General Remarks

ON THE

PRACTICE OF MEDICINE.

BY
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THE HEART AND ITS AFFECTIONS, NOT
ORGANIC. (*Continued.*)

III.—*The Frequent Pulse at its Highest Degree of Significance. Cases.*

THERE are things which, as they ordinarily present themselves in nature, are so beset with collaterals that, but for their sometimes appearing in simple forms, they could never be fairly understood. Such, among the symptoms of disease, is often the frequent pulse. It is one of a crowd, and is lost in a crowd. It is not duly attended to among many as urgent and as pressing for notice as itself. But then it sometimes stands almost or altogether alone. There is the disease; and all that can be reckoned as belonging to it in the nature of a symptom, all that can serve to direct its treatment and prognosticate its event, is a very rapid pulse.

Such cases are rare; but still they occur often enough to afford us opportunities of seeing and noting this symptom of the frequent pulse in its simplest, its most elementary, and yet most prominent form, and the fittest and best to develop its true pathological meaning.

I was called one Friday, at midnight, to visit a young married lady, aged 21, whose state had given just alarm to her medical attendants. Her pulse was too rapid to be counted, and so feeble that it could only just be felt. She made no complaint of pain; and no questioning, no examination by pressure of the abdomen especially, could elicit the least expression of it. The abdomen was soft, and very slightly distended. The tongue was quite clear and moist; the extremities quite warm. Moreover, there was perfect consciousness; and she expressed surprise at the apparent anxiety of those around her.

Here the only present symptom was the pulse countless from rapidity, and scarcely perceptible from feebleness. But there had been another symptom. On the previous Wednesday, at 3 P.M., suddenly and without warning, there had been a long and severe rigor. No reaction followed, when it passed away; the pulse became extraordinarily rapid and feeble, and it had so continued ever since.

At 10 A.M. the next day (Saturday), the state of things was still the same, except that the abdomen had become flattened in consequence of evacuations which had taken place in the course of the night. There was still no positive symptom, but the pulse most rapid and feeble. At 10 P.M. this symptom no longer remained. The pulse was imperceptible at the wrist. The hands were cold. Consciousness remained, and even intelligence; and there was evidently no feeling on the part of the patient that she

was going to die. She died in the night; I did not learn at what time.

Observe: of this rapidly fatal disease (if disease it was) there were only two symptoms—the long and severe rigor, and the rapid, feeble pulse. But they were not, either one or the other, symptoms in the strict pathognomonic sense, being common to twenty diseases different in kind, and diagnostic of none. But symptoms they were, and both alike, of things incident to all diseases, and terrible when they occur. The inceptive rigor denoted the shock suddenly given to the powers of life; and the countless feeble flutterings of the heart, which followed it, denoted their surrender.

Now, as to the nature of the disease in this case, we must seek it in things prior to the inceptive rigor, since it certainly did not appear in what occurred afterwards. This lady had been confined eight days. The labour was favourable. But the placenta was retained, and had to be torn away. Still she had gone on favourably in every respect until the rigor. There was nothing more to be told of previous history; and this, and experience of the like, were enough to show the nature of the disease, and that it was puerperal fever. But shall I say “that it was”, or rather “that it would have been?” The morbid element was taken up, and became a quick-working poison to the powers of life. The disease had either only just emerged and was cut short, or it never emerged at all. The disease, so to speak, killed itself; it killed itself in the birth. Its first impression was a fatal shock; and there followed, not the symptoms proper to its own nature, but the one symptom of coming death—this countless fluttering of the heart.

I was suddenly summoned to a lady, about 40 years of age, who was to all appearance brought at once within the grasp of death. She was pale and cold, and her lips were livid; and her pulse was of a countless frequency, and just perceptible, and no more. Her mind was clear; and she could just be heard to whisper a few articulate words, telling me that she saw all things in a mist, and did not well distinguish one object from another; and that she seemed as if she were going to be suffocated. This looked awfully like dying. And into this condition she had passed in the course of two hours.

