

purpose many researches into the prevalence of these comma-shaped micro-organisms in the water-supplies at the beginning of an epidemic, during the height of the epidemic, and during its defervescence would be required.

In conclusion, I have to bring to your notice the data contained in Table II.

TABLE II.

When or how often the wells were treated with per-manganate.	Number of wells so treated.	Whether commas were absent or present.
The day before examination	One.	Present.
Two days before exami- nation	Two.	{ Present in one; absent in one.
Regularly every day	Three.	{ Present in one; absent in two.
Twice a week	Six.	Absent in all.
Once a week	Five.	{ Present in two; absent in three.
Stated to have been treated repeatedly	Three.	Present in all.
Stated to have been treated with permanganate	Four.	Absent in all.
Had been treated only once	One.	Absent.
Had not been treated	One.	Present.
No information obtained ...	Seven.	{ Absent in six; present in one.

In this table the result as to the presence or absence of comma-curved bacteria in wells is put side by side with the information noted in my notebook as to the treatment with permanganate of potassium which the wells were stated to have undergone. The result is as follows: 1. Of the 25 wells, about which it is reported that they had been treated with permanganate, some more frequently and others less, eight contained commas. The 17 other wells treated were free. 2. In one well that had not been treated commas were found in numbers. Neither these facts nor the analysis of the connexion between the frequency of the treatment and the absence or otherwise of the commas, as shown in Table II., permit of drawing any definite conclusion as to the efficiency or otherwise of the permanganate process of treating infected waters.

Bombay.

WHEN TO OPERATE IN PERFORATIVE PERITONITIS.¹

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I HAVE found during the last few years that considerable difference of opinion exists among us as to the occasions and the time for opening the abdomen in serious and sudden emergencies, and since I think it will be useful for us carefully to consider and to discuss the question I propose as a basis for such discussion to give you the main principles upon which my practice in such cases is founded. One paper would not suffice to deal with all the abdominal emergencies in which laparotomy is, according to modern surgical practice, demanded, so I propose to discuss in this paper one of the commonest, and therefore most important, clinical groups—viz., perforative peritonitis.

The diagnosis is the first important matter that we have to settle, and we must in many cases settle it quickly if we are to save our patient's life by operation. I remember a case of perforating ulcer of the duodenum in a patient of mine who died within 14 hours of the perforation without rallying in any proper sense of the word from the initial shock. The case occurred before the days when operation in these cases was generally practised, and the post-mortem examination showed that the ulcer was in an inaccessible situation at the back of the duodenum; but the point which I wish to press home is the extreme urgency of

these cases and the fatal danger of delay. The diagnosis, then, has to be made and made at once if possible, so let us consider with what lesions perforative peritonitis—i.e., peritonitis caused by the rupture or ulceration, actual or potential, of some viscus or abscess into the peritoneum, and the diffusion of its contents over that sensitive lymphatic area—may be confounded.

Gall-stone and renal colic we must mention. We are not likely to confound them, although I have been in doubt about such cases. The onset is not very dissimilar, but in other respects the conditions have not much in common. Peritonitis non-perforative in origin is, of course, the chief crux, and here I find my surgical sense asking my medical conscience this question—"Do you really believe in a peritonitis which has its origin in a cause not remediable by surgical treatment?" and if you except the rare but well-known and easily recognisable cases which arise from a septic condition of the system such as those which occur in the course of scarlet fever, puerperal septicæmia, pelvic cellulitis, and the like, I must say that I do not. Tuberculous peritonitis may be named together with a ruptured hydatid, but both are more or less surgical conditions. I hear occasionally of peritonitis from exposure to chill, but I cannot honestly say that I believe in chill as a real and fundamental cause of the disease. There are many causes other than perforation, but most of them would be dealt with in a paper on intestinal obstruction, and they require consideration from the surgical point of view.

