noticeable that the only European region it has not visited is the Spanish Peninsula, which alone has undergone epidemics of yellow fever. The widest, however, of those connected diffusions was in South America, from 1846 to 1858. In appeared first in 1846, in Brazil, which holds much commercial intercourse with the United States, where it had prevailed in Louisiana in 1844, and, simultaneously with yellow fever, in the summer of 1848, at New Orleans, and at Mobile in Alabama. It spread in Brazil during the summers up to that of 1849, and in the next year yellow fever superseded it, returning through six successive summers. In Peru, it commenced in January 1852, having broken out at Lima amidst a body of one thousand German immigrants, who had recently arrived, after touching at Rio Janeiro, where yellow fever was epidemic. From Lima, the disease spread far in the coast towns, and ascended to the inter-Cordillera provinces, but ceasing at Lima in July. Dr. Archibald Smith has described it as a fever, commencing with flushed face and injected eyes, and bruised sensations in the limbs and loins, ceasing about the fourth or fifth day by crisis, often hæmorrhagic, with appearance of roseolous eruption, the transition being often sudden from pyrexia to apyrexia; the eruption lasting several days, and often with spongy bleeding gums. The usual course was one of about eight days, leaving recurrent neuralgic pains for weeks or months, the fatal cases being few. It disappeared in Lima in July, but reappeared in January 1853, attacking many of the previous sufferers, and generally without the roseolous eruption. At the middle of March, Dr. Smith attended the first case seen of "black vomit, with jaundice"; such cases being rare that summer.

In January 1854, yellow fever of a fatal type ravaged Callao and Lima, continuing through the summer, attacks of the milder fever in the previous summer affording no immunity, as true yellow fever does, from future attacks. These diseases ought, perhaps, to be described as distinct entities constituting one epidemic; the principal feature in common being the tendency to a shorter or longer period of apyrexia, between the primary and secondary stages of the febrile action.

The question of the correlation of diseases in epidemic seasons or cycles, of which this seems to have been an instance, and which is generally observable in epidemics of other zymotic diseases, appears to be one worthy of the consideration of this Society.

NOTES OF A CASE OF TRANSFUSION BY AVELING'S APPARATUS.*

By GEORGE HOGGAN, M.B., AND FRANCES ELIZABETH
HOGGAN, M.D.

THE following notes are offered as a small contribution to the history of immediate transfusion of blood in man, in deference to the general opinion that it is only by the careful study of individual cases that a safe or correct general conclusion can be arrived at; and that it, therefore, becomes the duty of every physician to put on record every case of interest that may occur in practice, and to make public the reasons, if they can be discovered, which have led to success or failure.

Mrs. S., aged 49, was admitted on March 31st, 1874, into the New Hospital for Women, Seymour Place, under the care of my wife. She complained of having suffered from great pain and constant sanious discharge from the vagina during the previous three months. This discharge was independent of the monthly flow of the catamenia, which were still quite regular. She was tall and fat, even flabby; the vessels of the face were dilated; the heart was large, and had a slight systolic murmur at the apex. She was also subject to spasms of the heart, and had all the symptoms of exophthalmic goitre. She was the mother of a grown-up son and daughter; had menstruated for the first time when under twelve years of age; and, with the exception of the abovementioned symptoms, she considered her health to be otherwise good.

On examination, the uterus was found to be enlarged, the fundus being felt externally above the pubes. The cervix was indurated, nodulated, and ulcerated, bleeding freely when touched. The vaginal walls seemed to be quite healthy.

The treatment first applied was to touch the cervix with strong carbolic acid at intervals of three days; while internally infusions, first of quassia and afterwards of bark, were administered.

This treatment seemed to have no effect; and, the sanio-purulent discharge having been examined microscopically without finding any cancer-cells, it was considered advisable to remove the lower part of the cervix by means of the wire *écraseur*.

Accordingly, on April 20th, the operation was performed by my wife, assisted by Mrs. Garrett-Anderson, M.D., I giving the chloroform, which was well borne by the patient. The steel wire with which the *écraseur* was unfortunately provided gave way before the cervix was completely severed, and the operation had to be completed with a pair of scissors. The free bleeding from the cut surface was effectually stanchied by the application of the actual cautery; the vagina was plugged; the patient dressed and carried to bed.

During the next twenty-four hours, the patient complained of throbbing of the temples, and the face was flushed. There were, however, no other symptoms, and she had several hours of refreshing sleep; indeed, altogether, she was considered to be in a very satisfactory condition.

On the following night, there was slight hæmorrhage; otherwise, things were satisfactory.

On the 23rd, the patient had a slight heart-attack, and was rather restless. A mixture containing five minims of tincture of aconite was ordered every four hours, in addition to the ice, which, ever since the operation, she was allowed to suck, and to have applied to the head while the throbbing continued.

On the 24th, the patient had another attack, consisting of irregular weak action of the heart, with a feeling of fulness in the epigastrium. Brandy was given during this attack, and the patient seemed much stronger after it had passed away, and ate a little meal for the first time since the operation. She passed a good night; but there was still slight hæmorrhage.

