was felt to end abruptly in a firm hard pipe-like piece of bowel about as thick as the thumb; this was tightly bound down to the brim of the pelvis by dense fibrous tissue. It was at once obvious, on this examination, that, owing to the dense fibrous tissue into which the coats of the bowel had been converted, any operation on the strictured part itself was impracticable. The distended coil above the stricture was therefore drawn out as far as possible, and an inguinal colotomy performed after the manner I have already described in previous papers. The piece of gut was so distended that it would not have been safe to leave it unopened, for any vomiting would almost certainly have caused its rupture. It was, therefore, after having been very accurately stitched to the parietal peritoneum and skin, opened. Several pints of pea-soup-like faeces flowed out. A stream of water was kept pouring over the wound until the bowel had completely relieved itself; the dressings were then applied. The wound healed without any trouble. In a few months the artificial anus thus formed worked with fair regularity. The patient's general health rapidly improved, and since the day of the operation she has never had the slightest return of fecal vomiting, nor any of her old symptoms. Occasionally, when there is diarrhoea, the artificial opening gives some trouble, at other times it can be kept clean.

The patient has become very stout, and there is some tendency for the bowel to prolapse, but it can be replaced without difficulty, and kept in position with a pad. The patient is now (more than three years after the operation) able to drive and walk out daily.

CASE II.—Mrs. G., aged 53, brought to me by Dr. Goodchild, had enjoyed fair health till May, 1888. At that time she often used to notice that she would be suddenly seized with violent pain in the abdomen. She would want to pass a motion, but only a little wind would come away. As the summer advanced the bowels became very irregular, sometimes being constipated, at others relaxed. There was a frequent desire to relieve them, but generally only a little mucus would pass. During the autumn and winter she gradually became worse. At times the pain would increase, and she would pass a considerable amount of mucus. This was occasionally mixed with a small quantity of blood. At this time she had a relief from the bowel every day, or every other day.

On March 5th, 1889, I saw the patient for the first time, and made the following note of her condition: On first getting up in the morning she has desire to go to the closet, and passes a teaspoonful or two of discharge. This sometimes occurs at other times of the day, but not often. She cannot pass wind without fear of the discharge coming away. The motion is generally relaxed, but sometimes well formed. Often she has intense colicky pains in the bowels, in the intervals being free from pain. Upon examination the abdomen was very large, flat, and flabby, and nothing abnormal could be felt. An examination by the rectum disclosed nothing but some large loose folds of mucous membrane. I advised injections and a strict diet. The patient felt a little better at first from the treatment, and was able to come downstairs, but was often driven up again with the pain. In the morning she could not stand up without mucus passing involuntarily away, so that she had to dress sitting. The pain would come on every two days. One day she would be quite free, and the next in great pain. Occasionally, for a week or two, she would feel much better; her appetite was very bad, and she was getting markedly thinner. The motions were small, and passed in little pieces.

On August 25th, 1889, she took a dose of castor oil. This brought on violent pain and vomiting, and the abdomen became so tender that the weight of the clothes could scarcely be borne. Owing to this pain she readily consented to an exploratory operation, with a view to colotomy if obstruction was found. On September 1st, in the presence of Dr. Goodchild, and with the assistance of Mr. Bagnall, I opened the abdomen in a manner similar to the last case. On passing my finger into the abdominal cavity some hard, scybalous masses could be at once felt in the sigmoid flexure. The bowel could be traced down to the pelvic brim. Here, and for a distance of two inches above it, it was tightly strictured, feeling like a hard cord bound down to the fascia behind. The bowel immediately above the stricture was dilated. This was traced upwards till a healthy portion could be found, which was drawn out and sutured to the peritoneum and skin, and opened the following day. The patient convalesced without trouble.

At the present time, two years after the colotomy, she states that since the operation all symptoms have been completely relieved, and she now considers herself in excellent health, and is very satisfied with her condition. The new anus, as a rule, acts but once a day. She has no difficulty in keeping herself clean, and is able to take walking exercise without discomfort or inconvenience.

