MEMOIR
ON
TUPHLO-ENTERITIS;
OR,
INFLAMMATION AND PERFORATIVE ULCERATION
OF
THE CÆCUM,
AND OF
THE APPENDIX VERMIFORMIS CÆCI.

BY JOHN BURNE, M.D.

PHYSICIAN TO THE WESTMINSTER HOSPITAL, LECTURER ON THE
PRACTICE OF MEDICINE, ETC.

READ NOVEMBER 27TH, 1838.

SINCE I had the honour of laying before the Society, in May 1836, an article on the Inflammation and Perforative Ulceration of the Cæcum, and of the Appendix Vermiformis Cæci, I have had opportunities of observing and treating more of these cases, which, as they serve to illustrate further the pathology of the cæcum and appendix, will, I trust, be found not uninteresting to the Society.

The cæcum, in common with other parts of the alimentary canal, is liable to various forms of disease; but it is not my purpose, on the present occa-

sion, to treat of the pathology of the cæcum and appendix generally, but to confine myself to those affections which result from the peculiar conformation, disposition, and organization of these parts.

The peculiarity in the organization of the cæcum, which bears upon the present subject, is the absence of a peritoneal tunic at its posterior part, where it is fixed and attached by adipose cellular tissue to the iliac fascia, so that in the event of a perforative ulceration in this direction an abscess would form behind, and without the peritoneum upon the iliac fascia, and direct its course to the lumbar region at the outer edge of the quadratus lumborum muscle, as described in the former memoir.

Now of the whole tract of the large intestine, no part is so exposed to the lodgment of undigested substances as the cæcum, owing to its particular conformation, as well as to its being the portion of the large intestine with which the undigested substance comes first in contact. These circumstances, strengthened by the fact that many of the patients attacked with inflammation of the cæcum remember to have swallowed accidentally, or to have taken as part of their ordinary food, matters likely to pass the stomach in an undigested crude state, admit of the conclusion, that the greater number of the cases of inflammation of the cæcum are to be ascribed to the prolonged irritation of bodies so lodged, and that such inflammations are therefore properly symptomatic; a conclusion borne out, moreover, by the manner of attack, which is characterized by the deve-

lopment of the local preceding that of the general symptoms, and by the absence of the chills and rigors, which usher in idiopathic inflammation. The inflammation is developed slowly in one person, speedily in another, owing to the greater or less susceptibility and inflammatory predisposition of the individual. That inflammation of the cæcum may be idiopathic, and arise from the ordinary exciting causes, cold and vicissitudes of the weather, there can be no doubt; though the instances are rare in comparison with those which may be fairly attributed to the irritation of crude substances, which have reached the cæcum and lodged in its pouch.

The termination of this symptomatic inflammation of the cæcum is usually by resolution; the symptoms yielding at the end of five or six days, and subsiding altogether soon afterwards; except in patients of an inflammatory or gouty diathesis, in whom inflammation once excited will continue in a sub-acute-chronic form, and require several weeks for its removal, notwithstanding the original exciting cause shall have passed away. The termination by perforative ulceration and abscess is rare, and probably never occurs when the cæcum was sound prior to the attack; the open channel of the colon permitting the passage of the irritating body, as soon as the subsidence of the spasm and the removal of the inflammation allow the muscular tunic of the cæcum to resume its function. No instance has come within my observation in which, upon dissection, perforative ulceration of the cæcum has been

found; all the cases of inflammation of the cæcum and of supposed perforation, within my knowledge, having recovered; and, in the cases on record, there is evidence of disease in this gut having existed previously.

CASE IX.

Sub-acute Tuphlo-enteritis, or Inflammation of the Cæcum.

R. M——, Esq., while travelling to town from Herefordshire, on Friday, the 20th of October 1837, was seized with pain in the abdomen, followed by sickness and vomiting. On the second day, in the morning, he was seen by Mr. Freeman, to whom he complained of pain in the right ilio-ingui-nal region, of frequent vomiting, and of an interruption in the usual action of the bowels. Calomel in the dose of five grains was given; and at noon, the symptoms continuing, blood was drawn, and the calomel repeated. In the evening the pain had diminished, and the vomiting ceased, when sulphate of magnesia in mint-water was prescribed. On the third day the bowels acted, and all the symptoms seemed to be subsiding.

On the fourth day the pain and sickness returned, on which account my attendance was requested. I found Mr. M—— labouring under pain, still referred to the region of the cæcum, where I could distinguish a tumour very tender and deep-seated, but not hard; the rest of the abdomen was soft, and

bore pressure without uneasiness; the tongue was furred, the pulse frequent, the stomach irritable; the skin was perspiring, the effect of a hot bath he had just taken. Recognizing this as an inflammation of the cæcum, I questioned Mr. M—— as to what he had been taking lately of an indigestible nature, when he called to mind having eaten some apples whilst out shooting a fortnight before.

Hydrarg. chloridi, gr. $\frac{1}{2}$; opii, gr. $\frac{1}{4}$, every eight hours, with an effervescing saline aperient, composed of Sodæ potassio-tartratis, ℥ij; Sodæ sesquicarbonatis, ℥j; Acidi tartarici, gr. xiv.—Misce.

On the fifth day, some pain and tenderness remaining, eight leeches were applied to the cæcal region; the same medicines persevered in. The result was that the bowels soon acted freely, the sickness abated, the pain, tenderness, and tumour gradually subsided; and in a few days passed away altogether. From this time the recovery was uninterrupted and perfect.

Cases of this description are of frequent occurrence, and, although sub-acute in degree, are well marked; the symptoms pointing to inflammation of the cæcum as the pathological condition. The cause too is obviously referred to the having swallowed some indigestible substance within a short time of the attack. Two cases exactly similar to the above were admitted into the Westminster Hospital in the spring of last year. One of these patients attributed his attack to having eaten raw turnips in the

field, he being in a state of hunger and destitution ; and as the case proceeded portions of broken down turnip were discovered in the evacuations.

