

Discovery of anaesthesia by Dr. Horace Wells : memorial services at the fiftieth anniversary.

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DISCOVERY OF
ANESTHESIA BY
DR. HORACE WELLS

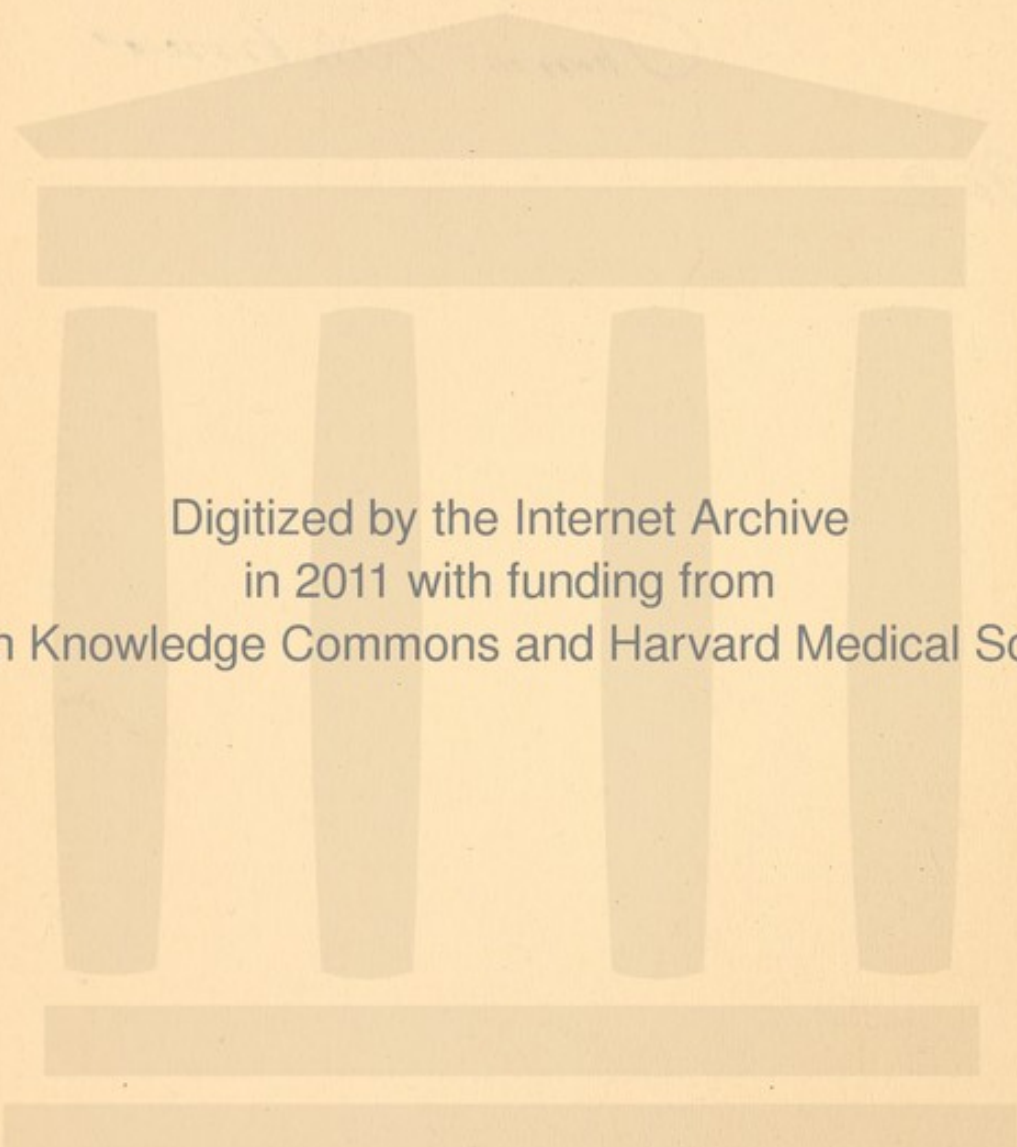
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HORACE WELLS
THE DISCOVERER OF ANÆSTHESIA.
PRESENTED BY THE DENTISTS OF AMERICA.

DISCOVERY OF • • •
ANESTHESIA BY
DR. HORACE WELLS

*Memorial Services
at the
Fiftieth Anniversary.*

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INTRODUCTORY.

AT the February, 1894, meeting of the Odontological Society of Pennsylvania, attention was called to the fact that in the coming December would occur the fiftieth anniversary of the discovery of anesthesia by Horace Wells, and a resolution was offered that a committee be appointed to promote a fitting celebration of that great event. Drs. J. D. Thomas, Louis Jack, A. P. Brubaker, E. C. Kirk, and D. N. McQuillen were appointed as the committee.

The idea prospered until it grew to such dimensions that it was deemed proper to make the celebration a national affair.

At the meeting of the American Dental Association held at Old Point Comfort, August 7, 1894, Dr. J. D. Thomas, of Philadelphia, offered a resolution for the appointment of a committee of nine to take into consideration and report at that meeting measures for the proper celebration in December, 1894, of the fiftieth anniversary of the discovery of anesthesia by Horace Wells. The resolution was

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adopted and the following gentlemen were appointed: Drs. Thos. Fillebrown, of Boston; J. Taft, Cincinnati; Jas. McManus, Hartford; W. H. Morgan, Nashville; W. C. Barrett, Buffalo; A. W. Harlan, Chicago; H. J. McKellops, St. Louis; Thos. A. Weeks, Minneapolis, and J. D. Thomas, Philadelphia.

The committee at a later session presented the following report:

MR. PRESIDENT AND GENTLEMEN:

Your Committee upon Anesthesia would report that it has agreed upon the following motions:

First. That the fiftieth anniversary of the discovery of anesthesia by Horace Wells should be properly celebrated by the dental profession of America.

Second. That the celebration should comprise the presentation of two papers: one upon the "History of the Discovery of Anesthesia," and the other upon the "Application of Anesthesia to Surgery and its Benefits to Mankind"; and that Dr. Thomas Fillebrown, of Boston, Mass., be invited to present the paper upon the "History of Anesthesia," and that Dr. J. E. Garretson, of Philadelphia, Pa., be invited to present the one upon the "Application of Anesthesia to Surgery."

Third. That a banquet be given in honor of the event, at which prominent gentlemen shall be invited to make addresses, and that the papers and addresses, properly edited, shall be compiled and preserved in a memorial volume appropriate to the importance of the occasion.

Fourth. That after the claims and advantages of the cities of Hartford, Boston, Washington, New York, and Philadelphia had been presented and discussed, Philadelphia was unanimously selected as the place of meeting.

Fifth. That there be three committees appointed; an organization committee of nine, an executive committee of eleven, and a general committee of fifty.

The following gentlemen were nominated upon the several committees:

Committee upon Organization.—J. D. Thomas, James McManus, H. J. McKellops, Thomas Fillebrown, A. W. Harlan, Thomas E. Weeks, J. Taft, W. H. Morgan, W. C. Barrett.

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Executive Committee.—J. D. Thomas, E. T. Darby, S. H. Guilford, D. N. McQuillen, E. C. Kirk, Louis Jack, C. N. Peirce, Philadelphia; A. L. Northrop, Wm. Carr, New York; H. B. Noble, Washington, D. C.; Jas. McManus, Hartford, Conn.

General Committee.—Dana W. Fellows, Maine; James Lewis, Vermont; J. L. Williams, R. R. Andrews, Massachusetts; E. D. Gaylord, Connecticut; C. A. Brackett, Rhode Island; S. B. Palmer, S. G. Perry, O. E. Hill, W. W. Walker, New York; R. M. Sanger, C. A. Meeker, New Jersey; C. R. Jefferis, Delaware; J. A. Libbey, W. H. Fundenberg, Pennsylvania; B. Holly Smith, M. W. Foster, Maryland; J. H. Moore, Virginia; V. E. Turner, North Carolina; T. T. Moore, South Carolina; H. W. Coyle, B. H. Catching, Georgia; C. P. Robinson, Alabama; Geo. B. Clements, Mississippi; G. J. Friedrichs, Louisiana; W. R. Clifton, Texas; A. H. Fuller, J. D. Patterson, Missouri; A. O. Hunt, Iowa; C. M. Baily, Minnesota; T. W. Brophy, G. V. Black, G. H. Cushing, Illinois; S. B. Brown, Indiana; J. S. Cassidy, F. Peabody, Kentucky; J. Y. Crawford, H. E. Beach, Tennessee; G. L. Field, Michigan; H. A. Smith, C. R. Butler, A. F. Emminger, Ohio; A. H. Thompson, Kansas; A. W. Nason, Nebraska; G. H. McCausey, Wisconsin; W. J. Younger, C. L. Goddard, E. L. Townsend, California; Geo. H. Chance, Oregon; W. E. Burkhart, Washington.

