On Appendicitis: with special reference to diagnosis.

"Appendicitis" is a term which has only recently been employed in medical phrenology. Its use, I take it, implies a growing conviction of the responsibility of the Appendix vermiformis for most of the pathological conditions which formerly were included under the heads of Typhilitis, Perityphilitis and Paratyphilitis. It implies in short, the general appreciation of the fact, now made clear by the progress of anatomical, pathological and surgical knowledge, that while the appendix itself plays a comparatively secondary part in the production of perforation of the intestinal tube, and of consequent inflammatory changes starting from the right iliac region, the appendix, on the other hand, is highly treated, as it has been quaintly put "in a step motherly fashion," and somewhat overlooked by pathologists, has a very
important bearing. The researches of Fitz and others show conclusively that this is so, and the term Appendicitis is therefore a convenient and expressive one. It is sounder than its predecessors which were based on partly incorrect ideas of the anatomy and pathology of the region. It includes the conception of catarrh of ileum or
perforation of the Appendix and of other causes, also of the inflammatory processes resulting from them, external to the ileum, and within the cavity of the peritoneum.

It is only comparatively of recent years that the subject has excited very much interest or attention, and even still the information acquired on it has hardly become so crystallized, so to speak, as to find a place in even recent editions of standard works on Medicine and Surgery. The older authors are either silent on it, or discuss the subject with a few lines. Our knowledge of it must therefore be sought in the form of solution as if scattered amidst the vast mass of medical periodicals and reports. It would seem as if
The advances which have taken place in abdominal surgery, which have at once rendered possible the treatment, and thrown light on the conditions of many chronic abdominal affections, have stimulated the study of this interesting remedy.

It is not my intention in this paper to touch more than incidentally on the pathology or treatment of Appendicitis. Both are, indeed, instructive and fruitful topics: but it is chiefly with the question of diagnosis that I propose to deal—a very weighty one.

For whilst, on the one hand, the recognition of the disease clinically may be very difficult, and fraught with various possibilities of error; on the other hand, it is frequently of the highest importance for treatment—and especially for surgical treatment—that the disease should be localized, if possible, and that with the least possible delay. For here, certainly, operative treatment, to be effective, must in the majority of cases be early. Otherwise it may well turn out to be that as Dr.
Goodhart puts it "a few hours pass by, and the patient is unchanged, and the surgeon for that case has set. It is to this for question of diagnosis, then, that I chiefly address myself.

Appendicitis presents itself clinically under various aspects, in various grades of severity. It may break out suddenly, in an acute form, leading rapidly to the worst acute diffused peritonitis; or alternatively to localized abscess formation - a form of acute supplicative peritonitis. As a rule, the course may be extremely rapid; the tendency is towards a quickly fatal result. It is this variety which is capable of almost surgical procedure.

Or it may appear as a comparatively mild and lamellar disease readily amenable to purely medical measures, capable of speedy resolution, and rarely leading to death.

And again the disease may assume a chronic form. It
sympathetic at first acute, gradually subsiding only to burst out again and again at short intervals with renewed and even increased severity. This form again is very amenable to surgical treatment.

The Acute form usually manifests itself quite suddenly, often in a person who has previously been in perfect health. Sometimes there is a history of constipation or diarrhoea, or other digestive disturbance, and occasionally of precedent undefined abdominal pain or uneasiness, although this is by no means common, but very occasionally there the illness is dated from a chill, from some blow or injury, or sudden strain; and how and then from some unusual exciting which has been immediately followed by a sense of something having given way within the abdomen. The disease is more common in the male than in the female. Of exceptional occurrence is infancy, it is common in childhood. The period of election would appear to be between the ages of 10 and 30. After the latter age its frequency declines, and it is rarely
met with after 40, and in the later periods of life. It is by no means uncommon to find that a similar illness, often of slighter severity, has been previously experienced.

There may be an initial chill or rigor, but this is not constant. The cardinal symptom which is complained of is abdominal pain, and generally it sets in suddenly and is very severe. Dr Samuel Fennwick states that of eighty-five cases collected by him, in sixty-three pain was the first symptom (Lancet 1881 p. 1039). The pain may make its appearance from the outset in the right femoral iliac or it may be at first diffused over the whole abdomen. Sometimes the hypo-gastric is most complained of, or as so frequently happens in abdominal diseases, it may be referred to the region of the umbilicus. It may even occupy the epigastrium or the left iliac region. The pain may radiate into the testis, the groin and perineum, and the thigh. Very often the pain is accompanied
or rapidly followed by vomiting. It may be very slight, or may be a marked and very distinct feature—food and medicine being persistently rejected, and it often assumes a necrosed, cachectic, condition. The tongue generally becomes fissured, dry, or glazed. The bowels may be constipated, or can frequently be relaxed. Rectal tenesmus is not an uncommon feature, and is often accompanied by frequent painful rectal distension, resulting in the passage of only a very small quantity of melena. The pulse is rapid and unstable, and remains so even if other symptoms appear to ameliorate. The temperature shows a constant degree of elevation. It is rarely high. Usually it stands at 100° or 101°. Sometimes it may reach 103°, or it may stand at 99°. In cases in which collapse rapidly occurs the temperature may be decreased below the normal; but even when this is not the case, it frequently rises to a normal or subnormal level (generally after a period of great elevation) and
during the continuance of the disease. Tenderness on pressure soon presents itself, and is usually but not always most marked in the right iliac or hypogastric regions. It may be generally diffused over the abdomen, and is sometimes very severe. The slightest touch eliciting acute pain. The situation of the maximum tenderness or pressure is a valuable aid to diagnosis for it may be localized in the iliac region, while the pain is referable to some other part of the abdomen.