I had no other expectation than that she would die immediately. But hour after hour passed away, and she still lived. Days and nights, even five days and five nights, between Tuesday and Sunday, passed away, and she still lived. She lived, but without the slightest appearance of rallying, and without the least token of any positive disease. The countless, scarcely perceptible pulse, comprised all the symptoms. Brandy, ammonia, ether, anything and all things that could stimulate, were given (for the power of swallowing remained), every ten, or every five, or every three or two minutes, night and day. But they produced no reaction. They kept the heart just moving, and that was all. The pulse was sometimes perceptible, and sometimes not; and several times, when it was actually gone, and all was over, as it seemed, life and a pulse were brought back again by a larger supply of brandy.

After five days and five nights thus spent, a change took place; and it was all at once. It was within a certain half-hour. As I sat by her bedside, I found her pulse had for the first time become dis-

tinged enough to allow me to count it. Instead of a confused flutter, it gave 120 distinguishable beats in a minute. It continued perceptibly constant to this number for one half-hour, without the help of brandy. Presently what was dusky became red, what was cold became warm; and so much of reaction brought so much of hope.

But how did this frightful mystery end? How did it clear itself up? The tongue became red, then intensely red, then papillated; and then a rash diffused itself over the neck and chest, then over the whole body. And all was consummated in a regular attack of scarlatina, which went through its course without any unusual or unfavourable incident, and the patient got well.

In the first of these two cases, there was the highest presumption *à priori* (perhaps the proof), that the puerperal poison had gained access to the blood, and had entered into deadly conflict with the powers of life. Had the conflict been less than deadly, it would have had its natural issue in some authentic form of puerperal fever, which would have had its own perils. In the second case, there was the positive proof, *à posteriori*, that the scarlatina poison, gaining access to the blood, did for five days and five nights keep up an all but deadly conflict with the powers of life. But life holding out, the disease appeared as the natural consummation at last.

Now these two cases have the force of crucial instances. They are experiments of Nature's own contriving, and exclude all fallacy in the result. They prove the true significance of the frequent pulse; viz., that it is not a thing of disease as belonging to its essence, but a thing of disease and of all that concerns disease only as being a sign and a measure of the degree in which life and the powers of life are then brought to feel and to suffer, and to languish and fail. And this is the interpretation which the frequent pulse will be found to bear in the whole range of diseases in which it occurs, and in all the conditions, few or many, simple or complex, with which it is combined.

Further Commentary on the Foregoing Cases.

But, in these two remarkable cases, everything was uncommon and extreme. They furnished full-drawn representations of the rapid pulse, and, as such, well suited for studying its meaning; not, however, *exaggerated* representations, but strictly those which Nature offered. Yet it is startling to be told that the meaning found to belong to the rapid pulse in these two cases is the same *in kind* which it has in all diseases whatever. The difference between great and small, or of mere magnitude, in things of the same kind, is often so considerable, that practically it is difficult to look upon them and believe them to be of the same kind in fact. But, in the things pertaining to diseases, identity of kind, when it is real, ought to be carefully preserved, for the sake of doctrine and of truth. Mere magnitude, however, forces itself into notice. And so it ought; for life and death continually depend upon it, and it cannot be ignored with safety to practice.

In the two cases which have been cited, we have spoken of *life* and the *powers* of life, and of the rapid fluttering pulse bearing sole and infallible witness to their utter prostration and failure. But these expressions denote the truth popularly, rather than

pathologically. Nevertheless, they *do* denote it. Still they are expressions which, being employed about diseases, are suited only to things of the greatest magnitude in their kind. Accordingly, it would be too much to speak of *life* and the *powers* of *life* being reached and implicated in every case of disease wherein the pulse was frequent beyond the standard of health. But it would be neither too much nor beyond the truth to speak of something being reached and implicated which holds peculiar relations with life—something, belonging to our organisation, which communes with life more nearly and at once than through the circle of our grosser and more intelligible functions. And this is the nervous system.