In the first of the two cases recorded the symptoms were most pronounced, and seemed to be more consistent with a stricture low down in the large intestine than with any other disorder. The second case was not so clear, though the probability of a stricture was suggested. The gravity of the symptoms in both cases was such as to make it apparent that without relief a fatal termination could not be far off. In these circumstances it appeared that the right thing to do was first to find out what was the matter, and the only way in which this could be done with certainty was to look into the abdomen to see. It was conceivable that if an obstruction were found it might be due to some cause which surgery could remedy; and, if such was not the case, by performing a colotomy above the obstruction death might be averted, and the patient's life made comparatively comfortable. The site selected for exploration in each instance was on the left side, between the umbilicus and the anterior superior spine. In the first case, the hardness that could be felt on deep pressure in this place was taken as an indication of the right spot for the incision. In Case II, where nothing could be felt through the abdominal walls, it was selected from the fact

that when there is nothing to indicate the site of stricture the chances are strongly in favour of its being either in the sigmoid flexure or in the upper part of the rectum. Another advantage of the exploratory incision being in this neighbourhood is that, if the obstruction is found to be irremediable, or an anastomosis impracticable, an inguinal colotomy can be completed without further trouble, as in my two cases.

Had the obstruction not been thus found, I should have enlarged the incision sufficiently to have admitted the hand and explored the rest of the colon. If the stricture had proved to be in the transverse or descending colon the exploratory opening might have been closed, and colotomy performed on the opposite side.

It would be out of place in this paper to dilate on the merits and advantages of inguinal colotomy; but I must state that with an experience of nearly a hundred cases I have not altered my views as to its great superiority over the lumbar method. Moreover, the two cases recorded are additional evidence of its value, for the abdominal incision afforded the means of confirming the diagnosis, and then was used for the completion of the operation.

In conclusion, I would ask physicians whether in these cases they could help us to a more precise diagnosis as to the presence of stricture, as to its nature, and the point where it is likely to be found; so that when an exploratory operation is undertaken, the surgeon may confidently expect to find a condition admitting of relief.

ON THE USE OF CANTHARIDINATE OF POTASH IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

By W. SOLTAU FENWICK, M.D.LOND., M.R.C.P.,

AND

ARTHUR G. WELSFORD, M.B., B.C.CAMB.

Previous Observations: Literature.

IN February, 1891, Professor Liebreich,¹ of Berlin, drew the attention of the medical profession to the effects which cantharidinate of potash might be supposed to exert upon the progress of tuberculous disease. He pointed out that the specific action of the drug consisted in promoting increased exudation of serum from the capillary vessels, and since this exudation had been proved to possess considerable germicidal properties, it was probable that the rapid inundation of the tuberculous material by an antagonistic agent would tend to modify, or at least retard, the specific action of the bacilli. This statement immediately received practical support from Fränkel² and Heymann,³ who, in addition to a verbal report upon 32 cases treated in this manner, demonstrated several in which the morbid phenomena in the larynx had either diminished or entirely cleared up under the influence of the new remedy. A few weeks later Professor Tümas,⁴ of Warsaw, published some observations upon the value of the drug in 6 cases of pulmonary phthisis. He considered that the treatment was decidedly efficacious, as in 2 instances the physical signs of disease had disappeared.

Heryng⁵ has recently investigated the use of the cantharidinate of potash in 20 cases of laryngeal and pulmonary tuberculosis, and believes that he obtained markedly beneficial results in some cases of recent tuberculous laryngitis. Germonig⁶ concludes from his own cases that while the drug produces no appreciable effect on the pulmonary symptoms, its use is sometimes followed by an improvement in the laryngeal. Similar statements have been made by Saalfeld,⁷ Landgraf,⁸ and Lublinski.⁹ On the other hand,

¹ *Berlin. klin. Wochn.*, March 2nd, 1891.

² *Berlin. klin. Wochn.*, March 2nd, 1891.

³ *Loc. cit.*

⁴ *Wratsh*, 13, 1891, p. 247.

⁵ *Therapeutische Monatshefte*, November, 1891.

⁶ *Lo Sperimentale*, May 15th, 1891.

⁷ *Berlin. klin. Wochn.*, March 2nd, 1891.

⁸ *Loc. cit.*

⁹ *Loc. cit.*

Cornil,¹⁰ Rosenbach,¹¹ Forlanini,¹² and Carter¹³ deny that the remedy has any beneficial influence either upon the laryngeal or the pulmonary lesions, and lay stress upon the fact that the continuous use of the drug in doses exceeding 0.2 milligramme is very apt to induce albuminuria, and also to be accompanied by other abnormal symptoms such as vomiting, abdominal pain, and diarrhoea.

Although the majority of the recorded observations are favourable to the employment of the salt in cases of tuberculous laryngitis, the statements which have reference to the benefit accruing from its use in pulmonary phthisis are extremely contradictory. It therefore seemed to us that observations undertaken for the direct purpose of settling this point might prove of interest.

