Dunster (E. S.)

THE USE OF THE

OBSTETRIC FORCEPS

IN

ABBREVIATING THE SECOND STAGE OF LABOR:

BY

EDWARD S. DUNSTER, M. D.

Box 33

LANSING:
W. S. GEORGE & CO., PRINTERS AND BINDERS.
1877.

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A PAPER

READ BEFORE THE MICHIGAN STATE MEDICAL SOCIETY,
MAY 10, 1877.

BY

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[REPRINTED FROM THE TRANSACTIONS OF THE SOCIETY FOR 1877.]

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THE USE OF OBSTETRIC FORCEPS

IN ABBREVIATING THE SECOND STAGE OF LABOR.

BY EDWARD S. DUNSTER, M. D., PROFESSOR OF OBSTETRICS, AND THE DISEASES OF WOMEN AND CHILDREN IN THE UNIVERSITY OF MICHIGAN.

The paper which I submit for the consideration of the society, may appropriately be styled a plea for the more frequent use of the forceps in shortening the second stage of labor, for it is this special use of the instrument that will alone be considered. The general and equally interesting questions of the choice, uses, and application of the forceps are so varied and extended that it would be impossible to do anything like justice to them within the limits of a single essay; but with the restriction just made the subject can be compressed within reasonable bounds. The importance of the subject, moreover, justifies its presentation in the shape of a special plea, for my belief is that there is too much hesitancy on the part of many members of the profession to avail themselves of the aid of that truly conservative instrument, the forceps. I hold that as the instrument is more frequently used for the purpose indicated the loss of life, both fœtal and maternal, will correspondingly diminish, while the amount of suffering thereby prevented is simply incalculable. This thesis I shall attempt to sustain by an appeal to recorded statistics from various sources as well as by personal experience.

My attention was first called to this question in January, 1869, by a somewhat startling paper* from the pen of Dr. James

* *Edinburgh Medical Journal*, Vol. XII., Dec., 1866, p. 510.

Hardie, of Manchester, Eng. He stated that in the last one hundred cases of confinement in his practice, prior to publication of said paper, he had used the forceps on an average once in about every three and a half cases, and for the express purpose of abbreviating anxiety and pain. The results obtained were extremely gratifying, and could not have been hoped for had the labors been left to nature's unaided efforts. His views were so at variance with those generally received and inculcated, and his reasons therefor were so cogently stated, that they left a deep impression on my mind. A year later in preparing the notes for my first course of lectures on obstetrics I examined the subject more at length, adopted the views alluded to, and since then in all my teachings I have urged a more frequent use of the forceps in the second stage of labor, even in cases where there is no doubt that, sooner or later, the child will be expelled, if no assistance be rendered. This somewhat heretical position calls for the reasons on which it is based. Assent cannot be expected unless the reasons are unimpeachably correct and convincing. Furthermore, so radical a position naturally invites criticism, which is healthy even if not always agreeable to him whose work provokes it, and I hope therefore that the opinions of the Society will be unhesitatingly expressed on the subject in hand.

It is well known that after the secret invention of the Chamberlains had been made public, principally by the teachings of Gifford, Drinkwater, Chapman and Smellie (though some of them it must be confessed for a time imitated the Chamberlain tactics, and tried to keep the instrument for their own personal use and advantage) the forceps came into very "general use all over Europe." A reaction, however, against the frequent employment of the instrument soon set in. This may be clearly traced to Mr. Butter's criticism on Chapman; to Dr. Burton's savage attack on Smellie, which appeared in 1753, the year following the publication of the first edition of

Smellie's treatise on midwifery; and also, and more directly to the well-known anonymous pamphlet, "The Present State of Midwifery Considered," which was published in 1772, against the employment of men in midwifery practice. This reaction, aided by the great authority of such men as Wm. Hunter, Osborne, Denman, and their successors in the early part of this century, was so absolute that "for fully forty years," as Beatty* says, "the forceps was banished from practice through the whole of this country, * * * and no one dared to question the authority by which it was condemned."

These grand old worthies, who did so much to advance obstetric art, and who are entitled to all credit for what they did, presented some curious contradictions in their mental make-up. For instance, Osborne (as a reviewer in the American Journal of Medical Sciences for January, 1877, has very happily put it), after saying "there never was an instrument invented more ingenious in the original contrivance, more simple in the structure, better adapted or more capable to overcome every possible resistance, to answer every beneficial intention, and to guard against every possible injury either to mother or child," goes on to lay down rules for their use which absolutely neutralize all this, and which "are nothing less than barbarous." Among these precepts it is forbidden to use the instrument "until the living powers of the whole body or *vis vitae* are greatly reduced, if not irrecoverably exhausted," one of the symptoms being "*continued cessation of the labor pains for several hours at the end of the third or fourth day.*" What wonder that the instrument fell into disuse under such teaching as this?

The inevitable recoil from such extreme views soon began, and was undoubtedly inaugurated by the older Beatty. He used the forceps 105 times during a practice of thirty-eight years and five months, his patients numbering 5,616. His

* THOMAS EDWARD BEATTY, M. D., *Contributions to Medicine and Midwifery*, Dublin, 1866, p. 2.

paper on this subject was read before the College of Physicians of Dublin, October 5, 1829, and is published in the transactions of the society for the following year.* It is a calm and dispassionate review of his own practice. It points out clearly the indications for the use of the instrument, and shows conclusively the great benefit to be derived from it in appropriate cases. "It opened the eyes of Irish practitioners who had so long groped in the darkness of error," says his son, though it must be admitted that no rapid change of opinion in the profession at large resulted therefrom. The records of the Rotunda Hospital at Dublin, under various masters, will convey the best idea of this gradual change in professional sentiment, and at the same time will help establish the proposition already laid down, with regard to the relative occurrence of maternal and fœtal deaths as the forceps are more or less frequently used.

Dr. Clarke was master for seven years from 1786 to 1793. During this time there were 10,387 deliveries in the hospital, and the forceps were used but fourteen times with six maternal deaths. Or, taking the classification as given by Dr. Clarke—the instrument was used in 6.55 per cent. of the so-called tedious labors (183 in number) with a maternal death rate of 20.21 per cent., and a fœtal death rate of 53.0 per cent.† During this time, however, he used the perforator in forty-nine cases, or 26.78 per cent. of the tedious labors, with a maternal mortality of 20.21 per cent. In his private practice, covering a period of forty-four years, and numbering 3,878 patients, he used the forceps only once, and failed in the attempt to deliver by it.‡

Under Labatt's mastership (1815–1822) 21,867 births took

* This paper, with true filial respect, is reprinted by his son, in the volume of contributions just quoted.

