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THE

# HISTORY OF ANÆSTHETICS

FROM

AN AMERICAN POINT OF VIEW

*Extracted from "Surgical Observations, with Cases and Operations,"*

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## P R E F A C E .

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THE Anæsthetic Process—or induction of temporary unconsciousness by the respiration of an ethereal vapour—was a great discovery, and well deserved the £20,000 awarded for it by the American Government; while the use of chloroform, and other fluids of a similar kind, instead of sulphuric ether, does not at all affect the principle thus established. But as there appears to be prevalent a very erroneous understanding with regard to the history of this subject, I deem it right, in justice to my Transatlantic brethren, that the following extract from the work of a late most distinguished surgeon\* should be rendered more accessible to British readers, by being published in a separate form.

JAMES SYME.

EDINBURGH, *31st March* 1868.

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THE  
HISTORY OF ANÆSTHETICS.

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THE change made in the practice of surgery by the discovery of the anæsthetic power of ether can scarcely be appreciated by those who have come on the stage since the introduction of this agent. It was in the city of Boston, a little more than twenty years since, that the full value of this discovery was first demonstrated and published ; and it is truly remarkable that, at the present day, artificial anæsthesia is best attained by sulphuric ether, used in substantially the same manner as when it was first tried in surgical operations at the Massachusetts General Hospital. While chloroform is acknowledged to be dangerous, and while the foreign medical journals contain frequent notices of death from the use of this potent agent, it is a striking fact that, out of the hundreds of thousands of cases of etherisation, the first undoubted case of death from its action is yet to be recorded. It is not pretended by this statement to abjure the use of chloroform, which in some cases is certainly preferable to any known anæsthetic ; being far more concentrated in form, more agreeable, and more active in administration, than any of the many substitutes which have been proposed for it. On the battle-field, especially, its greater portability is likely always to secure the preference for it over safer but more bulky anæsthetics.

The first and perhaps the most important application of ether is in producing unconsciousness of pain ; and it is for this boon that the patient will ever be chiefly thankful. To the surgeon, also, the non-infliction of pain is often a matter of the greatest moment ; for he can now undertake a long and tedious dissection or a delicate exploration of an acutely inflamed cavity, undisturbed by the involuntary movements of the patient. The power to abolish pain has also materially enlarged the domain of operative surgery, not only by diminishing the dread of common operations, and allowing of their more frequent performance, but also by admitting into the list of justifiable operations some whose severity would otherwise, in most cases, forbid even the thought of attempting.

The other great application of ether in surgery depends upon its power of relaxing the voluntary muscles by inducing a state of the brain analogous to coma. In the deep sleep of complete etherisation, the manipulation and reduction of fractures and dislocations, the diagnosis and treatment of anchyloses, the reduction of strangulated hernia, etc., are immensely facilitated. The question of its use in certain special departments of surgery will be noticed elsewhere.

This is not the place to dwell on the very important uses of ether in midwifery, and in painful or convulsive medical diseases ; but of its inestimable value in the alleviation of suffering during the last moments of life, I cannot omit this passing notice.

Having been conversant with the principal facts relating to the introduction of the inhalation of ether for surgical operations from the beginning, it may not be considered inappropriate to give, in this place, a slight sketch of its early history, more especially as, since the introduc-

tion of chloroform, and its almost complete adoption abroad, the origin of etherisation seems in danger of being lost sight of. The facts, so far as I am acquainted with them, are briefly as follows:—

In the autumn of 1846, Dr. W. T. G. Morton, a dentist in Boston, a person of great ingenuity, patience, and pertinacity of purpose, called on me several times to show some of his inventions. At that time, I introduced him to Dr. John C. Warren. Shortly after this, in October, I learned from Dr. Warren, that Dr. Morton had visited him and informed him that he was in possession of, or had discovered, a means of preventing pain, which he had proved in dental operations, and wished Dr. Warren to give him an opportunity of trying it in a surgical operation. After some questions on the subject, in regard to its action and the safety of it, Dr. Warren promised that he would do so. On the Tuesday following, October 13th, after the surgical visit at the Hospital, a patient was brought into the amphitheatre for operation. This being the first opportunity which had occurred since Dr. Warren's promise to Dr. Morton, Dr. Warren said to us: "I now remember that I have made a promise to Dr. Morton to give him an opportunity to try a new remedy for preventing pain in surgical operations," and asked the patient if he should like to have the operation done without suffering. He naturally answered in the affirmative. The operation was therefore deferred until Friday, October 16th, when the ether was administered by Dr. Morton with his apparatus, and the operation performed by Dr. Warren. It consisted in the removal of a vascular tumour of the neck, which occupied five minutes. During a part of the time, the patient showed some marks of sensibility; but subsequently said that he had no pain, although he was aware that the opera-

tion was proceeding. On the following day, a woman requiring the removal of an adipose tumour from the arm was rendered insensible by ether, given by Dr. Morton; and Dr. Warren requested Dr. Hayward, who was present, to perform the operation. This was successful; the ether being continued through the whole operation, which was a short one, and the patient being entirely insensible.