All of which is respectfully submitted.

In pursuance of the foregoing the fiftieth anniversary of the discovery of the anesthetic properties of nitrous oxid by Dr. Horace Wells, of Hartford, Conn., was observed in Philadelphia, December 11, 1894, by a public meeting in the afternoon in Association Hall and a dinner at the Union League in the evening. The Association Hall meeting was attended by the students of the Pennsylvania and Philadelphia Dental Colleges, the Dental Department of the University of Pennsylvania, and of the Medico-Chirurgical College, besides many well-known members of the profession in this and other

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cities. At this meeting Dr. R. Huey offered a resolution, which was adopted, calling for the appointment of a committee to take action toward placing a memorial to Wells in Washington, D. C. The president appointed Drs. Jas. Truman, W. F. Litch, E. C. Kirk, S. H. Guilford, with J. D. Thomas, chairman and treasurer.

Immediately after the celebration exercises the chairman sent out circulars soliciting subscriptions to the fund, which were handsomely responded to by contributions of individual sums from fifty cents to twenty-five dollars, and by societies sums from five to two hundred and fifty dollars, from every state in the Union, making a grand total of eleven hundred and five (1105) dollars, which has enabled the committee to place in the Library of the Army and Navy Medical Museum, in Washington, a beautiful bronze bust, executed by Hartley, of New York, inscribed "Horace Wells, the Discoverer of Anesthesia. Presented by the Dentists of America," which has won the approbation of all who have viewed it.

The honor which attaches to the discovery of this great boon to mankind has not been uncontested, various claimants have disputed the right of Horace Wells, a dentist, to the high place in human regard to which his unselfish investigation and beneficent discovery entitles him. The testimony brought forward in connection with the anniversary meeting held in Philadelphia goes far toward removing any lingering doubt upon the sub-

ject and places the history of Dr. Wells upon a foundation before the world which assures to him his rightful place in history.

Encouraged by the widespread interest which the meeting aroused, and believing that a permanent record of the events which made the meeting a memorable occasion in the history of the dental profession will be an acceptable souvenir to all dental practitioners who have a pride in the achievements of their profession, the committee has prepared this record, which it submits in the hope that it will serve not only as a memento of a work that has shed luster upon the name of American dentistry, but also as a stimulus to higher professional endeavor.



Report of the Proceedings at Association
Hall. Tuesday, December 11, 1894.

DR. THOMAS called the meeting to order and called attention to the banquet to be held at the Union League in the evening, and stated that after adjournment an opportunity would be given to all who so desired to give their names in as wishing to attend.

Dr. THOMAS then said: As chairman of the Executive Committee, it now gives me pleasure to introduce to you Dr. J. Y. Crawford, of Nashville, Tennessee, President of the American Dental Association, who will address you.

Dr. CRAWFORD then said: Mr. Chairman, members of the dental profession of the city of Philadelphia and other cities, at the meeting of the American Dental Society, held in Virginia, the second Tuesday of last August, at Old Point Comfort, by a resolution offered by J. D. Thomas, D.D.S., of this city, there was a committee appointed by the American Dental Society to take under their management and control the organization of the present celebration that we now propose opening in honor of the

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discovery of the anesthetic properties of nitrous oxid gas by Horace Wells on the 11th day of December, 1844.

In pursuance of that resolution, by the direction of your National organization, as its humble representative, I am here to-day before you to inaugurate the celebration of the fiftieth anniversary of the Horace Wells memorial.

We have provided a program which I am sure will be of interest to you all, and I will not further detain you by a discussion of the question at issue. It is enough for the dental profession to know that fifty years ago to-day the human family was emancipated and freed from pain by the invention of anesthesia in a surgical way. I will be excused for saying that I am one of those who believe that by virtue of the peculiar circumstances and the moral forces that led to the wonderful development of Horace Wells, of Hartford, Connecticut, on the 11th day of December, 1844, that it was for first legitimate adaptation of anesthesia in a surgical way, under proper restrictions, and to him is due at least the amount of credit that would at once entitle him to that recognition at the hands of a just and liberal public equal to that which has been accorded to such characters as Jenner and Harvey for their discoveries.

Your Executive Committee informs me that, in addition to the provision for the entertainment this afternoon, to-night there will be a magnificent banquet for the further celebration of this important

event in dental surgery and in commemoration of this humane, this eminently humane, contribution to the healing art.

Now, without further detaining you, gentlemen, I have the pleasure of calling your attention to the program which will be carried out for us. First, by the reading of a paper by PROFESSOR FILLEBROWN, of Boston, on the subject of

THE HISTORY OF ANESTHESIA.

To-day we'll

"Poise the cause of Justice in equal scales,
Whose beam stands sure, whose rightful cause prevails."

And

"If circumstances lead me, I will find
Where truth is hid, though it were hid indeed
Within the center."

[SHAKESPEARE.]

Fifty years ago to-day there was enacted in the city of Hartford, Conn., the first scene in the development of the grandest and most beneficent discovery the world has ever beheld, the Discovery of Modern Anesthesia; and this during a period which has exceeded all others in the magnitude and importance of the discoveries made in science, mechanics, and medicine.

We wish to pay our tribute to the memory of the discoverer of this great fact. To this end let us examine the testimony, restate the facts, and again judge their relative value.

"We can do nothing against the truth." History makes itself; to record it impartially is a difficult task.

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Great discoveries and great events do not burst forth with Promethean suddenness or completeness, but are the result of long periods of incubation and growth, and oftentimes await many long years of expectancy, hope, and even despair. Such was the case with the great fact of practical anesthesia. The ancient nations waited for it, hunted for it, but died without the sight. Modern nations continued the longing search, but they caught only a glimpse of the coming day to reward them, until the middle of the present century, when Horace Wells discovered, demonstrated, and proclaimed the great blessing, "which stopped pain, robbed the knife of its terrors," and made glad the heart of every sympathizer with suffering.

Insensibility to surgical operations was occasionally induced many centuries ago. Homer mentions the anesthetic effect of nepenthe, and refers to the inhalation of a vapor of hemp. Dioscorides and Pliny record the use of mandragora. Apuleius, A.D. 125, said: "If a man has to have a limb mutilated, sawn, or burnt, he may take an ounce of mandragora wine, and whilst he sleeps the member may be cut off without pain or sense." In the third century Hoatho, a Chinese, gave his patients a preparation of hemp which rendered them insensible to pain. Theodoric in the thirteenth century gave directions for preparing the *spongia somnifera* for inhalation before operations.

Ether was known as early as the thirteenth century, and described by Cordus in the sixteenth cen-

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tury, and the name ether was given it by Frobenius in 1730. In 1828 G radin read a paper before the Academy of Medicine of Paris describing surgical anesthesia produced by inhaling gases.

In 1800 Sir Humphry Davy made his remarkable statement that "As nitrous oxid gas appears capable of destroying physical pain, it may probably be used to advantage during surgical operations in which no great effusion of blood takes place." The pity is that this suggestion should have lain buried under the forgetfulness of forty-five years and borne no fruit.

None of the agents used by the ancients proved practical or safe; consequently at the beginning of the present century practical anesthesia remained undiscovered.

Two agents are inseparably connected with the discovery of modern anesthesia, protoxid of nitrogen and sulfuric ether. Protoxid of nitrogen was discovered by Priestley, described by Davy, and practically applied by Horace Wells in 1844.

Sulfuric ether was discovered in the thirteenth century, described in the sixteenth, named in the eighteenth, and practically applied to produce surgical anesthesia in the nineteenth century, when, in 1846, its use was made known to the world by Morton at the Massachusetts General Hospital. Since 1847 chloroform has been successfully used as an anesthetic, but it played no part in the discovery of anesthesia. Chloroform was discovered in 1831. Sir J. Y. Simpson discovered its anesthetic power, November 4, 1847.

