What symptoms should put the practitioner on his guard concerning the diagnosis of intussusception? Surely the occurrence of intestinal obstruction in children under 12 years of age unassociated with a rise of temperature. In 7 cases out of 10 the obstruction is not at first complete, so that flatus and sometimes liquid faeces can be passed through the not completely obstructed lumen of the invaginated gut. In such cases—and they are the rule—tympanitic distension of the abdomen does not occur, at least in the early stages of the malady. The most reliable diagnostic sign is the feeling of the typical sausage-shaped tumour; but I would beg you to notice that this lump is only to be felt in some 60 per cent. of all cases of intussusception. It may, further, be palpable at one time and not at another. Let me instance a striking example of this.

I was called a year ago to the child of a medical friend. On my arrival the father informed me that he and his partner had felt a tumour in the caecal region. Two hours later it was in the middle of the ascending colon. On my arrival I could feel no tumour, even under anaesthesia; and I confess that, as the child seemed so well, I doubted the diagnosis. I therefore advised a few hours' delay. Four hours later I felt a typical sausage-shaped tumour in the middle of the transverse colon. I then prepared to operate. On the operation table the lump could not be made out by palpation, even under deep anaesthesia. After opening the abdomen it was discovered in the splenic flexure of the colon. Other factors of great moment in the diagnosis are the presence of blood-stained mucus in the rectum and the information obtainable by rectal inflation, especially with reference to the position of the invagination. Exaggerated peristaltic movement of the intestine above the site of the invagination is also, when it can be made out, a valuable diagnostic sign. You will observe that I have said the presence of blood-stained mucus in the rectum. I have found that in cases of intussusception blood-stained mucus is present in the rectum just above the sphincters some hours before it is voided per anum. This point is worthy of attention in a condition in which hours count largely in the prognosis.

I have no intention to attempt to discuss the treatment of intussusception, a subject so extensive that it could hardly have been adequately dealt with had I devoted to it the whole of my remarks. Time will only allow me to mention three points: (1) Manipulation; (2) injection (rectal) of air; and (3) means to prevent recurrence of the invagination.

1. *Manipulation.*—In spite of the fact that many cases of intussusception have, during the past twenty years, come under my care, I confess that my knowledge of the value of manipulation without opening the abdomen is of very recent date. Hardly more than a month ago I was called by Dr. F. E. Easton to see with him a male infant, 13 months of age, suffering from intussusception. The history was clear and the diagnosis certain. At 6.30 p.m. the infant was seized with intense abdominal pain and vomiting. The pain recurred about every ten minutes. Dr. Easton saw the child at 9 p.m., and immediately telephoned to me to come to a case of intussusception. On my arrival shortly after 10 p.m., that is, three and a half hours after the onset of symptoms the child was anaesthetized by Dr. Easton. A lump was clearly to be felt in the caecal region, and with one finger in the rectum to steady the mass and the other hand on the abdominal wall, I, by massage and manipulation, succeeded in reducing the intussusception. I confess that I for some time felt uncertain about the reduction, but immediate improvement in the infant's condition, the entire absence of any subsequent symptom, and the uninterrupted recovery of the patient, convinced me that manipulation had indeed succeeded in reducing the invagination.

A second case occurred a fortnight later, in which, under very similar circumstances, I was able to reduce a caecal intussusception in the 4-year-old child of a friend which had been invaginated for about six hours.

2. *Rectal Injection of Air.*—My knowledge of this valuable method of reducing recent invaginations of the intestines is largely due to my friend, Dr. G. Phillips of Ealing. Several years ago he related to me a case in which he had succeeded in reducing an intussusception by means of rectal inflation of air, employing an ordinary

bicycle pump for the purpose. Acting upon his suggestion, I have thrice succeeded in reducing an invagination by the employment of air, using a Higginson's syringe, a bicycle pump, and the kitchen bellows. In all these cases the invagination was of less than twelve hours' duration. The two above simple measures—namely, manipulation and rectal inflation of air—should be carried out under deep anaesthesia, and the air is to be pumped in slowly and steadily whilst an assistant prevents the escape from the anus by firm pressure.

3. *Means to Prevent Recurrence of the Invagination.*—There is always a tendency for an intussusception to recur even after complete reduction. This accident I have known to take place on six occasions. In order to prevent the recurrence of the invagination, I have for some time past, after reduction of the intussusception by opening the abdomen, kept the bowel taut and sutured the extremities of the reduced invagination, or, in the cases in which many inches of intestine have been involved, the bowel on either side of the most damaged segment to the parietal peritoneum by means of catgut sutures. Since adopting this precautionary measure no instance of recurrence has come under my notice.