† See paper by Dr. Kidd, *Dublin Journal Medical Sciences*, January, 1872, and also a most interesting article by Thomas More Madden, M. D., on the history of the forceps, *Obstetrical Journal of Great Britain and Ireland*, November, 1875.

‡ BEATTY, *loco citato*, p. 5.

place in the hospital, and there is no record of the forceps having been used in a single instance. "From 1826 to 1833, Dr. Collins used the forceps in twenty-four cases out of a total of 16,654 [or once in 694 cases], but employed the perforator in no less than 118 cases. * * * From 1847 to 1854, in Dr. Shekelton's mastership, there were 13,748 deliveries in the Rotunda, and the forceps were used in no less than 220 of these [or once in about every sixty-two cases], and the perforator in fifty-four. * * * To Dr. Johnston, the present master, undoubtedly belongs the credit, however, of having brought the forceps into more frequent use than had ever previously been the case. Thus, from November, 1868, to November, 1874, in 7,027 deliveries, the forceps has been used in no less than 639 cases, or about once in every eleven cases, with only thirty-nine deaths, whilst the proportion of craniotomy or cephalotripsy cases has been reduced to twenty-nine.*

Dr. Johnston's report for the year ending November 6, 1875, shows 1,025 confinements at full term, in which the forceps were used 113 times, or once in about every nine cases, while craniotomy was resorted to in five instances only. The result was that 103 mothers recovered, and ten died, six being cases of seduction, two of peritonitis, one of pleuritis, and one of fungoid tumor of the uterus, with fatty heart. Of the children, 113 in number, five were still-born, and six died subsequently, leaving 102 saved, "who in all probability would have been lost if left to the maternal efforts."† From these reports alone it appears that the mortality both to mother and child is lessened as the instrument is more frequently used; and at the same time the more dangerous and repulsive operation of craniotomy is reduced to a minimum.‡ Mr. Philip H. Harper,‖

*Madden—*loc. cit.*

†*Obstetrical Journal of Great Britain and Ireland*, May, 1876, p. 106. 7th Annual Report by Dr. Johnston.

‡In one year, November 5, 1873, to November 5, 1874, Dr. Johnston used the forceps 138 times in 1,236 deliveries without a single craniotomy.

‖HARPER: *The more frequent use of the forceps as a means of lessening both maternal and fœtal mortality.—Trans. Obst. Society of London, Vol. I, p. 142.*

F. R. C. S., has made use of these statistics from the Rotunda, and analyzed them very carefully for the purpose of comparing them with the results obtained in his own practice. From his paper, which will again be alluded to, I quote the following table, which shows at a glance how a diminution of mortality accompanies an increasing use of the forceps:

PHYSICIANS.	Forceps Cases.	Fœtal Deaths.	Maternal Deaths.	Duration Labor.
Collins	1 in 694.	1 in 26.	1 in 329.	38 hours.
Hardy	1 in 355.	1 in 20.	1 in 334.	35½ "
Johnston	1 in 60.	1 in 35.	1 in 502.	29½ "
Harper	1 in 26.	1 in 47.	1 in 1490.	16 "

Dr. Harper's own practice includes 6,053 cases in which the forceps, long and short, were used 232 times. He also saw in consultation during the same time seventy cases in which he used the forceps, with the combined results tabulated above. I mention these figures, which do not appear in the table first given, to show that Dr. Harper's deductions were not based on insufficient data. The numerical mode of reasoning is so vicious, when not surrounded by proper restrictions that we cannot be too careful how we make our generalizations, and hold them up as positive and unerring guides in practice. It seems to me, however, that Dr. Harper's conclusions are perfectly reasonable, and that substantially and directly they support the proposition already given as the thesis of this paper. Allowance must be made, of course, in comparing his results with those already alluded to, which were obtained in hospital practice, for the difference between a hospital and a private practice is evident. His maternal mortality was "from all labor causes" one in 851, or, excluding peritonitis, one in 1490. His increased use of the forceps at all events had the effect which is constant (so far as my reading has extended) of diminishing the frequency of a resort to craniotomy, for he performed this operation sixteen times, or once in 378 cases. He claims* among other points, the discussion of which is pur-

* *Loc. cit.*, p. 184.

posely excluded from this paper, that when maternal death occurs after the use of the forceps it is generally because of the length of time the labor has lasted *before* their application; and that so long as they are applied as a last resort in tedious labor, so long will the maternal mortality be high; that "from the only statistics [*i. e.* those from the Rotunda reports above quoted] which give us the necessary data, 1 mother in 22, and 1 child in 5, died in unassisted tedious labor, whilst 1 mother in 56 and 1 child in 8.4 died where the forceps were used, and 1 mother in 10 died after craniotomy;" and finally that his own cases, which were conducted mainly on the principle that unless the second stage of labor is *rapidly* and *steadily* progressive the use of the forceps should be the rule and not the exception, show a large and important lessening both of material and fœtal mortality, by reason of the increased frequency in the use of the instrument. I have no hesitation whatever in stating my convictions that the principles he has enunciated are correct, and that I believe they will justify a more frequent resort to the forceps than that which he exhibited in his own practice.

But let me call another witness, whose testimony, if taken chronologically, should have preceded Dr. Harper's. I refer to Dr. G. Hamilton, of Falkirk, Scotland, whose labors in the direction of securing a more frequent use of the forceps are well known. In his first paper* he said that by using the for-

*Hamilton, *British and Foreign Med. Chir. Review*, April, 1853, p. 402.

Dr. Hamilton's paper was inspired, and I might almost say, his ire was aroused by a review in the same journal for October, 1852, of Dr. Murphy's "Principles and Practice of Midwifery." In this review the writer inculcates the old conservative line of practice which, under Clarke, Denman, and others, had practically abolished the instrument, and he gives the following conclusions as deducible from the statistics collated in Murphy's book: "1st. That in forceps deliveries occurring in 78,892 midwifery cases, in the hands of British German, and French practioners, nearly one in every four of the children were still-born. 2d. That in protracted labors, so far as the children are concerned, the proportion still-born is very much the same, whether the forceps be employed or not; the difference, if any, being in favor of leaving these cases to nature. 3d. That the use of instruments is to be discountenanced in all but exceptional cases of this kind, in which the habit of the patient is too feeble

ceps once in between seven and eight cases, the ratio of mortality to the child was *one in three hundred and seventeen.* This series, like those put forward in his subsequent papers, includes only labors which were under his own care from the commencement. Furthermore he excluded from his statistics cases which were not viable, or where he had reason to believe that the child was dead when he took charge. Of course these limitations give him a considerable discretionary latitude in his figures, and influence, to a material extent, his showing. But even admitting all that can be urged on this point, the success was wonderful. Assent to his conclusions is the more cheerfully accorded from the fact which he himself emphasizes, that in consultation practice in long delayed labors, etc., his success with the instrument was no better than that obtained in other hands.