Authors' Cases.

The cases chosen were sixteen in number, of which twelve were men and four women; the pulmonary disease being incipient in two, very chronic in three, and active in eleven. In all cases the sputum and urine were carefully measured and examined daily, the temperature recorded at intervals of at most four hours, and the treatment abandoned at the first appearance of albumen in the urine, or any other grave abnormal symptom. The drug was administered hypodermically by means of a Koch's syringe, the strictest antiseptic precautions being observed. At the outset we used the solution prepared by Mr. Martindale, containing 0.2 mg. in 1 c.c., but on account of the large bulk of the injection, we afterwards preferred a solution of double strength. The dose varied from 0.2 to 0.3 mg., and was given at first on alternate days, but afterwards more continuously. In all, 177 injections were administered, extending over a period of five weeks, the following being the relative number given to the various cases: 20 to 1, 18 to 1, 17 to 1, 16 to 2, 15 to 1, 12 to 4, 9 to 1, 7 to 2, 6 to 2, 2 to 1. Pain was noted in every case at the seat of puncture, its intensity varying according to the anatomical site selected; thus it was most severe when the salt was given in the arm, and least so when injected into the tissues of the buttock. The pain usually disappeared within twenty-four hours, but in some cases slight inflammation took place in the subcutaneous tissue, which subsided in a few days without further trouble. Suppuration was never observed.

Effects on General Constitutional Symptoms.

With regard to the question of *pyrexial reaction* various statements have been made. Liebreich and others assert that no reaction can be observed after the use of the cantharidates, while Rosenbach and Heryng have noticed a definite exacerbation of temperature after each injection. According to our experience the reaction is often undeniably present. In many cases the temperature rose 1° to 2° F. within three hours after the injection, and fell again to its former point after the lapse of from four to six more. This rise of temperature was variable both in its appearance and degree, and it appeared as if the amount of fever tallied closely with the intensity and duration of the pain set up by the injection. It was more often observed in women than in men, and more frequently met with at the commencement of the treatment than afterwards. We are unable to corroborate the statement that hectic fever either diminishes or disappears under the use of the drug. Nothing definite was noted respecting the influence of the treatment upon the character, of the pulse, or respiration.

In 3 instances the symptom of night sweats improved, while in the others no change could be detected. In 2 cases acute diarrhoea supervened in the course of treatment.

We are unable to sustain the reputation of the drug for producing objective beneficial effects on the weight. In 8 cases loss of weight was recorded during the course of the treatment; in 3 cases a slight increase took place; while in 3 the weight remained unchanged.

Influence on Cough and Expectoration.

Cough was a constant symptom in every case, and since

slight differences in its frequency and severity are apt to escape even the notice of the patients themselves, but little reliance can be placed on their statements on this point. We find, however, from our notes that in 7 instances the cough steadily increased, apparently in consequence of the treatment; in 5 it somewhat improved; while in the remaining 4 no obvious difference could be detected. We never had the satisfaction of observing the total disappearance of the cough with cessation of expectoration.

Much stress has been laid upon the changes wrought in the quantity and quality of the expectoration by the drug under discussion. The general opinion appears to be that the expectoration tends at first to increase in amount and to become more diffuent and frothy; but some writers have noticed a steady diminution in the quantity of the sputum with final cessation. In our own cases an initial increase was almost invariable, and in nearly all the sputum became at the same time somewhat more watery and frothy, while the patient stated that the phlegm was got rid of more easily than before. But the ultimate results were much less satisfactory than those previously recorded, for we find at the termination of the treatment that in 8 cases the sputum had permanently increased in amount, in 3 a slight decrease was perceptible, while in 3 others the average quantity remained unchanged. Although various statements have been made respecting the effect of the cantharidate of potash upon the physical characters of the tubercle bacilli, it is now acknowledged that no changes whatsoever can be demonstrated by the microscope.

Albuminuria.

