of dealing with such cases unless he knows how to enter into the patient's feelings. An unfortunate little girl, 14 years of age, who had been stealing at school, came from a virtuous but poverty-stricken home, where the father had giving up both drinking and smoking in order that his family might have a better education. Unfortunately, however, he never forgot to remind his family of the great sacrifices he was making. This girl was being pressed at school, in the hopes that she might become a pupil teacher. Having recognized that she had artistic taste I suggested to her how delightful it would be if someone made her a present of a pretty dress, especially if she had a ribbon at the same time for her hair. Her eyes sparkled at once; on discussing the situation she had little doubt that the happiest life for her to look forward to was to become a dressmaker, work for which she was well suited. One advantage would be that if no one ever made her a present of a beautiful dress, as indeed seemed likely, she would at least have leisure some time, when she knew how, to make one for herself.

The question may be asked: If punishment is of limited value, is discipline of no use? The answer is, that discipline is essential, but it must never be repression through fear. Starting in infancy and early childhood with wise suggestion, regulation of habits, and imitation of good examples, discipline must become the result of wisdom founded on the appreciation of reality. The best discipline comes from Nature, which, if we can only see it, teaches us to recognize reality and its force, so great that it cannot be ignored. Discipline comes also from the training given by wise mothers and fathers, coupled with the benefits of rubbing shoulders with brothers and sisters, who constitute a birthright of which the only child is robbed. The discipline of the drill sergeant may lead to perfect conduct, but, so far from leading to perfect character, it often develops no character at all. In order to develop character there must be freedom to develop, after first learning obedience in the early years.

Opportunities for healthy recreation are essential. In this connexion it is important to remember that the Scottish investigation into juvenile delinquency showed that far more offences were committed on Sunday than on any other day, and that the two other most unsatisfactory days were Wednesday and Saturday, which are half-holidays.

In conclusion, it may be thought that I am very revolutionary in my ideas. If so, it will be found by referring to the reports of the important prison conference held in London last August that I have much authority to support me. That conference was the ninth International Prison Conference; the first was held in London in 1872, while the last previous one was held in Washington in 1910. Two facts at this conference were particularly noticed: the first was the tremendous change that had taken place in ideas about crime since the last one was held. The other was the realization that of the fifty-six different countries which sent representatives to the conference some of those countries usually looked upon as backward were found to be, if not actually more, at any rate quite as enlightened as the countries that are generally considered to be in the van of progress. Among the important resolutions passed by the Prison Conference I would direct attention especially to the emphasis laid upon probation. This is one of the most effective means of dealing with delinquency, but in order that it may be effective it must last for a much longer time. If we send a young person to a training college or a university, he usually goes for two or three years, and often for longer. When an offender has already graduated in an unsatisfactory course, how can we hope to train him for something better in such a period as six or twelve months? In many cases the period ought to be not less than five years. Better trained probation officers are required, but one of the chief essentials is to see that before probation begins a thorough examination is made to determine what special arrangements ought to be made conditions of the probation. The conference also attached great importance to the indeterminate sentence, which is the natural consequence of individual treatment, and is the only possible way of dealing with some offenders. The conference emphasized also the importance of special

training for magistrates, going so far as to say that all who wish to be magistrates should be compelled to attend lectures on psychology, sociology, psychiatry, and penology. It drew attention to the importance of scientific investigation of accused and convicted persons, with the object of elucidating the causes of delinquency and discovering the suitable treatment of the individual. It was decided that classification in penal institutions ought to be according to character and ability to be reformed. One of the most important resolutions was that in all cases where parents are incapable of providing for the moral education of their children the court should have the power of boarding out the children in a suitable foster-home.

As a last word I would say that if the important resolutions arrived at by this conference were carried out we should go a long way towards dealing satisfactorily with delinquency.

A SIMPLE MODIFICATION OF THE MIDWIFERY FORCEPS.*

BY

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I HAVE been asked to initiate a discussion on the midwifery forceps, especially in relation to the choice of instrument and its applicability to private practice under modern conditions.