In his second paper* he reports that he had delivered 416 cases in succession, in all of which the children were born alive. In his third paper† the list swells until 731 children were successively delivered, "not one of which was still-born," a result which he may well claim as "altogether unprecedented in obstetric history." The 732d case, which occurred in December, 1861, broke this long line of continuity. Since then Dr. Hamilton has had another series of about the same numbers, which he describes in a fourth paper.‡ This paper is a detailed exhibit of his line of practice, showing classes of cases, mode of using the instrument, etc. I do not, however,

to admit of her enduring a protracted labor, without risk of exhaustion. 4th. That Rumsbotham employed the forceps once in 729 cases; Joseph Clarke once in 742; Collins once in 684; Kilian once in 78; Carus once in 14; Siebold once in 9."

Dr. Murphy recommends the employment of the forceps only in cases of positive arrest, unless dangerous constitutional symptoms are present, and says: "The mere protraction of labor is no justification for interference." This precept, and the above quoted conclusions are, I believe, based on a thorough misconception of the power, dangers, and appropriate use of the instrument.

* HAMILTON, *Edinburgh Medical Journal*, May, 1855.

† HAMILTON, *Ibidem*, October, 1861.

‡ *British and Foreign Medico-Chirurgical Review*, Vol. 48, Oct., 1871, p. 449, and continued in the following number.

find in it any statement of the exact number of his cases. The publication was ten years after the date of his third paper, and the Doctor had been in the same active practice all this time. The presumption therefore is, that the number was very great, and as to his success, he says: "From then up to the present time, and under the same management in all my own practice, I have lost only one other child, in a footling case, and in all my forceps cases not a single child." But in a paper read at the meeting of the Obstetrical Society of London, in March of this year, Dr. Edis said: "Dr. Hamilton, of Falkirk, again had had two consecutive series of 800 and 700 cases, without a single still-birth, using forceps in about one case in five."* In view of such results as this, does it demand a large exercise of liberality to subscribe to his dictum "either a lower rate of mortality must be attained, or the non-interference system ought to be abandoned as a wanton sacrifice of human life."†

It is not out of place to add here the guides which Dr. Hamilton adopts in his practice. He holds sharply to the non-necessity of interference in the first stage of labor; such meddlesome interference he characterizes as pernicious. In the second stage he is governed by the principle that the danger is proportioned to the delay,—a principle first applied to labor as a whole, by Prof. James Y. Simpson. He says: "When the head has entered the pelvis so that an ear can be easily felt, I hold that the danger to the child usually becomes imminent if it be allowed to remain undelivered much more than two hours, especially when the pains are smart, or the compression is considerable. When mother and child have been much exhausted by a protracted or severe labor, my rule is, when an ear comes within reach, not to wait more than a quarter or half an hour, or even, if the case is urgent, to de-

*Abstract of paper on "*The Forceps in Modern Midwifery.*"—*Obstetrical Journal of Great Britain and Ireland*, April, 1877, p. 42.

†*Edin. Med. Jour.*, Oct., 1861, p. 318.

liver immediately." He believes, furthermore, that the safety of the child is a better guide in forming an estimate of the comparative success of different modes of practice than the safety of the mother on account of the conceded uncertainties arising from the dangerous tendencies of the puerperal state, epidemic influences, etc., and thinks it may almost be adopted as an axiom, that where, under similar circumstances, many children are saved, comparatively few mothers will die.

The most striking characteristic of his practice, he declares, is its simplicity; and in support of this he instances a number of "negations," one only of which I will refer to, for, in my estimation, it is one of the most positive advantages to be derived from greater frequency in the use of the forceps: I mean the disuse of ergot as an oxytoxic. The dangerous effects of this agent on the child are only too well known; but I will contrast with Dr. Hamilton's unbroken series of 731 children born alive the appalling record of McClintock and Hardy.* They mention 173 tedious labors, which were terminated without instrumental aid. In 30 of these cases ergot was administered to hasten labor, and only ten living children were born from the whole number; and this, too, in face of the explicit assertion that there was unequivocal evidence that the children were alive when the ergot was given. Well may we say, with Dr. Hosack, that so far as concerns its action on the child, ergot should be called *pulvis ad mortem* instead of *pulvis ad partum*.† Johnson and Sinclair's‡ experience with ergot was more favorable, but still sufficient, I hold, to condemn, most emphatically, the obstetric use of this agent for any purpose, except that of warding off post-partum hæm-

* *Practical Observations in Midwifery.*

† "In conclusion I must state my conviction that the more enlarged is the clinical experience, and the more accurate the observation, the more rarely will ergot be used before delivery, and furthermore that the fear of delay in labor will be greater than the apprehension from the use of forceps."—FORDYCE BARKER, M. D., *Transactions New York State Medical Society*, 1858, p. 130.

‡ *Practical Midwifery*, London, 1858.

orrhage, for which use I am in the habit of teaching my classes, ergot should be reserved in obstetric practice.* Of 113 children born under their care, after ergot had been administered, 12 were dead-born,—9 died in hospital, and 92 recovered. But it must be borne in mind that 61 of these 113 children were delivered after all by the forceps. What would have been the record had ergot alone been relied on? Other statistics on this point could be easily adduced, as the books are full of records pertaining thereto. Happily, however, there is but little difference of opinion among the authorities of *to-day* as to the pernicious influence of ergot on the child by compression of the placental circulation, and hence there is no necessity of further discussion of this point.

Dr. Hardie,† as we have already seen, used the instrument twenty-eight times in one hundred cases. He began his professional career a firm adherent of the non-interference policy, as inculcated by the majority of the teachers. His views, however, were gradually modified until he passed over to the opposite extreme, and used the forceps with a frequency which, so far as I am aware has been exceeded only by that of Osiander who is said to have used them 1,016 times in 2,540 cases,‡ and which has called forth some pretty vigorous criticisms from the adherents of the old conservative policy of the schools. But let us enquire into the results of this radical practice. A single sentence will cover it—all the mothers made excellent recoveries except one who died of acute tuberculosis on the 25th day, and all the children were born alive, and without injury. Where in the whole range of obstetric

* Prof. Fordyce Barker, *loco citato*, says that he was authentically informed that Dr. John Stearns, of Albany, N. Y., to whom the profession is indebted for the introduction of ergot, suffered so much in his practice from the mortality to children, charged to the use of this article, that he left the city on that account.

