that the evil effects of chloroform result from vasomotor paralysis, causing the accumulation of blood in the abdominal viscera especially, and bringing about partial or complete cessation of function in the nervous centres from acute anemia.

(2) Pregnancy increases vasomotor tension, and thereby renders the pregnant woman less liable to the injurious effects of chloroform.

(3) In normal labor, the actual expulsion of the child may be safely rendered painless, dilatation of the birth-canal furthered, and laceration diminished, by light and transient narcosis from chloroform.

(4) In tetanus of the uterus, eclamptic convulsions, and maniacal labor, chloroform is to be preferred to ether, and is most useful.

(5) Profound narcosis from chloroform is seldom, if ever, necessary in obstetric practice, and like this condition under ether, is attended with risk.

THE SUPERIORITY OF CHLOROFORM AS AN ANESTHETIC IN MIDWIFERY PRACTICE.¹

BY A. WORCESTER, A.M., M.D., WALTHAM, MASS.

Not long ago, when returning the visit of a recent graduate from one of the best medical schools of this country who had the temerity to settle in this vicinity, I was asked if it is true that it will not do for a physician hereabouts to use chloroform in his midwifery practice. He had been warned by a previous caller that if he did use chloroform he would forfeit the support of the medical fraternity. Of course, it was understood that the forfeiture of professional support would be felt only in case of some awkward coincidence. But as accidents will sometimes happen, and as scapegoats are troublesome animals if not thoroughly understood, it is well worth while to examine this particular chloroform scapegoat.

Granted that in this part of the world there has been a peculiar susceptibility to the poisonous effects of chloroform such as to preclude its use hitherto in midwifery practice, what, then, are the geographical limitations of this unfortunate inheritance, and must it last forever?

Such questions, while of little or no interest to physicians whose opinions upon this subject have long since been crystallized, are nevertheless interesting to those still open to conviction. For instance, my young friend already quoted, who has been taught by a most distinguished obstetrician that he should use chloroform, and just how to use it, very naturally is anxious to know how far it is advisable to disregard this local idiosyncrasy. He is entitled to all the information that can be gleaned from the experience of his new-found brethren.

So far as my own small experience goes, I have already assured him that for the past ten years, at a distance of ten miles from ether's shrine, chloroform has proved itself infinitely preferable to ether in relieving women from the agony of child-bearing. Unfortunately for my present argument, I have not used pure chloroform so often as I have used a mixture² of it with ethyl bromide and alcohol. I have to thank Dr. Walter J. Otis, of Boston, for calling my attention to

this mixture, which I still think superior even to chloroform in the rapidity of its anesthetic action without sacrifice of consciousness. But this difference is not great, and there is some difficulty in obtaining and in keeping absolutely pure ethyl bromide. So it not seldom happens that I use plain chloroform in midwifery practice. But if by any mischance I have only ether at hand, I feel a sense of shame akin to guilt. For many a time, when my chloroform vial has been drained of its last drop, and I have tried to hypnotize the patient into being thankful that at last she can have lovely ether, have I witnessed her disappointment and disgust. Instead of the instantaneous relief that came from a few deep inhalations of the chloroform, the patient on changing to ether finds that she no longer has time or strength, after the earliest intimation of a coming pain, to inhale enough of the anesthetic to do her any good. As the stress of suffering is upon her she keeps gasping at the ether when she should be holding her breath and so giving to the abdominal muscles a fixed thorax to pull from. The usefulness of the labor pain is thus lessened. If she has been steadily inhaling ether during the pain, then by about the time it is over she will be more or less under its influence. Possibly she may sleep during the intervals, but she is more likely to thrash about begging for more ether. There is little use in assuring her she is not just then in pain; her answer is unanswerable, that she soon will be, and then it will be too late to get any good from the ether. If she is smart enough she will simulate a pain so as to scare the etherizer into putting it on before the real pain begins. "Give me more! *give me more!!* GIVE ME MORE!!!" prevails, and her pains are effectually relieved. Then the end is within plainer sight.