All previous writers have pointed out that albuminuria is apt to result from the employment of cantharidate of potash in doses exceeding 0.2 mg.; and, indeed, slight albuminuria has been observed in nearly 30 per cent. of all the cases that have hitherto been published, in two instances accompanied by blood in the urine. With regard to the frequency of this symptom, our results approximate closely to those of other observers. In 8 cases out of the 16 the treatment was abandoned on account of albuminuria. This complication only occurred once when the injection of the salt was limited to 0.2 mg., but it sometimes appeared immediately the dose was increased to 0.3 mg. Its onset was usually accompanied by a feeling of pain and oppression in the loins and hypogastric region, with considerable smarting in the urethra during micturition, and with slight strangury. The urine regained its normal characters within thirty hours, and the concomitant symptoms subsided somewhat later. In one case a rigor accompanied the onset of the albuminuria, the temperature rising to 103° F. Although the treatment was never undertaken when albumen was previously demonstrated to be present in the urine, it seemed to us as if the renal disease was latent in some cases, for in such, though the urine appeared perfectly normal, the injection of the cantharidate immediately gave rise to albuminuria, and in one case careful questioning elicited the fact that the patient had been under treatment some years before for Bright's disease. We would therefore add that the mere absence of albumen is not a sufficient guarantee of the suitability of the case for this treatment, but that the salt is contraindicated whenever the urine is pale in colour, with a specific gravity permanently under 1012. Hematuria was never observed. In some cases it appeared as if the treatment gave rise to a slight increase in the daily quantity of the urine, but this result was exceedingly variable, and is only worthy of notice as having been previously remarked upon by Heryng.¹⁴ In 5 cases the treatment was accompanied by abdominal pain and vomiting.

Physical Signs.

Since the physical signs of phthisis are known to vary considerably in the same case from time to time during the course of the day, and are liable to such various interpretations at the hands of different observers, we considered it necessary to adopt special precautions when tracing the supposed influence of the drug upon the disease of the lung, as denoted by physical signs. Each case was, therefore, examined at the commencement of the treatment, at intervals during its course, and at its termination, and each of us recorded his individual observations in the form of a diagram,

¹⁰ *Journ. des Connaiss. Méd.*, April 16th, 1891.

¹¹ *Deutsche med. Wochen.*, April 9th, 1891.

¹² *Gazzetta Med. Lombarda*, May 6th, 1891.

¹³ *BRITISH MEDICAL JOURNAL*, April 25th, 1891. See also SUPPLEMENT to the *BRITISH MEDICAL JOURNAL*, where a full account of the literature is given.

¹⁴ *Loc. cit.*

the physical examinations being made about the same hour on each day. We have thus been able to obtain a series of diagrams in each case, and by taking the mean of our individual observations we may be allowed to have arrived at results approximately correct; but unfortunately the results so obtained are very different from those of Heymann and Tümas, who had the satisfaction of watching the gradual disappearance of the physical signs; for in no instance could we arrive at this happy inference. On the contrary, in 11 cases the disease apparently progressed uninfluenced by the treatment, new foci of disease appearing in hitherto healthy districts, while the signs showed that the previously consolidated tissue tended to break down in the ordinary way. In three chronic cases the physical signs remained unchanged. There is one point, however, which is deserving of some notice. In many cases where the expectoration became frothy moist crepitations appeared at the bases of the lungs and in the region of the larger bronchi, while in 3 cases a distinct attack of subacute bronchitis became superadded to the tuberculous disease, a phenomenon which subsided within a few days after relinquishing the treatment. It would, therefore, appear as if the drug is partially excreted by the bronchial mucous membrane, and that as a result a slight degree of inflammation is set up. Finally, the *post-mortem* examinations recorded by Cornil¹⁵ and Lübmoff¹⁶ in cases treated by cantharidinate of potash, offer no confirmation to the statement that the drug has any power to modify the progress of the tuberculous disease, but rather point the lesson that glomerulo-nephritis is apt to be set up by its employment.

Conclusions.

A glance at the foregoing statements forcibly demonstrates the fact that in the investigation of the influence of a drug upon the progress of organic disease a wide distinction must invariably be drawn between subjective and objective symptoms. In the majority of the cases recorded such symptoms as appetite, sleep, cough, and even night sweats were considerably improved by the use of cantharidinate of potash, and in our own cases the accounts given by the patients themselves were always extremely encouraging, though they tallied ill with the steady advance in physical signs. A striking example of this tonic effect of hope was observed in the case of a man who had suffered from persistent insomnia for many months. After a single injection of 0.2 mg. he passed an excellent night, and continued to do so during the whole period of treatment, despite the fact that albuminuria supervened after a few injections, and that an equal quantity of distilled water was substituted for the more deleterious preparation. In three other cases the subjective symptoms continued steadily to improve after injections of water had been regularly given in lieu of the potash salt. With these facts before us we have of necessity come to the following conclusions:

1. That cantharidinate of potash is absolutely useless in producing any obvious beneficial effect in pulmonary tuberculosis.
2. That in doses exceeding 0.2 mg. it is apt to induce albuminuria, with pain in the loins, strangury, and even hæmaturia.
3. That for the latter it should in no case be used without the most careful supervision, and that it is therefore ill adapted for out-patient practice.