CASE X.

Acute Tuphlo-enteritis, or Inflammation of the Cæcum.

On the 15th of November 1835, I was called in consultation with Mr. Cox to visit Mr. S——, a gentleman of middle age, and of full habit and stature. He was very ill in bed with pain, great tenderness, and a deep-seated resisting circumscribed fulness, amounting almost to a tumour, in the right ilio-inguinal region ; the rest of the abdomen was full and slightly tender, but free from pain ; the bowels had been obstinately confined for several days, and sickness and vomiting were frequent ; the tongue was very much loaded, the urine red with copious deposit of the lithates and purpurates, and the skin of a feverish heat ; the pulse was frequent, rather large, but compressible. He had been bled and leeches, had used a hot bath, and taken calomel and purgatives. The countenance was anxious, and he was much exhausted from several days' suffering, as well as from the necessary antiphlogistic treatment.

The disease was manifestly an inflammation of the cæcum. Calomel and opium, with the saline effervescing aperient every four hours, were prescribed : the part to be frequently fomented.

The symptoms persisted for two days, when evacuations took place, and he began to recover. The evacuations, though kept up afterwards without difficulty, were insufficient; and there remained the same deep-seated circumscribed resistance in the region of the cæcum, with fulness and flatulence of the belly, and a sensation to the patient that he wanted to be more freely purged, the bowels seeming to him to act only to a certain point, from which the flatus, instead of passing on, would roll back in the intestines. On this account he took a brisk cathartic, composed of colocynth and calomel, followed by senna and salts. These, instead of producing relief, brought on a return of sickness, an increase of the fulness and of the pain in the cæcal region, and induced us to return to the more mild and appropriate saline aperients, under the use of which the unfavourable symptoms again subsided.

His health, however, did not forthwith return; the tongue remained foul, the appetite defective, and the circumscribed fulness was still to be felt in the region of the cæcum. To resolve this, mercurials were persevered in, and it was not until after five or six weeks of strict regimen, and the daily use of a saline aperient, that all evidence of the local disease passed away and recovery was established.

In another instance, that of Mr. H. F——, a gentleman also of full habit and middle period of life, which occurred in December 1837, there was the same disposition for the inflammation to continue in a sub-acuto-chronic form; as indicated by the

imperfect return of health, by a sensation of the bowels, though open, not relieving themselves fully, they seeming to act to a certain point and there to meet with difficulty and obstruction, causing the flatus to roll back; together with obscure symptoms referred to the cæcum.

In this patient some little angry aphthous vesicles showed themselves in the mouth, phenomena strongly indicative, at this age, of a tendency to organic disease or of its actual existence in some part of the alimentary canal. He experienced also the sensation of requiring strong purgatives, and desired to take them; but the experience of the former case made me object. By the use of a blue pill every third night, and of a saline aperient every other morning, he recovered perfectly in a few weeks.

The tendency in the inflammation to continue in a sub-acute-chronic form, in these cases, should be suspected and narrowly watched, and an abstemious diet with saline aperients and mercury should be insisted on, until all trace of the local affection has disappeared: without these precautions there may continue an obscure disorganizing pathological congestion, which would produce thickening and contraction of the cæcum, with all the sufferings and fatal consequences of permanent organic disease and obstruction of this part of the bowel; as illustrated by the Cases III. and IV. in the first Memoir.

Having witnessed the salutary, and, I may say, the surprising effects of the natural saline springs in

stricture of the alimentary canal, I have strongly advised those patients whose recovery has been delayed, to repair to Cheltenham, or Leamington, or Norwood, for a few weeks; but their affairs not permitting them to leave town, the saline aperients have been substituted, and have hitherto proved effectual.

Of the perforative ulceration of the cæcum from within, no case, verified by dissection, has occurred under my own observation. One is detailed by Ferrall,* in which the patient stated "that he had a cough a long time, and for the last four months had been subject to bowel complaints, occasionally passing blood, and suffering more or less pain in the right iliac region," symptoms which indicated tubercular ulceration of the intestinal mucous membrane. A tumour formed in the right groin burst in a few days, and through the opening were discharged fæces and caraway seeds. The patient died; and on dissection were found several ulcers in the cæcum, one of which had perforated the posterior wall, and communicated directly with an abscess in the iliac fossa, the abscess communicating with the external opening in the groin.

Perforative ulceration of the cæcum from without is common, and takes place in those cases of circumscribed abscess resulting from perforation of the appendix, the abscess bursting into the cæcum

* Edin. Med. and Surg. Journal, vol. xxxvi. p. 12, Case No. 4.

and discharging itself by the channel of the large intestine. This is the most favourable termination of abscess from perforation of the appendix.

Of the Inflammation and Perforative Ulceration of the Appendix Vermiformis Cæci, consequent Abscess, and Peritonitis.

In a former memoir* I took occasion to refer to the conformation and situation of the appendix vermiformis cæci, as influencing very materially the phenomena of inflammation and perforative ulceration of this process. The truth of this opinion, as also the importance of the relative anatomy of this insignificant appendix, has been illustrated by additional evidence, which has further shown how very variously the appendix may be situated in different individuals; this variation depending mainly on the disposition of the meso-appendix.

