temperature, and the evidence of softening may lead to a correct diagnosis; the discovery of tubercle bacilli in the sputum may be expected towards the end of the second week, but their appearance may be delayed for some time further. In any event we consider that the diagnosis should be established and treatment commenced in nearly every case by the end of the fourth week, and in some cases quite a week earlier.

At the present time there has not been recorded a sufficient number of cases of acute caseous tuberculosis treated by artificial pneumothorax to justify an opinion as to what percentage can be restored to health by this means, but we venture to publish a short account of our two first cases in the belief that the present very high death rate in this class of case will be reduced very materially, provided artificial pneumothorax treatment can be employed sufficiently early in the disease.

CASE I.

A. G., a schoolboy, aged 16 years, was always quite healthy till January 20th, 1922, when he contracted "influenza." He was treated by Dr. Milne of Streatham, who kept him in bed for two weeks; after a further week's convalescence the boy felt perfectly well and returned to school. The following day, February 11th, he shivered and had three haemoptyses, totalling about twelve ounces of blood. He was put to bed and Dr. Milne noted the rapid development of signs of consolidation in the upper half of the right lung, and, later on, increasing infiltration of the right base. At first the clinical picture resembled lobar pneumonia, but no crisis occurred, the temperature began to swing widely, and by the middle of March, in spite of the fact that no tubercle bacilli were found in the sputum on three occasions, Dr. Milne was satisfied that the case was one of acute pneumonic phthisis. On March 23rd the late Dr. Arthur Latham was asked to see the boy with a view to deciding whether artificial pneumothorax should be attempted. Dr. Latham agreed that this treatment would afford the only possible hope of recovery, and on March 24th the boy was admitted to St. George's Hospital, x-ray photographs being taken on his way from the receiving room to the ward. A few weeks later the onset of Dr. Latham's fatal illness precluded his further attendance at the hospital, and the subsequent treatment of the case devolved on the present writers.

Condition on admittance (March 24th).—A pale, wasted boy, with hectic flush, dirty tongue, injected fauces, and frequent cough; he was obviously very ill indeed. Temperature 102° , pulse 120, respirations 28. The right lung showed diminished expansion, especially of the upper half, with increased tactile vocal fremitus; solid dullness to percussion over the upper half, back and front; vocal resonance greatly increased, some aegophony. The breath sounds were tubular with many hard crackles and pleural creaks over the upper and middle lobes. The lower lobe showed impaired resonance and many medium and fine crepitations. The left lung was hyper-resonant and emphysematous, with a patch of fine crepitations in front of the axilla and a band of hard crepitations to the left of the vertebral column (? conducted from the other side). The heart, which was dilated, gave sounds of poor quality; there were no murmurs.

A skiagram showed much fibrosis with excavation of the upper and middle lobes of the right lung, with pleural involvement, and fine mottling all over the lower lobe. There was emphysema and general tuberculous infiltration of the left lung, chiefly in the lower lobe, and most marked just external to the cardiac impulse.

Subsequent Course of Case.—It was considered advisable to collapse the right lung fairly quickly. The first injection was given on March 25th; no difficulty was met with, and 320 c.cm. of oxygen were introduced. The initial manometer readings were -4, -8 cm., and the final -3, -6 cm. By the end of a fortnight five injections had been given, nitrogen being used after the first day, and satisfactory collapse had been achieved, the final pressure after treatment was maintained at roughly -1, +3 cm. A persistent adhesion from the apex to the first rib did not interfere with the collapse. The sputum, which after the first injection of gas was copious and loaded with tubercle bacilli, ceased completely when collapse had been achieved, and there has been none since April, 1922. Constitutional improvement was slow but steady; the temperature did not reach the normal for five months and was not stable for seven months; the pulse remained high for several months, but was down to 70-90 a minute by March, 1923. The weight rose in eighteen months from 99 lb. to 121 lb., but has fallen a little since manual work has been undertaken.

After nine weeks of treatment, pleurisy with effusion developed on the right side, with severe constitutional disturbance for several weeks. This necessitated gas replacement of the fluid, which took several weeks to re-form in any amount after the chest had been completely emptied. Finally, the fluid, though sterile, became purulent, and in July, 1923, was so thick that it could not be withdrawn through any ordinary aspirating apparatus. Accordingly 5 c.cm. of Gauvain's fluid* was injected to liquefy the effusion, and a few days later 18 oz. were removed with success. Since September, 1923, the boy has been at a sanatorium, where, we are informed, it was once necessary to liquefy and remove a thick effusion as described above, but since then no fluid has formed and ordinary gas refills are performed every fortnight or

so. He is now doing Grade III work (pick and shovel and drawing a truck), is afebrile, and without cough; the signs in the left lung have long since disappeared and he looks and feels perfectly well.

CASE II.