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Ever since 1818 the physiological action of gas and ether has been well understood. In 1840 it was well known that both would produce intoxication, and that both would lessen the severity of pain, having been repeatedly inhaled for amusement and for relief of suffering. So it was but a step from this to the attainment of surgical success; but a step no one had dare take and maintain until Wells ventured and bridged the chasm, and the fierce extremity of suffering was steeped in waters of forgetfulness, and the deepest furrow in the knotted brow of agony was smoothed forever. The history of this step is simple but dramatic. It is known that Wells possessed the current knowledge concerning the properties and physiological effects of both gas and ether, though probably ignorant of Davy's suggestion. For four years he had believed it possible, by the inhalation of certain gases, especially laughing gas, to produce a degree of intoxication that would obtund the pain of surgical operations.

At this time G. Q. Colton was delivering throughout the country popular lectures on chemistry, administering at each lecture the laughing gas for the amusement of the audience. December 10, 1844, he lectured in Hartford, Conn. In the audience was Horace Wells, with his mind still occupied with the possibilities of the gas. He inhaled the gas himself; he watched its effects on others. He said to a Mr. Clark: "I believe a man may, by taking that gas, have a tooth extracted or a limb amputated, and not feel any pain." Among those present was

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Mr. S. A. Cooley, a druggist. Mr. Cooley inhaled the gas, and while under its influence ran against and overthrew some benches in the hall, thereby producing several severe abrasions upon his knees. When he recovered consciousness he found the skin on his limbs badly bruised and broken, and yet he had not suffered at all, and did not know of the injury he had inflicted upon himself until the spectators had called his attention to it. Dr. Wells observed this effect of the gas, and at once determined to try it on his own person. A troublesome wisdom-tooth offered the necessary object for the experiment. A number of those present, including Colton, Wells, and Cooley, met on the morning of the 11th of December at Dr. Wells's office. What occurred there is thus described by Dr. Riggs, whose office adjoined Dr. Wells's, and who was called in to extract the tooth:

"Dr. Wells a few minutes after I went in, and after conversation, took a seat in the operating chair. I examined the tooth to be extracted with a glass, as I generally do. Wells took the bag of gas from Mr. Colton and sat with it in his lap, and I stood by his side; Wells then breathed the gas until he was affected by it; his head dropped back. I put my hand to his chin, he opened his mouth, and I extracted the tooth; his mouth remained open some time. I held the tooth in the instrument that the others might see it, they standing partially back of the screen and looking on.

"Dr. Wells soon recovered from the influence of

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the gas so as to know what he was about, discharged the blood from his mouth, swung his hand, and said: 'A new era in tooth-pulling; it did not hurt me at all.'

"We were all much elated, and conversed about it for an hour after. We were so elated by the success of this experiment that we immediately turned our attention to the extraction of teeth by means of this agent, and continued to devote ourselves to this subject for several weeks, almost exclusively. Dr. Wells continued to use the gas freely in the practice of dentistry during the remainder of that year and the year following, and at all times when he was in the practice of his profession."

Then was the deduction and suggestion made by Humphry Davy in 1800 verified by Horace Wells; the prophecy fulfilled; and practical anesthesia became a discovered and demonstrated reality.

This event was the source of the world's knowledge of anesthesia; all previous efforts had come to naught; but the echoes of Wells's success were soon heard around the world.

In the beginning of the present century science could not interpret the signs, and Davy's conception and prophecy of the possibilities of nitrous oxid fell upon deaf ears, and all the knowledge concerning the power of ether to produce insensibility to pain appealed to sterile minds. And even in 1844 the professional ear was not quite attuned to the sound, and could not recognize in the extraction of Dr. Wells's tooth, on the 11th of December, 1844, the key to the solution of the whole problem of anesthesia. Even

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those most interested, most acute, and most observant, could not in Wells's nearly successful operation before the class of the Harvard Medical school in January, 1845, apprehend the great fact that surgical anesthesia was a possibility. Nor indeed could they perceive it until it was forced upon their attention by the courage of a Morton.

If, when Wells extracted the student's tooth, the surgeons of the Massachusetts General Hospital had possessed a little more of that keen perceptive power "of feeling, than of seeing; of the heart than of the ear," they would have apprehended the possibilities, and the discovery of surgical anesthesia would then have been acknowledged, the processes perfected, and no disputing claims would have arisen.

When we realize how hard it is to compel attention to a new idea, how slow is the accumulation of new facts, how gradual the growth of perception, and how great the magnitude of this subject, we cease to wonder at the slowness with which the significance of this event was appreciated.

In future years whenever and wherever the discovery of anesthesia is intelligently discussed with knowledge of the subject, the name of Horace Wells will be spoken with honor and gratitude, and with his name will be associated the names of John M. Riggs, G. Q. Colton, E. E. Marcy, W. T. G. Morton, James Y. Simpson, Charles F. Jackson, Oliver Wendell Holmes, and Henry J. Bigelow.

Of these, Dr. Marcy and G. Q. Colton still survive to bear witness to their part in the drama and enjoy their honors.

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G. Q. Colton administered the nitrous oxid gas to Dr. Wells for the first operation under anesthesia, and reintroduced its use in 1863.

Dr. Riggs performed the first operation, extracting Wells's molar tooth.

Dr. Marcy suggested to Dr. Wells the use of ether instead of gas, and verified its action.

Dr. Morton made the first public application of ether for surgical anesthesia.

Dr. Jackson claimed to have suggested all that Morton knew about the effects of ether, and the use of it for anesthetic purposes.

Dr. Simpson made himself and British surgery famous by the discovery of the anesthetic power of chloroform.

Dr. Holmes suggested for this condition of insensibility the name, the use of which has become universal. He wrote to Dr. Morton as follows:

"Everybody wants to have a hand in a great invention. All I will do is to give you a hint or two as to names, or the name, to be applied to the state produced and to the agent.

"The state should, I think, be called anesthesia. This signifies insensibility, more particularly (as used by Linnæus and Cullen) to objects of touch. The adjective will be anesthetic. Thus we might say, the 'state of anesthesia,' or the 'anesthetic state.' The means employed would be properly called the 'anti-esthetic agent.' Perhaps it might be allowable to say 'anesthetic agent'; but this admits of question.

"The words anti-neuric, aneuric, neuro-leptic, seem too anatomical; whereas the change is a physiological one. I throw these out for consideration.

"I would have a name pretty soon, and consult some accomplished scholar, such as President Everett, or Dr. Bigelow, Sr., before fixing upon the terms which will be repeated by the tongues of every civilized race of mankind. You could mention these words which I suggest for their consideration; but there may be others more appropriate and agreeable.

"Yours respectfully,

"O. W. HOLMES."

Dr. Crawford W. Long, of Georgia, used ether for anesthetic purposes three times during 1842-43, and now appears as a claimant to the discovery. But Dr. Long's connection with the subject was not mentioned until many years after the fact. He did not write a word in regard to his discovery, nor did any notice of it appear in print until 1849, five years after Wells's discovery, and seven years after he himself had administered the ether. How could any one, after knowing of such a boon to suffering humanity, resist for even a day the impulse to "fly on joyful wings, cleaving the sky," to proclaim the coming of this great consolation to the afflicted?

Dr. R. M. Hodges wrote of this claim: "Not a physician or surgeon ever used ether because Long had used it; nor did mankind learn from him that anesthetic inhalation for surgical purposes was possible. His claim was made after the fact, and resting on no better foundation than those claims simi-

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larly made by other aspirants for distinction; a class so numerous as to have been named by the *London Lancet*, 'The class of jump-up-behinders.' "

Dr. H. J. Bigelow's connection with the ether discovery was important, perhaps vital to the success of anesthesia at that time, as in more than one instance he prevented fatal results from overanesthesia. Although but twenty-eight years of age, and junior surgeon at the hospital, less than one year in office, he was the one whose penetration, executive ability, sagacious and active qualities of mind and body, made him realize that the event of a lifetime was taking place. He made a clinical study of the subject; he made most unremitting exertion to prove the safety of ether; he practically supervised etherization during the first year of its use. He announced to the world the discovery of this use of ether in a paper read at the American Academy of Medicine, November 3, 1846. He verified the anesthetic power of nitrous oxid in 1848. These facts have identified Dr. Bigelow with the whole subject of anesthesia. Had he been present on the occasion of Wells's first experiment, it is not unlikely the course of events would have been materially different.

