

The History of Anesthesiology

Reprint Series: Part Sixteen



Scylla—"We are having this baby, and We are having chloroform."

John Snow's most illustrious patient, as he knew her. Queen Victoria in 1853; age 36. He gave chloroform to her in 1853 and again in 1857. From *The Letters of Queen Victoria*, edited by A. C. Benson and Viscount Esher. 1907. 3 volumes. London: John Murray. Published by authority of H.M. the King.

FAMOUS PATIENTS IN ANESTHESIA

Portrait of Queen Victoria reprinted from W. Stanley Sykes' *Essays on the First Hundred Years of Anaesthesia, Volume I*, facing page 77. Reprinted by permission of Churchill-Livingstone, publisher.

FAMOUS PATIENTS IN ANESTHESIA

When the Trustees of the Wood Library-Museum of Anesthesiology sought to compile a listing of famous patients in anesthesia, it garnered, as expected, a melange of kings, queens, presidents, generals, literati et al, plus a few lesser known heroes and heroines. Famous peoples are perforce operated on from time to time, the operation per se might be a landmark, or the anesthetization of such a nature as to render the patient famous. We have chosen only to present information on seven subjects, whose narcotization marked a turning point in the maturation of the specialty.

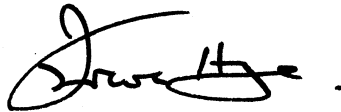
Although the account of the resuscitation of Anne Green in mid-17th century may seem irrelevant in context, the occasion does foreshadow the role assumed by anesthesiologists in life support endeavors, some 300 years later. Obscure James Venable, when etherized by Crawford W. Long, could hardly have envisioned his fame in the controversy over who should be credited with the discovery. Better known than the others, except for his opponent Morton, was ill-starred Horace Wells, the first of many still to come who would have an odontectomy under the influence of nitrous oxide. We come then to Edward Gilbert Abbott, only recently rediscovered, who is the central figure in Robert Hinckley's ether day portrait. To Queen Victoria go the kudos for her courage and determination in seeking chloroform to alleviate the pain of labor, thus disarming those who opposed the method. Finally, the deaths of Hannah Greener and Ida Wyndham under the spell of chloroform and nitrous oxide, respectively, were the first instances of recorded cardiac arrests to arouse concern.

Patients fare better these days "under the influence" and they owe their wellbeing, perhaps, to those people who unwittingly became famous subjects in anesthesia.

Leroy D. Vandam, M.D.

Miraculous deliverance of Anne Green: an Oxford case of resuscitation in the seventeenth century

J TREVOR HUGHES



On 14 December 1650 a remarkable event took place in Oxford, and of the contemporary accounts one is so detailed¹ that it constitutes an important report of an early example of resuscitation of a person presumed dead. Anne Green was executed and then revived by the two doctors who were proposing to dissect her. The case is so bizarre that a full account is of interest.

Apart from the hangman and the justices of Oxford, whose actions today appear so brutish, the persons concerned in this dramatic episode are Anne Green herself, Dr William Petty (later Sir William Petty), and Dr Thomas Willis (later Sedleian Professor of Natural Philosophy in Oxford). The circumstances arose from the custom of granting the corpse of an executed criminal to the reader in anatomy in order that an anatomical dissection might be performed for the benefit of the Oxford students of medicine.

Anatomical dissection in Oxford

A few words about the practice of anatomical dissection in Oxford are appropriate.² Until the middle of the sixteenth century, anatomical dissection of the human body was conducted in

Paper presented at the 12th World Congress of Neurology, Kyoto, Japan, September 1980.

Department of Neuropathology, Radcliffe Infirmary, Oxford OX2 6HE

J TREVOR HUGHES, MD, FRCPATH, consultant neuropathologist

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Oxford as in most European universities according to a ritual that had not been altered for centuries. The Hogarth caricature "The Reward of Cruelty," although engraved in the eighteenth century, depicts the mediaeval scene. The dissection of the cadaver is shown being performed by an assistant, while the professor sits on a raised throne above the dissection table and reads aloud from the works of either Galen or Mondino. In Oxford the anatomical dissections took place in the anatomy school, which was part of the university schools quadrangle and may be seen in Loggan's print of 1675.

In 1549, however, the statutes of the University of Oxford were revised after the visitation of King Edward VI, and this revision caused changes in the instruction of medicine. From this time the Oxford medical student was obliged to view two anatomical dissections and also to perform two dissections.

To obtain the human cadavers for these new requirements was a difficulty that was resolved in 1636 by a section of the great Charter of Charles I to the University of Oxford. This part of the charter permitted the anatomy reader to demand, for the purpose of anatomical dissection, the body of any person executed within 21 miles of Oxford. This was the statute invoked in the case of Anne Green in December 1650.

Anne Green and her "crime"

Anne Green was a maid employed by Sir Thomas Read who lived in a large house at Duns Tew in Oxfordshire. She was born at Steeple Barton and, at the time of this narrative, was 22 years of age. She was described as "of middle stature, strong, fleshy, and of an indifferent good feature." Apparently she was seduced by Mr Geoffrey Read, the grandchild of Sir Thomas Read, conceived, and subsequently gave precipitate delivery of a premature stillborn boy. The poor girl concealed the body of the child, and this body being subsequently discovered caused her to be suspected of murder. She was immediately taken into custody and taken before a justice of the peace who consigned her to the Oxford gaol where she remained for three weeks until the next sessions were held in Oxford. At the sessions she was arraigned, condemned to death, and on Saturday 14 December 1650 she was hanged.

The execution

The place of execution was the Cattle yard in Oxford. A psalm was sung and some mitigation was said of her crime with some pointed remarks against the family for whom she had worked and who had used her so ill. She was then executed in the customary way by being turned off the ladder to hang by the neck (figure). She hung for half an hour during which time some of her friends thumped her on the breast, "others hanging with all their weight upon her legs, sometimes lifting her up, and then pulling her down again with a sudden jerk, thereby the sooner to despatch her out of her pain." At this point the



The execution and resuscitation of Anne Green. (By kind permission of the Bodleian Library, Oxford.)

under sheriff required them to desist lest they should break the rope. When everyone thought she was dead, the body was taken down and put in a coffin and carried to the private house where lodged Dr William Petty, the reader in anatomy.

The resuscitation

When the coffin was opened, Anne Green was observed to make a breath and a rattle was heard in her throat. William Petty and Thomas Willis abandoned all thoughts of a dissection and proceeded to revive their patient. They caused her to be held up in the coffin and then by wrenching open her teeth they poured in her mouth some hot cordial which caused her more coughing. They then rubbed and chafed her fingers, hands, arms, and feet, and, after a quarter of an hour of this with more cordial into her mouth and the tickling of her throat with a feather, she opened her eyes momentarily. At this stage the doctors opened a vein and bled her of five ounces of blood. They then continued administering the cordial and rubbing her arms and legs. Ligatures, presumably compressing bandages, were applied to her arms and legs. Heating plasters were put to her chest and another apparently inserted as an enema, "ordered an heating odoriferous Clyster to be cast up in her body, to give heat and warmth to her bowels." They then placed her in a warm bed with another woman to lie with her (see figure) and keep her warm. This seventeenth-century account includes excellent observations on the recovery of the patient. After 12 hours she began to speak and 24 hours after her revival she was answering questions freely. At two days her memory was normal apart from the period of the execution and the resuscitation. At four days she was eating solid food, and one month after the event she was fully recovered except for the period of amnesia that had been noted at two weeks to shorten somewhat.

It is most instructive to consider the methods that these early physicians used to monitor the progress of their patient. There were frequent observations of the state of the pulse. Her colour was observed closely and soon after her revival her face was noted to be sweating, swelling, and very red, particularly near the place where the knot of the rope had been fastened. There were frequent tests of her sight and her hearing and also of her understanding of questions. Even when she was mute, she was asked to move her hand or open an eye if she could hear the question. Her memory was frequently tested by specific questions. The description was made, when her memory returned after two days, that "her memory was like a clock whose weights had been taken off a while and afterwards hung on again." At two weeks there was the interesting observation of the slight return of her memory of the execution. She remembered "a fellow in a blanket" who could only have been the executioner in his cloak. After two weeks her memory of the event remained static. Other contemporary accounts—there were so many, including a great deal of verse, that possibly the event was given as an essay subject to the students—described the great visions that Anne Green saw of the afterlife. The description cited here, however, appears quite factual and completely in accord with a modern case report.

Further career of Anne Green

The subsequent history of Anne Green is interesting. The Under Sheriff of Oxford solicited the governor of the Oxford gaol and the justices of the peace for her reprieve. The justices decided that the hand of God had preserved her, and they wished to co-operate with divine providence in granting her a reprieve pending the time that a pardon might be obtained, and this pardon was subsequently granted. Many people in Oxford had seen her during her recovery, and it seems that her father charged for admission. This collection and a subsequent financial appeal on her behalf produced many pounds, which paid the bill of the apothecary, her food and lodging, and the legal expenses of her pardon. Anne Green's fame continued after her full recovery, when she returned to some friends in the country taking with her the coffin in which she had lain. She then married, bore three children, and lived for 15 years after her famous execution and resuscitation. William Petty and Thomas Willis also achieved considerable fame from their conduct of the case. Petty left the practice of medicine shortly after but Willis went on to become an Oxford professor and then a wealthy London physician.

References

- ¹ *Newes from the Dead or A True and Exact Narration of the miraculous deliverance of Anne Green.* Written by a Scholler in Oxford. Oxford: Printed by Leonard Lichfield for Tho Robinson, 1651.
- ² Sinclair HM, Robb-Smith AHT. *A short history of anatomical teaching in Oxford.* Oxford: Oxford University Press, 1950.

Newes from the Dead.

O R

A TRUE AND EXACT

Narration of the miraculous
deliverance of

ANNE GREENE,

Who being Executed at OXFORD Dec-
cemb. 14. 1650. afterwards revived; and
by the care of certain hyſtians there,
is now perfectly recovered.

Together with the manner of her Suffering, and the
particular means uſed for her Recovery.

Written by a Scholler in OXFORD for the
Satisfaction of a friend, who deſired to be
informed concerning the truth
of the buſineſſe.

Whereunto are added certain Poems, caſually
written upon that Subject.

The Second Impreſſion with Additions.

OXFORD,

Printed by LEONARD LICHFIELD, for
THO. ROBINSON. . D. 1651.



Newes from the Dead.

Here happened lately in this Citty a very rare and remarkable accident, which being variously and falsely reported amongst the vulgar (as in such cases it is usuall) to the end that none may be deceived, and that so signall an act of Gods mercy and providence may never be forgotten, I have here faithfully recorded it, according to the Information I have received from those that were the chiefe Instruments in bringing this great worke to perfection.

In the house of Sir *Thomas Read* at *Duns-Tew* in *Oxford-shire*, there lived a maid named *Anne Greene*, born at *Steeple-Barton*, in the same County, being about 22 years of age, of a middle stature, strong, fleshie, and of an indifferent good feature; who being (as she said) often solicited by faire promises and other amorous enticements of Mr *Jeffery Read* Grand-child to the said Sir *Thomas*, a youth of about 16 or 17 years of age, but of a forward growth and stature, at last consented to satisfy his unlawfull pleasure. By which act (as it afterward appeared) she conceived, and was delivered of a Man-child: which being never made knowne, and the Infant found dead in the house of office, caused a suspicion, that she being the mother had murdered it, and throwne it there on purpose to conceale both it and her shame together. Thereupon she was immediatly taken into examination, and carried before severall Justices of the peace in the Countrey: and soone after, in an extreame cold and rainy day, sent unto *Oxford Gaole*, where having passed about three weekes more in continuall affrights and terrours, in a place as comfortlesse as her condition, she was at a Sessions held in *Oxford*, arraigned, condemned, and on Saturday the 14 of *December* last, brought forth to the place of Execution: where, after singing of a Psalm, & something

something said in justification of her self, as to the fact for which she was to suffer, and touching the lewdnesse of the Family wherein she lately lived, she was turn'd off the Ladder, hanging by the neck for the space of almost halfe an houre, some of her friends in the mean time thumping her on the breast, others hanging with all their weight upon her leggs, sometimes lifting her up, and then pulling her downe againe with a suddaine jerke, thereby the sooner to dispatch her out of her paine: insomuch that the Under-Sheriffe fearing lest thereby they should breake the rope, forbad them to doe so any longer. At length, when every one thought she was dead, the body being taken downe, and put into a Coffin, was carried thence into a private house, where some Physitians had appointed to make a Dissection. The Coffin being opened, she was observed to breath, and in breathing (the passage of her throat being streightned) obscurely to ruttle : which being perceived by a lusty fellow that stood by, he (thinking to doe an act of charity in ridding her out of the small reliques of a painfull life) stamped severall times on her breast & stomack with all the force he could. Immediately after, there came in Dr *Petty* of *Brasen-nose-Colledge* our Anatomy-Professor, and Mr *Thomas Willis* of *Christ-Church*, at whose comming, which was about 9 a clock in the morning, she yet persisted to ruttle as before, laying all this while stretched out in the coffin in a cold room and season of the yeare. They perceiving some life in her, as well for humanity as their Profession sake, fell presently to act in order to her recovery. First, having caused her to be held up in the Coffin, they wrenched open her teeth, which were fast set, and powred into her mouth some hot and cordiall spirits; whereupon she rutled more then before, and seemed obscurely to cough: then they opened her hands (her fingers also being stiffly bent) and ordered some to rub and chafe the extreme parts of her body, which they continued for about a quarter of an houre; oft, in the mean time, powring in a spoonfull or two of the cordiall water; and besides tickling her throat with a feather, at which she opened her eyes, but shut them againe presently. As soon as they perceived any heat in her extreame parts, they thought of letting her blood: & no sooner

sooner was her arme bound for that purpose, but she suddenly bent it, as if it had been contracted by a fit of the Convulsion : the veine being opened, shee bled about five ounces, and that so freely that it could not easily be stopped. All this while her pulse was very low, but otherwise not much amisse. Her arm being bound up again, and now and then a little cordial water powr'd down her throat, they continued rubbing her in several places, caused Ligatures to be made in her armes and leggs, and then ordered her to be laid in a bed well warmed : then they caused her neck, and also her temples to be anointed with confortative oyles and spirits, and so likewise the bottoms of her feet, and upon this shee beganne to open her eies and to move the lower parts of her body. About this time came in Mr *Bathurst* of *Trinity* Colledge, and Mr *Clerke* of *Magdalen* Colledge, whose advice and endeavours were then and all the time afterwards concurrent with those of the other two above meutioned. Then they applyed a plaister to her breasts, and ordered an heating odoriferous Clyster to be cast up in her body, to give heat and warmth to her bowels : after that, they perswaded a woman to goe into bed to her, and to lye very close to her, and gently to keep rubbing of her. After all which shee seemd about noon to be in a sweat. Her face also began somewhat to swell and to look very red on that side on which the knot of the halter had been fastned.

Whilst the Physicians were thus busie in recovering her to life, the Undersheriffe was solliciting the Governour and the rest of the Justices of Peace for the obtaining her Reprieve, that in case she should for that present be recovered fully to life, shee might not be had backe again to Execution. Whereupon those worthy Gentlemen, considering what had happened, weighing all circumstances, they readily apprehended the hand of God in her preservation, and being willing rather to co-operate with divine providence in saving her, then to overstrain justice by condemning her to double shame and sufferings, they were pleas'd to grant her a Reprieve untill such time as her Pardon might be compleatly obtained.

All this while she had no sooner opened her eyes, but presently she shut them again, and being call'd upon to try whether she could hear or speak, there appeared no sign that she could do either. Soon after, they made tryal again : bidding her, if she understood them, to move her hand, or open her eies. Whereupon she obscurely opened her

eyes. The Physicians fearing least her face might swell more & more, and a Feaver come upon her, by reason of the former suffocation, took from her right arme about nine ounces more of blood, and then ordered her a Julep, and other cordiall things to be administred upon occasion, and so left her for that night: and about two houres after she began to speake many words intelligible.

On Sunday the 15 about 8 in the morning, they return'd, and found her much amended, being able to answer to any question propounded unto her. Shee then complained of her throat, (but not much of any other part) whereunto they ordered a Cataplasme to be applyed: then she complaining of drought, a Julep was offered her, which she first took with difficulty, and at last refus'd: warme beere being given her, she disrelished it, but of cold she drank and thanked them.

All this while she lay often sighing and talking to her selfe, as if she had been still to suffer. About noone she felt an extreame sore-nesse in her breast and sides, but there appeared nothing discoloured or like a Contusion. That night they ordered her a Clyster, & a Cataplasme to be applied to her breast and sides, with other means to prevent what evill might ensue by reason of contus'd blood, and so left her to rest. About 9 of the clock she laughed and talked merrily, looking fresh and of a good colour: being a litle feverish, her tongue not furr'd nor clammy.

Munday the 16, they found that she had taken some rest, and her feaver not much encreas'd: they then tooke from her left arme about six ounces of blood more: she fainted not, but talked very cheerfully, complaining somewhat of her neck, stomach, and throat.

But before they let her blood, having first caused all to depart the roome, except those Gentlemen that were of the Faculty, they asked her of her sense and apprehension during the time of her suffering she answered, that after she put off some of her clothes, bequeathing them to her Mother (which was early in the morning before her execution) and heard some one say that one of the prisoners was le out of the chaine to put her to death, she remembered nothing at all that had been done unto her: and that she knew not when her fetters were knock'd off, or how she came out of prison, or that she had bin upon the Gallow's, neither could she remember that any Psalm had bin sung, or that she said any thing there: notwithstanding that

that were present do testify that she spake very sensibly : onely about a fortnight after, she seemed to remember something of a fellow wrapt up in a bláket, which indeed was the habit of her Executioner.