W. H., a schoolboy, aged 15, was admitted to St. George's Hospital on January 1st, 1923, with a history of the sudden onset of illness with shivering, pain in the right chest, cough and expectoration, ten weeks before. Physical examination, as well as x-ray photographs, showed an almost identical condition to that described in Case I, except that there was rather more implication of the left lung. The same treatment was adopted, but owing to the existence of numerous tough adhesions only partial collapse of the right lung was obtained, in spite of the fact that the intra-pleural pressure was raised at each treatment to +30 and +40 cm. Nevertheless progress has been, on the whole, satisfactory: the fever has disappeared, there is neither cough nor sputum, and moderate walking exercise has been permitted from time to time without obvious ill effect other than an increase in respiration rate. By reason of the pleural adhesions it is now (sixteen months after the beginning of treatment) impossible to introduce any more gas, and the lung has partly re-expanded, though with a very thickened pleura and marked falling in of the chest wall.

We do not maintain that this case is so satisfactory as the first one, and it is too early yet to say what may be his ultimate capacity for work or exercise; but we think that if he fails to make a good recovery it will be because he was not got at early enough to achieve full collapse of the damaged lung before the presence of multiple adhesions rendered this impossible.

A CASE OF STREPTOCOCCAL MENINGITIS TREATED WITH SERUM: RECOVERY.

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RECOVERY from meningitis due to a haemolytic streptococcus is sufficiently rare to warrant placing the following case on record.

A girl, aged 10, of delicate constitution, had been subject to mucous catarrh of the bowel and mild attacks of acidosis associated with an irritable patchy dermatitis which were quickly relieved by treatment. Adenoids, but not the tonsils, were removed during 1922.

On March 14th, 1924, she was sent home from school with mild tonsillitis and a temperature of 99° . On March 18th she complained of earache; the tympanic membrane was hyperaemic but not bulging; on March 19th the temperature was 100° and the pain in the ear continued. On March 22nd the dermatitis was very troublesome, but the temperature was 98° F. On March 24th she had pain in the right ear and the breath smelt of acetone. Vomiting occurred, but was relieved by alkali. On March 25th the pain in the ear ceased and she was better until March 30th, when persistent vomiting recurred and the vomit was thought to contain pus. Mr. E. S. Steward of Harrogate examined the ear, but did not consider there was any indication for surgical treatment. There was slight hyperaemia of the tympanic membrane, but no swelling or vertigo; the ear appeared to be settling down. A small amount of pus was squeezed from the right tonsil.

On March 31st she complained of severe frontal headache, said she saw two of everything, and was confused and apathetic. The temperature was 104° F. and she was seriously ill; the vomiting continued. The neck was stiff, with pain when the head was bent forwards. The knee-jerks were not obtained and Kernig's sign was present. Exploratory lumbar puncture yielded 20 c.cm. of turbid fluid under increased pressure; polymorphs 60 per cent., lymphocytes 40 per cent. No organisms were seen in direct smears. After the puncture the headache was relieved and the temperature dropped to 99.8° .

The headache and general symptoms returned next day and the temperature was 103° F. After the removal of 20 c.cm. of fluid 15 c.cm. of antimeningococcal serum were given intrathecally and 10 c.cm. subcutaneously. This was followed by great restlessness, much generalized pain, and considerable increase of the headache. Towards the end of the next day (April 2nd) there was distinct improvement and the temperature dropped to 100° . The pathological report upon the fluid was: "Fluid turbid, the turbidity being due to pus cells composed of polymorphs 64 per cent., lymphocytes 36 per cent. No blood present. Gold sol reaction nil. Globulin increased. Culture on solid media gave a moderate growth of a short chained streptococcus which was markedly haemolytic in character." Lumbar puncture was again performed;

*Camphor 1 part, thymol 2 parts, ether 3 parts.

the pressure and turbidity were less; 10 c.cm. of antistreptococcal serum were injected subcutaneously.

On April 3rd the improvement was very distinct. There was no headache and the mental condition was normal. Kernig's sign was not obtained. Lumbar puncture gave only slightly turbid fluid under normal pressure. Next day 6 c.cm. of clear fluid were obtained by puncture, and the patient was quite clear from symptoms. Except for a serum rash on April 10th recovery from this point was uneventful.

Remembering the rarity of primary streptococcal meningitis, it may be questioned whether in this case the meningitis was not secondary to an ear infection. There was evidence of ear disturbance following mild tonsillitis, and although a streptococcus was not recovered from the throat, we are of opinion that the meningitis was definitely related to the primary naso-pharyngeal condition. At no time previous to the meningitis or during the illness was there any aural discharge.

Numerous instances have been recorded of recovery following operation for meningitis developing during the course of middle-ear suppuration. Such cases have been reported by Holger Mygind¹ of Copenhagen amongst a series of 210 cases of otogenic meningitis, and also by G. J. Jenkins,² J. F. O'Malley,² and E. Watson-Williams.² In many of these cases the cerebro-spinal fluid was turbid to the naked eye, and organisms were seen in the direct smears of the fluid obtained by lumbar puncture. Apparently in only a very small minority of the patients who survived were organisms recovered by cultivation, and in no case was a streptococcus obtained. In all the cases the meningitis followed ear disease, and with the exception of one of Mygind's all the cases were operated upon and basal drainage brought about.

