It is needless to linger over the details of the next few days, save to say that the diarrhoea ceased somewhat suddenly on the evening of the 27th, the bowels having acted thirteen times in the preceding twelve hours; and on the 28th, when an attempt was made, on account of the constant vomiting, to administer some food by the bowel, an obstruction was found to exist about five or six inches from the anus. No injecting-tube could be got beyond this obstruction, nor could any fluid be forced beyond it. A little perfectly odourless white glairy mucus was occasionally expelled from the rectum; and on the 31st a small piece of solid matter, like inspissated green paint, escaped from the rectum; and the following day the injecting-tube came away covered with semisolid tenacious dark-green substance; but, notwithstanding the most patient perseverance in attempts to overcome the obstruction by injecting emollient and solvent enemata, it remained complete. The vomiting was incessant; and the vomited matters, at first green, thick, and scanty, became more fluid, abundant, and of a decidedly faecal character.

On the morning of August 1st, another phenomenon manifested itself; viz., a rapid and painful enlargement of the left parotid gland. The little patient gradually sank from exhaustion on the evening of August 2nd.

The following day, we were permitted to make a *post mortem* examination. We found a considerable amount of purulent exudation in the left pleural cavity, and quite at the base some readily detachable masses of altered lymph, in the form of a caseo-purulent semisolid material, of which we removed two or three handfuls. The lung itself was the seat of catarrhal (lobular) pneumonia scattered through a considerable part of its substance. The peritoneum presented the usual appearance following intense inflammation. The intestines, distended by gas and containing a certain amount of faecal matter, were matted together throughout nearly their whole extent by inflammatory exudation; and here and there, covering the intestines and between the coils, were purulent masses of altered lymph. There was no invagination of the intestine, or any constriction by fibrous bands of any kind throughout its course; but, at the termination of the sigmoid flexure of the colon, the large intestine was bent at a sharp angle—suddenly stretched, as it were, over the brim of the pelvis. At this point, the bowel appeared slightly constricted. Above this bend, there was a conical plug of dense tenacious material, like inspissated dark green paint. It was at this spot that the injecting-tube was arrested. The kidneys and the other viscera were healthy. There was no trace of tubercle in the lungs, in the intestines, or in the peritoneum; nor was there any noticeable enlargement of the bronchial glands.

REMARKS.—This case presents many features of interest. It is, fortunately, exceedingly rare to find peritonitis excited in this way. Acute peritonitis is an exceedingly rare affection, except as a consequence of injury (traumatic), or in association with tuberculosis. Infective peritonitis is, however, not uncommonly met with in connection with the puerperal state; but, as a possible sequence of purulent pleuritis, I do not think any of the text-books in this country have hitherto called attention to it. When I was engaged in translating the article on Diseases of the Pleura in Ziemssen's *Cyclopaedia of Medicine*, I first became aware of the occasional occurrence of peritonitis as a consequence of the passage of infective material from the pleural cavity along the lymphatics of the diaphragm to the peritoneum. At page 620 of the fourth volume of Ziemssen's *Cyclopaedia*, the following passage occurs: "Pus sometimes makes a passage through the diaphragm. This either happens in a *diffuse* and *acute* manner, and sets up an acute and invariably rapidly fatal peritonitis, altogether analogous to the purulent, usually double-sided pleuritis, which also result from the extension of the purulent inflammation through the lymphatics of the diaphragm in purulent puerperal peritonitis," etc.

Another very interesting point in this case was the simultaneous occurrence of an acute, and I think we are also forced to say an *infective*, congestion of the kidneys; and it is most noteworthy that the kidneys, being *excretory* organs, were enabled to set themselves free from the disturbing influences of the infective material; for, notwithstanding the coexistence of an acute fatal peritonitis, the kidneys in a very short time—viz., three or four days—completely recovered themselves, and the urine became quite free from albumen.

Another point, which I can only now just suggest for consideration, is whether the coexistence of the infective malady—whooping-cough—conferred an *infective* property on the purulent pleuritic exudation. Pus formed in the pleural cavity is by no means of itself a necessarily infective fluid; but pus formed under certain infective constitutional conditions may acquire special infective properties.