You all know the rest of the story, and can vouch for this synopsis of it: gradual cessation of labor pains; complete exhaustion; mother's pulse 120; fetal heart 160; paternal pulse fluttering; consultant sent for to hear the pitiful story; operative interference plainly demanded; because high forceps and version are equally dangerous, first one method is timidly tried and then the other; perineum torn to sphincter, but fortunately no further; complete relaxation of uterus and of everything else; alarming post-partum hemorrhage skilfully treated by manual extraction of the placenta and plugging the uterus with iodoform gauze; bruised fetus resuscitated after a half-hour of artificial respiration; tedious convalescence, but eventual recovery; all concerned more than ever convinced of the wonderful blessing of ether in midwifery; "What did our poor grandmothers and grandfathers do without it?"

If by good chance the laboring woman, in disgust that the ether does her no good, tosses the mockery from her and in her indignation pulls all the harder, then it must be admitted the ether has done no harm. Moreover, in midwifery cases where prolonged surgical anesthesia is required, ether of course has its proper place. But where only partial anesthesia is desirable, ether is a delusion and a snare. Once begun, either it is found to be useless, or if given in serviceable amount the labor is delayed if not absolutely stopped, and all the trouble of artificial labor thus inaugurated.

Small wonder is it that many physicians here in this ether district so dislike to employ the only anesthetic they know anything about, that they actually deliver

¹ Read at the meeting of the Obstetrical Society of Boston, March 16, 1897.

² Ethyl bromide, one part; chloroform, three parts; alcohol, four parts.

most of their patients without any anesthesia. Such physicians steel their hearts by making much of the increased safety so obtained. But were they themselves to suffer the pangs of child-bearing, it is doubtful if such beautiful fortitude would be displayed.

I must not, however, forget that my purpose in this paper is not to describe the use of ether in midwifery practice, but rather to call attention to the superior advantages of chloroform.

In the first place, then, it produces partial anesthesia much more quickly than ether, and with less loss of consciousness, and allows a correspondingly quick recovery from the anesthesia. Not only does chloroform itself act much more quickly, but it can be taken more quickly than ether, because of not irritating the respiratory apparatus, as ether is so liable to do. With chloroform there is none of the choking and coughing that so often retard ether anesthesia.

Let us for simplicity's sake consider the requirements of an ideal anesthetic during only the second stage of labor. In the first place we shall all agree that the anesthesia is desirable only during the height of the pain, that is, during the latter part of it, and is not wanted during the intervals. Moreover, after the pain begins, there is time only for a very few deep inhalations before it is necessary for the patient to apply all of her strength to her work. And, furthermore, the patient's intelligent co-operation is needed in securing the proper application of her voluntary muscular powers.

So closely do the properties of chloroform conform to these desiderata that it might seem as if the requirements of the case and the properties of this anesthetic were especially designed for each other. No such mutual fitness can be shown in favor of ether.

Now, with such a blessing at hand, is it fair to womankind to withhold it from them? Should the unsatisfactoriness of ether prevent the use of a really satisfactory anesthetic?

If there is any other excuse for not easing these pangs with a few whiffs of chloroform, that excuse is probably to be found in the local idiosyncrasy, to which reference has already been made. Whatever its cause, there undoubtedly is thought to be in this neighborhood a peculiar susceptibility to the supposed poison of this anesthetic. Had ether been discovered in Edinburgh and chloroform anesthesia given its first public demonstration in Boston, perhaps there would not be here such an acute form of chloroform-phobia. But, however that might be, is not this semi-centennial era of thanksgiving for anesthetics a very proper season for inquiring if it be possible, even in Boston, that chloroform now at this end of the century can be used in midwifery practice as safely and as advantageously as it is used everywhere else in the civilized world.

Let us admit that for prolonged surgical anesthesia ether is much less likely to cause the patient's death on the table; and let us waive the question, on the other hand, as to the after-effects of ether being more dangerous than those of chloroform; and let us leave out of consideration the great advantages of the use of chloroform at the beginning when ether is to be used later for maintaining the anesthesia; let us keep strictly to the question of partial anesthesia, repeatedly produced, for the relief of the second stage of labor sufferings. Will any one who has had experience with both dispute the immense superiority of chloro-

form? Or will any one maintain that there is any danger whatsoever in the proper use of it for this purpose?