I am not so much concerned with the indications for forceps, though I would like to say that there is a tendency at present, in my opinion, to their too frequent use in these days of hurry and haste, not altogether always to the advantage of either mother or child. I feel sure there is often too much meddlesome interference nowadays in midwifery, partly for the reason I have already stated—impatience—and partly also with the idea of shortening labour from motives of humanity, which are really short-sighted measures when one comes to analyse them. Suffering can often be mitigated by other and safer means.

Be that as it may, it cannot be denied that the judicious use of forceps is one of the most beneficent and life-saving adjuvants to labour which we possess, in spite of the abuses which have crept in, mainly from their too early application and a failure always to recognize the real indications for their use and their undoubted limitations.

The indications for forceps are generally in a certain proportion of delayed and dangerous labours, but not in all, and the object is to secure the safe delivery of a living child with the avoidance of injury to the mother. These results can in most cases be secured by the judicious and careful use of forceps. A severely lacerated mother, or the delivery of a dead or dying child, cannot surely be claimed as an altogether satisfactory forceps delivery. The practical teaching of the safe use of forceps is one of the most important things teachers have to do. It is a responsibility which weighs very heavily on all who teach obstetrics, and the far-reaching consequences which result from inadequate practical teaching are appalling to contemplate the more one thinks of them.

As I have said already, however, I am not now considering so much the principles involved in the use and application of forceps as some points to which I wish to draw attention in regard to the construction of the instrument, and to indicate what in my opinion constitutes the safest kind of forceps to use (when its use is indicated) with the minimum forceps risk to mother and child.

There is no doubt that the principle of axis traction constitutes one of the most important improvements and advances in the construction of midwifery forceps in recent years (probably the most important). I cannot but think, however, important as the axis-traction principle undoubtedly is, that the purely mechanical aspect of its

*A paper read before the Edinburgh Obstetrical Society, February

application has been carried perhaps a little too far. There are other equally important matters which I believe have been lost sight of in concentrating mainly on the mechanics of attempting to secure, especially at the brim, adequate axis traction with the axis-traction rod forceps in common use.

I feel almost as if I were guilty of heresy if I seem to belittle the importance of the axis-traction rod forceps in a school such as that of Edinburgh, where such magnificent work has been accomplished in that direction by such men as A. R. Simpson and Milne Murray, following on the lines of Tarnier in trying to perfect the axis-traction principle. This great legacy they have handed on to us makes us

FIG. 1.—Blade of forceps showing original long fenestra of Sir J. Y. Simpson, which is retained in Haig Ferguson's modification.

FIG. 2.—Blade of Milne Murray's axis-traction forceps, showing fenestra shortened by half an inch to permit of traction rod being attached as high as possible.

ever their debtors. Their work is abiding for all time. I do not, therefore, for a moment wish to minimize the value and importance of the axis-traction principle. What I desire to criticize is the method by which it is attempted to apply it in the use of the modern type of the axis-traction rod forceps. What I wish to contend for is that in adapting the axis-traction principle with traction rods to the forceps of Sir J. Y. Simpson, while securing a great advance (as we all admit) in the method of traction, we are losing (owing to the construction of the instrument) one of the great advantages of Sir J. Y. Simpson's original instrument, which I regard as the most perfectly constructed forceps in existence, in its measurements and curves, for conserving the interests of the foetus during its passage through the pelvis (Fig. 1).

Sir J. Y. Simpson laid great stress on long fenestrae as being of special importance in preventing undue compression of the foetal head in prolonged forceps cases, and my experience fully bears out his contention. The adaptation of the axis-traction rods to the original Simpson forceps results in the shortening of the fenestrae by half an inch, as the diagrams show; that loss of half an inch, in my opinion, is a very vital loss (Fig. 2).

FIG. 3.—Author's forceps.

