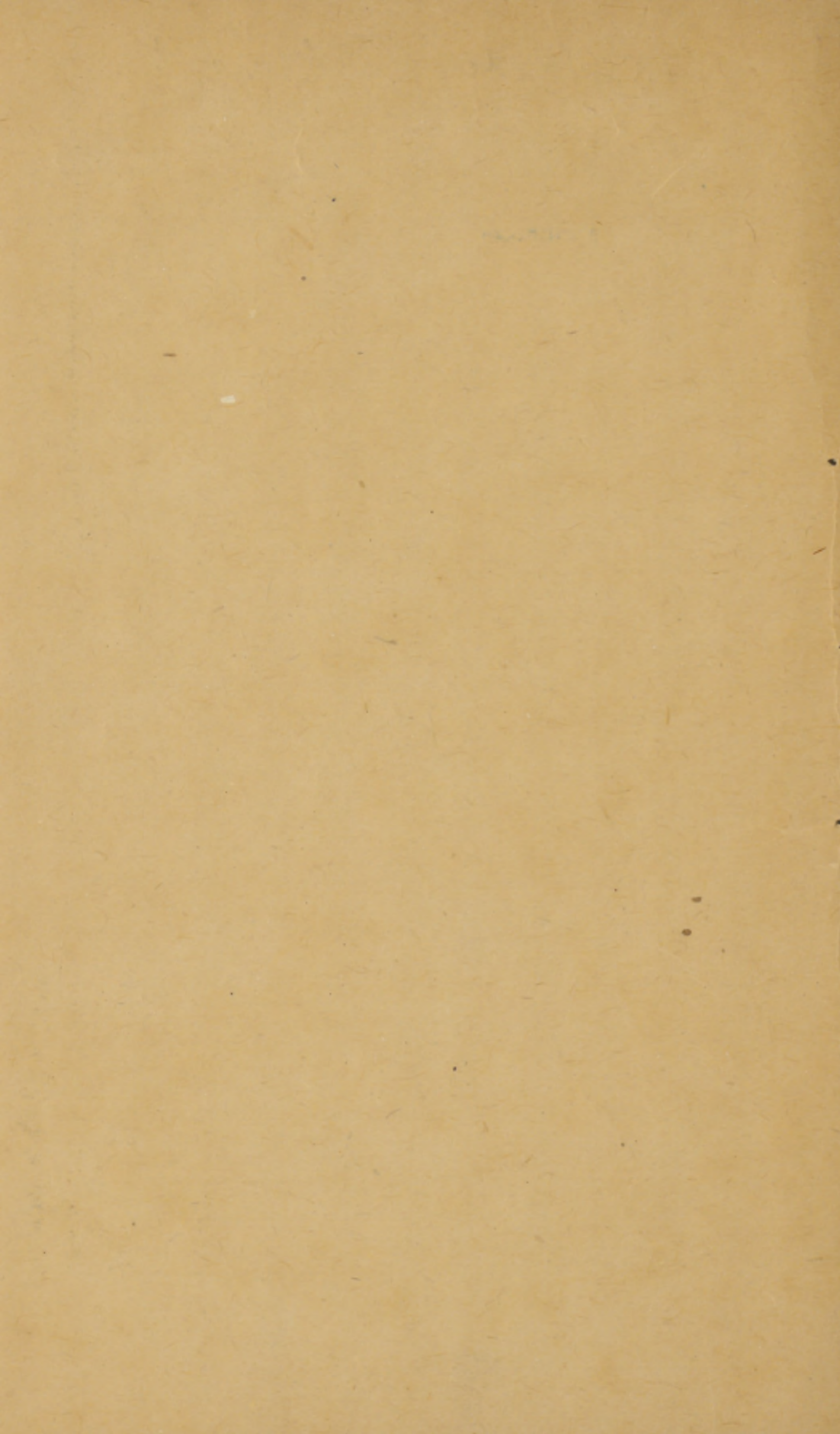


Turnbull (2)





**HYDROBROMIC ETHER OR BROMIDE OF ETHYL AS AN ANÆSTHETIC.**

BY LAURENCE TURNBULL, M.D.

Annual Surgeon to Jefferson College Hospital, Philadelphia.

