attention to the general hygiene as to the question of feeding, and he may at the same time prescribe cod-liver oil and a haematinic, of either of which, however, it is doubtful if much is absorbed. Every one has had the experience of seeing marked improvement take place in two or three weeks. It may not be possible for these poor people completely to revolutionize the hygienic conditions of their homes, but it is certainly possible to take the child out more often into the open air, to give him a daily bath, and to practise a little massage and passive movement of the limbs. Much more easy is it, to my mind, materially to alter the hygiene of the child than the manner of feeding, even to a slight extent. Will a child who has been accustomed for many months to "the run of the house," with all its attendant delicacies, allow much curtailment of its diet, and remain quiet on a simpler and healthier fare? Even should this revolution in feeding take place, will the intestinal mucosa return so speedily to its normal, and allow of perfect absorption? Again, there are cases in which it is impossible to detect any fault in the manner of feeding, though the mother will frankly admit not taking the child out in case it might catch cold. Holt, though he holds that rickets is due to incorrect feeding, admits that he cannot find any error in the dieting of the negro and Italian children in New York.

In the majority of cases a child develops rickets before it has learned to walk, that is, when it is still dependent on its mother and nurse for its exercise. There are many cases, however, in which the child has commenced to walk only to go off its feet later and become markedly rachitic. Perhaps in most of these instances the condition is secondary to some illness, as, for example, measles with bronchitis; and, in order to avoid a recurrence of the complication, the child has been kept indoors, and guarded against the slightest draught of fresh air. But there are other cases in which there is no such history of an intercurrent illness, but owing to the mother being pregnant, or ill from some other cause, the child has not been taken out sufficiently often. In neither of these classes of cases can we call to our aid as a cause the manner of feeding: for months the feeding has been the same, and in many instances such as we cannot take the slightest exception to. In all, however, we get the same story of confinement, and the explanation of the condition lies in the want of exercise.

It is on the ground of the above experiments and facts in the child's history that I am forced to the conclusion that want of exercise is the chief etiological factor in this unfortunately too common malady. It is possible that there may be a toxin responsible for the immediate results, but without lack of exercise this toxin will not produce any injurious effects. We may surmise that the lack of exercise and fresh air may be productive of a certain amount of perversion of metabolism, which allows of the generation of some harmful product, and so by auto-intoxication brings about the disease. But until this specific toxin is isolated and its nature and mode of formation understood, any such idea is mere theorizing and an easy refuge for ignorance. Typhus fever does not arise *de novo*, and yet we know that somehow or other overcrowding allows the disease to proclaim itself, and by legislation against overcrowding this disease has been kept at bay. Overcrowding and typhus fever are no more closely related to one another than lack of exercise and rickets, and by instilling this fact into the minds of mothers, and especially those of the poorer classes, as well as into corporations who have the welfare of the infant race at heart, rickets would undoubtedly become a very rare disease. Far be it from my intention to belittle dietetics, which is one of the most important branches of pediatrics. Faulty feeding is the cause of much of the infantile mortality, but that it plays any important part in the etiology of rickets is very doubtful.

CONCLUSIONS.

1. Not one of the many theories which have been elaborated to explain the cause of rickets has been universally accepted, and they all lack, not only from the clinical but also from the experimental aspect, unequivocal proof.

2. It is some error in feeding which, in this country and America, is commonly believed to bring about the disease, but it is doubtful, however, if feeding plays any important part in the etiology of rickets. Experimentally I, like

several other observers, have been unable to cause the condition by improper feeding.

3. By confining young dogs and depriving them of exercise, rickets has been invariably induced, as in the experiments detailed, and that although their diet was beyond suspicion, the air which they breathed pure, and their kennels were kept scrupulously clean, whereas control animals allowed exercise, but otherwise similarly treated, did not become affected.

4. Examination of the conditions under which rachitic children are reared reveals one constant and invariable factor in their lives, namely, confinement. Alike, then, on clinical and experimental grounds I accordingly conclude that confinement, with consequent lack of exercise, is the main factor in causing the disease.

