After the extension has been effected, the position of the head of the tibia may still occasion some deformity. Should this be the case, much good may be effected by the use of an instrument invented by Mr. Bigg, and which I have seen of signal service in cases of this description.

The following cases, out of many, will illustrate the nature and treatment of this kind of deformity:—

CASE 4.—A man, twenty-three years of age, was sent to me last July by Mr. Ede, with contraction of the left knee of eight months' duration, the result of an acute attack of inflammation of the joint. The leg was bent at right angles with the thigh; the knee was nearly rigid, merely admitting of enough motion to carry the foot a distance of two inches. There was no tension of the hamstrings. As the case was a simple though a severe one, the patient was put under the influence of chloroform, and forcible extension practised; with loud snaps and cracks the knee yielded, and the limb came straight. No inconvenience resulted, and the patient was able to leave the hospital in about ten days.

CASE 5.—A woman, aged thirty, seven months advanced in pregnancy, was admitted under my care last September, for acute articular disease of the right knee. Owing to the pain, she could not bear splints, and the limb was consequently supported on pillows. The disease went on to loosening of the joint, the tibia slipping readily on the condyles of the femur, with intense pain and startings at night, but with neither synovial effusion or grating. On two or three occasions there was threatening of abscess; but the puffiness went down. As active local and constitutional treatment was adopted as her condition allowed, and the inflammation in the joint being subdued, she left the hospital to be confined. Contraction of the knee now gradually took place; and when she presented herself again in June, ten months after her confinement, the knee was bent at right angles, quite immovable, but not tender; there was some retraction of the head of the tibia; no tension of the hamstrings. She was accordingly put under the influence of chloroform, and forcible extension made with loud crackings and snaps in the joint as the adhesions were broken through; the limb came into excellent position. A tolerably smart attack of inflammation in the knee followed; but was subdued by rest in bed and evaporating lotions; and she was able to leave the hospital in about three weeks, wearing a starch bandage over the knee.

(To be continued.)

ON PARTIAL OBSTRUCTION OF THE INTESTINE.

By WILLIAM BRINTON, M.D., F.R.C.P.,

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THERE is an exceedingly interesting class of cases in which we may regard the intestinal canal as in a state of imperfect obstruction. Of several instances of this kind which have fallen under my notice during the last few months, the following may almost serve as a type.

H. K.—, aged thirty-two, an athletic coalheaver, presented himself as an out-patient at the Royal Free Hospital on Friday the 1st of June, 1855. He had a feverish aspect, a quick pulse, and a furred tongue; he complained of intense abdominal pain, which almost prevented him from moving. On stripping the belly, this pain was referred to the right iliac region, where it was so intense that he could hardly bear the slightest pressure, still less mediate percussion with the finger. Above this region the pain spread, diminishing in severity over nearly the whole abdomen, where it seemed to wander. The pain was constant, though it had occasional remissions of severity.

Careful percussion and palpation showed that the belly in the situation of the cæcum was occupied by a solid mass, while elsewhere the large intestine seemed irregularly tympanitic. The ordinary sound given out when the small intestine is percussed could scarcely be detected anywhere.

The history of his malady gradually revealed itself to my questions as follows:—His bowels acted in general with great regularity, about once daily. His health had always been good, but on the Sunday morning, or five days before he came to me, he was standing in the street, when he suddenly felt a kind of jerk in his abdomen, attended with some pain. This sensation was immediately followed by an inclination to stool, which was, however, quite ineffectual.

On Monday, the pain gradually became so violent that he was soon forced to leave off work. The same evening he had

an evacuation from the bowels, of what, on inquiry, appear to have been hard and scybalous fæces. This, however, had no influence in diminishing the pain. A mustard poultice applied to the belly gave him some relief.

On Tuesday and Wednesday the pain continued; on the latter of these two days he had another evacuation, also scanty and scybalous. On Thursday he took an ounce of castor oil, and this produced two stools, both of which were rather relaxed. Afterwards the pain was considerably relieved, but it soon returned and increased in severity, until the afternoon of the following day, when he managed to reach the hospital.

In coming to a diagnosis as to the real nature of this case, it might perhaps have been thought that the extreme pain and tenderness of the belly, and the general symptoms of febrile reaction, pointed to an inflammatory state of some of the coats of the bowel; that even if not originally an inflammation, the attack had been complicated by this process, which had now come to form the chief feature of the malady, and especially the main object of treatment.

