tion, there is more or less functional derangement of the liver. The liver, indeed, plays a prominent part in the pathology of the febrile process. It is one of the few parts of the body which do not waste during the fever. On the contrary, it becomes enlarged and congested, while its gland-cells are swollen out with minute albuminous granules; and it is well known that these changes are attended by an increased disintegration of albuminous matter and an increased production of urea and less oxydised products. On the cessation of the febrile process the liver resumes its normal functions; but now and then it happens that, after a severe attack of fever, these functions are permanently impaired. I have repeatedly known a permanent tendency to hepatic derangement induced by a severe attack of typhus, enteric, malarious, or scarlet fever, in persons who had exhibited no such tendency previously.

Functional derangements of the liver, when primary, may be due to a variety of causes. Of these, the principal are—

I. *Errors in Diet.*—There can be no doubt that the present system of living, and especially the consumption of even what are regarded as average quantities of rich food and stimulating drinks, contribute largely to derange the liver. It will be generally admitted, nor would it be difficult to prove, that most persons are in the habit of eating a quantity of food far greater than suffices to maintain the nutrition of the body. Much of this excess is fortunately never assimilated and is got rid of in the fæces; but very often much more is taken into the blood than can be converted into tissue, or pass through the ordinary processes of oxydation preparatory to elimination. The result is that the excess of food is thrown out in an imperfectly oxydised form by the kidneys, lungs, etc., or accumulates in the system; while more work is thrown upon the liver than it can readily perform, and functional derangement of the organ ultimately ensues. With regard to individual principles of food, speaking generally, it may be said that the liver is most apt to be deranged by saccharine and fatty substances. The derangement of the liver which leads to lithæmia or gout is more likely to be induced by even small quantities of these substances than by a moderate excess of purely nitrogenous food, such as meat. Cooked articles of diet containing a large proportion of both sugar and fatty matter are in many persons certain to derange the liver. The excess of carbon in these substances must either be deposited as fat, or must take away the oxygen, so as to leave little free to act on the nitrogenous matter passing out from the tissues or derived from the food; and hence, as Dr. Bence Jones has observed in speaking of gout, “with carbonaceous diet in excess, the whole of the uric acid from the tissues might pass off through the blood unoxysed.”* There are also constitutional peculiarities with regard to many articles of food, which always derange the liver in certain individuals, though they are comparatively harmless in others; and some persons who are the subjects of lithæmia get on best with a vegetable diet and milk.

But of all ingesta the various alcoholic drinks are most apt to derange the liver. They do so in two ways. *a.* They may cause persistent congestion of the liver. Even small quantities of alcohol in healthy persons produce a temporary hepatic congestion; but if alcohol be taken in excess, or too frequently, the congestion of the liver becomes permanent, and the functions of the organ are deranged. Like results may ensue from comparatively small quantities in certain persons, who may be said to have a constitutional intolerance of alcohol. Of course, if the congestion be long maintained, structural disease may follow. *b.* But wines and other alcoholic drinks often cause derangement of the liver, which a corresponding quantity of pure alcohol would not produce, and which, in fact, cannot be accounted for by any one ingredient of the offending liquid—neither by the free acid, the ether, the salts, gum, sugar, or extractive matter. This general rule, however, I believe holds good, that the injurious effect of alcoholic beverages upon the liver increases in a direct ratio with the amount of sugar plus alcohol which they contain. It would seem, indeed, that a mixture of alcohol and sugar produces injurious results, which would not be caused by the admixture of a much larger quantity of sugar, or of alcohol alone, with the food. In accordance with this view, the alcoholic drinks which are found from experience to be most apt to disagree with the liver are malt liquors of all sorts, but especially porter and the stronger forms of mild ale, port wine, madeira, tokay, malaga, sweet champagne, dark sheries, liqueurs, and brandy; whilst those which are least likely to derange the functions of the organs are claret, hock, moselle, dry sherry, and gin or whiskey largely diluted.

