7.5 milligrammes in ten cubic centimetres (corresponding to the amounts of uric acid and hippuric acid in 20 cubic centimetres of urine) were taken. Ten cubic centimetres of these solutions were taken and boiled with one cubic centimetre of hydrochloric acid respectively for ten minutes, ten cubic centimetres of water were added, and the excess of acid was neutralised by carbonate of lead or by sodium hydrate. After filtration the liquid was treated in each case with phenylhydrazin hydrochloride, and sodium acetate. In no case were any yellow osazone crystals obtained. (In the experiment where the uric acid was tested and the hydrochloric acid was neutralised by lead carbonate some colourless needle-shaped crystals of lead urate were formed quite unlike the yellow osazone crystals.)

c. As it has been suggested that the production of the characteristic yellow crystals may be due to glycerine, I next experimented with pure solutions of this substance: 0.2 per cent. solution and 0.5 per cent. solution were used. The test was applied in each case: (1) by treating 20 cubic centimetres of solution with phenylhydrazin hydrochloride and sodium acetate; and (2) by previous hydrolysis with hydrochloric acid and neutralising the excess of acid with lead carbonate or sodium hydrate. *In no case was a single crystal obtained.*

Conclusions.—From the above experiments on normal urine it is evident that a normal urine *invariably* contains some substance—a polysaccharose or glyco-proteid perhaps—which itself gives no characteristic crystals with phenylhydrazin, but which after hydrolysis always yields a substance (probably a sugar), which latter substance gives very characteristic crystals with phenylhydrazin.

II.—NOTES ON A FEW OF THE PATHOLOGICAL CASES EXAMINED.

CASE 1. *Malignant disease of the pancreas* (diagnosis confirmed by operation).—Crystals were obtained from the urine after hydrolysis with hydrochloric acid as described above but these were in no way different in character or in quantity from those obtained from a normal urine.

CASE 2. *Carcinoma of the stomach*.—The growth was removed by operation on April 13th, 1904. The pancreas was injured by the operation and a pancreatic fistula resulted. The urine was examined on the 23rd. Characteristic crystals were obtained after hydrolysis but these were not present in greater amount nor were they different in character from those obtained from the normal urines examined. In this case death occurred from acute pancreatitis (confirmed post mortem) on April 30th.

CASE 3.—This was thought to be a case of pancreatic disease. Crystals were obtained after hydrolysis similar in character and quantity to those obtained from normal urines. Operation showed a gall-stone in the common bile-duct and an inflammatory condition of the bile-passages but no pancreatic disease.

CASE 4. *Biliary colic*; and CASE 5. *Malignant disease of the pancreas*.—These two cases have not yet been operated upon but there is little doubt as to the diagnosis. In each case crystals were obtained after hydrolysis similar to those obtained from normal urines but not in greater amount.

Conclusion.—From the above work it is evident that the production of characteristic yellow crystals in a urine “after hydrolysis by boiling with hydrochloric acid” can in no sense be used as a specific test for any special pathological condition since such crystals are constantly obtained from normal urines.

St. Mary's Hospital.

HOSPITAL FOR EPILEPSY AND PARALYSIS, MAIDA VALE.—The Duchess of Saxe-Coburg and Gotha, a lady-patroness of the Hospital for Epilepsy and Paralysis, Maida Vale, accompanied by Princess Henry of Battenberg, and attended by the Dowager Lady Augusta Monson, paid on July 15th a visit of considerable duration to the new hospital which they minutely inspected. In the absence, through indisposition, of the President, the Earl of Hardwicke, the Royal party was received by Canon Duckworth, a Vice-President, Dr. George Ogilvie, the senior physician, Mr. N. Behrens, Captain Ellis, and Mr. S. A. Knapp-Fisher, members of the committee, Mrs. S. A. Knapp-Fisher, the matron, Miss Keith, and Mr. Howgrave Graham, the secretary. At the request of Canon Duckworth Princess Henry of Battenberg graciously gave her consent to be elected a lady-patroness of the hospital.

ONE FORM OF SUPPURATIVE APPENDICITIS.¹

By ARTHUR C. ROPER, F.R.C.S. EDIN.,
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CASE 1.—In March, 1903, I performed appendicectomy on a young man, aged 21 years. His history was that he had had two severe attacks of peritonitis focussed in the right iliac fossa during the previous six weeks. The most striking thing in the operation was the large mass of omentum, only partially recovered from an inflammation, adherent to the cæcum and parietal peritoneum and drawn, as it seemed, to a caseating mass, which I took to be a gland, half an inch up the ascending colon from the origin of the appendix. It is not a very uncommon thing to find that gland enlarged in this operation but I have never before seen it caseating. There was little or nothing wrong with the appendix so far as I could see except that its exterior shared in the general inflammatory condition prevalent in the fossa. My note at the end of the account of the operation runs thus: “I think it doubtful whether the appendix was at fault here. It seems more likely that the cheesy mass to which the omentum was most adherent was the cause of the peritonitis.”