The importance of the subject, and the strength of my own convictions respecting it, must excuse the apparent hardihood of my remarking, that it is precisely this bugbear of inflammation, and the dogma of its appropriate remedies, which form the most frequent causes of errors in the diagnosis and treatment of many abdominal diseases. That pain betokens inflammation, and that inflammation demands depletion and mercury, are the premises of a kind of rude syllogism which has too often been made a substitute for the careful, painstaking examination of a case, and the discreet choice of remedies suitable to it.

There can be no doubt that the characters of pain like that described above will often enable us to negative the idea of inflammation. As a rule, it is far less intense, and more remittent, than the pain of peritonitis. It is scarcely, if at all, affected by movements of the trunk, which, like coughing or violent inspiration, would often agonize a patient suffering under peritonitis. A very delicate contact, such as hardly amounts to pressure, is almost unfelt by the patient; while the same amount of mechanical interference would often be productive of serious pain in peritonitis.

But all these distinctions are at best only relative; and as such they require to be based upon either a direct comparison, or a series of indirect comparisons, which can hardly be expected to remain impressed on anyone's memory with that sharpness and delicacy that would be necessary to make them the sole basis of a diagnosis; while since, in certain instances, the tenderness of inflammation is small, and in others, that of colic is great, it is obvious that the ordinary limit of intensity is by no means peculiar to each. In short, to speak physiologically, the pain evinces a subjective, rather than an objective character, and thus constitutes no index of the injury or disturbance which is undergone by the nerves distributed to the affected part. Indeed, the very different sensibility to pain, or endurance of it, which is possessed by different individuals, affords a good illustration of the danger of making any conclusions from the mere complaints of a patient with respect to it.

It is therefore important to add to such grounds of distinction any which may be derivable from other sources; and amongst these, there is one which has often appeared to me to attract less attention than it deserves—namely, the characters exhibited by the wall of the belly.

It has long been known that the muscles of the anterior parietes of the abdomen, and especially the recti, are liable to a kind of reflex contraction or spasm, as the result of irritation affecting various of the organs within; and in extreme cases of colic, something of this kind is described as occasionally drawing up, or contracting, certain parts of the belly into a kind of elevation or knot. We may, however, suspect the accuracy of some of these descriptions, and are at any rate justified in regarding the cases they refer to as very rare. Perhaps the irregular contractions of the intestines themselves have sometimes been misinterpreted as contractions of the abdominal muscles. Indeed, a local contraction of any one of these would obviously give rise to depression, rather than elevation, of the corresponding part of the surface of the belly.

However this may be, the peculiarity which I am anxious to point out is one that belongs, not to colic, but to the peritonitis with which we are now contrasting it; and I have found it a sign of such delicacy, that it has before now enabled me to diagnose, during life, the presence of an inflammation, which the necropsy has subsequently shown to be limited to a few slender shreds of lymph, such as might almost have escaped notice, unless they had been previously expected.

The appearance acquired by the anterior parietes of the

belly, during even a very limited peritonitis, is so characteristic, that it can hardly be mistaken by those who have ever carefully noticed it in any previous case. The whole of this wall of the abdomen becomes singularly tranquil and quiescent, a state which is of course best traced by its diminished respiratory movement; the flaccid skin extends, by a comparatively flat, smooth surface, from the cartilages of the ribs to the bony margin of the pelvis; the muscles themselves are relaxed, and their outlines effaced; and in a further stage or intensity of the malady, the relaxed intestines themselves testify, by their tympanitic distension, to a similar state of flaccidity in their muscular parietes.

The rational explanation of the above degrees of relaxation in the parietes of the intestine and the belly, can hardly be introduced here, where we are chiefly alluding to it as a symptom, the absence of which may aid our diagnosis; but the reader who is interested in this topic may perhaps find some considerations in support of what is above implied, as to the passive character of the tympanitis seen in peritonitis, in some remarks on the Intestinal Gases, introduced in an essay by the author on the Stomach and Intestine, in the "Cyclopædia of Anatomy."

But to return to the above case. The great tenderness which was present did not appear to me to imply any inflammation of importance; for although it was certainly very like that of peritonitis in some of the respects just alluded to, the appearance of the belly itself was quite sufficient to negative this view. Indeed, the careful physical examination of the abdomen alone was almost a sufficient ground for a diagnosis. The region affected, the remittent character of the pain, the solidity of the substances felt,—all these characters were at least strongly indicative of an accumulation of fæces.