M. Burney of New York has pointed out that in adults the point of greatest tenderness of pressure in most cases (a right figure being employed) is situated between an inch and a half and two inches on a straight line drawn from the anterior superior iliac spine to the umbilicus. The determination of the point in regard to being palpable is more difficult. (New York Medical Journal Dec. 21, 1889 and Baird's Retrospect I 1890.)

Stimson confirm M. Burney's observation, but is disposed to limit
its due to the earlier stages, before the abdomen has become tense, and before the formation of a large abscess. He finds also that in some instances, the point may be somewhat lower down or even a wider area than D. M. Ramage indicates. (New York Med. Journ. Oct. 23rd 1890. and 1891. Taken in conjunction with other signs, this one may prove a valuable aid to differential diagnosis.

The abdominal muscles on the right iliac fossa are usually rigid. The rigidity comes on at an early period, and can be clearly distinguished as being much more pronounced than on either part of the abdomen. Frequently the abdomen becomes distended and tympanitic. When the disease leads to general peritonitis, the whole abdomen is distended; when only a localized abscess is formed, the lower abdomen only is distended, or there may be only fulness over the iliac fossa or hypogastrium. According to M. Ramage (loc. cit.) abdominal distension is no measure of the relative severity of the case. It may be marked in a mild case, slight or only slight in a very bad one.
At some period of the case, tumour is usually to be made out. In the earlier stage and in those which proceed rapidly to a fatal issue, there may be only an undefined sense of resistance. In those of longer duration, it gradually becomes more perceptible. When present, it may give rise to dulness on percussion, but this may not be easy to make out at an examination. For the differentiation between it and the anterior abdominal wall of a coil of intestine containing air may give rise to a tympanitic note. In many cases the tumour is best defined by an examination by rectum, or per vaginam. The administration of an anaesthetic is generally necessary to the satisfactory accomplishment of such an examination. Difficulties are rarely to be made out, except in cases of long continuance: it manifestly is largely dependent on the depth of the abscess from the surface, and on what lies between. The tumour is found in subsequent examination to be very variously constituted. Sometimes it is composed of a mass of intestines, united together by lymphs, and ending in a muscular or distended appendix.
appendix forms the tumour. In a case of Mr. Runney's it consisted of such an appendice enveloped in folds of thickenedomentum.

The character of the disease varies a good deal, according as it leads to general peritonitis, or to a more localized peritonitis ending in abscess. In the same event the origin of general peritonitis rapidly supervenes, and the local origin is frequently quickly obscured by the general severity of the disease. The first distinct signs of abdominal disease may be rapidly followed by perforation and even fatal collapse. But, as was pointed out by Lendar, one of the first to make an exhaustive survey of the subject, (Archives Générales de Médecine, 1859, tome xiv) general peritonitis is the rarest event, never than in perforation of other parts of the intestine. Collapse may follow or mediate, and in fatal cases which follow the perforation of a gastric ulcer, but usually the process of ulceration which precedes rupture proceeds so slowly that a certain amount of adhesions and conservative peritonitis is set up, which may shut the abdominal opening off from the general peritonitis.
cavity, and so ward off the more rapidly lethal results. In addition, the dependent position usually occupied by the appendix is not favorable to the rapid diffusion of any fecal material if it may contain throughout the peritoneal cavity; and moreover, the contents of the bowel at the point of perforation, being the contents of the stomach, and at the same time usually of more consistence. Thus it is not an uncommon event for a perforation to be found plugged by a lead fecal mass, which has then prevented a diffuse peritonitis. But it is the presence of limiting adhesions which constitute the greatest safeguard.

Localized peritonitis, tending to suppuration, is then the commonest event, and when that is so, the case is longer in duration, and the evidence all points to the ilium from as the chief seat of the two chief. Signs of peritonitis are indeed present, but the tenderness in that region is more pronounced, limma or sense of resistance gradually becoming more and more palpable; but it may be felt for sometime to occupy a fixed position in the direction of the caecum. Tenderness
may be detected in the general region of suppuration begin to show themselves. The patient lies on his back usually keeping his right thigh flexed, and objects to have it extended. Often, especially in children, it is maintained rigidly in a flexed position. It is seldom that there is to be seen any evidence of suppuration on the in the condition of the integuments over the tumour. Yet this is sometimes the case. In a case reported by Godlee in the Clinical Society of London, the position of the abscess was very clearly defined by a reddened area on the skin over the caseous. And in another, a similar red spot appeared in a similar situation, and extended with such rapidity to the axilla, that erysipelas was diagnosed, and an attempt made to stop its progress by painting the skin with nitrate of silver solution.

In a certain proportion of these cases, either from some unhappy accident, or from injudicious treatment, the fluid suddenly formed adhesion as broken down, and the circumference of the tumour is quickly turned into a general purulency, and the patient + Godlee Lancet vol. 1885 p. 1144.
rapidly succumbs from collapse or the general severity of the disease.

Such, in brief, was the course taken by the first case which came under my notice (Case I). The patient was a medical man aged 32. He had an irritable digestive system, and was of sedentary habit and a readiness to all the manifestations of dyspepsia. Coming suddenly into an active practice, and very rapidly acquiring reputation and success, he had been working very heavily above his physical powers, which were not at any time of the most robust.