We are called, say, to a case of perforated gastric ulcer. We arrive soon after perforation has occurred and we find the patient in agony. Everything shows us that it is so and that the case is most serious. The patient's aspect is one of terror and expectancy—terror of the fearful pain which is every moment increasing in severity until it threatens to overwhelm sense and life. The terror-stricken look is that of shock—pallor, sweating, starting eyes, parted lips, and clenched teeth are all there. The pinched nose and sunken cheek give the facies abdominalis and afford you the first clue to your diagnosis. Is the sufferer rolling about in the bed? If so it is probably not peritonitis but a colic, intestinal, biliary, or renal. Patients with peritonitis keep their abdominal muscles very still. They may toss the arms about or roll the head in the restlessness of severe pain and collapse, but they do not move the abdomen. You will probably observe or hear that vomiting has occurred, and retching may be actually in process at the time of your visit. Too much stress must not be laid upon this symptom, because in perforation of the stomach, if the stomach is empty at the time there may be little or none, and even if a meal has been recently taken the first copious vomit rids it of its contents and the symptom ceases. Persistent vomiting is a symptom rather of intestinal obstruction than of perforation. The temperature is unimportant at this early stage, but it is most likely to be subnormal during the first few hours. You next feel the pulse, and it is the pulse of shock in a typical case—small and rapid—though I have seen cases where its pace has been scarcely at all accelerated. Then, if you have not already heard the story of the commencement of the attack you inquire and you find that it has been more or less sudden. There may have been a slight similar attack which passed off rapidly a short time previously, but if you have not been attending and guarding against such a catastrophe as has occurred you find that it has come on without warning. Possibly your patient has been sitting still or even asleep in bed, though more usually some slight exertion seems to have determined the attack. By this time you have a strong suspicion of peritonitis, and your mind then travels rapidly over the few viscera the perforation of which may have caused it—viz., the appendix, the stomach, the intestine, the gall-bladder, or, in a woman, the Fallopian tubes and ovaries. I have seen within the last three weeks two cases of pelvic cellulitis in which the onset of peritonitis exactly resembled that of perforation. To guide you further you put a few leading questions as to the organ from which the lesion originates. First, the appendix. Has there been any previous illness, with abdominal pain, constipation, and tenderness in the right iliac region? If so, how many attacks and at what intervals? Next the stomach. Any indigestion, flatulence, or pain after meals? If so at what interval after? Especially must inquiry about vomiting, hæmatemeses, and melæna be made. Thirdly, the intestines, which rarely perforate save in diarrhoea from typhoid fever or in tuberculous ulcer. Fourthly, the gall-bladder. Jaundice and gall-stone colic with tenderness.

¹ A paper read at a meeting of the Devon and Exeter Medico-Chirurgical Society on Feb. 15th, 1901.

Fifthly, the Fallopian tubes and ovaries. In this connexion you must think of ruptured tubal pregnancy which is remarkably like perforated gastric ulcer in its onset. Pyosalpinx, bursting into the peritoneum. Pelvic cellulitis I have already spoken of. In connexion with the ovaries you will inquire for the presence of a tumour which may have disappeared, for there may have been a ruptured cyst, or a suppurating cyst, or a cyst the pedicle of which has become twisted. Having obtained as much information as you can get or require without harassing your patient you proceed to examine the abdomen. Be careful to have it thoroughly exposed and in as good a light as possible. In the early stage of peritonitis you will almost certainly find that the abdominal respiratory movements are either greatly diminished or altogether absent and that there is rigidity of the abdominal muscles. There is no distension at this period, unless it pre-existed, but peristaltic movements may sometimes be seen. Palpation elicits in addition to the rigidity that the abdomen is tender, probably exquisitely so, but this depends in great measure on the ability of the patient to endure pain. Percussion, lightly performed because it is painful, will, if two or three hours have elapsed since the perforation, tell you that there is fluid in the flanks, a most important sign, and further it may furnish you with evidence of free gas in the abdomen by showing diminished liver dullness. If this free gas is clearly demonstrable it places the diagnosis of perforation of the stomach or intestine beyond reasonable doubt.

I have enumerated the four cardinal signs upon which I am accustomed to rely for my diagnosis of perforation in the early stage—i.e., for the first few hours after it has occurred: (1) rigidity, (2) tenderness, (3) presence of fluid, and (4) free gas in the peritoneum; and to these should be added, of course, the pain and signs of collapse. But before considering them and their significance in greater detail I will take you a little further with our supposititious case.

