Typical Temperatures.—In the following it is to be remembered that the statements refer to the axillary temperatures as estimated by the Fahrenheit instrument only; and in some measure the difference between higher records of temperature taken per vaginam or rectum are to be explained. Wunderlich, for instance, regards 107°6 as a common temperature in septicemia. So far as more recent observations may be quoted against the name of the pioneer of the science, this is an exceptional height; and unless we assume this to be an internal record, or that the type of puerperal septicemia is somewhat different, or, still more likely, that another most important element, the treatment by reduction of temperature, is explanatory of the lower temperatures more often met with, it is difficult to reconcile his statement with common experience.

Peritonitis affecting the peritoneum more especially covering the womb, and from hence extending to the epigastrium, shows an early sudden temperature. The usual date of invasion is between the second and third day; I have seen it within twenty-four hours. A rigor very frequently ushers in the rise. The range is from 103°5 to 104°5; probably 104° is sufficiently accurate. Bad cases of severe general peritonitis may soon show a higher temperature, but with these other grave symptoms will become evident. Traumatic peritonitis has a lower temperature than that from septic or other infective causes.

Metritis is an affection difficult to consider per se, as, however much we may desire to distinguish its varieties, it is not always possible to state positively that the disease is a perimetritis, a parametritis, an endometritis, a pelvic peritonitis, or a metroperitonitis. Yet for broad purposes of diagnosis and prognosis the local symptoms are usually sufficient. The temperature is from 103° to 104°. I have observed one case without any evident peritonitis reach 104°9 (almost 105°); but I think this unusual, and unless there is a concomitant peritonitis, phlebitis, pyaemia, or septicemia, 103°5 will be found about the mean. A special aid is afforded by the pulse, which will be mentioned hereafter. The invasion of traumatic metritis is about the third day, if from autogenetic, or other heterogenetic causes, it may be either very rapid (a few hours) or delayed to a week; if the former, it is either quickly mastered by treatment, or lapses into another form of metria.

Septicæmia, if ante-partum, averages 100°—101°. There is a well-marked persistent rise after delivery is effected. In health it is to be remembered that there is usually a fall below the normal for

1 Medical Thermometry, p. 361.
some hours, then a slight rise till the establishment of milk, and thereafter a fall. The septic rise is a very constant one, so that in a few hours there may be an increase of two or three degrees. There are so many seeming varieties of septicæmia, and the quæstio vexata of puerperal fever and puerperal septicæmia affords so wide ground for controversy, that I content myself with stating facts briefly which may apply to both that which may be called specific or true puerperal septicæmia or puerperal fever, and metric septicæmia or puerperal septicæmia. In septicæmia the temperature may be as high as 107° (commonly 107°-6, Wunderlich); it is never lower than 102°-5 at some period of the case if the illness is from septic poisoning. The average temperature, possibly as modified by treatment, is 104°-5. I have had cases of autogenous origin, so far as could be judged, which terminated fatally, and in which, until the very end, except on one or two occasions, the highest reading was 103°. The temperature rises at night from 1° to 3°. Mixed cases of septicæmia, e.g., arising from the virus of scarlatina, rubeola, typhus, etc., have usually high records. Septicæmia in anemic patients, and in those suffering from albuminuria, is less marked by high temperature. Still, again, rare cases may be met with in which the temperature is modified in a remarkable way, as when metria is complicated with rheumatism. The intense prostration from pain and exhaustion, which doubtless materially influences the production of body heat, must be considered as a prominent factor in such cases. It is the stationary high temperature that is worst, more especially if without discoverable local lesion to account for its existence. When a septic temperature remains above 102°-5 persistently for two or three days despite treatment, it may be regarded as at least two or three degrees higher naturally, and is thus most ominous. When the night rise ceases there is an unquestionable advance to a favourable prognosis. In certain instances the temperature falls rapidly before death, i.e., from collapse, but I think the fall of temperature is less usual than the fall of pulse in like circumstances. Certain hours seem to show an increased heat in septicæmia. The temperature rises from 5 to 8 A.M., thereafter falls; at from about 4 to 6 P.M. there is an increase, after this a decrease; and again from 9 or 10 P.M. until 1 or 2 A.M. a decidedly high record.

Pyæmia gives very various temperature curves. The temperature is not necessarily very high (102°-103°), except after each rigor, when from 1° to 3° more may be marked. In this form there is more often a recurrence to a high record after the norm has been touched than in septicæmia, and in some protracted cases the temperature is not to be much relied on without due regard to the local symptoms.