It is observable also, that when she came to her selfe againe, she fell into the like speeches as she had used in prison before the execution : seeming there to go on where she had so long time left off; like to a Clock whose weights had been taken off a while, and afterwards hung on againe.

That night she was fomented about the sides and other contused places, her neck being very sore, especially on the right side, where it was all black, and began to blister : there appeared also diverse spots of setled bloud on her right cheek.

Tuesday the 17 in the morning they found her pulse slow, but very unequall : her tongue not very dry nor rough : the night before she slept well; in the morning she arose, but her head was so light that she could hardly stand upright : she now complained of paine beneath the pit of her stomach : she complained also of a deadnesse in the tipp of her tongue, thinking she had bitten it in the time of her suffering : she call'd this day for some bread, which she did eat, being first toasted and moistned in beare. At night when they visited her againe, the paine of her neck and throat was decreased : the spots of setled bloud about her cheek and neck lessened, but the deadnesse of her tongue still remained. That night she slept 6 or 7 houres : and on the 18 in the morning had no feaver; her pulse was much amended; all Symptomes lessened; the paines in her breast seemed to descend into the region of the belly, being (as 'twas conceived) not in the bowells, but only in the musculous outward parts.

The 19 she was up, and did eat part of a chick. All Symptomes decreased : yet could she not goe, without the help of somewhat to uphold her. Her neck still sore, but mending. The deadnesse of her Tongue lessened. That night she slept well. About foure or five daies after, being hard frosty weather, there appeared a blacknesse over the lower part of her right arme, and upon her flankes on the same side : which by degrees waxed yellow, and in foure or five daies vanished.

By this time, the care of the Physitians was well over. The paines in her breast and side when she drew in her breath, as also the inequality of her pulse (which caused a insuspition of a contusion and extravasated bloud spilt on the Lungs) being now fully ceased. The deadnesse of her tongue and sorenesse of her neck quite gone. There

remained onely a giddinesse in her head when she walked or stirr'd her body, which in a short time likewise left her. And now being able to walk about the town, eat, drink, and sleep aswell as before the accident had befallen her, she had liberty to repair (and is since gone) unto her friends in the Country; taking away with her the Coffin wherein she lay, as a Trophy of this her wonderful preservation.

Thus, within the space of a Moneth, was she wholly recovered and in the same Room where her Body was to have been dissected for the satisfaction of a few, she became a greater wonder, being reviv'd to the satisfaction of multitudes that flocked thither daily to see her.

One thing more I had almost forgotten; that when the number of people still pressing into the house began to be too impetuous, as the Physicians had obtained of the Governour to have a Guard plac'd at the door; yet because those of the better sort could not altogether be denied admission, they thought it a seasonable opportunity for the maid's behalfe, to invite them either to exercise their Charity or at least to pay for their Curiosity. And therefore (themselves first leading the way) they commended it to those that came in, to give every one what they pleas'd, her Father being there ready to receive it. After a few daies the Governor (a Gentleman as much to be belov'd for his Courtesie, as hee is honour'd for his Prudence) committ'd himselfe to see her, did not onely contribute to her in a liberal manner, but also improved his charity with many pertinent and wholesome instructions. By this meanes there was gathered for her to the summe of many pounds: whereby not onely the Apothecaries Bill and other necessities for her Dyet and lodging were discharged, but some overplus remained towards the suing out of her Pardon.

And now, having done with the Sufferings, and the Cure, it will not be amisse to look back, and take a Reveiw of the Cause of this sad matter of fact for which she suffered: which (as I have said) was the supposed murder of her own Infant.

There are two things, very considerable, alledged on her behalfe, and that may seem to cleer her Innocence as to that businesse.

The first is, that the Childe was abortive or stillborn, and consequently not capable of being murder'd. The other, that she did not certainly know that she was with childe, and that it fell from her unawares as she was in the house of office.

As for the first, it is evident that the child was very unperfect, being not above a span in length, and the sexe hardly to be distinguished: so that rather seem'd a lump of flesh, then a well and duly form'd

med Infant. The Midwife said also, that it had no hair, and that she did not beleieve that ever it had life. Besides, her fellow-servants do testifie, that shee had certain Issues for about a month before shee miscarried, which were of that nature (Physicians say) as are not consistent with the vitality of a child: the eruption of which Issues came on her after shee had violently labour'd in skreening of malt. Lastly, it is not likely that the Child was vital; the mischance happening not above 17. weekes after the time of her conception.

For the 2. that shee might not know certainly that she was with childe, it is not improbable: for shee was not 10. weeks without the usual Courses of women, before she had those continual Issues which lasted for a Moneth together: which long and great Evacuation might make her judge, that it was nothing else but a flux of those humors which for ten weeks before had been suppressed; and that the childe which then fell from her unawares, was nothing but a lump of the same matter coagulated. As for the pain, it must needs be different in such cases from that which accompanies the timely fruit of the womb: and by reason of those Issues coming from her, for so long continued a time before she could not have those throwes and passions at the time of her abortion, as women in travel are subject unto.

Adde to all this, that at her Tryall she ingenuously confessed as much as was alledged by the witnesses: and continued in the same assertions, not only before, but at her Execution, the last supposed minute of her life; and the very first words, after she came to her self again (which certainly were not spoken with design, or purpose to deceive) confirmed the same.

There is yet one thing more which hath been taken notice of by some, as to the Maid's defence; That her Grand Prosecutor Sir *Thomas Read* died within three daies after her Execution; even almost as soon as the probability of her reviving could be well confirmed to him. But because hee was an old man, and such Events are not too rashly to be commented on, I shall not make use of that observation.

It may perhaps be expected by some (and 'tis pity I can give them no better satisfaction) that I should here relate some story (like those of *Orpheus* or *Æneas* in the Poëts) of what fine visions this maid saw in the other world; what celestiall musick, or hellish howling she heard; what spirits she conversed with; and what Revelations she brought back with her, concerning the Present Times, or the Events of things to come. But for such matters the Ballad-makers must rest contented: since shee (as you have heard) was so far from

knowing any thing whilst shee was dead, that shee remembred not what had happened to her even when shee was yet alive. Her spirits, at that time, being either so fixed or benumbed with fear, as not to admit of any new Impressions; or otherwise so turbulent and unquiet, as presently to discompose and obliterate them. As we often see it fares with men that are buzz'd in the head with drink, or transported with madnesse, who, though they seem sensible enough of every present object that moves them, yet after they recover can own but little of what they did or said before.

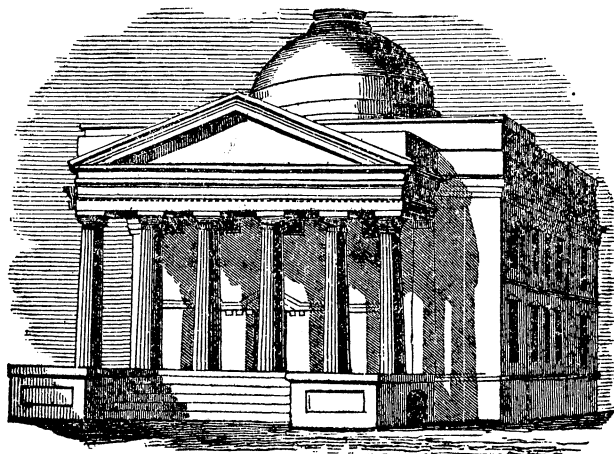
Having here done with the Story, I cannot but reflect upon the generous attempt of those Gentlemen that freely undertook, and have so happily performed the Cure. That whilst they missed the opportunity of improving their knowledge in the dissection of a Dead body, they advanced their fame by restoring to the world a Living one: who now (deservedly) accounts it her happinesse to have fallen into such courteous and skilfull hands: not only for their successfull endeavours used in her Recovery, but for being a means to vindicate her from that foul stain of Murder, which, in most mens judgment (and, perhaps, Heaven it selfe also bearing witness) was so harshly charged upon her.



SOUTHERN MEDICAL AND SURGICAL JOURNAL.

EDITED BY

PAUL F. EVE, M.D.,
PROFESSOR OF SURGERY IN THE MEDICAL COLLEGE OF GEORGIA,
AND ONE OF THE RECENT VICE-PRESIDENTS OF THE
NATIONAL MEDICAL ASSOCIATION.



Medical College of Georgia.

"Je prends le bien où je le trouve."

VOL. V.—1849.—NEW SERIES.

Augusta, Ga.
JAMES McCafferty,
PRINTER AND PUBLISHER.

1849.

SOUTHERN
MEDICAL AND SURGICAL
JOURNAL.

Vol. 5.]

NEW SERIES.—DECEMBER, 1849.

[No. 12.]

PART FIRST.

Original Communications.

ARTICLE XXXVIII.

An account of the first use of Sulphuric Ether by Inhalation as an Anæsthetic in Surgical Operations. By C. W. LONG, M. D., of Jefferson, Jackson Co., Georgia.

For nearly three years, the various medical journals have contained numerous articles on the employment of Sulphuric Ether by Inhalation, for the purpose of rendering patients insensible to pain during surgical operations.

The first notice I saw of the use of ether, or rather of Dr. Morton's "Letheon," as an anæsthetic, was in the editorial of the Medical Examiner for December, 1846, in which the editor gives the following extract from a paper by Dr. H. J. Bigelow, contained in the Boston Journal:—"The preparation (letheon) is inhaled from a small two-necked glass globe, and smells of ether, and is, we have little doubt, an ethereal solution of some narcotic substance."

Having on several occasions used ether, since March, 1842, to prevent pain in surgical operations, immediately after reading this notice of "letheon," I commenced a communication to the editor of the Medical Examiner, for publication in that Journal, to notify the medical profession that sulphuric ether, when inhaled, would of itself render surgical operations painless, and that it had then been used by me for that purpose for more than four years. I was interrupted when I had written but a few lines, and was prevented, by a very laborious country

practice, from resuming my communication, until the Medical Examiner for January, 1847, was received, which reached me in a few days after reading the December number. It contained several articles, giving accounts of different experiments in etherization, in which surgical operations were performed without pain. On reading these articles, I determined to wait a few months, before publishing an account of my discovery, and see whether any surgeon would present a claim to having used ether by inhalation in surgical operations prior to the time it was used by me.

A controversy soon ensued between Messrs. Jackson, Morton and Wells, in regard to who was entitled to the honor of being the discoverer of the anæsthetic powers of ether, and a considerable time elapsed before I was able to ascertain the exact period when their first operations were performed. Ascertaining this fact, through negligence I have now permitted a much longer time to elapse than I designed, or than my professional friends with whom I consulted advised; but as no account has been published, (so far as I have been able to ascertain,) of the inhalation of ether being used to prevent pain in surgical operations as early as March, 1842, my friends think I would be doing myself injustice, not to notify my brethren of the medical profession of my priority of the use of ether by inhalation in surgical practice.

I know that my interests have suffered from not making an earlier publication, and I would not be persuaded at this late stage of the ether controversy to present my claim to being the first to use ether as an anæsthetic in surgical operations, if I were not fully satisfied of my ability to establish its justness.

In the month of December, 1841, or January, 1842, the subject of the inhalation of nitrous oxide gas was introduced in a company of young men assembled at night in this village, (Jefferson,) and several persons present desired me to prepare some for their use. I informed them that I had no apparatus for preparing or preserving the gas, but that I had a medicine (sulphuric ether) which would produce equally exhilarating effects; that I had inhaled it myself, and considered it as safe as the nitrous oxide gas. One of the company stated, that he had inhaled ether while at school, and was then willing to inhale

it. The company were all anxious to witness its effects. The ether was introduced: I gave it first to the gentleman who had previously inhaled it, then inhaled it myself, and afterwards gave it to all persons present. They were so much pleased with the exhilarating effects of ether, that they afterwards inhaled it frequently, and induced others to do so, and its inhalation soon became quite fashionable in this county, and in fact extended from this place through several counties in this part of Georgia.

On numerous occasions I have inhaled ether for its exhilarating properties, and would frequently, at some short time subsequent to its inhalation, discover bruised or painful spots on my person, which I had no recollection of causing, and which I felt satisfied were received while under the influence of ether. I noticed, my friends, while etherized, received falls and blows, which I believed were sufficient to produce pain on a person not in a state of anæsthesia, and on questioning them, they uniformly assured me that they did not feel the least pain from these accidents. These facts are mentioned, that the reasons may be apparent why I was induced to make an experiment in etherization.

The first patient to whom I administered ether in a surgical operation, was Mr. James M. Venable, who then resided within two miles of Jefferson, and at present lives in Cobb county, Ga. Mr. Venable consulted me on several occasions in regard to the propriety of removing two small tumours situated on the back part of his neck, but would postpone from time to time having the operations performed, from dread of pain. At length I mentioned to him the fact of my receiving bruises while under the influence of the vapour of ether, without suffering, and as I knew him to be fond of, and accustomed to inhale ether, I suggested to him the probability that the operations might be performed without pain, and proposed operating on him while under its influence. He consented to have one tumour removed, and the operation was performed the same evening. The ether was given to Mr. Venable on a towel; and when fully under its influence I extirpated the tumour. It was encysted, and about half an inch in diameter. The patient continued to inhale ether during the time of the operation; and

when informed it was over, seemed incredulous, until the tumour was shown him. He gave no evidence of suffering during the operation, and assured me, after it was over, that he did not experience the slightest degree of pain from its performance. *This operation was performed on the 30th March, 1842.*

The second operation I performed upon a patient etherized was on the 6th June, 1842, and was on the same person, for the removal of another small tumour. This operation required more time than the first, from the cyst of the tumour having formed adhesions to the surrounding parts. The patient was insensible to pain during the operation, until the last attachment of the cyst was separated, when he exhibited signs of slight suffering, but asserted, after the operation was over, that the sensation of pain was so slight as scarcely to be perceived. In this operation, the inhalation of ether ceased before the first incision was made: since that time I have invariably desired patients, when practicable, to continue its inhalation during the time of the operation.

Having so long neglected presenting my claim to the discovery of the anæsthetic powers of ether; for the purpose of satisfying the minds of all, of its justness, I have procured, I conceive, a sufficient number of certificates to establish the claim indisputably. I present, first, the certificate of James M. Venable, the patient on whom the first experiments in etherization were made, and no comments on it, I conceive, are necessary.

[NOTE.—A few months ago, Dr. Long informed us of his early attempts at etherization, in Surgery. He was then informed that any claim set up at this late day to priority of discovery, would be severely criticised, if not violently resisted; and that he had best, therefore, do all he could to fortify his position. He has accordingly sent us a number of certificates, properly attested; but as it is unusual for medical journals to admit these, and as besides, in our profession, the word of a gentleman is sufficient on all points of controversy, these are of course omitted here. We state, however, they may be seen by any one curious in the matter, and their character may be judged of by the two following, bearing most pointedly on the subject under discussion.

We have only to add, that the writer of this communication is a highly worthy member of the medical profession, exceedingly modest in his pretensions and entitled to full credit for all he advances.]—EDT.

(CERTIFICATES.)

I, James M. Venable, of the county of Cobb, and State of Georgia, on oath, depose and say, that in the year 1842, I resided at my mother's, in Jackson county, about two miles from the village of Jefferson, and attended the village academy that year. In the early part of the year the young men of Jefferson, and the country adjoining, were in the habit of inhaling ether, for its exhilarating powers, and I inhaled it myself frequently for that purpose, and was very fond of its use.

While attending the academy, I was frequently in the office of Dr. C. W. Long, and having two tumours on the side and rather back of my neck, I several times spoke to him about the propriety of cutting them out, but postponed the operation from time to time. On one occasion, we had some conversation about the probability that the tumours might be cut out while I was under the influence of S. ether, without my experiencing pain, and he proposed operating on me while under its influence. I agreed to have one tumour cut out, and had the operation performed that evening after school was dismissed. This was in the early part of the spring of 1842.

I commenced inhaling the ether before the operation was commenced, and continued it until the operation was over. I did not feel the slightest pain from the operation, and could not believe the tumour was removed until it was shown to me.

A month or two after this time, Dr. C. W. Long cut out the other tumour, situated on the same side of my neck. In this operation I did not feel the least pain until the last cut was made, when I felt a little pain. In this operation, I stopped inhaling the ether before the operation was finished.

I inhaled the ether, in both cases, from a towel, which was the common method of taking it.

JAMES M. VENABLE.

GEORGIA, Cobb county, }
July 23d, 1849. } Sworn to before me.

ALFRED MANES, J. P.

I certify that I was a pupil in the Academy in Jefferson, Jackson county, Ga., in the year 1842. Some time during the spring of that year I was present, and witnessed Dr. C. W. Long cut out a small tumour from the neck of James M. Venable. I am well acquainted with the smell of sulphuric ether, and know that Mr. Venable inhaled it, before and during the time of the operation. He made no sign of suffering pain during the operation; and after the tumour was cut out, he asserted that he did not feel any pain from the cutting out of the tumour.

A few months after this operation, Mr. Venable informed me that Dr. Long had cut out another tumour from his neck, while he was under the effects of ether, and that he did not feel any pain from the operation. Mr. Venable was a pupil in the Academy during the year 1842, and I was intimate with and heard him speak of the operations frequently, and he always asserted they were performed without pain. I know the operations were performed in the year 1842: my brother, Wm. H. Thurmond, had charge of the academy that year, and it was the only time I was a pupil in the academy.