The intestinal obstruction, favoured by the inflammatory paralysis of the intestinal walls, was rendered complete by the arrest of the accu-

mulation of the tenacious plug I have described at the termination of the sigmoid flexure of the colon.

Finally, this case affords a sad and instructive example of the extreme gravity of the complications of whooping-cough and the necessity of at all times watching very carefully the course of this malady.

ON THE USE OF ARSENIC AS A BLOOD AND CARDIAC TONIC.*

By STEWART LOCKIE, M.D.,

Senior Physician to the Cumberland Infirmary.

In this brief communication, I desire, in the first place, to call the attention of the Branch to the really remarkable results obtained by the administration of arsenic in certain cases of anæmia, and these cases in which iron and good food have failed to produce any benefit. My attention was first directed to the power of arsenic in this respect by a paper published by Dr. Byrom Bramwell of Newcastle, in which he narrated several cases of essential or progressive pernicious anæmia, where remarkable benefit accrued from the administration of this drug. Whether it really has the power of curing this disease—a disease which had hitherto baffled the resources of our art, the good results apparently promised by phosphorus in the hands of Dr. Broadbent not having been obtained, to any extent, at all events, by other observers—remains for the future to determine. Certain it is that, in cases of anæmia approaching in gravity the so-called essential or pernicious anæmia, it is capable of producing great benefit. In support of this statement, I venture to submit the following cases.

Mr. J. W., aged 67, consulted me during last year on account of increasing weakness and languor, occasional vertigo, palpitation on ascending a hill, flatulence, and rushing noise in the left ear. There was marked pallor of the skin. A systolic *bruit* was heard at the cardiac apex. There was no enlargement of the liver or spleen. On microscopic examination of the blood, there was found no increase of white corpuscles, while many of the red were irregular in shape, many of them being ovoid. On subsequent inquiry, it was found that he had internal bleeding hæmorrhoids, and these were ligatured in December by my friend Dr. Maclaren. After this, he improved a little in appearance and strength. The hæmorrhage was stayed. Iron in the dialysed form was administered. But the improvement did not continue.

On February 18th, 1878, there had been no bleeding since the operation; but the patient was now paler than ever, and was unable to move about outside. He complained of weakness, languor, faintness, and breathlessness. The cardiac dulness was increased transversely. There was a systolic *bruit*, whose maximum intensity was in the mitral area and was propagated to the left; and a second, the maximum intensity of which was in the tricuspid area; there was also a well marked systolic *bruit* in the pulmonary area. There was no impairment of resonance over the pulmonary organs; but the respiratory murmur was harsh in the left subclavian region. There was oedema of the lower limbs, and a complaint of numbness and tingling in the tips of the fingers and soles of the feet. This abnormality of sensation was not felt until after the operation. The urine was acid, of specific gravity 1019, and contained no albumen.

February 22nd. The ophthalmoscope showed in the left eye, near the apparent inner and lower margin of the disc, a small extravasation close to a vessel. The fundus of each eye was pale. Under the microscope, the blood was found to be watery, the red corpuscles relatively much diminished in number; there was no increase of colourless corpuscles. The red corpuscles formed themselves into irregular masses, only a few rouleaux being seen in the field. Many of the corpuscles were somewhat oval in form; some were pear-shaped, while numbers presented one or several mammillated processes; as a rule, only one such process. Most of the red corpuscles appeared somewhat larger than normal, and presented a swollen appearance, while others were less by one-half than normal. At this date, he was ordered three minims of liquor arsenicalis three times a day, with no other medicine.

On February 26th, the dose of arsenic was increased to five minims. He thought himself stronger. The anæmia did not seem to have increased. The appetite was good. There were no new symptoms.

After this date, a slow but gradual improvement took place, and, on April 23rd (two months after commencing the arsenic), he had improved very much. The colour of his face was very good. The conjunctivæ were still a little pale. He felt much stronger, and had no dyspnoea on ascending a hill. There was still some oedema of the lower limbs

* Read before the Border Counties Branch.