† *Loc. cit.*, p. 3.

‡ *SIEBOLD, Geschichte der Geburtshülfe*, Bd. *ii.*, p. 604, quoted in *American Journal Medical Sciences*, January, 1877, p. 177. The writer also states on Siebold's authority that Zeller attended 10,454 cases, without once using the forceps, and that Boer in 29,961 cases used them 119 times.

literature can we find, under the old and so-called conservative practice, a success equal to this? And if by shortening the duration of labor we can secure such brilliant results, with a saving of an incalculable amount of suffering, are not those who oppose this practice bound to show cause why it should not be adopted, and to demonstrate that the advantages gained are more than counterbalanced by disadvantages that are necessary and inherent in the mode of interference recommended in this paper.

Dr. Kidd, to whose paper I have already alluded, in the last seven years of his practice used the forceps once in every sixteen cases. In his earlier career he used the instrument much less frequently, but the results under his new practice fully justify the change. He says,* "during these seven years I have never lost a mother from tedious and difficult labor, where the case has been under my own care from the beginning, nor has there been one child still-born that did not show indisputable evidence of having been dead some time before labor begun. During these seven years I have only given ergot of rye to hasten labour to one patient, * * * and I have performed craniotomy but once on a patient, who had been under my own individual care from the commencement of labor, and then merely to save the mother from a prolonged labor, when the child was known to be dead. It would be difficult for me to describe the pleasure it affords me to look from time to time on children now growing up who were born by the aid of the forceps, but who so recently even as when I was a student would have been the subject of craniotomy."

It may be said that the comparison of results in private and hospital practice is not fair, and I have already admitted the force of this objection. But it would be easy, if the length of this paper did not forbid, to collect any amount of experience in private practice to compare with that of Drs. Hamilton,

* *Loc. cit.*, p. 70.

Harper and Hardie. For brevity's sake, then, I will allude to but one or two records. At the meeting of the Dublin Obstetrical Society April 20th, 1872, Dr. Fleetwood Churchill made a report* of his private practice, covering a period of thirty-nine years, during which he attended 2,547 cases of labor. The maternal deaths were from all causes 17, or 1 in about 150. The fœtal deaths "within the first week," were 130 or 1 in 19½. The number still-born is not mentioned except in the cases of malpresentation and operations which amount to 49. This oversight is to be regretted, as it is a most important point to know by generalization from large numbers of cases how often still-born children are met with in natural labor without as well as with interference by the forceps. The forceps were used 42 times or once in 60½ cases, with 3 maternal and 4 fœtal deaths. During the same period in consultation practice Dr. Churchill used the forceps 80 times, in which five children were born dead, and 4 died shortly after birth. Here is no exclusion of any special class of cases as in Dr. Hamilton's reports, so that no charge of arranging figures to serve any special purpose can be entertained. The one point which will attract our attention is the infrequent use of forceps. Dr. C. was not prejudiced against the instrument, yet in no one instance does it appear that he used it except for cause, by which I mean that he never used it for the purpose of shortening labor as did Harper and the others alluded to. His success under these circumstances must be admitted as somewhat remarkable and in the highest degree creditable to his skill and judgment. Still the contrast between his and Harper's and others' results is very marked.

Mr. Robert Dunn, F. R. C. S., gave to the Obstetrical Society of London statistics of twenty years of his practice.† His records included 4,049 cases of confinement. The total maternal mortality was 27, of which 21 were in immediate

* *Dublin Quarterly Journal Medical Science*, Vol. 53, p. 525.

† *Transactions of the Obstetrical Society of London*, Vol. I., p. 279.

connection with parturition, and 6 from remote causes (diseases) during the purperal state, or a ratio from all causes of 1 in 149. The still-born children, excluding 228 premature births, were, from all causes, 170, or 1 in about 23. This includes, of course, deaths in malpresentations and operations, as well as those from tedious labor. The forceps cases are not definitely enumerated, but the reporter says:* "I have had but slender experience in the use of the forceps, not having applied them myself more than twenty times during the twenty years I am now reviewing." He says that he was so impressed with Dr. Blundell's teaching that a meddlesome midwifery is a bad midwifery, that it became an abiding and ruling principle in his action never to interfere when he felt that the natural efforts would eventually prove equal to the completion of the delivery, and he candidly confesses that he may have erred "in avoiding, at times, the use of the forceps, and that their timely application, in some few instances, might have saved the life of the child, for my practice in this respect is certainly in striking contrast with the avowed and habitual procedure of some of the fellows of this Society. But I have availed myself freely," he adds, "and with the happiest effects, of the use of the bruised ergot of rye, in half-drachm doses, infused in boiling water." Criticism is disarmed in the face of such ingenuous simplicity and child-like candor as that which the writer manifests all through his report, and accordingly we dismiss it, venturing only to intimate that the reporter's own results contradict, most positively, the mischievous adage which he has adduced in justification of his practice.

But I must turn from the study of statistics to a consideration of the advantages which result from abbreviating the second stage of labor. And *1st, we save maternal life.* This proposition follows so directly from the statistics above collated that it is scarcely necessary to again mention it. It is well,

* *Ibidem*, p. 285.

however, to keep in mind that this saving of maternal life is remote as well as immediate, for we shall soon see that the early use of the instrument averts many results, which may and not infrequently do prove fatal a considerable time after parturition has supervened. The appalling mortality charged by the older authorities on the use of the forceps is clearly due to the fact that the instrument was never used except as a last resort, and when the maternal powers were already so exhausted by the long continuance of the labor that death was inevitable from any additional shock. Under such circumstances abandonment of the case or any mode of interference would probably result alike in the death of the patient, and it is not fair to charge the result on the use of instrument. If however, we use the forceps before there are any evidences of exhaustion we shall have no such sad record to make.

2d, We save fœtal life. This proposition is forced on us even more convincingly than the one just considered, and I doubt not will be clearly manifest in the experience of every one who like myself has changed his practice from rare to a frequent use of the forceps. In the present state of the obstetric art the forceps must be held for the benefit of the child as well as the mother, and one who is skilled in estimating the condition of the child will often be able to save it by timely delivery. The proposition that "danger is proportionate to delay," applies to the fœtus as well as to the mother, and the brilliant results already quoted from Hamilton and Hardie, justify their more frequent use of the instrument on the score of saving fœtal life alone, and without reference to the many other advantages accruing therefrom.

