against vivisection is improved away) that we have no certain, clear and easy test for the pyrogenous and phlogogenous products of the growth of bacteria, simply because we do not know them, but only their frequent concomitants.

Well, then, you can understand that, when I say it is desirable to have some idea of the frequency with which antiseptic treatment fails, I desiderate what is not easy of attainment. Having no absolute test, we attain certainty of asepticity only by ascertaining that the testimony of all the tests I have mentioned is coincident. Now, I do not think that the statistics which have been published fulfil this rigorous requirement. They have been used to show the general goodness of results under antiseptic management, and doubtless in that view they have a certain value of their own. And here let me say that the idea which appears to possess some men, that the questions which underlie the antiseptic method, or its value, can be at present determined by general and comparative statistics, seems to me curiously erroneous. In those confusingly able lectures of Dr. Burdon Sanderson lately published, much stress is laid on the abolition, in certain German clinics, of septicæmia and pyæmia. Such facts are of some value, I admit; but, when we consider the mass of septic cases that necessarily remains in every hospital, and the uncertainty, which I have just pointed out, as to the proportion of failures, it is evident that other factors (better drainage, greater cleanliness) have also been at work; and I will venture to add that antiseptic management, although I hope and believe it will enormously diminish mortality in the cases to which it is applicable, can never abolish the septic results of surgery. And so, on the other hand, for similar reasons, the demand (made, I think, by Mr. Holmes) to compare the statistics of eclectics and antiseptics can lead to no conclusion whatever, but only to confusion and error. The more limited inquiry which I suggest is, perhaps, more feasible and useful; and I hope, at some future time, to make some contribution to it. Meanwhile, I am not in a position to do so, because I have not myself invariably applied the rigid tests I have mentioned. I do not believe that the frequency of failure will be found to militate much against the usefulness of the antiseptic method. I feel assured (inasmuch as I know of only five cases in which I have not succeeded when I might fairly have hoped to succeed during the past six months) that the percentage of failures, taking into account certain dubious cases, is not greater than ten per cent.; and that, with more experience, I shall be able still farther to reduce it. There is nothing mysterious or difficult in the process; but, as I have said, it involves perpetual attention to minute details on the part, not only of the surgeon, but of his assistants; and a certain number of mistakes will, therefore, always occur, the probable proportion of which it would be well to ascertain both generally and for the varying sizes and kinds of wounds.

Hence arises also another interesting point of inquiry. To what extent may we class our failures under the heads avoidable and unavoidable? How much may be due to errors of manipulation? How much to other causes? We do not yet know whether, in the human subject, putrefaction may sometimes come from within. Most certainly, such a result must be exceedingly rare. But I have not myself the slightest doubt that there is great variation in the susceptibility to inoculation of different patients. We know, of course, that, according to the constitution of the patient and the character and locality of the lesion, the effects of the contact of putrescent material vary infinitely. In this empyema, we have seen much suffering result; in the excision of the mamma, none at all; and, in the abscess of the tibia, very little. But I think there is reason to believe that gross errors of management may sometimes be made with impunity; while, in other instances, the slightest flaw inevitably leads to putrescence; that, in short, the soil is sometimes so unfavourable, that many germs may fall upon it and die; while, in other cases, one will be sufficient to insure luxuriant growth of bacteria.

CASE OF ACUTE PHOSPHORUS-POISONING.

By W. T. MARTIN, M.D., Surgeon-Major.

R. G. B., AGED 31, servant, of active and moderately temperate habits, was admitted to the Royal Victoria Hospital, Netley, at 10.30 A.M. on December 18th, 1877. He stated that he had had liver-disease in India seven years previously, when serving in the 66th Regiment; and that he had been ailing for about ten days. On admission, he was very weak, anxious, and depressed; appeared drowsy, but complained of sleeplessness. No spots were observed on the skin, which, with the conjunctivæ, was of a distinct yellow tinge. The tongue was coated with blackish fur; bowels constipated; belly tympanitic; abdomen

and right hypochondrium slightly painful on pressure; area of hepatic dulness not increased (diminished, if anything); and there was no vomiting. The condition of the respiratory system was normal; pulse 88, weak; temperature in the axilla 98 deg. He had passed urine. The case being regarded as one of blood-poisoning by bile, he was ordered pills containing calomel, scammony, and colocynthis, a warm bath, turpentine fomentations, and milk diet. In the afternoon, the temperature rose to 99 deg.; but was not afterwards recorded, as, when visited in the evening, he was sleeping quietly.