The coloured corpuscles were much more uniform in size and normal in shape, and collected much more into rouleaux.

May 20th. The cardiac murmurs had disappeared, and there was now no œdema of the limbs. The patient looked well, and had a good deal of colour. He was to cease taking the medicine.

Subsequently, I met this patient in the street, and he informed me that there had been a slight return of hæmorrhage; this, however, speedily subsided under a few doses of glycerine. Last month, the wife of the patient informed me that her husband had been lately in Edinburgh, and had climbed to the top of Arthur's seat, thus testifying to the completeness of the recovery.

It is to be noted that, after the operation on the piles in December, this patient improved somewhat; but that, in February, without any return of bleeding, he became more anæmic than ever. Had it not been for this, one would have concluded that the bloodlessness was entirely due to the hæmorrhage. This conclusion, however, in the circumstances, is untenable. There was evidently some other cause at work, and, without positively averring that it was a case of essential or pernicious anæmia, it was certainly a grave form of the disease which iron failed to benefit, but over which arsenic had remarkable power. Coupled with Dr. Bramwell's cases, the result was such as to encourage one to try the remedy in any future case.

My next case is that of a married lady, somewhat beyond the middle period of life, now residing in Edinburgh, who consulted me as she passed through Carlisle on June 18th, 1878. For two or three years, more or less, she had been troubled with breathlessness, occasional palpitation, and great languor, so that she was incapable of sustaining any exertion, either mental or bodily. She stated that she sometimes had nausea more or less constantly for weeks together, and frequently vomiting of food, sometimes vomiting after every meal, and sometimes once or twice a day. She had had a fibroid tumour of the uterus for many years. This at one time was the seat of pain, but latterly had ceased to trouble her. Menstruation had ceased eighteen months before the date of my visit. Very occasionally—only once or twice in two months—she had slight bleeding from hæmorrhoids. She stated that she had not progressively become worse, but sometimes became a little stronger, when the vomiting would cease. She had just returned from Buxton, where she had been with her husband, who was also an invalid. Whilst there (five weeks), she had had vomiting nearly every day. The vomiting especially occurred if she made the slightest exertion after taking food. There was no gastric uneasiness. She had consulted a medical man in Buxton, who had advised her to go to a German watering-place. This, however, she was very unwilling to do, if it could possibly be avoided, and indeed she did not seem to me fit to undertake the journey.

On examination, I noted the following:—"The patient is very pale and anæmic-looking, somewhat sallow; the conjunctivæ are pale and a little yellow. There are systolic *bruits* in the mitral, pulmonary, and aortic areas, with accentuated pulmonary second sound; venous pulsation in the neck; no *bruit de diable*. The cardiac dullness is somewhat increased transversely."

On microscopic examination of the blood, the white cells were not found increased; the red corpuscles varied much in size and form, many being ovoid and some caudate. There were no abnormal percussion or auscultatory phenomena in the lungs. Hepatic and splenic dullness were normal. There was a firm nodulated tumour in the hypogastric region, twice the size of an orange, movable, found on vaginal examination to be connected with the uterus. The urine was of amber colour, acid, of specific gravity 1010, and contained no albumen, bile, or sugar.

The patient had taken iron in various forms, but with no permanent benefit. Two years and a half ago, when she resided in Carlisle, she took Kirby's pills of phosphorus, iron, and nux vomica, from which she thought she derived some degree of good.

I prescribed for her liquor arsenicalis, beginning with three drops three times a day, the dose to be increased or diminished according to circumstances; and ordered her to take glycerine in two-drachm doses once or twice a day, if at all constipated; to rest in the recumbent position after each meal; the meals to be small and frequent; to take stimulants only so far as they helped her to take food.