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CLINICAL NOTES ON SOME CAUSES OF PERITONITIS OCCURRING DURING THE COURSE OF PREGNANCY.

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CONDITIONS likely to produce peritoneal inflammation are fortunately not of common occurrence in pregnant women, for when they do arise their course is often more severe, their prognosis graver, and they are likely to seriously affect the pregnancy; so, too, they are more easily overlooked, and their diagnosis is in all cases arrived at with greater difficulty.

The more usual causes of peritonitis in women are appendicitis, salpingitis, rupture, complete or partial, of ulcers of the stomach, inflammatory changes in cysts of the ovary with or without torsion of their pedicles, and degenerative changes in uterine fibroids. Peritonitis due to salpingitis, though of extreme frequency in the non-pregnant state, is but rarely seen during pregnancy. The reason for this is probably that salpingitis diminishes the possibility of pregnancy.

Gastric ulcers seem to be of infrequent occurrence during pregnancy, though some years ago I saw a fatal case of general peritonitis due to the rupture of an ulcer in a pregnant woman.

The special interest in all causes of peritonitis arising in pregnancy is dependent mainly on the variations in the clinical course which the process is likely to run, especially with reference to (1) the symptoms, complications, and prognosis, (2) the effect of the disease on the pregnancy, and (3) the special difficulties in arriving at a correct diagnosis of the particular lesion present. With regard to the effect on the pregnancy, we have to consider on one hand the effect of the morbid process itself, and on the other the effect of the necessary surgical treatment.

There is, I think, no doubt that shock produced by physical or mental processes may lead to abortion, even if there be no interference with the uterus or abdomen; much more so is this likely to be the case if an abdominal operation is necessary. Especially is the effect to be feared in women of very nervous temperament. While, therefore, it is unwise to perform an operation of any importance during pregnancy, except in the case of urgent necessity, it is possible that with greater experience and with modern methods and technique the fear expressed by the older generation of surgeons of operating during pregnancy will be shown to be in great measure unfounded.

Certainly to-day major operations of urgency are done again and again, without ill effect, and I have myself on divers occasions operated for such diseases as gall stoner, hydatid of the liver, renal calculus, and for ovarian cyst,

without uterine disturbance, and many other surgeons have had a similar, more extensive, and varied experience. Some little time ago I had the opportunity of seeing a colleague, operating for intestinal obstruction during pregnancy, resect a portion of the large bowel and make immediate anastomosis, with most satisfactory result, the patient being safely confined a few months afterwards. It is, however, when peritonitis in its various stages arises in the lower abdomen that abortion, with all its dangers probably increased, is extremely likely to take place.

APPENDICITIS.

Appendicitis, so common in the ordinary run of surgical practice, is of very infrequent occurrence during the course of pregnancy. Pregnancy does not seem to be a predisposing cause of appendicitis, nor is it certain that its effect is likely to be injurious, in that it may relight old trouble in the appendix. Some writers, however, maintain the likelihood of this latter effect, for the reason that the uterus in its enlargement may stretch adhesions, or further increase any kinking of the appendix.

All degrees of appendicitis may be met with during pregnancy, from the mild, so-called catarrhal form which will quickly subside without complication, to the most acute fulminating form. Of the great majority of cases it may be said, however, that they are distinguished by the severe course they run, and the certainty that if left, however mildly the onset may have been, an abscess will ultimately form. Now not only is the presence of an abscess always of serious import, making the prognosis graver, both as affecting the patient's life, the length of the illness, and the after-strength of the abdominal wall, but occurring during pregnancy its effects are likely to be yet more serious and far-reaching. In all pelvic abscesses, and in the later months of pregnancy in those in the iliac fossa, the uterus will form some part of the boundaries of the collection of pus. Its wall and possibly the right Fallopian tube will be bathed in pus, so that it is little to be wondered at that abortion is an almost certain concomitant of abscess formation. According to Heaton,² in 86 per cent. of the cases in which pus has formed abortion or death of the fetus takes place. The contracting uterus during the expulsion of its contents recedes into the pelvis, breaking down adhesions and spreading pus into other localities, thus intensifying the dangers of the disease. Infection spreading to one or other of the Fallopian tubes renders the future onset of sepsis in these organs possible.