Now the nervous system has the heart for its gnomon or finger of the clock. This notes, by the rate of its movement, the various degrees in which the nervous system is affected, from the least to the greatest. It is the greatest which must still engage our attention, and the rapid pulse the index of them. And the cases which have been just cited will help to explain them. To press the language of our analogy a little further, for the sake of illustration, we have already seen in these two cases the index hurrying rapidly round the dial-plate, and telling that, from some cause or other, the mechanism within was running down, and, if it were not arrested, that it would quickly stop. Even prior to any outward presentments to give assurance of disease, even earlier than its known beginning, we have seen the countless fluttering of the heart and arteries give token of the nervous system already under trial of mortal suffering, and ready to let life go for ever. But there is no reason in the nature of things (as far as I know) why a morbid poison, or any other element of disease, should not affect the nervous system soonest of all, and sooner than the blood and blood-vessels, to which it properly belongs to work out disease into its cognisable products and realities. Only experience says that it is rare, very rare.

Frequent Pulse still at a very high Degree of Significance. To what Conditions of Disease it belongs.

Not until disease is shaped and realised into something which can be seen or heard or touched, and can be called by a name, is it wont to engage the nervous system perilously; and should the particular disease, according to its nature, have to go through a stated course to a certain end, and so admit a probable measure of its duration, it will not commonly be until towards its decline that extreme peril to life is indexed by extreme frequency of the pulse. But the time is often anticipated. This sign of fearful significance—this countless fluttering of the pulse—may break in upon the disease at any stage of its progress, either early, even very early, or in its midcourse. And when it does, some notable thing has often preceded it, well capable of giving a shock to the nervous system. Sometimes a sudden profuse diarrhoea has been enough to account for it; sometimes a hæmorrhage; sometimes an unhappy error of treatment by larger depletion than the patient could bear; sometimes pain—severe, long, uninterrupted pain; sometimes loss of sleep; sometimes the solution of some organic texture within, as the rupture and perforation of a bowel. Sometimes, however, and oftenest, nothing incidental or casual

can be found to bear the blame, but only the malignant nature of the disease itself.

Still there is a hope for these cases; but it is small. Yet small hope is made much of by the hopeful, and often serves them for a great encouragement. And so it must and had need do now, or there will be no saving of life.

And there is a treatment of these cases. Death is inevitable, if they are left to themselves. None ever recovered but by known, palpable, and adequate means. The treatment is simple enough. A single symptom has absorbed all other indications of treatment into itself, and remains our sole infallible guide what to do. The countless fluttering pulse now stands for everything. Watch must be kept upon it and its meaning. And its meaning is, that the nervous system is ready to sink into death. Accordingly, stimulus is to be given so often and so much as will keep it going and prevent it from coming to a stop. All this is simple enough in the telling. I wish it were so in the doing. As much, perhaps, has been told as can be told. But the "how often" and the "how much" are the things upon which life now hangs, and a judgment has to be exercised upon them every hour or many times every hour. Therefore the sick man has a poor chance, unless he can now have the services of one intelligent nurse at least entirely to himself. To have also one intelligent physician constantly within reach would not be at all beyond his needs. But it is useless to insist upon what is generally impracticable. Nevertheless, many cases within my experience, in which life has been rescued contrary to all probable calculation, have had this unspeakable advantage; and some of them have occurred in the family of physicians.

But be it borne in mind that we have now to do with a part only of a very great subject. The nervous system, and its actings and sufferings under disease, this is the great subject; and our small part of it is the frequent pulse. Nevertheless, small though it be, it is the part which especially offers itself as a handle to the whole. The part, by which we can best lay hold of it, and apprehend it, and study it, and turn our little knowledge of it to practical uses and benefit.

I wish still to keep hold of this handle that I may show the share the nervous system has in the graver diseases, and how it often determines their form, their course, and their event.

It is only in the most chronic diseases that the nervous system does not sensibly participate. All which show an appreciable progress from day to day; all to which fever in any measure belongs, either essentially or as an accident; these cannot exist without the nervous system feeling them and showing that it feels them. Now, almost all such diseases have, in respect of their essence, a due course to run and an end to reach. Phlebitis has its mixture of pus with the blood, and its deposit in abscesses within and without; erysipelas has its diffused redness and swelling; scarlatina one form of rash, and measles another; small-pox has its pustules; typhus has its petechial maculæ of the skin, and the typhoid malady has its tumescence and ulcers and sloughs of the intestinal glands. And these several conditions represent the essence of the several diseases, and show it to be different in each. But there are other things belonging to them all in common, which have great force in guiding their treatment and

ruling all concerning them. It is, indeed, by the essential element of these diseases, and by its mode of working, whether diffused through the veins, or collected in abscesses, or sprinkled over the skin, or scattered through the bowels, that each fulfils its course and accomplishes its end. But it is the great vascular system and the great nervous system that are most conspicuously engaged, and acting, and suffering all the time and in all of them, and the sum of their acting and suffering is called fever. The number of the pulse is our chief handle for apprehending the part specially borne by the nervous system.

