appearances, excluding the consolidation of the apices due to the coincident pleuro-pneumonia, almost reproduce the *post-mortem* appearances observed by Dr. Klein. That the micrococcus from scarlet fever cases should fail to produce in calves fever, ulceration of the tonsils, or scarlatina rash, or any condition resembling clinically the disease in man, and yet that the result should be regarded as scarlatina in the calf, is quite untenable; but I am quite ready to agree with Dr. Klein that similar lesions may be produced in calves, whether inoculated with scrapings from ulcers, or with the streptococcus from the Hendon cows, or with the streptococcus from cases of scarlet fever. The micro-organism is a septic organism (*streptococcus pyogenes*); and its inoculation or the inoculation of septic lymph may produce septicæmia.

SUMMARY.—From the evidence I have adduced, and from the facts that I have described, I am led to the belief that:

1. The nature of the contagium of scarlet fever is unknown.
2. The micro-organism regarded by Dr. Klein as the contagium is the *streptococcus pyogenes*.
3. *Streptococcus pyogenes* is found, sometimes in company with *staphylococcus pyogenes aureus*, as a secondary result in scarlet fever and many other diseases.
4. A streptococcus was first observed in scarlet fever by Crooke, later by Löffler, Heubner, and Bahrdt; but its exact relation to scarlatina, and its undoubted identity with the streptococcus from pus and puerperal fever, was definitely established in 1885 by Fränkel and Freudenberg.

To these I would add the following statements:

5. Both the Wiltshire and Hendon cow diseases were called cow-pox by people on the farms.
6. Both diseases correspond in their clinical history.
7. The ulcers on the teats correspond in naked eye and in microscopical appearances, and the latter "vividly recall the appearances of cowpox."
8. Calves inoculated from the discharges of the ulcers are similarly affected.
9. *Post-mortem* examination of such calves, or of calves inoculated with streptococci isolated from scarlet fever cases, show similar appearances.
10. The *post-mortem* appearances in such inoculated calves are the result of septicæmia.

11. There are no specific visceral changes in cow-pox apart from complications or coincident affections.

I propose to publish shortly the history of the lad shown at the Society, the full details of the calves inoculated from the boy, and of calves inoculated from those calves, the results of revaccination of those calves, and further details from Wiltshire and Gloucestershire.

RUPTURE OF THE SAC IN THE EARLIER STAGES OF TUBAL PREGNANCY, WITH NOTES OF TWO CASES.

By WILLIAM JAPP SINCLAIR, M.A., M.D.,

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CASE 1. Tubal Pregnancy: Sudden Death: Necropsy.—During the greater part of 1880 a patient, nullipara, was under treatment for an enlargement of the uterus, with retroversion. In November she did not menstruate, and in December she had symptoms which suggested pregnancy, but they were very slight, and from the history and circumstances it seemed an improbable event. On January 1st, 1881, she was taken suddenly ill, with faintness and pain in the bowels. The medical man who was sent for in the emergency found the chief symptom diarrhoea with tenesmus. The patient sank rapidly, and when I arrived in the evening, in response to a telegram, she was dead.

From my previous knowledge of the case, on learning the details of the fatal illness, I concluded that the patient had died of hæmorrhage from the bursting of the sac of a tubal pregnancy. We were permitted to make an examination of the abdomen, and we found it full of blood. There was a tubal pregnancy apparently of about six weeks' duration; the sac was near the middle of the left Fallopian tube, and the orifice, from which blood oozed on disturbing the parts, was on the posterior surface, so that there was a free opening into the pelvis. The uterus contained several fibroid tumours projecting on the serous surface, the largest of them about the size of a walnut. In cutting through the abdominal walls, which was done carefully as if in the performance of an operation on the living, we were struck with the

appearance of the blood through the peritoneum before it was cut. As soon as the peritoneum was reached we knew there was blood in the abdomen, because of the black colour apparently given to the peritoneum by the blood behind it.