The symptoms of appendicitis in both severe and mild cases are too well known to require consideration or enumeration as such. It is the question of arriving at a proper appreciation of what is actually taking place in the pregnant abdomen which may tax all our powers of diagnosis. It is the possibility of the occurrence of symptoms during a simple pregnancy with more or less close resemblance to those produced by early peritonitis which may confuse us. Indeed, without a very close and minute examination, it is quite possible to miss the import of the early symptoms altogether. The vomiting is extremely likely to be overlooked, or considered by the patient as pertaining to the pregnancy. Shivering is now and then seen in an otherwise normal pregnancy. Pain, too, coming on in paroxysms may be present when everything else is apparently quite normal. This may be acute and localized to one side of the uterus or pelvis. What the cause is is not always easy to say. It may be due to painful contractions of the uterine muscle; again, in some few of these cases it is due to pregnancy commencing in the angle of the uterine cornu—the so-called angular pregnancy—a condition likely to be accompanied by a considerable amount of pain during the first few months. The presence of a projection of the uterine wall, and the absence of fever and other usual signs of inflammatory disease would enable us to exclude appendicitis.

Of other conditions likely to cause confusion, haemorrhage into the uterus should be borne in mind as producing pain, abdominal rigidity, and tenderness. Commencing abortion has more than once been taken for appendicitis, and on several occasions I have seen patients sent into hospital suffering from the retention of the septic remains of an abortion with the diagnosis of appendicitis. The pain, abdominal tenderness, rigidity, and general appearance of illness of the patient all conduce to this mistake. The converse mistake—that of overlooking an abscess due

to a perforated appendix—is also easy, and its consequences likely to end disastrously. The following is a short history of an instructive case bearing upon this point, and also upon some other points of the symptoms and diagnosis:

A primipara, 25 years of age, was admitted into hospital, with the statement that she had aborted in the fourth month of pregnancy, and that she was suffering from puerperal sepsis.

History.

A week before admission she had been seized while in bed with acute pain in the abdomen, and had vomited several times. The pain had become less for a couple of days, and then became worse again, accompanied with "spasms in the stomach." Some bleeding had then occurred from the vagina, and two days before admission she had passed several clots. She continued to be in great pain, which now and then had exacerbations, and there was vomiting and feverishness. On admission the patient looked very ill, had a dry, furred tongue, pulse 120, temperature 103°, and rigid and tender abdomen. The abdomen was not moving with respiration, and the tenderness was acute just over the pubes and in the right iliac fossa, here too the rigidity of the wall was very marked. Bleeding was taking place from the vagina, the discharge was not offensive, the os was open and occupied by a clot. The uterus was enlarged, its movement caused great pain, but beyond this, owing to the great tenderness and rigidity, nothing further was noted. The patient was very uncertain as to whether she had had any previous abdominal trouble or no.

A consideration of the way the illness had commenced, its onset in bed with vomiting, the great tenderness and rigidity of the abdomen on the right side, the fact that the high temperature seemed out of proportion to the early abortion, and the character of the discharge from the vagina, led one to the conclusion that the primary disease was appendicitis, that an abscess had formed and that a normal abortion was an after result.

Operation.

Operation revealed a large abscess bathing the back of the uterus, this and the right Fallopian tube were coated with lymph. A gangrenous appendix was found as the cause, and removed.

After-history.

With the exception of some slight trouble with the uterus for a few days the patient made a satisfactory recovery.

A somewhat uncommon disease to which attention has been directed in recent years, the pyelonephritis of pregnancy, due to the infection of the upper urinary tracts by the colon bacillus, may very closely simulate appendicitis. This condition is signalized by sudden acute abdominal pain, vomiting, fever with quick pulse and furred tongue, and is accompanied by the presence of albumen and pus in the urine, from which fluid the bacillus may be cultivated. The pain and tenderness in the abdomen will be found on careful examination to be more intense in the "kidney region," both in front and behind, and not, to such an extent, in the iliac and pelvic regions. The abdominal wall does not seem to become so rigid in these cases; indeed, in a patient I saw some little time ago the abdomen was quite soft.