December 19th, 10 A.M.—He was much worse, lying on his back in a state of stupor, with eyelids closed, pupils dilated, and insensible. The skin and conjunctivæ were more deeply jaundiced; the extremities were cold and bluish, and a rash (petechial?) was noticed on the forehead. The pulse was 84, very weak and intermittent; respirations 48, without stertor; temperature 98 deg. The tongue was coated with black fur; the lips covered with sordes; the breath was offensive; the belly was more tympanitic; the bowels were still constipated, and the bladder was slightly distended with urine, which, on withdrawal, was found to be of a smoky colour.* The patient's condition strongly reminded one of typhus. Four grains of calomel were placed on the tongue; hot turpentine fomentations were applied to the abdomen and legs; the nape of the neck and loins were freely blistered with the strong liquor ammoniæ. An enema of castor-oil, turpentine, and tincture of assafoetida brought away a considerable quantity of black pulsatous feculent matter. After a transient rally, during which he took some beef-tea and brandy, the stupor increased, and the patient died, without convulsions, at 5 P.M., having just previously vomited a quantity of black matter similar to what was afterwards found in the stomach.

The following particulars regarding the case prior to his admission to hospital have been kindly furnished by Surgeon-Major Watts.

"He applied to me on December 12th, complaining of being unable to retain anything on his stomach; that whatever he took in the way of food was at once vomited. His pulse was quiet; his tongue a little furred; and I was inclined to attribute the symptoms to the effects of spirit-drinking. I ordered him a sinapium to the epigastrium, and an effervescing mixture with hydrocyanic acid. On the 14th, he presented himself at the office, and had his medicine repeated; he still complained of vomiting after food, pain in the stomach, and of feeling altogether ill. On the morning of the 16th, I visited him in his room; he was complaining of great pain in the epigastrium, and his belly was somewhat tumid and a little tender on pressure. The vomiting, however, had subsided to a great extent, and he was able to retain food on his stomach. His pulse was a little accelerated; but there was no notable increase of temperature. On the morning of the 17th, I noticed considerable discoloration (brown to yellow tinge) of the skin; but the conjunctivæ were not yellow. The belly was tumid; tongue furred; pulse quiet. The bowels had been twice moved. He said he was better. I ordered infusion of gentian with bicarbonate of soda. In the evening, he was decidedly worse; and he complained much of thirst and insomnia. The following morning, he was moved into hospital."

A *post mortem* examination was made forty-three hours after death by Surgeon-Major Boileau, M.D., Assistant-Professor of Pathology, who has been so good as to contribute the following notes. The length of the body was sixty-six inches; the girth of the thorax thirty-five inches; weight 137 lbs. The integuments, especially those of the upper parts, were tinged yellow. There was considerable hypostatic congestion; slight rigor mortis. The pupils were dilated, and the conjunctivæ of a deep yellow. The abdomen was extremely tympanitic. There was a cicatrix on the body of the penis. The muscles were of a healthy red appearance. *Head*.—The pia mater was rather freely injected; the arachnoid presented a good deal of opacity; the brain-substance was firm and normal on section; the lateral ventricles contained a small quantity of serum. *Neck and Thorax*.—The mucous membranes of the epiglottis, larynx, trachea, and larger bronchi were of a deep purple colour. The œsophagus contained a very dark coloured tenacious fluid; its mucous membrane was pale, and presented some dark striae. The lungs were normal, except that, posteriorly, they were engorged with blood. The surface of the pericardium had an icteric tinge; its cavity contained about a drachm of fluid. The substance of the heart was fatty; its surface was pale and unhealthy looking. There were no clots in the cavities, only a small quantity of dark fluid blood in each. The endocardium of the left ventricle presented several ecchymotic patches. The valves were healthy. The weight of the heart was five thousand nine hundred and twenty grains; its bulk