A few days afterwards, Dr. Warren informed me that he had learned from Dr. Charles T. Jackson that he had suggested the use of ether to Dr. Morton.

The success of this process in the prevention of pain was now quite established. Its use, however, was suspended for a time, for reasons which Dr. Warren has already given in his first paper on ether; and the experiments were not again resumed until November 7th, when Dr. Morton declared his willingness to state the nature of the agent employed. Two important operations were now done successfully at the Massachusetts General Hospital under its agency: one, an amputation of the thigh, by Dr. Hayward; the other, a very difficult and bloody operation—removal of a portion of the upper jaw in a woman—by Dr. Warren. On the same day, I operated on an infant for hare-lip; but, as we had thus far had little experience in the use of ether, it was not thought prudent to employ it with so young a child. With a more full experience, however, I have since given it, in this operation, at the earliest ages of life; in one, between six and eight hours after birth.

On November 12th, I performed the first successful operation under ether which was done in private practice, on a young woman, for a tumour of the arm. The ether was administered for three minutes, when the patient became unconscious. The operation then proceeded, the inhalation being continued. The patient was so entirely tranquil, that Dr.

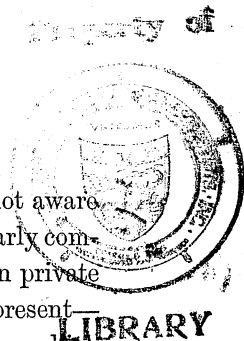


J. C. Warren, who was standing by her side, was not aware that the operation had commenced until it was nearly completed. November 21st, I did another operation in private practice, at which many of the profession were present—the removal of a formidable tumour of the thigh—which is thus described by Dr. J. C. Warren :—

“ The patient lying upon a bed, the vapour was administered by Dr. Morton, in the presence of Drs. C. T. Jackson, Reynolds, J. V. C. Smith, Flagg, Gould, Shurtleff, Lawrence, Parsons, Briggs, and others. After he had breathed the vapour for three minutes, his head fell, and he ceased to respire it ; but, presently awaking, the inhalation was renewed until he again appeared insensible. The operation was then commenced. At the first stroke of the knife, he clapped his hand on the wound ; but I immediately seized and held it during the remainder of the operation, though not without some difficulty, in consequence of his struggles. The operation was completed in one or two minutes, and the patient remained quietly on his back, with his eyes closed. On examination, the pupils were found to be dilated ; the pulse was not materially affected. After he had lain about two minutes, I roused him by the inquiry, ‘ How do you do to-day ? ’ to which he replied, ‘ Very well, I thank you.’ I then asked what he had been doing. He said he believed he had been dreaming : he dreamed that he was at home, and making some examination into his business. ‘ Do you feel any pain ? ’—‘ No.’ ‘ How is that tumour of yours ? ’ The patient raised himself in bed, looked at his thigh for a moment, and said, ‘ It is gone, and I am glad of it.’ I then inquired if he had felt any pain during the operation, to which he replied in the negative. He soon recovered his natural state, experienced no inconvenience from the inhalation, was remarkably free from pain, and in three days went home into the country.”

The preceding operations at the Hospital were followed by a variety performed there by the other surgeons of the Institution—Drs. S. D. Townsend, S. Parkman, H. J. Bigelow, and myself.

The use of ether in surgical operations being sanctioned by the Medical Board of the Hospital, the Consulting Board,



and the Board of Trustees—the last composed, as it always is, of distinguished and prominent men of Boston, having in charge important trusts\*—was, after some little resistance, gradually adopted throughout this country, and at once made use of by surgeons in Europe.

About a year after the discovery of the anæsthetic power of ether, chloroform was introduced, and, from its fascinating qualities, seemed likely to displace ether, which had the disadvantage of being disagreeable to the smell and taste, and objectionable, under certain circumstances, from its inflammability. Very soon, however, fatal accidents began to be caused by chloroform ; many of them occurring where it was given for minor operations. The proportion of deaths has continued up to the present time, and may be estimated at about one a-month for the last twenty years ; which ratio seems scarcely reduced by the use of any care or ingenuity.

Dr. John C. Warren and myself introduced into practice, and used for about five years, concentrated chloric ether, prepared by distillation after a process recommended

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OF THE McLEAN ASYLUM.—Luther V. Bell, M.D., Physician and Superintendent.

by Dr. A. A. Hayes. It had the advantage of being very agreeable to the taste, not inflammable, easily manageable, safe, and a good substitute for chloroform. Its liability to adulteration, and some accidents which subsequently occurred, probably from that cause, after its use became extensive through the country, led us to abandon the responsibility of recommending it, and to return to the use of sulphuric ether.

Ether was first administered by an apparatus. The use of this was inconvenient, especially with children, and led me to administer it on a simple sponge, which immediately took the place of the apparatus everywhere. The sponge first used at the Hospital is still preserved there.