We will suppose that, for some good reason, either that you have been unable to attend immediately to the first summons or that you have sent for assistance, or that you are called in consultation upon the case several hours after the catastrophe—what will you probably find? A period of calm after the storm. The patient looking fairly comfortable, the pulse a little faster and small but not alarming, the temperature slightly above the normal, cessation of the vomiting, the agonising pain gone, and the patient expressing himself as feeling fairly comfortable and in a fair way to recovery. You examine the abdomen and what do you find? 1. Rigidity giving place to distension, but still there is immobility in respiration. 2. Tenderness still present, though in less degree and not so general. In an appendix case the localisation of the pain at this stage may be an invaluable guide. 3. Free fluid probably increased, though you must not forget that great distension of the intestines may obliterate the percussion dullness in the flanks by displacing the fluid. 4. You will probably find that neither fæces nor wind have passed per rectum. I have myself been deceived by this apparent extraordinary amelioration of the symptoms, and I have seen men of far greater experience than I can claim thoroughly taken in by it. But this period is the golden opportunity for operating, or even for removing a patient to a hospital or place suitable for operating in; and, while I personally should not deliberately wait for it as the elective period for operation, I should not, having made my diagnosis at an earlier stage, or seeing the case for the first time in this stage, when a competent man had earlier diagnosed perforation—I should not, I repeat, refuse to operate because the patient had apparently become so much better.

In the foregoing paragraph I have twice used the word "apparent" in connexion with the improved condition of our patient, and I think that if we spend a few minutes in considering the pathology of the symptoms we shall better see why the improvement is rather apparent than real. Let us first take the most obvious and to the patient most urgent, symptom, pain. What causes it? Do you at once exclaim, "Why of course the presence of foreign matter in the peritoneum"? To a certain extent I agree. I can well understand and realise that acid gastric juice and digestive ferments, especially when to them are added portions of solid food, would be an instantaneous cause of most terrible pain to the sensitive peritoneum. But how about the warm, creamy pus from a ruptured pyosalpinx? There is not at first sight anything so instantaneously pain-producing in this. It will in a short time produce peritonitis by inoculation with

saprophytic germs, but the pain is instantaneous and severe; it suddenly doubles a man up when he is walking in the street, and he will describe the sensation of "something giving way in his inside." Again, the pain diminishes after the first severe bout, but the food particles are not absorbed. "They are diluted by the outpoured peritoneal fluid," you say. This will hold good as an argument when dealing with the gastric contents but not for the septic pus. Dilution will only serve to disseminate the latter. Time will not allow me to elaborate this interesting point, but I will just say that I think that the first shock of the irritating fluid from stomach or abscess causes a vaso-motor paralysis—immediate or spreading, dilatation of the peritoneal blood-vessels, and roughening from hyperæmia of the hitherto smooth endothelial surface, and that the pain is caused mainly by irregular peristalsis of the intestines in these altered conditions. Septic intoxication of the local nerve ganglia, assisted oftentimes by an opiate, then arises, and the period of rest supervenes because the peristalsis ceases. In other words, the intestines become paralysed; and the resulting inability to pass wind or fæces gives rise to a condition of obstruction. I should like to note in passing that this is often a cause of a mistake in diagnosis, because all medical men do not realise that peritonitis is a cause of paralysis of the bowel and so of obstruction. The bowel being paralysed is unable to carry on its peristaltic action, and with the cessation of movement you get cessation of pain. If this were all one would be inclined to say "very good" but the effect of the paralysis does not stop here. The bowel having lost its peristaltic movements has also lost its contractile power, and it stretches with the pressure of gases inside it, and so you get the condition of distension. Before this increasing distension the rigidity rapidly yields; if it did not so yield I suppose that the pain of distension would be considerable, and the displacement of the heart by the accumulating gases in the intestine might be rapidly fatal.