The origin of the appendix from the cæcum is pretty uniformly at the inferior, inner, and posterior part; while the appendix itself depends sometimes in the pelvis, or more frequently lies in the iliac fossa at the outer edge of the psoas, convoluted beneath the cæcum, and concealed by it; and, lately, I have met with two instances in which it was given off at the inferior, posterior, and outer part of the cæcum, and having proceeded directly outwards for

* Med. Chir. Transactions, vol. xx.

about half an inch, turned abruptly round the inferior and outer portion of the cæcum, and extended its whole length straight upwards along the outer part of the cæcum and colon, and lay in the angle formed by the peritoneum as it passes from the cæcum and colon to the iliac fascia and the loins. The extreme point of the appendix reached so far as to localize the symptoms of inflammation and perforative ulceration in the iliac region; causing necessarily an embarrassment in the diagnosis.

CASE XI.

Enlargement of the Appendix. Sero-enteritis originating in the Peritoneal Tunic of the Appendix.

Mr. R——, aged 31, applied, on the 22nd of January 1831, to Mr. F. Odling, in consequence of rheumatic pains in the head and limbs, with feverishness and confined state of bowels; all of which ailments were relieved by appropriate medicines.

On the 24th, in the afternoon, Mr. R—— went to the hairdresser's, where, having been kept waiting in a cold room, he was seized with a shivering which persisted till he had returned home.—Second day. Mr. Odling found him complaining of pain in the right inguinal region, the tongue being white, the pulse very frequent, and the bowels not open: calomel and aperients were given.—Third day. In the morning the pain was severe, and had diffused itself over the abdomen, its chief focus remaining in the

groin ; great tenderness had supervened, the pulse was rapid and small, fever high, and great anxiety in the countenance ; the respiration, which increased the pain, was short and frequent : calomel and opium were given ; blood was drawn to ʒxvi , and in the evening 24 leeches were applied to the groin.

On the fourth day of the inflammation, I was called to visit the patient in consultation. He was lying on the back, breathing rather slowly and deeply ; the face was of a pale leaden colour, the lips blue, and the features sharp ; no pulse at the wrist ;—the action of the heart was as rapid as possible, and barely perceptible ; the extremities dark, cold, and clammy ; the belly flaccid and soft, except in the right groin, where some deep resistance was palpable. He died in a few hours.

Necrotomy, eighteen hours after death.—The abdomen, laid open, presented no anormal appearance till the omentum was raised, when it was discovered that the cæcum, the convolutions of the small intestines which depended in the pelvis, as also that part of the sigmoid flexure of the colon which projected towards the cæcum, were agglutinated together by concrete adhesive fibrine spread over these parts like a thick membrane, and dipping into the furrows formed by the contact of the convolutions of the intestines, but not extending beyond this line of contact to the mesentery. The peritoneal tunic of these parts was minutely vascular, and easily peeled off. At this stage of the dissection was discovered a body depending from the cæcum in the pelvis,

which proved to be the appendix in a diseased state; its peritoneal tunic was covered, likewise, with a thick layer of concrete fibrin.

The bulk of the appendix was several times larger than usual, and consisted chiefly of deposit between the serous and mucous coats, by which the intervening coats were converted into a dense compact white tissue. The meso-appendix was loaded with adipose substance, which contributed to increase its general bulk; the canal of the appendix was pervious, and its mucous lining sound. The cæcum was in the same diseased state for a considerable distance around the mouth of the appendix, that is, very much thickened by a compact dense tissue between its serous and mucous tunics, which had the effect, also, of contracting its natural dimensions. The thickening extended to the ileo-cæcal valve, and obliterated it in a great degree.

Looking at the enlarged appendix separately, it might be considered as in a state of simple though excessive hypertrophy, but, when the condition of the cæcum is associated with it, the anormal state of both organs must be attributed to a pathological congestion at some former time; and on the Celsian principle that "*quoties offensum corpus est, vitiosa pars maxime sentit*," it is probable that, a cold having been caught, the consequent inflammation localized itself in the appendix, to which the symptoms during life pointed as the focus of the peritonitis.

CASE XII.

Concretions in the Appendix Vermiformis Cæci, Pelvic Abscess and Peritonitis: the Appendix being situated in the Pelvis.

Sarah Reynolds, aged 24, admitted into Guy's Hospital on the 4th of March 1831. The short notes which I have of this case say, that she was seized with an abdominal and pelvic inflammation, about six weeks after delivery, and died in consequence. On dissection, an abscess was found in the anterior part of the pelvis, between the peritoneum bladder and os pubis, with inflammation of the corresponding pelvic peritoneum, to which was agglutinated the extremity of the appendix: the appendix, in this case, hanging in the pelvis. In the canal of the appendix were two or three dark concretions, the size of raisin stones, but the mucous and serous tunics, as also the general organization of the appendix, were reported to be sound.

How far the concretions in the appendix and the pelvic abscess, in this case, were connected as cause and effect, there is no evidence to show. I have thought the case worth recording, on account of the situation of the appendix being in the pelvis, of there being foreign bodies in its canal, and inflammation and abscess in the immediate vicinity. Had there been a perforative ulceration of the appendix, from the irritation of the concretions, then the neighbouring peritonitis and abscess would have been a natural consequence.

CASE XIII.

Perforative Ulceration of the Appendix Vermiformis Cæci; Abscess discharged by the bowels; recovery.

Sir John M——, a gentleman past the middle age of life, was taken suddenly ill on the 29th of August 1836, on his arrival in town, with pain and fulness of the abdomen, constipation, and sickness; for which calomel, opium, colocynth, and enemas had been administered. I saw him on the 31st, in consultation with Mr. Freeman.

He was then sick, and at times vomiting. He had flatulent fulness of the belly, and pain referred to the right ilio-inguinal region, where was great tenderness and a deep-seated hardness: the bowel had acted slightly, the pulse was frequent and compressible, the tongue rough, brownish, and disposed to be dry. There was a general prostration of power, which forbade the abstraction of blood from a vein; we therefore directed twelve leeches to be applied to the seat of pain, fomentations to the abdomen, and an effervescing saline aperient to be taken every four hours. From this period he continued in a very precarious state for many days, vomiting matter like coffee grounds, the bowels acting with difficulty; the local symptoms persisting; and the tongue dry and brown, with increasing prostration. On one occasion, severe pain extended from the right ilio-inguinal region all over the abdomen, as if an universal peritonitis was setting in.

