fever and cholera are there fought. No speedy exemption is, in my opinion, to be expected.

It must be frankly said that the method of exclusion is practically impossible in the smaller villages, in the larger villages, and in the lesser towns; but this admission is very far indeed from covering the whole case. In the first place, it is precisely in those smaller and more or less circumscribed collections of huts and houses that the palliative or remedial measures are easily successful, and, provided the infection be not reintroduced, permanently successful. In the second place, whence do Indian villages derive their infection? Is it not from the great cities on the seaboard, and from the larger inland cities which have become secondary distributing centres? And is it indeed quite impossible to apply the method of exclusion in them?

I do not doubt that when a broad and comprehensive survey of all the data has been taken, it will be perceived that the exclusion of rats from occupied buildings in cities is the only measure which can permanently diminish the susceptibility of India to plague; and that, as soon as this principle of action has been grasped, resolutions taken by Government will be conceived in the spirit which animated that courtier who, when he was desired to undertake a business which the King himself thought it hardly possible to carry through, replied, "Sire, if it be difficult, it is already done; if it be impossible—it shall be done!"

PRIMARY SARCOMA OF THE VERMIFORM APPENDIX.

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ALTHOUGH primary malignant disease of the vermiform appendix is comparatively rare, recent increase in surgical and pathological activity has brought to light many instances. The literature of the subject of malignant disease of the appendix was collected and critically examined by Dr. H. D. Rolleston and Mr. Lawrence Jones in an excellent paper read before the Royal Medical and Chirurgical Society of London in 1906.¹ They found that the total number of cases of primary malignant disease of the vermiform appendix available for analysis up to that time was 42. Of these, 37 were recorded as some form of carcinoma, 3 as endothelioma, and 2 as

sarcoma. It is only the last with which I am at present concerned; I am able to add a third case. No other subsequent reference to sarcoma has been found, though there have been a few later cases of carcinoma.

CASE I.—In 1898 Warren recorded a round-celled sarcoma of the appendix spreading to the mesentery, for which he removed the caecum and performed an anastomosis by Murphy's button.²

CASE II.—In 1903 P. Paterson recorded a case of round-

celled sarcoma, infiltrating all the coats except the peritoneal.³

CASE III.—In 1905 a case of round-celled sarcoma of the appendix was under treatment by the writer, in consultation with Dr. Lees of Clifton, the particulars of which are recorded below.

The patient was a lady, aged 45, who had been losing flesh, had severe pain in the right iliac region and diarrhoea. The first indication of trouble was five months previously, when she had a sudden colicky pain in the right lower abdomen. Two months afterwards she had another short attack; and again, two months later, a longer attack. Subsequently she was frequently awakened by pains at night, which tended to be less severe but more constant. Tenderness then appeared, and a deeply-seated swelling was found, occupying the false pelvis, just above the brim on the right side. The region was resonant, and the tumour somewhat defined above. During the next few weeks the swelling increased, though pyrexia and tenderness were absent. We had suspicions of its malignancy, and after further consultation an operation was decided upon.

The appendix was about 3½ in. long, as big as one's thumb, and very hard and very adherent. Its club-shaped extremity was deep down behind the ileo-caecal junction. It was enucleated with considerable difficulty and fractured like a carrot near the base. The caecum and ileum were normal. The base of the appendix presented into the caecum like an os uteri, and through the small lumen a glairy fluid, but no faecal matter, escaped. A gland could be felt in close proximity and was simultaneously removed, as well as the uninvolved head of the caecum. The patient made a satisfactory recovery from the operation.

About five weeks later a tender tumour was first noticed in the left lower abdomen, and bimanually this was found to be ovoid, mobile, and apparently in the position of the left ovary. This continued to increase, and at the time of the death of the patient, nine months after operation, it occupied almost the entire abdomen. For some months the patient was frightfully emaciated; she developed pleuritic effusion at an early stage and very marked oedema later on.

Microscopic sections of the appendix in several places showed it to be uniformly composed of round cells, with a little intercellular reticulum. This pathological change involved the whole of the wall between the peritoneum externally and the muscularis mucosae internally; it showed signs of breaking through the peritoneal coat at one place; and, as will be seen in the accompanying photomicrograph, the submucosa was becoming invaded. The sections were submitted to several authorities, and the consensus of opinion was that the tumour was a sarcoma. Mr. Shattock, who kindly examined the sections, regarded the growth as a lymphosarcoma, having its primary origin in the submucous tissue, and tending to infiltrate the neighbouring coats, as is common with lymphosarcoma of the alimentary tract.