CASE 2.—Some weeks after I was summoned to operate on a delicate child, aged eight years, who had a history of inflammation in the right iliac fossa extending over several weeks. There were all the signs of abscess and the operation consisted in merely opening, washing out, and draining it. In this case the pus was quite inodorous. It was devoid of the fæcal smell which is so characteristic of most of these cases and which is due, of course, to the presence of the bacillus coli. The pus, moreover, was thick and curdy, just like that which one finds in tuberculous cervical glands and quite different from what usually obtains in appendix abscess. In this case I saw nothing of the appendix, so cannot tell whether it had sloughed or whether it was behind the cæcum and uninjured. This case reminded me of the previous one and I came to the conclusion that it was only a later stage of the condition which I found in Case 1. I mean that had I not removed or scraped away the caseating gland in Case 1 it would have run on to an inodorous abscess unconnected with the appendix but, in the fashion of to-day, to be dubbed an appendix abscess.

CASE 3.—On Jan. 7th of this year I was called to see a pale but fairly strong boy, aged nine years. He had a typical mild appendicitis with a history of a similar though slighter attack some few weeks before which was regarded as stomach-ache and passed off with a purge and three days in bed. His temperature, which was never above 101° F., subsided in a few days. A lump formed in the fossa and disappeared and in a fortnight he was out of bed. After a week's interval of apparent health he was playing with his brother and the latter sat upon his abdomen, thus starting another attack. This, though rather more severe, was similarly typical and uneventful and in ten days the temperature was normal and the swelling had nearly dissipated. I advised appendicectomy and my advice was endorsed by Mr. J. F. Parsons of Frome who saw the case in consultation with me. I gave the patient ten days rest in bed and careful dieting before operating and on the morning of the operation he told me that he had a return of his old pain. I had carefully examined his abdomen 48 hours before and could find no trace of the lump or of any abnormality, yet on exposing it for operation the lump was at once visible and palpable in the fossa. On opening the peritoneum the first thing I encountered was a large mass of engorged and inflamed omentum adherent to the parietes. I separated this, ligatured it, and cut it away. Immediately under it was the appendix, inflamed, curled up over, and closely adherent to, the inflamed cæcum. Adhesions were everywhere dense and succulent, and it took considerable time and care to separate the appendix from the cæcum, which I was afraid of lacerating. Surrounding the root of the appendix was a small abscess of thick, curd-like pus, and quite inodorous.

¹ A paper read at a meeting of the Barnstaple Branch of the British Medical Association on March 30th, 1904.

Its walls were very thick and resistant and the cæcum was so tied down that I could not revolve or even move it so as to bring the stump up into the wound to form flaps. I was obliged to ligature the appendix deep down in the fossa, close to the cæcum, and to cut it away. I curetted the abscess cavity, left a drain, and in three weeks the wound was healed. I could see nothing wrong with this appendix externally save that it shared in the peritonitis of that part. There was hæmorrhage into it and that it communicated with the cæcum was evident from the fact that there was faecal matter in it, and had it perforated the bacillus coli would certainly have contaminated the abscess. I sent this appendix to St. Bartholomew's Hospital Pathological Laboratory and the report was to the effect that it was in a condition of acute hæmorrhagic inflammation. I had a dim foreshadowing of the diagnosis of this case in my mind and remarked to Mr. Parsons at our consultation that I should not be at all surprised to find that a caseating gland was the cause of the trouble. I have very little doubt that the abscess was a suppurating lymphatic gland.

Unfortunately all three cases occurred in private practice and I had nothing with me for bringing away pus or curettings for examination. I believe, however, that a lymphatic gland near the origin of the appendix is the seat of abscess in these cases which we should all of us unhesitatingly diagnose as appendicitis. I have narrated these cases in chronological order as they arose in practice, but if you take, first, the case where there was the caseating gland; secondly, the little boy whose case I narrated at some length and who had a small and quite recent abscess with no acute symptoms at all; and, thirdly, the child with a large abscess, you have a good clinical picture of the different stages through which one would expect such a glandular inflammation to pass. The weak link is that I did not find the appendix in the case which represents stage No. 3. This may be explained in two opposite ways: first, that the appendix was not involved in the abscess at all but was, and still is, lying on the inner side of the cæcum out of reach of harm from contiguous inflammation; and secondly, that it sloughed from thrombotic interference with its blood-supply and escaped in the discharge from the abscess. Of bacteriological evidence I have none to offer you for the reasons which I have already given.

An interesting point in the pathology of this gland suppuration is as to whether the gland is primarily attacked, which is unlikely, or whether it is secondary to some infection, tuberculous or otherwise, of the appendix or cæcum.

