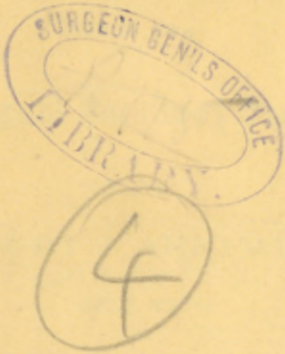
Oration

Latimer (G. S.)



ANNUAL ORATION

BEFORE THE

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ANNUAL ORATION.

ANÆSTHETICS IN MIDWIFERY.

By THOMAS S. LATIMER, M. D.

The use of anæsthetics in labor has not, it appears to me, attracted that attention in Maryland which the importance of the subject demands, both by reason of the extent to which they have been used elsewhere, with the favorable reports thereon, and the horrible individual and aggregate suffering which, if their use is justified, they are capable of relieving.

In treating this subject, it is my purpose to avoid, to a great extent, the expression of my personal views, and present to you the conclusions of the most qualified observers to whose writings I have had access, deduced from their experience. For, in my judgment, most of the questions involved can only be determined by observation. Arguments shall be used only in explanation of observed phenomena, and where observation has been indecisive. I shall also confine myself almost exclusively to their purely obstetric use, not even referring to those pathological conditions, such as eclampsia and puerperal mania, for the relief of which they are so often advised.

It has been objected to their use—

1st. That they impiously abrogate the curse, "in sorrow shalt thou bring forth children."

2d. That labor pain is a physiological condition, which they annul.

3d. That they are directly dangerous to life.

4th. That they are indirectly dangerous by increasing the liability to hemorrhage.

5th. That they prolong labor by diminishing the force and frequency of uterine contractions.

6th. That in instrumental labors, by annulling maternal sensation, they remove the best guide to the safe introduction of instruments.

7th. That they injuriously affect the lacteal secretion.

8th. That they are alleged to occasion indecency of expression while under their influence.

To the religious objection it can scarcely be necessary to say a word. Its absurdity is transparent.

A more specious, but equally untenable position, is that most strongly maintained by the elder Meigs, of Philadelphia, that labor pain is a physiological condition with which it is wrong to interfere. Dr. Meigs presses this objection with great earnestness, and it has found many supporters. But it may be questioned whether pain is ever a physiological condition; and it certainly is in no sense an essential part of labor, for if the uterus contract with sufficient force for the expulsion of its contents, it is by no means necessary that that contraction should be felt by the mother, since it has been abundantly shown, ere the use of anæsthetics was suggested, that labor could be conducted to a safe and speedy conclusion without the maternal consciousness of pain. Not only have drunken women, paraplegic women, and narcotized women passed through perfectly healthful labors in a state of complete unconsciousness; but in a savage and uncivilized state, freedom from suffering in parturition is the common law. Indeed so slight is the inconvenience in many savage tribes, that we are told by Marco Palo, Strabo, and other historians and travelers, that in certain communities it is customary, immediately after the birth of the child, which is accomplished without suffering, for the mothers to get up and attend their husbands, who are put to bed in their stead.

Nor must it be forgotten that all physiological functions are aided by artificial means just in so far as we have desired, or been enabled to do so.

We endeavor to aid the function of digestion by the art of cookery; we supply clothing to conserve animal heat, cars to transport us, though natural progression is a strictly physiological function, and a peculiarly healthful one; microscopes, telescopes, spectacles to assist the function of the eye, and it is as just to object to interference with the functional activity of one organ as with that of another.

Savages, unaccustomed to the use of clothing might with the same propriety object to protecting their bodies from heat and cold, since they are the expression of natural laws, and "the pain against which they protect us is natural and physiological."

Such objections were actually urged against the use of optical instruments, even so late as the 17th century. D'Israeli tells us they were held to be "subversive of the Christian faith," and were denominated atheistical inventions which perverted our organs of sight, and made everything appear in a new and false light." Arguments like these have been uniformly opposed to all innovations upon established customs, and are of identically the same nature with the argument against interference with what is held to be the natural law of labor.

