betwixt the blood and the living solids is destroyed, the blood perishes.

Whether we regard the blood-disks as cells or not, we cannot deny that they are living entities; but their life is rather epizootic than self-substantial, there being but one circumstance in which they can maintain their existence, and that is the one above mentioned, to wit: they cannot exist save in the presence of the *membrana communis*, since through that organ they receive their inducted life.

If that organ of induction be perfect, the corpuscles may become perfect: if the organ become imperfect, or if it lose its vitality, they fail or they die along with it.

From the foregoing, I deduce that the *membrana communis* is charged with the faculty, not only of restraining the course of the blood in the bounds of circulation, but that it contains within itself the power to make the blood, and is indeed the *blood-membrane*.

If it may be healthfully constituted; if it may enjoy in perfection its crasis and its powers; then it may also, under certain circumstances, be subject to modifications of both crasis and power that shall affect the state of the blood-corpuscles, and render them unhealthy, or imperfect; for, inasmuch as the *membrana communis* is occasionally affected with inflammation, with weakness, with contusions, wounds, and other disorders, and as it is capable of those vital processes that are called adhesions, inflammation, suppuration, etc., it is impossible to deny not only that it may be strong or weak, or healthy or unhealthy, according to circumstances, but that the crasis of the blood must depend upon the state of the blood-membrane.

I have been condemned for using in my writings a word which I derived from the illustrious Professor Burdach, who ought, it should seem, to be held sufficient authority for the introduction of a word into our medical terminology. The very persons who have railed at me for using Burdach's word have no hesitation daily to employ a similar one. Such, for example, as the words *endo-cardium* and *endo-carditis*, from *ev*

or *ενδον* and *καρδια*, by which they mean to express the idea of the lining membrane of the heart, or an inflammation of that lining membrane.

For my own part, I cannot discover any unreasonableness in Burdach's suggestion of the term *endangium*, from *ενδον* and *αγγειον*, *inner-vessel*, to express the idea of the lining membrane of the aorta, of the cava, of a great artery, vein, or sinus, since the Greek word *αγγειον*, and the other Greek word *εν* or *ενδον*, express an idea of the same membrane where it is called endocardium, but only as being not confined to the cavities of the heart alone.

To repeat, or to write the long sentences, *membrana vasorum communis*, or *membrane commune des vaisseaux sanguins*, or the lining membrane of the bloodvessel system, is a useless toil; wherefore, I shall beg the Student, hereafter, to allow me to speak of it by using M. Burdach's short and euphonious term, *endangium*.

So much I have thought it incumbent on me to say in my own defence; and now I come to the question, whether the *endangium* is, in fact, charged with the important offices I have supposed; and here I must invite the Student to judge for himself upon an examination of the facts, particularly the following facts, that will nowhere be denied.

A child, in its mother's womb, touches her only by its placenta, which consists of the vascular tufts into which the umbilical arteries are divided upon reaching their place of destination in the after-birth. The placenta takes out of its mother's blood the oxygen and plasma sanguinis required by the foetus.

The child in utero takes nothing but plasma, which is water, with a certain protein, probably, under the form of dissolved albumen and salts. It takes no blood, but only plasma.

But the blood, out of which the whole body of the embryo is made and maintained in its status sanitatis! Whence comes this blood, this generator of the body?

I have neither purpose nor time to enter at length into an examination of the principles of the hæmatosis. Such an essay requires not a few pages, but a volume; but, without entering at large on the subject, I may, in hopes of explaining myself, state a few particulars for that end.

1. The blood is daily renewed by means of the alible matter digested in the stomach and bowels, and absorbed by the lacteal absorbents, by which it is transferred to the bloodvessels.

2. The whole of the blood is contained in the heart, the arteries, the capillaries, the erectile tissue, and the veins.

3. The only tissue that the blood touches is the *endangium*, which is the lining or interior membrane of all bloodvessels. In the viscera

—in all the organs, indeed—it is probable that the ultimate ramuscle of a vessel consists solely of endangium, the stronger coats being unnecessary in the last distribution. The endangium, to use the idea of Prof. Burdach, separates the blood from the body, as the scarf-skin separates the body from the external world. The endangium is the delimitary membrane of the blood. The blood perishes, or changes very soon, almost immediately, after it escapes from within the endangium. It is converted—or it is coagulated, or it dissolves, or it ceases to be blood, upon leaving the cavity of the endangium.