Pelvic cellulitis, oœphoritis, parametritis, etc., which arise post-partum, have a temperature about 102°; if pus is formed, there is
a temporary increase to 103°–104°. The invasion is gradual, beginning at 99°–100°, and in two or three days reaching the heat mentioned. Cases may, from the absence of other symptoms, be so overlooked that, unexpectedly, after a few days of seeming languor, a comparatively high temperature is discovered on examination. For the most part such cases require a week or ten days for their development. If a traumatic lesion exists previously this does not hold good. Arising, as these cases frequently do, from imprudent early rising on the third or fourth day after confinement, we may thus find an explanation of the abnormal heat in as many days after as it takes the subacute inflammation to develop. Exceptional cases are met with in which these inflammations arise three weeks or a month after delivery; these are ushered in by a rigor, temperature of 103° or 104°, which falls within forty-eight hours usually to about 102°, and remains there till the subsidence of the disease. It is well to note this, as such cases form a large proportion of the popularly named “bad recoveries” which, from insufficient care or neglect, are overlooked, and may be an evil for years or a lifetime. Attention to the abnormal temperature would cause greater precaution to be observed than most often pertains; and it is a mere everyday experience for all of us to meet with chronic cases of “sore side” which need not have been.

Weid, or milk fever, shows a high temperature, yet the persistency is not great. A rigor commences the illness; in two hours after, the temperature reaches 103° or 104°. The invasion is late but rapid, and the local development of mastitis follows the fever. I have previously referred to another class of milk fever cases which differ from the foregoing in the mildness of their nature, but are more continuously febricular. In these, as I have mentioned, the mild continued fever indicates the mammary disturbance. But the formation of a mammary abscess, if of late origin, does not often cause much constitutional disturbance. The temperature touches 100° or thereabout, and speedily falls on the evacuation of pus.

It is thoroughly recognised that temperature is affected by mental emotion, fright, retention of clots or secundines, retention of urine, constipation, or errors in diet. Various authors might be quoted illustrating the rise of temperature after terror. Dr Mahomed relates a case. According to others, “puerperal fever” may originate from fright or mental emotion; “milk fever” may be also induced by the same cause.

From mental emotion the temperature rises suddenly. I
have had cases at 102°-4, 104°, 104°-9, 105°-2, and know of one which reached 106°. The duration is usually short. If no other cause exists, the normal will be regained within forty-eight hours; sometimes two or three hours is sufficient.

Retention of secundines and blood coagula may show increased temperature without the fever being in any way caused by septicaemia. The irritation induced by the foreign body in the uterus causes the rise. I have related a case with a temperature of 103°-2. After the expulsion of a clot the fall was almost immediate, and the record normal next day. About 101° is the average heat in such cases. Retention of urine and constipation shows 100°-5, or, for a short time, more; 99° if after three or four days from the date of delivery is a usual observation.

The temperature varies in individuals (97°-6–99°-5) at different periods of the day (1°-5), and after food (1°). All these observations apply to parturient women in common with other individuals, but, in addition, it is stated that the subsequent puerperal temperature is influenced by the time of day at which delivery took place. It is lowest in women who have been confined at 11 A.M. I abstain from quoting several authorities in support of these generally received facts, but a recent article by Dr Waters will repay careful perusal. Personally I have noted a range from 97° to 101° during the course of one day; there was a suspicion only of metritis, which came to nothing. At night the record was 99°-5, next day 98°. Certain individuals have, during confinement to bed, a temperature of 97°. One lady I have attended twice has shown this after both labours on repeated examination; the pulse was 76, the age of my patient 21. On the other hand, some, without another unnatural sign, have a heat of 99° to 99°-5 for a week or ten days after accouchment.

The relations of the pulse to the temperature cannot be entered into fully here, but a passing word will assist us in elucidating the above. In the puerperal period a slow, absolutely slow pulse with a high temperature is at times met with; if so, the record of the thermometer signifies little. A relatively slow pulse with a high rate of body heat is indicative of metritic inflammation (pulse, 100; temp., 104°). A pulse relative in rate to thermometric record 120°–104° is to be distinguished in some measure by its character, wiry, peritonitic, full and bounding, less likely to be dangerous. A high pulse, 140 to 160, with 102° to 103°, is symptomatic of extreme exhaustion. If the pulse in the course of an illness is 80 or under for 48 hours continuously, the temperature need not be feared, however high it is. I have met with but one exception.