If pain is not essential to labor, as is shown by its frequent absence among barbarous nations; in such accidental cases as have been referred to, and, as is now shown by the many thousand cases in which it has been destroyed by the use of anæsthetics, it remains only to enquire in this connection, to what extent it is, as Dr. Meigs has claimed, "a most desirable, salutary and conservative manifestation of life force." To what extent is pain regarded as salutary in other conditions? Surely no more absurd position could be held than that so sturdily maintained, even by men of the greatest distinction, that mere pain is, in itself, salutary rather than injurious. And yet some of the greatest names in medicine are linked with this doctrine.

"Pain," says Mr. Cooper, surgeon to Guy's Hospital, "is a premonitory condition, no doubt fitting parts, the subject of lesion, to reparatory action," and, therefore he "should feel averse to the prevention of it."

Mr. Nunn, surgeon to the Colchester and Essex Hospital, argues that "pain should be considered as a healthy indication, * * * and is the natural incentive to reparatory action."

Dr. Pickford states that "pain during operations is in the majority of cases even desirable."

So eminent a man as Magendie "doubts if there is any advantage in suppressing pain," and holds it to be a "trivial matter to suffer."

On the other hand, Ambrose Pare says, "nothing so much dejects the powers of the patient."

Mr. Travers holds it to be of itself destructive, and that it "exhausts the principle of life."

Prof. Burns teaches, in his Principles of Surgery, (vol. 1, p. 502,) that it has two effects: "it exhausts both the system and the part, and it acts as an exciting cause of inflammation."

Prof. Alison, in Outlines of Pathology and Practice, maintains that it sometimes affects the circulatory system "with fatal effect."—(P. 13.)

Dr. Ranking relates a case in which after the removal from the breast of a healthy female of an erectile tumor, without dangerous symptoms during the operation, until on the tightening of the ligature, "with the full force of two surgeons, she gave a yell of agony, the pulse became imperceptible, the countenance ghastly pale, and in eighteen hours she was a corpse."—(Abstract of Medical Science, p. 383.)

Erichsen says, that "though a slight degree of pain, as a pinch or prick, may act as a stimulant, very severe suffering is a most powerful depressing agent, capable of itself of destroying life."

Lewes states, that "pain will sometimes cause death by arresting the heart's action."—(Physiol. of Common Life, p. 131.)

Wilson Phillips found that "when a rabbit had been stunned by a blow on the head, its medulla might be destroyed without an arrest of the heart ensuing."

Bernard anæsthetized rabbits and also destroyed the medulla "without destroying life, whereas if the medulla be even irritated without etherization, death inevitably ensues from cessation of the heart's action."—(Lewes' Physiol. of Common Life, 130.)

But it is quite needless to cite further authorities in this connection. Common sense, physiological experiments and more recent scientific observation unite in teaching us that pain is, in itself, an almost unmixed evil, injurious to health and destructive to comfort.

But it may be asked with propriety whether the pains of child-bearing are of so severe a character as to warrant our interference either as a matter of safety or of ease.

No one who has witnessed them can question their severity; writers upon obstetrics have taxed themselves to find phrases adequate to express the degree of suffering experienced in ordinary labors. Cazeaux stands almost alone in speaking of labor as ordinarily "almost without pain," the patient preserving her "calmness and gaiety to the end of labor." He also states that the introduction of the blades of the forceps or cephalatribe is almost free from pain. But this is not the general testimony, and Dr. Meigs who, notwithstanding, opposes the use of anæsthetics in obstetric practice, says of the pains of parturition, "there is no name for them but agony."

Dr. Merriman, also an opponent of anæsthesia in obstetrics, says "the moment the head passes into the world, the extremity of suffering seems to be beyond endurance."

Prof. Nægele, of Heidelberg, describes the same stage in these words: "The patient quivers and trembles all over; her face is flushed, and, with the rest of the body is bathed in perspiration; her looks are staring and wild; her features alter so much that they can scarcely be recognized; her impatience rises to its maximum with loud crying and wailing, and frequently expressions which, even with sensible high principled women, border close upon insanity." (Simpson on Anæsthesia, p. 112.)

Dr. Rigby, (System of Midwifery, p. 103,) describes the patient as "quite wild with suffering, which approaches to a species of insanity."

Velpeau calls the pains of the last stage "inexpressible pains and agonies, apparently intolerable."

Prof. Byford expresses it as "unspeakable agony."