THE hydrobromic ether or bromide of ethyl was discovered by Serullas in 1827, but received no special attention until Dr. Thomas Nunnely, of Leeds, made some experiments with it on animals in 1849. Dr. Nunnely brought the subject again before the profession, by a paper read at the meeting of the British Medical Association in 1865, in which, in conjunction with another anæsthetic, he says he had employed the one or the other in all the principal operations at the Leed's General Eye and Ear Infirmary. This was at the time when chloroform held such complete sway in England, that no importance was attached to Nunnely's experience or experiments, and he had no one to follow him in using it, and we hear no more of it until 1876, when some experiments were made with it in France, by Rabuteau, on the lower animals, but evidently without a knowledge of the fact that this had been done previously in England by Nunnely.

I then took the agent up without the knowledge of the experiments of Dr. Nunnely, of England, and had it made in Philadelphia by Professor Remington, and with two friends began experimenting in September, 1877, using it first on myself, and then upon my patients. After satisfying myself as to its efficiency and safety as an anæsthetic, I laid the subject before the Pennsylvania State Medical Society in 1878, and a record of ten cases, with my conclusions, which were published in the volume of their Transaction for that year. In August, 1879, I brought it before the British Medical Association at Cork, and in September of the same year, I presented a report of one hundred cases before the International Medical Congress at Amsterdam (to which I was a

delegate from the American Medical Association), up to March, 1879, when the second addition of my work on anæsthetics went to press. I had published a report of twenty-five successful cases in quite a variety of surgical operations, and had not only employed it at my daily ear clinic, but also in the Jefferson Medical College Hospital, and administered it in April, 1879, to a patient of Dr. Samuel W. Gross, at the public clinic, when he (Dr. Gross) removed a hyoid cyst in front of the neck of a child. Dr. R. J. Levis, who was at this clinic, for the first time saw it employed, and become much interested in its use. \*

I thus compelled chemists to make it, by producing a demand for it, and gave them, through Dr. Green, a good formula free from phosphorous; I interested surgeons all over the country to try it, and especially the surgeons of this city, by bringing it in every way before their attention. Subsequently the whole number of cases in which it has been employed by myself and friends up to the present time, June, 1880, will number some eight or nine hundred.

I cannot but feel disappointed that two deaths, not produced by it, should have been associated with it,\* as such accidents will be employed by those having a prejudice against the ether, to condemn it on theoretical grounds. It is my firm conviction that although in several instances recently the use of this anæsthetic has been attended with persistent vomiting, in the hundreds of cases in which it has been employed, chiefly in Philadelphia, in not one single instance has it caused cerebral trouble, or any of the symptoms produced by the action of free bromine, which are as follows: When dogs are confined in an atmosphere of bromine vapor, they suffer a profuse secretion from the eyes, nostrils, and fauces, with cough, hoarseness, dyspnoea. I have ex-

\* The bromide of ethyl as an anæsthetic, by Marion Sims, M.D., LL.D., New York Medical Record, April 3, 1880.

x I was the first to use the bromide of Ethyl as an Anæsthetic in Labor see author work 2<sup>o</sup> Ed

OFFICE  
316  
LIBRARY

## HYDROBROMIC ETHER OR BROMIDE OF ETHYL.

perimented upon frogs, cats, dogs, rabbits, and various other animals by subjecting them to an atmosphere highly charged with the vapor of hydrobromic ether, and in no instance was there the slightest irritative effects as described above.

PHILADELPHIA, June 2, 1880.

"Deputy Coroner Beam made an investigation of the circumstances, as reported in *The Times* nearly a week ago, of the death of William Linderman, eighteen years old, of Schuylkill county, while upon the operating table at the Jefferson College Hospital on Wednesday last, under the influence of the new anæsthetic, bromide of ethyl, and about to be treated for stone in the bladder. He had been about sixteen weeks under the care of Dr. R. J. Lewis, one of the strongest advocates of the new anæsthetic, and was taken to the hospital by his direction. Linderman's health was very poor at the time. Dr. Ames, who applied the bromide, said no incision had yet been made, but Dr. John B. Roberts said it had. The patient was in such a condition that something had to be done, because he could not tide over the hot weather: 96° 98° in the shade.

Dr. J. G. Lee, the Coroner's physician, testified that he found the brain congested, *the lungs far advanced in consumption, and the kidneys and liver enlarged*, and two large encysted stones in the bladder. His opinion was that they could not have been safely taken out. *Linderman could not have lived over a week or two at any rate.* Dr. Lee said further, that he had experimented with the bromide on animals without bad results. In his opinion death resulted from exhaustion and prostration, the result of phthisis. The jury took the same view in their verdict."