Another condition to be borne in mind in cases of anomalous pain in pregnancy, especially if abortion is threatened or taking place, is the colic of lead poisoning; cases of this nature are continually cropping up to entrap the unwary. Finally, as by no means to be despised as a very real source of possible error is the abdominal pain due to the presence of intrathoracic mischief.

With regard to treatment, the duty of the surgeon is plain. Bearing in mind the extreme likelihood of the disease running a dangerous course, and the rapidity with which its stages are passed through, the appendix should be removed immediately the diagnosis can be made in any case of pregnancy. If this be done in an early stage the risk to the patient is slight, and the chance of the pregnancy being undisturbed is good. In no case should any attempt to empty the uterus be made with a view to influencing the appendicitis.

The following case, which was referred to me by Dr. A. E. Naish, is a good example of the benefits of early interference.

A woman, aged 20, in the seventh month of pregnancy, was admitted into hospital suffering with acute pain in the abdomen.

History.

The day before she was suddenly seized with pain in "the right side of the stomach; it was so bad as to double her up, to make her shout out, shiver, and sweat." She vomited several times; the bowels, though constipated, had been open that day. The pain continued through the night; it was constant, though with exacerbations. Dr. Naish saw her next day, diagnosed appendicitis, and she was admitted under my care.

The patient had the typical pinched abdominal face, the tongue furred but moist, pulse 104 (when Dr. Naish saw her it was 120), and temperature 99.4°. The abdomen was distended in its lower part, the summit of the uterus being palpable a little above the umbilicus. The muscles were tense, the rigidity being most marked over the right iliac region. There seemed to be extreme tenderness over the whole of the lower abdomen. As the patient was of a very nervous temperament, there was doubtless an element of exaggeration about some of this. She seemed, however, to be constantly in great pain, and every now and then, although not being touched, cried out on account of it. On vaginal examination nothing abnormal was to be made out; the os was closed, and there was no discharge of any kind. With the exception of varicose veins during the last two months, she had always been healthy. There was no history of any previous attacks of abdominal pain whatever.

Operation.

The abdomen was opened through the border of the right rectus in the usual way. A small collection of sero-purulent fluid was found to the outer side of the caput caeci, and the appendix led from here to a point behind the uterus, where it was acutely kinked on its long axis. There was lymph on the back of the uterus and on the right Fallopian tube. The appendix was easily removed with small disturbance to the uterus, and the abdominal wound closed in three layers, with the exception of a space at its lower extremity to allow a very fine drainage tube to pass down to the caecal region. This was only following my usual plan of sewing up the wound as closely as possible round the drainage tubes (usually only one) in all cases of appendix abscess. Although in some cases the wound breaks open in part, yet in many cases it does not, and in all the method shortens the period of convalescence and is a great preventive of hernia.

After-history.

The tube in this particular case was removed in thirty hours, and the patient made a rapid recovery, leaving hospital at the end of the third week with the pregnancy undisturbed.

The appendix was a long one; its distal half was swollen to three times the diameter of the proximal, was acutely inflamed, almost gangrenous in patches, and covered with flakes of yellow lymph.

This case well illustrates the rapid course of the disease, for, although operated on within twenty-four hours of the onset, an abscess was forming, and the appendix was on the point of gangrene. It also shows the happy result that is likely to result from early operation.

TORSION OF OVARIAN PEDICLE.

The next condition likely to cause peritoneal symptoms that I shall allude to is torsion of the pedicle of an ovarian cyst or tumour. Such twisting of a pedicle is not an uncommon accident, it arising in probably 10 per cent. of patients with such cysts.

The growth of the pregnant uterus, as also the sudden emptying of the same, is held liable to cause this condition. Twisting of the pedicle of a cyst obstructs the blood supply to its walls, and several serious complications are liable to arise therefrom. The first result is that bleeding takes place into the cavity of the cyst. This may be very great indeed, leading in some cases to rapid death of the patient, and always producing shock and pain. Then the interference with the blood supply to the cyst wall leads to degeneration, infection of the tissues by the colon bacillus, and even gangrene of the cyst wall. These latter changes rapidly induce the onset of peritonitis.