4. Notwithstanding the chyle—particularly chyle taken from the upper end of the thoracic duct—contains vesicles or globules, or corpuscles that are of a reddish hue, and that are the results of the earliest morphological operations of the hæmatisation, it is not proper to regard these corpuscles as blood.

5. Soon after the chyle is poured into the cavity of the endangium, and becomes exposed to the influences of the oxygen in the lungs, it acquires the character of perfect blood. The fœtus in utero touches the parent only by the placental tufts that it has developed at the extremity of its umbilical artery. It is only by these placental tufts that it can receive from the parent the material supplies for its hæmatisation. This material enters into its sanguiferous system only, since it comes into the vena cava by the umbilical vein. If the child has a power to make its own blood, it is clear that it makes it within the walls of its endangium. There is no other *solid* that the alible material of the child can come in contact with. Therefore, either the blood makes itself, or the endangium of the embryo makes it.

6. It is, therefore, not to oxygen alone that it is indebted for its morphological developments.

7. Contact with the endangium is essential to that development, since the blood loses its physical character as soon as it ceases from that contact. The endangium contains the force that makes the blood. This proposition, which I put forth in my *Letters to the Class*, has been denied. I reiterate it here; and I ask what violence is done to probability in this doctrine, seeing it is universally admitted that the power of a cell—a far more simple and elementary body—is so great that it can, out of the alible cytoblastem in which it exists, produce, by its metabolic and plastic energy, cartilage, ligament, skin, muscle, aciniferous viscera, nerve, and, indeed, all solids of the body? If the *το μεταβωλικον και το πλαστικον* really appertain to the simple tissues of cells, may we not concede a higher power to the elementary structure which we call endangium? The cell-power is a

power of presence and contact, not a power of percolation or endosmose or exosmose merely.

8. The endangium is the blood-membrane. When it is healthy, the blood is so—when it is diseased, the blood becomes diseased. The health of the endangium is as essential to a normal hæmatisis as that of the gastro-intestinal mucous membrane is to the health of the digestive force. In diseases of the endocardium, the functions of the heart are modified, but the endocardium is the endangium of the heart. Similar affections of the endangium, ranging throughout extensive portions of the sanguiferous system, derange the bloodvessels in which they occur, and the whole mass of the blood.

9. Simple diminution in the life-force of the endangium produces the idiopathic forms of anæmia, in which the solid constituents of the blood become lessened in quantity, while the aqueous constituent increases in quantity.

10. One thousand grains of healthy blood ought to contain seven hundred and ninety grains of water. In hydræmia, a thousand grains may contain eight hundred and fifty grains of water—or even more. Such a state of the blood is hydræmia.

11. Plethora is a contrary state, one in which the watery proportion is lessened, and the solid constituents augmented.

12. The endangium is the regulator of these proportions; when its powers are either lessened or exaggerated the crisis is changed.

13. The nervous mass, acted on by oxygen, gives out the nerve-force, the biotic force, the life-force. It does not extricate or give out that force under any other exciter or influence.

14. The arterial blood conveys oxygen, which it imparts to the nervous mass. Oken scarcely speaks metaphorically when he declares that an artery is an air-tube; it conveys vital air, oxygen. Perfect blood conveys the due amount of oxygen required to develop a perfect innervative force. Imperfect blood cannot convey a due amount of oxygen—whence the innervations produced by it are inevitably imperfect.

15. The health, activity, and power of all the organs, are but the exact expression of their innervation; under circumstances of imperfect blood in the endangium, their health, activity, and power become deranged.

In these propositions, I have set forth the opinions I have long held as to the influence of states of the endangium upon the health. I am, perhaps, imprudent, again to put them forth in this manner, and without the array and support of many facts and many arguments that I deem confirmatory of them. I prefer, however, to submit them to the

reader in all their nakedness, rather than not to present them for his examination. I hope that, in any event, they may serve me to elucidate the rationale I am about to state, as to the amenorrhœal affections, which are still under consideration.

I have said that reproductive force is complemental, and that menstruation is a sign of the active state of that force.

The blood of an anæmical girl is incapable of developing her innervative force in sufficient amount for the regular operation of the ordinary functions. She will, therefore, scarcely produce nervous force sufficient to execute both the special and the complemental offices of her life.

The amenorrhœal girl is generally anæmical. To cure her anæmia, is to re-establish the dominion of her life-power over both the special, and the complemental powers and offices of the system.

No attempt should be made to bring on menstruation, in order to the cure of the anæmia; but, *mutatis mutandis*, the anæmia should be cured, in order that her blood, fully and thoroughly oxygeniferous, may enable her nervous mass to extricate the biotic force in sum equal to the demands of the general, as well as the special, or complemental wants of the economy.