One evening, when playing tennis, he was suddenly seized with acute pain in the abdomen. He immediately fainted, and when seen, was found sitting up with pain, which was general over the whole abdomen, but most severe in the umbilical region and was of a colicky nature. He presented vomiting several times. A hypodermic injection of morphia, followed by some morphia and belladonna in full doses by the mouth, allayed the pain, and he passed a fairly comfortable night. Next day he seemed better, the symptoms were somewhat
ameliorated, and although the abdomen
now seemed mildly resistant in
plate, his temperature was almost
normal, and really there seemed but
little ground for apprehension. He
himself inclined to the belief that
the attack was merely one of ordinary
colic associated with constipation
from which he had frequently previously
suffered. Accordingly, as his own
responsibility, and in the absence of
his attendants, he sent a servant to
administer a dose of castor oil.
The effects were almost immedi-
ately disastrous and lamentable.
The pain returned with increased
severity; the castor oil did not move
the bowels, but the vomiting was re-
produced. The temperature rose
to 100° and on the right iliac
region a very definite hardness
and firmness of the muscles became
apparent. On the morning of the
third day of the illness the temperature
was 9102°. The face had assumed
a pinched and perturbed aspect; his pulse
was rapid and weak; the abdominal
pain and tenderness were marked.
He was manifestly very ill.
Still some of the medical friend who were in attendance on him reported that anything in the way of his immediately fail'd since was imminent.

All that we could say was, that he had a bad attack of pneumonia, which apparently had not started from the right lobe of his lung, and in his general state of health was not such as for that to be regarded without much anxiety. But we had all seen patient in much worse plight recover. I left him at 10 a.m. in charge of a medical friend, and returning about three hours later, I was horrified to find him in a state of profound collapse. It appeared that about an hour after my leaving him the vomiting was renewed, and in complaints of severe abdominal pain. Shortly afterwards he had a shock of collapse which passed himself. When I saw him he was practically insensible. The face was pale, clean, with perspiration, the pulse extremely rapid and feeble: the extremities cold and already becoming cyanotic: the wisdom fast waning.
Energic stimulant medicines had, of course, been resorted to from the first moment, and were persisted in as long as a chance of success remained. Death occurred about six hours after the first appearance of the collapse. Not till afterwards did we learn that some months before, he had had a severe attack of pain in the abdomen which had necessitated his giving up work for several days, and that he had resumed practice while this pain was still actually present. No autopsy was made: but I think that the facts related justify the diagnosis of perforation of the appendix, and that the sudden fatal result was very possibly due to the breaking down of precedent adhesions, with the escape of peritonitis or faecal matter into the general peritoneal cavity.

This sad case is but an example of a type, in which, before the knell is but half suspected, the invincible course is suddenly interrupted by a violent outbreak, and the patient is placed beyond the reach of help. A very similar case is related in
The Medical Times and Gazette (vol. 15, 1870, p. 497) in that case the initial symptoms were more severe and points more distinctly to the peritoneal as the seat of the malady. After a period of apparent amelioration, the patient was allowed by the nurse to use the right arm. An immediate relapse followed, and death ensued twelve hours afterward in a condition of colicky pain. The autopsy showed general peritonitis, most marked around the lesser omentum, and an appendix which had shrunk almost entirely. Here it was found a concretion and a quantity of fecal matter.

Such termination, however, are fortunately by no means general. The abdomen, walled in by protective barriers of lymph from the general cavity of the peritoneum, may be developed in its own lines, without the intervention of a diffuse peritonitis. In that event, the signs of continued suppuration become apparent. Here is fever of a hectic kind, with vertigo and acceleration, and general debility and emaciation as occasional features, which is
A doubtful case may prove of value for diagnostic purposes, in the occurrence of peristaltic labor, which may either resolve again, or proceed to suppuration and add a complicating feature to it, or. The abscess may become fixed and finally open into some adjacent part of the intestine - the colon, the ileum, or the rectum, and it contains being then evacuated, a spontaneous cure may result. It may be covered behind the ascending colon in the cellular tissue, separating it from the base of the rectum, or even, perforating the diaphragm, lead to peritonitis and pneumoperitoneum. It may descend into the pelvis, or if, as may happen, the appendix be situated either in the pelvic basin, or in the pelvis cavity, the abscess may be pelvic from the first, and may discharge into the bladder or vagina, or may extend slightly still through the peritonism. And finally, the abscess may attack the anterior abdominal wall, or rupture on into the
substance of the psoas and iliacus muscles. It may appear for want
of the iliopsoas ligament, like an ordinary psoas glans. It may even infil-
trate the muscular layers of the thigh, or penetrate the ilium, give
rise to alsees of the hip-joint.

In a case which recently
came under my notice a good many
of the points above referred to were illus-
trated, and as it is a remarkable one, I
intended to give it somewhat in
detail. (Case II). The patient, Owen
K., aged 11, came under observation on
March 14 of the present year. He was a
healthy lad, and had been in robust
health until his illness began, with the
exception of a mild attack of scarlet
fever, twenty-five years before, from
which he recovered very well.

Three days before I saw him he had
been playing football in a cold wind; he
was a somewhat dogged account of
a blow or kick in the abdomen received
during the game. Next day he appeared
out of sorts, and complained of slight
pain in the lower part of the abdomen.
An ointment was administered which
burned the muscles naturally, but
the pain persisted, and he began to vomit occasionally. When I saw him, he did not at first right appear ill. But the pain, although not very pronounced, was quite marked in the right loin region and the hypogastrium, and there was tenderness pressing in these situations. On the right side from the abdominal muscle, small, somewhat contracted and tense.

his temperature could be made out, nor was any dulness in percussion to be made felt anywhere. The tympanum was firm; slightly rumbling was pretty frequent and the rejected matter, consisting of food mixed with a greenish bile, filled. The temperature was 100° the pulse 120. Next day the condition was similar, with the addition of a new feature in the shape of frequent and painful hiccoughs; the very little urine which was passed being colored with urates. There was also rectal tenesmus. The frequent movements of the bowels being accompanied by much pain and nausea. The pain and tenderness had become more pronounced; the temperature went up 99.4°. The changes for the first few
days were not marked. The pain and tenderness gradually extended toward the left loin region. The abdomen became moderately distended, especially the lower part. Presently the intermittent rectal tenesmus ceased; the vomiting became less frequent and gradually finally disappeared. The temperature, however, was over 101°, was often 99.2°, was sometimes normal. The pulse sometimes remained quick and irregular, varying between 120 and 130. Although there was little more improvement in the general symptoms, the pain also being less complained of, there was no diminution in the size of the abdomen; there was more pronounced tenderness in the right iliac fossa, and a sense of resistance, at first very ill-defined, began to be experienced there. After frequent examination, slight dulness was detected, most marked just above the costal margin. The region, in fact, was beginning to be localized in the iliac fossa. Towards the end of the second week, a new feature appeared in the shape of pain and swelling behind the angle of the lower jaw on the left side. A hard bly body formed
but fortunately did not proceed to opera-
tion. By this time the swelling of the head and the ideas of a meningeal attack were clearly marked: and a little fluctuation could be made out. The little patient began to lose flesh and strength rather rapidly. I therefore explained my view of the case to the parents, and urged the necessity of operation into presence.