* This urine was not tested; but some drawn from the bladder after death presented the same physical characters, and was found to contain blood. After boiling and filtration, Pettenkofer's and the nitric acid tests for bile were applied, with negative results.

twenty-three cubic inches; its specific gravity 1.019. *Abdomen.*—A quantity of pale yellow clear fluid was found in the peritoneal cavity. The stomach contained a black, thick, tenacious fluid, resembling a mixture of black-lead and coffee-grounds, and with a peculiar indescribable odour, suggestive of Worcestershire sauce. The mucous membrane was of a greyish cream-colour, soft, and quite devoid of vascularity and all appearance of erosion. It was smooth and felt somewhat thick, and presented a few small ill-defined dark spots. The intestines externally appeared perfectly healthy. They contained about a pint of fluid similar to that in the stomach. The mucous membrane of the whole tract was pale, soft, and devoid of vascularity. No evidence existed of congestion or inflammation. The liver was small, and did not project below the costal cartilages; its upper surface was extensively adherent to the diaphragm, and, on removal, was seen to be much roughened. Its posterior aspect presented some yellow orange-coloured patches, and others of an ecchymotic appearance were observed in the right lobe, anteriorly and inferiorly. The whole organ felt very soft and flexible. On section, the lobular structure of the viscus was very indistinct; the colour generally was a pale brown, with ill-defined patches of yellow orange. The gall-bladder was collapsed, and contained a small quantity of pale green tenacious fluid. The dimensions of the liver were 9.7 by 2.4 by 7 inches; the weight 2.7 lbs. The microscope revealed extreme fatty transformation of the whole organ; scarcely any hepatic cell-structure was to be seen. In the square hundredth part of an inch might be counted two hundred and fifty oil-globules, varying in size from the 1-1000th to the 1-5000th of an inch in diameter. The spleen was small; its substance was firm; normal on section. The kidneys were normal in size, and the calyces of both presented purplish ecchymotic patches, exactly resembling those noticed on the liver and in the heart.

Such were the clinical and pathological features of this case, which would have passed as one of "acute atrophy of the liver" had not rumours reached the authorities, just before the *post mortem* examination was made, that B. was supposed to have taken poison. In consequence, a coroner's inquest was held, and the following particulars were elicited. B. had of late been in a dejected state of mind, owing to a want of success in a love affair; he had been seen in possession of rat-poison (phosphorus paste) on December 11th, and, on that morning, he suddenly became ill, restless, excited, and wild looking, and said "he had done it"; although, when pressed, he would not tell what was the matter. A fellow-servant, fancying he had taken poison, administered a mustard emetic; but it was not until the following day (the 12th) that medical aid was sought, and then without any hint whatever being given as to the occurrences above mentioned. The county analyst reported that, in thirteen ounces of the contents of the small intestines, he estimated the presence of 2.8 grains of phosphorus, besides which there was a small quantity in the contents of the stomach. He found, moreover, that nearly the whole of the phosphorus obtained was present in the form of phosphorus acid, which accounted for the absence of luminosity.

REMARKS.—It will be noticed that the symptoms and pathological appearances observed in this case correspond in a most striking manner with those of "acute atrophy of the liver", as detailed by Murchison in the last edition of his work. In the absence of all suspicion, inquiry was only accidentally directed into the right channel, and the real nature of the case brought to light. I am tempted to publish it on account of its rarity and importance, corroborating, as it does, Wagner's opinion, quoted by Murchison, that many of the recorded instances of acute atrophy were probably cases of acute phosphorus-poisoning.

ON SOME POINTS IN THE CLINICAL HISTORY OF CHOREA.*

By W. R. GOWERS, M.D.,

Assistant-Professor of Clinical Medicine at University College.

[Concluded from page 449 of last number.]

III.—THE DISTRIBUTION OF HEMICHOREA.

HEMICHOREA is sometimes strictly unilateral in its distribution, affecting conspicuously the arm and the leg. Not unfrequently, however, the condition of the two legs is the same, when one arm only is affected.

1. The choreic movements may be confined to one arm, both legs being free from movement, although that in the arm is violent.

2. When the chorea affects considerably one arm and leg, although the other arm is quite free from movement, it will generally be found,

on close examination, that there is some degree of affection of the other leg.