In the forceps I will now demonstrate (Fig. 3) I aim at getting axis traction without diminishing the length of the fenestrae, and I claim for this forceps greater simplicity, greater safety, and greater efficiency than the axis-traction forceps with traction rods attached. I showed this forceps to this society fifteen years ago after using it for one year previously. Now, after sixteen years' experience, during which period I have used no other (except occasionally to

demonstrate other varieties in the Maternity Hospital clinics), I can assert that it has given me infinite satisfaction, and compared with other forceps has reduced my foetal mortality in difficult forceps cases by about 10 per cent. This I ascribe mainly to the long fenestrae. There should be no maternal mortality in low and mid forceps cases, and, as Whitridge Williams has shown, the foetal mortality should also be practically nil, except in the rare cases of contracted outlet—often, alas! overlooked.

I can recall only two foetal deaths since using this forceps, excluding cases when other forceps had been used first.

This forceps secures sufficient axis traction in the cavity and at the outlet of the pelvis by using it in the ordinary way with the traction handle adjustment as shown, but in addition one can get real axis traction at the brim by tape traction without shortened fenestrae. The traction tapes are threaded through eyelet holes which are made at the level of the middle of the fenestra in each blade. The attachment of the tapes to the blades is practically, therefore, at the level of the biparietal diameter of the head (opposite the parietal eminences) at a height to which axis-traction rods cannot attain. This high traction on the head through the tapes tends markedly to increase flexion, which is a further advantage. High forceps are so seldom applied nowadays, in comparison with twenty years ago, that I need not elaborate these points. I have not personally for many years had occasion to use this tape traction. When I showed this forceps here fifteen years ago the tape

FIG. 4.—Diagrammatic representation of traction with tapes with Haig Ferguson's forceps. The hand which holds the tapes pulls in the direction of the "practical axis." The head descends in the axis of the "excavation of the pelvis" (B C), a part of the force (A) being annihilated by pressure against the pubes.

traction arrangement at the brim seemed to fascinate all the speakers, to the exclusion of what I regard as the infinitely more important and practical cavity and outlet traction, where the tapes are not used at all.

I may say that the late Professor Fabre of Lyons, whom I regard as one of the most ingenious and sagacious of modern obstetricians, always advocated tape traction, both in high and low forceps cases. He adapted tape traction to the ordinary Levret forceps (as modified by Pajot). Some of Fabre's illustrations show how he utilized tape traction (Fig. 4) ("lacets," as he called them) with the Levret-Pajot forceps (Pajot's manœuvre), and how by combined manipulation with the lacets and with the handles of the forceps he was able successfully to deal with difficult cases. He was also in the habit of using the tapes for securing anterior rotation in occipito-posterior cases as illustrated in the accompanying diagrams (Figs. 5 and 6)—a method which I have also on occasion used. I find that one can generally rotate the head safely in posterior positions by pressing in the required direction with a finger inserted into the lower end of the fenestra. Fabre believed that tape traction allowed the head more freedom of movement, and thus, in virtue of the laws of accommodation, helped it to adapt itself more easily to the diameters of the pelvis. Fabre was in the habit of attaching a dynamometer to the tapes during traction to ensure that too much force was not being used. He regarded 55 lb. traction as the

limit of safety for the child. For practical purposes I believe that biceps traction (that is, with bent elbows) is sufficient for safety.

It will thus be evident that tape traction secures pulling on the head at a higher level than axis-traction rods can

FIG. 5.—Divergent bilateral traction with the two tapes in a right occipito-posterior position to secure anterior rotation. (After Fabre.)

possibly achieve, thus securing more adequate axis traction at the brim. The head becomes more thoroughly flexed by this method of traction (as Davies has pointed out), and, above and beyond all, the fenestrae of the blades have not in any way been interfered with in an attempt to get axis-traction rods attached as high as possible, and even then not high enough to secure completely the object aimed at. It has been adduced that the tapes may break: well, if they do, it is simple to put new ones on. If they break it is probable that too much force has been used, and in this case they make for safety, like an electric fuse. It is a different matter from the breaking of axis-traction

FIG. 6.—Rotation accomplished and occiput lying under the pubes. (After Fabre.)

rods (which has occurred twice in my experience), which leaves the axis-traction rod forceps practically useless. It has also been objected that the tapes may fray the maternal soft parts; this can be prevented by the use of a vaginal retractor or an ordinary Sims speculum to protect the posterior vaginal wall. This is not as a rule necessary, however, as I shall explain later.