In short there can be no questioning the fact that parturient pains, in a large proportion of ordinary labors, are fully equal to those experienced in the majority of surgical operations in which anæsthetics are unhesitatingly used. Nor is there any reason to suppose that the suffering of child-birth is any less injurious than an equal amount of suffering in general surgery. And, when we find by reference to statistics that the death

rate in amputations is materially lessened when sensibility has been annulled, as is shown by the records of the British, Parisian and Glasgow hospitals, where the per centage of deaths from the larger amputations without anæsthesia was respectively, 1 in 3½, 1 in 2, and 1 in 2½, whilst "in the same hospitals, and upon the same class of patients," it was with anæsthesia but 1 in 4, we may reasonably infer that pain is a factor of no inconsiderable moment in its ultimate effect upon the health of the patient. It is true, allowance must be made for the greater skill manifested by the surgeon, when the element of time ceases to be a consideration, and his own nerves are unaffected by the agony of the person undergoing the operation, which cannot be a consideration in ordinary labor, where no interference is required. But this alone cannot adequately account for the different results referred to.

Again, it is a fact in midwifery that the maternal and fœtal mortality are directly related to the duration of labor; and the inference is perfectly just, that death, in protracted labors is largely due to the exhaustion consequent on the long continued muscular contraction, with its associated pain and intense mental anxiety. In the Dublin Lying-in Hospital, under Dr. Collins' care, in 7,050 cases, delivered within two hours, "22 died, or 1 in every 320." In 452 cases prolonged above 20 hours, "42 died, or 1 every 11." In 150 cases lasting beyond 36 hours, 1 in 6 died.

In labors of from 25 to 36 hours, 1 in every 3 children was still-born; from 37 to 48 hours, 1 in 2; from 47 to 60 hours, 2 in 3; beyond 60 hours, four out of 5 were born dead. (Diseases of Women, Simpson, 518.)

Now, inasmuch as anæsthetics cancel two potential factors in determining this result (pain and mental anxiety) we have a right to anticipate that they will exert an influence for good, at least commensurate with the ill result of an occasional death from the direct influence of the antipathic agent. What, then, is the danger from the direct action of the anæsthetic?

The liability to error in estimating the number of deaths directly traceable to the agent employed is, of course, exceedingly great, for, notwithstanding deaths in child-bed are not uncommon where no attempt is made to occasion insensibility

to pain, yet all deaths occurring where such an attempt is made are sure to be credited to the anæsthetic. It is not necessary, however, to enlarge upon this source of error.

Cazeaux, who, as I have before stated, was opposed to the use of chloroform, except in difficult cases, says, in answer to Professor Montgomery's statement, that it was both reasonable and probable that, inasmuch as it was occasionally fatal in surgery it might likewise prove so in obstetrics, "doubtless it is possible; but happily, although a great number of women have used inhalation, not a case can be mentioned in which sudden death can be reasonably attributed thereto;" and, he adds that he "cannot regard the chloroform as chargeable with the fatal result" in the cases related by Gream.

Dr. Byford thinks the profession is almost unanimous in sanctioning "the use of anæsthetics in natural labor," and makes no mention of danger to life in enumerating the objections to their use.

Dr. Elliot, in his "Obstetric Clinic," (p. 64,) expresses the opinion that in obstetric practice "chloroform acts reliably, powerfully, and with trifling risk," and has met with alarming symptoms but once when he has "given chloroform to a woman in labor."

The Report of the "Committee of the Royal Medical and Chirurgical Society" of London, published in the "Medical Times and Gazette" for 1864, declares, "The careful administration of chloroform during labor is not attended with special danger, there being either in this country or abroad, so far as is known to this committee, no well authenticated instance of sudden death where it has been given by a medical practitioner; but the occasional occurrence of unfavorable symptoms demands the exercise of caution during its administration."

Dr. Storer, of Boston, previous to relinquishing the practice of midwifery, had made it his rule always to administer chloroform to parturient patients, and this no matter whether the labor was a rapid one or no, or whether the patient had or had not organic disease of the heart or lungs, believing that it "lessened the risk both to mother and child," and, in 1870, he still believed it the "duty" of physicians to administer an anæsthetic in child-birth.—(Gynæcological Jour., April, 1870.)

Dr. Appleton considers that it is in obstetric practice that its "most valuable" results are obtained.

Dr. Ellis thinks "its benefit in this class of cases alone, is the greatest discovery in any age of the world for the relief of suffering humanity."—(Gynæcological Journal, April, 1870.)