In the course of twenty years, as already stated, not a single death can be fairly attributed to the use of sulphuric ether. In the Massachusetts General Hospital alone, it has been employed over twenty thousand times, without a single unfavourable occurrence. In some cases, particularly in young persons and females, I have seen disagreeable and troublesome symptoms occur from prolonged etherisation. From the great frequency of the use of artificial teeth, the following not unusual accident may be mentioned. In one instance, after operating upon a lady, under ether, for a tumour of the thigh, I found her in an apparently dying state ; respiration having almost ceased, and the pulse being just perceptible. Passing my finger down the throat, in order to admit a current of air to the larynx, I discovered an entire upper set of artificial teeth closely forced down on the glottis. These being withdrawn, it was only after a long persistence in the use of the usual remedies employed to recover a person from drowning, that the regular course of respiration and circulation was restored. She then became violently delirious for a time, but recovered well. I

have once or twice, in the course of etherisation, found artificial teeth loose in the mouth ; and now generally inspect it previously, when I have suspicions of their presence.

Patients subjected to long operations—such as difficult vesico-vaginal fistula in women, and cases requiring perineal section in men—should be allowed, from time to time, to partly recover from the ether, and get a supply of fresh atmospheric air into the lungs. Otherwise, from the position of the patient, which interferes with the abdominal respiration, and from the system becoming completely saturated with the anæsthetic agent, I have seen an unpleasant and prolonged depression occur a number of times, causing considerable anxiety.

For army use, chloroform will undoubtedly take the place of ether. From the prejudice in favour of ether in this country, it was thought that, during the late war, it might be substituted for chloroform. This, in practice, has been found not to be the case ; the greater portability of the latter outweighing its dangers. In fact, to a surgeon on the field of battle, it would probably have been found necessary to have abstained from the use of anæsthetics, if such a bulky and explosive article as ether had required transportation.

The following is the result of the use of anæsthetics in the army, as given in Circular No. 6 :—

“ There have been consulted, in regard to the employment of anæsthetics, the reports of 23,260 surgical operations performed on the field or in general hospitals. Chloroform was used in sixty per cent of these operations, ether in thirty per cent ; and, in ten per cent of the cases, a mixture of the two was administered. At the general hospitals, the greater safety of ether, as an anæsthetic, was commonly conceded. It was often employed, and no fatal accident from its use has been reported. In the field operations, chloroform

was almost exclusively used. The returns indicate that it was administered in not less than eighty thousand cases. In seven instances, fatal results have been ascribed, with apparent fairness, to its use."

In six of these fatal cases, the operations were trifling ; and in one only was it administered for a capital operation.

In civil practice, ether will probably, from its greater safety, gradually take the place of chloroform ; and this is already being done in some of the great cities and hospitals abroad. Professor Pétrequin, *ex* chief surgeon of the Hotel Dieu of Lyons, has recently presented to the French Academy of Sciences an article styled, "Clinical Studies on the Injurious Effects of Chloroform on the Best Constitutions and all Ages, and on the Necessity of substituting for it Rectified Ether."

It will be observed that the supporters of chloroform lay much stress on the method of its administration by an instrument, or otherwise, in order to measure the quantity given, and proper admixture with atmospheric air, from the fear of dangerous consequences. No fear or precaution of this kind is to be apprehended or required in the use of ether. In fact, the more liberally it is poured on the sponge or towel at first, the more rapid and perfect is the etherisation—the intermediate stage of excitement being avoided—and the quicker the patient expels it from the system after the operation. In children, who resist violently, one or two screams so effectually empty the lungs of atmospheric air, which is at once replaced by the vapour of ether, that insensibility is almost immediate.

Previous to a surgical operation—which, it may be here said, is always best done in the morning, unless forced otherwise by circumstances—the patient should take no solid food ; thus avoiding the occurrence of vomiting,

which not only depresses him, but much embarrasses the proceedings of the operation.

After the operation, it is best to leave the patient to recover gradually, and perhaps to sleep off the effects of etherisation, rather than to rouse him suddenly, and subject him to excitement, nausea, or headache.

A caution may be given in regard to the inflammability of ether, during the night, where artificial light is necessary for the performance of operations, and in obstetric cases. In one instance, while operating at the Hospital at night on a mutilated finger, the lamp being three feet distant, and a sponge placed over the patient's mouth, the air in the vicinity became saturated with the ether, ignited, setting fire to the sponge, bed-clothes, and even face of the patient. The flames were fortunately, in this case, extinguished without any injury to the patient, but not without causing great fright to those in the neighbouring beds. In another instance, the same accident took place from the introduction of a red-hot iron into the mouth of a patient, from whom the sponge containing ether had just been withdrawn. The flames were fortunately at once extinguished with water, which was immediately at hand. These accidents need only to be mentioned to be avoided.

The importance of having the ether properly prepared and thoroughly washed, so as to free it from alcohol and other irritating substances, should be carefully looked to. Otherwise, the action of it is disagreeable at the time, highly irritating, and its subsequent unpleasant effects more protracted. This was a fact early pointed out to me by Dr. Charles T. Jackson.