The previous health of the patient and the history of his malady confirmed this view. At first, indeed, when he answered my inquiries by asserting that his bowels had been opened several times in the last four days, and once or twice freely relaxed by a dose of castor oil, such a conclusion seemed scarcely warranted. But when his statement was thoroughly sifted, it resolved itself, as such information often does, into facts having a bearing precisely opposite to what their hasty reception or careless interpretation would assign them. In fact, I had very little doubt that the scybalous stools of the Monday and Wednesday did not come from the obstructed part of the bowel at all, but from the colon (very likely from the sigmoid flexure) at some much more advanced part of its course. Nor did the relaxed character of the later evacuations fully disprove all obstruction, but, on the contrary, was equally explained as due to the filtration (if we may use such a term) of a certain quantity of semi-fluid fæces through the centre of the intestinal tube. The latter statement perhaps requires a little amplification, since it relates to a class of facts, the correct appreciation of which is of great practical importance in these interesting (and by no means unfrequent) cases of what we have termed partial obstruction.

In most, if not all, of the instances of this kind which I have seen, the obstruction has been seated in the large intestine, oftenest in the cæcum and the adjacent segment of the colon; rather less frequently in the sigmoid flexure, and sometimes, but still more rarely, in the transverse colon.

They are, I believe, much more frequent in the female than in the male—a fact which may be attributed, partly to the more languid and irregular action of the bowels in this sex, partly to those distortions which their large intestine is so apt to suffer, as a consequence of tight lacing. Such distortions, by exaggerating the natural curves of the colon, and often by introducing new or abnormal angles into its course, give rise to serious impediments in the transit of the bowel by solid fæces, and thus become a very efficient cause of delay and partial obstruction. And in many of these instances there can be little doubt that the condition is one which, though it certainly wards off the probability of a serious issue to the malady, disguises its most characteristic symptoms, and protracts its duration; in other words, the constipation affects chiefly or exclusively some of the sacculi of a certain segment of the large intestine, without obliterating that central general calibre of the tube into which these sacculi open. It would seem that a want of contractile energy in these pouches allows part of their fæcal contents to be detained in them for an unusual space of time, during which they are gradually reduced, by the absorption of their more fluid parts, to a state of abnormal hardness and density, such as must offer a still further obstacle to their being properly transmitted onwards towards the rectum. While the centre of the tube, which is little exposed to the chance of such accumulation, still remains patulous, and allows the peri-

stalsis of the intestine to effect a transit of fæces that at any rate suffices to prevent absolute obstruction; and although we know too little of the exact mechanism of the usually co-ordinate muscular contraction to specify why it should fail in one part of the tube, and continue in another which is immediately adjacent to it, still a consideration of the mere structure of the muscular coat of the intestine might almost suggest an explanation. Over the pouches which form the site of the morbid accumulation, the longitudinal layer of muscle fails altogether, and the transverse one is reduced to a lamina of extreme tenuity; while in the intervals of these pouches, the transverse layer, though thin, is aided by the apposition and contraction of three strong though narrow bands of fibres, in compressing and propelling the fæces that occupy the axis of the canal.

Hence the altered fæces which occupy these pouches of the colon are often delayed here in spite of a tolerably frequent or even regular action of the bowels. Not only is it always possible that some of the lower parts of the canal have emptied themselves by the ordinary course of peristalsis, without involving the evacuation of those above them, but the centre of the tube in the obstructed part may itself be traversed by a certain quantity of fæces, without at all affecting the real cause of the malady. In short, there is no moderate degree of purgation which quite forbids the possibility of such a state, especially in the presence of the signs and symptoms above-mentioned.

A good illustration of this fact is offered by a case for which I was consulted a few months ago. A middle-aged lady had suffered from attacks of intense abdominal pain, coming on at intervals of some weeks or months, and lasting many days at a time. The history of the case, aided by a careful physical examination, led me to suppose that these attacks were due to an accumulation of fæces in some of the sacculi of the transverse colon. But there was no evidence of constipation; and purgatives seemed to have generally procured copious evacuations without any difficulty. During the attack for which I was called in, the aperients selected were administered with the effect of large and repeated stools; but though the first of these were quite healthy in their characters, those which finally succeeded them were chiefly composed of fæces, the hardness, blackness, and extremely offensive smell of which plainly showed them to consist of broken-down scybala, which had probably occupied the canal during a long period of time.

It may, perhaps, be said, that, after all, these cases of what I have termed partial obstruction, might be equally regarded as instances of constipation, but I think a careful consideration of their symptoms affords sufficient grounds for our constituting them a separate class.