As bearing upon this proposition, so often coupled with Sir Jas. Y. Simpson's name, I quote from Mr. Harper's paper* a table which is deduced from the well-known statistics of John-

* *Loc. cit.*, p. 154.

son and Sinclair, showing the direct bearing which delay in labor has upon the *maternal* mortality:

In 5,640 labors, finished in 6 hours		21 mothers died, or 1 in 268.
In 4,489 " " " 7 to 12 hours		31 mothers died, or 1 in 144.
In 1,745 " " " 13 to 24 hours		15 mothers died, or 1 in 116.
In 163 " " " 24 to 36 hours		4 mothers died, or 1 in 41.
In 84 " " " 36 h'rs and upwards		8 mothers died, or 1 in 10½.

Or deducting the deaths from non-puerperal causes, the results to the mothers were:

In 6 hours and under	1 in 470 died.
In 7 to 12 hours	1 in 214 "
In 13 to 24 hours	1 in 145 "
In 24 to 36 hours	1 in 41 "
Above 36 hours	1 in 12 "

These labors, it must be kept clearly in mind, were natural and uncomplicated. "None of them were instrumental, but all were begun and finished by natural efforts alone. All foot, breech, arm, and placental presentations, as well as forceps and craniotomy cases are thus excluded." Fortunately we have also at hand in this series of cases the data for determining the influence of delay in labor upon the *fœtal* mortality:

Of 5,640 born within 6 hours, 79 were still-born, or 1 in 71; or, excluding those born putrid, 1 in 207.

Of 4,489 born in from 7 to 12 hours, 70 were still-born, or 1 in 64; or, excluding those born putrid, 1 in 159.

Of 1,745 born in from 13 to 24 hours, 56 were still-born, or 1 in 31; or, excluding those born putrid, 1 in 55.

Of 247 born in over 24 hours, 49 were still-born, or 1 in 5; no note of the putrid born.

These facts clearly show that there is an increasing danger to fœtal as well as maternal life with the increasing duration of the labor; and in the light of this generally well established proposition, it is easy to infer that the artificial shortening of labor should bring about the results which experimentally has been shown in the practice of Dr. Hamilton and others. We

must be cautious, however, not to push this generalization to the logical conclusions which its statements in the bald, unqualified form above given would warrant. To do so would be, in my estimation, really illogical, and in the highest degree absurd, for we must take into account all the factors and disturbing conditions met with, otherwise our reasoning is hopelessly deceptive and dangerously unreliable. To illustrate this point, I need only intimate that if one were to distort the principle enunciated into a warrant for cutting short labor in the first stage, *i. e.*, before full dilatation of the os, his logic would land him in a solecism, the practical results of which would be as disastrous as his reasoning is vicious. In teaching and practice, therefore, it is wise to limit this proposition to the second stage of labor alone.

3d, We secure prompter recovery. No one point has more fully and forcibly impressed itself on my observation than this: that women "get up," to use a common expression, after a quick labor better and more speedily than after a protracted labor. Nor does it matter practically whether the brevity of the labor is natural or artificial, provided always and of course, that the interference is not resorted to until the second stage of labor. The speediness of recovery is due to the saving of the strength of the patient, and to the prevention of bruising of tissue which accompanies protracted labor. In prostration with the nervous irritability that always follows, there is a susceptibility to both external and internal influences, which under other circumstances would produce little if any appreciable effect. Each successive contraction of the uterus in this depressed condition acts as a shock of greater or less intensity to the nervous system and adds to the already commencing mischief. This we cut short by interference, and thereby avert the disastrous consequences resulting therefrom. The long-continued bruising of the muscular fibre of the uterus produces in it and the adjacent tissues a tenderness

bordering on inflammation, which prevents, or at all events interferes with, involution. This I believe to be a prominent factor in the slow recovery from tedious labor, and one, too, on which but little stress is laid in our systematic text-books. How often under such circumstances do we find the uterus enlarged and painful? And even when it has reduced in volume so that it is no longer appreciable by abdominal touch, vaginal examination will show that it is tender, succulent, and still increased in its measurements. Who of us is there also who has not frequent occasion to observe that the soreness of the abdominal and perineal muscles is proportioned quite accurately to the tediousness of the labor? While these painful and engorged tissue-conditions continue it is useless to expect a speedy recovery, and my experience is that I do not meet with such conditions by any means as frequently as under my former mode of practice. There are of course many other and disturbing factors incident to the puerperal state that may produce the same result—incomplete or tardy involution—but with them I am not now dealing. My object at this time is simply to emphasize the proposition that in natural labor, without accidental or other complications, the ease and speed of recovery turns very constantly upon the quickness of the labor, and that involution of the uterus is retarded by delay in labor.

So strongly am I impressed with validity of this rule that I always expect that my forceps cases will "get up" more promptly than when the labor is left to nature's unaided efforts; and if I find delay I suspect that it is due to some lurking, possibly undetected, mischief in no way connected with the use of the instrument. In illustration of this I may be permitted to refer to two cases which I have attended within a few days past, and which are in such striking contrast as to enforce this position. The first was a primipara, 35 years of age, short, stout in build, of tough fibre, and phlegmatic tem-

perament. She was in good health, and had suffered but little during gestation, except from her extreme and unwieldy size, which had often suggested twins both to herself and friends. The urine, several times examined, as is my wont, showed no trace of any kidney complication. The first stage of labor, during the first half of which the pains were very slight and irregular, was protracted to 36 hours, a longer time than any that I have noted for several years past. The uterus did not act to advantage from the fact (learned later on in the labor) that the quantity of *liquor amnii* was immense. She was under the influence of chloroform in the latter part of the first, and all through the second stage, which I terminated by the forceps at the end of four * hours, as the pulse had already shown a tendency to rise, and but little advance was making. After delivery the pulse rose to 120, and on the following ten days it fluctuated between 112 and 124, with a temperature of 101° to 103°. There was no unusual tenderness, and the patient could move herself freely about the bed without pain. She slept well, ate well, and digested well; still the pulse kept up to such a degree that I became anxious about her, and yet, by careful examination, could find no explanation of the symptoms, until, on the 22d day after delivery, a sharp pain in the calf of the leg, followed by swelling, showed that my patient was the subject of *phlegmasia alba dolens*. The blood condition, which is antecedent to this local outburst, had probably been influencing her condition all the while, and thus accounted for her symptoms. The other patient was also a primipara, 22 years of age, slender and elastic, but of highly marked nervous temperament, and of excellent general health. Her first stage was also lengthy, the pains ceasing at one time for four hours, and at another for two hours. The membranes spontaneously ruptured at 2 P. M., before complete dilatation of the os, and at 8 P. M., about three hours after full dilata-

* I am by no means certain now that it would not have been wiser to have used the forceps some two hours earlier than I did.

tion, I delivered with the forceps. Her pulse at no time during or since the delivery rose above 80. She could bear deep pressure over the uterus on the morning after delivery, and she frequently said that she felt as well as she ever did in her life, her only sources of wonderment being that the little affair was concluded without her consciousness (for I invariably use chloroform with my patients unless they object to it) and that she was kept in bed when she felt so well.