Dr. Tanner says its good effects may be obtained in ordinary obstetric cases without the "slightest danger at the time, or ill effect to mother or child afterwards."—(Hand-Book.)

Sir J Y. Simpson, who was the first person to use chloroform in obstetrics, and, who had, perhaps, used it more extensively than any other obstetrician, and had also most carefully collected the statistics in reference to its use, writes in 1852, that he is "not aware of any death in Scotland or elsewhere from the use of chloroform in midwifery." I am informed, though I have not myself seen the report, that a death subsequently occurred in Dr. Simpson's own practice in a labor case.

It appears, then, so far as I have been able to examine the reports of obstetricians, that the opinion is almost unanimously entertained by those who have used anæsthetics in labor, that the immediate danger from their use is very much less than in surgical operations, and the objections to its use have come almost exclusively from those who have not used it, and are based on theoretical grounds alone. The difference in danger in surgical and obstetric practice is sufficiently accounted for by the fact that the degree of anæsthesia necessary in midwifery is ordinarily much less than in surgery. But just in proportion as this is the case, must we admit the pain to be less in labor than in surgery, for if it were equal, so would the force necessary to overcome it have to be equal, and just insomuch as the pain is less in labor, must we admit the injurious effect of pain to be less than in surgery.

Dr. Snow relates 4,000 cases, not obstetric, without a death. In eight London Hospitals it was administered 1,000 times, with but 1 death; afterwards, however, in the same institutions 6 deaths occurred in 7,500 cases. In the English Hospitals generally, in 35,162 cases there occurred 11 deaths.

According to Dr. Sansom, "at the period at which he wrote, (Sept'r 1863,) chloroform had been administered 2,000,000 times, whilst the deaths that were known to have occurred

were rather over 150."—(Waring's Practical Therapeutics, p. 195.)

Admitting, however, that the danger from anæsthetics in parturition and in surgery to be relatively equal, their use may still be defended, or else the same objections must weigh equally against many of our most common remedies. Writing in 1865, Sir James Simpson informs us that Messrs. Duncan, Lockhart & Co., of Edinburg, (one of three manufacturing firms there,) send out annually two and-a-half million doses, estimating two drachms as a dose, or 7,000 doses per day, and asks, "are every two million and a half doses of opium, antimony, Epsom salts, etc., attended with as little danger and as few ultimate deaths?

The Report of the Registrar General for Great Britain shows, in answer to this question, that for "five years, from 1863—67, there were poisoned by preparations of opium, 632 individuals; by salts of lead, 242; by strychnine, 41." The Registrar General's report for 1840 also shows that for "every 1,000,000 persons living in England and Wales, 24 were poisoned by opium, and 22 by other medicines improperly given to children below the age of 5 years."—(Simpson on Diseases of Women, p. 153.) Shall we, therefore, abandon the use of opium, etc., or will it be contended that occasions in which this drug is prescribed are ordinarily more serious, or attended with greater suffering than child-birth?

The fear of hemorrhage as a secondary danger resulting from the use of anæsthetics in labor, is, perhaps, a more general apprehension than that of immediate death. The most common cause of *post partem* hemorrhage is generally admitted to be uterine inertia, and the most common cause of failure in the uterine fibres to contract firmly and persistently is exhaustion.

But the apprehension of hemorrhage is closely associated with all conditions or agents tending to occasion muscular relaxation. Hence anæsthetic agents, nearly all of which occasion general muscular relaxation, are obnoxious to this fear. But investigations have not shown that the involuntary muscular fibres are affected invariably by the same agents which affect the voluntary fibres. On the contrary it has been

positively shown that the involuntary fibres are not affected to the same degree, and it is quite possible to produce complete insensibility to pain with general muscular relaxation, without sensibly affecting the force of uterine contraction.

Cazeaux declares that prudently administered chloroform whilst completely annulling pain, "in no respect alters the regularity and power of the contractions," but he is "not entirely assured" that the "contractility of tissue," and the "retraction of the womb" may not be to some extent affected by the previous use of anæsthetics. But he is unable to refer to any satisfactory instances of hemorrhage attributable to this cause except, *perhaps*, 3 out of 4 cases of hemorrhage in 78 cases of anæsthesia reported by Dr. Channing. He refers also to Dr. Montgomery's statement that in his experience "the patient is more or less exposed to hemorrhage" when the influence of chloroform is kept up until the labor is ended.