August 21st, 1849.

ANDREW J. THURMOND.

In addition to Mr. Venable's, I present the certificates of E. S. Rawls and Wm. H. Thurmond, who were present, and witnessed one or both operations.

* * * * *

My third experiment in etherization was made on the 3rd July, 1842, and was on a negro boy, the property of Mrs. S. Hemphill, who resides nine miles from Jefferson. The boy had a disease of a toe, which rendered its amputation necessary, and the operation was performed without the boy evincing the least sign of pain.

I present Mrs. Hemphill's statement of the report the boy gave her of the operation on his return home, which I conceive is sufficient on this point.

* * * * *

These were all the surgical operations performed by me during the year 1842, upon patients etherized; no other case occurring in which I believed the inhalation of ether applicable. Since '42, I have performed one or more surgical operations annually, on patients in a state of etherization.

The question will no doubt occur, why did I not publish the results of my experiments in etherization soon after they were made? I was anxious, before making my publication, to try etherization in a sufficient number of cases to fully satisfy my mind that anæsthesia was produced by the ether, and was not the effect of the imagination, or owing to any peculiar insusceptibility to pain in the persons experimented on.

At the time I was experimenting with ether, there were physicians "high in authority," and of justly distinguished character, who were the advocates of mesmerism, and recommended

the induction of the *mesmeric state* as adequate to prevent pain in surgical operations. Notwithstanding thus sanctioned, I was an unbeliever in the science, and of the opinion, that if the mesmeric state could be produced at all, it was only on "those of strong imagination and weak minds," and was to be ascribed solely to the workings of the patient's imaginations. Entertaining this opinion, I was the more particular in my experiments in etherization.

Surgical operations are not of frequent occurrence in a country practice, and especially in the practice of a young physician; yet I was fortunate enough to meet with two cases in which I could satisfactorily test the anæsthetic power of ether. From one of these patients I removed three tumours the same day: the inhalation of ether was used only in the second operation, and was effectual in preventing pain, while the patient suffered severely from the extirpation of the other tumours. In the other case, I amputated two fingers of a negro boy: the boy was etherized during one amputation, and not during the other; he suffered from one operation, and was insensible during the other.

I have procured the certificates of the lady from whom the tumours were removed and of her husband, who was present and witnessed the operations; and also that of the owner of the boy, establishing the fact of the insensibility of the patients to pain during these operations. These certificates were procured in preference to those establishing other operations, because they not only show that the experiments were continued from year to year, but also show that they were conducted so as to test the power of etherization.

* * * * *

After fully satisfying myself of the power of ether to produce anæsthesia, I was desirous of administering it in a severer surgical operation than any I had performed. In my practice, prior to the published account of the use of ether as an anæsthetic, I had no opportunity of experimenting with it in a capital operation, my cases being confined, with one exception, to the extirpation of small tumours, and the amputation of fingers and toes.

I have stated that ether was frequently inhaled in this and

some of the adjoining counties, for its exhilarating effects; and although I am conscious that I do not deserve any credit for introducing its use for that purpose, yet as others, through their friends, have claimed to be the first to shew its safety, most of the certificates I have obtained establish the fact of its frequent inhalation for its exhilarating effects. I met with R. H. Goodman, who was present the night ether was first inhaled in Jefferson, and who removed to Athens, and introduced its inhalation in that place, and present his certificate. All the young gentlemen who were present the night I first administered ether, with one exception, are living, and their certificates can be procured, if necessary.*

* * * * *

I have now, in a very concise manner, presented a "plain, unvarnished" account of some of my experiments in etherization, and have said nothing of the comparative merits of ether, and the other anæsthetics, because that was foreign to my present subject. Had I been engaged in the practice of my profession in a city, where surgical operations are performed daily, the discovery would, no doubt, have been confided to others, who would have assisted in the experiments; but occupying a different position, I acted differently, whether justifiable or not. The result of my second experiment in etherization, was such as led me to believe that the anæsthetic state was of such short duration that ether would only be applicable in cases in which its effects could be kept up, by constant inhalation, during the time of the performance of the operations. Under this impression, up to January, 1847, I had not used ether, in but one case, in extracting teeth, and thus deprived myself of experimenting in the only class of cases which are of frequent occurrence in a country practice.

While cautiously experimenting with ether, as cases occurred, with the view of fully testing its anæsthetic powers, and its applicability to severe, as well as minor, surgical operations, others, more favorably situated, engaged in similar experiments; and consequently the publication of etherization did not "bide my time." This being the case, I leave it with an enlightened

* Our friend, Dr. Long, can lay no claim to the introduction of sulphuric ether as an exhilarating agent when its vapour is inhaled.—*EDT.*

medical profession, to say, whether or not my claim to the discovery of etherization is forfeited, by not being presented earlier, and with the decision which may be made, I shall be content.

INDEX TO VOL. V.

OF CONTRIBUTORS.

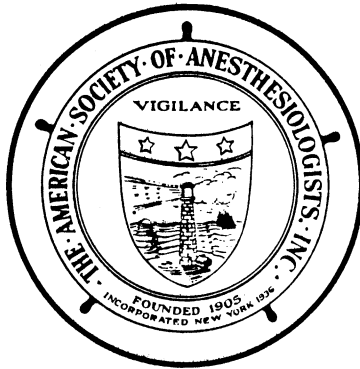
	PAGE.		PAGE.
Blackburn, J. C. C., M.D. Case of Rupture Uterus.....	72	Gordon, James M., M.D. On Ranula	65
Campbell, H. F., M.D. Infantile Paroxysmal Convulsions.....	591	Harper, P. W., M.D. Cases in Obstetrical.....	715
Campbell, H. F., M.D. Scirrhus Degeneration of the Pancreas....	336	Harriss, Juriah, M.D. Cholera in the Hospitals of Paris.....	388
Cooper, George F., M.D. Case of extensive Gun-shot wound—recovery.....	396	Harriss, Juriah, M.D. Properties of the Saliva, &c.....	202
Cullender, George D., M.D. Singular case of Hysteria.....	400	Harris, James C., M.D. Topography, Meteorology and Diseases of Wetumpka, Ala.....	513
Dugas, L. A., M.D. Clinical Lecture on Colic.....	577	Jones, W. L., M.D. Observations on Malarious Influences.....	449
Dugas, L. A., M.D. Clinical Lecture upon Syphilis.....	321	Le Conte, John, M.D. The Philosophy of Medicine.....	257
Dugas, L. A., M.D. Malformation of the Genito-Urinary Apparatus..	193	Long, C. W., M.D. First use of Sulphuric Ether by Inhalation.....	705
Erskine & Sheffield, M.D's. Cases operated on under Chloroform....	713	Mastin, C. H., M.D. Rupture of Quadriceps Femoris Muscle.....	714
Eve, Joseph A., M.D. Review of Meigs' Obstetrics.....	286	Mayes, J. A., M.D. On an Indigenous, Deobstruent and Alterative Compound.....	376
Eve, Joseph A., M.D. Review of Smith's work on Parturition, &c..	655	Mayes, J. A., M.D. Treatment of Malarial Fevers.....	140
Eve, Paul F., M.D. Amputation at Shoulder-joint.....	533	Means, Alexander, M.D. History of Chemistry.....	128
Eve, Paul F., M.D. Case of Natural Anæsthesia.....	718	Oakman, Erwin H., M.D. Therapeutic action of Quinine.....	207
Eve, Paul F., M.D. Deaths from Sulphuric Ether.....	342	O'Keeffe, D. C., M.D. Researches in Cornine, or Dogwood Bark.....	1
Eve, Paul F., M.D. Case of death from foreign body in pharynx and larynx.....	73	Pendleton, E. M., M.D. Statistics of Diseases, &c.....	461
Eve, Paul F., M.D. Report of Surgical Clinic in Medical College of Georgia.....	29	Pendleton, E. M., M.D. Statistics of Diseases of Hancock Co.....	526
Eve, Paul F., M.D. Lithotomy—117 Calculi.....	146	Pendleton, E. M., M.D. Statistics of Diseases of Hancock Co.....	647
Eve, Paul F., M.D. State Medical Convention.....	188	Roberts, W. H., M.D. Schirro-Cancer of Vagina and Uterus.....	464
Eve, Paul F., M.D. Report of operations under Anæsthetic agents....	278	Rossignol, Henry, M.D. Translation from French, of a case of Expulsion of iron Fork per anum....	534
Eve, Paul F., M.D. Notice of the Mineral Springs of Georgia.....	442	Sheffey, L. B., M.D. A case of Strangulation of Intestine.....	654
Eve, Paul F., M.D. Removal of large Polypus from the Nose.....	466	Twigg, J. D., M.D. Therapeutic Effects of Tobacco against Worms.....	641
Eve, Paul F., M.D. Lithotomy, case of large calculus.....	596	Westmoreland, J. G., M.D. On Fever.....	69
Eve, Paul F., M.D. Meteorology at end of each No.....		Wooten, H. V., M.D. Death from a drop of Laudanum.....	398
Gordon, James M., M.D. Letter on continuance of this Journal.....	120	Word, R. C., M.D. Mammary Abscess treated by Hyd. Pot.....	533

UNDER THE INFLUENCE

A History of Nitrous Oxide and Oxygen Anaesthesia

Dr. Wells - who sat next to him - noticed the circumstance, and as the audience was retiring, asked me why a man could not have a tooth extracted without pain while under the influence of the gas . . . (Colton, 1886).

W. D. A. SMITH



THE WOOD LIBRARY-MUSEUM OF ANESTHESIOLOGY
Park Ridge, Ill., 1982

Reprinted from **UNDER THE INFLUENCE: A History of Nitrous Oxide and Oxygen Anaesthesia**, by W.D.A. Smith, Macmillan Publishers, Ltd., London and Basingstoke, 1982. *Reprinted by permission of Macmillan, London and Basingstoke.*

THE CRUCIAL EXPERIMENT, ITS ECLIPSE, AND ITS REVIVAL

I make no claim to any merit in the matter myself; but it is a great pleasure to remember that at the request of Wells, I gave the gas and produced the first anaesthetic condition for a surgical operation.
(Colton, 1868)

The story of the introduction of inhalation anaesthesia for the relief of pain during surgical operations has been confused by the clamour of the rival claimants to its discovery, and their supporters; but it has been told many times. In re-telling it here, prominence is given to the tale of nitrous oxide anaesthesia. The question of who "discovered" surgical anaesthesia is played down. Re-evaluation of all the evidence has not been attempted. This would entail a major research effort which should, for preference, be carried out in America.

Gardner Quincy Colton.

The researches of Humphry Davy at Thomas Beddoes' Pneumatic Institution (see Part I, Smith, 1965a) stimulated interest in nitrous oxide in Europe and America. His scientific observations were repeated and praised; but the greatest applause was for the effects of inhaling the gas, which he had discovered and then persuaded volunteers to experience and comment upon—including Boulton and Watt, Kinglake, Joseph Priestley's son, Coleridge, Southey, Roget and Wedgewood. In the course of time others were to provide facilities for breathing the gas as an entertainment, and among them was Gardner Quincy Colton (fig. 1).

Colton had entered the College of Physicians and Surgeons, New York, in 1842, when he was twenty-eight years old, and he studied under Dr. Willard Parker*; but after two years he became

short of money and had to leave. For a livelihood he took up lecturing on popular scientific subjects, including the effects of breathing nitrous oxide (McNeille, 1898; Fulton, 1930; Waters, 1944; Duncum, 1947, p. 94). According to Fulton (1930) he learned of the exhilarating effects of nitrous oxide during his early studies, and Willard Parker has certainly been quoted as having referred to the inhalation of nitrous oxide by medical students as early as 1831 (Wells, 1935). Even if Willard Parker was partly responsible for Colton learning about the gas, however, apparently he did not feel



FIG. 1

Gardner Quincy Colton (1814-98) (from Nevius, 1894, facing p. 93). By courtesy of The Wellcome Trustees.

* Dr. Willard Parker (1800-84) graduated M.D. from Harvard in 1830, presenting an inaugural dissertation entitled "A Thesis on Nervous Respiration". He was a renowned teacher and he became Professor of Surgery in 1832. He may have been the first in America to operate successfully upon an abscessed appendix (Warbasse, 1907; *Dictionary of American Biography*).

strongly in favour of Wells's use of it for the production of anaesthesia, because later he was a member of an active group which met in his house in New York to support Morton's claims to the "discovery" of 'anaesthesia' (Veits, 1946). The following advertisement, which Colton placed in the *Hartford Daily Courant* on December 10, 1844, bears a striking resemblance to the bill which advertised Samuel Colt's nitrous oxide demonstration in Portland twelve years before (see part II, Smith, 1965b).

A Grand Exhibition of the effects produced by inhaling Nitrous Oxid, Exhilarating or Laughing Gas! will be given at Union Hall, this (Tuesday) Evening, Dec. 10th, 1844.

Forty Gallons of Gas will be prepared and administered to all in the audience who desire to inhale it.

Twelve Young Men have volunteered to inhale the Gas, to commence the entertainment.

Eight Strong Men are engaged to occupy the front seats, to protect those under the influence of the Gas from injuring themselves or others. This course is adopted that no apprehension of danger may be entertained. Probably no one will attempt to fight.

The effect of the Gas is to make those who inhale it either Laugh, Sing, Dance, Speak, or Fight, and so forth, according to the leading trait of their character. They seem to retain consciousness enough not to say or do that which they would have occasion to regret.

N.B. The Gas will be administered only to gentlemen of the first respectability. The object is to make the entertainment in every respect a genteel affair.

Mr. Colton, who offers this entertainment, gave two of the same character last Spring in the Broadway Tabernacle, New York, which were attended by four thousand ladies and gentlemen, a full account of which may be found in the *New Mirror* of April 6th, by N. P. Willis. Being on a visit to Hartford, he offers this entertainment at the earnest solicitation of friends. It is his wish and intention to deserve and receive patronage of the first class. He believes he can make them laugh more than they have for six months previous. The entertainment is scientific to those who make it scientific.

Those who inhale the gas once are always anxious to inhale it a second time. There is not an exception to this rule.

No language can describe the delightful sensation produced. Robert Southey (poet) once said that "the atmosphere of the highest of all possible heavens must be composed of this gas".

For a full account of the effect produced upon some of the most distinguished men of Europe, see *Hooper's Medical Dictionary*, under the head of Nitrogen.

Mr. Colton will be the first to inhale the Gas.

The History and the properties of the Gas will be explained at the commencement of the entertainment.

The entertainment will close with a few of the most surprising Chemical Experiments.

Mr. Colton will give a private entertainment to those Ladies who desire to inhale the gas. None but Ladies will be admitted. This is intended for those who desire to inhale the Gas, although others will be admitted.

Entertainment to commence at 7 o'clock. Tickets 25 cents—for sale at the principal Bookstores and at the Door. [Taken from Wells, 1935.]

Perhaps the most noteworthy differences between the two advertisements are that Colt's mentioned Davy and that Colton's gave the quotation from Southey; "No language can describe the delightful sensations produced. Robert Southey (poet) once said 'the atmosphere of the highest of all possible heavens must be composed of this gas'."* Colton also gave *Hooper's Medical Dictionary* as a source of reference on "the effect produced upon some of the most distinguished men of Europe". At that time the seventh edition (1839) of *Hooper's Medical Dictionary* would have been available. The sixth edition (1831) was published in the year before Colt's first demonstration of laughing gas. Neither edition mentioned the effects upon distinguished men of Europe. After referring to the parts played by Priestley and Davy, and giving a fairly full account of the physical properties of nitrous oxide, it said

When mingled with atmospheric air, and then received into the lungs, this gas generates highly pleasurable sensations: the effects it produces on the animal system are eminently distinguished from every other chemical agent. It excites every fibre to action, and raises the faculties of the mind, including a state of great exhilaration, an irresistible propensity to laughter, a rapid flow of ideas, and unusual vigour and fitness for muscular exertions, in some respects resembling those attendant on the pleasantest period of intoxication, without any subsequent languor, depression of the nervous energy, or disagreeable feelings; but more generally followed by vigour, and a pleasurable disposition to exertion which gradually subsides.

Colt and Colton were born in the same year, and their paths may well have crossed. It is also possible that Colton may have come across references to nitrous oxide in Willard Parker's

* See Cartwright, 1952, p. 321. Southey's comment was quoted in *Tilloch's Magazine*, 1799; *Monthly Review*, 1799; *Nicholson's Journal*, 1800; Barton (1808), and *Medical Repository* (1800). See appendix for an account of one of Colton's first performances.

library,* which contained about four thousand volumes when he died (Warbasse, 1907).

Horace Wells and the crucial experiment.

One of the young men who volunteered to inhale the gas at Colton's "Grand Exhibition" on



FIG. 2

Horace Wells (1815-48) from an engraving by H. B. Hall in the Wellcome Historical Medical Museum and Library. By courtesy of the Wellcome Trustees.

* This library was donated to the Medical Society of the County of Kings (Warbasse, 1907), but the collection has not been kept separate from other volumes in the library of the Academy of Medicine of Brooklyn, and until recently no catalogue of its contents had been located (Draper, W., 1964, personal communication). The catalogue has now been found and some of the chemical and physiological works listed do mention nitrous oxide (Draper, W., 1965, personal communication). Unfortunately the catalogue does not contain a list of periodicals which Dr. Parker might have had. Beddoes (1799), Davy (1800) and Hooper (1831) are not listed (Draper, W., 1966, personal communication), but Colton, as a medical student, would have had access to the New York Hospital Library (Draper, 1957), and possibly to other medical libraries.