The symptoms of this accident—more or less severe pain in the lower abdomen, with collapse, vomiting, abdominal rigidity, followed rapidly by great tenderness of the abdomen and fever—will, if the presence of a cyst has been previously known, readily lead the surgeon to a correct conclusion as to the condition present. Failing the previous knowledge of a cyst the diagnosis in these cases may be anything but certain, for the rigidity and tenderness render any examination of the abdomen or pelvis difficult and of small value. At least an anaesthetic and probably only a laparotomy will make things clear. Abortion is extremely likely quickly to follow torsion of a cyst pedicle, whether operated upon or not. One of my patients aborted a full week after operation, having up to then experienced no trouble of a post-operative nature. In the obscure cases many of the factors that have to be considered in the diagnosis of appendicitis will also require to be considered here. With the exception of appendicitis itself, for the pain, tenderness, and rigidity may be markedly right sided, the possibility of the presence of haemorrhage in or without the uterus has always crossed my mind. In the latter case the usually afebrile course and the position of the tenderness and swelling would usually point to the state of affairs.

The following case, in which twisting of the pedicle of an ovarian cyst had taken place, came under my notice some little time ago, and I give the history as it serves to illustrate the clinical course of such conditions and the difficulties which are met with in the diagnosis.

A woman aged 28, a patient of Dr. G. H. Dawes, was admitted into hospital complaining of severe pain in the lower part of the abdomen, mostly on the right side. She was about four months pregnant, and gave the following history:

History.

About a fortnight before admission she had a fairly severe attack of pain in the abdomen, while in bed in the early morning. It was accompanied with vomiting. She attributed this attack to having strained herself the previous day while lifting a cradle. The pain gradually passed off, and she had no more until three days before I saw her. She had noticed that the abdomen was enlarging rather more rapidly than she thought right. Then the pain commenced again, and, like the first onset, in bed in the early morning. It was "very bad pain indeed," and came on quite suddenly, principally in the right iliac fossa. She vomited shortly afterwards. The pain remained a constant one, and vomiting occurred at frequent intervals up to my seeing her.

Her bowels had been constipated for some time. Before the attack a fortnight before this she had never had any pain in the abdomen.

The patient was pale and collapsed, pulse 130, temperature 100°. The abdomen below the umbilicus was uniformly distended, its walls were held rigidly contracted, and it was very tender, especially to the right of the middle line. There was no movement of the abdominal wall below the middle during respiration. No tumour could be detected by palpation, only a sense of resistance passing from above the pubes into the iliac region. There was no vaginal discharge of any kind.

On vaginal examination the uterus could be made out to be enlarged, and movement of it caused a good deal of pain. It was pressed very much forwards and downwards with the cervix high up and posterior. Again no tumour could be detected, though there was something like a resisting body to be felt through the posterior fornix on the right side, and also between the two hands on this side bimanually. Owing to the resistance of the abdominal walls, and the pain produced by any manipulation, examination was very unsatisfactory.

A provisional diagnosis of either appendicitis or torsion of a cyst pedicle was made, and operation suggested.

Operation.

When the patient was under the anaesthetic a tense swelling could be made out in the abdomen just above the pubes and extending into the iliac region. It was not movable. Opening the abdomen revealed a cyst of the right ovary, containing some 60 oz. of blood-stained fluid, with a tightly twisted pedicle, the twist being in the opposite direction to the movement of the hands of a watch. Some soft patches of lymph and adhesions were already forming, and the peritoneum both on the subjacent uterus and abdominal wall was red and injected. The pedicle was ligatured and the cyst removed.

After-history.

The recovery was uneventful, and in due course the patient was delivered of a living child.

The difficulties in the way of making a correct diagnosis are here well illustrated. We have the onset of acute symptoms which are common to every abdominal catastrophe, the pain, vomiting, and shock; the signs of disturbance in the lower right half of the abdomen which could be occasioned by more than one serious disease, and the tenderness, rigidity, and immobility of the abdominal wall pointing to the involvement of the peritoneum. The pulse-rate was above what is usually seen in cases of appendicitis; so, too, was the amount of collapse, and the displacement of the uterus was also a point against appendicitis.