The unusualness of our case lies in the recovery without operation after a streptococcus had been obtained by culture from a markedly turbid fluid. We have found records of only two cases parallel with ours—one of the series reported by Mygind which was not operated upon (no organism was, however, recovered by culture), and a case reported by Archer³ from which a haemolytic streptococcus was recovered by culture.

We are of opinion that the serum administered by intrathecal injection was definitely related to the improvement which took place within twenty-four hours, and that the horse serum itself produced some effect of the nature of foreign protein shock which resulted in the stimulation of the child's antibacterial powers.

It is hoped that the happy result in this case may stimulate others to treat energetically cases of meningitis, usually considered hopeless, by frequent lumbar puncture and early intrathecal injection of serum. In the absence of a complete bacteriological report it would seem worth while to make use of an antimeningococcal serum.

We wish to acknowledge the help afforded by Dr. Sinclair Miller, who carried out the bacteriological examinations.

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OBSTINATE CONSTIPATION TREATED BY CRUSHING THE LOWER END OF THE COLON AND UPPER END OF THE RECTUM.

BY

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THE subject of the operation here described was brought to me by Dr. James C. Watt, of the West African Medical Service, who supplied the history and urged the operative treatment which was carried out by me.

The patient, a man aged 36, was robust as a boy, but during adolescence he developed chronic dyspepsia with constipation. The tongue was generally coated, and he began to suffer from morning drowsiness and faintness on rising. When about 25 years

old the constipation became severe, so that cathartics had to be used regularly, and the man became an invalid.

Right-sided abdominal pain and discomfort now became constant, and the pain in the hypochondriac region was so severe that cholelithiasis was diagnosed and the abdomen opened in 1922. No local lesion was found, but some peritoneal bands passed down to the ascending and transverse colon, matting these slightly, but not sufficiently so to cause noticeable obstruction. The appendix was removed at this time.

The patient was now hardly capable even of the lightest work; he was often melancholic, and "at the end of his tether." He was placed by Dr. Watt on a low protein diet and advised to use a bowel douche daily. There was immediate relief from all symptoms, the patient feeling happy and comfortable in body for the first time for years, but he could not regain a healthy degree of strength and still had attacks of obstinate constipation.

X-ray photographs taken in February, 1924, showed general atonicity and ptosis of the colon, characteristic of the asthenic type of chronic intestinal stasis. Shortly after this I was asked by Dr. Watt to see the case and consider the advisability of performing an operation to destroy sphincter action and kinking at the upper end of the rectum.

The patient was prepared for operation by Dr. Watt, who lays stress upon the thorough clearing out of the system by practical starvation, with copious water drinking and daily enema, until the tongue is clean and the abdomen concave; then low protein diet for a couple of days, and practical starvation for twenty-four hours before operation. Sips of water are allowed immediately after the operation; morphine is given as required; and a low protein diet gradually re-established, beginning about forty-eight hours after operation.

Operation.

The operation is simple and presents little difficulty in performance apart from the rather restricted space in the lower pelvis. With the patient in the Trendelenburg position, a vertical median incision was made in the lower abdomen, extending above the umbilicus. The bladder was turned forward, and the pelvic basin and pelvic colon exposed. A point on the pelvic colon, about four inches above the attachments of the peritoneal ligaments of the rectum, at which the kinking was marked, was chosen. A small incision was made at the apex of this kink into the interior of the bowel, and through this incision the blades of a large and powerful crushing forceps were introduced, one blade going into each limb of the V. One blade therefore descended, as it was introduced, toward the rectum, while the other ascended the pelvic colon. The blades were introduced to their full extent so that the blade which descended toward the rectum reached the insertion of the peritoneal ligaments. As the clamp was now closed, the two limbs of the V were approximated, so that four inches of the end of the pelvic colon and the beginning of the rectum lay parallel to four inches of pelvic colon immediately higher up.

Care was taken at this stage to keep the mesenteric attachment of the bowel well away from the proposed line of crushing. The mesentery of both limbs was kept below, or posterior to, the position of the blades of the crushing forceps, and once this position had been assured the full crushing power of the forceps was applied.

The clamp was kept on for several minutes, and during this period a stitch was run along the junction of the two pieces of bowel above, or anterior to, the blades of the crushing forceps, so as to minimize the danger of separation of the pieces of bowel on removal of the clamp. The clamp was then slipped out carefully, and the preliminary incision made at the apex of the V was sutured. The abdominal wound was then stitched up.

The idea of the operation is that, once the two pieces of bowel wall which have been severely crushed have sloughed, a wide opening will be established between the upper end of the rectum and the pelvic colon, redundant pelvic colon and consequent kinking will be largely done away with, and in addition a sphincter action of the upper end of the rectum and kinking about the junction of the pelvic colon and upper rectum will be rendered impossible.

Certainly the results of the operation were remarkably good. The patient soon began to lose his melancholic symptoms; the tongue kept clean; and the bowels began to move naturally, once or twice daily, with the aid of a little virolax. He has recently been able to leave for New Zealand, feeling fit and able for his work. A letter received from him at the time of writing this states, "I am keeping very fit and have a bowel movement twice a day."