December 10, 1844, was Samuel Cooley. Also in the audience was a local dentist, Horace Wells (fig. 2), who noticed that Cooley bruised and abraded his knees against the furniture without seeming aware of the injury. This observation led directly, on the following day, to the performance of the crucial experiment of operating on a patient while he was under the influence of nitrous oxide. The instigator and the subject of this experiment was Horace Wells. He invited Colton to bring some of his gas to the surgery so that he could breathe it immediately before a colleague, Dr. Riggs, extracted a troublesome tooth. The experiment was painless and when Wells recovered he was said to have exclaimed: "A new era in tooth pulling".

Wells's experiment may have resulted from more than just an inspiration of the moment fired by the observation of Cooley's behaviour. According to a deposition made subsequently by Dr. L. P. Brockett (Smith, 1858, p. 18), the possibility of using nitrous oxide during surgical operations had already crossed Wells's mind.

... in 1840, in the month of July or August, I called at Dr. Wells's office and found him engaged in some experiment, which led to a conversation between Dr. Wells and myself respecting nitrous oxyd gas. Dr. Wells first spoke of the gas, and inquired of me if I had seen it administered. I replied that I had seen two or three persons inhale this gas, and described the effects upon them under its influence. We conversed upon this subject for some time, and Dr. Wells remarked that he believed that a man might be made so drunk by this gas or some similar agent, that dental and other operations might be performed upon him without any sensation of pain on the part of the patient.

Confirmatory evidence was given by Wells's wife, although it suggests that the thoughts were more recent than 1840:

For some months previous to the delivery of a course of chemical lectures by Mr. G. Q. Colton, in the city of Hartford, December, 1844, Dr. Wells turned his attention to the discovery of some means of rendering the human system insensible to pain under dental and surgical operations, and made several experiments in mesmerism with reference to that object. Towards the close of Mr. Colton's course of lectures, I went with my husband to witness an exhibition of the effects of inhaling nitrous oxyd, or laughing gas. It was in the evening at Union Hall, in this city. My husband and several others took the gas in my presence, the effect of which on the parties occasioned much amusement to those present. When we came out of the lecture room to return home, I reproached my husband for taking the gas and making himself ridiculous before a public assembly. He replied to me that he thought it might be used in



FIG. 3

Laird W. Nevius, associate of G. Q. Colton, administering nitrous oxide (from Nevius, 1894, facing p. 101). By courtesy of The Wellcome Trustees.

extracting teeth, and in surgical operations, so as to prevent pain; and said he meant to try the experiment himself the next day. And accordingly, he took the gas and had a tooth extracted the next day, and declared that he did not experience any pain. It was a wisdom tooth, and had troubled him a considerable length of time. [Smith, 1858, p. 20.]

Mrs. Wells's comment about her husband's wisdom tooth having troubled him for a considerable length of time adds a little weight to a report given by Shaw (1839) (see Part III, Smith, 1965c). Shaw told how he was a dental student in Boston in 1844, and how one day in December that year he received an invitation to attend the private seance of a Mr. Colton, who was in the habit of going round the country lecturing on nitrous oxide and administering it to those who chose to come upon his platform. That Colton sometimes held preliminary meetings to which he invited the leading professional and business men of the locality was confirmed by Nevius (1894), who was

an associate of Colton, and Colt before him certainly advertised private Exhibitions (Cary, 1961). Quoting Shaw verbatim:

When Mr. Colton found I was a dental student he told me of an incident that had happened at the last place he had visited, which was Hartford in Connecticut. While there, so he told me, a dentist had an aching tooth out without pain, under the influence of the gas. Colton mentioned this merely as a curious incident, and he certainly then had no idea that a great discovery had been made. . . . From what I subsequently learned in Hartford, from other sources, it appears that the full particulars of the incident mentioned to me by Mr. Colton were these. Dr. Horace Wells, of that city, had gone to one of his private meetings and inhaled the gas. While under its influence Wells noticed that he suffered nothing from an aching tooth which had been giving great and continuous pain for some time. That was the suggestive starting point in the anaesthetic discovery. At the public exhibition in the evening Dr. Wells noticed that one of the subjects bruised himself a good deal against a form. Wells asked the man if he felt pain at the time, to which he answered that he felt nothing. This was the second step in the discovery. Dr. Wells then got Mr. Colton to

administer the gas the next day, and a brother dentist removed the offending tooth from his mouth. No pain was felt and the discovery was made complete.

Shaw's version of the story does not seem to have been recorded anywhere except in his own writings (Shaw, 1889, 1893). As they were published some forty-five years after the event, they should be regarded with reserve, but doubtless he had already told the story many times.

Waters (1944) described the developments in American dentistry which may have alerted Wells to the advantages of pain relief during dental extractions.

Technical skill in the preparation of false teeth had advanced to such a point that the removal of useless teeth in preparation for artificial replacements was frequently desirable and always painful. Being under the necessity of inflicting such suffering in his daily practice and realising that if the useless teeth could be removed without pain, many more patients would be candidates for the prosthetic replacements. Wells was in a position to appreciate the practical value of this effect of nitrous oxide.

Wells was, in fact, intimately involved in the technicalities of making false teeth. He went into partnership with W. T. G. Morton in Boston, and on January 2, 1844, they published the following advertisement

Messrs Wells and Morton, Dentists, No. 19 Tremont Row, are determined to make their valuable invention extensively known, and duly appreciated in the shortest possible time; with this end in view we now propose to insert teeth of gold (until further notice) without compensation until the expiration of one year; then if the patient is perfectly satisfied that our invention is really valuable and superior to any other mode of constructing gold plates, we shall expect a small compensation which may previously be agreed on, otherwise we shall ask nothing. All we shall require, when the teeth are inserted, will be just enough to pay for the materials used, which will be but a trifle. If by this means we are enabled to introduce our improvement more extensively than in the ordinary way, our object will be attained.

The partnership lasted only a few weeks and Wells returned to Hartford (Wells, 1935).

A disastrous demonstration.

The "new era in tooth pulling" did arrive much later, but Wells played a sad and disappointing part in it. Colton taught him how to make the gas, and with the assistance of Dr. Riggs he used it for dental extractions in fifteen patients. The procedure was to administer the gas from an animal

bladder through a wooden tube, while the patient's nose was compressed between finger and thumb. In 1845 he gave a demonstration to students and staff at the Massachusetts General Hospital in Boston. W. T. G. Morton was present. It was greeted with derision, and Wells and his method were discredited as humbug. In his own words,

I was then invited to extract a tooth for a patient in presence of the medical class, which operation was performed, but not entirely successful, as the bag was removed too soon; and as the man said he experienced some pain, the whole was denounced as an imposition, and no-one was inclined to assist me in further experiments. [Wells, 1847.]

The introduction of ether and chloroform and the eclipse of nitrous oxide.

In the following year, 1846, William Thomas Green Morton (1819-68) gave a demonstration of the use of ether in the same hospital (Bigelow, 1847), and this was acclaimed "no humbug".

It was not appreciated at the time that Morton had been preceded by Crawford William Long (1815-78) (see Young, 1942). Soon after starting in general practice in Georgia, Long was asked to prepare some nitrous oxide so that friends could experience its exhilarating effects, but as he had no suitable apparatus, he suggested sulphuric ether as an alternative.* Long inhaled it himself and discovered bruised and painful spots on his person which he could not recall inflicting, and he was satisfied that they were received while under its influence. He noticed also that his friends appeared to receive falls and blows without pain when etherized. In 1842 he gave it to a boy by the name of James Venable, to inhale before excising a small tumour. The operation was quite painless. Long was anxious to repeat the experiment on a number of cases before publishing his discovery, but only a very few suitable cases came his way. Meanwhile Morton demonstrated ether anaesthesia in Boston, and because of the nature and place of his demonstration, because he tried to conceal the identity of the anaesthetic agent by calling it Letheon, and to patent it, and also because his claims were contested by Wells and by Jackson (who also claimed

* It had been reported previously that "... when the vapour of ether mixed with common air is inhaled, it produces effects very similar to those occasioned by nitrous oxide" (*Journal of Science and the Arts*, 1818; also quoted by Pereira, 1839).

OCCASIONAL NOTES

**Edward Gilbert Abbott: Enigmatic Figure
of the Ether Demonstration**

LEROY D. VANDAM, M.D.
AND JOHN ADAMS ABBOTT, M.D.

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New England Journal of Medicine

OCCASIONAL NOTES

Edward Gilbert Abbott: Enigmatic Figure of the Ether Demonstration

ONE of the memorable advances in the relief of suffering took place in Boston on October 16, 1846. It was justly celebrated as the first public demonstration of the use of ether for anesthetization during the course of a surgical operation. As a result, the innovator and anesthetist, William Thomas Greene Morton, a dentist, achieved lasting renown. Likewise, a surgeon at the Massachusetts General Hospital, John Collins Warren, professor of surgery at the Harvard Medical Institution and its quondam dean, reaped the rewards for the surgery. Despite the controversy engendered by those who sought credit for this epoch-making oc-

casion, the patient in the drama has received surprisingly little attention. Indeed, his identity has remained cloaked in mystery for well over a century. Known since the operation as Gilbert Abbott, even though his given name was Edward, he has repeatedly been called a painter rather than the printer and editor he actually was.

Edward Gilbert Abbott was born in Cambridgeport (West Cambridge), Middlesex County, Massachusetts, on Friday, September 2, 1825, the only child of Samuel and Harriet Ann. The genealogy¹ does not further identify his mother, but his father, born in Lincoln on March 22, 1798, was a lineal descendant of George Abbott of Rowley (d. 1647). The couple were married in Cambridge on January 26, 1823. Both succumbed to phthisis at an early age: Samuel on January 5, 1831 at the age of 33 years, and Harriet a year or so later. According to the Cambridge city records, in August of 1843 the remains of Joseph (?) Abbott and his wife were taken from the original site of interment to an unknown place, possibly a stranger's burial ground. Samuel's name may have been confused with that of his brother, Joseph, a lamp manufacturer of Cambridgeport, born on April 19, 1791.

Edward Abbott's subsequent existence must be construed as a constant struggle against poverty (and illness). This is suggested by documents relating to the appointment of a guardian and the subsequent disposal of a meager estate.

On the 9th day of February, 1836, a document was issued by the Court of Probate at Concord, Commonwealth of Massachusetts:

Bela Jacobs of Cambridge in the County of Middlesex, appointed guardian of Samuel [sic] Gilbert Abbott a minor under the age of fourteen and a son of Samuel Abbott, late of Cambridge, shall within 12 months return a perfect inventory of the real estate goods, chattel's rights and credits belonging to said minor.

Were the inventory and appraisal necessary to pay off residual debts? Apparently, the property had been seized. How soon after this directive the inventory was compiled is uncertain, but the pitiful list of items retrieved gives some inkling of the Abbott family's existence during Edward's childhood:

An inventory of the Estate of Samuel Abbott of Cambridge Port in the county of Middlesex Labourer, deceased. Appraised upon oath by us the subscribers being duly appointed to that service by the Hon Saml P. P. Fay Esq. Judge of the Court of Probate for the said county. To that —

one bed and bedding	7"00
eight common chairs	1"50
one bureau	4"00
table	2"50
two stands	"75
one iron pot one dish mettle one skillet	1"00
1 copper kettle and tea	1"00
fire dogs & shovel & tongs	"75
four (?) flat irons	"50
set (?) tin ware	"50
6 teaspoons silver	1"00
one table ditto	"75
1 1/2 set crockery and glass ware	2"00
2 set tin ware	"50
set of 3 buckets 2 sugar	"50

1 bedstead	1"50
4 — \$1"50 2 chests \$1"15	2"65
2 wash tubs	"37
1 tin	"50
wearing apparel	5"00
one axe and hoe	"75
one looking glass	"25
3 mats	"25
bellows	"33
whitewash brush & tub	"35

36"20

Samuel Cutler
Ebenezer Kimball
Abm Grant Appraisers

Another directive from the probate court appeared on August 13, 1844:

Guardian's sale — will be sold by public auction on Monday the 23rd day of September next at 4 o'clock on the premises a certain [lot] of land with a dwelling thereon situated at the Corner of Auburn and Canal Streets in Cambridgeport containing about six thousand two hundred square feet.

Said property is the property of Samuel (?) G. Abbott a minor and is to be sold by virtue of a — from the Judge of Probate in the County of Middlesex.

[Notification of the sale appeared in the *Boston Courier* at least once, on 13 August 1844.]

On 23 September, 1844 — An inventory of the Estate of Samuel G. Abbott of Cambridge in the County of Middlesex a minor — is seized and possessed

Situated in Cambridge containing about six thousand and two hundred square feet of land with the building on the same appraised at Twelve Hundred Dollars, 23 September, 1844.

?Niz Real Estate
Nathan Fiske
Jos. A. Holmes
William Hovey, Jr. Appraisers

The property formerly belonged to John P. Wiswell.

We have little idea of the pursuits of Edward Abbott in the interval after his parents' deaths. In view of the family's circumstances, he must not have attended private school. Probably, he had some schooling but was apprenticed to a printer at an early age, as suggested by his later career.

On September 25, 1846, Edward Abbott presented himself for medical evaluation at the Massachusetts General Hospital. It is not clear whether he feared cancer, sought cosmetic correction of a deformity, or was trying to discover the reason for recurrent bouts of illness. The hospital admission note gives a detailed description; the entry is the first in the record on that date²:

366.	Gilbert Abbott	aet 20
1846	Single Printer	Boston
Friday	"Tumor on Face"	Congenital
Sept 25		

This man had from birth a tumor under the jaw on the left side. It occupies all the space anterior to neck-bound on the inside by median line — on outside is even c̄ edge of jaw — below on a level with Pomum Adami — and in front tapers gradually as far as anterior edge of jaw — Integuments not adherent to it — skin smooth & of natural color — It is uniformly soft, except in centre where a small hard lump can be felt, corresponding in size & situation c̄ Submaxillary Glands — Can be made to disappear by compression, but seems rather to be displaced than emptied — The edge of the lower jaw bone can be felt thro' the tumor to be irregular

On examination of inside of mouth find a soft smooth tumor — a hemisphere about 5 lines in diameter — of a livid color — on the left lobe of tongue about an inch behind tip

That portion of the organ in front & underneath the tumor is of a dark purple color —

This tumor is readily emptied by slight pressure, but fills again in one or two seconds but not sooner when pressure is made simultaneously upon the external tumor

For the distance of 5 lines from angle of mouth on Rt side the lower lip is of a livid hue — this seems to be a continuation of a stripe, similar in appearance which extends from angle of jaw on R't side about on a level c̄ lower teeth — it is about 4 lines wide and is slightly raised — its color seems to depend upon small spots, like granulations, of a livid color set on mucous membrane of ordinary appearance.

He reports, that he never has p'n, except when he has taken cold, & then, he perceives the centre of the external tumor to be larger & harder than usual.

Patient has a slovenous appearance — is tall and slim — Both parents died of Phthisis — Has no reason to think that any of the appearances that have been described are hereditary — Has always been weak and sickly — Has been obliged frequently to give up work on account of ill health — but has never had any acute disease — has frequent colds c̄ sore throat — Cervical glands never enlarged — Never cgh of any note —

A contemporary surgeon has identified the tumor as being, unmistakably, a congenital vascular malformation.

Excision of the cervical mass did not take place until October 16. Was Abbott retained in the hospital for the very reason that he might become the subject of an experiment involving ether? Surely, he was not critically ill, and in those days there was little reason to perform an operation for the lesion he had. To all outward appearances, it was not cancerous, it had not enlarged, and it did not seem to cause great discomfort. Its size and color do not suggest that it was offensive in appearance, and apparently it did not affect his speech. Could he have been concerned about the possibility of tuberculosis? At the time, not having a private patient of his own, surgeon John Collins Warren might have induced the callow youth to undergo the operation. From what we can surmise about Abbott, he might thus have been easily persuaded.

The operation was originally planned for Wednesday, October 13, but it was delayed until the 16th. Possibly, Abbott was still undecided or the anesthetist, William Thomas Greene Morton, was still perfecting the breathing apparatus.

Psychologically and physically, Abbott was an almost ideal candidate for induction of anesthesia. Just before application of the inhalation mouthpiece,

Morton took the man by the hand and he spoke a few encouraging words to him assuring him that he would partially relieve if he did not entirely prevent all pain during the operation, and pointing to Mr. Frost [brought along especially for the assurance], told him that there was a man who had taken it and could testify to its success. "Are you afraid," he asked? "No," replied the man, "I feel confident and will do precisely as you tell me." In four or five minutes he lay quietly and soundly asleep as any child, in that curious state which is —

"Twixt gloom and gleam,
with Death and Life at Each Extreme."³

Since a description of the operation has been published,⁴ as well as J. C. Warren's journal,⁵ these items are not included in the present narrative. Unfortunately, there was no photograph made of the performance, since Josiah Haynes, daguerreotypist, lost heart and failed to appear at the appointed time. In a steel engraving (Fig. 1) reproduced in *Trials of a Public Benefactor*³ the principals are clearly recognizable. Abbott is seen semirecumbent and relaxed, his visage that of a young man of the expected age, more robust than expected, but tall and thin, legs dangling over the edge of the operating chair. He had curly dark hair, a rather bulbous nose, and somewhat thick lips. The tumor is revealed on the left side of the neck, anteriorly. This helps to fill out the image of him, including his none-too-fashionable clothing.