In my opinion for I took a bad sign.

In the evening the proposal was absolutely rejected, and by way of compromises a consultation was arranged with my friend Dr. Dyson of Ruffield. On the afternoon of that day, however, I was hurriedly notified. I found the boy had been seized with a sudden fit of convulsion since I had seen him earlier in the day: that what he was spitting up was chiefly pus with a marked yellowish matter, which was continually rolling up into the mouth and being spat out. The pulse had become extremely rapid and full, the temperature was 102°, his colour was very cyanotic, and the face pale and somewhat inclined to be cyanotic. The general condition was so
alarming, that I did not venture to make any exhaustive examination of the chest, till I should have had some anx

ous. The administration of stimulants achieved this, and when I saw him a little later with St. Gyeton, we found dhe mon the whole face of the u

rth, with hoarded blood and abundant perspiration. We agreed that the general condition was such as to preclude any possibility of

successful operation, and we entertai the worst phase of the result.

For the next 24 hours the situation was very critical, but at the end of that time there was a free evacuation of the bowels, quickly followed by a second and a third, and with this the ileus commenced rapidly to diminish in size. It is noteworthy that, from the end of the first week of the illness, the bowels had acted without trouble, and that the fecal matters had been fairly firm in consistence. How, ever, the evacuations were fluid, with a few semisolid masses, and rather resembled liquid stools in colour and general appearance. After the lapse of a few days, the abdominal
distemper had wholly disappeared. While
the illis swellip gradually dwindled
away, till it came to be represented
only by a hard lump of the size of a
walnut. It was evident that the
original abdominal trouble was tending
to disappear. The temperature hence
was still persistently elevated, the
pulse rapid. There was still dul
ness on a wide area of the right
lung. Findings could be learned
in places, and the same purulent
material was coughed up. For two
weeks the view was doubtful; but very
gradually, almost imperceptibly, im
provement set in. The expectoration
became more mucous, and less
purulent; it had lost its odor. The
painful, first diminishes; then it
ceases entirely. The temperature
first showed a downward tendency, and
finally became normal, and remain
ed so; the tongue cleaned; the ap
dtite improved. The pulse impro
ed in strength, but its frequency was
large, in disappearing. For several
days it remained 110, but at last it
also returned to a more normal
degree. The lung began to
to clear somewhat, and, in short, the patient began to be enervated, and to put on a little flesh. At the date of writing, the improvement continued, and I have every hope of his complete restoration to health.

In a case such as that recorded, where recovery occurs, there is always room for speculation and difference of opinion, for there is no means of checking clinical observation by post-mortem examination. The existence, however, of appendicitis

**Note - Case of Gwen K.** The subsequent progress of this case has been entirely in the direction of recovery. There is still at this time (April 28th, 1892) some resistance to pressure experienced on palpation of the right iliac fossa, but considerable pressure fails to elicit any pain. There are no chest symptoms, although a certain degree of dulness is still to be made out at the base of the right lung, chiefly in the axillary region. The appetite is restored, and the improvement in strength and general appearance is very marked.
medical literature. Farrnwick (Pamet vol. iii 1844 p. 1040) reports a case when a minute opening, resulting from the perforation of such an abscess, existed for many years in the vagina. It gave rise to a frequent discharge, and was finally closed by the galvanic current.

In the Medical Times & Gazette (vol. i) for 1862, is the report of a paper containing analogous cases. Read before the Royal Medical-Chirurgical Society. In one of these the abscess burst externally over the rectus ligament, discharging pus and faeces.

Another series collected by Moore (Pamet 1864 vol. iii) shows similar events. One of these quoted from Shaw in Transaction of the Pathological Society for 1854. The abscess was in the axilla where the appendix occupied a lumbar sac. Another reported by Rider Bennett, resulted in herniary between the anterior abdominal muscles and the peritoneum. The pus ultimately being discharged in the left groin.

In a third case the abscess perforated the iliacus muscle, and extended through the muscles of the thigh to the knee, causing inflammation of that joint.
And in a few the liver joint was found to lead to prolonged suppuration and acute liver disease.

An occasional, though rare, terminus is the occurrence of pyaemia, with polyphlebitis and abscess in the liver and pancreatic glands. It is possible to term this as usually prevented by the abscess cavity being shut off from the veins by the effusion of abundant lymph. Such a case is reported by Ashby when the liver contained several large secondary abscesses, the spleen was enlarged, congested, and there was in addition pyaemic endocarditis. (Lancet 1879 vol.177 p.649)

A similar case is reported by Robinson, where a brother of the 58th Guards died of abscess following perforation of the appendix, with pyaemic symptoms. An abscess was found in the liver and in several of the pancreatic glands (Lancet vol.1885 p.333).

