which, when dry, weighed only forty-one grains. I used on that occasion a No. 4 lithotrite. I was obliged to introduce it twelve times into the bladder. The boy strained violently during the greater part of the operation, rendering the task of crushing the stone into fine powder extremely difficult. He, however, made a rapid recovery. Ten years ago, when I was beginning to practise litholapaxy in boys, I should certainly have failed to accomplish so difficult an operation as this proved to be. I would impress on the inexperienced the advantages of not being in too great a hurry to complete the operation and would direct special attention to the absolute necessity of extracting every grain of *débris* from the bladder of a child before removing him from the operating table. Five or ten minutes spent towards the close of the operation in searching for the last particles of *débris* will be well and profitably employed. All those who have studied the history of the surgery of stone in the bladder know full well that lithotritry in boys as practised in the days which preceded Bigelow's great invention was attended with the most disastrous results. If success is to be achieved in the future in evacuating calculi from the bladders of boys by a crushing as distinguished from a cutting procedure, there must be no blending of the old method of lithotritry with the more perfect and modern operation of litholapaxy. Four or five fragments of stone, each weighing two or three grains, may be left behind in an adult male's bladder after a litholapaxy with some degree of impunity, for in all probability they will be voided safely with the stream of urine the day succeeding the operation; but these same fragments of stone if left behind in a boy's bladder, whose urethra will only just accommodate a No. 6 lithotrite, may become impacted in the urethra, causing convulsions or retention and perhaps extravasation of urine with all their attendant dangers. In conclusion, I would lay down the following rules to guide the inexperienced in performing the operation of litholapaxy in boys. The surgeon should provide himself with an ample supply of perfectly reliable lithotrites, all of the completely fenestrated pattern, and with cannulæ with serviceable stylets. He should never withdraw a cannula from the bladder or introduce one unless it be fitted with a stylet. Four ounces of water should be the maximum quantity allowed to be in the bladder at any given moment. The aspirator should be used gently and methodically, and water should not be injected into the bladder whilst the patient strains. Extreme gentleness and care are essential in practising all manipulations of instruments in the bladder and urethra. The operator should not be in a hurry to finish the operation, and if possible he should not leave a grain of *débris* behind in the bladder. If all these conditions be fulfilled a large measure of success will be obtained.

Indore, Central India.

SOME NOTES ON TYPHOID FEVER.¹

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IN introducing a discussion on typhoid fever I am aware that there is nothing new to be said on a subject which is so well known, and, moreover, the subject is so large that I cannot do more than bring forward a few of the many points which are worthy of notice.

The first thing which strikes anyone conversant with the literature of typhoid fever is the unsatisfactory vagueness with which it is surrounded. Thus Murchison² says: "Enteric fever would be excluded from the diagnosis by a temperature approaching normal on any evening during the first week and, on the other hand, by a temperature of 104° on the first day or second morning of illness." Whilst further on³ he says: "Many cases are designated 'simple fever' or 'febricula' which are in reality mild or abortive cases of typhus or enteric fever." "The typhus and enteric poisons occasionally give rise to symptoms so mild and so indefinite and of so short duration that an accurate diagnosis is impossible unless well marked cases of either fever occur in the same house at the same time." This uncertain tone is very fully borne out in actual practice; it is the experience of all, as it certainly is my own. I have met with three cases of typhoid fever, in two of which

I was asked to see the patient in consultation because there were vague feelings of malaise which did not yield to treatment. Two of these I saw up and dressed, seated in their sitting-rooms, and in one of them I had some difficulty in persuading the medical attendant that there were enteric papules and that the furred tongue and slight bowel disturbance meant typhoid fever. Both these patients died of severe internal hæmorrhages, thus confirming the diagnosis, but in neither case was a necropsy allowed. The third patient came under my care as physician to the Devon and Exeter Hospital, and as the diagnosis was verified by a post-mortem examination I will give short notes of the case.