In a fortnight, I received a note from this lady, in which she said: "I am pleased to tell you that I have improved steadily, though slowly. During the last three days, I have been able to take a fair amount of food, and I drive out, besides sitting in the garden for at least an hour daily. I now take six drops of arsenic at each dose, and it appears to suit me. *I am said to have almost a pink tinge in my skin.* Will you let me know if you think any English waters would be of real advantage to me, and which? I do not intend to go abroad this year, and shall prefer merely to go to the country." This was

dated July 1st. On the 17th, she again wrote, saying she was going to Harrogate. She said: "I continue to improve slowly but steadily. My walking powers are the worst. My appetite is good, and I do not feel any need for wine. I have no feeling of nausea, and can eat vegetables and fruit. . . . *The colour of my face and hands is becoming quite natural.*"

On August 27th, I saw this lady, as she returned from Harrogate to Edinburgh, when I took this note. "She continued the medicine until five weeks ago. She had improved much in strength and appearance, and the sickness had ceased. Whilst at Harrogate, she had an attack of erythema of the leg, and she then discontinued the arsenic, as the medical man whom she consulted thought it might be caused by it. The leg became well, but is now bad again, without her having resumed the medicine. She drank the chalybeate water at Harrogate. She now feels immensely better and able for exertion. Her complexion is almost ruddy; the appetite good; the tongue and inside of the lips raw (she is subject to this). There are no cardiac *bruits*, excepting a very faint one in the pulmonary area. There is still occasional bleeding from hæmorrhoids. If this continue, she is to see a surgeon and have the piles ligatured."

This case requires no comment. It is an illustration of the power of arsenic over a form of anæmia approaching in gravity pernicious or essential anæmia, if not actually an instance of it. Let it be noted that, in both these cases, the red corpuscles were not merely diminished in number, but altered in form and size. It is consistent with my experience that pernicious anæmia ultimately proving fatal is not always continuously progressive in its course; there may be periods of improvement.

Somewhat similar to the latter of the two cases I have related was that of a woman, M. W., aged 37, admitted to the Cumberland Infirmary under my care. She was intensely anæmic; had hæmic murmurs in the chest and *bruit de diable* in the neck. She was subject also to occasional attacks of pyrexia and also of diarrhoea. She, too, had slight and infrequent hæmorrhage from piles; but the intensity of the anæmia was altogether out of proportion to the small amount of blood lost. Iron, alone and combined with phosphorus and nux vomica, did her no good. The piles were ligatured, and, under the use of mineral acid and pepsine, given on Dr. Fenwick's theory that pernicious anæmia is due to atrophy of the stomach, she improved considerably, and was discharged. Some time afterwards, she had a relapse of all her old symptoms, and was readmitted. She stated that the piles had been bleeding again; but no hæmorrhage was discovered after she came into hospital. This time, nothing local was done. Arsenic was administered, and occasional doses of glycerine, and she gradually and steadily improved.

On October 16th, I saw this patient, who is now attending as an out-patient, and made this note:—"She looks well, with much colour. There is a faint systolic *bruit* in the aortic area only, and a slight *bruit de diable* in the neck." The arsenic had to be discontinued, on account of an attack of diarrhoea.

I have dwelt upon the value of arsenic in anæmia, as there its action as a blood-tonic is most strikingly seen, and because its use in these cases is probably less generally known; but it may well be that it is as a blood-tonic that it proves useful in chorea and in phthisis, both ailments associated with an anæmic condition.

I pass on to a very brief consideration of the use of arsenic as a cardiac tonic.

In 1871, the late Dr. Anstie, whose premature death the profession so deeply deplores, published a remarkable paper on the Pathological and Therapeutical Relations of Asthma, Angina Pectoris, and Gastralgia. In this paper, he says: "There is one remedy which is supremely effective, where it can be tolerated, in all these three maladies; namely, arsenic." Now, it is this element of pain in cardiac disease which has been usually, though not exclusively, looked upon as the indication for administering this drug, and there is a concurrence of experience as to its value in this respect. But I am convinced that other indications may be fulfilled by the use of arsenic. I believe it to be a valuable tonic to the cardiac muscle, and that it forms an useful adjunct to digitalis in ordinary valvular disease of the heart, where there is failure of compensation, with its consequent results. Further, it seems to be of great value even in fatty degeneration. One case of, I believe, undoubted fatty heart seemed to derive much benefit from the use of this remedy. It was that of an innkeeper, aged between 40 and 50, who, though at the time of which I speak of temperate habits, had at one time been addicted to excess. I was called to him on February 9th of this year, on account of an attack of renal colic, which was relieved by hypodermic morphia. He had previously been suffering from attacks of giddiness. These continued after the pain was relieved, and especially came on when assuming the upright position or

when he sat up in bed. The impulse and first sound of the heart were very feeble, and the face was pale and somewhat sallow.

