but an inquiry into the history of these cases showed that an attack of influenza was often the starting-point of the trouble. I have found this history so often that I am convinced of the potency of the effect of an attack of influenza in setting up a chronic catarrh of the nasopharynx. In this connexion we must remember the epidemic of 1918, and I am quite convinced from my experience that there has been a great increase of these cases of chronic nasopharyngeal toxæmia with tic and irritable heart since that time. The bacillus of influenza may not remain in the nasopharynx, but it has done its damage. It has set up chronic inflammatory mischief and it has lowered the resistance of the nasopharyngeal mucous membrane to other infections, and any other organisms are enabled to grow and multiply.

Treatment.

If there is nasopharyngeal obstruction, operation is needed; if not, local treatment of the nasopharynx should be tried. The nasopharyngeal toilet in children is not very easy, but with an intelligent child a good deal can be done in the way of douching and spraying. More important, however, are physical exercises and drill, which are directed to keeping the nasopharynx clear. I have seen great benefit from persistent treatment on these lines.² The value of change of climate has already been referred to, and this, when available, is perhaps the most important of all; but it is not easy for most children to have prolonged residence at the seaside unless they happen to be of boarding-school age and can be sent to a seaside school. The question of drugs can be summed up by saying that sodium salicylate is the most useful for the infection and toxæmia, followed by tonics in the form of either nuxvomica or iron.

The treatment of the heart troubles is very important, and it is necessary to make a clear distinction between two forms: (1) The lax heart, and (2) the irritable (tense) heart. The lax heart needs a period of rest to recover from any dilatation which may be present, and then graduated physical exercises until tone is restored. The irritable heart is, however, quite a different matter; there is no dilatation, but only a very rapid pulse, which is stirred up especially by emotion and may be slowed by exercise. Dr. B. A. McSwiney, of the Physiological Department of Manchester University, and myself have been working lately at a series of tests—physical, emotional, and also one related to intrathoracic pressure—by which we hope to be able to evolve simple clinical methods of distinguishing between these two forms of heart disease. These tests are based on similar lines to those which Dr. Martin Flack has described with regard to testing candidates for the Air Force.³

The x-ray screen examination is also very useful, and the two varieties of heart trouble can be readily distinguished when looked for. The slow-beating heart, slightly dilated to the left, with an increased width from side to side at its lower part, shows up very clearly in comparison with the extremely rapid, and one might also say contracted, heart, which appears to be almost as wide in its upper part as in its lower. In this latter case it is quite obvious that, since the heart is not dilated, it is not necessary to treat the child by prolonged rest; this was shown during the war, when "disorderly action of the heart" was found to be improved by a series of drills and exercises. The trouble in these cases is that emotion and nervous control play a very large part in their production, and if the child can be taken out of itself and at the same time given suitable exercises the trouble will tend to disappear gradually. One must remember, however, that it is possible for dilatation to be superimposed upon irritability; in such cases a period of rest may be necessary before commencing the exercises. The point, however, is that some cases of heart trouble in children should be treated, not by rest, but by physical exercises.

I have arranged, in the massage department of my clinics, to have selected cases of irritable heart disease treated in this manner, and so far the results have been very encouraging. The children are set to play games which keep them fully engrossed, and if a little ingenuity is exercised this object can be attained.⁴

Prognosis.

This depends very much on whether treatment is continuous and thorough and on the lines recommended. I

do not remember having ever seen valvular disease of the heart develop in any of the cases of purely irritable heart with which I have had to deal, though I have seen it develop after lax heart when rest was not persisted in. In conclusion, I wish to state once more that the ordinary methods of palpation, percussion and auscultation are not sufficient to diagnose these cases, and it is therefore necessary for us to adopt more delicate methods of estimating the heart efficiency by tests such as I have indicated.

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REMOVAL OF STONES FROM THE PELVIC PORTION OF THE URETER.