CASE 1.—A man aged thirty-one two months before admission was laid up with "a cold in his bones." He recovered after a week and went to work until three weeks before admission, when he caught a fresh cold. At this time he was troubled with paroxysms of violent retching unaccompanied by vomiting. Fourteen days before admission diarrhœa commenced and continued up to the date of admission. He lost flesh and at times broke out into violent sweats. He had no rigors. He had been getting about the house and eating ordinary food up to the day of admission. The patient was admitted on March 1st. He was a tall, thin man with a peculiarly phthisical appearance. The tongue was furred, fissured and dry. He was very deaf and the first heart sound was indistinct and splenic dulness was increased, the abdomen was distended and twelve enteric papules were found on it. Temperature 100°, pulse 116. He went on very well until 3.30 A.M. on March 5th, when he was seized with pain in the stomach. He died the same day with the usual symptoms of perforation. At the necropsy the spleen was found to be enlarged and the bases of the lungs were cedematous. The intestines contained numerous typhoid ulcers, some of considerable standing and skinning over, some more recent and some covered with sloughs. There were three points of perforation. One of these was of old date and had contracted adhesions which had quite shut it off. The two others were recent and were the cause of death. From the fact of the ulcers having skinned over it would appear that this patient had probably contracted typhoid fever and gone about with it for two months, doing his work a great part of the time.

The great difficulty there often is in forming a correct diagnosis of typhoid fever makes me hesitate to make a definite diagnosis in such cases as the following, although in both the furring of the tongue, the presence of enteric papules and the bowel disturbance forced Dr. Hingston and myself to regard them as really typhoid. Their history is most interesting.

CASES 2 and 3.—In 1889 Dr. Hingston referred a lady and her daughter to me from Plymouth in reference to the purchase of a house in a suburb of Exeter. The house was purchased and at my suggestion the drainage was thoroughly overhauled and remodelled by one of our best sanitary authorities. Whilst doing this the architect found that an old brick drain belonging to the house passed close to a well with a pump in the kitchen. The water in this well was analysed and condemned, and the pump was chained up and not used. In June, 1891, the lady of the house was unwell, suffering from various ailments referable to her change of life, and she continued under my observation until November. During September and October she never left her house except for an occasional drive; she never called at any other house, nor did she take a meal of any kind out of her own home. In August, 1891, the pump was unchained and the well pumped out dry and cleaned, and on Oct. 14th the water was analysed by the city analyst. He found an unusual amount of chlorides and nitrates, but reported it fit for drinking purposes. This water was used by the lady, her daughter and a parlourmaid on and after Oct. 26th of the same year. On Nov. 4th the parlourmaid became unwell and a curious rash appeared on her arms; this looked more like erysipelas than anything else, and although I then knew nothing about the well water I considered it due to blood-poisoning. It was treated with iron and sulphate of magnesia and she got well in about a week. About Nov. 13th the lady began to ail, and on Dec. 2nd a definite feverish condition commenced, the temperature reaching 102°. The fever did not run a definite typhoid course, but it continued more or less for over three weeks and was attended with diarrhœa, a typically furred tongue and with enteric papules. On Nov. 16th her daughter began to complain of violent headache and malaise and on Dec. 5th her temperature was 100° and her tongue typically furred, and although the temperature never ranged high she had three distinct crops of enteric papules.

¹ A paper read before the Devon and Exeter Medico-Chirurgical Society November, 1892.

² Continued Fevers, p. 516.

³ *Ibid.*, p. 678.

I may add that the lady's family seem to be peculiarly susceptible to typhoid fever. She has four brothers and one sister, of whom three brothers have had typhoid fever severely at various times and in various places, whilst the sister has had an attack of so-called "low fever." I hesitate to call these cases true typhoid fever, because I am not prepared to contend that typhoid fever can originate *de novo*. If, however, they were typhoid fever, I do not see any other explanation. The house in which they lived stands almost in the middle of its own grounds (twelve acres in extent) and is connected with no other drains. The inmates keep their own cows and the lady had tasted nothing for months which could have given her typhoid fever except this well-water, and it is significant that all the three persons who drank the well-water were ill after it, whereas no one else in the house was in any way affected. It is certain that there had been no typhoid fever in the house since 1889 and the most careful inquiry could not trace its presence in the house previously. The fact that the water contained so much chlorides and nitrates is suspicious. Subsequently the water was analysed by Dr. Stevenson, who in every way confirmed the previous analysis and reported the water fit for drinking purposes. His report, however, contains a suspicious sentence: "The water is derived from a soil abounding in nitrates which, though in themselves harmless, are derived from antecedent impurities in the soil, possibly a rich or well manured soil." As the well was in the centre of the house the impurities in the soil must have come from the old brick drain which was destroyed in 1889.