Digitalis in small doses was ordered, and ammonia and ether as stimulants. The pulse became very slow (below 40) and irregular, and continued so after the withdrawal of the digitalis. Liqueur arsenicalis was then ordered instead, and gradually the pulse rose in frequency and became regular. His colour became much better, and the attacks of giddiness quite passed off. He continued to take the arsenic for some time, and, on May 28th, this note was taken:—"Cardiac impulse not strong but fair. First cardiac sound somewhat feeble at the apex; almost inaudible in the aortic area. Pulse 76 to 80. Looks and feels well."

I have not yet had an opportunity of testing the power of the remedy in other cases of fatty heart, but shall not fail to do so when the opportunity occurs. I am aware that late experiments tend to show that fatty degeneration of the muscular tissue of the heart is one of the results of feeding animals with arsenic; but this is no reason why the drug, administered in small doses, should not be beneficial in cases of the disease in question. We cannot safely infer from the effects of large doses of drugs what will be the result of the administration of small ones. Of some remedies, we know that the effects of large and small doses are not only dissimilar, but opposed: witness the vomiting induced by large doses of ipecacuanha, and the speedy relief of some forms of vomiting by small ones. The very drug we are considering, as we know, causes vomiting in large toxic doses, while in minute doses it is the remedy *par excellence* for at least one form of vomiting—the vomiting of drunkenness.

REMARKS ON A DISEASE KNOWN BY THE NAMES OF "FALSE DIPHTHERIA", "SPREADING QUINSY", AND "CYNANCHE PHARYNGEA".*

By CORNELIUS B. FOX, M.D.,
Medical Officer of Health of East, Central, and South Essex.

It is probable that few medical men in this country have been so circumstanced as to have had greater opportunities than myself for becoming intimately acquainted with *true* diphtheria. During the severe epidemic of 1859, an enormous number of cases came under my notice; and, even now, I am Medical Officer of Health in one of the Eastern Counties which, the Registrar-General informs us, is more afflicted with this disease than any other group of counties in England. It is unnecessary for me to detail all the symptoms of true diphtheria. The characteristic signs which distinguish it from throat-affections that resemble it are:

1. The production of a tough leathery false membrane (*δ.φ.θ.ε.ρ.α*, a prepared hide);
2. The presence of great depression of the vital powers;
3. The presence of albumen in the urine at an early stage;
4. The subsequent occurrence, in a certain percentage of cases, of some form of paralysis.

My surprise was great, in October and November 1875, in encountering a disease, which was reported to me by the Union medical officer as quinsy, that spread amongst children. Knowing, of course, like every other medical man, that quinsy is not a communicable malady, although it may affect several members of the same family at the same time, who have all been similarly exposed to the same influences, or who may all have a family tendency to throat-complaints, I made a thorough investigation into the matter, and described the affection in my Annual Report for 1875. The disease has since frequently presented itself to me in small local outbreaks. The principal facts brought out in my study of the disease have been these.

1. The disease consists essentially in an inflammation of the tonsils, which extends more or less into the pharynx, and sometimes to the neighbouring submaxillary and other cervical glands.
2. Although yellowish spots are sometimes seen on the tonsils, from an accumulation of mucus in the follicles of these glands, no ash-grey tough leathery membrane (characteristic of true diphtheria) is ever seen during the course of the disease.
3. The individuals affected present an anæmic appearance.
4. The disease is communicated from one to another generally through the medium of schools, gleaning, etc.

* Read in the Section of Public Medicine at the Annual Meeting of the British Medical Association in Bath, August 1878.

5. Unlike diphtheria, it is but seldom fatal,* unless those who suffer from it have been long exposed to most unwholesome conditions.