Dr. Edward Warren wrote: "To him next to the discoverer himself are the public and the world indebted for the blessings of so early receiving this great discovery."

The many volumes printed during the exciting years from 1846-63 furnish a great number of

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statements, opinions, and facts pertaining to this discovery, most of which have ceased to be of any value.

Napoleon is said to have often left his letters lie unopened for several days, giving as a reason that in that time events would answer a greater part of them. So we find that the larger part of the statements, opinions, and arguments in regard to this subject have been answered by subsequent events.

Let us contrast a few of the statements made at that time with the facts as now known.

Then some denied that nitrous oxid was an anesthetic; *to-day* it is known as one of the most efficient.

In 1844 Wells claimed that the gas was safer than ether; others denied its safety; *to-day* it stands proven the safest and most pleasant anesthetic agent known to the world.

It was *then* claimed to be impracticable to use it; *now* its successful administration annually to more patients than all other agents combined proves its practicability.

It was *then* claimed to be ineffectual for prolonged operations; *to-day* it is proven equal to continuing the anesthetic state indefinitely.

Then it was contended by skillful surgeons and eminent divines "that pain was a natural protection, a necessary stimulant to the reparative process, and a Providential dispensation, and that the prevention of it was defying the Almighty"; *now* it amounts to inhumanity and malpractice to presume to do any severe operation without it.

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Prof. Charles D. Meigs, of the Jefferson Medical College of Philadelphia, as late as 1856, wrote of the "doubtful nature of any processes that the physician sets up to contravene the operation of those natural and physiological forces that the Divinity has ordained us to enjoy or suffer."

And a clergyman wrote to a medical friend as follows: "Anesthesia is a decoy of Satan apparently offering itself to bless women; but in the end it will harden society, and rob God of the deep, earnest cries which arise in time of trouble for help."

The following facts seem to be established by indisputable sworn testimony, and I believe are admitted by all the friends of truth:

In 1840 Dr. Wells expressed his faith in the anesthetic power of nitrous oxid.

December 11, 1844, Wells inhaled nitrous oxid and had a tooth extracted painlessly, which event immediately became known throughout the city of Hartford and vicinity.

Forthwith Wells made a pilgrimage to Boston to proclaim and demonstrate his discovery; he called on Morton and made known to him this event. Through Morton's intercession an invitation was given Dr. Wells by Dr. J. C. Warren to speak to the class of the Harvard Medical School, and describe his discovery. A little later he gave the nitrous oxid to a patient and extracted a tooth for him before the same class with incomplete success. The patient cried out as with pain, but when again conscious declared he had not been hurt.

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A month later Dr. Marcy suggested to Wells the use of sulfuric ether for this same purpose, and verified its effects by anesthetizing a patient with this agent, and removing a good-sized tumor from his head without causing pain. They both discarded ether, as its odor was unpleasant, and because they considered it less safe than laughing gas.

Early in 1845 Dr. Wells administered sulfuric ether to a patient (Gaylord Wells) and extracted a tooth painlessly.

In 1841 Dr. Morton was a pupil of Dr. Wells. In 1842 they were in business together for a time in Boston.

In July, 1845, Morton called on Wells in Hartford and talked with him and Dr. Riggs about the gas, and asked them for a supply.

Dr. Wells referred him to Dr. Jackson for information as to the manufacture of it.

Drs. Wells, Riggs, and others continued the use of gas until November 6, 1846, when chloroform and ether were substituted, and gas remained unused until 1863.

The use of nitrous oxid for anesthetic purposes was recorded in the *Boston Medical and Surgical Journal* of June 18, 1845, as follows: "The nitrous oxid gas has been used in quite a number of cases by our (Hartford) dentists during the extraction of teeth, and has been proven by its excitement perfectly to destroy pain."

Dr. Wm. T. G. Morton performed his first successful operation with ether September 30, 1846;

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and on October 16, following, he administered ether to a patient at the Massachusetts General Hospital, and on the 17th to a second case.

About October 20, 1846, Dr. Jackson claimed compensation from Morton for professional advice, and charged five hundred dollars.

October 27, 1846, Drs. Morton and Jackson made oath to a joint discovery of a *compound* for the prevention of pain during surgical operations; and applied for a patent. The patent was granted, and in 1863 was declared void, as such a discovery was not patentable.

November 9, 1846, Dr. Morton declared it was simply sulfuric ether, not a compound as claimed in his application for a patent.

In the autumn of 1847 Drs. Jackson and Morton each claimed to be the sole independent discoverer of anesthesia, and in nowise indebted to the other, and so contended to the end.

In 1847 the Paris Academy of Medicine, upon *ex parte* evidence, declared Morton and Jackson the discoverers of anesthesia.

In January, 1848, the Parisian Medical Society, after a full hearing of evidence from both parties, voted that "To Horace Wells, of Hartford, Conn., U. S. A., is due all the honor of having discovered and successfully applied the uses of vapors or gases whereby surgical operations could be performed without pain," and elected him an honorary member of the society.

In 1846 the surgeons of the Massachusetts Gen-

eral Hospital gave Morton the credit of being the discoverer of modern anesthesia. In 1853, five years after Wells's death, Dr. C. H. Haywood, one of the surgeons present at the first operation, gave the following unqualified credit to Wells for his share in it. He closes a letter to Hon. Truman Smith with these words:

"It was no Minerva born full armored. Moreover, in analyzing the nature of the discovery, we can detect several elements which were successfully brought to light. Thus we observe in the first period an indefinite search after some method of producing insensibility to pain. Then came a second period where great advance was made, beyond all dispute, due to Horace Wells.

"This was the first important step in the history of anesthesia.

"The question of priority may be easily settled. It is satisfactorily proved that Dr. Wells's experiments had established the above-mentioned points as early as 1844, though they had not determined either the best agent, or perfected the method of administration in detail.

"In the third period the anesthetic properties of certain substances were discovered. First nitrous oxid was tried; then sulfuric ether; then chloroform; then chloric ether. These discoveries were all made by different individuals.

"Now for which of these agents and to which discoverer shall remuneration be granted? To each and for all I say: to Morton for sulfuric ether, to Dr.

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Simpson for chloroform, to Dr. J. C. Warren for chloric ether; but before all, let full and ample justice be done to that noble genius which first conceived the grand idea which has been the basis of all the experiments, and father of all the discoveries. To the spirit of Horace Wells belongs the honor of having given to suffering humanity the greatest boon it ever received from science."

"Thus do facts maintain the majesty of truth." Argument would only weaken the evident conclusion.

Considering that Wells was timid, retiring, and only twenty-seven years old when he announced his discovery, who can wonder that he should return from Boston disheartened; and later, when still suffering from disappointment and the ill effects of his own sacrificing experiments, meet a sad and tragic death?

It is remarkable, too, that his rival claimants should both meet an almost equally tragic fate: Morton dying of apoplexy while out riding, and Jackson spending the last seven years of his life in an asylum for the insane.

Thus did "the shears of Fate cut the tent-ropes of their lives."

Upon the memory of Horace Wells there remains no blot or stain; against him no charge of selfishness, dishonesty, deceit, or unfairness was ever made; he lived and died honored and respected by the people among whom he dwelt. We best quote the words of one who knew him intimately:

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"He had a mind of uncommon restlessness, activity, and intelligence. He early manifested great inventive genius and mechanical talent. He was of medium height, with a head of remarkable size, complexion light, compactly built, of pleasing countenance and address, and of fine personal appearance. As a citizen he was a man of great purity of character and of generous impulses, honoring religion by his walk and conversation; as a son he was kind and dutiful, and in his family relations an example of kindness and affection. In all these respects he was without spot."

Such a character as this sought only the legitimate emoluments of his calling, and was always ready to benefit his profession and mankind. No sacrifice was too great for him to make. Very appreciative of words of encouragement, he was also very sensitive to criticism; hence it is not strange that such a spirit, so young, should quail before the derision of professors and jeers of students. Honest himself, he could not think others dishonest; just, he could not brook injustice. Being denied what he knew were his just claims, his soul was cut to the quick, and a dark veil was drawn over what promised a brilliant and useful life.

We lay our wreath upon his tomb; would that we to-day might with it crown his head. Coming generations will recognize in him the martyr and the world's benefactor, and on every monument which in the future may be raised to commemorate this great event will be inscribed: "Horace Wells—the Discoverer of Modern Anesthesia."