On the other hand, the rigidity and tenderness of the abdomen was rather more than I had noticed before in torsion of a cyst, and our failing to detect a cyst in the abdomen pointed in the opposite direction. It was not until the patient was under the anaesthetic that anything like certainty was arrived at.

RED DEGENERATION OF UTERINE FIBROIDS.

Yet another condition which I wish to illustrate with a case, and which may give rise to alarming symptoms, again emphasizes the ease with which one may make mistakes in the diagnosis of abdominal disease. This condition is that produced by that peculiar change in uterine fibroids known as "red degeneration." In most cases it seems to be attributable to pregnancy. As the result of some nutritional change, induced probably by the pregnancy, a fibroid becomes transformed into a more or less softened mass, whose colour and consistence, when cut into, resembles nothing so closely as raw beef-steak or

liver. The necrotic transformation may be so complete that the centre of the tumour is of a watery or pultaceous consistence, and this may then be absorbed, leading to the disappearance of the tumour. In other cases only the central parts have undergone degeneration, and then we have the firm white, whorled appearance of the normal fibroid unchanged at the circumference of the tumour, surrounding areas of the mahogany-coloured degeneration. The condition is a degeneration or aseptic necrobiosis of the component parts of the tumour. The colour seems to be due to the diffusion of the colouring matters of blood throughout the degenerating part. Fairbairn,³ who first drew particular attention to the subject and investigated the pathology, states that "there is a marked deficiency in the nuclear staining of the tissue cells, and in the more advanced cases this had resulted in an almost total absence of nuclei in the section, leaving only wavy bundles of fibres, which had taken up the ground stain; in some cases the muscle bundles showed signs of granular or hyaline change." How or why pregnancy plays a part in setting up these changes is not clear, but that it does so is probable. Although the condition occurs in non-pregnant women, it attains its most typical form only during pregnancy. Although it is not considered that any organisms play a part in this degeneration, fibroids undergoing this change may cause quite alarming constitutional and local symptoms. It seems not unlikely that these are the expression of toxic absorption of products from the breaking-down tumours. The following case, bearing on these points, came under my care some months ago:

A woman aged 25, a patient of Dr. Robertshaw of Stockbridge, and four months pregnant, was referred to me, complaining of severe pain in the abdomen with constant vomiting.

History.

Four days before admission into hospital the patient had been seized with very severe pain in the lower and left quadrant of the abdomen. She could not sleep for pain during the next night, and next day the pain became so unbearable that she kept to bed. At the same time she became aware that there was a tumour in the abdomen in the painful region, which was extremely tender to touch. Vomiting also commenced, and became very troublesome for the last twenty-four hours before admission, she having vomited everything that she swallowed. For some four or five months she had had increased frequency of micturition, especially during the night, and this had been getting more troublesome of late. Menstruation up to five months ago had been quite regular, not profuse, but accompanied with a good deal of pain. When I saw her the patient was lying on her back, with the knees drawn up, complaining of very much pain in the lower abdomen. The pulse was 120, temperature 101°, the tongue brown and dry. There was general distension of the abdomen, its walls were slightly rigid, and slight tenderness was everywhere present. The summit of the uterus could be felt some little way above the pubes, and attached to its upper left angle was a tumour, somewhat greater in size than two large fists, very tender to touch and very movable; it could be pushed about the abdomen in various directions. Misled by the mobility, I considered that we had to deal with the twisted pedicle of a solid ovarian tumour.

Operation.