It will be noted in the history of this case that the pregnancy was not capable of definite diagnosis. It was too early for certainty in almost any case; but in this case there were the previous symptoms of diseased uterus and disturbed menstruation, the uterus was always enlarged to the touch, owing, as was found after death, to the presence of small fibroids. The sound was not used after the menstrual period had been missed, and there was no sort of examination to excite unusual movements of the uterus or tubes for nearly a month before the rupture of the sac.

When the rupture took place, it will be observed that the disturbance set up in the bowels became the most prominent feature in the case, and so obscured the diagnosis that the experienced practitioner who was called in on the emergency concluded that some unusual bowel complication had occurred.

This case made a deep impression on my mind, and I resolved that if ever the opportunity occurred to me, I would operate at once, and endeavour to stop the hæmorrhage by surgical means. It seemed a simple operation, and the only question was how far the bathing of the whole abdominal cavity in blood, which could not possibly be completely removed, might militate against a successful result. Very few cases of operation in the early stage had been published at that time, and the proceeding did not seem so common-place then as it may appear now.

CASE II. Tubal Pregnancy: Rupture of Sac: Laparotomy: Recovery.—The next case is that of a patient of Mr. Priestley, of Fallowfield, at whose suggestion I had the opportunity of helping in the treatment. She was residing at a distance from home at the time of the rupture of the sac. Mr. Priestley's notes of the case prior to operation are as follows:

"The patient, Mrs. —, between 30 and 35 years of age, vii-para, after menstruating regularly for more than twelve months from the birth of the last child, missed two menstrual periods, and was, when the present symptoms commenced, a week past the second. A week after the first missed period there was a slight brownish discharge, which subsided after a two days' rest on the couch.

"On February 13th, 1887, the patient 'believes she caught cold.' On February 15th, after a hasty tea, she hurried to catch a train. Hardly was she seated in the carriage when she was seized with a 'sudden terrible pain, paleness, vomiting, and faintness.' She was carried out of the train on its next stoppage, in a few minutes, and conveyed home, when her abdomen was found to be 'distended like a drum.' The temperature was normal. On February 16th the pain and faintness continued, and the temperature was found to be 101°. She also complained of muscular pain in the limbs. The pain diminished towards evening, under the influence of sedative medicine. On February 17th the intense abdominal pain returned quite suddenly at 3 A.M., and at 5 A.M. a clot of blood passed by the vagina. More morphine was administered, and the pain abated towards evening. On February 19th, at 3 A.M., four days after the first attack of pain in the abdomen, the patient was once more seized with intense abdominal pain, and immediately became collapsed and pulseless. During the day she was seen by Mr. Priestley, and subsequently by Dr. Sinclair. She had then rallied. The abdomen was much distended and tympanitic; it was very tender all over, but extremely so beneath the ribs on both sides; there was dulness in both flanks, and in a zone one inch above the pubes (horizontal position of the body). The uterus was high up, and its movements were slightly impeded; the left broad ligament was somewhat full and stiff. The cervix was soft, the os externum patulous, and a trickling discharge of blood still continued. The pulse was over 120, and very soft; the temperature was somewhat above the normal. Diagnosis: rupture of a tubal pregnancy.

"It was determined to open the abdomen at once, and, if the diagnosis proved correct, to proceed to check hæmorrhage by surgical means, and remove the ovary and tube, and, if possible, the ovum."

The operation was performed with as much attention to antiseptic precautions as the circumstances of the emergency would permit. It seemed tolerably certain that hæmorrhage had repeatedly occurred when, in the process of rallying, the blood-pressure had reached a certain point, and there was every reason to fear a recurrence, which might be fatal, if we delayed till morning. The operation was, therefore, proceeded with immediately after our consultation, which was held late on the night of February 19th. The incision was carried as quickly as possible down to the peritoneum, and when this was reached any possible shade of doubt as to the nature of the case which might