1 Obstet. Journal, No. xciii. p. 643.
2 Brit. Med. Journal, 22d Nov. 1879, p. 806, et 20th Dec., p. 978.
3 Obstet. Journal, loc. cit.
4 Since the above was written I have met with another example of an almost identical nature.
What is the cause of the increased temperature? And what is the explanation regarding rigors? The various causes of increased body heat are, to state them briefly (a) Deficient power of heat dispersion; (β) General heat produced by a defined local cause; (γ) Increased power of heat production; (δ) Chemical changes within the organism; (ε) Changes in the vaso-motor nerves or vaso-inhibitory nerves; (ξ) Or, finally, abnormal conditions of brain or spinal regulating nerve centres. Taking a wide view of the question, it seems we might, without serious loss to a clearer apprehension of what is still unquestionably undefined, dispense with the four first mentioned as likely to be inseparably connected with the two latter. Whether a definite centre for heat production exists or not has yet to be proven; but whether the vaso-motor nerves of the sympathetic act as simple contractile or as dilating and contractile agents, and whatever the precise value of vaso-inhibitory nerves from the cerebro-spinal system and local centres of nerve moderation is, it is certain that in an unnatural condition of the nervous system is to be found the main explanation of abnormal temperatures.

I dare say we do not err in ascribing an increased body heat to an effort on nature's part to rid herself of disease. We may describe the heat production as the result of an internal struggle which is waged between vitality and virus (understanding by virus, not simply the narrow interpretation, but any malign influence affecting the human economy). Vitality, if sufficiently powerful, expels virus, and, beating her back step by step, ultimately pushes the intruder through the portals of the system; and virus, to pursue the metaphor, deluges the outworks with her tears. More prosaically, acute diseases end by crises and the usual perspiration. In lysis the struggle, if less severe, is more protracted, the end not very dissimilar.

In certain conditions of the blood and nervous system the body is less able to resist disease. In pregnancy we have a watery state of the blood and perversion of nerve control. These, with the addition of the shock to the system caused by parturition, both by depletion and the expenditure of vis nervosa, and the rapid changes which the uterus undergoes during the process of involution, and the necessarily accelerated blood-circulation for the establishment of lactation, severally and conjointly are likely factors in the production of abnormal heat. Women who are of sensitive organization are more likely to assume the febrile condition than those who are of equable temperament. Unmarried women and primiparae are more likely, ceteris paribus, to suffer from metria than matrons and pluriparae.

Laying aside for the time other considerations, we can have unanimity of opinion that the neurotic influence is great in many diseases and symptoms. The influence of terror or joy on the catamenia, on lactation, on the functions of the alimentary
canal, on various local and general diseases, on existence itself, is too well known to require more than mention. Hundreds of examples may be found in current literature.¹

These considerations—and they are but brief outlines—lead us to the point that the nervous system plays a most important part in the production of body heat. Excessive sensibility is congenital in some; it is produced in the majority of women during pregnancy and parturition. To this neurotic disturbance is also to be ascribed the production of rigors which in many cases evidently precede the increased temperature. From the consideration of rigors we can learn a good deal. A rigor is not simply an indication of the advent of the febrile condition; it demonstrates that perverted function has already taken internal possession; it is the signal of distress which the nervous system throws out on its being perturbed by the invading malady. That rigors are not always present, or, if so, unnoticed, is not singular; but it is as usual an experience to find, as naturally to be expected, that metric affections accompanied with much pain are signalized by a decided rigor. The recurrent rigors characteristic of pyemic affections are to be regarded as the attempts of the system to throw off the repeated doses of the poison by crises. The rigors which are not uncommonly an accompaniment of cases which are of purely mental causation are accounted for in the same way; they are manifestations of internal nervous irritation. In slowly invaded cases, where the disease is more gradual and insidious in development, the climax, as shown by rigor, is seldom reached. Possibly the nervous sensibilities are too much exhausted to resist the intruding evil after it has assumed such dimensions as to be of vital concern. In such cases the vitality has been previously undermined. In some terribly rapid cases of puerperal death there is no time for the exhibition of rigor; the system succumbs to the poison ere it has had time to summon resistance. In many cases the rigor is so mild that it escapes notice, and in others I believe it is never present, owing to individual peculiarity or to some of the preceding causes.

To briefly recapitulate. We have to rely on temperature in puerperal patients as indicating that there is an abnormal condition which may be of much or of little significance. And, further, it is to be remembered that the temperatures as here stated were in all likelihood modified by treatment, which probably explains the difference between my observations and those of others who have given higher records.

(1.) Temperature varies in the normal puerperal condition. In certain individuals it may be as low as 97° F. or as high as 99°.5 for a week or more without a single bad symptom. The average for the three or four days immediately succeeding parturition is

¹ Vide Nature of Life, Dr Richardson (Lewis, 1879), pp. 270-294.
98°-5 to 99°; the subsequent heat is modified by the hour of delivery, but to only a small extent. The healthy puerperal range is 2°-5.