3. Occasionally the affection of the other leg is as great as that of the leg of the side on which the arm is affected.

The distribution of the chorea may thus be unilateral in the arms, bilateral in the legs. No doubt the explanation is to be found in the anatomical relations which underlie the common joint action of the legs and separate use of the arms. The same thing may be occasionally noted in unilateral convulsions, in which, as in one case I have recorded (*Lancet*, Nov. 6th, 1875), the convulsions were the result of an unilateral meningeal hæmorrhage: the fits affected one arm and both legs equally, leaving the other arm free. This distribution of the spasm in hemichorea is thus quite in harmony with an unilateral pathological cause.

IV.—THE RELATION OF CHOREA TO CONVULSIVE SEIZURES.

If chorea depend on an unstable condition of the nerve-centres, it is not surprising to find that the affection is occasionally associated with other diseases which we ascribe to a similar instability of nerve-cells, such as hysterical and epileptoid seizures of various kinds, and even genuine epilepsy. The association is probably, in some cases, that of a common origin, in imperfect development or nutrition of the nerve-centres; but, in others, it would appear as though the morbid process, constituting the one affection, entailed an instability of tissue, which resulted in the other disorder.

The following cases illustrate the association, and one or two of them are of sufficient importance to deserve detailed narration. This applies especially to the first case, in which we have the choreoid movements, when most intense, assuming a convulsive character.

CASE IX. Many Attacks of Choreæ: Mitral Constriction: During Choreæ, daily attacks of Loss of Consciousness, deviation of Head, and spasm in Limbs, tonic and choreoid.—Alice P., aged 15, was admitted into the National Hospital for Paralysis and Epilepsy, in October 1875, with general chorea, very violent in character. She had had repeated attacks of chorea during the preceding seven years, for which she had been in several hospitals. She had a very loud and marked mitral presystolic murmur. At first, the choreic movements were greater on the left side than on the right. The attack lasted four months, and then gradually lessened, almost, but not quite, ceasing for several months; and then increased so that, in October 1876, she was readmitted. There was then much mental obtuseness; the look was dull and heavy. When she was at rest in bed, the spasm was slight; on movement, it became extreme and general. The speech was difficult. The tongue was protruded and withdrawn slowly. Almost every day after her admission, she had a peculiar convulsive seizure. One of these I saw, and several were witnessed by Dr. Sturge, then resident medical officer, who made some careful notes of their character. The following is his account of one of these attacks. "Whilst I was listening to the heart, and just after she had spoken to me, she gave a sort of groan, became flushed and somewhat cyanotic; her head was turned to the right, the left sterno-mastoid being strongly contracted, and the eyes deviated to the right. There was a good deal of general movement of the limbs, at first choreic rather than convulsive. Thinking she was in pain, I asked her what was the matter, but got no answer, and she was apparently unconscious. The movements increased, and she had some degree of opisthotonos for a short time, and the character of the movements became more convulsive. The condition lasted three or four minutes and gradually went off, leaving her in a dull heavy state, and with more choreic movement than before the fit."

In another fit, which was watched from the commencement, the head again turned to the right. There was no initial pallor of face; but the countenance became more suffused than before the fit. The right arm and leg were affected with greatly increased choreic movements, while the left arm was stretched out rigidly from the side with the fingers extended, the thumb extended and drawn under the fingers. The rigidity was cataleptic in character; for the arm remained rigid wherever it was placed. The fit lasted about two minutes, and left the patient very stupid and dull. After she came to herself, the left arm was weaker than before.

A third fit, witnessed a day or two afterwards, differed in some respects from the others, although of the same general character. She was at first apparently more or less unconscious, without any movement. This condition lasted for half a minute, and then convulsion set in. The head was drawn violently to the right; the eyes remained open, the pupils rather dilated. There was some arching of the back, and tonic spasm in both arms and hands, that in the flexors preponderating, so that the elbow, wrist, and finger-joints were all strongly flexed and the arm was drawn up almost to a level with the shoulders. After a few seconds, the right arm became affected with a sort of choreic movement, the wrist and fingers remaining flexed. The left arm became

* Read in the Section of Medicine at the Annual Meeting of the British Medical Association in Manchester, August 1877.