By the aid of calomel, morphia, and saline aperients, the more urgent symptoms were alleviated; but the local affection, instead of yielding, assumed the character of a distinct tumour, the size of a small orange, accompanied always with tenderness on pressure. At this time the patient was seen by Sir Benjamin Brodie, and the unguentum iodini comp. prescribed. The tumour resisted all the means employed for its resolution, and the general health remained impaired until, at the end of six weeks from the first attack, Sir John was seized with a diarrhœa, by which pus in a considerable quantity was evacuated. The tumour quickly diminished, and the local tenderness soon disappeared entirely. From this period the general health improved, and was gradually re-established without interruption.

The similarity of this case to Case VI. in the first article* is so exact, as to leave no doubt in my mind of the disease having been a perforative ulceration of the appendix, with abscess in the peritoneum, walled in by adhesive inflammation; the abscess having eventually burst into the cæcum and discharged itself by the large intestine. In the case No. VI. alluded to, the extremity of the appendix had sloughed, and the abscess formed in the peritoneum, precisely in the same spot, of the same size and general features, as the Case XIII. just related;

* Med. Chir. Trans., vol. xx.

but in Case VI., the patient sunk before a communication had been formed with the cæcum; which gave the opportunity of ascertaining, by dissection, the exact anatomical characters of the disease.

CASE XIV.

Perforative Ulceration of the Appendix Vermiformis Cæci, from a concretion lodged in its canal; Peritonitis; Death.

Master Baker, a well grown youth, 14 years of age, complained for several days of pain recurring frequently in the stomach and bowels, supposed to proceed from mince pies he had eaten about Christmas time. The pain grew worse, and fixed about the left iliac region on Saturday the 6th of January 1838. He was now questioned by his parents as to what he had eaten or swallowed, and he recollected having accidentally swallowed a small plated pencil-top, such as is used for pocket-book pencils; and to this the symptoms were attributed. The pain continued, made him ill, and began to disturb the circulation. Fomentations were applied to the abdomen, and aperients administered which produced six or seven dejections, and for a time gave relief. Sunday, second day, at eight in the evening, the pain returned with violence; and on the third day, in the morning, fixed in the region of the cæcum. Sickness and vomiting now supervened; the suffering was great: he was bled to 10 oz., and took calomel, opium, and saline aperients.

I saw him, in consultation with Mr. Armstrong,

in the evening of the third day. He complained of most severe pain in the region of the cæcum, which region I found full, hard, and tense, with tenderness so great, that he would scarcely allow me to touch the part: the pain was exacerbated from time to time; the whole of the abdomen was rather full, and all the muscles rigid from spasm; he lay upon his back inclined to the right side, with the right extremity bent upon the pelvis: the face expressed great suffering; the pulse was 124, rather wiry; and he vomited occasionally. He had recently taken a hot bath; and leeches, applied to the groin, were now bleeding. To take Hydrargyri chloridi gr. 1, opii gr. $\frac{1}{6}$, every three hours, with a saline aperient: to repeat the bath.

After the bath he slept two hours and a half, and when he awoke the pain had shifted from the cæcum to the ascending colon; then, after a few hours, to the arch; and, at noon on the fourth day, it had reached the sigmoid flexure, in the region of which the tension was nearly as great, and the tenderness almost as exquisite, as it had been in the right ilio-inguinal. The exacerbation and throes of pain from spasm of the colon, were as violent as any I had ever witnessed; and the spasm of the muscles of the parietes rendered the whole abdomen as hard as a board. The pain shot to the testicles; the penis was in a state of priapism; the pulse was small and weak; the face was not only anxious but haggard; the teeth dry, the tongue rough and growing dry; and I was apprehensive he would die from the

violence of the pain. No dejection for the last three days.

The shifting of the pain along the tract of the colon, led us to suppose that the pencil-top was passing onwards, and that, if the bowel could be emptied by injections, the spasm would be relieved and the patient do well. In this we were disappointed, the result proving that the pain and spasm were produced by a quantity of hard friable fæculent matter, without any trace of the pencil-top.

To take *Ol. Ricini* ℥ss., *Tinct. Opii* ℥x immediately; *Enema e Decocto Papaveris et Avenæ statim*; *Haust. Potassæ Citratis* c̄ *Tinct. Opii* ℥v every three hours.

Towards the close of the day he became easier, although the bowels did not act; but eructation, sickness, and occasional vomiting, continued.

Fifth day, morning; the symptoms had undergone no change: and, the bowels not having acted, recourse was had to the *Enema Tabaci*, in the proportion of three ounces with an equal quantity of gruel; about half of which injection passed up. In ten minutes he became sick and faint, and sweated about the forehead; but no evacuation from the bowels took place till 7 P.M., when he had two dejections, which were followed by so much relief that he instantly fell into a soft sleep. The dejections consisted of dry, knotty, hard, friable fæces, which were carefully examined without discovering the pencil-top. The character and quantity of these dejections sufficiently accounted for the spasm, and for the

pain shifting as this irritating matter passed along the colon. This cause being removed, we hoped for a speedy amendment.

Sixth day. Although the night had been passed tranquilly, we did not find the anticipated amendment. The abdomen was again hard and full, great tenderness in the right iliac region, and pain in the corresponding lumbar region. Two more evacuations had occurred without relief. To repeat the Enema Tabaci; to take Hyd. cum Cretâ gr. ii. every four hours, with the aperient effervescing draught.