have lingered in the mind of anyone present was removed. Although the light was not all that could be desired, the presence of a black liquid behind the peritoneum was most evident. As soon as the peritoneum was cut, the black blood spurted out like the fluid from a tense monocystic ovarian tumour when it is wounded. The amount of blood which flowed out was enormous. It could not be measured, merely estimated, and it would be easy to exaggerate; but it seemed to my colleagues and myself as if the quantity was about as great as would be the whole amount of blood in the body of a healthy woman of the patient's size. When we remember that the blood had been re-making, and bursting out to an almost fatal extent for four days, this estimate may be considered fairly accurate. When the blood, which was quickly pressed out by manipulating the abdominal walls, ceased to flow freely, the distension had disappeared; the belly was quite flat. Several handfuls of clots were now cleared out of the pelvis, and bright arterial blood could then be seen welling up rapidly through the black fluid which remained. Fresh hæmorrhage had evidently already begun. The ruptured sac was found at the extreme end of the right Fallopian tube, with very active hæmorrhage going on from its interior. The tube and ovary were ligatured in the ordinary way, and removed. No embryo was ever seen.

There could be no possibility of washing away all the extravasated blood, as it had been evidently bathing every abdominal organ up to the diaphragm. The pelvis was emptied with the help of sponges, and all the blood within reach was washed out by means of a warm saline solution—common salt in boiled water, $\frac{1}{2}$ per cent. This was poured from a jug, while the intestines within reach were gently moved about by two fingers of the left hand introduced through the wound. A considerable quantity of the fluid was left in the pelvis, a large Koerber's tube was put in position, and the abdominal wound was closed in the usual way. As it was anticipated that a large quantity of blood and sanguineous fluid would be discharged from the tube, the dressing applied consisted only of cotton wool and lint wrung out of corrosive sublimate solution, and packed round and above the orifice of the tube. This was kept in position by means of a flannel binder gently applied.

A large quantity of fluid was discharged into the dressings, and a large quantity was also drawn through the tube by means of an ordinary two-ounce glass syringe, with a piece of india-rubber tubing attached, of such a calibre as to enable it to be easily passed through the glass tube to the pelvic floor. The syringe was also frequently used to inject warm saline solution in the hope of breaking down the blood-clots and encouraging the discharge of the disintegrated blood within reach. The result was highly satisfactory. The bloody fluid continued to flow freely for several days, and the intestines and omentum seemed to be longer than usual in closing in round the tube and obstructing the free gravitation of the fluid to the pelvis.

The patient bore the operation well, and soon showed signs of improvement. The pulse, which was very quick and soft before the operation, fell to 100 within twelve hours; in two days it fell to 90, and never again rose appreciably higher. The temperature varied between 99° and 100°, for three days. During this time vomiting was severe, and though continuous since the administration of the anæsthetic, it began to cause us uneasiness. The pulse, however, continued satisfactory. From February 24th to March 8th, the temperature rose and fell from 99° to 102°. There was considerable hardening of the pelvic floor on the right side, with partial fixation of the uterus. Hardening could also be felt along the course of Poupart's ligament on the right side.

The hæmorrhage from the uterus, which had been almost continuous, though slight, before the operation, completely disappeared until March 1st. It came on then with a molimen like menstruation; the day before its appearance, the temperature rose for the first time to 102°. The glass tube was removed on February 28th; it had been kept in an unusually long time, owing to the continued flow of disintegrated blood, and precautions were taken to prevent it doing harm by pressure. A rubber tube was substituted for the glass one, and this was gradually shortened, and finally removed on March 3rd. The rest of the history has no event worth noting; the patient gradually recovered, and the last report of her, in June, was to the effect that she was quite well. Keeping to the experience of myself and of the gentlemen with whom I was associated in the treatment of the two cases outlined here, I should like to call attention to a few points.

1. There was an entire absence of symptoms pointing to abnormal pregnancy in both cases. Neither of them could exceed two months, and in both the Fallopian tube was distended to the bursting point without giving rise to such uneasiness as to evoke any complaint from the patient.

