tired perhaps, or got "run down" or thin, or developed an obstinate "stomach" cough, and at that time it is quite likely there were a few physical signs to be detected, such as dullness at one apex, a few crepitations, and diminished breath sounds. Such cases are met with often enough when examining contacts in the home, and present a serious difficulty in attempting any such comparison as I have made. Most of these get well within a short time (I have known this happen within a month or two even when tubercle bacilli were found in the sputum on the only occasion when any was procurable), but some go on to major tuberculosis, and this is where the preventorium should prove beneficial. Many such I have sent to a sanatorium. A comparison of Stage II. cases alone in each series seemed to me enough to eliminate minor cases. When collecting cases I had no bias beyond a moderate belief in the efficacy of sanatoriums, and did not know whither the inquiry would lead.

In considering tuberculosis to-day one great difficulty is that the majority of those who give thought to the subject have been narcotised by sanatoriums.

Treatment other than at a Sanatorium.

Dr. Crockett suggests that if I am right "the best thing that can be done for tuberculous patients would be to leave them alone." If he will make this read "for many tuberculous patients" it is certainly correct. A number of patients do well if reassured and left alone under the normalising influence of their daily work, with possibly occasional observation by the physician, so that other methods may be tried if progress seems unsatisfactory. Minor tuberculosis in private practice is usually treated in this way, and on the whole successfully, with or without the addition of some medicine which enables the doctor to maintain the observation. When tuberculosis becomes more manifest, and has been definitely mentioned to the patient, "advice only" does not for a moment imply no treatment at all. It is here, indeed, that the skill and individuality of a fadless practitioner can be exercised most efficiently. First, to read between the lines of the patient's history, then to put right what is wrong in his daily life. To substitute, for instance, something restful for a too vigorous recreation, or too many public activities in the patient's spare time; or to modify the despairing desire for a short life and a merry one, which so often arises when a patient, especially a young patient, does not feel as well as he did, and suspects that something serious is the matter. And in many patients the weekly encouragement by their doctor is a most important aid to recovery.

Conclusions.

I still hold the views set forth in the paper read on Jan. 31st last. On the one hand I have received severe criticism from some of those engaged in tuberculosis work, but on the other hand several practitioners of experience have informed me that they agree whole-heartedly with my remarks; and the experienced practitioner is generally able to pass very sound judgments on treatment other than his own. The most hopeful means that I can see of dealing with the tuberculosis problem is by adequate isolation of infective cases. This necessitates hospitals, of which there is a shortage, and the introduction of appropriate legal measures, of which there seems no prospect. The preventorium, especially for children, also seems promising, and by all means let us try to improve and coördinate the present sanatorium methods. A committee of experts to visit sanatoriums with the object of devising better treatment, and of standardising our methods, as advocated by the Association of Medical Superintendents, would be admirable if the members are not chosen solely from medical superintendents; it should include a general practitioner, a surgeon (for sanatorium treatment is often beneficial to surgical cases), and an intelligent layman.

Clinical Notes :
MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

**A CASE OF
DELAYED TETANUS TREATED WITH LARGE
DOSES OF ANTI-TETANIC SERUM.**

**BY S. E. DENYER, C.M.G., M.A., M.D., B.C. CAMB.,
F.R.C.S. ENG., D.P.H. LOND.,**

**ACTING HON. PHYSICIAN, HULL ROYAL INFIRMARY; LATE
EXAMINER IN ANATOMY, CAMBRIDGE UNIVERSITY, ETC.**

THE following case is of sufficient interest to merit permanent record :—

A. B., 24 years, was admitted on April 28th, 1917, to Hull Royal Infirmary, under my care, with inability to open his mouth. He had been wounded five months before and had sustained a gunshot wound of the face, right arm, and right leg. His right eye had been excised and anti-tetanic serum was stated to have been administered on the same day, and again a few days later. After this he appeared to go on well, and the wounds healed up. On April 24th he found he could not open his mouth properly, and he had attacks of shivering. On the 25th he consulted Dr. Soutter, of Hedon, who diagnosed tetanus and sent him into the Hull Royal Infirmary.

On admission he was able to walk into the ward. There was marked trismus, he being unable to open his mouth more than one-eighth of an inch; back rigid, neck stiff, and any endeavour to sit up brought on a severe spasm of the jaw. No headache, temperature normal, pulse-rate 100; he complained of a cough and some pain over insertion of diaphragm. Slept well; no mental symptoms, tremors, or Kernig's sign, but marked increase of the reflexes. No local pain in the wounds which were healed, but a local increase of reflex excitability in the muscles of the face. No sore-throat or difficulty in swallowing. There was considerable general muscular rigidity.

Treatment.

The patient was put on fluids ad lib. Milk, beef-tea, &c., and treated with intrathecal, intramuscular, and subcutaneous injections of anti-tetanic serum.