I shall now describe the forceps which I use and advocate, and while it is available if need be for tape traction at the brim such as I have been describing, I wish

distinctly to emphasize that this, in my opinion, is not its most important role. Its chief value is in the common everyday forceps case with the head well engaged in the pelvis (low and mid cases). Axis traction in such cases can be sufficiently secured by the simply adjustable traction handle, and the retention of the original long fenestrae of Sir J. Y. Simpson adds materially, as I have said before, to the safety of the child.

The measurements from the Smellie lock upwards conform exactly to Sir J. Y. Simpson's measurements (Fig. 7). I have shortened the handles for three reasons: (1) to indicate that they are not meant for traction; (2) to discourage the use of the handles for application, believing as I do that the blades should be applied by the shanks as tending to ensure their more gentle introduction by delicate manipulation; and (3) to allow the traction handle to work free from obstruction by the forceps handles without making the attachment of an inordinate length. The screw is the same as in the ordinary rod axis-traction forceps. Its use can often to a great extent be dispensed with, as the simple device which attaches the traction handle serves for all practical purposes to make the screw unnecessary after the forceps has been adjusted and traction has begun. It will be seen that the construction of this forceps is very simple. There is no complicated mechanism to go wrong—in other words, it may almost be said to be "foolproof," and there is nothing likely to break; it is a light instrument and not clumsy in appearance; and, above and beyond all, it combines the outstanding advantages of Sir J. Y. Simpson's original forceps with the added advantages of axis traction and the minimum amount of compression of the foetal head. With the old Sir J. Y. Simpson forceps when traction was made on the handles the resulting necessary compression of the head was to a certain extent counteracted by the long fenestrae; with the rod axis-traction forceps the axis-traction advantage is to some extent counterbalanced by dangerous pressure on the foetal head owing to the shortened fenestrae. In this forceps, I submit, the advantages of both the old and the new are conserved without detracting from the special features of importance in the construction of either. It is an attempt, and in my experience a successful attempt, to combine what is best in the old forceps with what is best in the traction-rod forceps, the result being an improvement on both.

It must always be remembered that the rod axis-traction forceps was at first constructed and mainly meant for high forceps cases, so as to secure as nearly as possible axis traction at the brim of the pelvis. I have shown that perfect axis traction at the brim is not possible with these rods and is only imperfectly carried out at the expense of shortening the fenestrae.

Incidentally I would here call attention to the classical diagram (Fig. 8) showing the physics of traction, from A. R. Simpson and von Winckel, to illustrate the line of traction with the rod axis-traction forceps. It will be observed that the line AB gives mathematically the true, accurate, and ideal line of proper pull at the brim, but it is an erroneous representation of the pull of the axis-traction rods, which are attached, be it remembered, to the lower end of the shortened fenestrae; and it will be seen that the line AB lies considerably behind the lower end of the fenestrae. The figure therefore gives an incorrect impression of what rod axis traction really does. The line of pull of the rods is considerably further forward than is here represented. The diagram, in fact, correctly portrays what theoretically might be taken as the line of pull with tape traction.

Chassagnay has shown, however, that when traction is exerted at the level of the centre of a movable object

FIG. 7.—Left blade of Haig Ferguson's forceps showing attachment of removable traction handle.

(*traction au centre de figure*) the line of traction may make an angle of 45 degrees with the axis of the passage without causing friction, and he showed that the advantages of *traction au centre de figure* can be applied to forceps;

FIG. 8.—Diagram showing physics of traction with Simpson's ordinary forceps in the pelvis. (A. R. Simpson and von Winckel.) A.B., Line of proper pull. A.F., Available pull. A.E.F.D., Parallelogram of forces on A.F. A.C., Misspent pull. A.C., Line of pull with ordinary long forceps (without traction rods).

and this has been confirmed by Fabre, who described tape axis traction at the brim as "*traction au centre de figure*." In other words, if traction is made on the middle of the head, as can be done by tape traction, it is not necessary to pull so far back (towards the coccyx) as with the rod axis-traction forceps, and there is consequently not so much danger of fraying the soft parts with the tapes as one might fear. Indeed, according to Fabre, the line of well directed tape traction need not exceed the making of an angle of 20 degrees with and in front of the umbilico-coccygeal line to get all that one needs. (See diagram showing schematic representation of tape traction—Fig. 4).