The term constipation is, of course, a relative one; and implies the delay or infrequency of an act of defecation, which, like all other functions, is liable to great variety in different individuals, without necessarily exceeding the limits of health, or implying disease; and even when it is present in a degree that there can be no objection to our practically regarding it as morbid, it is often associated with scarcely any evidence of disease, producing very little more than mechanical inconvenience. I might cite numerous instances of this kind, but prefer alluding to two which have recently fallen under my own observation. In one of these, which was under the care of my late colleague, Mr. Gay, and which he made the subject of an interesting communication to the Pathological Society, there had been no evacuation of the bowels for more than three months, and the abdomen had enlarged from its ordinary size in a child of nine years of age to a circumference of forty-six inches; while the general health and appearance of the patient had scarcely suffered at all. In another case, a man of thirty-two, who was a patient of mine a few months ago, and who had been more or less subject to constipation from childhood, (the bowels having been rarely relieved more than eight or ten times in a year during several years,) although, when I first saw him, there had been no evacuation for six or seven weeks, and the sigmoid flexure and descending segment were largely distended with fæces; still the patient's general health and strength were perfectly unaffected. Indeed the only abnormal symptom he could specify was that of being occasionally troubled with ineffectual calls to evacuate his bowels.

Now, if we contrast such cases of constipation with the instances just mentioned, in which the retention of fæcal matter in a few cells of the colon gave rise to intense pain and violent constitutional disturbance, we shall find good reason for concluding that it is not a mere delay of the healthy contents of a bowel, or even a considerable distension of its parietes, which can give rise to these grave symptoms; but that we have

here a process, which is far more strictly morbid than any such delay, however it may depend on it—a process which these symptoms specially illustrate and represent.

Any further inquiry into the details of this process would be out of place in the present sketch, and would, indeed, involve a careful investigation of some obscure points in the physiology of the intestinal canal; nor need I even enumerate the various plausible views that have been hazarded from time to time concerning them. Unequal distension, irregular muscular contraction, and spasm, are the motive disturbances of the intestinal muscles, which have sometimes been supposed to explain these abnormal sensations of pain. But in cases of chronic poisoning by lead, intense pain is often associated with a relaxation and distension of the tube, such as (if we may infer the state of the organic or unstriped muscle from that of the striped fibre) perhaps closely resembles that of ordinary constipation. And since the majority of these cases certainly are not inflammatory, in the sense of affording those exsudations which form the ordinary evidence of this process, we shall perhaps do better to forego all attempts to define the exact state of the muscular walls of the bowel; and to regard the pain as merely evidencing that condition which, in the absence of more accurate knowledge, we find it convenient to express by the name of irritation. And, however vague the pathological significance of this name, its use at least affords us a group of analogies that have great practical importance. Whatever, for example, may be the mechanism of the irritation present in chronic lead-poisoning, in these cases of partial obstruction, and, finally, in ordinary colic, the most careful study of the pain present will often show that it presents almost identical features in all three of these maladies—two of which imply what is often an obstinate (though local) constipation of the bowel, while the third is sometimes associated with a violent diarrhoea.

The remarkable effect of active purgatives in all three of these disorders, (as well as the griping often produced by the action of these remedies in a previously healthy subject,) constitutes a further analogy between them, and at the same time, perhaps, entitles us to conjecture that the pain is generally due to irritating substances, which are either introduced into the canal from without, or are formed within it by the decomposition or change of its ordinary contents. Such a supposition well explains the violent symptoms of some of these cases of partial obstruction, and receives an excellent illustration in the characters of the scybalous evacuations that finally relieve these symptoms. Their black colour, their intensely foetid (or almost putrefying) odour, and their hard and brittle consistence, render it easy to imagine what powerful sources of irritation they may form to the tube that contains them.

As regards the special purgatives which may most usefully be employed in partial obstruction, while there are numerous cases in which almost any drastic cathartic would suffice to relieve the patient, there are others (and I think these are the majority) in which it is by no means a matter of indifference which we select, or with what other drugs we combine them. In respect to the class of purgatives, I have generally found it best to combine a preparation of aloes (which has the credit of acting specially on the segment of the intestinal canal that forms the seat of the mischief) with some of the more active hydragogue cathartics. The latter I believe to be extremely useful in these cases of partial obstruction; while, on the contrary, I have learnt to regard their employment with strong repugnance in those cases in which there is reason to suppose the existence of a complete obstruction in the tube.* They seem, in fact, to irrigate and cleanse the mucous membrane more rapidly and thoroughly than any other class of aperients. Antacids, such as the carbonate of magnesia, may be usefully added, as a means of possibly neutralizing the acids into which the intestinal contents are often partially transformed.