BY

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THE operations described in textbooks for the removal of a stone from the pelvic portion of the ureter, are nearly all devised with the evident intention of avoiding any interference with the peritoneum. Stones have been taken away successfully by direct incision of the ureter from the intraperitoneal aspect, followed by closure of the opening with sutures, but this, as a routine method, has not yielded the good results recorded where the extraperitoneal operations have been practised. There has therefore been, and is still, a tendency to avoid using the peritoneum in any way as a regular part of such a procedure.

The following methods are the chief of those recognized at the present time¹—it is not necessary to describe them:

A. Extraperitoneal—

1. Exposure of the lumbar segment of the ureter.
2. Exposure of the whole length of the ureter.
3. Exposure of the ureter at the brim of the pelvis and in its pelvic portion.
4. Para-sacral route for exposure of the pelvic segment.
5. Vaginal route.
6. Vesical route for calculi in the intramural portion of the ureter.
7. Transvesical route for calculi lying in the lower two inches of the ureter outside the bladder wall.

B. Transperitoneal—

Exposure of the ureter at the brim of the pelvis and in its pelvic segment.

Advantages of an Opening into the Peritoneum.

There have been manifestations of a tendency to use the intraperitoneal route to some extent during recent years. For instance, Dr. Witherspoon² opened up the peritoneum to localize the stone, then sewed up the opening in the peritoneum very carefully. He afterwards peeled the peritoneum off the parietes, so as to enable him to extract the stone extraperitoneally.

Dr. Gibbon, of Philadelphia,³ pointed out the advantages of combined intra- and extra-peritoneal uretero-lithotomy—"for doubtful cases and all cases where a stone is found in the ureter when the abdomen has been opened for some other condition." He records two cases in which stones were removed from the lower part of the ureter, having been found during exploration of the right iliac fossa. In both the appendix was removed and then the stone extracted through an incision made extraperitoneally.

Recent Opinions.

Mr. Kidd, when introducing a discussion at the meeting of the British Medical Association last year, advised an extraperitoneal operation, but conceded "that if anything can be gained it is permitted to open the peritoneum." In the discussion which followed that paper Mr. Grey Turner said that he thought it "advantageous to open the peritoneal cavity simply for the purpose of locating the stone

by exploring the ureter with the finger." Mr. Rowlands recommended "a long para-median extraperitoneal valvular incision displacing the rectus and peritoneum inwards, but did not like any form of intraperitoneal operation for the removal of a stone from the ureter."

During the period of the war, three adults (one female) came under my charge for the relief of symptoms due to the impaction of a urinary calculus in the pelvic portion of the ureter. By means of the *x* rays the position, shape and size of the stones were clearly shown. They were similar in size and appearance, being under half an inch in length and somewhat like date-stones in shape.

It was evident in the first patient that the stone would be difficult to find through an incision in the extraperitoneal tissues only, and that it would not be easy to incise the ureter with confidence over the stone, because of its rounded and somewhat narrow presentation and distance from the surface.

Deliberate Opening of the Peritoneum as part of the Operation.

It was considered that the operation would be done with greater confidence and precision, therefore more rapidly, if a peritoneal opening was made at an early stage, and the fingers of the left hand introduced into the cavity of the peritoneum to locate the stone and steady it whilst the other hand was working in the subperitoneal tissue to the point which had been located where the incision through the wall of the ureter was required.

Experience of the Combined Method.

The result of the operation was so satisfactory in the first case that when the others presented themselves with a similar condition it was repeated for them. In none of these three patients could the oat-shaped stone be worked away from its original position in the ureter, even with the combined manipulation of the two forefingers, but, with the ureter, it was lifted upwards to an appreciable extent towards the external wound, and this rendered it more easy to make the liberating cut. The precaution of placing a strip of gauze beyond this point was taken in each, but only a small amount of healthy urine escaped.

At the depth these stones are from the surface it is almost impossible to insert any useful sutures to close the ureteral incision, and as in the absence of any stricture of the ureter there is very little tendency for urine to escape by this opening, it is unnecessary to prolong the operation by the attempt. The edges of the cut ureter fall nicely together and heal quickly, for when the ureter is steadied as described there is a clean longitudinal incision which soon closes. It is advisable to place a tube down to the bottom of the extraperitoneal wound, or a gauze drain, for a small quantity of urine usually escapes during the next day or two, and provision must be made for its easy evacuation.