REFERENCES.

¹ Transactions of the Royal Medical and Chirurgical Society of London, 1906, vol. lxxxix, p. 125-156. ² Boston Med. and Surg. Journ., vol. cxxxviii, p. 177, 1898. ³ Practitioner, 1903, vol. lxx, p. 155.

A CASE OF SEPTICAEMIA WITH INTERESTING REACTIONS TO TREATMENT, AND RECOVERY.

By CLAUD F. FOTHERGILL, M.B., B.C.CANTAB.

THE following case appears to be of sufficient interest to warrant publication, showing, as it does, several interesting features. The writer himself was the unfortunate patient, and endeavoured accurately to observe his own case.

On May 1st, 1907, the patient, then senior house-surgeon at the Gloucester General Infirmary, had the misfortune to receive a small scratch at the root of the nail of the middle finger of his right hand whilst assisting at the amputation of a septic tuberculous hip. It bled slightly at the time, was there and then bathed in lysol solution, and was not again employed at the operation. Immediately the operation was over (and it necessarily had to be performed rapidly on account of the patient's condition) the finger was squeezed successfully to induce free bleeding, was held under a very hot stream of water, and then a little pure carbolic was rubbed into the cut.

Hot boracic fomentations were applied at frequent intervals during the day and once in the middle of the night, and were continued throughout. In the meanwhile prophylactic treatment proved of no avail, for the patient felt progressively more ill, whilst the finger became more acutely painful. The bowels were freely opened by a calomel purge. No fluctuation was discoverable.

On May 5th patient began to have rigors. Gas was adminis-

tered and incisions made dorsally and ventrally over the distal interphalangeal joint, but only a bead of pus was liberated. Further incisions were made two days later without finding pus. The temperature had now risen to 103° and the patient had acute pain, was extremely weak and had lymphangitis to the level of the shoulder. A mixture of tincture of digitalis and liquor strychninae hydrochloratis was given every four hours and morphine at night.

On May 9th the pus yielded a pure culture of streptococcus, and 10 c.cm. of antistreptococcal serum (Parke Davis) were injected into the left flank at 6 p.m. The temperature at time of injection was 103.8°. The same evening the patient had a severe syncopal attack, but it passed off after brandy had been administered. The following day another injection of 10 c.cm. of serum (Parke Davis) was given into the right flank, and two incisions were made over the metacarpo-phalangeal joint, and again the next day another 10 c.cm. of serum, this time of the Lister Institute.

From this date the patient's general condition steadily improved, with the exception of a second severe syncopal attack on May 12th after a soap enema. No serum was injected after May 11th.

× = time of injection of antistreptococcal serum (10 c.cm.).

The various incisions soon closed with the exception of that on the palmar surface of the metacarpo-phalangeal joint, from which pus continued to discharge in spite of gauze drains, hot fomentations, hydrogen peroxide spray, hot boracic, carbolic and mercury perchloride baths. The finger remained exceedingly painful, especially at the interphalangeal joints, and grating on movement was observed. Ethyl chloride was applied locally, and a dorsal incision made again down to the bone over the mid-interphalangeal joint to see if any deep pus was present. None, however, was found.

About an inch and a half of the tendon of the flexor sublimis digitorum sloughed out on May 27th, followed three days later by about ½ in. of the tendon of the flexor profundus, and the finger was then amputated at the metacarpo-phalangeal joint after the discharging wound had been well swabbed out with pure carbolic; a rubber and gauze drain was inserted on the palmar surface, the wound being otherwise sewn up.

There was considerable pain on the day after amputation, and on the second day oedema to the level of the wrist. All the stitches were consequently removed and the wound was allowed to gape. Very thick and gelatinous pus was discovered. Hot boracic fomentations were applied every two hours. The rate of coagulability of the patient's blood was now found to be very much above the normal, and he was accordingly given citric acid (gr. xxx) with syrup of lemons (℥ xl) every four hours for two days. After an interval of two days citric acid was again administered and then an extraordinarily rapid recovery ensued. The wound healed completely, and although it was by granulation, it appeared almost as though it had been by primary union. During convalescence the patient peeled as though recovering from scarlet fever.