Sir James Simpson on the other hand, whose extensive experience, approved good judgment, and unquestioned integrity, entitle his opinion to every consideration, says that "in the anæsthetic state not only does the uterus contract powerfully, but the abdominal muscles often do so also, * * * we leave intact the expulsive muscular effort, while all accompanying suffering is annulled," p. 57.

Neither is there any thing constrained in the statement that these agents do so decidedly affect the system of voluntary muscles while leaving the involuntary fibres of the uterus unaffected. We observe the same effect upon the respiratory muscles, and upon those of the heart. Respiration and circulation are usually but slightly affected except in full and complete anæsthesia, and in those cases of sudden death occurring during their use from dyspnœal syncope, occasioned, according to Dr. Richardson, by direct irritation of the vagus.

According to Mr. Bouison, the reflex or excito-motor power of the spinal marrow is not abolished by etherization except it is carried to an extreme degree, and, as the contraction of the abdominal muscles in labor is a purely reflex act, due to the reflexion upon them of the excitement emanating in the uterus, their force is likewise but slightly impaired by anæsthesia.

This view is further sustained by the fact that paraplegic women ; women in a profound state of drunkenness, and in the coma of eclampsia, have all gone through perfectly healthy and natural labors. Nor says Cazeaux, "are examples rare of the delivery of women, during a lethargy so profound as to be mistaken for death."

Dr. Elliott in his obstetric clinic relates a case where the flooding had been so profuse as to occasion syncope, with, of course, that complete relaxation which attends this state, in which, during this condition, the application of a piece of ice to the walls of the uterus caused it to contract with such force as to expel the hand of the operator together with a mass of clotted blood, (p. 224.)

Ramsbotham also states that during the continuance of puerperal convulsions with coma "although no signs of pain are manifested" the "uterine action is not suspended."—Obstetric Medicine, p. 455.

If then these conditions of insensibility to pain, and of general muscular relaxation, may be induced by disease or accidental circumstances, without impairing the force of uterine contraction, there can be no reason except the actual observation of the fact to deny that the same state may be induced by the use of medicines.

Dr. Hamilton, of Falkirk, whose obstetric success has been most remarkable—in 1,049 cases of labor he had but two still births—objects to the use of chloroform in tedious labors on the ground that he here requires the full force of the uterus which is in some measure impaired by its use. In more than one-eighth of his cases Dr. Hamilton used forceps. But this objection, admitting its propriety, does not hold in ordinary labor, where the degree of anæsthesia need not be so great, and the full power of the uterus is not so necessary for the accomplishment of delivery.

I am not, however, prepared to admit the propriety of this objection, since most obstetricians, even among those who object to its general use, urge its propriety in instrumental labors, holding that what is lost in uterine force is fully compensated by the relaxation of the soft parts, the annihilation of pain, the relief from mental anxiety, and the physical repose

of the patient with the consequent facility in applying the instruments.

Dr. Barnes commends chloroform for certain obstetric uses and says under its influence the "body" of the uterus "contracts as it should." (American Journal of Obstetrics.)

The "Committee of the Royal Medical and Chirurgical Society" were of opinion that given in moderate quantities chloroform did not ordinarily weaken the expulsive force of the uterus, but hesitated to express any opinion as to its effect upon the uterine contraction after delivery, stating that authorities were pretty equally divided on this question.

Inertia of the womb is the most common cause of *post partem* hemorrhage, and, as this is most commonly due to exhaustion, and as exhaustion is due in no less degree to pain and mental anxiety, than to the mere force of contraction in uterine fibres, it is but just to assume that whatever alleviates pain and mental anxiety lessens the exhaustion, and to that degree overcomes the tendency to inertia. Every one is familiar with the fact that even slight pain continuously acting adds in a very remarkable degree to general weariness. All of us have at times worn ill fitting shoes, and have felt how utterly exhaustive was the effort to walk with them, and how completely overcome we have been, not only with pain, but with weariness out of all proportion to the muscular effort put forth. And we are also aware to how great an extent general exhaustion interferes with the force of contraction in any particular muscle or set of muscles. Now the relation between the pain of labor and the subsequent contraction of the uterus is not different from what we elsewhere observe, and, as the pain is excessive and continuous, it must in itself tend strongly to induce that very condition which is the most frequent cause of hemorrhage, and I contend that the inertia dependent upon exhaustion is more likely to be of long duration than is the relaxation of fibre, supposing it to occur, consequent upon the direct action of chloroform; and, furthermore, even though we should have to admit that the labor is prolonged, I claim that the ill effect of its extended duration (pain, etc.) is to a great extent abrogated by the anæsthetic.