In such a case as I have pictured I have no hesitation in saying that the first thing you must do is to make your diagnosis, and then to give an anodyne. In perforating gastric ulcer you must give a hypodermic injection of morphia—a quarter of a grain is usually sufficient—to relieve the pain, to counteract shock, and to assist the patient as speedily as may be to the second stage. But in the meantime you must not be idle, you must prepare for the operation which is imperatively demanded. Send for your operator or your assistant, for your chloroformist and for a nurse, if the operation is to be performed at the patient's house. If such a course is inadvisable or impracticable you must arrange to have your patient removed as comfortably and as speedily as possible to a suitable place.

The case which I have just sketched is of the perforating gastric ulcer type, but there is another form of perforative peritonitis which is usually associated with the appendix and in which it is by no means so easy to come to a decision. The term "perforative" is used in the potential or future sense rather than in the past or perfect, and signifies threatening perforation. These cases have usually a history which is of great assistance in localising the seat of mischief, but as the appendix is usually the offending organ we will take such a case as a type. The illness begins with a well-marked sudden and severe pain, not by any means always referred to the right iliac fossa. It is quite as common in my experience for the pain to begin round the umbilicus, and so you may jump to a hasty conclusion that it is a case of intestinal colic. Again, the pain may be at the splenic flexure of the colon—a common place for "windy spasms" in dyspeptic, tea-drinking women. The symptoms may not be very severe to begin with and may develop more slowly, taking, it may be, some hours to arrive at their maximum. The pain will increase to the point of severity and you get the collapse. The pulse may be as bad as in the last case which we considered, but it may be only rather quicker and smaller than normal. The special abdominal signs—rigidity, absence of respiratory movements, and tenderness—will be present, and I need hardly say that in appendix cases you usually get, sooner or later, a particularly tender spot midway between the umbilicus and the iliac crest. Important evidence as to tenderness localised in the right iliac fossa is obtainable from a rectal examination, which should always, I think, be made in these cases. So far the case resembles an ordinary appendicitis, but let us suppose that the symptoms are severe all round, so that we have good reason to fear the formation of abscess. In these cases you also get the

second stage of rest, and in proportion as the first stage has been mild you will be likely to be deceived by the amelioration of symptoms at this time. Careful attention to the condition of the abdomen alone can save you from mistake. Here the temperature is of great importance, because the absorption of pus or of its toxins by the cellular tissue in and around the appendix causes a well-marked rise of temperature.

We have arrived, then, at suspecting the formation of pus in connexion with a perforated appendix. We only suspect pus. We have not yet got beyond the point where we can say definitely that the appendix is the seat of trouble. What we want to know is whether the appendix has perforated. Then, if so, whether it has perforated in a situation where adhesions will rapidly form and shut off the general peritoneal cavity, or thirdly, whether it has given way in a position which will speedily overwhelm the patient with a general septic peritonitis. These are points of supreme importance, because, in the first case, if no perforation has occurred and abscess is unlikely, it is better to let the attack subside and to remove the appendix when things have quieted down. Secondly, if the appendix is in its usual position, behind or to the outer side of the cæcum, an abscess may form, but local peritonitis will probably shut off and guard the general cavity from the dire effects of the foul pus. To find such an abscess in the early stage of its formation is by no means easy, and in seeking it one can easily destroy nature's barrier, and, with a small abscess of, say, two drachms in amount disperse it over the peritoneum in endeavouring to discover it; whereas if we allow it to increase to a considerable size we shall be able easily and satisfactorily to evacuate it. The third consideration which I have in my mind is fortunately the least common and is that in which the appendix runs inwards towards the middle line of the abdomen or over the pelvis. A long appendix one can picture hanging over the pelvis and almost dropping pus into the pelvic peritoneum.

Now how are we to decide in a given case as to which of these conditions is probably before us? I think that there are three things upon which we may rely with some sense of security. They are; (1) the condition of the patient—the pulse, the temperature, and the aspect; (2) the condition of the abdomen; and (3) the presence or absence of a swelling. We will leave the condition of the patient for a minute while we briefly consider the second and third signs.