Derangement of the liver from excessive eating or from other errors in diet usually first shows itself in middle life—from 35 to 45. Young people, who take much exercise, and whose bodies are still undergoing development, require more food, and can often with impunity eat more than they require. But by the age of 40 the body is fully developed,

and most persons take less exercise than before, while at the same time they often indulge more freely at table. At any age, errors in diet will be all the more likely to tell upon the liver, if there be any constitutional weakness in the functional power of the organ.

[To be continued.]

TEDIOUS LABOUR FROM DEBILITY, AND ITS TREATMENT.

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THE remarks in this paper apply exclusively to labours protracted from debility, but, in other respects, natural. I, therefore, expressly exclude from consideration all cases in which the delay arises from the position of the child, or from an abnormal condition of the passages, and also cases complicated with rigid os uteri, or with spasmodic contractions of a tetanic nature, as well as those in which there exist obstructions arising from inflammation or from surgical interference. My remarks have reference solely to cases in which the delay is due to enfeeblement or failure of the natural powers of the organs specially called into action during the process of parturition.

Most obstetric writers apply the term “tedious” to all labours protracted beyond a certain period, whatever be the cause of the delay. While it appears to me that the physiological conditions of the case preclude the possibility of fixing for all cases a definite period, many obstetricians, following Dr. Ramsbotham, limit the definition of the term “natural labour” to those cases “in which not more than twenty-four hours are occupied from the commencement of true uterine action to the termination of the process”. And the same author, in defining lingering or tedious labour, says that it denotes those cases “in which nothing calling for anxiety occurs, except the length of time that elapses under the continuance, so that it differs from a natural labour only in respect of its duration”. Is not this method of basing a classification of labours on the element of time highly unscientific? It is in the first stage of labour that the longest time is occupied, and it is in that very stage that the consideration of the factor time is of the least consequence. It is to the natural differences of temperament that we must attribute the greatly diverse energies with which the organs act in different individuals. The standard of natural labour is one, therefore, that should have reference to the conditions under which the organ contracts, and assuming no unnatural formation to obstruct its progress, it should not be held to have passed into the category of non-natural labour as long as the pains are active, and the labour progressive.

Uterine action may be said to be a violent effort to expel a body in contact with the cavity which is no longer in harmony with it. The action is kindred to that of the bladder in evacuating urine, or to that of the heart during the systole. Taking the latter as the type of uterine action, analogy would teach that labour pains result only when the distension is sufficient to produce uniform contraction; and, having once set in, the action proceeds in a truly peristaltic manner until the organ has been emptied of its contents. The rapidity of the action causes it to be mistaken for a simultaneous general contraction. The nerves which control the womb's action are not those of common sensation, but the sympathetic, which becomes a nerve of sensation only in special circumstances. The true contractions of the uterus originate among the fibres of the cervix and end at the fundus. Were the functions of this organ, like that of the other organs, performed by muscles composed of involuntary fibre, the contractions would be painless. Labour-pains, however, are spasms—violent efforts by an organ to throw out a substance which has ceased to be in harmony with it. Recent observations show that the onset of uterine action is due to a decadence of the membranes, or of the membranes and placenta, and each recurring pain indicates a renewed effort to effect expulsion. Painless uterine contractions do take place, as, for instance, in primiparæ after delivery; but these lack the force to expel other than liquid substances. Under healthy uterine action, then, the rapidity of the delivery bears a direct ratio to the force and frequency of the pains. In certain cases, no doubt, natural labour is hastened or retarded by other circumstances. Thus, in primiparæ, it is usually prolonged from an obvious cause, while, in phthisical cases, it may be accelerated from the attenuated state of the passages. In the case of a woman of average strength, where the pains are regular and effective, the uterus of a multipara may perform its function with sufficient vigour to complete the parturient act within two hours. Dr. Haughton of Dublin and Dr. Duncan of Edinburgh have made independent investigations on the propelling power of the uterus. The maximum power of an uterine contraction is estimated by Dr. Duncan to be equal to 50 lbs., and by Dr. Haughton 54 lbs. The uterus has thus three times the amount of power necessary to complete an uncon-

* *Op. cit.*, p. 142.