Of Still Births the record shows no increase with the use of anæsthetics, and Cazeaux, to whom I have so often referred for the double reason of his great distinction, and because he is opposed to the general use of anæsthetics, says, "whatever difference of opinion may still remain respecting the influence of chloroform upon the health of the mother, no one doubts its entire innocence as regards the fœtus. In the immense majority of cases the new-born child presents its usual appearance, its cries are neither weaker nor heard less frequently, nor does its viability appear to be in any way injured. Thus have the gloomy previsions of certain physiologists been falsified by experience" (977).

No ill effect has been observed upon the lacteal secretion where chloroform has been used, nor should it have been anticipated in an agent so transitory in its effect, except it had been shown that the general health of the mother had been materially affected by it.

The indecencies of expression alleged to occur under its use, must be of so rare a character as to entitle them to no consideration whatever, since all those obstetricians who have used it most extensively deny having ever met with it.

The objection urged by Dr. Meigs that anæsthetics are not desirable in instrumental cases because, by destroying the consciousness of the mother, we are deprived of the guidance derived from her cries, in the application of instruments, is cogently and briefly answered by Dr. Simpson, that the proper and only reliable guide is a thorough anatomical knowledge subtended by the directive agency of the fingers deeply introduced into the uterus; and, inasmuch as the anæsthesia enables the operator to introduce his hand to a greater depth, with more facility, it is especially useful in just such cases. Moreover owing to the varying sensibility of women, and the consequently different significance to be attached to their cries, the operator is far more likely to be misled than guided by them.

Now it is to be remembered that most of the objections urged against anæsthetics in midwifery have been directed against chloroform and sulphuric ether. All obstetricians admit that the effect of either of these may be carried so far as to seriously impair the force of the uterine contractions, and that in some

cases of peculiar susceptibility this danger may be incurred by very small quantities of the drug; hence earnest efforts have been made to ascertain whether these agents may not be so combined with others which shall lessen the danger attributed to them, or, whether others may not be substituted which shall not be obnoxious to the same objection.

Sir James Simpson found the contractions strengthened rather than enfeebled when ether was combined with tinc. of ergot, or, its oil. This is a branch of investigation still awaiting careful observation.

If, however, notwithstanding the combination of different agents, in any given case the womb should be found to contract imperfectly, or immediate danger should threaten, the practical conclusion is that the remedy is not suited to that particular case, and it should be at once withdrawn unless some special and more weighty reason demands its continuance. Nor does the occasional occurrence of such complications constitute a serious objection to their ordinary use, since the withdrawal of the anæsthetic almost immediately restores the patient to the condition in which she was before its administration.

Between chloroform and ether so far as direct danger or interference with uterine contraction is concerned there is, I think, little or no difference, but chloroform occasions less nausea, is more easily breathed, is more rapid in its effect, and occasions greater quietude of body. The combination of chloroform and ether has been extensively used, but it is doubtful if any advantage has accrued, and it is open to the objection that, inasmuch as they are of different densities, the ether is all given off before the chloroform begins to evaporate, so that according to Snow, we practically induce anæsthesia with ether and keep it up with chloroform, which in Dr. Richardson's judgment is puerile and simply involves the question of the propriety of quick or slow anæsthesia.

Dr. Sansom is of a different opinion and holds "that a dilution of chloroform with an equal bulk of alcohol effectually insures the administration of an atmosphere containing as nearly as possible one-half the per centage which results when undiluted chloroform is employed." "This" he says "is not all a question of vapour densities and boiling points. It is not pretended that

the evolved chloroform vapour is diluted *pari passu* with the vaporized alcohol. As I have before stated the alcohol acts chiefly in restraining the volatility of the chloroform, and thus indirectly inducing a free dilution by favoring the admixture with air. This is no vague generalization, but a deduction from experimental facts." (Braithwaite January 1871, p. 257.)