2. When the rupture occurred there were produced, in addition to

the signs of internal hæmorrhage, symptoms having no apparent relation to the pelvic viscera, and sufficiently prominent to obscure the diagnosis. This is a striking fact in the history of the first case, and, though Mr Priestley had diagnosed the second case, it was with considerable doubt as to the value to be assigned to the apparently irrelevant symptoms.

3. In making a vaginal examination in the second case it was found that the uterus seemed to be impeded in its movements, not fixed, and not free. During the operation the uterus was found to be surrounded with blood-clots, which explained the peculiar impression that had been conveyed in the examination. This fact must be of some diagnostic value in any similar case in which the hæmorrhage has not proved rapidly fatal, so that blood-clots have had time to form.

4. A minor point, to which attention has already been called, was the appearance of the black blood through the uninjured peritoneum. This is obviously of some importance where any doubt exists as to the diagnosis. The aspirator needle, if used to clear up a doubtful case, might fail to give reliable information if its point happened to be inserted into a blood-clot.

5. The use of the saline solution seems to me to be specially suitable for cases of this kind. Owing to its solvent effect on the blood, it probably aided greatly in carrying away all the fluid, which might have been subjected to the risk of infection by exposure or manipulation during the operation. To the viscera with which it came in contact it would be as irritating as non-sterilised blood-serum.

6. A physiological point of some interest may be noted. Mr. Priestley and I examined the urine, with the object of ascertaining whether it contained an unusual amount of colouring matter, or any abnormal constituents resulting from the presence of such a large amount of blood in contact, under pressure, with the peritoneum; but the results were entirely negative.

THREE UNUSUAL CASES OF ABDOMINAL SECTION IN PRIVATE PRACTICE,

UNDER THE CARE OF HERBERT W. WHITE, L.R.C.P. ED., L.F.P.S. GLAS.,
Bradford.

By STUART NAIRNE, F.F.P.S.G.,

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THE three following cases are unusual, in so far as their occurrence so soon one after another in the practice of one man is concerned, in the condition of the patients that preceded the operations, in the various guesses as to the diagnosis, in the apparent gravity of the cases, and in the very pronounced benefit resulting from the use of antipyrin. The whole after-treatment of the cases was conducted by Mr. White, to whom I am indebted for the histories, and by whose active and judicious management the cases were undoubtedly saved.

CASE 1.—Mrs. G. came under the care of Mr. White on June 4th, 1886. She was suffering from latent peritonitis, with symptoms of septicæmia. She was grey, collapsed, dull, and semi-delirious; there was albumen in her urine; her pulse was 140, and her temperature 104° F. She was vomiting frequently, and had wasted considerably away. A large tumour protruded from the abdomen, filling the pelvis, and extending to the umbilicus. The case looked so hopeless that operation was delayed, and the patient put on tonic and antifebrile treatment. She had been allowed to get into this state for fear of falling into the hands of an operator, when, she was told, her death would be assured. She hung on for several days, and at length the operation was performed, June 29th, under an attack of peritonitis, her temperature being 102° and her pulse 120. Adhesions were universal, to the abdominal walls, the bowels, and the pelvic viscera. The pedicle was broad and thin. It was tied with the Staffordshire knot. A considerable number of ligatures were left inside the peritoneal cavity. The abdomen was carefully sponged out, not washed, and the incision in the abdominal walls entirely stitched up. She had a bad night, with vomiting, and her temperature rose to 104.6°. The operation was performed at 2.30 P.M., and at 8 P.M. her temperature was 104.6°. She was then given a powder of 20 grains of antipyrin, and the improvement was so marked and immediate as to establish the value of the drug in this instance. The temperature oscillated between 99.4° and 100.4° for some time, but never rose beyond the latter after the first powder of antipyrin. Troublesome diarrhoea commenced on the third day after the operation, and continued till July 9th, when her temperature became normal, and she made uninterrupted progress towards convalescence. In the first week in August she was well enough to go to Morecambe,