plicated labour. Now, to this uterine power nature has superadded the expulsive strength of the abdominal muscles, and the further force resulting from what is called "bearing down"; in this way, an economy of uterine muscular action is provided for, and provision made for the exertion by a healthy woman, in cases of emergency, of a force equal to 80 lbs. (Duncan), or as great as a quarter of a ton (Haughton). But, in large cities, there are forces at work which prevent this healthy standard from being reached, and to the extent to which the patient suffers from constitutional debility will we find her disqualified for continued exertion. It is in consequence of this that many ordinary labours are prolonged unduly. These cases are met with, not only amongst the poorer classes, as the result of insufficient food and overwork, but amongst the working classes, from their indoor life, early sedentary occupations, and their ill-cooked meals; and even among the middle and upper classes, from inactivity and artificial habits of life. The constitutions of a certain proportion of women are thus so deteriorated, that there results a very serious impairment of the parturient powers. Such women are unable to complete labour without much exhaustion. The labour often sets in fairly, with regular and effective pains, till, perhaps, the first stage is completed; after passing into the second stage, the pains alter in character, become more frequent and less defined, without periods of complete rest between them. Symptoms of acute fatigue are present. The muscles are irritable from exhaustion; they are losing power, are responding feebly, or not at all. The sufferer becomes irritable and anxious, thinks she should be assisted, and, perhaps, vents some ill-natured remark at the accoucheur standing listlessly by. On examination, the head is presenting naturally, and is usually found in the floor of the pelvis. Another digital examination in half an hour likely enough reveals no progress, owing to a true transient paralysis of the organ having ensued.

In another class of cases, the pains are slow and feeble from the beginning. The patient is usually the victim of disease, and the enfeebled parturient action is a fair indication of the lowered vitality. After a time, the pains become irregular, and seem to produce no effect on the os uteri, and they ultimately cease. In these cases, the powers of life appear to fail in the violent efforts required for expulsion. The uterus acts in sympathy with the general state of the system. Even when deficient or irregular action continues, the labour has ceased to be natural. From the resulting condition, spring many of the most troublesome complications connected with parturition. It is a condition which should by every possible means be avoided, and, when it does occur, it should be relieved with the least possible delay.

Much, however, might be done for these classes of patients prior to the onset of labour. Even with the enfeebled woman, frequent and judicious administration of beef-tea and other kinds of nourishing food may obviate the tendency to exhaustion. Benefit may also be derived from the administration of the tincture of perchloride of iron; and, if near her confinement, I have even seen more benefit from the use of the liquid extract of yellow cinchona in fifteen-minim doses every four hours; whilst rest may be secured for a day or two when the non-effective labours happen during the first stage by the exhibition of a sedative. Until this first stage of the labour has been completed, I allow the patient her usual diet, she is not restricted to the recumbent position, and, if the labour be tedious, I endeavour to persuade her that no mischief is likely to result from the delay. My experience is at one with Dr. Hamilton of Falkirk, who, in his able article on the proper management of tedious labours, says: "I now rarely attempt to interfere with the progress of the first stage of labour, even when this is protracted for some days. Indeed, when I can, I keep as much as possible out of the way of my patients, recommend them to walk about or lie down, as they may incline, to take a little sherry and water to support the strength, and, in fact, I get over it the best way I can without interference." Indeed, if I differ at all from Dr. Hamilton, it is through paying more attention to the dieting than he appears to have done. I prefer beef-tea to his sherry and water, and, instead of keeping out of the way, I see my patient at least daily, so that she may feel in no way anxious about her condition.

As illustrating my treatment of the first stage, I will read over the notes of a case.

Mrs. G., aged 35, of slender make, was confined with her third child; her pains were weak, short, and irregular; these had continued for some hours when I first saw her, she said about fourteen hours. The os had now opened about the diameter of half a crown. After waiting a little, finding the pains doing so little good, I left her. About six hours after I saw her again, the pains had become more frequent, teasing, and so constant as to prevent sleep, yet the os gave hardly any appreciable evidence of progress. To relieve her anxiety, I gave her an opiate, and arranged that she should receive her usual diet, with a good supply of beef-tea daily, until the labour was over. Four days afterwards, I got a message to come at once. When I reached the house, the child was

born, I was told, by a few very strong pains. She made a good recovery. In this case, it appeared to me that the uterine fibres were so relaxed and weakened as to cause the power of contraction never to get beyond the cramp-like initiatory efforts of the onset of labour. The pains were of a colicky character, the vagina was hot, and the secretion of mucus scanty. I have no doubt the rest in bed, along with the generous diet during these four days, helped very much to render the termination of this case so favourable to mother and child.