The curative indications for such ends consist in the use of drugs, frictions, baths, exercise, dress, diet, and medicines, as well as the psychiatric recommendations that may be apposite for the cases.

Drugs.—Aperients are, for the most part, indispensable, and they may well consist of a basis of aloes, or other resinous cathartics, in combination with rhubarb or extract of colocynth, and, on proper occasions, of mercury.

The celebrated Hooper's pill, which is familiarly known by every mother in the land, is composed chiefly of aloes.

The Dinner-pill, or Lady Webster's pill, is also aperient, on account of the aloes combined with it.

In some of the samples of amenorrhœa, which, while they chiefly depend upon a want of vigor in the blood, may derive a part of their rebelliousness from unhealthy states of the circulation and innervations of the pelvic viscera, a useful resource is to be found in the compound powder of jalap. Doses, consisting of twenty grains of jalap, forty grains of cream of tartar, and six drops of oil of anise-seed, may be given every alternate morning, with considerable advantage. I have sometimes directed my patients to procure half a dozen packages, each containing such a dose, and to use one of them every other day, until the whole of them should be taken.

When the idea is entertained that the hepatic secretions are impaired,

under a vicious state of the portal circulation, a very proper alterative will be obtained by the exhibition of six grains of blue-pill, fifteen grains of extract of taraxacum, and ten grains of soda, suspended with a drachm of gum Arabic, in an ounce of distilled mint or cinnamon-water. Such a dose should be followed by an aperient dose of magnesia, oil, senna, or salts.

Tonics.—The most available tonic is iron.

Iron appears to possess a peculiar power to modify the rate of the hæmatisis. Certainly, one might in vain endeavor to remove certain cases of anæmia by the aid of quinine, the various vegetable tonics, and the mineral tonics, with the same rapidity and completeness as with the ferruginous medicines. I believe that common experience teaches the truth of the above proposition.

I know not what is the rationale of the almost specific power of the martial preparations in anæmical disorders, yet I am willing to believe it true that the iron enters into direct combination with the blood, to render it more powerful and more noble by its union with it, and that it acts as a direct tonic for the solids of the economy, imparting a greater energy to the cell-life of the blood-corpuscles. Mr. Quéneville teaches us that it does combine with the blood-disks, and absorbs the oxygen which it gives out to the tissues, and that the blood takes up more or less oxygen in proportion as it contains more or less iron. I think nothing is better or more clearly established in my mind, as a therapeutical maxim, than this, namely, that an anæmical girl, who labors under no other malady, is cured of her anæmia in about sixteen days, by the proper use of iron.

The use of iron was well known so far back as the days of Louise Bourgeois, who, in her *Observations diverses sur la Stérilité, perte de fruct*, etc. etc. (Paris, 1627, 12 v. p. 23), says: "*Pour en avoir l'heureuse yssue, il en faut user trois semaines, ou un mois; mais sans aucun doute toutes les incommodités causées par le mal, cesseront avant quinze jours;*" that is to say, in order to reap the benefit of the medicine, it ought to be employed for three weeks, or a month; but, beyond all doubt, the whole of the inconveniences arising from the disorder will be at an end in a fortnight. Now, Louise, who speaks so positively on this point, was unacquainted with our beautiful preparation, iron-by-hydrogen, and used one which, though not so good as ours, was yet capable of producing such remarkable effects as she points out.

As Louise was a celebrated practitioner, and indeed in all respects a sensible and excellent woman, I shall indulge my desire to translate the passage in which she describes her famous medicine; thinking also that, perhaps, some American practitioner might wish to subject her

remedy to the test of experiment. She says: "We should take then a quantity of iron filings, any quantity, and put it into a crucible, such as goldsmiths use, which being placed among hot coals, the fire should be kept up until the crucible becomes as red-hot as the coals; when thus heated, let the heat be kept up for about a quarter of an hour, then take it off, and it will be quite black. It is next to be pulverized in a mortar until it is as fine as possible. To four drachms of this powder, add four drachms of cinnamon, sifted very fine: mix them well, and then take four ounces of sugar, and mix with it a little water; boil it into a syrup, and make it clear of scum. Then, little by little, add the powder, and stir it all the time until the process is finished. To test this, put a drop now and then on the edge of a plate, to see if it is sufficiently candied. As soon as it has become sufficiently done, pour the whole out upon a sheet of paper, and then work or beat it with a spatula, and make it into lozenges of convenient size."