In subjecting the new anæsthetic to this most severe test we do not think our friend Dr. Lewis was doing justice to it; knowing the extreme debility of the patient, and that the most simple nervous shock would render him liable

to death. Hundreds of patients have thus died. Again, when ordinary ether, chloroform, or other anæsthetics cause fainting, which was no doubt the result in this case, artificial respiration has to be resorted to; now we were reliably informed that when this useful means was resorted to by alternating and relaxing the chest walls, *the pus which was in this man's lungs was forced into his bronchial tubes and suffocated him.* Again we are very sorry that the valuable agent, nitrite of amyl, which has been found useful in such cases was not employed.

In some recent experiments on animals I crowded four ounces (the quantity stated to have been used by Dr. Sims) upon a dog for several minutes, by means of a tin inhaler, until he became apparently dead, with no perceptible action of the heart or lungs, but his expression of eye was clear, and the pupil was dilated, while there was no secretion from the eyes or nostrils. The apparatus was removed in the space of four minutes, and he was exposed to the air when at once he began to breathe, and by the end of the six minutes, he had almost entirely recovered consciousness.

The dog did not seem much inclined to move for ten or twelve minutes afterwards. While this dog was only partly under the influence of this anæsthetic, having at first caught the inhaling apparatus with his under teeth; there was a good deal of rigidity, and slight tetanic movements of the extremities but this was overcome by the free use of the ether. Now, had we been using chloroform, just before we would have been ready to perform any experiments upon the animal, he would have been dead, and no removal of the anæsthetic nor the introduction of atmospheric air, would have been of any avail. Again if Squibb's rectified, and absolute ether had been employed; we must have super-saturated the animal, and been annoyed by the expectation of large quantities of mucus. Then we frequently have seen tetanic convulsions, requiring several as-

## HYDROBROMIC ETHER OR BROMIDE OF ETHYL.

assistants to hold the patient, with great reduction of temperature, from the use of ordinary ether. The rapidity of the anæsthetic action of hydrobromic ether and its rapid elimination from the system by the lungs, are two of its chief merits for all operations that are not prolonged. If an operation is to be very tedious, and requires from one to two hours, we would advise the additional use of purified sulphuric ether to the anæsthetic. *We would therefore recommend pure hydrobromic ether in operations not lasting over forty minutes.* There is one great advantage in the use of this agent, that the administrator must attend to the anæsthetic all the time, he cannot watch the operation and forget the patient for a few seconds, his whole attention must be given to keep up its action. We have often felt sure that the wet napkin, from the water, in the ordinary ether pressed over the patient's mouth by the weight of the body of the persons giving the ether, and watching the operation, were the indirect causes of the death of the patient. Within the last few days we have employed it in labor for the second time, and it has peculiar advantages in that it is so rapid in its effects, and the patient is comforted between the pains, but never passes into such a state of profound anæsthesia, that she is aroused by the expulsive effort, and has all her consciousness about her, and none of the depressing efforts of ether or chloroform. It is also most valuable in these cases in changing the position of the child, also in bringing forward the neck of the uterus into its proper position. In neither of these instances was there disturbance of the bowels, pain in the back or head. To the county practitioner who has to extract teeth or perform all the minor operations in surgery it is a great boon, as it acts like nitrous oxide gas; it is well where a number of teeth are to be extracted, that a prop of hard wood attached to a string should be used, so as to prevent such an accident as once

occurred in Philadelphia, under the use of nitrous oxide gas, as of the swallowing of a prop of cork. In many cases where you do not want a very profound narcotism with hydrobromic ether, the muscles of the patient become rigidly contracted. This condition occurred in a recent occasion, when we administered (3i) of this anæsthetic and the operator's finger was caught and pinched, as also his forceps, and yet before operating we could touch the cornea with impunity. Although the impression passed away very rapidly, we extracted twelve teeth with entire success, the patient promptly recovering consciousness, and not feeling the pain. In the following case the patient went under it very kindly. This patient was a man of very nervous temperament. With three drachms of the hydrobromic ether anæsthetic was produced without any struggling, and in four minutes from the time he had commenced to inhale it, the dentist had extracted ten teeth, and he had fully recovered consciousness, although he had just eaten a heavy breakfast of solid food. There was no nausea in either of those cases.

In a recent case of cataract extraction the patient went beautifully under the influence of the anæsthetic, extraction was accomplished, and the patient recovered so as to be able to count fingers, yet owing to some strong coffee which she drank; from dyspeptic symptoms or the swallowing of water soon after the operation, she became very sick at her stomach, and vomited for nearly twenty-four hours, and yet the case did well. In a case of operation for torticollis in a woman, she swallowed so much air with the ether, that as a consequence she complained of pain, of a hysterical character, in lower part of the abdomen, the same which is often the result of nitrous oxide gas inhaled, and too much air admitted.