In studying the origin, the extent and the probable duration of the local prejudice against chloroform, I must admit having wondered if dense ignorance as to its proper use deserves consideration as a potent factor. At any rate one need have no hesitancy in referring to this local ignorance, for, as is well known, it is not only generally admitted but is even considered a badge of distinction. Never to have given chloroform except to dogs whose deaths were desired is considered in this vicinity rather as a proof of virtuous conservatism than as a marked deficiency in professional attainment. It is pathetic to think of how many Boston blushes have been wasted at seeing chloroform used in every other part of the world by men who really seemed in other matters to know what they were about.

If it should seem that those poor medical graduates who are doomed to practise in New York or in other outside regions ought to be taught how to use chloroform, even if warned against using it hereabouts, the folly of so thinking is easily shown; for how can the proper methods of administering chloroform be taught where none is used?

The hope of persuading others to make a fair trial of chloroform in such cases, and the hope of drawing from our guests suggestions as to the best methods of administering it, overcome the hesitancy that I, who have had no instruction in the matter, very properly should have in describing my methods of giving chloroform to women in labor.

Before ever the labor begins it is often of no small advantage to be able to answer the prospective mother's anxious question if I surely will give her an anesthetic by assuring her that I always do. Again, when in the wearisome first stage of labor the certainty that when the hard bearing-down pains begin the anesthetic will be given cheers the patient on as no other possible assurance could. For often it is in the fear that the pains will grow much harder that the greatest torture lies. American women suffer fearfully in anticipation. When the second stage is fairly begun, and the pains are really strong, then I begin with the chloroform. The patient's nose and lips are well smeared with vaseline to protect the skin from possible chloroform blistering. Upon the centre of a handkerchief or some such piece of cloth five to ten drops of chloroform are dropped just before the pains begin. At first the patient herself is taught to hold the cloth over her nose and mouth while inhaling deeply; but as her labor progresses and she becomes well used to it, the cloth is better held by the assistant who measures out the chloroform.

In the relief from the intensity of suffering thus obtained the patient becomes more willing to exert all her strength as directed. She wastes no time in "holding back" her pains; she escapes nervous exhaustion. As the perineum dilates, and as the suffering becomes continuous the chloroform is kept on more of the time; but after every few inhalations the cloth is taken off for a like number of inhalations of fresh air. By pouring on a few drops of the chloroform at almost every such interval, the patient is kept sufficiently anesthetized to escape the agony and at the same time is not made unconscious. In this condition the perineum often can be kept on its natural

stretch long enough to allow the delivery without rupturing. Her uterine and other muscular contractions are not interfered with. The mother just knows when her baby is born, but she remembers no especial pain. She does not afterwards live in terror of ever again going through the same experience.

THE USE OF ETHER IN OBSTETRIC PRACTICE.¹

BY CHARLES M. GREEN, M.D., BOSTON.

In opening this discussion of "The Comparative Value of Ether and Chloroform in Obstetric Practice," it is best that I should state at the outset that I have had no experience whatever in the use of chloroform. It seems evident, therefore, that I am ill fitted to discuss a subject with which I am only partially familiar. I have been asked, however, to present concisely the way in which I use ether in obstetric practice, leaving to those who believe chloroform to be the better anesthetic the task of proving their position. This I am willing to do; especially since the burden of proof, in this community certainly, rests on those who would use chloroform instead of ether to produce anesthesia.

In stating my method of using ether in routine obstetric practice, I cannot do better than to quote from a paper I had the honor to read before the Boston Society for Medical Improvement four years ago.²

THE QUESTION OF ANESTHETICS IN NORMAL LABOR.