A still more uncommon event is obliteration of the intestinal ileic artery and death from haemorrhage. A case is recorded by Habershon, however. (Diagnosis of the abdomen p.324)

In nearly all such cases as have been described the Appendix is.
found on subsequent examination to have been the starting-point of the acute illness. It is, from the examination of a large number of cases, comes to that conclusion. (International Journal of the Medical Science. no. clxxxiii. 1881) J. R. Bryce Bucknall, dealing with the cases, seeing for a long period at St. Bartholomew's Hospital, was unable to find any that had original otherwise. (London ed. 1888 p. 653). In a large number, a focal congestion or a gallstone or some other foreign body as a stone or seat of fruit or a piece is found to have been the initial cause of the trouble. But even where the real cause is discoverable, the appendix is perforated, gangrenous or even sloughed off from the caecum, and around it in pus and focal induration in feces or gas quantity. The appendix may also become ulcerated through distension with humor; its outlet being obstructed by contraction of its canal, or by the organ being twisted on itself. The appendix in men is nearly a functionless organ; from an evolutionary standpoint it may be regarded as the degenerate representative of the large caeca of some vegetable.
feeding mammals. Its blood supply is not abundant, while its cavity is adapted for the collection and retention of any pathogenic micro-organisms that may be contained in the intestine. These considerations, among others, may serve to throw light on its liability to external and internal.

But the disease also presents itself in much milder shape. The symptoms are generally those which appear in the more serious variety, but they are not so pronounced. The pain may be hidden in appearance, but it is usually not so severe and it does not extend to more distant parts, nor is it usually referred to the parts of the abdomen than the thighs. Micturition and defaecation are not interfered with. There are no signs, and the wind is not so severe. While there is tenderness on pressure in the abdomen, it is not so marked, and the tenderness is said to be quicker in appearance and less fright (I evens, British Med. Journ., vol. 5, 1880, p. 1036 et seq). It must be confided however, that the differences in symptoms in
real illness of deeper than of kind; and that there in very little in the mode of onset to distinguish the more benign form, in its inception, from that which will end in the most pronounced grade of complications. Can I previously related, as well as the case of通用 K. (Case II) both began with symptoms which one would naturally associate with the ben Xiong kind. It is only by the subsequent course that the distinction is to be drawn: the milder form resolving in a few days, and remaining no times, or but little, of its presence.

Such as case presented itself to me sometime ago. (Case III) An elderly lady, aged 86, was seized suddenly in the right thigh pain in the right thigh form. She was habitually constipated, but had never suffered from any trouble affecting the uterus or its annexes. She had, however, some years before, experienced a somewhat similar attack to that of which she then complained. The language was dry and feverish; the mind felt pretty freely and frequently: the temperature ranged from 100° to 101° 5, and the pulse was...
was rapid. On the eleventh day there was considerable tenderness in the region and the abdominal muscles were contracted. Remembering the case of the commencement of my first case (Case I) I noted that this was with anxiety, but in the course of a few days, the condition began to ameliorate. The temperature fell; the pulse returned to normal frequency and the contractile force of the abdominal muscles gave way. The bowels moved a little convulsively, some tenderness and a sense of uneasiness remaining in the region for one or two weeks, whilst now and then, he had some pain in the same region on movement. He ultimately recovered perfectly but when last I heard from him, some four or five months after he became ill, the lad still complained of pain.

Here are the cases which lead to the primary difficulty in the differential diagnosis of the affection of this region. A large number. the majority are due to a local peritonitis or the case of the origin of the abdominal wall in the
case in itself and consequent colic and delirium - a striking case. The Typhilitic Stenosis of George A. W. But is a certain diagnosis the trouble is due to the case of the appendix, as pointed out by Hevesy (loc. cit.) giving rise to build symptoms and pubis points out. In recent years, without suppuration or general peritoneal involvement. A patient of mine had frequent attacks, and subsequent operation showed diseased appendix but no pus. 

Garnsway (Medical Times and Gazette, 1893) gives the opinion that there is no good reason to suppose that the cases which terminate fatally are those which do not. A patient suffering from pelvis was attacked with the symptoms of Typhilitic and recovered after death from other causes the appendix was found perforated, and outside it was a small abscess which contained several lumps. He thinks that in such cases the adhering change proceed so quickly as to prevent the leisure necessary for infection. Fagg (Practice of Medicine)
of Medicine vi 3 p 173) relates an almost exactly similar case.

The difficulty in practice is that we cannot distinguish those which are going to become troublesome from those which will presently resolve. When there is a history of a previous similar attack, or of several such, I think we may with reason incline to the former supposition. But attacking the question solely itself into one of wait-up, and of individual clinical tact and skill. Samuel T. New York (London Medical Register 1881) says that by the end of the second week the distinction cannot usually be drawn, and that in all that can be said unless one is willing to accept the dictum of the more advanced school of abdominal surgeons and cut the Gordian knot in a doubtful case by exploratory incision.

Closely allied to this doubtful case is the third variety, the relapsing form. Here the primary attack may be moderate in severity and in recovered from, only to be followed by others of increased severity. A hardness
maximum may persist from the first attack as in a case published by Mr. Teale (British Medical Journal vol. 1, 1891 p. 110). There is often persistent constipation, and frequently the attacks recur in spite of the greatest care, so that the patient becomes a chronic invalid. Mr. Teale's patient had four attacks, and was finally cured by excision of the appendix. Hence it is of opinion that the condition is due to disease of the appendix, which does not go the length of producing appendicitis. In a case of his (ibid. vol. 2, 1889, p. 267) the cause of the trouble was an excessively thickened and distended appendix filled with mucus. This is typical in the usual pathology. The appendix is twisted in itself, or it is connected with the cecum by whitish, by contracture following an attack, or occasionally the attacks are produced by the presence of a foreign body (British Medical Journal 1889 vol. 2, p. 1061). There are numbers of such cases reported, in which some explanation has discovered a state of inertia such as described by Mr. Teale.
A disease so varied in its manifestations is sure to give rise to frequent possibilities of error in diagnosis. It is a number of affections which Appendicitis may simulate, or which on the other hand may be mistaken for it. Often the signs are so clear as to leave no room for doubt, but these occur cases to demand the exercise of the utmost diagnostic ability may fail to unravel them, and which even exploring incision may fail to clear up. Each case, indeed, presents its own particular difficulties and doubtful points, and whilst in some it may not be urgently necessary to come to an immediate solution, and we can afford to wait the course of events, yet, if we suspect a disease in which the progress from apparent acuteness to the most grave issues is but a step, we must always feel uneasy till the limit is determined. This applies in the great question of treatment, and more particularly of treatment involving surgical procedure, hanging on this decision.