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After the reading of the paper by Professor Fillebrown, the chairman said, continuing: I am sure, gentlemen, that you will agree with me that if we had no further contribution to-day on this occasion, that the contribution that we have listened to would have justified us in our presence this afternoon. But whether the next gentleman will take you to the sick chamber, or whether he will take you to the surgical table, or the operating chair, or I know not what, but I know from his great reputation and his learning that he will do justice to the occasion in the course he may pursue in further demonstrating the great benefits of anesthesia to mankind. I have now the honor of introducing to you Prof. James. E. Garretson.

Before proceeding with his paper, Professor Garretson, in noticing a gentleman in the audience, said that he saw one present whose shoe latches he was not worthy to unloose,—Dr. G. Q. Colton,—whom he requested to come to the platform.

Dr. Colton upon this invitation ascended the platform and took his seat with those occupying that position.

Professor Garretson stated that he understood the son of Horace Wells was in the room, and asked him to come to the platform. To this there was no response.

Professor GARRETSON then exhibited his paper in full, saying he would not read it all, as it would be printed; that he would read an abstract which he had prepared.

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I come to assure this great audience that I stand in its presence overwhelmed by the contrast that separates subject and speaker; and that I find words in deference only to the circumstances of the occasion which brings us together.

It is no profane comparison to suggest that naught but a sense of profanation could associate with a priest who should add words to the lifting of the Host. Does not a priest, in performance of this act, set a seal upon his lips? Does he not wrap in vestment that has been blessed the hands which are to touch the sacred symbol?

The profundity of the meaning, not to say the holiness, of what seems to me among the greatest of God's gifts to men, anesthesia, affects me in its contemplation, as I assume the priest to be affected as he approaches the Host. The full feeling is, "Be still!"

Silence! and its golden meaning!

Surely,—forcing ourselves to talk and listen,—the gold of anesthesia is silence; silence in place of agonizing, heartrending screams. Silence in place of cries from the pitying but helpless bystanders. Silence in presence of torture shorn of its terror.

On an occasion, now many years back, I was wandering through the lanes and alleys of Sleepy Hollow Cemetery in the town of Concord, Massachusetts, when, being led up a hill, I stepped over a low, much-abused hedge of arbor vitæ, discovering a plain low-set stone having upon its face a single word. When at the foot of the hill, I had found my-

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self surrounded by what would not inaptly bear description as splendid marbles. Upon these were deeply cut many names and the records of many virtues. Neither names nor virtues had, however, significance to me. No chord was struck, no response elicited. The word upon the low-set stone of the hilltop was Hawthorne. The ring of a bell is its metal. The name of a man is his work. Men who have done something: either as cause or instrument! What reverberations ring out as such names are encountered! Somewhere, everywhere, is a sound. The lives of great men; the memories of the lives of great men,—left to remind us.

Horace Wells! The name does not, nor will not, still. It rings, and rings, and rings, in distinctness, albeit accordant and discordant sounds are everywhere about it.

The task of reviewing the history of anesthesia was given to the worthy colleague who has preceded me. I am glad of it. Standing, as I feel myself to-day, overshadowed by flames and memories; memories of blighted lives,—of mental wreckage,—of discouragements ending in suicides; what but admiration of the sacrifices made; what but desire to do homage; what else than these should or could fill a human heart on such an occasion. Here Cæsar can be praised, and Rome too.

A new good is an old gift,—not new in ages past, only because channel was lacking. Electricity before chaos. An Edison the production of a nineteenth century. Euphrates, Tigris; both water Mesopo-

tamia; both, alike, are the Persian Gulf. Not Armenia is the source; a common under-spring is the well constituting the divine afflatus.

My perceptions view Horace Wells as Euphrates and Tigris are viewed; he, and these, and all phenomena, not as things in themselves, but as things in other things.

Whether or not this man was a meditative philosopher to be found oftenest in haunts apart from men, or whether or not he was simply a vessel capable of holding, but never trying to fill itself, I am alike without knowledge as without desire to know. He was filled, however. The river of Lethe found in him a channel. Everywhere over the land flows the stream Nepenthe. He is Nepenthe.

To change a metaphor: Is invention aught but filling a Form? Is this not a matter made plain by Plato two thousand years back? Are not forms eternal? Forms of things seen yesterday, to-day, and to be seen forever. Forms not yet seen. Is invention else than seeing a form and bringing it down from the sky to the uses of men? Materializing it, properly speaking. How, as I grow old, do I grow impressed with this: The maker of forms, the all, the filler of forms, simple instrument.

It is not even slight departure from the immediate subject of the occasion to make further reference to this matter of forms, for it is not otherwise, according to my conception, that Horace Wells is to be either understood, appreciated, or called the discoverer of anesthesia.

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Was it truthfully Priestley to whom nitrous oxid owes its discovery? It assuredly was not to Horace Wells. Was, or was not, anything known of this gas before the days of our own Declaration of Independence? Or is it rather to be put thus: nitrous oxid is phenomenon deductively exposing itself to the chemist out of the droppings of camels upon desert sands; Ammon and Ammonia go back to Lybia.

No one has been, or is, greater than Plato. What the dungburners did, or what Priestley has done, is not credited by him as science, but simply as dealings had with phenomena. Science, he says, fritters itself where its aim is otherwise than with the getting of knowledge of Noumenon.

Things unlike are not necessarily dissimilar. The things that lie within things are multitudinous. Who knows, even yet, what nitrous oxid is? Who knows even what water is? In a word, who knows what, or how much, anything is? Nobody.

But the scientist is the evolutionist. Possessing himself of means he analyzes. Analysis is one, or closely one, with deduction. Science has no thought, or word, or action, outside of matter.

But forms, the true objects of science, as affirmed by Plato, constitute the invisible. The music of a musician is not his notes, the poet's inspirations are not grammar. Reality, or at least nearer approach to reality, is back of these. Notes are to be seen by anybody having eyes, and words are to be heard by anybody having ears. But what as to forms, or ghosts, as these are back of notes and

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words? What as to the seers of these? No forms being back of notes and words, there can be no notes and words in front of forms.

Was not the ghost of anesthesia with the camel-droppings? Was it not with the dudain, the devil's apple, of the Arab? Has it not been with alcohol since men distilled and knew this agent? Is it not with the poppy through all the ages that fields have been made red by this plant?

In 1540 the *oleum vitreoli dulce* was first given to the uses of men by Valerius Cordus. He had not the name, either, for it, but his oil was, at its least, the basis of the ether of Frobensius, and the ether of to-day. Guthrie, Liebig, and Soubeiran simultaneously discovered chloroform in 1831. Did Cordus, in 1540, see or tell anything about a ghost of anesthesia, as this lay in his sweet oil of vitriol? With chloroform filling the bottles of druggists, in 1831, was anybody to be found who had been introduced through its use to the wonderland of Euthanasia?

Let here the idea be repeated of nobody knowing what anything is. Cadmus, beyond all men of his times, saw letters. A Shakespeare, beyond all men of his times, saw use lying with letters. How many are the expressions lying with letters not yet seen by anybody? Forecast the unwritten poetry!

Here is culmination; and here is the place of Horace Wells in history. Horace Wells saw in a room in Hartford what had never before been seen by mortal man. He saw anesthesia. It was ages

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before he was born that ether was materialized, and it was before he was born that nitrous oxid was formulated, and it was when he was in no way thinking about such things that chloroform was brought forth. The seer saw anesthesia. The sight lay, as I understand, with a hurt hand of which no complaint was made. Others, many others, saw the bloody hand. In a distant state, about the same time, I myself saw the hurt hand, but none, not one of the many others, saw anesthesia. I think it is not to be denied that some saw a filmy halo that meant anesthesia. There was a something, but what the something was the seers did not make out, and what was seen was seen only to be forgotten. Truly, Sir Humphry Davy is to be credited with a feeling of the elysium. Ego was differentiated for him by nitrous oxid from environment; but, while he felt, it was separability that was felt, not anesthesia. His expression on coming from under the influence of nitrous oxid is familiar: "Nothing exists but thought."