On the morning of the 25th, five days after the operation, my wife was summoned about 7.30 by a messenger from the hospital, giving her the intelligence that the patient was losing much blood. Setting off immediately, she found the patient much blanched and almost pulseless. The vagina was filled with clotted blood, which she immediately cleared out, and applied oil of turpentine as a hæmostatic. The bleeding being thus for the time stopped, the vagina was again firmly plugged. She now learnt that, early in the morning, a drunken disturbance had taken place immediately under the windows of the hospital, which had greatly frightened and excited the patient. As a result of this excitement, there had probably been increased strength of the circulation, and consequently flooding. The hidden condition of the parts and insidious flow had, however, caused it to be overlooked until the patient was observed to be sinking, on which my wife was immediately sent for and acted as described.

After waiting about an hour (during which a little brandy was administered every ten minutes) without seeing any satisfactory change in the condition of the patient, my wife returned to breakfast; and, after a brief consultation with me, determined to try transfusion of blood as the only means of saving the patient; I at the same time volunteering to give whatever amount of blood was necessary. She then sent a request to her colleague, Mrs. Garrett-Anderson, to come and assist in the operation; we meanwhile going with the transfusing apparatus to the hospital. On arriving there, we found the patient, if anything, worse than when seen an hour previously, and there was no time to lose if we intended to act at all. Soon an answer came that Mrs. Garrett-Anderson had gone on her rounds to see her patients, and would not return for some time; but, as the son of the patient arrived at the same time and volunteered to give his blood to try to save his mother, we two set about performing the operation ourselves at once. The special transfusing apparatus we possessed was that invented and introduced by Dr. Aveling; but, after having examined it very carefully, I must acknowledge that I acquired anything but a cheering opinion of it or of the chance of successfully transfusing with it.

I had already had good opportunities of acquiring experience in the manipulation of living blood-vessels, having assisted for some months in a physiological laboratory while an extensive series of experiments on the circulation of the blood was being made on dogs, rabbits, etc. In these experiments, the circulation was generally connected with the barometer, etc., by means of tubes filled with solution of carbonate of soda, to prevent coagulation; but, though every effort was made to obviate this tendency on the part of the blood (which was never exposed to the air), continual interruption took place through it. I have often seen during experiments on a dog, lasting, perhaps, a couple of hours, that the apparatus would require to be disconnected two or three dozen times to clear the cannulæ of clots which had formed in them and prevented the impulse of the circulation from being transmitted to the instruments. These clots seemed to form on the slightest provocation, more especially when the turning of a stopcock in the tubes filled with alkaline solution gave a shock to the circulation at its junction with the cannulæ, and in that way appeared to cause the formation of a clot.

The experience thus gained made me, rightly or wrongly, suspicious

* Communicated by George Hoggan, M.B., to the Section of Obstetric Medicine at the Annual Meeting of the British Medical Association.

of the instrument now to be used ; but, at the same time, made us careful to try to obviate what appeared to be faulty tendencies entailed upon it by its principle and parts in its construction. These seemed to me to be :

1. There are the two long metallic tubes or cannulæ, one at each end of the apparatus, which have to be plugged into the tender blood-vessels.

2. There is the shock of turning the stopcocks at each end when the two circulations are to be connected.

3. There is the double shock of the blood entering and leaving the ball or chamber of India-rubber in the centre of the apparatus, at each filling and discharging of an ounce.

4. There is the long rough India-rubber tube connecting the different parts together. In this tube, all friction and shock to the passing blood had to be sustained.

5. The substitution in the instructions accompanying the instrument of water for alkaline solution was, if necessary, much more conducive to the chance of coagulation.

These objectionable points in the instrument seem to me to be so from their tendency to form clots of blood in the apparatus, which might interfere greatly with the success of the operation, or render it entirely abortive.

It was, therefore, with a full anticipation of the difficulties which seemed to lie before us that, having mastered the paper of instruction, we commenced the operation, and connected the two circulations without the slightest hitch. The first three or four pumps or syringefuls were cautiously discharged into the patient with success ; but it then became evident, by the refusal of the ball-pump or syringe to dilate, that no blood, or but a very small quantity, was flowing into it from below, and that probably a clot was causing the mischief.

After a little unsuccessful manipulation, with the chance of sending no blood, or, perhaps, a clot into the system of the patient, we disconnected the apparatus, and found that no blood came from the entrance or afferent cannula. This we cleared out with a stylet until the blood came with a gush ; so, having again filled the apparatus with water, we reconnected it.

The next attempt had exactly the same success. After the first three or four pumps, dilatation no longer ensued ; and, the blood-giving patient having declared his inability to give more blood (shouting during the latter part of the operation that he was going to faint, and having had to be plied with brandy throughout), we were very unwillingly compelled again to disconnect the whole apparatus, suspend the operation, and bind up the two wounds. This time the clot was found within the India-rubber tube on blowing through it into a dish of water. So much for the apparatus.