On March 19th last two cases of appendicitis were admitted under my care at the Royal Devon and Exeter Hospital. I operated on both in the evening. The first case was that of a strong young man with a fulminating appendicitis, high temperature, rising pulse, and marked septicæmia. I opened a small abscess of thin, faecal-smelling pus. Only 66 hours had elapsed since the patient was attacked. The second case was that of a thin, delicate-looking child, much emaciated, with a tuberculous family history and a personal history that she had been ailing for weeks with loss of appetite and pains in her abdomen. On the sixth day before admission she took to her bed. On the fourth a medical man was sent for who thought that an abscess was forming and sent her to hospital. I remarked to those present in the theatre that I expected to find an abscess of thick pus with lumps in it and inodorous. I spoke too broadly here. I should have said "free from faecal smell," for the contents gave out what my colleague Mr. C. E. Bell described as "a good, useful smell anyhow." It was rather the smell of gangrene than of the bacillus coli. I could find only staphylococci in a culture which I grew from the pus. I have sent the culture and some of the pus to my friend Dr. Horder at St. Bartholomew's Hospital and he says that there were only staphylococci and streptococci found there.

These cases are not of great importance as the treatment will, of course, be carried out on the now well-established lines but they are of great interest and I am not aware of the suggestion having been previously made that in some of these milder cases of recurrent appendicitis suppuration may be commencing in a gland secondary to infection from the appendix. I lack complete bacteriological evidence as to the precise cause of the suppuration but the pus and abscess wall in my cases were strongly suggestive of tubercle.

Exeter.

ABDOMINAL PAIN OF INTESTINAL ORIGIN.¹

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THE importance of a correct interpretation of the meaning of abdominal pain, when considered in connexion with abnormal intestinal conditions, can hardly be over-estimated, as in all serious disorders of this portion of the body the advent of pain in varying character and degree is often the first warning given that the patient is suffering from a disease which if not promptly recognised and the condition immediately relieved by the performance of a more or less serious surgical operation may soon terminate his life. Failure to heed this warning or to reach a correct conclusion as to its cause has been in the past, and too often still is, responsible for the untimely ending of many valuable lives; while delay caused by an effort to make an exact differential diagnosis in doubtful cases is still responsible for the high rate of mortality attending surgical operations undertaken for the relief of many acute intestinal disorders. As Maurice Richardson, in a recent valuable paper has forcibly said in regard to this subject: "Can we by study, observation, and reasoning, learn to interpret the cry for help which through pain the fatal lesion utters. Can we understand the cry which says, help the perforated stomach, the gangrenous appendix, the bleeding artery, and the ruptured gall-bladder and the obstructed intestines."

Abdominal pain, as has been stated, is common to all serious disorders of the intestines, its peculiarities in only one or two instances, however, being sufficient when considered alone to suggest at once to the physician's mind the general character of the disease; consequently in arriving at a reasonably correct diagnosis in the cases we are discussing it is necessary to take into consideration, in addition to the pain, other important factors such as the previous history of the patient and other accompanying bodily symptoms. In a general way it may be stated that abdominal pain of a sharp and persistent character indicates involvement of the peritonem, whereas a dull and aching pain points to involvement of the connective tissue only; while a cardialgia considered in connexion with abnormal intestinal conditions would limit the disease to the duodenum; tenesmus indicates limitation of the disease to the lower third of the intestinal tract, whereas colicky pains occurring several times a year in the same person who is not habitually constipated would, according to Hemmeter, be suggestive of entero-stenosis.

Duodenitis.—A constant abdominal pain with increased sensitiveness to pressure in the right hypochondriac region occurring in a patient suffering from an acute gastritis and in whose stools there is mucus, with or without blood, is indicative of duodenitis.

Enteritis.—Colicky abdominal pains extending in various directions, accompanied by an unpleasant sensation of pressure, abdominal distension, diarrhoea, loss of appetite, and thirst, indicate that the patient is suffering from acute inflammation of the bowels.

Colitis.—Involvement of the colon makes itself manifest by an increase in the diarrhoea, the limitations of the pains, and the sensitiveness on pressure largely to the large bowel.

Sigmoiditis; proctitis.—Colicky pains in the left iliac fossa followed by tenesmus and mucous bloodstained stools are indicative of inflammation of the sigmoid flexure and the rectum.

Enterocolitis in children.—Intense griping abdominal pain occurring during the summer months in a healthy child under four years of age accompanied by constant vomiting and frequent watery discharges from the bowel, rapid pulse, high bodily temperature, and collapse, is symptomatic of entero-colitis.

Chronic enteritis.—Recurring abdominal pain following errors in diet, unusual physical exertion, mental excitement,

¹ A paper read at the annual meeting of the Medical Society of the State of New York held at Albany, New York, U.S.A., on Jan. 26th, 27th, and 28th, 1904.