Whether Dr. Sansom is or is not right as to the restraining effect of alcohol upon the volatility of the chloroform is, in my judgment, of but little moment, since no one who has ever administered chloroform can fail to appreciate the fact that any amount of atmospheric dilution may be obtained at the will of the administrator, and there is no need of any admixture of different drugs to accomplish this result. Dr. Sansom would, no doubt, claim that such combinations determine the absolute degree of dilution, and take it out of the power of injudicious administrators to administer chloroform in too concentrated a form; but on the other hand the degree of dilution advantageous to a given case varies with the varying susceptibility of different individuals, and, since it is so easy to determine by observing its effect upon the respiration and circulation, whether or not a greater or less dilution with atmospheric air is needed, it seems quite unnecessary to lessen its efficiency in one case in order to protect patients from ignorance or carelessness in another. The judgment of the physician must be the reliance of the patient under any circumstances.

Those cases of sudden death without premonition have not been shown to be proportionately less frequent with ether than with chloroform; nor with any of the merely mechanical combinations of chloroform with ether and alcohols.

Quite a number of new anæsthetics have been introduced into surgical and obstetric practice; but of only two or three of these have there been a sufficient number of observations to entitle them to notice in a paper of this kind.

First in importance among these is Chloral Hydrate. This drug has been extensively used in parturition, and, it has been declared, with most signal advantage.

Sir James Simpson found that it interfered in no degree with the force or frequency of uterine contraction, although quite

competent to determine painless labor. It did not, in his hands, appear to have any subsequent ill effect upon mother or child. Braithwaite, July, '71, p. 236.

Mr. E. Lambert, of the Maternity Hospital, Edinburg, who has used it extensively, considers it "demonstrated that a labor can be conducted from its commencement to its termination, without any consciousness on the part of the patient, under the sole use of chloral," which, he thinks, not only does not interfere with but promotes contraction. His mode of administration is to give grs. xv. every quarter of an hour until some effect is occasioned, and to regulate the subsequent administration by the degree of that effect. Numerous cases are reported in all the journals in which this agent has been successfully used, and, so far as I have observed them, with uniform approval.

The only remaining anæsthetic to which I shall here allude is the Bichloride of Methylene, or chloromethyl ($C H_2 Cl_2$) introduced in 1867 by Dr. Richardson. It is claimed for it that its effect is more rapidly induced than that of chloroform; that it is attended with less excitement; that recovery from it is more speedy; that it less frequently nauseates, and that when it does the nausea is not so prolonged. Its vapor density is nearly that of ether, and hence its association with ether is not open to the objection urged against the conjoint use of chloroform and ether.

Mr. Spencer Wells considers it superior to chloroform in surgery. He "employed it in 180 cases of ovariotomy, in some 25 other cases of gastrotomy, and in more than 50 operations of more or less severity such as herniotomy and removal of tumors." Mr. Wells felt no uneasiness at any time for the safety of any one of these 250 cases from any effect traceable to the methyline. There was also in his cases much less nausea than is common to chloroform.

The mode of administering anæsthetic vapors, and the conditions forbidding their use do not differ in obstetric practice from that of general surgery and require no especial mention here. It is only to be remembered that it is scarcely ever necessary to carry them so far as in surgery.

I have nothing further to add in reference to obstetric anæsthesia except that, in my judgment, the foregoing facts warrant the following conclusions :

1st. That anæsthetics in labor cannot be rationally objected to on moral or physiological grounds.

2d. That they are not more dangerous to life than are medicines ordinarily employed in the treatment of troubles of equal gravity.

3d. That the danger of their use is fully counterbalanced by the danger they overcome, apart from the mere question of maternal ease.

4th. That they have not been shown to increase the liability to *post partem* hemorrhage ; nor is the inference that they are liable to do so fairly deducible from what is known of their mode of action.

5th. That they have not been shown to exert any injurious effect upon the life or subsequent health of the child.

6th. That they have not been found to affect injuriously the lacteal secretion, nor the healthful activity of any of the maternal functions.

7th. That it has not been demonstrated that chloroform is more dangerous than any other equally efficient anæsthetic.

8th. That Chloral Hydrate, and Bichloride of Methylene, give promise of greater immunity from danger, but that they have not yet been used in a sufficient number of cases to establish this claim.

And, finally, that the use of anæsthetics in midwifery cannot be defended on the ground of their absolute freedom from danger, so far as has yet been shown, but solely on the ground that the dangers from which they give exemption are at least the full equivalent of the dangers incident to them, and that their gain is in freedom from suffering.