The postoperative hospital stay was a lengthy one, although no hint of the then-prevalent infection, "hospitalism," appears in the account.²

438. Oct. 17 Remained thro P.m. and n't very comfortable — This mg' dressings were removed and the wound filled with Potassa & Calce — Very soon after this application bleeding commenced and continued 3 or 4 hours when it was checked by means of lint pt'ce & compression with sponge — Haemorrhage was venous
- " 18 Was kept very quiet thro' day — Slept well — Is now comfortable
Dressings have been removed & scraped lint & Cerate pledget applied & moderate compression — appetite good
May have Broth §VI & Soaked Toast 2 t.d. —
- " 19 Reports comfortable — Potassa with Calce sprinkled over wound this mg' & covered with Cerate pledget — Appetite very good
May have Broth §IX 2 t.d.
- " 20 No haemorrhage from Caustic — apply Poulitice to remove Lint and Slough — Increase Diet —
- " 21 Potassa & Calce again applied
- " 23 Potassa Fasa was used today —
- " 24 Poltice till slough is removed
- " 28 Slough had come away — Surface is healthy & granulating. Potassa Fasa was again sprinkled upon it — Poulitice —
- " 31 Slough has separated — Surface is healthy — Dress & Lint dipped in W. Water and covered with pledget & Cerate — Touch & Nitrate of Silver to keep down granulations —
- Nov 11 Doing well —
- Dec 7 Cicatrix perfect Tumor of same size as on Entrance but no vessels to be detected in it — Tumor on Tongue not altered — nor is the appearance on inside of Rt cheek — Gen^l health m. improved.
Discharged
Well

After Abbott was discharged from the hospital on December 7, 1846, with little evident change in the size of the tumor, his life style seems to have improved considerably, possibly because of reassurance that the lesion was benign. We know little of the day-to-day existence of Abbott. He must have achieved a degree of affluence, since in 1850 he married Mary Dunbar Fuller of Osterville. The wedding probably took place in the bride's home community — a considerable journey from Boston in those days. The daughter of David and Olive (Bragg) Fuller, Mary had been born on



Figure 1. The First Public Demonstration of Etherization at the Massachusetts General Hospital, October 16, 1846.

Physicians around Edward Gilbert Abbott are reputed to be, from left to right: H. J. Bigelow, A. A. Gould, J. Mason Warren, J. Collins Warren, W. T. G. Morton, Samuel Parkman, George Hayward, and S. D. Townsend. From a steel engraving.³

April 17, 1826, so she was 24 and Abbott was 25 at the time. They went to live in the Maplewood section of Malden, Massachusetts, and not too long thereafter, became the parents first of a son, then of a daughter: Edward Wellington Abbott, born March 27, 1852, and Mary Olive Abbott, delivered in Boston on February 24, 1855. Mary was to have a sad life, for her father would die of consumption when she was merely nine months old.

At various times after the operation, Abbott was a journalist in Philadelphia, in New York City, and in Worcester, Massachusetts, probably all these assignments occurring before his marriage. On his return to Boston he became an assistant editor of the *Boston Herald* and a compositor on the *Boston Bee*.¹ He is said to have written the first article advocating the reduction of letter postage from 5 to 3 cents. The first issue of *The Cambridge Mercury*, for which Abbott was both proprietor and editor, appeared on Friday, July 16, 1852. Twelve issues were published, presumably weekly, and this five-column sheet was well supplied with news. The main editorial thrust was opposition to a prohibitory liquor law about to go into effect. In fact, the editorial comments were quite intemperate in language and argument. The name of the paper was changed to the *Middlesex County Mercury* on Friday, October 8, 1852, and an enlarged tract was published. Editorially, it denied being simply a campaign sheet in that it favored for reelection a ticket headed by Governor Gifford. The fourth issue of the *Mercury*, appearing on Friday, October 29, 1852, carried a notice of the death of Daniel Webster, which had occurred on the previous Sunday. The fifth and last issue probably came out on Friday, November 5, 1852, at approximately the time of the election in which Governor Gifford was a candidate.

Abbott may also have been proprietor of a juvenile newsletter. Unfortunately, no copies of any of these periodicals are extant; the information provided above

was derived indirectly. One wonders about the short tenure of these papers, none too successful, perhaps influenced by the poor health of the progenitor, who died in Maplewood from consumption on Tuesday, November 27, 1855, at the age of 30.

In the November 27th issue of the *Boston Herald*, there is no reference to Abbott's death, but notice is given of the publication of Longfellow's poem, "Hiawatha." However, on Saturday, December 1, 1855 (at the time, General Lafayette was reported to have been in a boat wreck en route from Nashville, Tennessee, and the publication of "Hiawatha" was again noted), the death report appeared: "Death of a Printer. Edward G. Abbott well-known printer and editor died at Maplewood, Malden on Tuesday of consumption. He was thirty years of age and leaves a widow and two children."

We have a portrait of a youth struggling against great odds to become a respectable member of the fourth estate, husband of an admirable woman, father of an unfortunate little girl (who died at 11 years of age) and of a colorful son who lived to escape the familial scourge of tuberculosis. How different the account might have been today, when the recipient of a transplanted liver or kidney or even an artificial heart receives widespread publicity and financial support, as well as public sympathy. Facing the first surgical operation performed with the aid of anesthesia, Edward Gilbert Abbott would have been in those ranks.

Brigham and Women's Hospital
Boston, MA 02115

LEROY D. VANDAM, M.D.

Massachusetts General Hospital
Boston, MA 02114

JOHN ADAMS ABBOTT, M.D.

Additional information on Edward Gilbert Abbott, compiled by J.A.A. and L.D.V., may be found in the archives of the Boston Medical Library.

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SUBSCRIPTIONS: Subscription offices, 1440 Main Street, Waltham, MA 02254, USA; 13 Colina Road, Tottenham, London,

England N15 3JA, U.K. International subscription rates: US funds drawn on a US bank only: \$75 per year (interns, residents \$55 per year; students \$45 per year). Pounds sterling drawn on a London bank only: £48 per year (interns, residents £35 per year; students £29 per year). Sample copies available upon request. International copies are delivered by airlift to all countries except Canada and the U.K. at no additional charge. Payments and correspondence for all subscriptions delivered to Japan should be sent directly to: Nankodo Co., Ltd., 42-6, Hongo 3-chome, Bunkyo-ku, Tokyo 113, Japan.

THE
LONDON
MEDICAL GAZETTE,

OR

Journal of Practical Medicine.

NEW SERIES.

VOL. VI.

LONDON:

PRINTED FOR

LONGMAN, BROWN, GREEN, AND LONGMANS,
PATERNOSTER ROW.

1848.

sary; and mustard poultices, or sometimes blisters, were applied, but the former remedy was generally preferable. Bleeding, or depletion in any form, according to all but universal consent, was considered improper, and, if ever employed, proved injurious: even tartarized antimony, so frequently useful in apparently similar complaints, at other seasons, he (Dr. Webster) found not only inferior to ipecacuanha, in the recent epidemic, but often inadmissible, from the depressing effects it produced upon the system.

Dr. LANKESTER observed, that the temperature and moisture alone which prevailed in the early part of December were not sufficient in themselves to account for the late epidemic, as in these respects the season differed little from that of the three previous years. He associated in the chain of causation, with the two facts mentioned above, the small quantity of rain which had fallen during the year. Thus, extreme dryness, followed by heat and moisture, not only gave prevalence to influenza, but to all other zymotic diseases, as shown by the Registrar-General's Reports. The excessive dryness of the summer had led to the accumulation of large quantities of vegetable matter, ready to decay when the moisture came on. In towns so situated as readily to get rid of a superabundance of water, the epidemic was less prevalent.

Dr. WEBSTER rejoined, that in regard to the heat and dryness of last summer, as influencing the recent mortality, although he (Dr. Webster) did not allude to the circumstance, it had not escaped his notice; and he believed the subsequent rainy season thereby proved more injurious to the human frame; indeed a somewhat similar effect was observed, during the early part of 1827, in Groningen, Friesland, North Holland, Belgium, and Lower Germany. After a very hot and dry summer in 1826, followed by mild and moist weather, whilst the districts just named were still damp, in consequence of great inundations which had occurred in the previous year, a very fatal epidemic fever broke out, whereby so many persons were carried off, that the Dutch government found it necessary to adopt very strong measures to relieve the sickness affecting nearly the whole population. He (Dr. Webster) might also mention, that last summer, when there was so much hot and dry weather, he had mentioned his apprehensions to some members of the Society, that if the subsequent winter should prove mild and damp, in all probability a severe fever or fatal epidemic would prevail. How far this surmise was correct, recent events had shown. Dr. Webster hoped the Society would excuse such personal references, since they were only now brought forward in illustration of Dr. Lankester's observations.

Medical Trials and Inquests.

DEATH FROM CHLOROFORM DURING A SURGICAL OPERATION.

ON Saturday, the 29th of January, an inquiry was opened at the village of Winlaton, about five miles distant from Newcastle-upon-Tyne, by J. M. Favell, Esq., the coroner of Chester ward, in the county of Durham, to ascertain how and by what means Hannah Greener, aged 15, had come to her death.

The deceased was, about three months since, an inmate in the Newcastle Infirmary, where (on the 26th of October) she underwent an operation under the influence of ether; and it was on the 29th of January, while undergoing a second operation under the influence of chloroform that she lost her life. The event, as will readily be conceived, produced considerable excitement in the minds of a village-population; and the coroner resolved very wisely to make a full and searching inquiry, for the satisfaction of the public, and in justice to the medical practitioner by whom the operation was performed.

A jury having been sworn, and having viewed the body of the deceased,

John Rayne deposed that he was a blacksmith, and lived at Winlaton. His sister married John Greener, the father of the deceased. The deceased came home from her grandfather's about a year ago. Dr. Meggison, of Whickham, surgeon, had visited her several times. She was in the infirmary about four months since, to have a toe-nail taken off. Dr. Meggison was employed by her father to have another nail taken off—from the great toe of her right foot. Dr. Meggison's assistant performed the operation yesterday (Friday, the 28th ult.) about one o'clock. The persons present were Dr. Meggison, his assistant, and witness. Deceased was seated in a chair by the fire, and Dr. Meggison held a pocket-handkerchief to her mouth and nose; he kept moving it at times, and looked at his watch, and felt the deceased's pulse. The assistant had the instrument all ready to commence. Deceased appeared to be fainty like. Dr. Meggison then told his assistant to take off the nail. Witness held her leg to steady the foot. The assistant took the nail off very quickly. When he was removing it the deceased shook her foot. She did not speak, but moaned after the nail was off. They dashed some water in her face, and her eyes moved. Dr. Meggison put some brandy into her mouth, and there was a rattling in her throat. She did not come to her senses; she appeared in a fainting fit. Dr. Meggison bled her in the right arm; she bled a little,—may be a

table-spoonful or so. He bled her also in the neck, and about the same quantity came away. She died without ever recovering. She had the nail taken off the large toe of her other foot about four months ago, in the infirmary. Witness had heard that some stuff was given to her at that time to make her insensible.

Mary Greener deposed that she was the wife of John Greener, of Winlaton, banksmen. The deceased was 15 years old; she was not witness's daughter. Dr. Meggison had been attending her for her toe. She was in the infirmary for her toes for nine weeks. Witness brought her out on the Monday before Christmas-day. She had a toe-nail taken off in November. She told witness she was made insensible before it was done, and felt no pain. Her father said on Thursday (the 27th ult.) she had better not have that stuff to make her insensible again. Deceased said she would not have the nail taken off without it. All the family were then agreeable, not only that she should have her nail removed, but that she should take the stuff. She was in good health before she went into the infirmary. She fretted in the infirmary, but never complained of ill treatment. She grew thinner while in the infirmary, and also after she came out. She took her victuals better this last month. She had complained of a pain in her chest, and doubled herself up, both in and out of bed; she was never subject to anything of the kind before she went into the infirmary. She suffered much pain in her toes,—in the one from which the nail was removed and in the others. Witness thought the pain was so great as to prevent her thriving. The toe-nails were growing into the flesh, which was much swelled. Witness had poulticed her toes, and rotten flesh came off the one from which the nail was removed.

Dr. T. N. Meggison, surgeon, being asked by the coroner if there was any statement which he wished to make, said that Hannah Greener died under his hands on the previous day while under the influence of chloroform vapour, administered for the sake of producing insensibility during the removal of a toe-nail. She was suffering under onychia. She had never complained of pain in the chest to witness. The pain in her toes might cause her to become thinner. Witness seated her in a chair, and put about a tea-spoonful of chloroform upon a cloth, and held it to her nose. After she had drawn her breath twice, she pulled witness's hand down. He told her to draw her breath naturally, which she did; and in about half a minute he observed the muscles of the arm become rigid, and her breathing a little quickened, but not stertorous. Witness had one hand on her pulse, which was natural until the muscle became rigid; it then be-

came somewhat weaker, not altered in frequency. Told his assistant, Mr. Lloyd, to begin the operation, which he did, and removed the nail. When the semicircular incision was made, she gave a struggle or jerk, which witness thought was from the chloroform not having taken sufficient effect. Witness did not apply any more. The eyes were closed at first; witness opened them, and they remained so. Her mouth was open, and the lips and face were blanched. When witness opened the eyes *they were congested*. He called for water when he observed her face to be blanched, and gave her a mouthful; he also dashed some in her face. It had no effect. He then gave her some brandy, a little of which she swallowed with difficulty. He laid her on the floor, and attempted to bleed her in the arm and jugular, but only obtained about a spoonful of blood. She was dead, he believed, at the time he attempted to bleed her. The last time he felt her pulse was immediately before the face became blanched, and when he observed the jerk. The time that elapsed from the first inhalation of the chloroform to her death *could not be more than three minutes*. Witness procured the chloroform from Daglish and Ismay, of Newcastle. He had used chloroform from the same place before with good effect and no ill consequences. He did not apply more than *a drachm* to the deceased—probably less. One of his patients required upwards of half an ounce, at four times, before she became insensible, and she completely recovered afterwards. He had used it to a woman who was very drunk, and would not lie still without it. She had dislocated and fractured her ankle. Two tea-spoonfuls were given, and it had the proper effect. His assistant, Mr. Lloyd, was a duly qualified practitioner, and had been in the habit of using chloroform.

Mr. William Lloyd, surgeon, expressed his concurrence in what Dr. Meggison had stated.

The inquiry was now adjourned, that a post-mortem examination might be made by Sir John Fife and Dr. Glover, of Newcastle.

On Tuesday, at half-past one o'clock, the inquest was resumed. Before the arrival of the medical witnesses, the Coroner stated that he would read a passage from the MEDICAL GAZETTE of December 3, 1847, from which the jury would learn that chloroform was a substance in general use among medical men, and that Dr. Glover was a peculiarly appropriate witness to be called before them in an inquiry like the present. Mr. Favell proceeded to read part of an editorial article alluding to the prevalent use of chloroform vapour in surgery and midwifery, and its apparent possession of "all those

advantages over ether-vapour which had been announced by Dr. Simpson."

"While, however," said the MEDICAL GAZETTE, "these facts appear to promise safety in the use of chloroform vapour, the experiments of Dr. Glover on animals tend to shew that this agent is not to be regarded as innoxious. He found that it had a tendency to cause congestion of the lungs. His experiments were not performed with the vapour; and the mode of introduction into the system by the lungs may considerably modify the effects."

In the same number of the GAZETTE (Mr. Favell continued to say), there was a letter from Dr. Glover, dated "Newcastle, Nov. 21." That gentleman observed that Professor Simpson, to whom belonged "the sole merit of having proposed chloroform as a substitute for ether in surgical operations,"* spoke "as if no one had an idea of the physiological properties of this substance before his time;" but in October, 1842, there was published, in the *Edinburgh Medical Journal*, a paper of his (Dr. Glover's), on bromine and its compounds, and the analogies existing between the physiological properties of these bodies and those of the corresponding compounds of chlorine and iodine; one chapter of which paper was headed "Physiological Properties of the Bromide and Chloride of Olefiant Gas, of Bromoform, Chloroform, and Iodoform." This chapter began thus:—

"The only experiment on an animal with any of this class of bodies, is one related by Dr. Cogswell with iodoform, which he terms sesquioxide of carbon, but which we now know to be a compound of three atoms of iodine with one of formyl. The curious results of this experiment led me to investigate this class of bodies, which, from the results of my experiments, appear to form a new class of poisons, and to be possessed of properties not unlikely to be useful in the treatment of disease."

The chapter detailed an extensive series of experiments with these bodies, and especially with chloroform, performed upon animals, and, among other general conclusions, stated the following:—

"The action on the spinal cord is very different from that of strychnia, to which my friend Dr. Cogswell compared it in the case of iodoform. Strychnia destroys the influence of the will over the muscles, but appears to excite the spinal cord, which loses its sensibility under the action of this class of poisons."

Having thus referred to his paper of 1842, Dr. Glover closed his letter to the MEDICAL GAZETTE in these words:—

"When the application of ether and of chloric ether to anæsthetic purposes became known, I remarked to several of my friends that without doubt all the class of bodies on which I had formerly experimented would possess similar properties, but was deterred, from the fear of their formidable power of congesting the lungs, from giving them in practice."