The following amounts were given: the numbers represent hundreds of units :—

Date in 1917.	Intra-thecal.	Intra-muscular.	Sub-cutaneous.	Date in 1917.	Intra-thecal.	Intra-muscular.	Sub-cutaneous.
28/4	30	15	—	9	—	160	—
29	—	15	—	10	—	160	—
30	30	15	—	11	—	80	—
1/5	160	15	—	12	—	80	—
2	—	80	15	13	—	30	—
3	160	160	80	14	—	30	—
4	160	80	—	15	—	80	—
5	—	80	30	16	—	80	—
6	160	80	30				
7	—	80	80	17/5*	—	—	—
8	—	80	—	18	—	30	—

* No serum administered on this day.

Total of units given, 2365 hundreds, or 236,500 units.

The intrathecal injections were in every case given under chloroform, and owing to the patient's weakness after chloroform it was considered advisable when possible to miss a day. Twenty-one injections of $\frac{1}{4}$ grain of morphia were given during the period for the first few days, two a day being given. On May 5th a serum rash appeared. On the 8th he was able to move himself much more in bed and was able to read; on the 9th he was able to sit up in bed and had fish for dinner, but could not open his jaw very widely. On May 16th he could open the mouth quite well, but not to its full extent. There was no stiffness in the muscles of the face. I saw this patient in robust health a year ago, three years after the attack of tetanus.

Remarks.

This case illustrates the value of large doses of serum in the treatment of tetanus. I should point out that the serum was given intrathecally, after lumbar puncture, an equal quantity of cerebrospinal fluid having been drawn off. This method acts on the nerve cells in a shorter time than the intramuscular injection (it is stated in about 12 hours), the intramuscular injection taking 24 hours.

and the subcutaneous a still longer time. Intravenous injection was not given on account of the danger of possible anaphylaxis. Medical Abstracts, Vol. I., p. 116, quoting Richet, Brodin and Saint-Girons, "On the immunising action which chloride of sodium manifests on the determining anaphylactic dose," states that if nine parts of saline 0.8% are mixed with one part of plasma, the anaphylactic reaction does not occur. In the above case there was no sign of anaphylaxis, although a large amount of serum was given by subcutaneous, intramuscular, and intrathecal routes.

It is, I believe, difficult at the present time to obtain the highly concentrated serum suitable for intrathecal injection. In a case of tetanus which came under my care a few months ago, I was unable to obtain the highly concentrated serum; the more dilute is not nearly so efficient for intrathecal injection, as only a small quantity can be injected into the spinal theca.

A CASE OF DIVERTICULITIS WITH METASTATIC SUPPURATION.

By W. E. FOGGIE, M.D. EDIN.,

EXTRA PHYSICIAN, DUNDEE ROYAL INFIRMARY; LECTURER ON
CLINICAL MEDICINE, ST. ANDREWS UNIVERSITY.

THE following is a record of the clinical history and post-mortem examination of a case of diverticulitis in which the rare sequela of metastatic suppuration was present.

C. C., a woman aged 80, was admitted to hospital on August 20th, 1920, with a left-sided paralysis of 14 days' duration.

Family and Personal History.—Her father died of a "stroke," and her mother of pulmonary tubercle. Her only brother and her only sister died in infancy. She was a nurse for 30 years, mostly with private patients, and latterly she has been a prison wardress. Her home conditions are satisfactory. Erysipelas, chronic bronchitis, and neuritis make up her past ailments.

Present Illness.—She has had threatenings of "shocks" for a year or two and has on several occasions fallen down. Two weeks before admission she fell down and was unable to get up. She did not lose consciousness, but was confused. She was unable to stand, and could not move her left arm or her left leg. She has remained in this condition until her removal to hospital.

Condition.—Patient is a very big, heavy, fat woman. She looks aged and helpless as she lies in bed. Her memory is poor unless she happens to be talking about old times. Her chief complaints have reference to pain in her paralysed left leg and left arm. The pains are situated in back of leg and thigh; in upper limb they are in the arm and pass into the neck. Sensation to light touch appears diminished over left side. Left arm is held rigidly in a flexed position close to the chest; there is slight power of movement in the fingers and at the elbow, and also in the leg, but any movement is attended by severe pain. The tongue on protrusion is deviated to the left. Muscles flaccid in the left lower extremity, but rigid in the upper. No obvious wasting. Examination of reflexes on left side shows knee-jerk difficult to elicit, a Babinski, and absence of an ankle clonus; left abdominal reflex is present; supinator and biceps reflexes are exaggerated. Pulse 72, regular; artery wall thickened. Slight enlargement of heart to left; mitral first sound long; respiratory system appears normal. Tongue coated; bowels constipated. Urine, which has a sp. gr. of 1010, is acid, dull-straw in colour, and contains albumin.