This question of differential diagnosis is a very wide one, involving
as it does the consideration of a number of very different affections. The final diagnosis would be, in effect, the diagnosis of the differential diagnosis in abdominal disease. It will be sufficient here to describe its chief conditions which may cause confusion, which must at least be kept in mind in coming to a decision.

The most ordinary difficulty I have already alluded to. A simple leucomia, due to local perturbations of the bowels, may be at first indistinguishable from the initial results of disease of the appendix. As I have before remarked, in the commencement the symptoms are similar, only differing in degree. Disease of the appendix being usually attended with grave appearances from the first. Yet even this is by no means infallible. The cases from many hospitals itself will show, or the region may be infected. One of the cases reported by Tuff exhibited this character. A sailor who after his death was discovered to have a perforated appendix, died his work during twelve days before entering the hospital.
If speedy resolution occurs we may presume that we have to do with a single typhilitis. When the case assumes a grave aspect; it may be very difficult especially the tumour, if present, and also if disappearing, we may suspect appendicitis in some grades.

It is pointed out by Habel (Disease of the Abdomen p. 387.) that local peritiuities, or even suppuration may follow an injury in the iliac fossa and may at first give rise to doubt. While the distinction may not be easy to draw at first sight, a time will come when the course of the local affection, with absence of the more pronounced signs of appendicitis will permit a decision to be made.

Such a set of circumstances will however, give rise to anxiety, because, we know how frequently a true appendicitis is associated with a history of injury. Indeed, Habel in relation such a case further on (p. 349.)

Surgical disease with peritonitis has been mentioned as likely to give rise to doubt. It is possible that a very chronic case of ileus from perforated appendicitis might be so
mistaken: and hence notice of a case in which a very chronic and neglected empyema, came, via 2 special absent and then, following the course of the process involved, to address in the clinic, for a. In default of a clear history, it is not yet possible to have been committed in that case. But usually
the careful examination of the patient and consideration of the history will solve the difficulty. In a case of appendicitis, there would be nothing prior to the quiescence, which in this latter case there would be nothing to indicate indwelling of the case. An abscess resulting from case of the ilium, or disease of theseen. Abscess joint, might possibly lead to greater difficulty.

The possibility of confusion with hip disease has been noted by various authors. The error is specially liable to be committed in the case of children. It arises in milder cases in which the thigh is partially flexed, as it often is in such cases, where elevation gives rise to pain. But although there is pain in extension, the hind is capable of normal rotation, and the tenderness in operation into proper relative...
point to the pelvis: there is no adhesions
of the pelvic field, or of the field
of the groin, so general in early lip.
chicine; and a case of appendicitis,
which has advanced to a degree of
involving the case of the lip, will al-
most certainly give rise to distinct
swelling and tenderness in the ileum
fossa.

More important, because
usually more difficult to discriminate
are the intra-abdominal conditions
which give rise to doubt.

Certain conditions connected
with the right kidney may possibly
lead to error. The pain accompanying
the passage of a renal calculus
may in a person who has not previ-
ously suffered in that manner, or
whose history was in unknown, be con-
founded with the pain involving in
appendicitis. Both would give rise
to pain on the right side, spread-
ing downwards into the testicle
and perineum, and right thigh to a
certain amount of muscular and
rectal tenesmus. Both are apt to
be distinguished by a sudden onset.
The error is not, however, likely
to prove of long duration. In the case of appendicitis, the localization of the pain in the ileo-fovea, the condition of the temperature would soon lead to suspicion of the large size of the mass, while an examination of the urine would probably give some hint as to the existence of renal calculi.

In certain exceptional instances appendicitis may be confused with adhesions around the right kidney. Mr. James Low, in his discussion on the "Anatomy of the Infections" (British Medical Journal 1885), states that it is not unusual for the appendix, instead of lying in its normal position behind the termination of the ileum and pointing toward the ileum, to assume a position in which it lies upward, virtually beside the ascending colon. That in such circumstances it may even come almost into relation with the liver and gall-bladder, though appendicitis occurs in an appendix thus placed, it might present appearances very closely resembling a peri-nephritic abscess.
Such an abscess has been known to open in the lumbar region, and my opinion that no actuality of the urine took place, the condition might be very high and impossible to distinguish.

A case quoted by Talaman (Traité de Médicine Moderne, t.1892, p. 31) shows that even exploratory incision was fatal to close up so peculiar a case of circumstances. In that case the patient was seized suddenly with a severe acute disease under the right costal margin, quickly followed by signs of collapse. There were extreme tenderness over the right side of the abdomen, but the pain and tenderness diminished as the diseased area was approached. Exploration was done without result, no diaphragm organ being discovered. At the autopsy the patient having meantime died, a perforated appendix was found which had given rise to a small abscess. The appendix, abnormally long, ran directly upwards behind the cecum and colon.

In such a case also we might easily refer the
Symptoms to come apparent of the
pain, and indeed an attack caused
by the passage of gall. This might
at first sight be confused with
common cases of appendicitis. When
the appendix is normally placed
a few hours should make the
distinction clear. The pain in the
epigastric region, radiating to
the back, and the shoulder.