Whenever a woman has passed fairly through the first stage of labour, I remain with her and carefully mark the progress of it. With Dr. Hamilton, I have noticed "that the ratio of mortality to mother and child . . . is most intimately connected with the duration of the second half of the labour". The pains of expulsion vary in rapidity and in strength; sometimes a very severe one may be followed by several weak, useless ones; yet, on the whole, progress is made. When debility sets in, the pains become short, sharp, and recur more frequently. Indeed, like the feeble heart, the uterus is trying to make up for its weakened power by a quickened, excited action. With the onset of this condition, little or no further progress is gained. On examination, the passages are found quite sufficient to permit a natural delivery; but each recurring pain makes no permanent advance on the vertex, or may make no impression on it whatever. Should the obstetrician in attendance not deliver at this stage, he will soon find, in the quickened pulse, the furred tongue, the anxious countenance, the drooping spirits, and the failing strength, along with the gradually subsiding pains, that he can gain nothing by the delay. I have ceased now to wait for these symptoms, and, as soon as the strength begins to fail, I gently inform the patient of her condition; by the time she has made up her mind, it is time to interfere, and, these cases being the most favourable for the forceps, I have used these instruments without difficulty and without injury to mother or child. Thus Mrs. W., a young lady born and reared in the city, was lately confined of her first child. On the first day when I was called, she had labour-pains, but they were weak, and, after a few hours, these passed away, and she had seven hours' remission. At 5 o'clock on the following morning, the pains recommenced stronger and continued steady; the os uteri was opened sufficiently to admit the finger; the stomach was irritable, vomiting beef-tea and refusing all food. At 10.30 next morning, the first stage was completed, the head presenting naturally in the first position and at the brim. Bearing-down pains were regular, but short; she was very uneasy, speaking between and even during her pains. At 12.40, the head was in the pelvic cavity, and, as she was making no progress, I now delivered with the forceps. Mother and child did well.

I believe this timely application of the forceps to be a direct gain; for, when labour is retarded, we have induced a condition which, sooner or later, can lead only to mischief. It is true that nature is kind, and serious injuries to the passages have taken place without producing after suffering; but a careful obstetrician should not run any risk. Many look upon the forceps as a *dernier ressort*, and prefer to give ergot. This remedy, if good, is one of a known power. In ten or fifteen minutes, it begins to exert its influence, and often for nearly an hour its effects continue upon the uterus, if the fetus be not by that time expelled. Ergot acts by inducing sharp uterine action, recurring with brief intervals of rest, and, even during these remissions of pain, maintaining the womb in a continued state of action. The drug can only be judiciously given when a speedy termination of the labour is reasonably to be expected. With regard to the forceps, we know when to employ them, when to modify their action, and when to cease using them. It seems also *a priori* more reasonable to assist a weakened organ by giving help from without than by endeavouring to effect relief through stimulants; and I believe we should use the forceps as a better, because a safer, plan of treatment than ergot; at all events, until the birth of the child, it appears best to relieve the exhausted uterus by some other means than that of applying force to an organ already overworked.

Professional opinion is still undecided with reference to the time when the forceps should be applied. Dr. Ramsbotham (page 242) says: "When the head is impacted for four hours without advance and recession, I think we are warranted in delivering." In the *Rotunda Clinical Report* (page 21), Dr. Johnston says: "When we found there was no advance, say, for two hours, we usually administered a stimulating enema, then waited for an hour or two, according to circumstances, and, if the pains were not producing any effect, a second enema was given, and, if this did not succeed, in another hour, we gave a dose of ergot (particularly if it were a multiparous case); and, if the patient were irritable, we put her under chloroform, and then, after passing the catheter, we proceeded to apply the instruments." And Cazeaux, in his *Treatise on Midwifery*, says (page 992): "If the head were low down in the excavation, and it had made no progress for seven or eight hours, the forceps ought to be