6. It is never followed by paralysis of sensation or motion, as diphtheria often is.

7. It is not accompanied by albuminuria.

8. The pulse is full, as is noticed in cases of acute quinsy; whereas in true diphtheria it is small and feeble, indicating great prostration.

9. It presents characters dissimilar from those exhibited by cases of scarlet fever, without the rash, from which it does not confer an immunity. I have seen twenty children in one parish suffering from this disease, not one of whom displayed the slightest skin-eruption. If the scarlatinal poison had had any connection with the production of this affection, it is but reasonable to conclude that at least one or two cases would have shown some evidence of it on the skin.

10. It may prevail in a district where no true diphtheria is known.

11. The average duration of the disease is about ten days.

12. It is essentially a filth-disease, being always associated with some organic impurity of air or organic impurity of water. Overcrowding, saturation of soil around dwellings with slop-water, and employment of pond-water for drinking purposes, are the most common insanitary conditions found in connection with infected houses.

The outbreak before referred to, in Oct. and Nov. 1875, occurred in a parish situated on the London clay, which, according to the statement of the Union medical officer, seemed to be annually invaded by this disease after harvest. What was there peculiar to this parish at that particular part of the year, whereby it differed from neighbouring parishes that did not suffer? The same, more or less, offensive privies and ditches exist in all; but, whilst the neighbouring parishes are furnished with artesian wells and springs, this particular parish is supplied with drinking water by a stream, polluted at various parts of its course by soap-suds and drainage of farm-yards. All the well-waters are brackish, and are only used for cleansing purposes. At harvest-time, this stream is much reduced in size, and presents the appearance of a series of very dirty pools. The water is then so full of insects and dirt that the cottagers have to strain it. The men drink beer, the women boiled water in the shape of tea, so that the children are the only drinkers of water in its natural condition. Very little milk is ever consumed, as it is found to be too expensive.

Mr. Francis Vacher, whom we are fortunate enough to have as the Secretary of the Public Medicine Section, described (*Public Health*, March 2nd, 1876) the outbreak of a disease (which Dr. Main regarded as identical with the cynanche pharyngea of Cullen) at Lower Bebington, in Cheshire. It occurred principally amongst adults, and only in two or three cases had a fatal termination. The only unsanitary condition peculiar to the district in which it occurred was an impure public supply of water, and it affected ladies who drank tea, rather than gentlemen who consumed beer and wine. It seemed to be confined to the area to which this impure water was restricted.

It may be urged that the affection respecting which I am making these remarks may be a mild form of diphtheria or erysipelas of the throat. Dr. Ringer considers that there are two kinds of diphtheria, a febrile and a non-febrile form. Dr. Balthazar Foster, whilst recognising these two kinds, thinks that the non-febrile should not be regarded as diphtheria at all, and states that it is never succeeded by paralysis.

That mild cases of true diphtheria may occur is unquestionable. Dr. Blaxall related one to me in which the patch of false leathery membrane was so small that it might easily have been overlooked. That it was true diphtheria was undoubted, for it was followed by paralysis of the palatine muscles. Dr. Russell Reynolds has referred to cases where the throat-affection has altogether escaped observation.

Dr. Bernard O'Connor, in paper in the *Lancet* (April 27th and May 4th, 1878), has recently brought under the notice of the profession the disease that I have been describing, which he names "false diphtheria". He refers to nineteen cases, the average duration of which was about five days; and has formed the opinion that it mostly occurs in damp, close, and sultry weather. Air-impurity has doubtless some connection with this disease; whether etiological or not, it is impossible to say positively. I have met with it in a row of houses over which sewage polluted air was frequently streaming from a badly managed sewage-farm, the only highly offensive one that I have ever encountered. I have seen it in a very damp farm-house almost surrounded by a filthy farm-yard.

Dr. Thorne Thorne has noticed a general predisposition to *non-infectious* inflammatory sore-throats in a district before the outbreak in some part of it of genuine diphtheria. He believes in the production,

* Cases of true diphtheria have come under my notice which were of so malignant a character as to destroy life in twenty-four hours after the commencement of the illness.