Of course, Dr. Murchison believed that enteric fever might be generated *de novo* from putrified animal matter, and even as late as 1875 Sir William Jenner was unwillingly forced to admit that the bulk of evidence tended to support this conclusion. The weight of evidence now appears to be the other way, and I am not prepared to say that these cases are conclusive enough to found any theory upon them. Still I not infrequently meet with cases in the isolated country districts around Exeter in which it seems impossible to trace this disease to antecedent typhoid fever and I should be glad to hear the general experience on this point.

One reads a great deal as to the temperature in typhoid fever, and Wunderlich, in his book on Temperature, has divided the temperature into stages, which at any rate look very pretty on charts. I have seen a good deal of typhoid fever, but I have never yet seen a patient with a typical "initial stage." Patients undoubtedly very frequently—in fact most frequently—do not send for their medical attendant until the initial stage of disease is passed; but I feel sure that in many cases the onset of typhoid fever is just as acute and as sudden as it is in pneumonia. As showing the sudden onset of typhoid fever the following case is particularly interesting.

CASE 4.—A boy contracted typhoid fever at a day school at which the drainage was found to be imperfect and at which also two other boys caught the fever. The boy was in his usual health up to the evening of Jan. 7th, 1889; he had had a good appetite and appeared well and lively. On the evening of that day he was at a children's party, felt cold and chilly and took no supper. He passed a restless night, and when I saw him the next morning his temperature was 104° 6'. It was not under 104° for four days and the typhoid fever continued, with two relapses, for over fifty days, when he began to get well. So little did I believe that it was typhoid fever that, when distinctly asked whether it was or not, I said I thought it impossible for typhoid fever to begin in this way, and it was four or five days before the onset of bowel troubles and the subsequent appearance of enteric papules made me alter my diagnosis. Lung trouble was carefully looked for from the commencement both by myself and by Mr. Bankart, who saw the case with me in consultation, but we never found any, and the rate of breathing was not sufficiently increased to lead us to believe that any inflammation of the lung was present. This was the first case of the kind I had ever seen, but it caused me to entirely disbelieve Murchison's dictum that the diagnosis of typhoid fever is excluded "by a temperature of 104° on the first day or second morning of illness."

CASES 5 and 6.—In the following two cases the onset was just as sudden. One of the nurses had been nursing a case of typhoid fever for three weeks under my care. One day she complained of being chilly when out for a walk and on the same evening I took her temperature, which was 103° 8'. It was 103° 6' the next morning. The other case was that of a patient who was in bed in the Devon and Exeter Hospital for a fortnight before the fever began. She had been admitted

under my care for chorea and, the temperature having been normal for some days after admission, the nurse ceased to take it. One day she complained of feeling feverish; her temperature was found to be 103° 4' and she went through an ordinary attack of typhoid fever with the usual temperature observed in such cases.

I must call further attention to Case 5, as the nurse's illness illustrates the fact that typhoid fever may be communicated from patient to nurse. In February, 1891, a lady came up from Appledore to consult me, intending to stay with some friends in Exeter. I found her temperature 102° and advised her to go to her friends in Exeter and to take to her bed at once. She did so and it turned out that she had typhoid fever. The house in which her friends resided was in perfect sanitary condition and the greatest precautions were taken as to the stools &c. and plenty of disinfectants were used. No one else in the house but the nurse took the fever. She began to attend in the last week in February. The patient had that rare complication of typhoid fever, retention of urine with cystitis, and the nurse had to use the catheter every day twice or three times, washing out the bladder with a solution of Condy's Fluid. Whether it was the constant bending over the patient in passing the catheter, in which way the fever was said by the older authorities to be often communicated, or whether it was that the urine was infectious, in any case the nurse suddenly developed the fever on March 24th and was ill for eight weeks. Further, as illustrating the similarity of the poison in the two cases, both the patient and the nurse nearly died from thrombosis in the veins of the leg. Case 5 is especially interesting, for in most of the cases in which nurses have contracted the fever when nursing typhoid fever patients the sanitary arrangements of the house have been called in question. In this case the typhoid fever was imported from a long distance into a perfectly sanitary house, and the greatest precaution as to cleanliness and disinfectants was observed, whilst the nurse herself was one of the best of our hospital-trained nurses and well acquainted with all the precautions enjoined in nursing cases of typhoid fever.

I have several times heard the diagnosis of typhoid fever disputed because the temperature of the patient has been nearly normal at some time in the day during the first week of the illness. I can bring forward charts of twelve separate hourly observations of temperature in five undoubted cases of typhoid fever. In these it is established how different the hourly temperature is even in the same cases on different days.