If the fever be small, with moderate sympathy of the nervous system, there will be moderate frequency of the pulse, with moderate increase of its power, and thus much is natural and perhaps needful. If the fever be greater, with more sympathy of the nervous system, the pulse will rise both in frequency and force. And still all is natural and all is in harmony.

But, as the sympathy of the nervous system continues to increase, and the frequency of the pulse to increase along with it, anxiety begins to arise; yet the strength of the pulse will still be the vital safeguard. Let, however, the sympathy of the nervous system increase more and more, and the number of the pulse run on to greater and greater frequency, then assuredly its strength will languish; and if the balance be not soon redressed, it will become a countless fluttering. And to such extremity is the man now reduced, that this countless fluttering of the pulse will represent all that is vital in him, and all that can be treated in the disease. Gradually or abruptly, in any of the diseases mentioned, this may become the condition of the patient. It is often witnessed in the typhus and typhoid fevers of late years.

This deadly sinking of the nervous system, represented by the countless fluttering of the pulse, this most terrible incident of febrile diseases; coming on at their beginning, or middle, or end, sometimes abruptly, sometimes gradually, not absolutely hopeless, and not absolutely beyond reach of a remedy, deserves to have all told of it that observation has learnt. Well, then, having once begun, it may continue many days or nights (three or four) uninterruptedly. And during all that time, the pulse will continue countless and almost imperceptible; abating nothing of its frequency and gaining nothing of power for all the wine and spirits administered, but only just kept going and prevented from coming to a standstill. And thus the quantity even of spirits given in twenty-four hours has amounted to pints. And after these three or four fearful days and nights, the pulse may become of a calculable number again and of an appreciable power, and maintain itself at the less number and the greater power with a less amount of stimulus, and henceforth the disease will pursue its course exempt from the alarm of this particular symptom, which is the sure expression of the nervous system collapsing into death. But that the pulse should go on fluttering, and the nervous system go on collapsing into actual death, is the more common event.

Or this terrible incident of febrile diseases may occur after a different manner. The pulse will be countless and fluttering for a few hours, and then, under the use of stimulus, it will recover power and a

calculable number for a few hours ; and then become countless and fluttering again. And after the nervous system has thus gone on to sink and to rally alternately for a few days, it will rally permanently, and the pulse become slower and steadier, and the disease will proceed free from this peculiar peril. But more often the nervous system will sink irrecoverably, and the pulse flutter and flutter on, and the patient die.

There is a very curious and interesting circumstance well worth our notice, to which my observation, if it do not deceive me, has often borne witness as a matter of fact. It is that the nervous system having reached the degree of collapse, indexed by the countless fluttering pulse, carries with it the pathological consequence of suspending for the time the course of the disease. Whatever be the disease which it attends, whether scarlatina, or measles, or erysipelas, or small-pox, and whatever be the stage it has reached, at that stage it will stop, and all specific morbid actions come to a suspense and standstill ; perhaps to be resumed, perhaps not. To be resumed, when (if ever) the pulse comes within some clearly calculable number, and remains steadily within it, notifying the steady recovery of the nervous system. Not to be resumed, if the pulse goes on fluttering, although many days have yet to pass before the nervous system has collapsed into death. It is curious how disease thus under the all-subduing constraint of the nervous system, and halting for one, two, three, or four days, will, when that constraint is taken off, take up its course again from the stage at which it was arrested, and duly proceed to its end.

What took place in the remarkable case before cited is a specimen of the same thing in kind as that which now engages our attention ; only there the disease was latent in its state of incubation ; here the disease is manifest and already formed. There the disease had not yet begun, and the failing nervous system still withheld it from beginning during several days ; here the disease being already formed, the failing nervous system withholds it from proceeding during several days.