The day was passed in a restless state. About 8 o'clock in the evening, a vast quantity of flatus passed from the bowels, which diminished the hardness and tension of the abdomen in every part except the right iliac fossa, and gave so much relief that he again went to sleep, and the pulse fell to 116.

Seventh day. I was called up between 4 and 5 A.M. The abdominal pain, tension and hardness had returned, the pain being exacerbated severely as from spasm; the pulse had increased in frequency, and every thing wore a bad aspect. The tobacco injection, the castor oil, opium and mercury, to be repeated. Throughout the day the stomach rejected every thing, and in the evening I found him with a rapid feeble pulse, hurried respiration, clammy sweats, signs of approaching dissolution. He died at half-past 2 o'clock on the following morning.

Necrotomy, 10 hours after death.—The abdomen

excessively tense and distended by gas in the small intestines. The omentum adhered to the right groin ; the sigmoid flexure of the colon, distended with gas, reached over to the right side ; its peritoneal tunic was covered with concrete albumen, as was the peritoneal tunic of the small intestines in the lower part of the abdomen. The omentum, sigmoid flexure, and the contiguous small intestines, adhered to each other, and to the cæcum ; and the cæcum adhered at its interior and outer surface to the corresponding peritoneum of the abdominal parietes ; the whole forming a mass which it was necessary to remove for examination. The whole of the colon, from the cæcum to the sigmoid flexure, was contracted and lying in its natural situation.

The small intestines were first examined. They contained here and there a little fœculent matter, but presented no anormal appearance. The examination was then pursued by laying open the extremity of the ileum, the cæcum, and whole of the colon, but no trace either of disease or of the pencil-top could be discovered.

We now proceeded to seek for the appendix, which was found lying under the cæcum on its outer side, in a direction upward towards the colon, and was covered with a thick layer of fibrin, which extended also to the outer portion of the colon, and the contiguous peritoneum. Here, about midway between its origin at the cæcum and its blind extre-

mity, was discovered a perforative ulceration, with a gangrenous edge, at the mouth of which protruded a small hard body, which we conjectured to be the pencil-top, but which proved to be an intestinal concretion, of an almond shape, about three-fourths of an inch long, three-eighths wide, and one-fourth thick : there was thin sero-purulent fluid amounting to eight ounces, in the abomen and pelvis. All the other viscera in a normal state.

This case, then, proved to be a perforative ulceration of the appendix, from a concretion lodged in its canal. Peritonitis circumscribed around the cæcum was the first result, and produced the adhesion in the region ; afterwards the peritonitis extended to the small intestines and sigmoid flexure of the colon, and destroyed the patient. Had the peritonitis remained circumscribed, abscess would have formed, and pointed in the right lumbar region, on the outer edge of the quadratus lumborum, in which direction there was pain for some time previous to dissolution.

The swallowing of the pencil-top was a coincidence ; and it not being found in the alimentary canal, we may presume that it passed away with the fæces before the perforative ulceration took place.

The diagnosis between tuphlo-enteritis, or inflammation of the cæcum, and the perforative ulceration of the appendix, was here well marked. In the latter the bowel may be acted upon by medicine, but this action is not the prelude to recovery ; the symptoms

persist, notwithstanding. Whereas, in inflammation of the cæcum, the bowels are obstinately confined, as in enteritis ; but, when they do act, the more violent symptoms subside, and the patient recovers.

CASE XV.

Perforative Ulceration of the Appendix Vermiformis Cæci ; circumscribed Abscess ; death ; unusual situation of the Appendix.

Mr. H——, of Chelsea, an elderly gentleman, healthy and very corpulent, was attacked with severe spasmodic pains in the abdomen, followed by nausea and constipation. The constipation yielded to medicine in two or three days, but the nausea and occasional vomiting continued, and the pains recurred with violence. I saw him on the 19th of March 1837, in consultation with Mr. Gardener. He was very restless ; at one time in bed, at another walking about the room, suffering from constant pains in the abdomen, which were exacerbated violently and frequently. He was sick, often to vomiting ; the bowels acted imperfectly, and without relief ; the tongue was furred, the pulse frequent, the abdomen full and flatulent ; the pain was referred to a spot in the right iliac region, midway between the anterior crest of the ilium and the false ribs, where a tumour the size of an egg could be distinguished, deep-seated ; the tenderness at this part was excessive.

The symptoms so resembled those arising from affections of the cæcum or appendix, that I should

have entertained no doubt of such being the nature of the case, if the locality of the pain had been in the region of the cæcum ; but as it was decidedly in the region of the ascending colon, this portion of the large intestine was concluded to be the more probable seat of the disease.

Leeches, fomentations, enemata, calomel and opium, and saline aperients, prescribed.

The old gentleman had a large scrotal hernia on the right side, which we examined carefully, and finding it easily and perfectly reducible, were satisfied it had no share in producing the symptoms.

Several days passed without any improvement, and yet without any material change for the worse ; the sickness, vomiting, and pain being alleviated and aggravated alternately ; the bowels acting as before, yet without relieving the flatulence of the belly, or the suffering of the patient. His powers now began to sink under protracted suffering ; hiccup supervened, the tongue became dry, and delirium manifested itself in the night.

The co-existence of the hernia on the same side, which, although reducible, could not be retained within the abdomen, and the persisting signs of trouble in the intestinal canal, induced us to recommend that an hospital surgeon should be called in. Accordingly Mr. Bransby Cooper was consulted, who after a strict examination, confirmed our opinion, that the hernia was not concerned. He also examined the tumour in the iliac region, which was now less perceptible than before, but there was, never-

theless, a marked circumscribed rigidity of the abdominal muscles, and excessive tenderness at the spot. Soon afterwards the abdomen suddenly became more generally tender and painful, the pain and tenderness radiating from the iliac region ; and as the case proceeded I grew more convinced that there was a perforation of the intestine, which I supposed must be the ascending colon, the only gut situated in this region. Death took place about the tenth day of my attendance.