The effect on the patient, however, seemed very beneficial ; her spirits and her circulation improved greatly, although at most she had not received above eight ounces of fluid, and much of that was probably warm water. Indeed, the latter presumption was probably true, for three hours afterwards she quietly sank. Under the circumstances, we did not dare to attempt another operation with defibrinated blood, although we had reason to feel assured of its having the best effect on the patient. Why we did not interfere further may be imagined from the fact that, even in the case under consideration, some titled friends of the poor patient, who had sent her into hospital, were afterwards heard to express in a high circle their opinion that their *protégée* had been unjustifiably experimented upon. The conclusions forced upon us by our operation need not be stated at great length ; and we believe that, with the same experience, most people would come to the same conclusion. We would certainly never again try immediate transfusion with any of the special and complicated apparatus for that purpose, of which Aveling's apparatus is one of the best. We would only use defibrinated blood with any syringe that came first to hand. The reasons for such a course are to be found stated in the works of most of the adherents of the mediate system.

At the same time, we are quite ready to admit that Dr. Aveling's apparatus may often succeed. We simply give our experience of it, and say that the same may happen with the best operators ; and that such risks of failure, or even worse, by the introduction of clots into the system of the patient, make it an instrument upon which little dependence may be placed, and which we would, therefore, never again use.

DONATIONS.—The Clothworkers and the Merchant Taylors' Companies have each contributed one hundred guineas to the fund being raised by the Chemical Society for the promotion of chemical research. A few months ago, the Goldsmiths' Company presented £1,000 to the same fund. The Merchant Taylors' Company have contributed two hundred and fifty guineas towards the fund for rebuilding the Metropolitan Free Hospital.

CLINICAL MEMORANDA.

DR. BYROM BRAMWELL'S CASE OF DISEASE OF THE SUPRARENAL CAPSULE.

I AM hardly prepared to admit unconditionally that the disease in this case was lympho-sarcoma, or that the melasma was not that of Addison's disease. Indeed, my own opinion is, that the discoloration of the skin was due to the suprarenal lesion. It (the discoloration) was well marked, and the lesion was such an one as frequently results from the quasi-tubercular change. In the face of Dr. Pye-Smith's letter, endorsed as it has been by Dr. Greenhow, who very kindly a few days ago gave me his opinion on the case, I do not like to insist on this view, especially as full data, in the shape of the exact character and distribution of the discoloration, are wanting.

In reporting the case, I purposely avoided naming the lesion, which in all its features except "caseation" exactly resembled lympho-sarcoma. Caseation, however, is very rarely seen in the lympho-sarcomata of man. Indeed, no less an authority than Virchow himself states that lympho-sarcoma may be absolutely (*rigoureusement*) distinguished from tubercle by the absence of miliary granulation and of caseation.* Cornil and Ranvier say caseation is sometimes seen.†

I may, perhaps, take this opportunity of supplying an omission in my paper, and of stating that, on microscopical examination, the capsular lesion was found to consist chiefly of broken-down debris and fatty molecules. Where the caseation was least marked, lymphoid elements similar to those found in the intrathoracic growth were found. I maintain that, had the capsular lesion been solitary, it would have been impossible, either by its naked-eye or microscopical characters, to have distinguished it from a quasi-tubercular capsule which had undergone retrogressive changes.

BYROM BRAMWELL, M.B., Newcastle-on-Tyne.

LEAD-POISONING.

"THE predisposition to lead-colic is very varied, but among the predisposing causes we only know the great tendency to the disease left by a previous attack." The above-quoted remark of Niemeyer's is very well illustrated by the following case. A. B., a gamekeeper, was seized with most pronounced symptoms of lead-poisoning. The colic was most intense and the suffering great. There was difficulty in tracing any exposure to the influence of lead ; but at last the following particulars were elicited. A fortnight previously to his seizure, he had been engaged one afternoon in making cartridges, for which purpose he had mixed some shot of various sizes in a basin which he had stirred round a few times with his hand. The hand was blackened or "lead-ened" as he called it, but he washed it three times before sitting down to his evening meal. He acknowledges that the black colour was not entirely removed. As persons of his class are in the habit of handling their food a good deal before eating it, we can imagine that some of the lead at least found its way into the mouth through the food, although part of the poison was also absorbed through the skin. With regard to the predisposition, he stated that he had been a house-painter, but that, owing to four distinct attacks of lead-colic, he had given up his business and taken service as a gamekeeper. This present attack was the worst he had ever had. The last attack previous to the present one occurred more than two years ago ; during this interval, he had enjoyed the best of health. There was no debauchery or drunkenness to increase the predisposition.

The interest of the case lies in the marked predisposition this individual had to lead-poisoning, which permitted so small a dose of the poison to be followed by such severe symptoms in so short a time.

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THERAPEUTIC MEMORANDA.

TREATMENT OF RINGWORM BY PERCHLORIDE OF IRON.

SOME months ago, a paper by Mr. Hopgood of Sunderland was published in the *Students' Journal*, in which he advocated the use of solution of perchloride of iron for ringworm. Since that time, I have

* "Mais ce qui en distingue le lympho-sarcome rigoureusement, c'est l'absence de granulation miliaire et de métamorphose caséuse." (Virchow's *Pathologie*, French edition, vol. iii, p. 177.)

† *Histologie Pathologique*, page 253.