"Either the action of chloroform, when inhaled, must be very different from its action when admitted in other ways, or animals must be more susceptible of it than man. Perhaps habituation to alcohol may protect us somewhat. The use of chloroform, in some habits and cases, must, however, be attended with danger, from its immense power of congesting the lungs." The Coroner, when he had laid aside the *Medical Gazette*, caused the father of the deceased to be called, some one having stated that he had evidence to give.

John Greener was accordingly sworn. He deposed that he was a banksman at Mr. Ramsay's colliery. The deceased, Hannah Greener, was his daughter. There did not seem any thing much to ail her, except in her toes. She said, when she came out of the infirmary, that the doctors gave her ether before they took her nail off, and that they tried three different strengths* before she turned insensible. She said they pricked her with needles or pins before they performed the operation, to try if she felt any pain. She said she felt no pain when the nail was removed. She was bad of both toes at the time, and had suffered from both since. Witness employed Dr. Meggison to attend her; and he and his wife were agreeable to the operation. Deceased wished to have the chloroform. She had complained that the ether made her head bad for two or three days. The night before the second nail was taken off witness said that she had better suffer a bit of pain for a moment than have her head made bad again for some days with the stuff. She said she would not have the operation performed if they would not let her have it; so they agreed that it should be given to her.

Sir John Fife was now sworn. He stated that he had made a *post-mortem* examination of the body of Hannah Greener, with Dr. Glover; and they had thought it important to reduce the result to writing. "It was as follows:—"

The examination was made about 3 o'clock P.M., on Saturday, the 29th of January. The body was that of a well-grown female of about 15 years of age. The development seemed on the whole in tolerable relation to the age. The legs were rather thin;

* Note by the editor of the MED. GAZETTE.—It was first used by Mr. Bell. See *Pharmaceutical Journal*, Feb. 1847, p. 367.

* This is an error. Three different instruments were used, but only one specimen of ether. See Mr. Potter's letter, page 255.

calves not sufficiently fleshy. Breasts tolerably well developed; and although on the whole thin, she was not altogether devoid of fat, as appeared on proceeding to open the body. The body was perfectly free from spots or stains of any kind, except from the marks of the phlebotomy to which she had been subjected, and some slight livid stains about the neck. The toes showed the nature of the operations which had been performed. There was simply the ordinary degree of rigidity. Mouth a little open; eyes presented no appearance of congestion. On opening the chest the lungs were not collapsed. One or two very slight adhesions were encountered on separating them from the walls of the chest. The external appearance of both lungs, over the whole surface, but especially in the inferior portions, was that of organs in a very high state of congestion. They were mottled with patches of a deep purple, blueish, or scarlet hue. They were everywhere crepitant. Along the outer and interior border of both lungs, particularly of the upper lobe of the left lung, were several emphysematous bubbles of small size. On cutting into the pulmonary tissue it was found free from tubercles; unless some hard bodies about the roots of the bronchi (enlarged and partially-indurated glands) could be called so. The pulmonary tissue was filled with bloody froth, which was also found in the interior of the bronchi, mixed with mucus. There was no appearance of hepatization. On examining the larynx and trachea, the epiglottis was found reddened at the summit, of a vermilion hue. The mucous membrane of the larynx was redder than natural—mottled with vascular patches. The sinuses of the larynx contained a good deal of dark mucus. The œsophagus was healthy. The stomach was distended with food. Some of the veins were more distinct than usual. Digestion had been going on at the time of death. The liver, kidneys, and spleen, were more congested than usual. The heart contained dark fluid blood in both its cavities: very little in the left. Its structure, and that of the great vessels near it, quite healthy. The brain, externally and internally, was more congested than usual; and the ventricles contained rather more than the usual quantity of serum.

These (observed Sir John) were the facts revealed by the examination: he now came to matter of opinion—and he gave it as the united opinion of himself and his friend Dr. Glover.

The coroner requested that Sir John would give it as his own opinion: he would take Dr. Glover's separately.

Sir John Fife resumed:—In his opinion, the cause of death was the *congestion of the lungs*; and this congestion he was compelled to ascribe to the inhalation of chloroform.

Of the power of chloroform to occasion congestion, no doubt could be entertained, after the experiments of Dr. Glover and Mr. T. Wakley, jun. on animals. There did not seem anything observable in the *previous condition* of the young woman to have prevented the surgeon from having recourse to chloroform, as a means of allaying pain in one of the most painful operations of surgery. Having now concluded what was written, he had only to say, further, that such was his conviction of the value of chloroform in lessening human suffering, and of the comparatively small amount of danger attending its use, taking into account the number of cases in which it was applicable, that if he was himself under the necessity of submitting to an operation such as the one now under consideration, or to any other operation involving much pain, he would insist upon taking chloroform. He had given it repeatedly, and in much larger quantity than was administered by Dr. Meggison. Ever since the occurrence of this event he had used it; and he should continue to do so, with the fatal result in the present instance staring him in the face. Ever since Dr. Simpson had first applied it in surgery, and made known its virtues in relieving pain, he had been in the habit of using it, and had constantly seen it prevent suffering without leaving any bad consequences behind it: he had never once seen any bad effects from it. There was one remarkable case which he might mention, in which a woman submitted to the removal, by dissection, of a tumor weighing three pounds, and exposing a dissected surface of a foot square. Dr. Glover administered the vapour of chloroform, and his (Sir John's) son dissected away the tumor. The operation occupied some minutes, during which chloroform was applied in eight times greater quantity than was used by Dr. Meggison. Yet the woman was no worse after the operation than might reasonably be expected, and recovered favourably. He had used chloroform in cases of amputation, in lithotomy, and in other severe operations, and seen, he repeated, no evil effects from it. He attributed the fatal result in this young woman's case to *some peculiarity in her constitution*—not to be detected beforehand—either in the lungs or in the nervous system. He had no hesitation in saying that the same result might have occurred in the hands of the most prudent and skilful surgeon that ever lived. It was necessary that the coroner and jury should be reminded of this fact. Persons would die sometimes from the shock of an operation, and no appearances might present themselves to account for such a result; and the same susceptibility which led to a catastrophe of this kind, would be likely to produce the same issue from the use of chloroform. He

should certainly not use chloroform in all cases; he had refused to use it that day in a trifling case. He should think it undesirable to use it in trifling cases, where the pain was neither severe nor protracted. In other cases, however, he would not only resort to it, but if the quantity used by Dr. Meggison failed to produce insensibility, he would double it without hesitation. Within the last two months he had performed almost the whole of the more formidable operations of surgery in connection with chloroform, and without any bad consequences.

A juror.—What is the meaning of congested?

Sir John Fife.—Gorged with blood. The eye is congested when it is said to be "blood-shot." Sometimes the congestion is so extreme as to burst the smaller veins.

Robert Mortimer Glover, M.D. (examined by Mr. Favell) deposed that he was a lecturer on *Materia Medica*, and formerly on Medical Jurisprudence, in the Newcastle School of Medicine and Surgery. He concurred in the report read by Sir John Fife. The after-treatment of Dr. Meggison for the recovery of the deceased was very proper; it was in accordance with the practice recommended by the highest authorities. He should think that chloroform might be used, perhaps, with greater safety in the larger operations, where there was much loss of blood, than in the smaller ones. He had examined the chloroform used by Dr. Meggison, and found it pure; the bottle bore the name of one of the most respectable manufacturers in London. He should not think chloroform safer than ether. He found, from a lecture lately delivered by Professor Brande, that that gentleman was of the same opinion as himself. He (Dr. Glover) had thought from the first that the use of chloroform was attended with danger. There was a case recorded in the *Medical Gazette* of Friday, (January 28,) in which the use of chloroform had been accompanied by formidable symptoms. In the case mentioned by Sir John Fife, of the removal of a tumor, the loss of blood might render the copious application of chloroform less dangerous. After the use of it made by Dr. Simpson, and so generally afterwards by medical practitioners, Dr. Meggison, or any other gentleman, was perfectly justifiable in adopting chloroform. On reading Dr. Simpson's publication on the subject, he (Dr. Glover) had written to him to say that chloroform was not, in his opinion, so harmless an agent as the professor supposed. From the very fact that it was more powerful than ether, he should infer that it was more dangerous. It was in general use, however, all over the kingdom, and also in France; and Dr. Meggison, in using it in

the present case, had observed proper precautions—such as feeling the pulse, &c.

Sir John Fife said, in reference to what had fallen from Dr. Glover, that in one of the hospitals in London chloroform had been used in the case of an infant ten months old, where there was no loss of blood, and yet no ill consequences had followed. It was a case in which a needle was passed through a congenital tumor.

Dr. Meggison (who was present at the *post-mortem* examination) expressed his concurrence in the report made by Sir John Fife and Dr. Glover.

The coroner addressed the jury, observing that this was a case of so much importance to the public and the profession, that he had felt called upon to step out of the ordinary course of proceeding, and go beyond the bare requirements of the law. Having briefly stated the law and the facts, Mr. Favell remarked that the jury had enjoyed the advantage of hearing both Sir John Fife and Dr. Glover on the case before them, and would have little difficulty in coming to a right verdict.

The jury retired to another room, and were absent a short time. On their return, the Foreman (Mr. John M'Ewan) said, they were unanimously of opinion that Hannah Greener died from congestion of the lungs, produced by chloroform, and that no blame could be attached to Dr. Meggison or his assistant.

The coroner said, he might now mention, what he had not thought it right to name before, that Dr. Meggison, immediately after the fatal event, informed the police of it, and suggested that it would be necessary to hold an inquest.

Correspondence.

THE FATAL CASE OF CHLOROFORM NEAR NEWCASTLE—LETTER FROM DR. MEGGISON.

SIR,—In the last number of the *GAZETTE* I observed an account of the injurious and dangerous effects chloroform had produced in one instance where it had been administered with all due caution. I regret it should now fall to my lot to communicate a case of death from its use. The harassing duties of a country practice prevent my drawing out a longer report, and must also be my excuse for the delay in sending this. I merely give you a plain statement of the facts of the case; doubtless a full report of the *post-mortem* appearances will be given in the local papers, which I will forward to you; and, should such not be the case, I will endeavour to transmit Sir J. Fife's and Dr. Glover's report.

On Friday, Jan. 28, Mr. Lloyd, my assistant, and myself, having determined upon the necessity of removing the nail and matrix in a case of onychia, proceeded to do so, putting the patient (who was a well-developed girl of 15) under the influence of chloroform. About two months previous, she had, under the influence of ether, undergone a similar operation on the other toe in the Newcastle Infirmary. She described the ether as having full effect, but leaving a headache, which lasted for a day or two, and produced coughing, from the irritation of the windpipe.

She was recommended by her father to undergo the operation without taking any of the "stuff," and bear a little pain. She, however, refused to submit unless something was administered, to deprive her of feeling. We recommended chloroform as preferable to ether, not having left any ill effects where I had administered it. She appeared to dread the operation, and fretted a good deal: in fact, she commenced sobbing on our entering the house, and continued so until seated in the operating chair, and commencing the inhalation, which was done from a handkerchief on which a teaspoonful of chloroform had been poured. After drawing her breath twice, she pulled my hand from her mouth. I told her to put her hands on her knees, and breathe quietly, which she did. In about half a minute, seeing no change in breathing, or alteration of pulse, I lifted her arm, which I found rigid. I looked at the pupil and pinched her cheek, and, finding her insensible, requested Mr. Lloyd to begin the operation. At the termination of the semilunar incision she gave a kick or twitch, which caused me to think the chloroform had not sufficient effect. I was proceeding to apply more to the handkerchief, when her lips, which had been previously of good colour, became suddenly blanched, and she spluttered at the mouth, as if in epilepsy. I threw down the handkerchief, dashed cold water in her face, and gave her some internally, followed by brandy, without, however, the least effect, not the slightest attempt at a rally being made. We laid her on the floor, opened a vein in the arm, and the jugular vein, but no blood flowed. The whole process of inhalation, operation, venesection, and death, could not, I should say, have occupied more than two minutes.

Since the occurrence of this case, I have heard of several where temporary inconvenience was produced by chloroform, but not of any decided character, nor of long duration. In one case, after a third administration, temporary but furious delirium was produced: several complained of headache and oppression of respiration; and I have no doubt, now that the ice is unfor-

tunately broken, we shall find that chloroform is not the infallible agent which it was vaunted to be by its talented though sanguine discoverer, and we shall hear much less of the non-professional and drawing-room exhibitions of the vapour.

I am, sir,

Your obedient servant,

T. N. MEGGISON, M.D.

Whickham, near Gateshead,
Feb. 3, 1848.

*** We have great pleasure in inserting Dr. Meggison's account of the circumstances attending the operation. It corroborates the statements contained in the full report elsewhere inserted, which was in type before the *Gateshead Observer* reached us. His remarks on the absurdity, and even danger, of the drawing-room exhibitions of this narcotic vapour, are well-timed and appropriate. The manner in which he has made known to the profession all the particulars of the unfortunate case which has led to his letter, reflects the greatest credit on his candour and honesty of purpose. We heard of a case some weeks since, in which chloroform was used, and there was great reason to believe that it proved fatal. On application, the parties declined to publish the particulars!—*Ed. GAZ.*

THE EFFECTS PRODUCED BY ETHER IN THE CASE OF HANNAH GREENER.

SIR,—Supposing that the late fatal administration of chloroform in this locality will occupy some portion of your pages, perhaps it may not be uninteresting to your readers to state some particulars relative to the administration of ether in the same case, and to which allusion is made in the evidence adduced before the coroner.

Hannah Greener was admitted into the Newcastle Infirmary, under my care, on the 22d of October, 1847. She was then suffering from onychia maligna of her left great toe, which had commenced about twelve months before: the right great toe was also affected, but to a much less extent. Her general health was good, although her appetite was less than natural. This was the only symptom which indicated that the system was suffering from any irritation.

On the 26th of the same month, I removed the nail of the left great toe; and as the operation was necessarily very painful, I gave her a full dose of ether. She afterwards said that she felt no pain during the operation, and that she "was asleep the whole time."

It is stated in the report of the coroner's inquest that ether of three different strengths was administered. This is incorrect: three instruments were used, and the last one (Hooper's) produced complete insensibility.

I saw the patient about thirty minutes after the operation, and found her drowsy: I directed the attention of the pupils to the case, and delivered a clinical lecture upon onychia.

My reason for stating this is, that the attention of the pupils was directed to the case, and yet no pain in side, chest, or head, was ever mentioned to one of them; nor, until the inquest took place, had I ever heard of any such affection.

My report states, that "she screamed during the operation, but did not feel any pain." Her pulse never varied much; her countenance was *flushed* (in chloroform I have always seen it more or less blanched, which agrees with the evidence). She had no hysterical symptoms; no laughing, no crying: the pulse became weaker while under the immediate influence of ether, but soon recovered its usual state. When I visited her half an hour after the operation, there were no untoward symptoms present, nor did any such symptoms exist during her residence in the Infirmary: indeed, if she had suffered from any ill effects of ether, why should she have so earnestly requested to have "the stuff" administered before she submitted to a second operation?

I remain, sir,

Your obedient servant,

H. G. POTTER, F.L. and G.S. Lond.
Surgeon to the Newcastle Infirmary.

Medical Intelligence.

CONFERENCE OF POOR-LAW MEDICAL OFFICERS WITH THE COLLEGE OF PHYSICIANS.

THE College authorities having fixed Tuesday, Jan. 25, for receiving a Deputation from the Committee appointed by the Convention of Poor-Law Medical Officers, the following gentlemen—Dr. Hodgkin, Mr. Vallance, Mr. Peter Martin, Dr. Barnett, Mr. Lord, and Mr. Healey, the Honorary Secretary,—attended at the College of Physicians at 3 o'clock, and were received by Dr. Paris, the President, Drs. Clendinning, Todd, Sutherland, and Hawkins (the Registrar).

Dr. Hodgkin, in introducing the Deputation, remarked generally on the objects sought by the Convention, and the manner, temperate but firm, in which the Committee desired to carry out their objects. He dwelt on the claims which the profession had, when aggrieved, to the assistance of its seniors, and especially of a corporation exercising privately by its members, as well as publicly by its legal position, so much influence as the College of Physicians. The

Deputation, in seeking that conference, had it in view to secure the advantage of the College's assistance; and he expressed his hope and confidence, as one of its licentiates, that that assistance would be cheerfully accorded.

The President here remarked that the College did feel a warm interest in the subject which the Committee was submitting to it, and that in the Parliamentary Committee, under Lord Ashley, he had himself given evidence in favour of a great improvement.

The Deputation then submitted in detail to the President and Censors the different grievances under which Poor-Law Medical Officers suffered throughout the country, particularly adverting to the inequality of payment, its inadequacy, the short tenure of many Poor-Law medical appointments, the system adopted in giving orders, and the mischief which from all these causes constantly arose to the pauper sick. They referred to instances in illustration, and adverting to the influence the position of the College necessarily gave it with the Government, urged on it that, by representations to the Government, on the one hand, and by joining, on the other (through their President), a deputation to Sir George Grey and Mr. Buller, to be sent from the Committee, that they would exercise all their power to mitigate an evil alike mischievous and dishonouring to the whole profession.

The President and Censors promised to give their best consideration to the statements of the Deputation, expressed the warm interest they felt in removing the grievances complained of, and added an assurance that the College would be glad on every occasion to communicate with the Committee, and to second, as far as possible, their exertions.

The Deputation, having expressed their acknowledgments for the marked courtesy and cordiality with which they had been received and their representations heard, then retired.