Anesthesia, the thing being truly understood, is barrier between Matter, which does not feel, and Ego, which is percipient. It is not Matter that sees, hears, touches, or tastes. Does the matter temporarily composing the cadaver of a dissecting room see, hear, touch, or taste? Percipience is away from it; there is neither seeing, hearing, touching, nor tasting by a cadaver. A flute separated from its player is wood, having no *sing* in it.

I am not to credit Horace Wells with sight of

separability. The "Me, and the not Me," is not likely to have been seen even by his internal eye. His seership lay with a direction that people delight to call practical. Of many things, hundreds, thousands perhaps, lying with nitrous oxid, he saw one. But what a one! Here begins his glory. Here is to continue his glory. Here, so long as pain is esteemed hurtful, and absence of it pleasurable, will the name of Horace Wells be upon the lips of men.

Parallels recall obligations and glory due others. Apples have fallen since first apples began to grow and ripen. Kettles, in which water was being boiled for the evening repast, have opened their iron lips and tried for numberless centuries to say what they had to tell about locomotion. Over the earth and across the face of the heavens electricity has sought vainly, until latterly, for a seer. The sun, with his rays full of perfect pictures, brought as free gifts to man, could find no taker.

In the year 1665 a seer, sitting under a tree at Woolsthorpe, found himself able to hear fairly well what a falling apple had to tell about the moon staying where it belongs. Heron of Alexandria, holding his egotistic ear to the spout of a kettle, heard a story of steam, and wrote it down in the shape of his æolipile, a so-called invention. Papin saw the cylinder. Fulton saw the steamboat. Stephenson was, perhaps, the first witness of a train of cars drawn by a locomotive. Thales of Miletus got a story of electricity from a piece of amber. Daguerre, not, however, until the age of the world A.D. 1839, was

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able to take what the sun had to give of pictures. Mozart, beginning with the use of common sense, and from this passing to the advantages lying with educated sense, dropped at the last both these and put down in form notes what alone the flowers whispered to him,—having found out that education is not alone the teller of things that are to be heard.

Not unnecessarily to detain; was anesthesia, as anesthesia, known to surgery before 1844 as it became known in that year and since remains known? Not nitrous oxid, not ether, not chloroform, not rapid breathing, but anesthesia.

Who was the man of that year? Horace Wells.

This, it seems to me, settles the question.

Let, however, all deserved honor and glory associate with the names of workers and experimenters, as these have enlarged application of the inspiration of the Hartford seer. Ether! Chloroform! What would surgery do without them? How could the world do without them? How *did* the world do without them?

Here is other culmination. It is not necessary, in this presence, to enlarge beyond a very few sentences on the benefits of anesthesia to humanity. Are not all here assembled doing, and experiencing, each after the manner of his work, what I did and experienced only yesterday. Upon the operating table of a hospital lay sleeping sweetly and quietly as ever baby slept a member of our fraternity. In place of an ordinary neck was a tumor that reached from chin to sternum, and from ear to ear. Wher-

ever, as it proved, reaching fingers could reach, prolongations of this mass extended themselves. Salivary glands, trachea, carotid arteries, jugular veins, pneumogastric nerves, all were more or less embraced and wrapped about. Yet, while so horrible a dissection as was required to remove the mass went on, sleeping and dreaming quietly continued, nor was any consciousness had by our brother of his terrible experience until an hour later he awakened snugly tucked away in one of the most comfortable beds, the tender hand of the nurse wiping away the cold sweat drops standing threateningly upon his forehead.

Consider, in contrast, a picture familiar before the day of Wells's inspiration. A mother, her heart welling out in tears, limbs trembling so as scarcely to afford her support, helpless misery marking her countenance, despair striking at her with its thongs of flame, follows into a hospital operating amphitheater a nurse who carries her firstborn, which is being brought to the table. Alas! helpless indeed is the mother. How more than gladly, how a thousand times more than gladly, would she lie down in place of the child. Cries of mother and child moan through the hospital, and the least sensitive feels his cheek pale. The crucial moment has come. The child is placed and held by force upon the table. The mother is torn away. For a single moment eyes of mother and child have met in parting. A loud, frightened, despairing cry from the child rings from ceiling to floor of the room. The mother

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drops in a heap and is carried out a raving lunatic. She raves about and curses God as being without pity or mercy.

Let a picture of to-day have relation with that other one of the past. One which extended, alas, from the days of the first surgical performance to the year of grace eighteen hundred and forty-four.

A mother brings to a hospital a child whose deformity requires the knife for its correction. Conscious of the power of anesthesia, the surgeon talks to the parent, while all the while the little patient, pleased and inveigled by the sweet smell of chloroform, is itself anesthetizing itself. The cutting is done. The child has a dream of roses and gardens and wide fields. The mother has placed in her arms her restored offspring. She has no tears, no words, her contact has been alone with beneficence. She is overwhelmed by the mystery met and passed. She says, "Our Father which art in heaven." She says and feels there is a God of pity and mercy.

Look at the name of the maker of these pictures of the new time! It reads,—Horace Wells!

To what extent anesthesia has cultivated sensibility, I leave every surgeon to judge. Who, if suddenly transplanted into the olden times, being possessed of his present knowledge of anesthesia, could handle a knife without cutting everywhere else than where it would be desirable to cut, otherwise dying shortly out of sympathy for his patients. Could he say: "Merciful Father which art in heaven" in place of thinking "Pitiless devil who is in hell"? Alas!

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how near to hopeless atheism may ignorance bring a man. Hail! that knowledge shows God and Father everywhere.

Hail to all poets, to the music hearers, to the seers of forms of every kind! Let statues be made for such in the squares! Let tablets of enduring brass mark their working places! Let us place and hold them with the immortals!

Hail to him who has proved to be, perhaps, the greatest of the seers,—Horace Wells!

Dr. L. D. SHEPARD, of Boston: Mr. President, to crystallize the sentiment of this large gathering of professional men into a formal expression of opinion, the Executive Committee having this celebration in charge has passed a resolution and asked me to present it:

"Resolved, That we re-affirm and emphasize our belief that the observation of Horace Wells was essentially a discovery original with him. We do not claim that his was the first discovery of the same fact, but accord priority in this to Sir Humphry Davy, and with respect to the honors due to each, we call attention to the historical fact that it was from the discovery by Horace Wells, of Hartford, United States of America, that the direct benefits to humanity were achieved."

Moved and seconded that resolution be adopted. Motion prevailed.

Dr. HUEY: I have been asked by the Executive Committee to request that a committee be appointed with instructions to erect a permanent memorial to Dr. Horace Wells in Washington, D. C.

The PRESIDENT: Will the gentleman who made

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the motion suggest the member he will have upon the committee?

Dr. HUEY: I think it had better be left to the chair. I believe it is the understanding that the chairman shall appoint a committee to take the matter in hand, the members of which shall be members in good standing of the American Dental Association.

Motion seconded and carried.

The PRESIDENT: I will furnish Dr. J. D. Thomas the names of the committee to act under that motion.

ADDRESS BY DR. G. Q. COLTON, OF NEW YORK.

Mr. Chairman and gentlemen, I can truly say of myself as Antony did at the funeral of Cæsar:

"I am no orator, as Brutus is;
But, as you know me all, a plain, blunt man,

* * * * *

For I have neither wit, nor words, nor worth,
Action, nor utterance, nor the power of speech,
To stir men's blood: I only speak right on;
I tell you that, which you yourselves do know."

Now, I suppose in the course of five or eight minutes I can give you an outline of the discovery of anesthesia. On the 10th of December, 1844, I gave an exhibition of the amusing effects of nitrous oxid gas in the city of Hartford, Conn. I saw my advertisement yesterday in the *Hartford Current*, about one-third of a column. There was a very large audience present. After I had given a short

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lecture on the properties and effects of the gas, I invited a dozen or fifteen gentlemen to come forward who might like to inhale it for its amusing effects. Among the gentlemen who came forward was Dr. Wells and a young man by the name of Cooley. Both the gentlemen inhaled the gas, and when Cooley was under the influence of it he began to dance and jump around. Of course, you cannot see well under the influence of gas, and he ran against some wooden settees, benches, on the stage and bruised his legs quite badly.

Well, as the effects of the gas passed off, he went and took his seat next to Dr. Wells. Dr. Wells said to him: "You must have hurt yourself?" "No," said Cooley, but at the same time he began to feel some pain in his legs, and pulling up his pantaloons was astonished to find his legs all bloody. He said: "Why, I didn't know I ran against the bench. I didn't feel a particle of pain until the effects of the gas passed off."