Necrotomy.—The small intestines were much distended with gas ; the hernia free from strangulation, the bowel in the sac quite healthy ; some traces of peritoneal inflammation, extending from the right side of the abdomen. The cæcum and colon were slit open, and found perfectly free from disease. On drawing the ascending colon towards the spine, there was discovered a circumscribed abscess, the size of an egg, seated in the peritoneum, on the outer and under side of the colon, walled in by adhesion of the outer part of the ascending colon to the corresponding portion of the peritoneum of the lateral parietes of the abdomen, the ascending colon forming the anterior and inner wall of the abscess. Proceeding in the examination, the appendix vermiformis cæci was seen to be given off from the cæcum, at its inferior part, and to take a direction first outwards and round the cæcum, then turning upwards in the direction of, and extending to the abscess, into which it opened by a perforative ulceration the size of a pea. In its course the appendix lay concealed by

the colon. No concretion or other foreign body was found, either in the appendix or in the abscess.

The situation of the abscess corresponded exactly with the spot to which the pain was referred, and in which the tumour was distinguished during life.

This unusual situation of the appendix is remarkable, and has been observed by myself in one other case only.

Its blind extremity, near which was the perforation, extended fully into the iliac region, rendering this region the focus of all the symptoms. The perforation had produced a local peritonitis, and circumscribed abscess, which, from its contact with the colon, had, by sympathy, more or less interfered with its functions, causing spasm of its muscular tunic, and consequent impediment to the action of the bowel. The extension of the peritonitis occurred two or three days before dissolution, and hastened and determined the event. The cause of the perforative ulceration of the appendix did not appear.

The varieties of disease described in the present and former memoirs consist of :

1. Inflammation, acute or sub-acute, of the cæcum, terminating quickly or slowly in resolution, or lingering on and leading to permanent organic impairment.

2. Perforative ulceration of the cæcum from within, with abscess behind the peritoneum, pointing externally in the corresponding lumbar, or inguinal region, or in both.

3. Inflammation of the appendix, spreading over the peritoneum.

4. Perforative ulceration of the appendix, with consequent universal peritonitis, ending rapidly in death ; or with circumscribed peritonitis and abscess within the peritoneum, sometimes ending in death in the course of ten days, or, life being preserved, bursting eventually into the cæcum, and discharging itself by the rectum, or directing its course to the surface of the body, and pointing in the right lumbar or inguinal region. If the appendix happen to be situated anormally, then the locality of the abscess, always within the peritoneum, is determined accordingly ; as also is the direction it takes, or in which it points.

On referring to the *Leçons Orales* of Dupuytren, and to the article of Mr. Ferrall, on Phlegmonous Tumours in the right iliac region I find that neither of these authors have spoken of the appendix. The greater number of cases detailed by Dupuytren as original phlegmonous tumours and abscesses in the right iliac fossa, appear to have been cases of perforative ulceration of the appendix, the tumours and abscesses being consequent on this perforation, and not original. The appendix, indeed, seems to have been overlooked in the necrotomy, no mention being made of it. It has also been overlooked by others, under similar circumstances ; by Ferrall, Menière, Husson, and Dance, and it is the pathological error which has resulted that gives an especial interest to the subject.

A small work by Unger* is altogether silent on the perforative ulceration of the cæcum, and of the appendix, and of the consequences, abscess, peritonitis, &c.

The first publication in which I find the opinions of Dupuytren recorded, is a memoir by Husson and Dance;† the next is the *Leçons Orales*;‡ in both of which publications the same opinions respecting the pathology of these affections are maintained; namely, that they all are, primarily, inflammations of the cellular tissue in the right iliac fossa, which may terminate in resolution, suppuration, or sometimes in universal peritonitis.

The cases detailed in illustration in the *Leçons Orales* are six, of which five are examples of abscess in the right iliac fossa bursting into the cæcum, or pointing and bursting externally in the corresponding lumbar or inguinal regions: and it is far from improbable that these and other cases coming under Dupuytren's care, in his capacity of surgeon, in this stage or state of abscess, impressed him with the notion that they were primary abscesses of the cellular tissue, instead of what they really are, secondary, and consequent on perforative ulceration of the cæcum or appendix.

* *Commentatio medico-practica de morbis Intestini Cæci*. Auctore L. H. Unger. Lipsiæ, 1828.

† *Sur quelques engorgemens inflammatoires qui se développent dans la Fosse Iliaque droite*. *Repertoire général*. Tome iv. 1827.

‡ *Des Abscès de la Fosse Iliaque Droite*, *Leçons Orales* de Dupuytren, tome iii., p. 330. 1833. Troisième édition.

Seeing that abscesses in the right iliac fossa were frequent, while in the left they were very rare, Dupuytren endeavoured to account for this diversity by referring to the structure of the cæcum. He concluded that the contraction at the termination of the ileum in the cæcum likened it to the pylorus, and remarked that “ces rétrécissemens, en effet, en favorisant la stase des matières fécales et le séjour des corps étrangers, sont bien capables de devenir la source d’inflammation au voisinage de l’intestin.”*

That this part of the intestinal canal where the dimensions vary and the organization changes is particularly liable to irritation and to disease, admits of no doubt; but that irritation of the cæcum, from the causes mentioned by Dupuytren, can produce inflammation in the neighbourhood of this intestine, and thus cause the phlegmonous tumours and abscesses in the right iliac fossa, is difficult to understand. The irritation of foreign undigested substances lodging in the cæcum will excite inflammation of the cæcum itself, not of the subcæcal cellular tissue; and the inflammation may continue, and produce permanent disease of this gut, without extending to the subcæcal cellular tissue; as is shown by the Cases III. and IV. in my first communication,† in which there was extensive chronic disease of the cæcum, without any morbid change in the subcæcal tissue. Yet Dupuytren supposes that

* Répertoire général, tome iv., p. 100.