MODERN TREATMENT OF FRACTURES.*

By F. N. G. STARR, M.B. (TORONTO),
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It has occurred to me that, as general practitioners and as surgeons, we should begin some careful process of house-cleaning with regard to the treatment of fractures. Mr. Clinton T. Dent,¹ Surgeon to the Metropolitan Police of London, after a careful study of the end-results in fractures of the leg, and of the thigh in particular, makes the statement that:

Recovery, from the point of view of the surgeon and that of the patient, does not always coincide in date. The standard of efficiency is high in the police, the class of men principally under consideration. The work demands fair activity; thus, for two periods of four hours, or for one tour of eight hours, a man must be continually on his legs day after day, though with frequent short spells of leave. Judged by this standard, and desirous of keeping well within the mark, my estimate is that at least 30 per cent. fail to attain this standard after simple fracture of both bones of the leg—very few regain it under six months. . . . Fractures of the leg, involving the knee or ankle joints, or fractures of the femur, uniformly lead to permanent unfitness for the work which devolved on these men. Fractures occurring in the neighbourhood of these joints nearly always have the same result. I can hardly recall a case of Pott's fracture or a Dupuytren's fracture where recovery has been complete enough to enable a man to resume police work. . . . My experience with regard to fractures of the leg has led to the expression of rather gloomy, perhaps pessimistic, views.

Think of it, 30 per cent. of cases of simple fracture of both bones of the leg fail to attain to a perfect standard of fitness for police duty! In Pott's fracture, or fracture through or near a joint, he can hardly recall a case where recovery has been complete enough to enable a man to resume police work! Mr. W. Arbuthnot Lane's² experience and study make him endorse Mr. Clinton Dent's opinion.

Are we to improve our methods as far as the police are concerned and let the average citizen carry an unnecessary deformity to the grave? Are we to go on in the same blundering, haphazard manner? Are we to sentence a labouring man to three, six, or twelve months' disability, with the limp of his injury ever with him—like the stain on the character of the felon who has been under sentence—simply because he was so unfortunate as to break his leg? Or must we, when he breaks one leg, advise him to turn also the other leg in the way of danger, in order that both may be of the same shape and length?

How often has the blush come to the cheek when, in shaking hands with an old case of Colles's fracture, the patient trifles with his sleeve, so that one may see the result of one's labours! True, there may be perfect mobility of the wrist-joint if the method of Just Lucas-Championnière or of others has been followed, but what of the deformity if the fractured surfaces were never in apposition—as they rarely are—after so-called reduction by the usual methods?

* Read at the Section in Surgery, Canadian Medical Association, Winnipeg, August, 1909.

Malgaigne,⁸ many years ago, wrote, "The treatment of fractures can be summed up in two great indications—Reduce the fracture and keep it reduced until consolidation is complete." Ah! that is the trick—reduce the fracture.

Before the days of the *x* ray most authors told us to reduce the fracture and bring the fractured ends into accurate apposition and keep them there by means of some "cunningly-devised" apparatus, but nowadays the same author, if living, tells us to get them in as good position as possible and keep them there, which usually means that the fractured surfaces are rarely, if ever, approximated.

The whole question seems to me to sum up into two ideas—the one, skeletal deformity with or without a working functional result; the other, a perfect anatomical result with perfect function and a short convalescence. Which are we to take?

Before I go further, however, let me say this—if one cannot have his patient in a hospital with the best of hospital surroundings, instruments suitable for the purpose, and a perfect aseptic and antiseptic technique, together with a capable assistant and a skilled anaesthetist, by all means aim to get as good a limb as possible under the circumstances, but do not on any account expose damaged bone and damaged soft parts to the possibility of septic infection, because such damaged soft parts are infinitely more susceptible to infection than even the peritoneum.

Asburstand Newell,⁴ give us the end results in 61 cases of fracture of the femur treated, as follows:

- 28 cases with perfect functional result;
- 21 cases with no disability but a limp (would not do for police duty);
- 8 cases with marked impairment of function;
- 4 cases incapacitated;

and they conclude that with such remarkably good results there can be no excuse for the open operation.

Gentlemen, will you be satisfied with one cripple out of

every two cases treated? Personally, I think these surgeons are easily satisfied.

Sudder⁶ gives the end results in 35 cases of fracture of the femur:

In children (14 cases, average age 7½)—4 cases have slight pain; 3 of these have stiffness of knee-joint; 10 cases have good functional result.

In adults (16 cases, ages 18 to 48)—5 perfect results; 11 cases, limited knee-joint movement, aching in thigh, pain after movement, pain in wet weather, weakness and slight lameness in walking. In 5 cases, average age 58, reported two to six years after, no case has even a functionally perfect result.

Must we continue to have 2 cases of imperfect result out of 3 cases treated in adults, and every case bad after fifty years of age, or must we improve?

Then, again, take cases of Pott's fracture with the common displacement⁶ of the tendon of the tibialis posticus forward, resulting from rupture of the annular ligament—the tibialis posticus forms the chief support of the arch of the foot—are we to condemn our Pott's fracture cases to flat foot, for this we must do unless the tendon is

replaced, and it cannot be replaced unless the open operation is done? No wonder Clinton Dent can hardly recall a single case of Pott's fracture able to resume regular police duty.

Take fractured clavicle, if you like. Does the subsequent *shoulder-droop* never cause qualms of conscience, or are we unconsciously so accustomed to making excuses for our own shortcomings that we do not see our patients as others see them?