Well, after the exhibition, while the audience was going out, Dr. Wells came to me and said: "Why can't a man have a tooth extracted when under the influence of the gas and not feel it?" I said I did not know. The thought had never entered my head. "Well," said he, "I believe it can be done." He said, "I am going to try it on myself. I have a decayed molar and I would like to have it out, and if you will bring a bag of gas to my office tomorrow I will try it on myself." So the next day I went to his office with a bag of gas, and he sent out

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and got Dr. Riggs, a neighboring dentist, to come in. I administered the gas to Dr. Wells and Dr. Riggs extracted the tooth. On recovering and finding his tooth out, Dr. Wells slapped his hand upon his knee and exclaimed very excitedly: "It is the greatest discovery ever made. I didn't feel it as much as the prick of a pin." That was the first tooth ever drawn without pain and was the birth of anesthesia. This operation took place just fifty years ago yesterday. Dr. Wells wanted me to instruct him how to make the gas, which I did. He wanted me to furnish him the apparatus. "No," I said. I could not do that. I was engaged ahead and I had to go. I went away. In about three weeks from that time I saw a paragraph, three or four lines, that there was a Dr. Wells in Boston extracting teeth while the patients were under the influence of nitrous oxid gas, laughing gas. I then knew how it originated. Dr. Wells went to Boston to make the discovery known to the world. He called upon his former pupil in dentistry, Dr. Morton, and told him what he had done. They all laughed at him. You have heard his statement about his appearance before the class at Cambridge College, which is a fact, and the young man who had a tooth extracted said he didn't feel the pain when the tooth was drawn, but the students hissed him and laughed at him and sneered at him, and hurt the feelings of Dr. Wells very much. They said it was a failure. He returned to Hartford discouraged, but resumed his practice and used the gas

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constantly. Bishop Brownell and his two daughters, and about thirty or forty of the most respectable citizens of Hartford, gave their deposition afterward that during the year of 1845 Dr. Wells extracted two teeth for them, using the gas as an anesthetic, without any pain and without any ill effects from the gas.

At the end of 1845, if I am not mistaken, or the beginning of 1846, Dr. Wells's health failed and he went to Europe and presented his claim to the Academy of Sciences, and the Academy gave him the honor of an M.D., and he felt very proud of it. He then went traveling on the Continent. Not being able to speak the language, of course he could not use the gas.

Now, during his absence in Europe, Dr. Morton, his former pupil, went to Dr. Jackson, a chemist, to learn how to make this gas. He wanted to see what there was in Wells's pretended discovery. He broached the subject to Dr. Jackson, who said to him: "Don't use laughing gas; ether will destroy pain. Use ether if you want to use anything." He evidently had no faith in it. Upon leaving Dr. Jackson's office, Dr. Morton asked him what kind of stuff ether was, and Dr. Jackson's reply was: "It is a liquid, and you can buy it in any drug store." After that Dr. Morton tried it upon a patient, gave him the ether and took out a single tooth without any pain. That was on the 30th of December, 1846, almost two years after Wells. It has been stated, and very correctly, that Morton and Jackson

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applied for a patent. Well, the patent was delayed for some time, and Jackson probably thought the thing might turn out to be a humbug, and he did not like to have his name associated with Morton, so he takes an agreement from Morton that Morton should pay him ten per cent. of all he made out of the patent and then assigned his interest in it to Morton, and wrote to the Commissioner at Washington requesting him to issue the patent to Morton. The patent was issued to Morton, but instead of calling it ether he called it lethea, to mystify the public. Now, when Wells returned to this country he was astonished to find that Morton had got a patent and claimed the honor of the discovery of anesthesia, and then a very exciting and violent discussion commenced between them in a Boston medical journal. That discussion so worked on the sensitive nature of Wells that he became deranged and committed suicide. There is no doubt but that he was deranged, because he had the reputation in Hartford of being a very excellent Christian gentleman. Everybody loved him. That is the story of the discovery. By the way, Dr. Wells was the only man up to 1863 who ever used the gas that I am aware of. After the death of Wells, Dr. Morton set up the claim that nitrous oxid was not an anesthetic at all, and that, therefore, he, Morton, was the discoverer of anesthesia. It was an admission on his part, really, that in case nitrous oxid was an anesthetic Wells was the discoverer. When afterward it was proved, I was giving an ex-

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hibition in New Haven, Conn., and I wanted to get some subjects to inhale the gas, and I invited thirty or forty gentlemen to a private entertainment. Among the others who were present was Dr. Smith. I gave them the history of the discovery of anesthesia as I have given it to you, and said: "I can never get a dentist to try it." Dr. Smith was present, and at the close of the entertainment he said: "I will try it if you will give me the gas." "Why," I said: "I would be delighted, as I want to demonstrate what can be done with it." That was in June, 1863. I went to his office the next day, and while I was there an old lady, a very wealthy lady, came in. She had been trying to have the doctor give her chloroform, but he would not do it unless she would have her physician present to take the responsibility. Well, he introduced me, and I talked to the lady some little time, and finally she said: "I will try the gas." So, that afternoon I took a bag of the gas there and the lady was present. I administered a pretty strong dose to her, a pretty large dose, and Dr. Smith took out seven teeth for her, and when she recovered and found the teeth were out she said: "Don't go, Doctor, I want to give you my blessing." "Now," she said, "you may mention my name to your audience and state the fact that I have had seven teeth extracted without any pain and without ill effects from the gas." I made arrangements with Dr. Smith that I would furnish the gas and he should extract teeth for one week, and we should divide the profits equally.

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Well, it went along, and at the end of the week the rooms were crowded with people who wanted to get their teeth out before I went away. We did not stop at the end of the week, but continued for three weeks and two days, and during that time we extracted a little over three thousand teeth. I said to myself, this is a little better business than lecturing to empty benches sometimes, and I went to New York at the suggestion of P. T. Barnum. He said: "You establish an institution devoted exclusively to extracting teeth, and call it the Colton Dental Institute, because your name has been identified with the gas so long." I did so, and I commenced on the 15th of July, 1863. On the 4th of February following I had given it about nine months. I began to ask my patients to write their names on a scroll of paper twenty-one inches wide. On the margin I left a space to number them, and I have numbered every patient from that time to this. I have on that scroll, or had at the time I left New York, 186,500 names. Of all that vast number, I have not had a single accident from the gas.

Some people express themselves as being much surprised when I tell them that I am eighty-one years of age, or shall be in two months from now. It reminds me of a scene in the play of "As You Like It." In that play a Duke has been exiled, and he leaves his property to his two sons. Frederick inherits the property, because he is the oldest, and his father gives him directions to be kind to his brother Orlando; give him a good education and help him

along in the world. Well, instead of doing that, Frederick treats him very badly, and finally turns him out and sends him off without a dollar. Well, old Adam, who had been a servant in the family nearly all his life, takes pity on Orlando and goes with him, and Orlando says: "I have no money; what can I do? I cannot go on the road and commit a robbery." Well, then old Adam said—and this is what I wanted to say to you—

"But do not so. I have five hundred crowns,
The thrifty hire I saved under your father,
Which I did store to be my foster-nurse
When service should in my old limbs lie lame
And unregarded age in corners thrown:
Take that, and He that doth the ravens feed,
Yea providently caters for the sparrow,
Be comfort to my age! Here is the gold;
All this I give you. Let me be your servant:
Though I look old, yet I am strong and lusty;
For in my youth I never did apply
Hot and rebellious liquors in my blood,
Nor did not with unbashful forehead woo
The means of weakness and debility;
Therefore my age is as a lusty winter,
Frosty, but kindly."

Dr. HOPKINS: It has been suggested that there is no time like the present, and I move that the chairman appoint a treasurer and begin a subscription fund immediately. A gentleman near me suggested that he would be glad to subscribe fifty dollars.

Dr. J. D. Thomas, of Philadelphia, was nominated and elected treasurer of the fund.

Dr. WILLIAMS DONNALLY: I move that the com-

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mittee be instructed to take into consideration, in connection with the purpose of its appointment, the feasibility of establishing a national museum and library which shall also be a memorial.

Motion seconded and carried.

Motion to adjourn seconded and carried.

The banquet was held at the Union League, at which one hundred and forty gentlemen participated, representing fourteen states.