4th, We diminish the amount of suffering. If an anæsthetic be used, of course, there is no consciousness of pain, and it may be said that we can secure this desired result without using the forceps. This is true so far as the mere sensation of pain is concerned, but we must keep clear in mind the distinction between pain (suffering) and pain (contraction of the uterus). By pain in obstetric language we so often mean contraction that the words are used synonymously by most authors. Now while it is evident that we can prevent the suffering by an anæsthetic, it is equally evident that we cannot by it prevent the contraction. And the damage comes not from the mere sensation of suffering but from the often repeated and long-continued contraction producing the bruising and infiltration of tissue, and exhausting the strength of the patient as already described. These conditions cannot be prevented by the anæsthetic, but they go on as persistently, and even more insidiously with as without it. They, as well as the pain are, however, arrested at once by terminating the labor, and to me it seems more rational to follow this course which prevents both the pain and its results, than to adopt the other which abolishes the pain alone.

If no anæsthetic is used, of course, the pain during extraction with the forceps is increased, for to the amount of pain resulting from the uterine contraction we add that induced by the tractile force. But the aggregate amount of the suffering is infinitely less than when we allow the labor to drag along

for hours or possibly days, without assistance. The disastrous results of pain come not so much from its intensity as its duration, and so we find that the increased intensity of pain, while extracting with the forceps, is more than counterbalanced by shortening the continuance of the pains. But without any reference to the results of pain, I hold that it is our duty as physicians to alleviate suffering whenever and wherever we can do so with propriety. I have no patience with those persons who claim that as labor is a physiological process we have no moral right to interfere with it. Before I can accept this dictum as a guide in practice, I have a right to demand that the standard or physiological limit of pain be determined. But this is simply impossible, as we find that labor varies from a few minutes to many hours in duration. So long, then, as this continues, just so long we must have liberty of exercising our judgment as to the proper time and mode of interfering for alleviating suffering, and we cannot be held down to any hard and fast rule which allows no discrimination. Now it is self-evident that by arresting labor under appropriate conditions, we stop pain, and for this purpose and this alone, in my judgment one is authorized to employ the forceps,* though doubtless, there are many who would prefer to accomplish the end in view by a resort to anæsthetics, but on the broader and more tenable ground of averting the results of pain it seems to me there can be no difference of opinion.

5th. We prevent the danger of swelling, impaction, and the

* "Had I my life to live over," said Dr. Thomas Lipscomb of Shelbyville, Tenn., in narrating to the State Medical Society the results of a forty years' experience as an obstetrician, "I think the forceps would be used more frequently in my practice, instead of waiting, and witnessing days and nights of unavailing suffering by parturient patients. * * * * We might be instrumental in saving thousands of infants hitherto doomed by craniotomy to certain death as well as prevent an amount beyond computation of parturient suffering."—*Transactions Tennessee State Medical Society, 1875, p. 83.*

This candid statement, I can but think, is a true expression of the opinion of most observant practitioners who have spent many years in practice, especially where such practice has been governed by the unfortunate horror of the forceps, which for so many years ruled in British teaching and authority.

subsequent inflammatory complications. Inasmuch as I have expressly limited myself to a consideration of the use of the forceps in shortening the second stage of labor, it may seem to many that this reason is not pertinent. But when we remember that it is the prevention, and not the relief, of these troublesome and dangerous complications that we are aiming at, the reason is assuredly valid. Any one of experience knows that the first step in the processes under consideration is delay in labor. As the head does not advance, it becomes an irritant to the tissues with which it is in contact. "The natural secretions are arrested, the parts become hot and dry, tumefaction of the soft structures occurs, and, unless rescued from this state, the woman perishes from the combined effect of the shock to the nervous system, incident to labor, and the irritation and exhaustion produced by the presence of the fœtus in the parturient canal."* * * * * All this is avoided by delivery with the forceps early in the second stage of labor, and before time has elapsed to allow even the initial step in the dangerous process to take place. No good obstetrician will allow impaction of the head to occur, and there is no better or safer method of preventing it than by forceps delivery. When once impaction has occurred the introduction of the forceps blades is not only more troublesome, but may result in serious mischief, and at the same time the difficulties of extraction are enormously increased. It was just this delay, before resorting to the instrument, which, in the past, gave it its unenviable notoriety, and created the belief so common among the authorities of the inherent dangerousness of forceps delivery. The mistake was both illogical and inexcusable, in that it charged upon the forceps results that were due to the condition of the patient, yet none the less has it left its impress on the obstetric practice of the last generation. But with more enlightened

* W. TYLER SMITH: *The Modern Practice of Midwifery*, New York, Ed. 1858, p. 538.

views as to the truly conservative powers of the instrument, and with a wider extension of its use, this reproach against our art can no longer obtain, and with Tyler Smith, "we may hope and expect that in the progress of obstetric knowledge, the death of women from exhaustion, consequent upon lingering labor, where the muscular powers are at fault, but where no insurmountable mechanical difficulty exists, will become impossible." But even putting aside for a moment the fact that death may supervene, the results of destructive inflammation, following pressure, are so disastrous that many times death would be considered a mercy, and the more desirable extreme. The sloughings, fistulæ, and cicatricial contractions seen in extreme cases are directly traceable, not to the use of instruments, but to continued pressure, destroying the vitality of the soft tissues. This pressure is taken off, and the terrible consequences alluded to are averted by dislodging the head before swelling has set in, and no mode of interference at this time is justifiable except delivery by the forceps.* In these considerations we have, in my opinion, a clear warrant for the more frequent use of the forceps, and of the reasons already adduced, hardly any one is entitled to or will carry greater weight than this.

6th, We avoid a frequent resort to the facile but more repulsive and dangerous operation of craniotomy. This proposition follows so directly from the study of the statistics already collated, that it is scarcely necessary now to more than reiterate it. Craniotomy has diminished almost exactly in proportion as the forceps have been more frequently used.† The common use

*Dr. Hardie, whose paper I have already quoted, says that Dr. Figg, of Bo'ness, was in the habit of turning all the children and delivering by the feet. I apprehend, however, that so novel, not to say absurd, a practice will ever become very general, for not one of the arguments adduced in favor of interference by the process will justly apply here. Hence, it seems to me that the statement made above, that no other mode of interference is justifiable, is essentially true, and is a good rule in practice.