FIG. 9.—Mechanical construction of rod axis-traction forceps. (After Milne Murray.) V., Theoretical position for attachment of traction rods. Z., Best practical position for attachment of traction rods (with shortened fenestrae). T., Traction handle.

of the fenestrae, with the ordinary Sir J. Y. Simpson forceps in the pelvis. In Milne Murray's diagram the fenestrae have been shortened and the traction rods attached as high as possible to secure the best available axis traction, which he here mathematically illustrates. Milne Murray admitted that the point V is the theoretical position for the attachment of the traction rods, and he grasped the fact that to make his mechanics anything like perfect the higher the traction rods were attached to the blades the better. He consequently sacrificed part of the length of the fenestrae in an attempt to secure this advantage. But, even so, this axis traction, as will be noted, is not ideal, though for most practical purposes it may be

sufficient. Murray made an attempt to widen the fenestrae, but this did not compensate for the shortening. In addition, wide blades are more difficult to apply.

To put the matter in a nutshell, ideal axis traction at the brim can only be accomplished by traction in the middle of the head, as Fabre has pointed out. Traction rods cannot secure this without seriously shortening the fenestrae. The more the fenestrae are shortened and the higher the rod attachment, the better is the rod traction, but the more dangerous is it for the child, thus constituting a good example of the horns of a dilemma. It follows, therefore, that tape traction at the brim from the level of the centre of the head with full-sized fenestrae is ideally and practically correct, and should produce the best results all round.

I readily admit that the rod axis-traction forceps is equally available (perhaps more so) in the cavity and at the outlet; but again in these situations it is also handicapped by the short fenestrae, which are dangerous to the child with no compensating advantage. Whitridge Williams uses Tarnier's latest model of axis-traction forceps with detachable traction rods and handle bar. In 1910 he writes: "I use this instrument in all cases without the traction rods in low and mid, and with the traction rods in high forceps operations." In 1924 he writes that he uses the traction rods in mid operations as well.

My forceps as it stands is adapted mainly for traction in the cavity and at the outlet, which practically nowadays are the only situations where forceps should be used; but, in addition, this forceps has potential arrangements for almost perfect high axis traction by tape attachment, should an exceptional case demand it.

I do not for a moment contend that tape traction applied to the forceps is entirely a modern idea. Laroyenne in 1875 adapted the lacets of Chassagnay to Levret's forceps, but, so far as I know, this is the first time they have been applied to forceps with an axis-traction handle attachment, thus combining, as I have explained, an alternative method of axis traction (available for all circumstances) in the one instrument.

I confidently submit this forceps for criticism, trial, and approval.

A CASE OF SACRO-COCYGEAL CHORDOMA.

BY

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THE fact that up to the present time only 57 cases of chordoma have been published makes it desirable that each isolated case should be recorded. The case here described, the fourth to be diagnosed in Leeds, was encountered recently at the General Infirmary, and presents the typical clinical and pathological features of this rare tumour.

PATHOLOGICAL ASPECTS OF CHORDOMA.

Chordoma, as its name implies, is a growth of peculiar characteristics having its origin in notochordal tissue. Müller (1858) was the first to put forward this view, which, however, received little support at the time. Virchow (1857) and others regarded these tumours as cartilaginous, and small limited outgrowths of this nature arising in the basi-sphenoid continued to be reported under the title of "echordosis physaliphora." It was not until many years later that Müller's views received confirmation from Ribbert (1894), who reviewed the whole subject and advanced the following reasons for his belief in the notochordal origin of the tumours: (1) All spring from the middle line. (2) In no case has transition from cartilage to tumour tissue been demonstrated. (3) The tumour and the cartilage merely coexist side by side—a persistence of intracartilaginous notochordal vestiges. (4) In a chordoma undergoing gelatinous softening the cells do not present the typical physaliphorous appearance of these growths. There is, on the other hand, a close resemblance between