A few days ago we received a letter from Dr. J. Paterson Cassells, of Glasgow, a distinguished Aurist and a Surgeon to the celebrated Glasgow Infirmary, he writes that; he has used a specimen of the hydrobromic ether, which I gave him at Cork; as vapor, in diseases of the middle ear, and have also employed it as an anæsthetic with success.

THE ADVANTAGES AND ACCIDENTS  
OF  
**ARTIFICIAL ANÆSTHESIA.**

*A Manual of Anæsthetic Agents, and their Employment  
in the Treatment of Disease.*

BY

LAURENCE TURNBULL, M.D., Ph. G.,

Aural Surgeon to Jefferson Medical College Hospital.

Second Edition, 12mo., Cloth, pp. 300, with 25 illustrations.

PRICE, \$1.50.

"The exhaustion of one edition of this work in one year proves that it was wanted by the profession. Encouraged by its success, the writer has carefully re-studied every part and remodelled such as did not harmonize with the latest researches. Certainly every medical student and practitioner should be familiar with this little volume. We doubt not that it will speedily find its way into every medical library."—*The Detroit Lancet*, November, 1879.

"We do not know of a work that deserves more general popularity than does this. All the various anæsthetics, their properties, manner of administration, dangers and antidotes, are treated of in the clearest and most forcible style."—*Nashville Journal of Medicine and Surgery*, November, 1879.

"The work will prove highly useful to the surgeon who has not the time to seek in a scattered treatise what is admirably collated and condensed in Dr. Turnbull's work and to the dentist, which class it has also been written for. It cannot but prove invaluable. We greet its appearance as an important contribution to original American medical literature."—*St. Louis Clinical Record*, Oct. 1879.

"We no longer find the first edition in this journal quite fully at the time of publication, and have only to add that it is without question the most complete and best written work on anæsthetics published. Every dentist of whatever standing should be the possessor of this inestimable volume."—*The Dental Advertiser*, Buffalo, N. Y., October, 1879.

"Dr. Turnbull's Manual has met with a reception gratifying to him and merited by the care and labor he has bestowed upon it."—*The Medical and Surgical Reporter*, Philadelphia, August 18, 1879.

"Dr. Turnbull's work considers very fully the advantages and accidents of artificial anæsthesia, anæsthetic agents, and their employment in disease. He has accumulated a large amount of material upon every branch of this subject, and has distilled it for reference. The author's conclusions, derived from careful and logical study of the materials collected from a large personal experience, modestly stated, and from experimentation upon lower animals, are of decided weight. We believe, with him, that the recent graduate, to whom the administration of the anæsthetic is usually entrusted during an operation, generally receives far too little information in the course of his studies upon the requirements of this position, which we regard as one of considerable responsibility. The book is certainly interesting to read, and valuable for reference."—*The Medical Gazette*, New York, January 31, 1880.

"In the present edition new matter has been added—the best proportion in which ether, alcohol or chloroform should be mixed having been determined, and new experiments made on the action of anæsthetics upon the blood. It also contains additional practical hints for the safe administration of anæsthetics, so shortly given as to be readily remembered in an emergency. Among other interesting points in the work, we notice the local use of hydrobromic ether spray as a remedy for noises in the ears, and the effect of climate on the use of chloroform. The production of anæsthesia by rapid breathing, such as one uses when trying to blow up a fire, is mentioned, and its use in dentistry and short operations, illustrated by cases. This work is a useful and acceptable contribution to the literature of anæsthetics."—*London Practitioner*, January, 1880.

"Anæsthesia is a subject of great interest and importance to physicians and dentists, and everything that will aid them in better understanding the subject is sought with great avidity. This work we regard as the best aid in the study of this subject, and it presents the subject up to the present hour."—*Dental Register*.

"The value of such a work as the present is unquestionable. . . . the book contains a great amount of useful information on the nature and use of anæsthetics, applied externally or internally, in vapor, or in ordinary modes of administration."—*Medical Times and Gazette*, London, Nov. 24, 1879.

"This little work of 210 pages should be on the table of every practitioner who expects to administer an anæsthetic of any kind."—*St. Louis Medical and Surgical Journal*.

Published by LINDSAY & BLAKISTON, Philadelphia, and for sale by all Booksellers.