The pain of an appendicitis, if
it radiates at all, strikes inward
across the iliacus and thence
again the localization of the
origin in the fossa ilium. - Pain
and tenderness, rigidity of the
abdomen would point out the
existence of appendicitis. In
degenerate cases, on the same form.

Still more important is
the very possible confusion with
intestinal obstructions or some form of
intestinal obstruction. A sudden
sudden attack of pain - very often
refers to the right iliac fossa; severe constipation, becoming obstinate constipation; colicky pain of micturition with partial suppression of urine; and the presence of a tumour, one being which may be observed in certain affections.

The confusion is still more confused in this case, in which the coex. coex. value of the intestine in the neighborhood is the seat of inappreciation. There both pain and tumour are in the ileum, hence, in this position they might be expected to occupy the case as one of appendicis.

It is particularly in the case when a sudden peritonitis induces general peritonitis, that the difficulty arises; and, as a matter of fact, the error has frequently been committed. Several such cases are referred to by Salmon (loc. cit. p. 15) in which laparotomy was performed for a supposed strangulated ileum, turning out to be one of appendicis. The differentials of appenexitis mentioned by various authors are somewhat vague.
Tamrick (Sawd 1884 vol. i. p. 104) says that in *Echinolica* the penis is more insensitive, firmness and curvature were severe; the human lovers, some of them, have described the tenderness all signs manifestly bold to prove illusion. The passage for any of blood or urine, also noticed by Tamrick, would certainly suggest the case to the category of intestinal obstructions. The condition of the temperature, given as certain indications, because, although it may be certainly noticed by the patient following performance, it is as often an act longed to the related fact or below by the attendant physician. Talman regards it as only of value in those cases in which the region of obstruction coincides with a localized irritable with oppression. He thinks that in many cases the existence of a high temperature rising in the evening and falling in conjunction with the often circumstances drew, may possibly lead to a correct diagnosis. The sign in which he is most inclined to
place reliance in the acute cases, in the presence or absence of distention of the abdomen. In any case, the decision is on suction or on an enema. In an acute abdominal case, and more particularly in view of surgical treatment. While abdominal suction is equally indicated in either event, the procedure to be adopted if appendicitis is diagnosed is very different — it would depend upon which case would adapt to make a search for strangulated or incarcerated bowels.

It would appear at first sight as though no confusion was possible with typhoid fever. In ordinary well-nourished cases, the chief symptom, the typical temperature curve, the characteristic diaphoresis, the collapsed plane, and later — the typical emaciation would leave no doubt existing yet in certain atypical cases. The abdomi-
can occur. In a recent case of appendicitis, the clinical picture and tenderness with either relaxed or contracted bowel, the temperature rising in the evening and the patient being somewhat of a typhoid type. Such a case is quoted by Hallam (Proc. cit. p. 28) where in the presence of high temperature, constipation, abdominal pain, tenderness, and muscular vomiting, the patient—a child—was reported to be suffering from appendicitis. An operation was proposed, but rejected by the family. An enrollment treatment resulted in the relief of the constipation, and the disease turned out to be typhoid fever with an ordinary course, and a characteristic cutaneous eruption.

A case where appendicitis mimicked typhoid fever is reported by Ward (Camet vol. i. 1861). The matter is complicated by the fact that diuresis of the appendicitis is not altogether a rare occurrence or after typhoid; and might be taken for a relapse of the original disease. In a case reported by Symonds to the Clinical Society of London.
(Cromer, vol. i, 1885, p. 898) the patient suffered from recurrent attacks of appendicitis. After recovering from typhoid, I was called by removal of a calculus which had formed in the appendix.

The most acute form of appendicitis, particularly according to Salamon, when it assumes the recurrent type—may be mistaken for tubercular peritonitis. There is a strong similarity in the region. The patient becomes gradually unconscious. The abdomen is enlarged, and there is pain and tenderness about it, often referred to the hypochondrium. Calculus or pneumonia may be made out. A nodular mass may be discovered which may easily be mistaken for the tumor in appendicitis. The temperature is elevated, especially at night, and now and then, there are severe attacks of pain and vomiting, which may simulate very well the relapse of recurrent appendicitis. The condition of the bowel sometimes resembles vomiting. Constipation would give no definite information. More again the diagnosis may be most difficult.
The chief point to be noted is a careful consideration of the history of the case, the course and condition in tuberculous disease. If there be albumen, the similarity of the urine with the urine of the patient. Paedial examination will give a negative result. The pain and tenderness will probably be more generally diffused, not localized in the right iliac region. It is in such cases that the opinion referred to by Mr. Romney, if clearly made out, would be most useful. Of course, it must be borne in mind of the signs of pulmonary tuberculosis will have a most important bearing, but at the same time it must not be forgotten that, as pointed out by Turner, the signs of the appendicitis in pyo peritoneum may occur in phthisis. (Pallant vol. ii. 1884, p. 987 et seq.) In such cases there is usually previous diseaase, and there are but slight symptoms pointing to the appendix, the pain and tenderness being most slight. In phthisical subjects, the process of ulceration of pyo peritoneum usually
and give ample time for the cancer to exist if proper of conservative adhesions.

The results of tuberculous ulceration of the caecum itself, or of the ileum, would be difficult to distinguish during life from those due to ulceration of the appendix.