Progress of Case.—Patient showed no sign of improvement after admission. The condition was apparently stationary for the first week, but thereafter it got worse from day to day. The pains increased, a cough developed, the patient became sleepless, and the heart failed. The end came at the beginning of the fourth week with increasing weakness, Cheyne-Stokes breathing, and mild delirium. The temperature remained subnormal throughout. The pulse quickened a little after the first week, but was generally only between 100 and 108. The respirations remained quite quiet until the last day or two of life. After one week incontinence of urine set in and remained during the rest of her life. Constipation continued until a day or two before death. The patient died on Sept. 13th. The clinical diagnosis was cerebral hæmorrhage.

Post-Mortem Report.

The post-mortem report by Prof. L. R. Sutherland was as follows.

The body is markedly obese. The layer of adipose tissue over the abdomen measures fully 1½ inches in depth. The heart is soft and fatty, showing infiltration of the wall of the right ventricle. The aorta is atheromatous. The left lung shows several considerable abscesses having the character of embolic abscesses surrounded by condensed lung tissue. The pleura covering several of these is necrosed. Branches of the pulmonary artery contain slightly adherent thrombus. The spleen, kidneys, and liver present nothing noteworthy. The sigmoid flexure, which has large appendices epiploicæ, is the seat of multiple false diverticula. From one of these seen before disturbing the part a small amount of pus exuded. The mucous membrane of the lower bowel generally is hyperæmic. In the brain there is cedema of the soft membranes. The vessels at the base are atheromatous. On the right side in the region of the external capsule there is an area of evidently purulent softening. This is an ill-defined abscess measuring roughly 1½ inches antero-posteriorly by ¾ inch transversely. It is regarded as an embolic abscess. There is no evidence of hæmorrhage.

Summary.—Multiple diverticula in large intestine—suppurative diverticulitis. Embolic abscesses in lung (thrombosis in pulmonary artery). Embolic abscess in brain, &c.

Commentary.

The entry of diverticulitis into general recognition as a clinical entity dates from the review of the subject by Telling¹ in 1908, when after an analysis of 105 cases the main lines of its pathology and its clinical manifestations were laid down. The disease received much attention after this more especially from surgeons, so that Lockhart-Mummery, in his treatise on diseases of the colon,³ is able to give a detailed account of the condition and of its surgical treatment. In 1917 Telling and Gruner,² from a study based on 324 cases, were able to amplify and give more definition to their previous picture on both its pathological and clinical sides. Lastly, in 1920, in a discussion at the Royal Academy of Medicine,⁴ opinion was focussed from many sides on the whole subject especially as regards its ætiology, diagnosis by X ray, and surgical treatment.

It is now recognised that the condition occurs generally in those at least of middle age, frequently in the obese, and often where there is a history of constipation with the added factor of increased pressure inside the bowel. The main site is the sigmoid flexure. The diverticula, generally multiple, allow the retention of faecal material which goes on to the formation of concretions. With subsequent bacterial invasion there results a diverticulitis which may lead on to perforation, or to adhesion to neighbouring organs—e.g., to the bladder, or to tumour formation and possible stricture. In short, the diverticulitis in an acute or in a chronic form has to be reckoned with in the diagnosis of the various surgical or gynaecological conditions occurring in the left lower quadrant of the abdomen. The present case is on a somewhat different footing. It happened in a weak old woman, and the diverticulitis had not proceeded so far as to develop those secondary results which bring the disease within the likely range of clinical recognition. It is sometimes possible at this stage of the disease to demonstrate the presence of the diverticula by the use of X ray with bismuth meals.

In his review of 1908 Telling could only find one example of metastatic suppuration, that of Mackie Whyte,⁵ who found in a patient ill with rigors and pyrexia, multiple abscesses of the liver, secondary to a diverticulitis in a cavity the size of a thrush's egg in the sigmoid flexure. In p. 494 of his monograph of 1917 Telling still says "so far only one example of this (i.e., metastatic suppuration) has been recorded." I have not been able to find any other case, so that the above appears to be the second recorded one. It is regretted that the abscesses in the lung and the brain were not examined bacteriologically so that their relation to the occult focus in the sigmoid might have been made more explicit.

References.—1. Telling, W. H. M., THE LANCET, 1908, i., pp. 843, 928. 2. Telling, W. H. M., and Gruner, O. C., British Jour. of Surgery, vol. iv., pp. 468-530, 1916-17 (complete bibliography). 3. Lockhart-Mummery, J. P., Diseases of the Colon, 1910. 4. Proc. Roy. Soc. Med., Sect. of Surg. Subsect. of Proctology, vol. xiii., No. 6, pp. 71-98, 1920. 5. Whyte, J., Mackie, Scottish Med. and Surg. Jour., vol. xviii., Feb., 1906.