"In approaching this subject it is well to bear in mind that parturition is a physiological process, and physiological processes ought not to require the assistance of anesthesia. While willing to admit that modern woman is not perhaps the physical equal of her prototype, I am not prepared to grant that she is so degenerate as some writers would have us believe. The changed conditions of modern civilization have certainly wrought some changes in womankind: her nervous organization is not perhaps in many instances so stable and unimpressionable. It is a question whether the modern, higher education of women does not make demands upon their nervous systems which render them less able to bear without anesthesia the shock and pain of maternity. Be this as it may, I am not yet prepared to range myself with those who regard the use of anesthetics a necessary accompaniment of labor. Not that I believe, by any means, that woman should bear the curse of Eve, and submit to the pain of labor as an hereditary punishment; but because I believe that, as a rule, a girl with a healthy mental and physical inheritance, who has been well brought up, who has been well managed during pregnancy, and who approaches her labor in good condition, does not need anesthesia. Having said this much I hasten to remark that I am always ready to administer anesthetics on any reasonable indication, and do, in fact, employ them in moderation in many normal cases, partly to gratify the imperious demand, in the face of no contraindication, and partly for other reasons which will be stated later.

"During the first stage of normal labor it is only exceptionally that I find anesthesia either necessary or demanded by the patient. If this stage is well man-

aged, if the patient is well fed, and her attention properly diverted, she generally passes through the stage with equanimity and composure. If the stage is protracted, if the soft parts are unduly rigid, if the patient is decidedly hyperesthetic, if, in short, the labor is no longer normal, the indications must be met with appropriate therapeutics. Chloral hydrate is the drug, *par excellence*, for needed anesthesia in this stage, administered in fifteen-grain doses, at half-hour intervals, until three doses have been given, if necessary; the effect is satisfactory, and not injurious, if the heart is not weak. I usually give the drug by rectum to avoid disturbing the stomach, which may be already affected with the physiological nausea often seen towards the end of the stage.

"When the cervix is approaching the full dilatation, if the pressure of the passing head on the cervical ganglia causes undue pain, I then resort to ether, administered during the contractions. The amount given is not enough to inhibit the action of the uterus, but still enough to obtund the sensibility of the nerves and greatly comfort the patient. I never allow a woman in labor to bear pain which can be called in any way pathological.

"When the head has passed the cervix and the os has receded, the pain is usually less severe. The patient becomes conscious of progress, she is encouraged and looks forward to the birth of her child. She is cheered to make full use of her pains and brings to bear the material assistance of her voluntary muscles. If within two hours she has not brought the presenting part to the outlet, I cease to regard the case as normal, and employ such interference and assistance as may seem advisable. Otherwise I encourage the patient to make full use of her pains without anesthesia, until the head bulges the perineum, when I begin the administration of ether. This I give moderately at first that I may not diminish the effectiveness of the uterine contractions; but as the head crowns I push the ether, and deliver the woman under full surgical anesthesia. I do this for two reasons: first, because this brief use of ether does no harm, does not paralyze the uterus nor interfere with its retraction; secondly, because with the patient under full anesthesia I am better able to control the expulsion of the head and avoid laceration of the perineum.

"To state once more and in other words my position in regard to the use of ether in labor, I would say that while I am ready to use the anesthetic in the way and manner above described, I believe that the prolonged use of ether, even when not pushed to surgical anesthesia, is liable to inhibit the uterus and retard the labor; further, to interfere with efficient retraction of the uterus and predispose to hemorrhage; again, to etherize the child, and perhaps, in conjunction with a prolonged labor, to result in a still-birth. In short, my way is to soothe the patient with ether, if need be, through the peculiarly painful period when the head is passing the os uteri; then to subject her to a short, sharp labor, not exceeding two hours, and giving surgical anesthesia when the head is born. If after two hours of good labor the child is not born, nor apparently soon to be born naturally, I interfere. I believe that under this management the patient avoids one of the possible causes of post-partum hemorrhage; that she makes a better convalescence; that there is less risk of fetal mortality."

As to the method of administering ether, — I have

¹ Read before the Obstetrical Society of Boston, March 16, 1897.

² *Vide* Boston Medical and Surgical Journal, May 11, 1893.