†Meissner, "the great Leipsic veteran," in 1858, published the results of his thirty-five years of midwifery practice, so far only as it related to operative

of the perforator constitutes, says Playfair,* "a great blot on British midwifery." Even as late as Clark and Collins craniotomy "was performed three or four times as often as forceps delivery. These figures indicate a destruction of fœtal life which we cannot look back to without a shudder, and which it is to be feared justify the reproaches which our continental brethren have cast upon our practice. Fortunately professional opinion has now completely recognized the sacred duty of saving the infant's life, whenever it is practicable to do so; and it may justly be said that the British obstetricians now teach as carefully as those of any other nation the imperative necessity of using every endeavor to avoid the destruction of the fœtus." These are the words of one of England's best authorities, the author of the latest systematic work on midwifery, and they are a significant comment on the question at issue. Nor need we search far to find the direction in which they are making the "endeavor." It is almost solely in the more frequent use of the forceps, and it is mainly this which has removed the opprobrium from their practice. Indeed the most advanced, I might almost say, radical efforts for reform have come from British sources, and we are indebted to them for the better teaching and practice of to-day, though this thought is tempered with regret that we are equally indebted to them for much of the bad practice of the past. One point only under this proposition will, I suspect, provoke comment or dissent. It is the speaking of craniotomy as a more dangerous operation than the use of the forceps. Many even quite recent authors hold that the opposite is true. I do not care to discuss this question, which can only be settled by large experiences, nor is it essential to my purpose so to do. I cheerfully

interference. He used the forceps in 1,863 cases, and the perforator in 32 only, and he had attended 3,299 labors before he had his first case of craniotomy. The number of cases of all kinds covered in the report is 3,811.—RANKING. *Half Yearly Abstract Medical Sciences*, Vol. 28, p. 262.

* *A Treatise on the Science and Practice of Midwifery.* American edition. 1876, p. 440.

admit that with a closely impacted head, and swollen dry tissues, it is both less dangerous and easier to perforate, but I am not dealing with such cases in this paper, and have expressly formulated the assertion that the early use of the forceps wards off this very complication in which there has been so frequent a resort to craniotomy. But inasmuch as there is no choice between the two operations, the one being elective and justifiable in a wide range of cases, the other being resorted to only as an imperative necessity, I must be allowed to entertain and express the opinion that the latter—craniotomy—is a dangerous operation in the cases in which it is indicated, and that the forceps in skillful hands are devoid of danger in cases for which they are indicated. Excluding, however, this point, there is no escape from the conclusion that in proportion as the conservative operations are more frequently resorted to, the destructive operations diminish in frequency, and we join most fervently in the expressed opinion of Tyler Smith that (if we develop all the resources at our command) craniotomy may be abolished from practice in cases of living children.

Turning now to the opposite side of the question, let us enquire what are the objections to the practice advocated? And unless it can be shown, as an offset, that the disadvantages more than counterbalance the advantages, it is only reasonable and fair to adopt the practice.

And first we are told that the weight of authority is against it. This is true; but it is no valid reason against the use of the forceps that the teachers and authorities have condemned it. Out of their own experience we have convicted them of the error of their advice, and shown that by an opposite line of practice, immeasurably better results have been obtained. Unconsciously we are all, to a greater or less extent, influenced by authority, and it is only right that we should properly respect authority; but we are not bound to accept without ques-

tioning, or at all events, without testing by the light of experience, the dictates of authority. It is precisely this blind and slavish deference to authority which has been, all through the past history of medicine, such a hinderance to her advance. A better rule for our guidance is to submit authority's assertions to the rigid test of the laws of logic, which are as valid in medicine as in other departments of human knowledge. And when conflicting opinions are presented to the physician, he is logically bound to accept that which, by observation, comparison, and experiment (the principal, though not exclusive, means by which, in the physical sciences, we arrive at truth), is productive of the best results.

But again we are told that the forceps is a dangerous instrument, and our systematic works on midwifery, down to at least a very recent day, abound in terrible descriptions of the injury which the instrument may inflict, and are full of the most solemn warnings against its use. I will not weary your patience with quoting these soul-harrowing and forbidding pictures. They are familiar to you all, and I doubt not, many within the sound of my voice have sat under such teachings in their student days, and that their practice has been, in some measure, influenced by the solemn appeals and warnings. The effect of all this has been in the minds of many to make the use of the forceps an act which carries with it a large degree of impropriety, and even may make one ashamed of his doing. When, therefore, under the inspiration of such mental hesitancy, one takes up the dreaded instrument, doubt seizes on him, and may unman him and unfit him for the emergency he is facing; he is confirmed in his preconceived (because so taught) ideas, and he abandons the attempt in confusion, or blindly gropes his way through with a lively but not very comforting apprehension of the horrors in store for the unfortunate patient.

Now, I deny absolutely that the forceps is a dangerous instru-

ment, and I assert that whenever damage is done by it, such damage is the result of the blundering stupidity, ignorance, or recklessness of the operator behind the instrument, and that it is not fair to charge these mischiefs upon the instrument itself. It is the abuse and not the use of the instrument that does harm, and the best way to obviate this evil is to train our young men to greater skill, show them how to rightly use the instrument, and give them confidence in the work they are undertaking.

Indeed, so well adapted is the modern double curved forceps to the work for which it is intended, and so admirably does it fulfill every indication, that I go farther and say that it is impossible with it to seriously damage either maternal or fœtal tissues, unless a degree of force be used which is wholly unjustifiable. In the dorsal decubitus, and with the head well down to the outlet of the pelvis, the lower blade will almost by its own weight seek its appropriate position; the upper blade requires, usually, some adjustment, but calls for no force in application. With the head high up, or with failure of either flexion or rotation the difficulties are largely increased, but they are not difficulties that are to be overcome by increasing force in introducing the blades.