applied." Probably these authorities express the limit to which forbearance on the part of the attendant could be justified. I am certain these rules could not be followed, in many cases, without serious risk to mother and child. Dr. Burns seems to have appreciated the necessities of the case when he said that, "when mischief arises from the application of the forceps, it is always owing either to harsh and unskilful conduct, or to a state induced by delaying too long." It appears to me that the time for bringing effective assistance is unmistakably indicated by the increasingly feeble efforts of the uterus. Nature should be helped when she shows that she can no longer, unaided, help herself. It has been urged that, from the sudden emptying of the uterus, flooding may take place. I have never met with this complication in any case I have delivered with the forceps, but I can understand how it may occur with those practitioners who apply this remedy "after the head has been impacted for four hours", for then the power of the uterus would be exhausted, and contraction rendered improbable. In these cases, the delay in delivery produces uterine inertia; if not the true inertia as obstetricians define it, it is at least an inertia similar to the temporary paralysis of the over-distended bladder, and, in this condition, the sudden emptying of the womb, doubtless, exposes the patient to this complication. But the case is otherwise if effective aid be given in time. The sudden relief from pressure of an organ which still retains a certain amount of vital force will give rise to renewed vigour. A timely delivery should thus prevent, instead of cause, *post partum* hæmorrhage. When I have found it necessary to deliver in cases where labour-pains were absent, I took special precautions to avoid flooding, and it would only be when the condition of mother or child rendered delivery at once necessary that I would resort to this dangerous step. But the chief object of preventing delay in the passages, is to obviate any tendency to the very distressing diseases which occasionally follow inflammatory action. The late Sir James Y. Simpson said that vesico-vaginal fistula was "most commonly found as a consequence of difficult and prolonged labour, more especially the latter" (*Diseases of Woman*, p. 32); and there can be no doubt the long continued pressure of the foetal head on the maternal passages is a very certain way of "producing mortification and sloughing of the vagina and part of the uterine wall". Kindred results have so frequently been observed by surgeons to take place when even, for a few hours only, the hernial sac is strangulated, and also in other diseases accompanied by compression, that I believe the onset of inflammatory disease in the vaginal passages to be due more to the detention of the fetus than to any temporary injury which the judicious application of the forceps could give. When I began to apply the forceps at the onset of the patient's failing strength, it was with a view of securing, if possible, a living child, for the delay seemed to act as prejudicially against the fetus as the mother. In my private practice, I find, on an average, every twenty-sixth labour suffer from the symptoms of debility; these I have delivered with the forceps, and in not one of them was the child still-born.

ON GENERAL PARALYSIS AND FRAGILITAS OSSIUM.

By N. G. MERCER, M.D. Edin.,

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THE fact has been some time pretty well known that, in not a few cases of general paralysis of the insane, there exists a brittle condition of the bones, which must render them especially liable to fractures. The subject is evidently one deserving the most attentive consideration, as, in all instances of serious injuries taking place in asylums, we must steadily bear in mind the possibility—in average asylums not the *probability*—of the patients having been subjected to ill-treatment at the hands of their attendants. A few years ago, the public mind was greatly agitated by a concurrent series of asylum catastrophes, whose startling and common distinguishing feature was a large number of dreadful fractures of the bones of the chest. Sensational and garbled accounts of these cases were given in the general press, and served to propagate a wide-spread, though ill-founded, feeling of mistrust in the management of public asylums. It will not have escaped recollection, that a criminal prosecution was in one of these cases successfully instituted against two attendants upon a charge of manslaughter, the result being their conviction, and a sentence of seven years' penal servitude. Without calling into question the truth of the verdict, or the justice of the sentence, or the propriety of that jubilant frame of mind with which, outside asylum walls, the result appeared to be universally hailed, it has always seemed to me that it would have been a judicious course on the part of those who were entrusted with the charge of the