† Med. Chir. Trans., vol. xx., p. 212-13.

even trivial irritations of the cæcum may originate inflammation and abscess in the neighbouring tissues.

These opinions of Dupuytren are adopted by Husson and Dance, and also by Menière: indeed the memoirs of these gentlemen may be said to be expositions of his doctrines. Menière endeavours to sustain these opinions by advancing, as a principle, that "phlegmasies muquenses" spread not only along a mucous membrane, but to subjacent tissues, "que l'inflammation de cette muquense (of the cæcum) peut se propager aux couches celluleuses contigues."

To this principle the pathology of inflammation is directly opposed. The rule obtains that inflammation limits itself not only to one organ, but to one tissue: the propagation of inflammation from one tissue to another, or from an organ to a neighbouring tissue, is the exception. It is the rule as established by pathology that obliges us now to recognise inflammation of the individual tissues of organs as individual diseases. We have bronchitis, pneumonia, and pleuritis, designating inflammation of the various tissues of the lungs; and muco-enteritis, proper enteritis, and sero-enteritis, designating inflammation of the various tissues of the intestinal canal.

But it is said by the authors above cited that the peculiar structure of the cæcum, viz. the absence of a peritoneal tunic at its posterior part, and its fixedness in the iliac fossa by means of cellular tissue, is the reason why inflammation propagates itself from the mucous membrane to this

tissue. Here again it may be objected, that in many cases of abscess in the iliac fossa the cæcum is found to be free from all trace of inflammation ; and in other cases of extensive disease of the cæcum the subcæcal tissue remains free, uninvolved, and healthy. The principle thus laid down by Menière, that mucous inflammation spreads to subjacent tissues is not established ; neither is the conclusion of Dupuytren, that irritation of the cæcum from fæcal matter or foreign bodies is capable of becoming the source of inflammation “ *au voisinage de l'intestin,*” borne out.

Dupuytren, Menière, Husson, and Dance appear to me to have confounded together the four varieties of disease above set down, and have mistaken them for a primary inflammation and abscess of the subcæcal tissue ; while the abscess itself is secondary, is only a stage or symptom, and results from the perforative ulceration either of the cæcum or of the appendix.

Regarding the inflammation and abscess as primary in the right iliac fossa, Dupuytren and Menière discuss at length the causes which determine the development of inflammatory engorgements in the right iliac fossa, in preference to the left, and assign reasons deduced from the anatomy of these regions respectively. The validity of these reasons may be questioned, but I abstain from entering into the examination of them, seeing that my views on the origin of the inflammation and abscess are altogether different from theirs, and that the occurrence

of these phenomena in the right, in preference to the left iliac fossa, would be the natural consequence of perforative ulceration of the cæcum or appendix, as has already been explained. Much discussion has taken place also relative to the pathology of these tumours. Menière inquires, “*De quelle nature est cette tumeur?*” and concludes that it does not depend on the collection of fæcal matter, nor on psoitis and abscess, nor on abscess of the abdominal parietes: it must therefore be formed either by the intestine itself, or by the cellular tissue, and the other parts situated underneath the intestine in the right iliac fossa. In two of his Cases, VI. and VII., he is of opinion that the tumour may have depended on the cæcum; in his other Cases, that it depended on the subcæcal cellular tissue.

Differing as I do from Menière on the pathology of these diseases, and viewing them as depending altogether on the cæcum and appendix, I have no difficulty in assigning as causes of the tumour,

1st. Collection of fæcal matter in the cæcum.

2nd. The presence of any crude, undigested substance, of worms, concretions, or other foreign bodies.

3rd. Inflammation of the cæcum, resulting from the irritation of the above.

4th. Chronic disease of the cæcum, as in Cases III. and IV. of my former memoir.

5th. Abscess from perforative ulceration either of the cæcum, or of the appendix.

The diagnosis of these affections of the cæcum

and appendix is not difficult to establish, if their nature and peculiarities are kept in mind, and the symptoms inquired into with diligence and care; otherwise they may be, and have been, mistaken for idiopathic peritonitis. Dupuytren has seen them mistaken for intestinal strangulation, for hepatitis, metritis, peritonitis;* and Menière remarks, that “malgré le soin que nous avons mis à indiquer les caractères de la maladie qui fait le sujet de ce mémoire, nous ne nous dissimulons pas la possibilité d’une erreur dans le diagnostic. M. Dupuytren a vu un phlegmon iliac être pris, par un praticien distingué, pour une affection aiguë du grand lobe du foie. Tout cela prouve la difficulté du diagnostic et l’extrême attention qu’il faut apporter à l’examen des symptômes.”

Although, as has been observed, it is not difficult to distinguish the cæcum and appendix cases from other diseases, it is by no means an easy task to distinguish the varieties from each other; yet even this can be effected with tolerable accuracy, if we inform ourselves of the peculiarities which belong to each variety.

The inflammation of the cæcum, tuphlo-enteritis, the most frequent variety, is distinguished by the sudden attack, the patient having been in health previously; by the local signs fixed in the right iliac fossa; by the vomiting and obstinate constipation; and by all these signs being effectually relieved, or

* Leçons Orales, tome iii., p. 348.

passing entirely away as soon as a free action of the bowels can be procured. This variety is the least dangerous.

The perforative ulceration of the cæcum, which is comparatively rare, may be suspected when a patient, who has been in ill health, and labouring under bowel complaints for some time, is seized suddenly with the local signs fixed in the right iliac fossa, together with constipation and vomiting; the local signs continuing to persist in all their urgency, notwithstanding the constipation shall be overcome, and the free action of the bowels re-established. Later it will be distinguished by abscess without the peritoneum, pointing in the right groin, or in the right lumbar region, at the outer edge of the quadratus lumborum muscle; the tumour of the abscess being not unfrequently emphysematous.