Carcinoma of the caecum, or of the ileocaecal valve, is another disease which it may be very difficult to distinguish from the pure acute form of appendicitis; the mistake is the more likely to occur, when it happens, as it sometimes does in young subjects. Two such cases are given by Hackett in Disease of the Abdomen (pp. 358-9). The diagnosis may be still further drawn by the presence of actual perforation and abscess - the appearance of wounds, of blood, of pus, tenderness and tumour - the ileus being more likely to occur equally to either affection; and in the young subject would probably be referred to appendicitis, while in the case of an older patient, over 40, in whom malignant disease is as likely an appendix would be unusual, cancer would probably be diagnosed. In a good many
cases, a history can be got of the existence of a painful tumour, small at first, but gradually increasing in size, situated in the ileum, from which there was no discharge. The tumour, which had been altogether that of the development of a tumour in appendix from disease, may, perhaps, acquired with the appearance of the patient, lead to the suspicion of involvement of the appendix. On the other hand, it would quite easily to make the opposite error, and diagnose cancer when the disease was really appendicitis. The occurrence of secondary tumours in other situations—as in one of Heberden's cases—would be the next certain indication of the nature of the case, but obviously would only be a late symptom.

Refraction of the intestine in other situations than the appendix may give rise to symptoms so closely resembling those observed in appendix disease, that the distinction may be well-nigh impossible during life, unless the case has been under observation previously, and the preceding condition recognized; or, if evidence is available, a clear and distinct account of what ha-
gave before. Exploring incisions may even fail to reveal when the mischief lies. A series of very instructive cases of this kind, is published by Dr. H.C.W. H. MacKinnon (Lancet vol, 1888 p. 1061 and 1117). In two of these cases, which often death turned out to be due to duodenal ulcer, and in a third, in which there was perforation of the gall-bladder, the perforation due to gunshot might well have been ascribed to appendicitis. Perforation of the lower part of the ileum would lead to inestimable error, and any history obtained would probably fail in both the possibility of either affection.

In these very difficult cases the chief dependence must be placed on the previous history of the case if it be obtainable. It is the acute forms of appendicitis which are most apt to be handled by other perforation in the most lasting cases, the absence of pain in the ileal form, and the negative results of examination for tension, might at any rate, prevent of appendicitis being concluded.

Accurate diagnosis is here of chief importance from the point of
views of surgical treatment. The surgeon who has opened the abdomen, expecting to find a diseased appendix which does not exist, will be confronted with the alternatives of giving up the quest or of indulging in a delicate and probably enausious investigation into the real cause of the illness.

In the female, appendicitis is comparatively rare, as appears from Feniard's table (1884 vol ii p. 989) but when it occurs in a patient of that sex, it may be confounded with various pelvic disorders. The frequency of such errors would certainly direct one's thoughts towards them in a doubtful case. Mr. Jones' investigations on the position of the intestines show that both the cæcum and appendix may sometimes become pelvic organs, and lie in contact with the uterus or bladder: and even when the cæcum is normally placed, the appendix, either from unusual mobility or acute curvity of length, may lie over the lining of the pelvis, or actually reach into its cavity. Here it may contact adhesions to various pelvic organs, the bladder, uterine, ovaries, & Fallopian

...
tubes. An appendicitis occurring in an appendix so placed would inevitably give rise to symptoms and physical signs which would be confused with a pelvic disease of some pelvic organ. Cf. other pelvic disorders. Constipation would be most probable in the case of pelvic cellulitis. Both diagnoses would result might give rise to almost precisely similar symptoms, whilst the information gained by vaginal and rectal examination may not help much. The history of the case would form the salient guide. On account previous pelvic disorders, or of recent parturition or other known cause might lead to the case to the category of cellulitis. More drawn to the possible confusion with palpipiti. Such a case is quoted by Salomon (Medicine Medicine 1922. p, 31) when a case which had been diagnosed as palpipiti was found on exploration to be due to a dis tended appendix adherent to the right fallopian tube. Chronic inflammation of the right ovary is not likely to give rise to much doubt of a lancing kind.
But in those cases in which there is acute inflammation or absence of the ovary, the distinction may be impossible. Such a case—a very remarkable one—is given in detail by Dr. H. W. S. MacKenzie (see cit., 1116) the appearance described might well have been attributed to appendicitis. At the autopsy, however, the origin of the mischief was found in the right ovary which had contained an abscess and had set up an acute peritonitis. Particularly severe in the vicinity of the appendix was a large purulent effusion. Another such case is mentioned by Halberston. These cases are, however, extremely uncommon and their only possible solution and solution would, in any case, lie in abdominal section.

Pelvic hematocèle is another and it in which has been mentioned as leading to error. In Halberston's case, in one of which appendicitis was diagnosed and hematocèle was subsequently found, while precisely the reverse occurred in the other case. These cases show that the error is a more possible
one item would appear at first sight
the variety of appendicitis which
is most likely to be mistaken for
peritonitis is that in which a
sudden perforation rapidly induces
collapse and peritonitis. Both affect
the same pain rises to painful swelling
with sudden onset, peritonitis, vomiting
and possible pain and vomiting in
accordance of pain. It is the tumor
that would constitute the chief diagnosis
the point. In a case of appendicitis
the result of sudden perforation, the
would, in all likelihood, be little
or no tumor distinguishable.
One of the most characteristic signs
of hemorrhage, on the other hand,
is the sudden formation of a
large and constant fluctuating
 tumor, distinguishable by region
very unlike any tumor which is
likely to be met with in cases
of appendicitis of equally sudden
occurrence. The occurrence of
the attack is all probability at a
mechanical point, and the rapid
bleeding of the patient, would pro-
ably in most cases lead to the
correct solution. In these cases
in which suppuration subsequently occurs in a haematoma, the difficulty of the history in unknown would be considerably greater.

The diagnostic difficulties which have often embarrassed - very certainly and imperfectly, indeed - to pass in review, may present, I am well aware, as perplexing problems as are to be found in the range of medical practice. In attempting their solution, one point appears to me to stand out saliently. In these dubious cases, it is even more than usually important to obtain as complete and as accurate an account as may be, both of the origin and progress of the present condition, and of bygone illnesses. It is only by that means that we can enlarge and correct the information gained from the observation of symptoms and physical signs; and no one can himself, if that be possible at all, from the masses of mere conjecture.