The condition of the abdomen.—This has to be considered from the point of view as to whether distension has come on, and whether the peritonitis causing it is general or local. The former we can see at a glance, and we will suppose that the stage of rigidity has passed into that of distension. We shall lightly percuss the flanks to see whether there is dulness—i.e., fluid or exudation—and shall very likely find that there is impaired resonance if not actual dulness in the right flank from exudation, and that the left is tympanitic. If the left flank is also dull we shall know that the peritonitis is rather more than a local one and that fluid is accumulating in the general cavity—though I think that in appendix cases this is a rare condition. Because distension is general over the abdomen we must not necessarily infer that the peritonitis is also general or that the paralysis of the intestine is complete. We shall very likely find that on the left side pressure can be made with little or no pain, and we can infer from that that the peritonitis is not universal. Paralytic distension of the bowel is usually extended far beyond the site of the lesion or local peritonitis which causes it. If we hear gurgling or see peristaltic movements we shall know that paralysis is not complete, but we can do more than this. We can pass a rectal tube and see whether flatus escapes, or we can give a turpentine enema which may also serve the useful purpose of clearing out the rectum and sigmoid flexure. If we find then that contractile power is left in the bowel we infer that the general abdominal condition is not very bad at present.

The presence of a swelling in the right iliac fossa.—What constitutes the swelling in a case of appendicitis? First, the persistent rigidity of the muscles over an inflamed spot—rigidity which does not yield as readily or as rapidly as that over the rest of the abdomen. Deeper you have œdema of the transversalis fascia, of the omentum, and of the cæcum and adjoining intestine with matting together thereof. Indeed, all the cellular tissue of all the structures involved in the inflammation is infiltrated with lymph and serum, and being thus hardened and fixed gives rise to a palpable swelling. Now this swelling is a good sign, for it shows

that nature is making a good fight and is putting barriers between the poisonous pus and the general peritoneal cavity. In a very few hours, probably before pus will have had time to form, nature will have made the passage to the abdomen impregnable to its assaults. As a rule, then, the presence of a definite tumour without distinct signs of pus in it relieves our minds of pressing anxiety. We must assiduously watch the pulse and temperature, in four-hourly observations if such can be arranged for, because although we are tolerably (though not entirely) free from the danger of pus entering the peritoneal cavity, we have to recollect that the pus in these cases is very foetid and very virulent and may soon destroy not only the appendix (that is not much loss) but even adjacent bowel, as I have seen in more than one case which has been left too long unopened.

The condition of the patient.—This is the principal and important point upon which we have to form an opinion based almost entirely upon our own experience. The second and third signs are purely objective and can be seen or discovered with ordinary care by the merest tyro, but experience and ripe judgment are needed to decide whether the patient is suffering from a septic peritonitis which will very soon kill him, or whether he has a local condition which he can easily last through for some days and finally recover from when the appendicitis resolves or the local abscess is opened. It is most difficult to convey to others the points, minutely balanced *pro* and *con*, with the reservations which one has in one's own mind in considering such a case, and were I to attempt the task I should, I fear, only obscure the subject of our discussion. I will, therefore, put it broadly into two types, the sthenic and asthenic.

The sthenic you can afford to watch. The patient's face is possibly flushed, he is alert, and gives you the impression of reserved strength, but he has no delirium. Delirium in surgery is a danger-signal of grave significance. The pulse may be fast, and even small, from the contracted artery of peritonitis, but it is in accord with the temperature, which is high, say, 103° or 104° F., and has power and tension. In such a case you can, I say, afford to wait, especially if the distension is not alarming and you can feel a distinct swelling. But you must have a very clear idea as to what you are waiting for. You are waiting for one of two things, either the resolution of the inflammation without abscess or the earliest possible moment when you can safely evacuate the pus, the presence of which you have diagnosed and the potency of which for ill you dread—pus which you have diagnosed either from the temperature chart, from a rigor, from a local œdema of the skin, or from the presence of fluctuation in the swelling. I say the earliest possible moment, because I recently saw a case most severe in all its stages in which the patient and his friends absolutely refused me permission to operate in the earlier stages and I did not consider it a case to press. I diagnosed and localised the abscess and said that it should be evacuated; indeed, I offered to see the case the next day and to do the operation. Early the next morning the abscess burst into the peritoneal cavity and the man died. The diagnosis and course of the case were verified post mortem. Now, I believe that if I had insisted more strongly upon the immediate danger that the abscess was to his life I might have overcome their repugnance to the operation which I knew and declared to be necessary. But it seemed to me to be so certain that it would be soon pointing over the iliac crest that the idea of its finding its way into the peritoneum hardly crossed my mind. I hope that I have learned that lesson. One word more on the sthenic type. If you are watching such a case and the temperature suddenly falls without a corresponding improvement in the pulse you should decide on immediate operation, as it probably indicates a sloughing of the appendix at least and may mean something more serious.