But examine now, if you please, the specific dangers charged. And first, as to the mother. It is almost an insult to the intelligence of an audience like this now before me to discuss the possibility of producing vesico-vaginal fistulæ by the forceps. When the blades are properly adjusted on the head of the child, they cannot by any possibility touch the posterior wall of the bladder, and if it were possible to cut the bladder with the anterior edge of the blade, we should have the fistula produced at once; but every one of experience in this class of affections knows that as a rule the ability to retain urine is lost only after days of suffering with symptoms of marked inflammatory character. Furthermore in a large majority of the hitherto

recorded cases of fistula, instruments were not used at all, and in the minority of cases where they have been used, it was only after protracted delay. Says Dr. Emmet:* "After a careful review of all† the recorded cases admitted to the Woman's Hospital since its foundation (some twelve years ago), I could not satisfy myself that more than three cases out of the whole number should be regarded as having resulted from instrumental delivery. These were cases of malpractice, and of no value in a statistical point of view." There is abundant other testimony to the same effect; indeed, I know of no recent authority whose opinion is not essentially that just stated. Of course the forceps may be driven by force so as to do damage in the act of introducing them, and I have seen, at the Pathological Society in New York, a specimen where the so-called left blade was thrust through the septum, below and behind the cervix, into the Douglass *cul de sac*. The operator, however, was intoxicated, and in his stupefied state he had violated a fundamental canon in the use of the instrument, —never apply force in introducing the blades. It is an outrage against propriety to assert that such a fatal laceration is chargeable to the instrument. Nor do I believe that incisions of the vaginal walls, either anterior or posterior, can be produced by the edges of the blades, unless we forget the line of traction, and either elevate or depress the handles too much before the blades are set on the head. When once set and

* *Vesico-vaginal fistula*, etc., by T. ADDIS EMMET, M. D. New York, 1868, p. 19.

† Dr. E. had had, up to date of publication of this treatise, 296 cases under his own charge, and speaks of "several hundred" other operations under Dr. Sims, the first surgeon of the hospital. Dr. Emmet gives the histories of 65 cases of vesico-vaginal fistula. These cases have been carefully analyzed by Dr. Busey,* of Washington, D. C., and the conclusion is, "that impaction is the usual cause, and that delay in resorting to artificial means to expedite delivery, after it has occurred, incurs not only the danger to the mother, but imperils the life of the child." Fifty of the sixty-five children were known to have been lost, and four were known to have been saved, the result to the child is not stated in eleven cases.

* *Am. Jour. Obstetrics*, Vol. IV., p. 253.

locked the head forms a protecting buttress, as it were, for blades, and it is simply impossible to so displace the blades as to plough up either wall, unless again we use an amount of leverage which is simply inexcusable. The additional space that forceps take up is scarcely appreciable, as may be seen by carefully measuring a fœtal head, then apply the blades and measure again over the same circumference, so that there is no danger from this source.

But how stands the case now with laceration of the perineum? On this point my mind is equally clear that the instrument as such has nothing to do with producing laceration. Accurately adjust the blades and watch them as the head is emerging, and it is evident that they are not the direct factors in laceration, for they come nowhere near the tear. They straddle, if I may be allowed so to speak, the line of rupture, and with a finger in the rectum it is easy to ascertain whether or not they are properly embedded on the sides of the head. Many authorities hold furthermore that ruptured perineum occurs more frequently relatively without than with instruments. On this point I am by no means so clear, for I hold that one of the prominent factors in rupture of the perineum is the suddenness with which the force is applied. *Other things being equal,* the perineum is less liable to give way if time is allowed for it to stretch. Now one serious error in my estimation in forceps delivery is too sudden delivery, and if in addition to this sudden application of force the line of traction is incautiously neglected the chances of rupture are increased. But even admitting as others have claimed that laceration of the perineum is more common with than without instruments this would not counterbalance the enormous saving of life which has been shown to be directly due to greater frequency in the use of the forceps, and I frankly confess that I prefer to run the risk of perineal laceration rather than that of delay in labor. So amenable are these lacerations (except when they go through the sphincter ani) to the primary operation that I feel but lit-

tle concern about the result, and in the instances that I have met in practice where the laceration was deep enough to warrant inserting sutures union has promptly followed. Perineal lacerations are very frequently unrecognized, and I am inclined to think at times, that those who boast that they never have lacerations in their practice are simply deceiving themselves. A large proportion of the women, who have borne children that consult me for uterine disease, have had rupture of the perineum, and so important is this matter that I always advise examination after delivery with the finger of one hand in the rectum, and the other in the vagina. Only in this way (or by inspection) can these lacerations be detected, for if laceration has occurred there is now only a thin wall of tissue intervening which shows that the perineal body is torn.

The dangers to the child are of no greater import than those of the mother. The principal source of trouble is from compression of the head, but we must remember that the compression made by the forceps is vastly less mischievous than that of prolonged labor, or than that of the spastic contractions induced by ergot.* A greater degree of pressure lasting for a few minutes is by no means as dangerous as continuous and prolonged compression even if it be not so pronounced.

This is precisely what we secure by the use of the forceps, and so obvious is this principle that it hardly needs the argument drawn from experience to substantiate it. There is no need, however, of increasing in ordinary cases the pressure on the head to any dangerous degree. The grip may be relaxed in the interval between the pains, and the danger is thus materially lessened. But I maintain that the forceps should never be used nor constructed with reference to its compressing power. Its chiefest and best use is as a tractor, and, powerful

* The tetanic contractions of ergot produce their deadly effect, not by any toxic action on the blood of the fœtus nor by compression of the head, but by the persistent squeezing of the placental circulation, which induces a cerebral lesion not unlike that caused by violent pressure continuously applied to the cranium.

as it is, or can be as a double lever or compressor, this use of it should be avoided. The direction, too, in which the compression, as a rule, is exerted is an item of consideration, for it is well known that compression laterally is less disastrous than in the opposite antero-posterior direction; while the superior part of cranium by its wonderful molding capacity will stand a very severe and even prolonged compression. But the argument of experience is, after all, the best reply to these asserted dangers to the fœtus, and if experience has demonstrated anything it is that the forceps are the means of saving innumerable fœtal lives that must have been lost if left to nature's unaided efforts.

The already too great length of this paper precludes a discussion of the minor dangers to the child, such as cutting the scalp or ear, bruising the subcutaneous tissues, paralysis of the facial nerves, etc. I simply hold that these are not dangers which are necessary accompaniments of the use of the forceps, and that the judicious and skillful operator can usually avoid them, and that however frequently they may occur, they would not counterbalance the loss of a single human life. In conclusion, then, I again recommend a more frequent and, as I believe, a more rational use of the forceps for shortening the second stage of labor, feeling confident that the more we follow the practice the more we shall see the advantages arising from it, in saving both maternal and fœtal life, and in preventing an incalculable amount of suffering with the disasters consequent thereon. And to accomplish this desirable end, I urge upon all a more careful study of the instrument, an acquaintance with its powers for good in skilled hands, and its possibilities for evil in ignorant hands, and to do everything within their reach to reduce these possibilities to a minimum by demanding more thorough instruction and discipline for the beginner in practice, and by giving to such the benefit of their own experience and example.