Since his illness the patient has been able to operate, thus showing recovery of the use of his hand minus the finger. He has also been on a walking tour, but finds some shortness of breath on going up hills, due probably to some myocardial degenerative change from which recovery is as yet incomplete.

The especial features about the case are: (1) The extreme virulence of the infection. (2) The general symptoms became progressively worse until the use of the antistreptococcal serum, which almost at once acted beneficially. (3) Brandy was without doubt of great benefit when given in the two syncopal attacks, but, when the patient was given brandy four-hourly, it was found to raise both temperature and pulse, and made him more restless, and was therefore discontinued. (4) That, although the temperature and pulse had been normal or subnormal for nineteen days after the abatement of the general symptoms, yet, when the amputated finger was examined, it was found that not only had all the cartilage of the interphalangeal joints been eroded, but the bone was also eroded into the cancellous tissue, thus

proving that temperature and pulse in such a case are no guide to active disease, but that the presence of continuous pain is far more important. (5) The citric acid mixture proved of wonderful efficacy in lowering the abnormally high coagulability of the blood, and seemed directly responsible for improving the character of the pus, and bringing about the rapid and thorough recovery of the wound.

THE POST-MORTEM STATISTICS OF MIDDLE-EAR DISEASE IN YOUNG CHILDREN.

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THE frequency of middle-ear disease amongst apparently healthy children is well known. Cheate, examining 1,000 school children, found that 335 of these had a discharge from one or both ears. That such a condition constitutes a menace to the health of the child, and that it may lead to fatal cerebral complications, is universally admitted. The results of investigations in the post-mortem room as to the frequency of these cerebral complications and the relationship which middle-ear inflammation bears to other diseases are, however, not so well known. It was in the hope of adding to our knowledge on this subject that I have been investigating these questions by observations on the material at my disposal at the General Hospital during the last twelve months.

The material comprises 50 cases in children whose ages varied from 12 days up to 4 years. In every case the middle ear was opened through the "tegmen tympani." If the fluid in the cavity was clear no further examination was made. If pus were present, or if there was a doubt as to its presence, films were made and stained for bacteria. The presence of considerable numbers of polymorphonuclear leucocytes along with organisms was taken as the criterion for the existence of an acute inflammatory condition of the middle ear (suppurative otitis media). In most cases, however, there was no difficulty, pus welling up at once on the bone being ruptured.

Out of the 50 cases examined, 37 showed pus in one or other or both middle ears. In 20 of these the disease was bilateral; in 11 of the remainder the condition was restricted to the left side.

Previous observations on this question are not numerous. Preysing¹ gives the results of an examination of 100 children whose ages varied from 1 day up to 3 years, and who had died from various causes. Of these, 81 showed middle-ear disease, which was bilateral in 73. Bacteriological examinations brought out the fact that by far the most common organism present was the pneumococcus. Out of 121 positive results, Preysing found the pneumococcus present in 112.

Although cultural methods were not adopted in my own series, a Gram-positive, lanceolate, and capsulated diplococcus was found in practically all the films examined. Further, in 3 cases of acute miliary tuberculosis tubercle bacilli were found along with diplococci. This predominance of the pneumococcus does not appear to obtain when all ages are included. Supple² states that in a series of cases of middle-ear disease examined clinically, the *Streptococcus pyogenes* was found in 50 per cent. of all cases, but only in 30 per cent. of cases under 10 years, whereas the *Streptococcus lanceolatus* (pneumococcus) was found in 18 per cent. of all cases, and in 85.7 per cent. of cases under 10. We may therefore assume that, although not the commonest organism in otitis media of adults, the pneumococcus predominates in children, and that this predominance becomes more marked the younger the age limits selected.

With regard more particularly to the age of the children in my series, 43 were under 2½ years, 32 were under 1 year, and 17 under 6 months; 1 was only 12 days old, and yet showed bilateral otitis media.

The relationship of the cases with middle-ear disease to other pathological conditions is of considerable interest. Meningitis was found in 10 cases out of the 50; 8 of these showed middle-ear suppuration. Four out of the 10 were cases of pneumococcal cerebro-spinal meningitis, and in all these cases suppurative otitis media existed