The asthenic type is the last that we have to consider and is the most dangerous as well as the most difficult to decide upon. I am not referring to cases which are moribund when you first see them—cases in which pain has been deadened by repeated opiates and which have been allowed to drift through the first and second stages until the patients are all but dead from septicæmia and with probably multiple septic abscesses in the liver; cases in which blue lips and fingers with a thready, rapid, or uncountable pulse tell that dissolution is imminent. Operation can do no good in such a case; it will only hasten the inevitable termination. In such a case you can only try with heart-stimulants,

strychnine, brandy, and the like to restore the circulation to a point at which you might be justified in operating; but if, as is probable, your efforts in this direction fail you must not discredit surgery by doing a useless operation. In such a condition I doubt whether one is justified—nay, I do not think that one is—in subjecting the patient even to the examination necessary to found a diagnosis upon. No; the type of which I speak is that in which there is evidently profound disturbance. The complexion is pale or sallow, the pulse is rapid, small, and compressible, and the temperature is only slightly raised—not at all the temperature which one likes to see with the quick pulse. Or, again, the pulse and the temperature may neither of them be much increased, but still the patient, who has the history of appendix trouble and the abdomen of peritonitis, is evidently suffering from profound septic poisoning. In such a case you at once look for the swelling, and if you find it, you may conclude—particularly if it is known to have been present for a day or two, and the patient is at the end of the first week of his disease—that there is an abscess which is doing damage, that the appendix has sloughed or is sloughing, and that the abscess is dangerously near to perforating, even if it has not already done so, the peritoneal cavity. If you come to this conclusion you will of course arrange for immediate operation. But, you may not always have the help of finding the swelling, either because it is so slight as to be unrecognisable or the abdominal distension is so great as to mask it. I want you clearly to understand the situation. A patient with a history of appendicitis with symptoms of severe septicæmia of a low type evidently dangerously ill, the abdomen swollen but not very tender, and no swelling in the right iliac fossa that you can detect. What is to be done? Well, first, if it is a woman make quite sure that it is not pelvic peritonitis arising from pelvic cellulitis. I have quite recently seen a case, and can recall another, in which a vaginal examination saved the situation so far as I was concerned, and the patients went through their attacks satisfactorily. Having satisfied yourself that this is not present I think that an operation should be done to discover whether there is pus in the abdomen in connexion with the appendix or Fallopian tube. The operation is difficult and the prognosis is doubtful, but the risk of the operation is less than that of letting the patient run on to almost certain death. These cases are fortunately rare and are usually connected with an appendix which is tucked away behind the cæcum or colon or to the inner side of them and are due to the insufficient protection of the abdominal cavity by adhesions, so that a larger portion of the peritoneum is exposed to septic infection than is compatible with life.

I have indicated, I think, the conditions in which I should operate, but before concluding I should like to say a word about the propriety of refraining from operating during the condition of profound shock which often obtains at the onset of these cases. The condition is purely one of shock, because the history will tell you that the patient has only been ill for an hour or two. If I find a patient in this condition of shock and with a very rapid pulse—130 and upwards—I prefer not to add to the shock of the disease by the shock of an operation. The patient has, in my opinion, a better chance of recovery if you first rally him with strychnine, brandy, and a dose of opium. It is bad surgery to wait in a case of perforated gastric ulcer unless you have strong reasons for doing so, and I can think of no other reason than this that would make me delay. You can, as I have said earlier, utilise the time of waiting by preparing for the operation, and probably by the time that you have everything ready the pulse will have improved sufficiently for you to feel happy in carrying out the treatment that is so urgently needed.