Ulceration of the mucous membrane, as indicated by the bowel complaints, is a pre-existing condition of the cæcum, and invading eventually the other tunics, perforates the cæcum at its posterior part, where it is devoid of a peritoneal tunic; hence the inflammation and abscess of the sub-cæcal tissue, which give rise to all the phenomena of phlegmonous tumours, or abscesses in the right iliac fossa. Perforative ulceration of the anterior or lateral parts of the cæcum, covered by peritoneum, rarely happens. I am not acquainted with any case of this description, as proved by dissection. It would necessarily excite peritonitis, which, if circumscribed, would lead to abscess; if universal, would speedily

destroy life. These characteristics render the distinction between the perforative ulceration, and the simple ulceration of the cæcum very obvious.

The inflammation of the appendix is very rare, one case only having occurred in my experience. It was confined to the serous tunic, and presented the signs of circumscribed idiopathic peritonitis.

The perforative ulceration of the appendix is next in frequency to the inflammation of the cæcum, being certainly much more common than perforation of the cæcum. This variety may be suspected by the more or less sudden development of the local signs, always severe; by their being fixed in the right iliac fossa, and not preceded by bowel complaints, or ill health; by the supervention of vomiting and constipation, the constipation yielding readily to medicine, yet, having yielded, no amendment following; by the great tension in the ilio-inguinal region, there being always a circumscribed peritonitis and abscess within the peritoneum; by the sympathetic tenderness of the whole abdomen; and, subsequently, by the occurrence of a diarrhoea, and a discharge of pus by the rectum, followed by subsidence of the tumour, and amelioration of all the symptoms; or, by the pointing of the abscess in the form of an emphysematous tumour in the lumbar-inguinal, or ilio-inguinal regions.

The peritonitis, excited at the moment of the perforation of the appendix, will not unfrequently spread rapidly and universally over the peritoneum, and destroy life in from twelve to twenty-four hours.

The absolute perforation of the appendix is preceded by ulceration of the mucous membrane of some standing not resulting from disease of the intestinal canal, but produced by the accidental presence and infraction of some small foreign body : hence bowel complaints do not usually precede the perforation of the appendix.

The perforation of the appendix has many symptoms in common with the perforation of the cæcum. The perforation of the cæcum, however, is generally preceded for weeks or months by bowel complaints, indicating ulceration of the mucous membrane ; while the perforation of the appendix is not preceded by such bowel complaints ; a difference in the state of the canal prior to the occurrence of the perforation which aids materially in establishing the diagnosis.

It was my intention to present, in this place, an analysis of the cæcum and appendix cases on record, with a view to show the comparative frequency of the varieties before described, and other particulars. This intention I feel obliged to forego, owing to the difficulty of distinguishing with accuracy one variety from another ; the greater part of the cases having been published as phlegmonous tumours, and not containing an account of the state of the appendix ; an omission which would leave me under the necessity of conjecturing, from the data of the cases, what was the particular nature of each. Such a proceeding would necessarily be subject to disapproval, though by it one may nevertheless arrive at a pretty

correct estimate. I must therefore limit the analysis to cases which have occurred within my own knowledge.

Analysis of Twenty-one Cases.

Mortality : 13 recovered ; 8 died.

Character : 19 acute ; 2 chronic.

Varieties : 11 were inflammation of the cæcum—all recovered.

2 were chronic disease of the cæcum—both died.

1 was ulcerative perforation of the cæcum from within, with abscess externally—recovered.

1 was inflammation of the appendix, with circumscribed peritonitis—died.

6 were ulcerative perforation of the appendix—five died, one recovered.

Of the five fatal cases of perforative ulceration of the appendix, one died of diffuse peritonitis in about sixty hours ; one of peritonitis, and circumscribed abscess in the peritoneum, in nine days ; one of circumscribed peritonitis, and abscess in the peritoneum, in twelve days ; one of circumscribed abscess in the peritoneum, in four weeks ; and one of abscess in the peritoneum, pointing in the right ilio-lumbar region, in eleven days.

The one which recovered was a circumscribed abscess in the peritoneum, bursting into the cæcum.

Age,—Two under ten years of age ; seven between ten and twenty ; three between twenty and

thirty ; six between thirty and fifty ; three between fifty and seventy.

Sex,—Sixteen were males ; five were females.

Occupation,—Six were gentlemen ; one was a coachman ; one a farrier ; five were boys having no particular occupation ; three were destitute ; five were females having no particular occupation.

Season,—In the autumn and beginning of winter, more frequently.

Dupuytren, from the analysis of sixteen cases, infers that they occur at the end of summer and beginning of winter more frequently ; that age has an incontestible influence, eleven out of the sixteen having been under thirty years of age ; that men are more liable than women ; and that a greater liability applies to trades, as painters, colour-grinders, and turners in copper.

The inferences from this analysis are borne out by the foregoing in so far as relates to sex and season. They differ in some degree as relates to age ; and entirely as relates to the liability of particular trades.

In the twenty-one cases the age varied from six to seventy years ; the number under thirty being twelve, viz., four-sevenths of the whole ; while Dupuytren's rather exceed two-thirds. The greater susceptibility of the alimentary canal in young persons would predispose them to inflammation of the cæcum, from the irritation of crude, undigested substances, and give a preponderance of cases under

the middle age. The liability of particular trades I hold to be a fallacious inference ; the twenty-one cases having occurred in persons wholly unconnected with trade. Indeed, the causes being accidental, and having no relation to occupation, leave no ground for the supposition that the kind of trade can be instrumental in producing the various affections of the cæcum and appendix.