There are a great many martial preparations.

Vallet's mass, which is the same article as the *pil. ferri carb.* of the *U. S. Pharmacopœia*, is a very serviceable thing, and the purple precipitated carbonate of iron is also one of great power, but not unapt to prove irritating to the stomach, especially in the extravagant doses commonly allowed—as a teaspoonful twice or thrice a day. The pills of Dr. Blaud, of Caux, have also acquired a great celebrity for their emmenagogue power. They consist of carbonate of iron, combined with sulphate of potash.

Now, as, in the exhibition of ferruginous medicines, it is understood that the iron is the therapeutical agent on which reliance is placed, there seems to me little advantage in exhibiting it in combination with any particular acid, since it is to be supposed that such combinations are immediately dissolved and new relations established with the metallic base, in the stomach. Hence, I greatly prefer to administer the article in its metallic form; and, thanks to the ingenuity of Messrs. Quévenne and Miquelard, Pharmaciens of La Pitié Hospital, at Paris, we are favored with an impalpable powder of iron, that is prompt to enter into chemical union with the acids of the digestive canal.

This beautiful agent, which is produced by passing a current of hydrogen over peroxide of iron heated to redness in a porcelain tube, is a microscopic powder of iron—the hydrogen, united with the oxygen of the peroxide to form water, having left the iron pure and uncombined. It is prepared at Paris by M. Debreuil, the successor of Messrs. Pellétier and Caventou, and sold by the importers and apothecaries in this country.

My own custom is to exhibit it in the form of pills weighing two grains, and I habitually direct the patient to take one of the pills very soon after each daily meal. If swallowed while the stomach is engaged in the act of digestion, it does not occasion any unpleasant sensation; and it is present and in readiness for any salifying acid that happens to appear during the chymification of the food.

It is both inodorous and tasteless, and may be used without danger during an indefinite series of days, or weeks, or months.

No doubt rests upon my mind that it is the most powerful, safest, and least disagreeable tonic drug that the therapist can prescribe for the amenorrhœas depending upon a principle of anæmia—the most ordinary principle of those maladies. I ought to add that my attention was attracted to it by M. Raciborski's work *sur la Ponte Périodique*, and that it is to him I am first indebted for the practical advantages I have received from this medicine, and which induced me to take measures to introduce it into the practice in this country. The consumption of the article is already become very great, and will, without any doubt, become much greater—so as to supersede the other martial medicines.

In addition to the doses of iron used as above, it is necessary for the patient to observe certain rules as to the action of the bowels, which cannot be expected, under the imperfect and irregular extrication of biotic force of the anæmical girl, to be exact and orderly as in persons in health.

Medicines, of which the basis is aloes, are particularly adapted to such cases. The elixir proprietatis; the pill of aloes and rhubarb; the pill called Lady Webster's or English dinner-pill; the tinctura sacra, and a variety of such formulas, afford the opportunity for selecting preparations that may seem best suited to the existing indications.

Acescent food is the cause of much digestive distress. The acescent vegetables and fruits ought, therefore, to be eschewed, and, indeed, a considerable proportion of the food should be taken from the animal kingdom. Brown meats and game are preferable. A roast chicken, or roast beef or mutton, is preferable to other kinds of market provision, and it is, when practicable, useful to cause the patient to take a portion of meat at breakfast and tea, as well as at dinner.

Hot drinks, as coffee, tea, and chocolate, or cocoa, are debilitating to the already feeble powers of the stomach. When such articles ought not to be allowed, the patient can take claret and water, with meat and bread, and butter and eggs for the breakfast, often with signal advantage. But the wine should be pure and unadulterated

with brandy, which is so commonly added to every cask of claret sent to the United States for sale. Good Bordeaux wine, *non frêlaté*, that is, not brandied, makes an admirable substitute for boiling tea, coffee, and chocolate, which, though they may not sensibly injure persons in strong health, are yet surely unsuitable to the feeble and attenuated female. The claret should be sufficiently diluted. I think that a wineglassful and a half of claret, in a common tumbler of water, is not too strong a mixture even for a delicate girl.

There is no health without exercise and light. The patient should be much in the open air, exposed to solar light, when not too intense. She should reinforce the powers of the circulation by means of exercise. The best exercise is active, not passive exercise. But I dare not devote these pages to an extended discussion of this subject. I have, in my seventh and twenty-seventh *Letters to the Class*, pretty clearly stated my views on the topic, and refer the Student to those Letters.