DEPUTATION TO THE SOCIETY OF APOTHECARIES.

A VERY full Deputation, consisting of Mr. Martin (of Reigate), Mr. Bottomley (of Croydon), Mr. Vallance, Dr. Barnett, Mr. Liddle, Mr. Lord, Mr. Lobb, Mr. Boulger (of Blechingley), Mr. Mitchell, and the Honorary Secretary, had the honour of waiting on the Society of Apothecaries on Friday, the 28th ult.

In answer to representations similar to those made to the College of Physicians, the Society, through the master, Mr. Bean, and several of the wardens, emphatically declared their warm interests in the exertions of the Committee, and stated that the grievances

ESSAYS ON THE FIRST HUNDRED YEARS OF ANÆSTHESIA

by

W. STANLEY SYKES,
M.B.E., M.B., B.Chir. (Cantab.), D.A.

*Late Anæsthetist to the General Infirmary at Leeds, to the Hospital for Women
and St. James' Hospital, Leeds, to the Leeds Dental Hospital, to the
Halifax Royal Infirmary and to the Dewsbury General Hospital*

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CHAPTER 4

AN OBSTETRICAL SCYLLA AND CHARYBDIS, OR, VICTORIA AND MR. WAKLEY

VICTORIA, Queen of Great Britain and Empress of India, is sometimes, quite wrongly, thought to be an uninteresting person, or even stodgy. I once made this mistake myself. Lytton Strachey, that debunking biographer, probably had the same idea when he began to write about her.¹ If so, he very soon found out that he was wrong. For Victoria refused to be debunked and emerged from his scrutiny as a person of tremendous vitality. She and her husband, apart altogether from their exalted position, turned out to be strong characters in their own right, an impression which is confirmed by my own search through their writings, many volumes of which I read before dipping into Strachey's book. The reason for this excursion into Royal biography will appear later.

Victoria was a woman of abounding energy, to whom nine pregnancies were a minor incident in life. Her will was as hard as steel and she had a most overwhelming personality, in spite of her very small stature and lack of beauty. In October, 1857, she wrote to the British Ambassador in Germany about her eldest daughter's marriage:

"The Queen *never* could consent to it (taking place in Berlin) both for public and private reasons, and the assumption of its being *too much* for a Prince Royal of Prussia to *come over* to marry the *Princess Royal of Great Britain* in England is too *absurd*, to say the least. . . . Whatever may be the usual practice of Prussian Princes, it is not *every* day that one marries the eldest daughter of the Queen of England. The question therefore must be considered as settled and closed. . . ."

It was. The marriage took place at the Chapel Royal, St. James's.

A person who could so naturally assume this arrogant and effortless authority and calmly impose her will upon the head of another dynasty is not without interest, to say the least of it. And yet she could be very modest. On one occasion she presented Charles Dickens with a copy of her own published work.² She had written in it, "From the humblest of writers to one of the greatest." She was diffident about her own attainments, especially as compared to the brilliancy of Albert's, but she was never modest about the greatness of her position.

She was certainly one of the world's great lovers. Her life with Albert was ideally happy and she worshipped him to adoration. Lytton Strachey says, when he died at the age of forty-two: "With appalling suddenness Victoria had exchanged the serene radiance of happiness for the utter darkness of woe," and this was no exaggeration. The steel-willed autocrat, iron-hard and self sufficient, wrote to her uncle after Albert's death in 1861:

"My own dearest, kindest Father, For as such have I *ever* loved you! The poor fatherless baby of eight months is now the utterly broken-hearted and crushed widow of forty-two! *My life as a happy one is ended!* The world is gone for *me!* If I must live on . . . it is henceforth for our poor fatherless children—for my unhappy country, which has lost *all* in losing him—and in *only* doing what I know and *feel* he would wish, for he is near me—his spirit will guide and inspire me! But oh! to be cut off in the prime of life—to see our pure, happy, quiet, domestic life, which *alone* enabled me to bear my *much* disliked position, cut off at forty two—when I *had* hoped with such intuitive certainty that God never *would* part us, and would let us grow old together . . . is *too awful*, too cruel! And yet it *must* be for *his* good, his happiness! His purity was too great, his aspiration *too high* for this poor, *miserable* world! His great soul is *now only* enjoying *that* for which it *was* worthy! And I will *not* envy him—only pray that mine may be perfected by it and fit to be with him eternally, for which moment I earnestly long. . . .

Ever your devoted, wretched, child, Victoria R."

Albert himself was perhaps one of the most conscientious men who ever lived. He had a first-class brain, was an expert musician and a tremendous worker. By seven o'clock in the morning he was at his desk, abstracting papers, writing memoranda and doing everything he possibly could to relieve his wife of the burden of State affairs which she had to carry. He is generally thought to have been devoid of a sense of humour, and it is true that he was somewhat stiff, with a formal aloofness which made him a difficult man to know. This was one of the causes of his undeserved unpopularity. But he could tell a story against himself, which is a fair test of that undefinable thing a sense of humour.³

"Balmoral is in full splendour. . . . The deer were so polite as to show themselves yesterday . . . in the sacred number of three. Whether from a reverential feeling on our part, or from boundless lack of skill, I know not, but three of us also, to wit, Lord Malmesbury, Col. Phipps and myself, shot . . . and missed them, each of the others twice, and I, as became my rank and station, four times."

On one occasion a man was seen in the street waiting for this resolute pair with a pistol. He escaped in the confusion, so the next day Victoria and her beloved drove past the same spot with the deliberate idea of bringing the matter to a head at once rather than have a continuous threat hanging over them. Their bold plan was successful, but how many of us would have had the cold courage to try it?

The English-speaking world on both sides of the Atlantic owes a great debt to Albert. One of his last actions, at a time when he was feeling very ill indeed (it was the beginning of the attack of typhoid fever which killed him) was to rewrite a provocative diplomatic message which would probably have led to war between the two countries.

In 1853 Mr. Wakley, the fearless and incorruptible watchdog of *The Lancet*, began to hear extraordinary rumours about Her Majesty, rumours which he could hardly believe.⁴ Being Mr. Wakley he could not possibly ignore these tales, nor could he keep quiet about them. A leading article appeared:

"A very extraordinary report has obtained general circulation connected with the recent accouchement of her most gracious Majesty Queen Victoria. It has always been understood by the profession that the births of Royal children in all instances have been unattended by any peculiar or untoward circumstances. Intense astonishment, therefore, has been excited throughout the profession by the rumour that her Majesty during her last labour was placed under the influence of chloroform, an agent which has unquestionably caused instantaneous death in a considerable number of cases. Doubts on this subject cannot exist. In several of the fatal examples persons in their usual health expired while the process of inhalation was proceeding, and the deplorable catastrophes were clearly and indisputably referrible (sic) to the poisonous action of the chloroform, and to that cause alone.

"These facts being perfectly well known to the medical world, we could not imagine that anyone had incurred the awful responsibility of advising the administration of chloroform to her Majesty during a perfectly natural labour with a seventh child." (It was, as a matter of fact, the eighth child). "On inquiry, therefore, we were not at all surprised to learn that in her late confinement the Queen was not rendered insensible by chloroform or by any other anæsthetic agent. We state this with feelings of the highest satisfaction. In no case could it be justifiable to administer chloroform in perfectly ordinary labour; but the responsibility of advocating such a proceeding in the case of the Sovereign of these realms would, indeed, be tremendous. Probably some officious meddlers about the Court so far overruled her Majesty's responsible professional advisers as to lead to the pretence of administering chloroform, but we believe the obstetric physicians to whose ability the safety of our illus-

trious Queen is confided do not sanction the use of chloroform in natural labour. Let it not be supposed that we would undervalue the immense importance of chloroform in surgical operations. We know that an incalculable amount of agony is averted by its employment. On thousands of occasions it has been given without injury, but inasmuch as it has destroyed life in a considerable number of instances, its *unnecessary* inhalation involves, in our opinion, an amount of responsibility which words cannot adequately describe.

"We have felt irresistibly impelled to make the foregoing observations, fearing the consequences of allowing such a rumour respecting a dangerous practice in one of our national palaces to pass unrefuted. Royal examples are followed with extraordinary readiness by a certain class of society in this country."

When I first came across this article I was almost as astonished as Mr. Wakley was, but for a different reason. The first thing to notice is the date—five weeks after the birth of Prince Leopold on April 7th, 1853, so the article obviously refers to this confinement. I checked these details very carefully to make certain that they were correct. This led to further researches into Victoriana, in an effort to explain a conflict of evidence.

The Lancet not only makes it clear that chloroform in normal labour is never justified under any circumstances, but it also states definitely, as a fact, that it was not used. This surprised me very considerably, for I knew that Benjamin Ward Richardson, in his long biographical preface to John Snow's book on chloroform,⁵ states categorically that Snow gave chloroform to Her Majesty at this very confinement on the date mentioned above.

"A note in his diary records the event. The inhalation lasted fifty three minutes. The chloroform was given on a handkerchief in fifteen minim doses, and the Queen expressed herself as greatly relieved by the administration. He had previously been consulted on the occasion of the birth of Prince Arthur in 1850, but had not been called in to render his services. . . . On April 14th, 1857, another note in his diary records the fact of the second administration to her Majesty, at the birth of the Princess Beatrice."

That sounds authentic and detailed enough, and it is in flat contradiction to *The Lancet's* leading article. What is the explanation of this discrepancy? Was John Snow a liar, or did Richardson forge the entries in his diary, or was the usually reliable Mr. Wakley mistaken? I think the last of these three alternatives is the correct one, and there is a certain amount of evidence and a good deal of presumption, to support this view, whereas there is none whatever in favour of the other two theories.

I say Mr. Wakley was mistaken. What I really mean is that he was deliberately misled.

The obstetrician and the other Royal doctors were in a very perilous dilemma. They were between the devil and the deep sea, so they quibbled. On the one hand was their illustrious patient, who probably demanded chloroform. And when Victoria asked for something she was in the habit of getting it. Her very decisive victory over the German Royal House in the matter of the marriage is distinctly relevant here. If she could bulldoze a crowned head in this effortless way, surely the opposition of a few doctors was child's play to her. After all, only a few years before doctors were expected to use the tradesman's entrance at the back of the house, if indeed they had altogether ceased this habit.

Also a person with a will like hers was not likely to hesitate in making up her mind very definitely on the question of chloroform for her own confinement. No doubt, as *The Lancet* says, the royal doctors were very reluctant to use it. The reasons against it, put forward by Mr. Wakley, were not new to them. They were common knowledge, and a large percentage of doctors agreed with them, at that time. No doubt also the Queen and Albert would listen politely to their objections. After all they had had a lot of practice at listening. Politicians, statesmen, ambassadors, mayors, and deputations of all kinds had been talking at them for years. But I imagine the end of the discussion was in character. "Thank you, gentlemen, for your opinions. *We* are having this baby, and *We* are having chloroform." And another question was settled and closed. I find it quite impossible to imagine the doctors persisting in their refusal in the face of that imperious and inflexible will.

On searching through the relevant parts of the nine volumes of the *Letters of Queen Victoria* I could find no direct reference to this incident.⁶ These letters are, of course mainly political, written to her ministers. A few personal and family details are mentioned in those addressed to her relatives, especially those to her uncle the King of the Belgians. But she did not need to ask his advice on an intimate subject like this, which after all concerned nobody but herself and Albert.

On only one occasion—apart from her remarks to John Snow—did she record her opinion of chloroform, and it was entirely favourable. In a letter⁷ to Princess Augusta, the mother of the Prince Frederick who married her eldest daughter, also called Victoria, she said, "Vicky appears to feel quite as well and to recover herself just as quickly as I always did. What a blessing she had chloroform! Perhaps without it her strength would have suffered very much."

It must be remembered that, conservative though she was in some ways, in others she was far in advance of her time. In an era when ladies of quality were kept in bed for weeks after their confinements she put into practice—no doubt against strong opposition—the modern idea of getting up early. The Prince Consort himself makes this quite clear in a letter to his stepmother after the birth of the Princess Beatrice (the occasion of the Queen's second anæsthetic): "Victoria is already on the sofa and very well."⁸ The birth was on the 14th April and the letter was written on the 19th.

Sidney Lee's biography⁹ and Queen Victoria's own book¹⁰ do not mention chloroform at all. There is no particular reason why they should.

So the probability is that the *accoucheur* had to do as he was told, making the best of a bad job by unloading the terrific burden of responsibility on to the competent shoulders of John Snow. He was the acknowledged expert, and had been ever since the beginning of anæsthesia—the only anæsthetist in the kingdom, with the possible exceptions of Clover and Potter.

But imagine the *accoucheur's* horror at the thought of what the formidable Mr. Wakley would say. For he was the other horn of the dilemma, and he was in his own way as inflexible as the Queen herself. Nothing would induce him to be quiet if he had something to say, and he had seen to it that his opinions about chloroform were generally known amongst his professional brethren. He was unbribeable, incorruptible, and utterly fearless. Rank, position and power meant nothing to him, nor was he afraid of the law. Chloroform in normal labour he condemned utterly as a treacherous drug—not knowing yet that it was far safer in labour than in surgery. Mr. Wakley was perhaps even more intimidating than the Queen—if that were possible—for there is no evidence that he ever softened or mellowed at all, whereas Victoria occasionally did. So he had to be pacified by a half-truth—that the Queen was not rendered insensible, which Mr. Wakley interpreted, as he was intended to do, as not having chloroform at all. In actual fact the Queen got her chloroform, given by the best possible man, but she got analgesia only, not anæsthesia—chloroform *à la reine*, in fact. Snow knew quite a lot about anæsthesia by this time, quite enough to use analgesia deliberately. His fifteen minim doses were in fact designed for this purpose, and they did their work well. The Queen herself said so. Mr. Wakley's conjecture that "a pretence of giving chloroform" might have been used was unworthy of his intelligence. Was Victoria the sort of person to be tricked like this?

Technically correct the statement may have been, but as an example of hair-splitting casuistry it takes some beating. For the Editor of *The Lancet* was certainly left with a totally wrong impression. He goes on to pontificate, "In no case could it be justifiable to administer chloroform in normal labour."

Not a very creditable episode, really. One wonders if Victoria and Albert ever got to hear about it. Probably not. It is very unlikely that they had either the time or the inclination to read *The Lancet*. It is equally unlikely that anyone would dare to tell them about it. Anyway John Snow was employed again at a future confinement, so it is quite certain that his work met with the royal approval. But it cost me several weeks of work to ferret out the facts and the background of this affair and to explain the incident in a reasonable way. I can think of no other theory which fits the facts. Whether Mr. Wakley ever found out how he had been diddled is not yet clear. Further researches in later numbers of *The Lancet* should clear up this point.

A detailed search through later volumes, carried out after this chapter was written—I couldn't delay the writing of it because it interested me so much—revealed no further mention of this anæsthesia.

What it did reveal was the fact that I was not quite accurate when I stated that Mr. Wakley never mellowed at all. He, or at any rate his paper, became rather less forthright and less intimidating than before. In 1857 two of his sons were made partners in *The Lancet*. Five years later he died, at the age of sixty-seven. Perhaps he was getting a little tired of fighting, perhaps his sons had a restraining influence. After all, he had corrected so many abuses, defended so many libel actions, exposed so many scandals and advocated so many reforms that the old fire within had probably died down to some extent.

On April 18th, 1857, the year of the family partnership, *The Lancet* reported that "Her Majesty was safely delivered of a Princess . . . on Tuesday last." It was a normal labour, but the report goes on to state, quite calmly, that Dr. Snow began to give chloroform at intervals at 11.30 a.m. This continued for 2½ hours, and "the anæsthetic agent perfectly succeeded in the object desired."

But there was no further comment and no criticism of any kind. I seem to detect the influence of the brothers Wakley here, rather than that of their ruthless and caustic father. In the next week's issue there is a simple and gratified report that Dr. Locock, "who has assisted Her Majesty through so many hours of trial without the occurrence of a single mishap," had been rewarded with a title and had become Sir Charles

Locock, Bart. Sir Charles, then plain Dr. Locock, was appointed physician *accoucheur* to Her Majesty in 1846. She had had four children before this. In 1847 Dr. Robert Ferguson was also appointed to a similar position. So these two were probably responsible for her last five confinements.

Victoria had one other operation during her long life, on Sept. 4th, 1871. Mr. Lister opened an axillary abscess for her, but the reports do not mention any anæsthetic.

Many years later, however, in 1908,¹¹ Lord Lister, in a long letter to Sir Hector Cameron, gave a condensed history of his antiseptic method. He began by saying that he first treated compound fractures with undiluted carbolic acid in 1865. He then began to use it for abscesses.

"I continued to use a strip of lint as a drain for about five years with perfectly satisfactory results. But in 1871, having opened a very deeply seated acute abscess in the axilla, I found to my surprise on changing the dressing next day that the withdrawal of the lint was followed by escape of thick pus like the original contents. It occurred to me that in that deep and narrow incision, the lint, instead of serving as a drain, might have acted as a plug and so reproduced the conditions present before evacuation."

He goes on to describe in detail how he cut off a piece of rubber tubing from the Richardson's ether spray which had been used at the operation, cut holes in it and attached silk threads to one end. He then soaked it in strong carbolic solution all night and used it for the abscess next morning. He found that there was no further damming up of pus, and the abscess healed in a week. After that he continued to use drainage tubes instead of lint plugs.