CASE 7.—I would especially call attention to this case, that of a man, in which there were hourly observations on four consecutive days, on two of which the temperatures at various hours were 99° and 99° 4', whilst on the other days they did not read so low. In another case the lowest temperature was 99° 2', and in a third 98° 8'.

My own opinion of the temperature in typhoid fever is that it varies so much that it is impossible to form or destroy a diagnosis on this ground alone. In forming an opinion one must consider the case as a whole and not the presence or absence of any one symptom. This is especially true as regards the rash. In few of the specific diseases does the rash vary so much as in the case of typhoid fever. In children especially the rash is often almost, if not entirely, absent. Twice I have seen the abdomen quite thickly covered with enteric papules, and in one case the rash was so peculiar that it is worth while to quote the full description dictated by the late Dr. Moxon to me when I was his ward clerk: "The eruption is peculiar; it consists of numerous brownish-red spots of about the size of a large pin's head. Many of these appear to have little vesicles on their summit, but on examining them with a lens this appearance is seen to be due to thickened epidermis. For the most part they do not lie near hair follicles. Scattered about amongst them are numerous large maculæ. Many of them are of about the circumference of a pea, of a rose colour and fade on pressure, to reappear as soon as this is discontinued. Others are of the same size and colour, but do not thus fade and look very much like the spots seen in a syphilitic eruption." A rash of this description has been described by Liebermeister in Ziemssen's "System of Medicine" as occurring in typhoid fever, but it occurs so rarely that it was much discussed by Dr. Moxon as to whether it was characteristic of typhoid fever. However, the patient (Case 7) had a relapse after being convalescent for ten days and the rash was reproduced in all its details during the relapse, thus showing that it was part of the typhoid state.

With regard to the treatment of typhoid fever, considering how much has been written on the subject by the most eminent physicians, it is curious how every medical man one meets seems to have a system of his own. The most common error which I think is now prevalent is the keeping of the patient too exclusively on milk and allowing it him in too large a quantity. This error reached a culminating point in one case which I saw in consultation last year. The patient, a youth aged eighteen, being very thirsty, was taking from four to five quarts of milk in twenty-four hours. I found him lying with an immensely distended abdomen, in which there was much pain, and with a weak, quick, flickering pulse, and he died very shortly after my visit. In one very similar case, in which this distension of the bowels and pain led to the suspicion that the case was complicated by peritonitis, I assisted at the necropsy, of which the following is a note: "Abdomen: no peritonitis; intestines, especially the colon, greatly distended with gas. A huge lump of casein was found blocking the upper part of the rectum; sigmoid flexure contracted and empty. In the lower three feet of the ileum and about the ileo-cæcal valve Peyer's patches congested, their purplish tint shining through a rough peritoneal coat. No ulceration, the morbid changes being in fact altogether inconsiderable in degree and in an early stage of development." One often forgets, to use Sir William Jenner's words, that "a pint of milk contains as much solid animal matter as a full-sized mutton chop and the casein of the milk must become solid before it is digested." I believe that from one and a half to two and a half pints of milk in twenty-four hours are quite enough in most cases of typhoid fever, and if this does not seem to be digested it should then be peptonised. Animal broths may be used to supplement this nourishment, whilst if the patient requires more fluid he should be allowed pure water. After an excess of milk an excess of stimulant is, I think, the most common error one meets with. I believe a very large number of typhoid fever patients will do well without any stimulant, although when the heart's first sound is feeble or inaudible I prefer to give stimulants to the extent of three or four ounces in the twenty-four hours and I have rarely found it necessary to exceed this amount. On this point Sir William Jenner says: "Nearly all the good effects of alcohol when its use is indicated are obtained by four, six, or eight ounces of brandy in twenty-four hours. Taken in excess—even when in smaller quantities it would do good—it dries the tongue, muddles the mind and diminishes the action of the secreting organs." It is not the custom now to give as much stimulant as formerly, but I have on several occasions met medical men in consultation who thought it necessary to give from fifteen to twenty or even more ounces of brandy in the twenty-four hours. In all the cases in which these large quantities of alcohol were given the patients died, and in one case certainly I thought that the acute dilatation of the heart, which is a rare complication of typhoid fever, was due in part to the quantity of stimulant that had been given.