defence, had they summoned the evidence of some high and competent surgical authority, to deliver his opinion, founded on an exceptional experience of chest-fractures, as to what amount of "kneeing," given a healthy condition of the skeleton, would have sufficed for the production of fifteen fractures of the ribs. At this trial, an opinion was unhesitatingly expressed that such multiplied fractures could not have been caused by heavy falls against a wooden bedstead. Whether or not such an event were possible, and whether or not the bones were so changed in their composition as to render fractures a probable circumstance from any slight accidental cause, are questions which would scarcely modify the complexion of the offence, seeing that deliberate violence was held proved by direct evidence; nevertheless, the subject of fragilitas ossium, in any class of lunatics, must be regarded as one both of medico-legal importance and pathological interest. It would be an useful contribution to surgical practice as affecting asylums, if some surgeons, with the highest opportunities of being well informed, would give their experience respecting the maximum amount of injury to the bony chest-wall which can be accomplished by one healthy man thrusting his knee with all his might against the prostrate breast of another. Would a fractured sternum *plus* nine rib-fractures, as in one case, or fifteen rib-fractures, as in another, be foreign, or would it be familiar to such experience? The case which I am about to describe, and which was recently under treatment in this asylum, will afford an illustration of the fact that an important fracture of the chest, which might readily have been attended with fatal complications, may occur in a person suffering from general paralysis, while, at the same time, there was no reasonable explanation of the cause of such fracture but the patient's own restlessness.

J. H., aged 58, engine-fitter, was admitted here, September 24, 1873. His case was at once diagnosed as one of general paralysis in an advanced stage. The phenomena of mental unsoundness were rapidly losing their maniacal or monomaniacal aspect, and assuming that of dementia. The lips and tongue were able to frame speech with the utmost difficulty; his power of recognising persons was all but gone; and the functions of deglutition and progression were very much impaired. The patient was not of meddlesome or aggressive habits, as general paralytics not uncommonly are, but was, on the contrary, a particularly quiet, inoffensive, harmless man. His symptoms, both bodily and mental, gained ground with a rapidity seldom witnessed in this disease, and, in the course of a few days after his admission, he was, in consequence of helplessness, removed for additional care to the hospital ward. Shortly after being transferred thither, he became rather more uneasy in his mind, and insomnia developed itself. Having been put to sleep in a dormitory with eight other patients, he got out of bed in the night time and rambled about the room, and a fellow-patient described how, in the course of this restlessness, he fell rather heavily and helplessly on the carpeted wooden floor. He was then placed to sleep in one of the ordinary single-bedded rooms; here, however, his restless conduct underwent no improvement, and he was found by the night-attendant out of bed, tottering about the room, very wakeful and uneasy. His powers of locomotion at this period were becoming much more feeble, and his tendency to fall heavily was increasing in an alarming degree. After a two nights' residence in this apartment, therefore, he was considered no longer safe in any other than the padded room, and thither he was accordingly carried. Although there was then no injury discoverable upon him, I still considered it quite a probable event that, during his past restlessness, he might have suffered some hurt. The progress of the case was naturally attended with much anxiety to me, and the rapid advance of the paralysis in all his functions rendered necessary the utmost possible care and gentleness in his management. After he had been two days an inmate of the padded room, a bruise on the right side of his chest, in extent approaching the size of the palm of the hand, was pointed out to me, by his attendant, at the morning visit. This bruise appeared to be of a few days' standing, but beneath its site, nothing, upon careful examination, was detectible in the way of crepitus from fractured ribs, nor was there present any functional disturbance of the respiration to favour the idea that any deep seated injury had happened. During the subsequent progress of the case, too, there was a total absence of dyspnoea, although the symptom was anxiously watched for from day to day. About a fortnight before his death, the dysphagia became so extreme that fluids only could be ingested, as any solid nourishment of which he partook appeared to stick in his pharynx, so much in abeyance was muscular energy in those parts. While in the padded room, he tossed and tumbled about a good deal, but there was no evidence, as indeed, so complete was the padding, there was scarcely any possibility, of his having sustained an additional bodily injury whilst there. Although he was very little in one position, yet vital power had grown so depressed that the slight intermittent pressure, to which the skin was exposed,