The gentleman who opened the discussion at the 1900 meeting of the British Medical Association,⁷ speaking of the open method, quotes from an anonymous

number of surgeons, and says: "They think it meddlesome and dangerous, or because they think it unnecessary if fractures are treated with 'brains'!" It seems to me that if I were unfortunate enough to require treatment for a fracture, I should desire something a little more stable than the grey matter of that surgeon's brain. He then goes on to decry the open method with "septic infection," "troublesome screws," and what not,

Fig. 1.—Fracture in the lower third of femur after the fifth attempt at reduction by means of extension, counter-extension, and manipulation.

Fig. 2.—The same bone after plating.

Fig. 3.—Fracture of the upper end of ulna after several ineffectual attempts at reduction. The patient was a doctor's son, and would therefore require to earn his own living.

Fig. 4.—The same after plating.

apparently losing sight of the fact that no advocate of the open method advocates the introduction of sepsis.

No modern surgeon of to-day will deny that practically all fractures of the patella and of the olecranon should, under proper precautions, be subjected to the open method of treatment. In the face of such statistics as I have quoted, can any one deny the advantage of the open method for most fractures of the femur?

Then we come to the leg. When either the tibia or fibula is broken usually there is not much displacement, and the one bone serves a useful fulcrum whereby the broken ends may be brought into good position. Under such circumstances, therefore, it frequently is not necessary to do the open operation. When, however, we come to a fracture of both bones, with a deformity that cannot be overcome, or to a Pott's, with the tearing of the internal malleolus and its associated laceration of the annular ligament, with displacement forward of the tendon of the tibialis posterior, I think operation by the open method is imperative, in view of the end-results in fracture of both bones of the leg examined in from one and a half to ten years after.

Fig. 5.—Compound comminuted fracture of the lower end of humerus.

Out of 35 cases in the Massachusetts General Hospital,⁸
13 cases reported the injured leg "as good as the other";
22 cases showed a leg permanently impaired, some with deformity, some with flat feet, etc.

About one good result out of every three cases treated; I really think it time for some change in method.

In all fractures implicating a joint—with the possible exception of fracture of the neck of the femur—surely patients will prefer the risk of the open operation, done with proper precautions, to the certainty of permanent crippling.

In the space of time at my disposal it is quite out of the question for me to go into detail in all classes of fractures,

and some I am omitting, for example, depressed fracture of the skull, and fractures of the spine giving rise to pressure symptoms, for in these there can be no two opinions as to the proper procedure, for even a Lucas-Championnière or a Sir William Bennett would be unable to elevate the depressed fragments by massage.

Having spoken of the risks, I shall briefly outline some of the advantages to be gained by the open method:

1. The mechanism of the skeleton is left unimpaired, and the patient therefore has a perfect anatomical and functional result.

2. The period of incapacity is shortened.

3. The pain is relieved in a few hours.

4. There is no risk of muscle fibre being left between the bones to favour non-union.

5. The surgeon can see what he is doing and can accurately approximate the fragments.

6. There is immediate relief from the tension, etc., from extravasation.

In 1903 I read a paper on "The Open Method

of Treating Fractures"⁹ before this Association, and it seems to me appropriate that I should contribute to the same Association any further light that I have found upon the subject after a prolonged and painstaking study of all the methods now in vogue, on a large series of cases, both in private and hospital practice. I am more convinced than ever, as a result of my observations, that there are now many cripples going about our streets who might have had a perfect skeletal mechanism had the open method been adopted.

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ACCURACY IN THE DIAGNOSIS OF URINARY DISEASE.*

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THE difficulties met with in attempting a diagnosis from the symptomatology of urinary disease may be grouped under three main headings:

1. The symptoms of the various diseases which affect a particular part of the urinary tract often mimic one another so closely as to render their differential diagnosis difficult.

2. Reflex or transferred symptoms may throw suspicion on the wrong part of the tract.

3. The very absence of symptoms in certain cases, whose only complaint is the passage of blood or pus in the urine, makes it difficult to localize the site of the lesion.

Let us consider more in detail each of these difficulties.

* Abstract of a paper read before the Worcester Branch of the British Medical Association.

DIFFICULTIES OF DIAGNOSIS.

A.—Due to Mimicry.

It has been the custom for years past to look upon such a group of symptoms as increased frequency of micturition, pain at the end of the penis after micturition, and the passage of blood in the urine towards the end of micturition, all perhaps made worse by exercise, as pathognomonic of a stone in the bladder. Now this group of symptoms is the immediate expression of cystitis and the symptoms are due to an inflammation of the bladder mucous membrane.

The pain is caused by the muscular wall of the bladder contracting down on and squeezing its inflamed and sensitive lining, and is therefore worst when the bladder is empty and contracted.

The blood in the urine at the end of micturition is explained as follows: The veins from the mucous membrane of the bladder run between the muscular fibres of its wall to reach the large venous plexuses situated outside, so that when these muscular fibres contract the veins are compressed and the tension of the blood within them is raised, and if their walls are thinned by ulceration or are only