On opening the abdomen, it was found to contain a considerable quantity of serous fluid, and the supposed ovarian tumour turned out to be a fibroid attached by a somewhat wide base to the left of the summit and back of a very movable pregnant uterus. Below it was another small one. The fibroids were easily enucleated and the wounds so made carefully sutured with catgut. The peritoneum covering the tumour showed considerable injection of the small vessels and also a number of small haemorrhages, and the peritoneum of the flank also showed signs of commencing inflammation. The progress of the patient was in every way satisfactory until the tenth day. On this day—the stitches having been removed on the previous day—the patient attempted to vomit, and to our consternation the abdominal wound burst open and a quantity of the serous fluid escaped. The wound, which had been sutured previously in three layers, was again sutured in the same way, with the exception that strong silkworm supporting stitches to the deeper layers were this time used.

After-history.

The patient made an excellent recovery, went home well, and five months afterwards was safely confined of a living child. The tumour, on section, shows over the greater part of the area the well-marked mahogany or liver colour of red degeneration. The capsule is roughened, and shows a number of small haemorrhages in its substance. The patient's abdomen became natural in appearance, and all trace of fluid quickly disappeared.

Dr. Frank Taylor,⁴ in a recent full and excellent paper on the subject of Necrobiosis in Fibroids, together with

many other illustrative cases, relates a very similar one to the above which occurred in the practice of Mr. Bland-Sutton, in which, although the same mistake in the primary diagnosis was made, the same treatment was followed by a similar good result.

The interesting points about my case were the constitutional disturbance, the great abdominal tenderness, and the great quantity of fluid that was present in the peritoneal cavity. The presence of this fluid was indeed curious. It might be that it was the result of the irritation of the peritoneum by the products of the change in the fibroids; indeed, there might have been some infection of the fibroid by the colon bacillus, and the fluid be comparable to that which is sometimes found in large quantity in cases of appendicitis, even when there is no gangrene or perforation of the appendix. Unfortunately, no bacteriological examination was made, so that the question cannot be decided.

The foregoing remarks imperfectly deal with a series of cases which are alike in that in all of them there was the sudden onset of acute and alarming intra-abdominal mischief during the course of pregnancy, and in all the involvement in greater or lesser degree of the peritoneum, with its risks to the lives of the patients and to the continuance of the pregnancy. Incidentally is shown how they all may be successfully dealt with by prompt surgical interference.

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ON THE MENTAL NERVE AREA AND ITS RELATION TO THE GREYNESS OF HAIR.

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[WITH SPECIAL PLATE.]

THE mental nerve area is unique in this way: it is the only nerve area which can be completely covered with hair, and in which, at the same time, there is so little overlap from other nerves. All other nerve areas are either more overlapped by neighbouring nerves, or they are not completely covered with hair. Hence the mental nerve area is the most interesting and instructive nerve area in the human body in which to study the incidence and spread of the hair's greyiness or whiteness.

It will be seen in this article that the points of incidence and area of spread of greyiness indicate a neurotrophic cause for both to perfect demonstration.

Figs. 1 and 2 show the mental region (blackened) as worked out by Dr. Henry Head as being the area which becomes tender in certain affections of the organs of the head and neck. The figures are reproduced with his kind permission from his article in *Brain*, vol. xvii, On the Disturbances of Sensation, with Special Reference to the Pain of Visceral Disease. Figs. 3 and 4 are photographs of a man whose beard has become white on the area seen in Figs. 1 and 2. Fig. 3 is very striking in that it shows the absence of whiteness beneath the lip on the man's right hand side, and the absence of whiteness below the lip on the left side is the same, but, unfortunately, the moustache covers the beard on this side. Compare Fig. 3 with Figs. 1 and 2, and it will be seen that the mental nerve area described by Dr. Head does not cover the chin immediately below the mucous membrane of the lower lip.

It can be claimed that the posterior margin of the white area of the beard in Fig. 4 corresponds exactly with the posterior limit of the mental area in Dr. Head's diagram in Fig. 2, hence the area of whiteness is identical with the mental area described by Dr. Head. I have seen the mental areas practically free from white hairs whilst the whiskers have been white, and the line of demarcation between the two corresponded exactly to the posterior line of Dr. Head's mental area. Fig. 5 shows the maximum point of the mental area, and is taken from the same article of Dr. Head to which reference has just been made. Fig. 6 shows the beard of a man whose greyiness began on this maximum point on both sides; the left side began first. The posterior limit to the