Steps of the Operation.

This method may be briefly described as follows: An oblique incision is made from midway between the anterior superior spine and the umbilicus in the direction of the pubic spine. The sheath of the rectus is opened for the whole length of the incision, the muscle separated from its sheath, and strongly retracted inwards. The deep epigastric vessels are found and divided between ligatures. The posterior sheath and peritoneum are incised in the centre of the upper part of the wound to an extent permitting easy passage of the fingers of the left hand, which are carried to the place in the ureter where the stone has been shown to lie by the *x* rays. Before the final stage of the operation the abdominal contents are protected and pushed out of the way with a strip of gauze.

When the stone is located the forefinger of the other hand is worked extraperitoneally directly to the spot, separating the peritoneum to a sufficient extent down to and a little beyond the stone. An attempt may be made to bring the stone higher up in the ureter if this is thought desirable; it does not always succeed, but it can be lifted upwards and forwards with the ureter to a useful extent. In my cases the lining of the ureter at the point of impaction was rough, and this appeared to be the reason why the stones could not be moved before the incision of release was made. As the stone was so definitely localized and the part of the ureter where the incision had to be made so clearly defined, it was possible to cut cleanly along the

middle of the prominence felt, without varying from the straight line. In addition, the fixation of the stone by the fingers of the left hand made it easier to avoid any accompanying artery, and enabled the incision of the ureter to be made firmly and accurately. The importance of this will be evident to anyone who has had to deal with a case of small stone in the pelvic portion of the ureter in a fat patient, when the stone is not steadied in the manner suggested.

There is another advantage of this fixation—the incision being quite under control, one is less likely to break up the stone when making the opening for its extraction.

No Risk of Peritonitis with Ordinary Care.

It must be apparent that there is no danger of causing a peritonitis by the added manipulation within the peritoneum which this method of operating demands. The opening of the ureter is still placed extraperitoneally, but some distance away, and when the incision of the peritoneum has been closed with a continuous suture and the muscle is sutured over it, it is not exposed to further risk. Any discharge which may appear during the after-progress is carried away through the lower part of the wound, which is left open for the passage of the drainage tube or gauze drain.

Use of Landmarks.

The various stages help in the quick performance of the operation, each being marked by some landmark.

Sometimes in doing these operations which involve a deep exploration into the pelvis there is a danger, especially in private when perhaps the *x*-ray plate has been forgotten and the lights are inadequate, that it may not be possible to find a small stone although it is known to be there and the cause of the symptoms from which the patient is suffering. It has not always been found. When it is acknowledged that the help of the fingers in the peritoneum is part of the operation, and that it should be used to find and afterwards fix the stone, a feeling of confidence is engendered which is otherwise apt to be lacking. Another advantage is the opportunity which is afforded for an examination of the kidneys or other parts (which might be affected by disease) should the symptoms suggest the possibility of complications.

There is no weakness of the abdominal wall as a result of the operation.

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RESULTS OF INSTITUTIONAL TREATMENT IN SURGICAL TUBERCULOSIS.

BY

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THERE have been published within the last few months a number of papers appealing for better treatment of the crippled child. These papers have made known schemes for institutional treatment excellent in their method and detail, but they have, with one or two exceptions, given little exact information as to the results likely to be obtained. Such appeals being of the nature of propaganda directed especially to the attention of local authorities and their medical advisers, it would, I think, much increase their value if some account of results were included.

The figures given in this article refer solely to the child crippled by tuberculosis, and embody the results obtained by me from work done at the Manchester Residential Schools for Crippled Children over the period 1905-18. These schools are maintained by the Manchester Education Committee, and occupying two large houses on the north side of the town, they provide in-patient accommodation for 114 cripples, of whom some 50 to 60 are cases of surgical tuberculosis of the spine and lower limb.

The fact that the schools are managed by an Education Committee involves two important consequences. The children admitted must be between the ages of 5 and 16 years, and it is, further, a *sine qua non* that they be in a sufficiently good state of health to be able to take the