A word in conclusion about opiates. To relieve the agonising pain at the beginning of the attack—and we must remember that the pain enhances the shock—an opiate is usually necessary; but if persisted with—if, that is to say, we keep the patient under the influence of opium—we obscure the diagnosis and increase the distension. I dislike morphia for the latter reason, I always think that it is more of a bowel paralyser than opium. If possible make your diagnosis before you give an opiate; if you cannot, then give the opiate and see the patient again in from four to six hours (in the case of suspected gastric perforation four hours is too long) and again try your best to make sure of the seat of trouble. You will then be able to ascertain for yourself whether more opium is necessary, and, if pain demands it, you can order

another dose; but you will have had the advantage of observing the developed abdominal condition when the patient has more or less thrown off the effect of your first dose. You will be doing the right thing by your patient and yourself if you insist on no opiate being given, except in your presence, until you have arrived at your diagnosis.

Exeter.

RECURRING ATTACKS OF CATALEPSY ALTERNATING WITH VIOLENT MENTAL EXCITEMENT.

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THE patient whose symptoms are here described has been known to me since Nov. 15th, 1900. She is a tall, thin woman, aged 27 years, married, but without children. She consulted me with regard to intense headache, from which she had been suffering for the two previous nights, the pain being situated in the supra-orbital and occipital regions. She told me that it came on about 3 A.M., that she was sick two or three hours later, and that she was free from pain but exhausted by 10 A.M. She had had one similar attack about six weeks earlier. She also mentioned at this time that she was subject to temporary attacks of dimness of vision and that she had noticed the great size of the pupils at such times. There were no symptoms suggestive of increased tension and no ocular error could be detected at the time of her visit.

With regard to her family history, her mother, who is known to me, is subject to very violent attacks of temper, so severe, indeed, as to make her home almost uninhabitable to her husband and children. In her ordinary life she is quiet and pleasant, but when excited she loses all control of herself, using the most abusive language, and seeming for the time to be really dangerous. She has, however, never suffered from definite delusions of any kind, nor has she shown much evidence of hysteria of a milder form. In other members of the family there is no record of nervous troubles that I can discover.

As to the personal history, the daughter is usually of a bright and lively disposition; she is fond of amusement and is very happy in her home life. She is not liable to sudden fits of crying or any of the milder hysterical outbursts. Her first mental symptoms appeared after her marriage, which occurred three years ago. One night, while staying at Ventnor for her honeymoon, she became violently and ungovernably excited and remained in this condition for three hours. Since that time the excitement had been apt to recur at or after the menstrual periods, and I am told that at such times she "wandered in her mind"; she had been heard by her husband to mutter "I must do it," and had twice been seen by him "looking for a razor." She also had spoken of a wish to destroy herself. The menstrual loss was excessive, lasting for fully a week; and it had usually been accompanied on the second day by great pain as well as by vomiting. She obtained considerable temporary benefit from a prolonged course of ergot in 1898, and the decrease of menorrhagia was accompanied by a decrease of mental symptoms. Six months after her marriage she had a prolonged febrile illness which was diagnosed with some hesitation as enteric fever; in this the mental symptoms were very pronounced and there was great insomnia.

When first seen by me she was anæmic and very thin but without positive signs of disease except the menorrhagia already mentioned. The temperature was normal; the tongue was fairly clear and moist, though she had much constipation. The heart sounds were normal; the pulse was small and rather tense but regular; the lungs were normal; sensation, muscular power, smell, taste, and hearing were unaffected. The knee-jerks were present. There were no tremors and no giddiness; the pupils reacted to light and accommodation; the movements of the eyeballs were normal. There were no ovarian tenderness and no tenderness along the spine. The urine was normal. The appetite was poor, especially during the daytime, when she took her meals alone. On Nov. 24th she again came to me complaining of headache. She was at the end of a menstrual