Was this patient Victoria? It was the right year, and he goes into such detail that it might well have been the Queen's case. Or it may have been that he detailed it because he thought tubes were a great advance over the old method. We shall never know for certain. But the case does give a hint as to the anæsthesia used. It would certainly be the ether spray.

Much later another little sidelight on this operation was discovered. Sir St. Clair Thomson, one of Lister's house surgeons many years before, gave an address in 1927,¹² revealing many interesting and homely facts about his old chief. In the course of it he said:

"Like all great men he was keen on the importance of small details. In showing us how to bandage a breast he insisted on the point that, in spite of various turns, the bandage was almost sure to slip . . . if the . . . turns of the bandage, above and below . . . the mamma . . . were not prevented from

slipping up and down by uniting them with a safety pin. . . . To impress this point upon us he narrated that he had once had to open a simple abscess in the axilla for Queen Victoria. All went well. After one dressing and on arrival at the railway station to travel back to Edinburgh, he suddenly remembered that he had forgotten the important safety pin. He at once drove back to the Castle, and explained his oversight to Her Majesty, and the necessity for rectifying it. Some surgeons, I fear, would have thought first of their own reputation, and would have 'risked' the safety pin."

I have read enough about Victoria to convince me that Lister's frankness and courage in acknowledging his forgetfulness would be appreciated by the patient. Albert would certainly have approved, but, alas, Albert was no longer there.

And so the incident closes. After her second general anæsthetic Victoria had still a few years of perfect happiness with her beloved, before she entered the gloomy and weary thirty-nine years of loneliness and sorrow. Only as death approached did the shadows lighten, at the joyous prospect of reunion. When she was dead there was to be no black upon her, for the first time for four long decades. So, at eighty-one, she was buried with her wedding veil in her coffin.

Dr. Locock had the vastly increased professional prestige of his baronetcy, Mr. Wakley, though still alive, lay dormant like an extinct volcano, and Dr. Snow, being an anæsthetist, naturally got nothing out of it at all.

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ESSAYS ON THE FIRST HUNDRED YEARS OF ANÆSTHESIA

by

W. STANLEY SYKES,

M.B.E., M.B., B.Chir. (Cantab.), D.A.

*Late Anæsthetist to the General Infirmary at Leeds, to the Hospital for Women
and St. James' Hospital, Leeds, to the Leeds Dental Hospital, to the
Halifax Royal Infirmary and to the Dewsbury General Hospital*

Volume II



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CHAPTER 14

THE DEATH OF MISS IDA WYNDHAM, NITROUS OXIDE'S FIRST VICTIM

Lancet, 1873, Feb. 1. 178. Death from nitrous oxide.

At Exeter on Jan. 22nd, Mr. J. T. Browne Mason, dentist, gave gas to Miss Ida Wyndham, aged 38, for extraction of an upper molar. The pulse became rapid, and Dr. Pattison, who was present, thought less full, while she was still conscious. The inhaler was taken away and an attempt at extraction made, but she could not bear it. Gas was given again. Her face became swollen and livid. She died. No post-mortem.

A fortnight later there was a letter from F. Woodhouse Braine, who was born in 1837 and qualified in 1858. When Henry Potter retired Braine became the only other pure anæsthetist besides Clover. He was twenty-one years at the Dental Hospital, and among the first to use nitrous oxide in this country. He was the first anæsthetist at Charing Cross Hospital and worked there for eighteen years. He used the Ormsby inhaler for ether. He died on October 28th, 1907, in his seventy-first year. His son, Charles Carter Braine, also became anæsthetist to Charing Cross Hospital. This letter was written about five years after T. W. Evans's first demonstration of gas anæsthesia in this country.

Lancet, 1873, Feb. 15. 253.

After saying that the newspaper reports were unreliable Braine said that he did not believe that the patient died from the effects of the gas. "What Dr. Pattison really does say is, and I quote from the report drawn up by him in conjunction with Dr. Drake and Mr. Browne Mason, 'that the pulse became less rapid, but that its volume did not vary'." The *Lancet* had said that death was clearly due to paralysis of the respiration, and that there was no obstruction to the air passages. "This is not true, for there was considerable enlargement of both tonsils, with chronic elongation of the uvula interfering with her breathing, and rendering it at times somewhat loud." There was no entry of air into the chest on artificial respiration. Had there been paralysis of respiration, this would not have prevented the entry of air.

Lancet, 1873, Feb. 15. 254.

Abstract of report by Mr. Browne Mason. The patient was stout, with enlarged tonsils, prominent eyes and an underhung jaw. Her breathing was loud and snorting on exertion (? exophthalmic goitre). The bleeding after the first

THE DEATH OF MISS IDA WYNDHAM, NITROUS OXIDE'S FIRST VICTIM

attempt was very slight. There was no cyanosis on removing the inhaler for the second time. There was a ten minute interval since the first attempt. All fragments were accounted for, and none of them went down the throat. The wooden gag was difficult to remove and was found later to be chipped. It was not known whether it was chipped before the anæsthesia. No blood went down the throat. The heart beat for two minutes after the respiration had ceased. The sounds produced during artificial respiration were only those of expiration. Dr. Pattison was Miss Wyndham's brother-in-law. There was no P.M.

There follows, ten months later, an interesting letter from G. Q. Colton, who was by far the most prominent figure in the world of nitrous oxide in the pre-McKesson era.

Lancet, 1873, Dec. 13. 857. Letter from G. Q. Colton, New York.

Sir,—In the February number of your valuable journal, an article appears under the heading of "A case of fatal suffocation from nitrous oxide gas," which in my opinion contains so many errors regarding the operation and effects of the gas that I ask space for this reply.

In regard to the death of Miss Wyndham, which you so circumstantially describe, the question is whether she died from the effects of the gas, or from the unfortunate treatment she received after having fainted, and after the effects of the gas had passed off. You state: "She took the gas in the usual way, without any symptoms to excite uneasiness. At the proper degree of insensibility the inhalation was stopped, and the tooth was extracted. In the operation Mr. Mason was obliged to split the fangs and take them out separately. It was not until after the operation was completed that anything unusual happened, but immediately afterwards the face became livid. . . . Mr. Mason hastened to fetch Dr. Drake, who returned with him, and who found the lady still alive. She was sitting in a chair in a half-reclined position, before an open window.

It will be observed that she fainted "after the operation was completed." She certainly could not have fainted while under the influence of the gas, because, from the extra supply of oxygen in the gas, the action of the heart and the circulation of the blood is increased rather than arrested. Indeed the gas is the quickest and surest remedy to administer in cases of fainting. If this lady had been placed at once flat upon the floor, and some water dashed in her face, in all probability she would have revived. There are many cases on record where patients have died in the dentist's chair when no anæsthetic was administered. Why assume that this death was caused by the gas, when nothing unusual happened till after the effects of the gas had passed off?

The great mistake of the *Lancet* is contained in the following extracts:—"From no agent have there been so many hairbreadth escapes from death as from this gas, and probably of late some persons every day have been brought

within the minutest line of the danger to which Miss Wyndham succumbed. . . . Nitrous oxide, indeed, is not an anæsthetic at all. A true anæsthetic is an agent which suspends common sensibility without, by any necessity, interfering with those organic processes on the continuance of which life depends. Nitrous oxide acts, not in this way, but by suspending for a brief period one of the most important of the organic processes—that of respiration itself.”

In reply to the first extract, I have to say that it is a mere assertion without any proof. The *Lancet* admits that this is the *only* death which has occurred in England from the effects of the gas, and I think I have shown that even this case cannot with certainty be attributed to the gas. The gas has been administered many years and by hundreds of dentists in England. How can it, then, be assumed that “some persons every day have been brought within the minutest line” of death? Practical experience is better than theory in such a matter.

In regard to the second extract, in which it is stated that nitrous oxide is not an anæsthetic, and that it suspends respiration, I have to answer, the *Lancet* never made a greater mistake. I speak from an experience of over ten years in administering the gas, and to over 67,000 patients. I have given the gas for something over a hundred operations in general surgery, in which I have kept patients in the anæsthetic sleep from five to sixteen consecutive minutes; and have the testimony of the distinguished surgeon, Dr. J. Marion Sims, that he has performed operations with the gas where the insensibility was continued over one hour.. According to the reasoning of the *Lancet*, respiration (breathing) was suspended during all this time! No one can question the fact that the gas will produce insensibility to pain.

And now as to the safety of the gas as an anæsthetic. I presume it is known that I introduced the gas (or rather revived it) to the dental profession in July, 1863. After using it for about nine months, I commenced to ask my patients to write their names on a scroll. These names I have numbered regularly from the beginning. The number on the scroll at this writing is *sixty-seven thousand, four hundred and fifty-five* (67,455).

It should be added that Colton, by 1881, during a period of seventeen years, had raised his scroll numbers to the astonishing total of 121,709 without a death.¹

In all this vast number I have never had a fatal case, or even a case of serious injury, from the effects of the gas. We have an occasional case of vomiting—not oftener than one in a hundred—and this, usually, from swallowing a little blood. During the past eight years we have averaged from twenty to thirty patients every day, and occasionally reaching fifty. In the spring of 1868 I exhibited to a large number of leading dentists and surgeons in London, at the office of Mr. Charles James Fox, the autograph signatures of *over nineteen thousand of the above patients*.

What do these facts prove? Not that "the administration of nitrous oxide is a harmless process—a process which any man, educated or uneducated, may carry out without danger of destroying life." No one pretends this. But it shows that, with ordinary care and prudence, it is a comparatively safe agent, even in the hands of ordinary dentists. There are many thousands of dentists in the United States who have used the gas during the past eight or nine years, so that it is safe to assume that three hundred thousand have inhaled it in this country for teeth extraction, and yet *not a death has occurred!* (There was a *reported* death from the effects of the gas in this city, but on investigation it was shown that the patient only *attempted* to breathe the gas three or four times, and finally concluded to have her eight teeth drawn without it, which was done. She fainted from the pain and shock, and unfortunately, like Miss Wyndham, was kept in an upright position for some ten minutes. In referring to this case, the *Lancet* admitted the "ineffectual" attempts to administer the gas, and stated that the patient would probably have recovered if she had been laid flat on the floor. In my opinion, if this woman had inhaled the gas properly she would have been alive today.)

To use any anæsthetic successfully requires experience. It does not of necessity require great knowledge in chemistry or surgery. If any of your learned readers were to stand by my chair and see me administer the gas successfully to a hundred patients, though I profess no great scientific knowledge, he would prefer to trust himself in my hands in a similar operation upon himself, rather than rely upon the theoretical knowledge of any physician or surgeon, however distinguished.

The difference in the action of nitrous oxide and chloroform is, that chloroform, containing no oxygen, arrests or retards the action of the heart, and really carries the patient *towards* the point of death; and about one in 2,500 die from it. Nitrous oxide, containing more oxygen than the atmospheric air, increases the action of the heart, and carries the patient into increased and higher life. One gives life, the other death. At least half a million people (the world over) have taken the gas for teeth extracting and not a death has occurred, or only one, according to the *Lancet*. It appears to me that if experiments are to be made with a view to "learn" how to use anæsthetics, they should be made with that agent which has been proved to be the most safe. In view of all the above facts, no one can question that nitrous oxide, in point of safety, is vastly superior to all known anæsthetics. Dentists who commence the use of the gas often make the mistake of not administering enough, or of having too small a passage for the patient to breathe through; but these are errors which time and experience will correct. I am, Sir, your obedient servant, G. Q. Colton. New York, Aug. 18th, 1873.

P.S.—The *Lancet* states that the pulse of the patient became rapid under the influence of the gas, as though this was an unfavourable symptom. The rapidity of the pulse (in health) depends upon the rapidity with which it is

oxygenised in the lungs. When we run upstairs, or engage in any sudden muscular exertion, we breathe faster, and supply oxygen to the lungs faster, thus preparing it more rapidly for circulation. There is a corresponding increase in the rapidity of the pulse. The nitrous oxide, being composed of one half oxygen, supplies this oxygen to the lungs so rapidly that the pulse is increased by fifteen or twenty beats in a minute when it is given for anæsthesia. If the operation is attended with great mental excitement, the pulse may be increased thirty or forty beats, not certainly reaching a point of danger.

A person *can* "hold the breath" for a considerable time after inhaling the gas, because an extra quantity of oxygen is suddenly supplied to the lungs. The blood continues to flow till the extra oxygen is used up. The pearl-divers take a dozen or twenty rapid and deep inhalations of common air and then go under water and remain a long time, until the extra oxygen supplied to the lungs is exhausted. By this rapid and deep inhalation of common air a person can make the head swim, or put himself into a half anæsthetic condition. The gas does the same thing, only carrying the effect a little further.

Comment by the Lancet:

Our correspondent, by the very candour which he exhibits, prevents us from replying to him as we might have been tempted to reply. He takes credit only for what he calls practical knowledge, and professes "no great scientific knowledge". This is to be regretted, because he offers observations purporting to be scientific—that is to say, to be based on scientific fact or observation. We, on our part, have a practical knowledge of anæsthesia as extended as it can be, insomuch as it extends from the first days of the introduction of the art to the present day without a break in our labour of any serious duration. But we have striven also to get at principles; we have experimented to learn; and we thereupon came to a difference with Dr. Colton on vital points. We assert, on facts gained both by experience and experiment, that the lady who died at Exeter from nitrous oxide did not die of syncope, that she showed no sign of syncope, but that she died of asphyxia. We assert, on like evidence, that nitrous oxide is not decomposed in the human body, and that there is no proof whatever that the oxygen it contains is applied for oxidation in the organism. We suggest, on good evidence, that the rapid pulse which follows the administration of the gas is due not to stimulation of the heart, but to the resistance which is taken off the heart from an induced paralysis of the vessels of the minute circulation; and we affirm that a man or an animal can live longer with the lungs filled with common air than with the same organs filled with nitrous oxide. In a word, Dr. Colton's experiences of administration, which we do not dispute, show that asphyxia can be carried to the point of inducing insensibility with fewer accidents than might be supposed. The experiments in the Grotto del Cane prove the same fact; and we remember that, some years ago, when, on an enquiry into the management of

one of our great English institutions for the insane, it was shown that for years upon years certain troublesome patients had been systematically quieted, before their washing and dressing, by the process of compressing their wind-pipes by a few twists of a soft stocking, it was contended that the process never did any harm. These facts, in their bearing on asphyxia, are most valuable, as are also some others which illustrate that a living body may be submerged in water several minutes, and may yet recover after removal; but they have nothing directly to do with anæsthesia, as a scientific study. Perfect anæsthesia is, in principle, the art of suspending sensations and sensibility, without interfering with those processes upon which the continuance of life depends. The administration of a gas which stops the process of respiration, though it suspends sensation and sensibility for a short period prior to death, is no part of this perfected art; and we shall persist, notwithstanding Dr. Colton's practical knowledge, in upholding the principle of scientific investigation until the art is perfected.—Ed., *L*.

Colton—not Dr. Colton, for he was never medically qualified—is of course quite wrong about the oxygen content of nitrous oxide. He assumes it to be free oxygen, available to the body, as in ordinary air. The *Lancet* corrects this erroneous view.

We shall see later how Courville based a perfectly correct principle on completely invalid and irrelevant evidence. We now have the position reversed. Colton, a most experienced and successful user of nitrous oxide, who had, at this time, an experience of 67,455 cases (which he increased to 121,709 by 1881¹) without a single death, based his correct practice on an entirely erroneous principle.

It is not altogether surprising that he could do this in the short dental 'fill-ups' which composed the vast majority of his cases. Such is the inherent safety and non-toxicity of the gas that the average patient can be taken almost to the point of respiratory arrest—and will recover directly air is given. But Colton went beyond this in a few cases. So great was his empirical skill that he even gave long gas anæsthesias—up to sixteen minutes, according to his own statement—for surgical operations. Nothing is said about the addition of oxygen, so these administrations must have been intermittent, with frequent breaths of air allowed.

This being so, it is singular that he did not discover his mistake about the available oxygen content of nitrous oxide, for in these long cases—about 100 of them—he must have found that pure gas could not be given continuously, but that air had to be given at intervals; and that air had an oxygenating effect infinitely greater than that supposedly due to nitrous oxide, which was, in fact, nil.

The *Lancet* correctly points out this mistake, but falls into error itself in referring to nitrous oxide as a gas which stops the process of respiration. The gas can be correctly described as an oxygen replacing agent, which interferes with oxygen metabolism, but to say that it arrested respiration was mere foolishness in view of Colton's immense series of cases which were unique in anæsthesia for the very reason that, alone among anæsthetics, respiratory arrest had never occurred. In fact the total condemnation of gas by the *Lancet* goes too far, and is much too sweeping.

The death of Miss Wyndham seems to have been due to asphyxia, as far as one can judge, not from the gas alone, but from the gas combined with many unfavourable circumstances. Her face was livid and swollen. She had enlarged tonsils and an enlarged uvula. She was stout, with an underhung jaw, and quite possibly an enlarged thyroid with pressure on the trachea—she is described as having prominent eyes and snorting or noisy breathing on exertion. There had been some bleeding from the first abortive attempt at extraction—it was stated to be slight, but it might have been more profuse than was thought, taking into account the ten minutes which elapsed between the two attempts and the fact that some of the blood might have disappeared into the air-passages. Added to all this she probably had tight corsets on. All these little things add up; besides the missing fragment of gag might have been impacted in the larynx. Nobody looked to see.

REFERENCE

- ¹ Henry M. Lyman (1882). *Artificial Anæsthesia and Anæsthetics*.

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