CASE 8.—In this case the patient, aged thirty-nine or forty years, had been very much overworked and had contracted typhoid fever of an indefinite type, but which at the date of my first visit could be pretty readily diagnosed from the character of the stools and from the presence of a few enteric spots. His pulse at this time was 140; the first heart-sound was inaudible, but the apex beat was well within the nipple line; the area of the heart's impulse was not increased and there was no bruit. It was agreed to give from six to eight ounces of alcohol in the twenty-four hours, but the next day the quantity was increased to twenty ounces. On the following day the quantity was reduced to twelve ounces; but as symptoms of fainting threatened in the night the patient was given an ounce of brandy and one teaspoonful of sal volatile alternately every half hour in water and milk. I saw the patient about ten hours after this, when the heart's area of pulsation was much increased; the apex beat was outside the nipple line, a well-marked mitral bruit had developed and the patient died shortly after my visit. This is the only case in which I have ever sat by the bedside of a patient and heard the apex strike audibly against the rib; but certainly in this instance the symptom was present for eighteen or twenty hours before death.

With regard to drugs, I dislike any routine plan of treatment. I believe it is better to give no drugs at all unless there are definite reasons for their administration. In my own practice I rarely give typhoid fever patients any medicine until they are convalescent, unless there be some definite complication which requires treatment. Still cases occur in

which, to use the words of the late Dr. Moxon, "a doctor without physic is like a priest without a creed." In such cases I would recommend peppermint water coloured with syrup of red poppy or syrup of saffron. However, I have never met anyone who has not his own special mixture for typhoid fever, and I daresay most of these mixtures are equally good. One routine treatment which I have come across is, I think, very harmful, and that is the treatment of the patient with five or six minims of tincture of opium three times a day. Twice, and twice only, have I met with retention of urine in typhoid fever, and in both of these cases the routine treatment had been adopted. One of them occurred in the practice of a friend, on whose opinion I set a high value; the other was in my own practice, I having been led to try this plan of treatment in deference to my friend's opinion that all his cases did well under it.

Time will not allow me to enter into the treatment of typhoid by baths, wet packs, quinine, antipyrin or salol. Rarely in my experience is such treatment necessary, and I believe that most cases of typhoid do well, if diagnosed early, when kept in bed under suitable diet.

Southernhay, Exeter.

A SIMPLE METHOD OF PERFORMING SUPRA-PUBIC CYSTOTOMY.

BY LAWSON TAIT, F.R.C.S. EDIN.,
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I DO not know of any instrument which has been added in my lifetime to the armature of the surgeon which has proved so generally useful, which has done so much to multiply operations, or to make them safer, easier and of more rapid performance, than the catch-forceps with scissor handles. As one might expect, the instrument is not a new one, for I found in the Museum of Pompeian Antiquities at Naples a fragment which I think must be the prototype of the ingenious invention of M. Koeberlé of Strasburg. That distinguished surgeon presented me with a pair of his forceps in 1871, and though the simple instrument has been variously modified and has had many other names attached to it the real merit of its modern introduction to surgery ought to be given entirely to him. It is not my purpose to enter now into a description of the many ways in which its use has aided us. That I shall do at length elsewhere. I will, however, briefly allude to one case—that of the ordinary abdominal section. In 1874 I began to use it instead of the cumbrous system of directors and other instruments then employed, and now that my traction method is in common use I am sure it will be universally admitted that not only is it more speedy than the old method but that it is far safer.

As supra-pubic lithotomy slowly and surely took the place of the perineal operation I found that cases of stone in the bladder in the male came into my hands from time to time, cases which I refused to undertake when the perineal method was the only available operation, for I did not feel myself justified in performing an operation which I knew could be done better by others. But when it came to be a question of peritoneal proximity I felt more at home and I resolved to perform the new operation. After much thought I came to the conclusion that attempts to raise the bladder from below by stuffing the pelvis were very unlikely to be successful, and after one or two post-mortem attempts I became perfectly satisfied that the viscus could far more easily and safely be pulled up by Koeberlé's forceps, just as I pull up the peritoneum or anything else I wish to cut with absolute precision.

My first operation was therefore performed as a perfectly completed process, because I was already quite familiar with all that my simple instruments could do and how best to make them do it; and in the eight cases of supra-pubic cystotomy in the male which I have done I have found no reason to modify the proceeding followed in my first case, which was that of a very stout farmer from Wales, seventy-three years of age, with a uric-acid stone in his bladder over four ounces in weight. The worst case I had was in a gentleman aged seventy-four, to whom I was called a few days ago by Mr. Eliot of Southampton. The patient had known of the presence of a stone in his bladder for more than ten years and had