MILK. Milk has been so often analysed, that it would seem no further facts could be elicited regarding this important liquid. Professor Boedecker, however, has just completed a series of experiments conducted on quite a new principle. The question he proposed to himself was whether milk obtained at any hour of the day always presented the same chemical composition or not ; and he has arrived at the result that the milk of the evening is richer by 3 per cent. than that of the morning, the latter containing only 10 per cent. of solid matter, and the former 13 per cent. On the other hand, the water contained in milk diminishes by 3 per cent. in the course of the day ; in the morning it contains 89 per cent. of water, and only 86 per cent. in the evening. The fatty particles increase gradually as the day wears on. In the morning they amount to 2.17 per cent. ; at noon, to 2.63, and in the evening to 3.42 per cent. This circumstance, if true, would be very important in a practical point of view. Let us suppose a kilogramme of milk to yield only the sixth part of its weight of butter ; then the milk of the evening may yield double that quantity. The caseous particles are also more abundant in the evening than in the morning—from 2.24 they increase to 2.70 per cent., but the quantity of albumen diminishes from 0.44 to 0.31. The serum is less abundant at midnight than at noon, being 4.19 per cent. in the former case and 4.72 in the last.

Illustrations

OF

HOSPITAL PRACTICE:

METROPOLITAN AND PROVINCIAL.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.

DISEASE OF THE EYELID IN CHILDREN.

Under the care of J. VOSE SOLOMON, Esq., F.R.C.S.

CASE I. *Phlegmonous Inflammation of the Eyelids, excited by Alveolar Irritation.* An Irish girl, 2½ years of age, came under the care of Mr. Solomon, on the 18th of November, 1852, with phlegmonous inflammation of the left eyelids ; they were red, tense, and very tumid. The conjunctiva, of a bright red colour, afforded a discharge of purulent colour. The cheek on the same side was swelled. On examination of the mouth, the right canine tooth was found just above, and the left nearly through, the gum, which was much inflamed. The two upper incisors were carious ; and, on taking hold of the left one with a pair of forceps, it proved to be loose, and from its side (fang?) a quantity of pus was discharged. This examination indicated the nature of the case, and the treatment of the alveolar abscess by removal of the dead and loose bone.

Several points of practical and physiological interest are presented by the above narrative. It shows the importance of examining the mouth where the cause of an ophthalmic disease is not apparent. The cases are by no means very exceptional where irritation of the dental branches of the fifth pair has, by reflex action, caused retinal blindness, or paralysis of the motor oculi nerve, with its attendant vertigo, diplopia, inability to judge of the distance of objects, and consequent uncertainty in the walk of the patient while both eyes are maintained open. When investigating such cases, we must not allow the absence of pain in a carious tooth to deceive us ; as, although it may never have ached, yet, according to Mr. Solomon's experience, it may be the sole cause of reflex mischief.

As to whether the phlegmonous inflammation of the lids and the purulent conjunctivitis were referrible to reflex action, or to the extension of inflammation by the continuity of a mucous surface, is a fair question for debate. The reporter is disposed to refer the symptoms to the former.

Another point deserving of notice is the late period to which the projection through the gum of the canine teeth was delayed ; namely, the *thirtieth* month of the patient's age. Bell fixes their eruption as occurring between the sixteenth and twentieth month ; Hunter, so late as from the twentieth to the twenty-fourth ; and Tames, at from the sixteenth to the twentieth month.

The late development of the canine and the premature decay of the superior incisors are suggestive of the presence of an hereditary syphilitic taint. As regards the periostitis, which led to the formation of an abscess at the fang of the left incisor, it was an eliminative act on the part of Nature to get rid of the dead bone, which had become a foreign body in the mouth.

CASE II. A delicate child, 7 years of age, was attacked with catarrhal ophthalmia on December 14th, 1852. On the 15th, the upper eyelids were swollen ; and on the 16th they were red. The swelling gradually increased until the 21st of December, the right suffering the most, when the patient was brought to the Eye Hospital, and the preceding description obtained from the mother. At this time, infantile purulent ophthalmia was prevalent.

On admission, there was enormous swelling of the