With respect to the effect of cantharidinate of potash on laryngeal tuberculosis, we are not in a position to make any definite statement, as only two of our cases suffered from laryngitis. As far as our observations went we detected no improvement in the condition of the laryngeal affection.

Finally, we must thank Mr. John Hopkins, F.R.C.S., for kind assistance afforded us in the course of this investigation.

¹⁵ *Loc. cit.*

¹⁶ *Pratch*, 8, 1891, p. 237.

GERMAN UNIVERSITIES.—The total number of matriculated students in the twenty universities of the German Empire and the Munster Academy during the summer semester of 1891 was 28,515, of whom 8,915 were students of medicine. The teaching staff numbered 2,445 persons, among whom there were 1,049 ordinary, 532 extraordinary, and 60 honorary professors, 665 *Privatdozenten*, and 139 teachers of languages, gymnastics, etc.

MEMORANDA:

MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, Etc.

OPERATION FOR THE RELIEF OF OLD-STANDING AND IMPERMEABLE STRICTURES.

IN such cases in which, owing to the density of the tissues at the seat of stricture, a Wheelhouse's operation is often impossible, I have relieved the patient by the performance of an operation which I devised some years ago.

I pass a soft instrument, such as a catheter, along one of the sinuses into the bladder, and with the catheter as a guide, I then introduce a long probe. Now I either (1) cut down upon the probe from a point in the mid-line of the perineum, and having passed a straight silver catheter through this wound into the bladder, withdraw the probe and allow this opening to remain patent; or (2) follow the probe by an incision from the fistulous opening until I arrive at the urethra, and then pass the catheter and withdraw the probe. In this manner I have found it easy to get at that part of the urethra behind the stricture. It is important in the after-treatment to keep the bladder well drained, so that no urine whatsoever may pass through the sinuses. This may be done by attaching to the straight petticoated catheter in the wound some rubber tubing, the other end of which, at a level below the bladder, dips in a solution of perchloride of mercury (1 in 1,000). The results obtained from this operation have been extremely satisfactory, all the sinuses become occluded, the patient passes his urine by the perineal opening.

L. S. SENHOUSE, M.B., C.M. Edin.

Ingham Infirmary, South Shields.

TWO CASES OF PUERPERAL ECLAMPSIA.

THE following notes of two cases of puerperal convulsions, which have occurred in my practice within the last two months, may possess a little interest as illustrative of two different conditions under which they may be found to exist:—

CASE I.—C., aged 30 years, the mother of several healthy children, whose previous labours, I was told, had all been normal, was daily expecting her confinement. An hour before my arrival she was found lying unconscious in her room, and had had several fits in the interval. Her face was puffy, legs very œdematous, and the skin had a jaundiced appearance. I learned that this condition had existed for some considerable time. I at once gave her two drops of croton oil, followed by an enema. The os was slightly dilated and labour evidently commencing. The fits continuing, and the unconsciousness becoming more profound, I determined, with the concurrence of my friend, Dr. Mackenzie, to empty the uterus as quickly as possible. She was put under chloroform, and I dilated the os with my fingers so far that in a couple of hours I was enabled to complete the delivery with forceps. The child was born dead. There was very little hæmorrhage, and the uterus contracted well. She had no fits after delivery, but she sank gradually into a state of coma, and died four hours afterwards. The urine which I drew off on first seeing the patient was thick, and greenish black in colour, due probably to admixture with blood. Unfortunately, it was only examined for albumen, which was found in considerable quantity. From the history of the case, and the general appearance of the patient, as well as from the presence of albumen in the urine, I concluded that kidney disease of long standing was present, and that the convulsions and supervening coma were the result of uræmic poisoning. That the pregnancy determined the appearance of the convulsions at this particular time may, I think, be conceded, but the nature of the influence so exerted is not so easy of proof.

CASE II.—Although the symptoms were much the same, the result was different, and the cause more doubtful. This patient, aged 25, and always healthy previously, was in the eighth month of her second pregnancy, her first confinement having taken place six years before. Without any premonitory symptoms, she was taken with a convulsive attack in the middle of the night. The fits came on every twenty minutes,