And in almost all these cases, the combination of sedatives with aperients is quite indispensable for the speedy relief of the pain which forms one of their most distressing symptoms. Practically, indeed, just as purgatives are the most obvious means of getting rid of their cause, so opium is the remedy by which we may best remove their effects. Hot fomentations, mustard poultices, or turpentine stupes, may sometimes be also used to moderate the pain.

Lastly, the conclusion of the above history forms a practical comment on these remarks, which we may dismiss in a very

few words. The patient was ordered a mixture, consisting of carbonate and sulphate of magnesia, decoction of aloes, and tincture of jalap, with about ten minims of tincture of opium in each dose. This mixture he was directed to take every four hours, until very free purging was produced, after which he was only to continue it in half the former dose, diminishing even this quantity if the purging did not moderate.

On the 6th of June he returned to the hospital. He had been very copiously purged, and had completely lost all pain and uneasiness. The region of the cæcum would now bear violent percussion without his feeling the slightest pain, and everywhere gave out its ordinary clear sound when struck. The feverish symptoms had entirely disappeared.

Although the patient now regarded himself as perfectly cured, I warned him that nothing but careful attention to his bowels would ensure him against a relapse of his ailment, and persuaded him to take, for at least a week or two, a mixture, composed of small doses of the sulphates of iron, quina, and magnesia, dissolved in water, with a few drops of dilute sulphuric acid.

Brook-street, Grosvenor-square, Nov. 1855.

COMPOUND COMMINUTED FRACTURE OF THE CRANIUM,

WITH

LACERATION OF THE DURA MATER AND BRAIN,
PRODUCED BY PISTOL-BALL AND EXPLOSION.

By JOHN BIRKETT, F.R.C.S., &c.,

SURGEON AND LECTURER ON SURGERY AT GUY'S HOSPITAL.

A MALE patient, aged thirty-five was admitted into Cornelius ward on December 7th, 1854, at eight p.m., under my care. He was well made and nourished, but the last few months he had been labouring under temporary aberration of the intellect, and had been in an asylum. He had this day travelled twenty miles by railroad from the country to London. In the right temporo-frontal region there was a hole in the skin, with ragged edges, and just large enough to admit the point of the little finger. The dresser, Mr. Blandford, was informed that at half-past five A.M. of the same day the patient had discharged a small pocket-pistol close to the right side of his head whilst lying in bed. The pistol contained a small charge of powder and a single ball. It was a common pocket-pistol, with a screw barrel; and as the diameter of the bore of the barrel is smaller than that of the ball, the lead became compressed and flattened on its sides in its transit through the barrel. The man was rather cold when first brought to the hospital, but no severe symptoms were manifest.

I saw him at nine p.m. I found a penetrating wound in the right temporo-frontal region, about an inch and a half above the zygoma, and in the line of the coronal suture. The point of the little finger, as far as the root of the nail, just entered the wound; a very sharp edge could be felt, which was believed to be a piece of bone. The man himself said there had been profuse hæmorrhage, but all bleeding had now ceased. In the wound was a little serum, which rose and fell synchronously with the pulsations of the heart. He replied to all questions rationally, deplored the deed, described the proximity of the muzzle of the barrel to his head, and complained only of pain about the occipito-cervical region on the right side. This region was examined, but a foreign body was not detected. The soft parts around the wound were slightly swollen; the hair scarcely singed. There was a total absence of any indication of injury to the brain; pulse 96, soft; surface of body rather cold; tongue white and furred over the whole dorsum; thirst. When he moved his head, some drops of serum ran from the wound. Fætor of breath was marked, and this he attributed to taking some alterative pills for liver complaint. The right half of his head was shaved. No foreign body could be detected in any part between the scalp and cranium. Wetted lint was laid upon the wound, and dilute diacetate of lead lotion on lint over half the head.

Dec. 8th.—Half-past Ten A.M.: Says he slept well, but he has an anxious and depressed aspect. Pulse 64, feeble, very compressible; tongue more furred, and rather dry; feels scarcely any pain; there is no cerebral disturbance. The circumference of the wound is scorched, the soft parts around it are puffy and red, as if disturbed by the near proximity of the explosion. Serous fluid oozes from the wound. It seems to himself im-

* The reasons for this distinction of the value of these remedies in complete and incomplete obstruction of the canal may be gathered from an essay by the author, "On the Physiology of Intestinal Obstruction," in the *Medical Gazette* for 1849; as well as in the essay on the Stomach and Intestine already quoted.