(2.) No temperature over 99° (unless accounted for by individual nervous susceptibility) is normal after four days. The healthy patient may have an occasional night temperature of 100° or 101° within the first four or five days, but a continuing, or even a morning or day record like this requires an explanation.

(3.) Slight causes, e.g., constipation, retention of urine, etc., give a rise to 99°-100°-5, sometimes more.

(4.) Retention of clots or secundines, 99°-101°, or upwards; 103° at times.

(5.) Weid has a sudden late temperature of 103°-5, with rapid pulse; the heat falls quickly with the development of the local affection. Other cases of mastitis are mildly febrile for several days.

(6.) Metritis (endo- and peri-) gives record of 103°-5, with slow pulse.

(7.) Peritonitis has a single rigor and a sudden early temperature of 104° or upwards; the pulse is wiry. General peritonitis, if severe, 105°-5-106°.

(8.) Pelvic cellulitis, oöphoritis, paramenstritis, etc., have a heat of 101°-102°-5; the pulse is weak and irritable. Recurrent rigors mark fresh deposits of pus, and are followed by temporary increased heat, 104°-5.

(9.) Pyæmia and uterine phlebitis average 103°, perhaps more. Cases in which the veins are rapidly affected are soon 104°-5 to 106°, and end speedily. Pyæmia is frequently late in development, 7-10 days.

(10.) Septicaemia varies from 102°-5-107°. The heat is never less, at least for some period of the twenty-four hours, than 102°-5, if the case is properly established. The temperature is liable to variations, but after the norm has been reached is less so than pyæmia. There is no security from remission till the night temperature is under 100°. Recovery may take place after 106°, but is rare.

(11.) Mental emotion may show 104° or even 106°, and we may sometimes have in addition symptoms resembling metro-peritonitis. These cases do not persist, and are generally normal in less than forty-eight hours.

(12.) If the temperature does not rise within ten days from delivery, there is little risk of grave disease unless from gross imprudence in exposure to cold, or zymotic infection.

(13.) Although the temperature is moderately low, 100°-101°, so long as the pulse continues 120 or more we are not safe from relapse. No anxiety need be felt so long as the temperature is kept under 102°. However fast the pulse, if the temperature continues low the prognosis is favourable. An evident exception
pertains when temperature is low from collapse. If the temperature is persistent at 102°, or frequently recurs to this point, there must be an abnormal organic condition.

(14.) Temperature should be observed night and morning for the first seven days, and daily for three to seven days after, more especially if any instrumentation has been required for delivery, or if zymotic or epidemic disease prevails. When an abnormal temperature is discovered, it should be reduced to the normal as early as possible by one or other agent. It is of the highest moment to bring it down to 100° and keep it there or lower.

It is impossible to summarize all cases of abnormal puerperal febrile conditions thermometrically. A few notable exceptions I have met with, but these are so exceptional as to require special and individual attention, and cannot be brought under general rules in all points.

I have avoided discussing the best means of reducing puerperal temperatures, as I consider this may be better treated of in a separate paper.

Article V.—Case of Poisoning with Belladonna and Aconite. By J. R. Hamilton, M.D., C.M., Hawick.

On Saturday, 20th August, I was called to see a young woman, M. T., aged 19 years, who was reported to me as having been suddenly seized with a severe illness. I was at her bedside in a few minutes, and found her in the following condition:—

The bed on which she was lying was stained with vomited matter, which smelt strongly. She was on her left side, her knees drawn up to her face, retching and moaning. The pulse was imperceptible, with the exception of a sudden, full, hammer-like, intermittent beat; hands cold and damp; face deeply flushed; lips somewhat livid; mouth open, and the tongue protruding; nostrils widely distended, the alæ nasi drawn up with each breath; the eyes shining, with the pupils widely dilated, leaving the iris as a thin rim. She was perfectly sensible, told me, when urged, what she had taken, and struggled violently against taking stimulants or anything that was likely to prevent her dying. The end so much desired by her quickly came. Within five minutes from my entering the house she was seized with a severe opisthotonic spasm; on its relaxing she was dead.

Her History.—She had been an invalid eighteen months. The cause of this was paralysis of the right side, which followed an attack of pneumonia. An uncle and aunt have been in a way bedridden for near thirty years. They are still alive, paralyzed on the right side. The paralysis in their case also followed pneumonia. Her father is in the asylum, suffering from a suicidal mania combined with a somewhat homicidal mania. She had been