ADDRESSES DELIVERED AT THE BANQUET HELD AT THE UNION LEAGUE.

After the banquet was finished, Dr. Darby called the assemblage to order and introduced Hon. Joseph R. Hawley, United States Senator from Connecticut.

Mr. HAWLEY was received with applause, and said: I am very much obliged to you for your greeting. I have a great affection for the city of Philadelphia and its people, and I am glad to be here to-night.

The Senator recited his having attended school with Horace Wells, in Hartford, and then proceeded:

In regard to anesthesia and its discovery, how many lives have been prolonged by it, and how many thousands and thousands and thousands of years of human life have been added by reason of it? How many thousands upon thousands of hours of agony

have been swept away and thrown into bottomless oblivion by reason of the thought of that young dentist fifty years ago to-day? I knew all about it; where the office was, where Samuel A. Cooley was executing a dance and cracked his shin and the blood ran down into his shoe. Wells asked him if it didn't hurt him. He said: "I hit the bench, but I didn't know it hurt me," but all the while the blood was trickling down in his shoe, and then Wells said: "A new era in surgery!"

He was a man of ideality,—a sensitive and quiet sort of man. He was a sort of poet in his way. He had been dreaming for some time of some way of escaping pain. His inquiry was whether a man might not take that gas and not know when a tooth was pulled if Sam Cooley (we all affectionately called him that) could hurt himself that way and not know it,—if a tooth might not be pulled the same way. You might think any one would have made that remark, that it was the most natural thing in the world to have said, but somehow or other it is only the real genius that does say that kind of thing after all, as Jenner discovered vaccination.

Then to try it he got John W. Riggs to pull a tooth for him. Riggs held the bag and administered the nitrous oxid while Sam Cooley stood in front of Wells to keep him from jumping out of the window, for he knew how it affected a man. When consciousness was regained Wells said: "A new era in tooth pulling; it didn't hurt me the prick of a pin." Then he thought it could be ex-

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tended to surgical operations, and it was not long before others were discussing this success under sulfuric ether, and within a year three operations were performed: a very serious surgical operation by Dr. Marcy under the influence of sulfuric ether and the other two by Dr. Morton.

Here is a little handbook that Wells published defending himself, and here is another, gotten up in great indignation that any one should try to defraud Horace Wells of the honor of his discovery. Wells went to a college in Boston and demonstrated his discovery. He explained it to Morton, and Morton went one day and got Jackson and spoke about nitrous oxid, and Jackson suggested that sulfuric ether would do about as well, and on that those two men, on that shady thing, claimed they were the discoverers and they joined in the application for a patent which Morton obtained. The patent was very carefully drawn. He didn't say anything about nitrous oxid gas, he knew perfectly well all that Wells had done. It was simply suggested to him that there were other agents that had similar properties and would bring about a similar anesthetic state. They did not pretend to have discovered anesthesia, because they did not want to perjure themselves. Why, when the steam engine was invented by Watt, it would have been just precisely the same thing if some one had come along and suggested that coal be used instead of wood, and then to have claimed to be the inventor of the steam engine; just as much reason precisely. The only

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question was whether there were other agents that would bring about the anesthetic state.

Jackson never claimed to be the inventor of anesthesia.

Your dentists and medical men have been operating upon us, your surgeons and physicians, and with the antiseptic treatment have made wonderful advances in the treatment of all these internal disorders and derangements of whatever kind. They are literally extracting everything, no matter where it may be in you, that is disagreeable in any way; they cut it out and sew it up and put in a little silver wire and you are all right, and you don't know when it was done either.

I thank you, and will not detain you any farther than to say to you that to-night we celebrate one of the greatest American discoveries.

Dr. Darby in calling upon Dr. Truman, said:

The dental profession claims among its own numbers the discoverer of anesthesia. It gives me pleasure to call upon a dentist to respond to the toast,—“Anesthesia as a Dental Discovery.” I refer to Professor Truman, of the University of Pennsylvania.

Dr. TRUMAN said: I have been impressed to-night with the story with which you are all familiar, or were familiar with in your early childhood,—the story of the “Ugly Duckling,” by Hans Christian Andersen. You remember that this ugly duckling came out of his shell late; he was picked at, was

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persecuted, and loved by no one, and the only talent he had was that he was able to swim. As he passed on through life he happened upon a tribe of wild ducks, and the leader of the ducks said to him: "You are very ugly, but you can swim and you can fly, and I think I will adopt you into our tribe; but you must remember you are never to marry into our family,"—and eventually the duckling became a beautiful swan.

Now, it seems to me that dentistry occupies, in its relations to the professions, very similar characteristics to that ugly duckling. It was born late. It began its life in the middle of the last century, and has been growing and building its own centers of instruction, laying its foundations in therapeutics and pathology, and upon experience creating a profession worthy the name. Standing this evening before this august assembly, I feel that the representation from fourteen states gathered here to do honor to one of our number indicates a professional spirit which rejoices my heart.

When Horace Wells, in Hartford, in 1844, discovered the properties of anesthesia, unnamed at the time, did he confine it to his own selfish purposes? It was a transition period in dentistry. Every professional man's hand was against every other man's. Horace Wells was broader than those with whom he came in contact. He desired to give the benefit of his knowledge to that "greater world," as Goethe loved to call it. He believed it was capable of being used in major surgery, and did all that

was possible to arouse interest among medical practitioners. He went to that great center of medical instruction, Boston, and gave an exhibition before the medical faculty and students, and was hissed from their presence. This action will ever remain to the discredit of the medical profession in Boston.

But Boston is not alone in this, for every age has stoned its prophets, and will probably continue to do this to the end of time.

Dr. B. W. Richardson, of England, has in these latter days, and indeed in the past few weeks, in *Longman's Magazine*, undertaken to tear the mantle from Horace Wells's shoulders and place it upon those of Sir Humphry Davy. It has been a long period to wait to perform an act of this character; ninety-four years since Humphry Davy undertook to promote the discovery of Priestley.

It is pertinent just here to consider what constitutes a discovery. It is certainly true that very few new things are born into the world through the unaided efforts of a single individual. The inspirations, apparently floating through the mental ether of the world, drop here and there as in the parable, some on rocky, some on poor, and some on fruitful soil. That falling on rocky soil dies in its birth, that on poor soil produces but a weakling, but the third brings forth fruit worthy of the generation. It fell upon Priestley, and there was no germination; on Sir Humphry Davy, and it ended in a dream; on Horace Wells, and the result was for the comfort and healing of the nations.

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Has this introduction of anesthesia been of any real benefit to dentistry? I might say almost nothing. To be sure, in the earlier "duckling" age of this profession, the extraction of teeth was the principal business of the operator; but to-day dentistry has grown far beyond that. We might now follow the old Delphian idea and hang up in our temples—in our operating rooms and offices—the leaden forceps indicative that no tooth should be removed until it could be extracted by such an instrument.

When Dr. Richardson wrote the article alluded to, he very vividly described the condition of surgery just prior to the introduction of anesthesia. He recalls the feelings of the surgeon, with all the care and anxiety of the day before him; the horror of the students, and the cries of the patients. Is it any wonder that there was intense excitement when the surgeon entered the classroom and announced that there would be no lecture that day, "that he had a piece of news to communicate,—nothing less than the discovery of a method by which the most important surgical operation could be performed while the patient was asleep!" The news had come from Massachusetts Hospital. It is not surprising that the students followed the surgeon to the amphitheater to see this wonderful operation. Was there one in that excited audience who thought of Sir Humphry Davy? No, he was entirely forgotten.

When we contemplate the past history of the world, the horrors of the battlefields, the terrors of the hospitals, and the accidents of life, the mind fal-

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ters in its attempt to grasp the aggregate of human misery. Who can translate this into words suitable for modern comprehension? This wail of the ages was voiced in the Garden of Gethsemane, when the Great Master of human thought, in anticipation of the cruel agonies of the cross, lifted up his voice and prayed: "Father, let this cup pass from me!" Eighteen centuries passed into oblivion with no response; but near high noon of the nineteenth, in the new world of Columbus, in a humble home in Hartford, there arose a "still small voice" sounding above this wilderness of suffering. It was wafted over the deep waters, echoed and re-echoed in joyous acclaim throughout the world: "Lo, the cry of agony from the surgeon's knife is silenced forever!"

We cannot deify thee, as the ancient Greeks would have done, but we give thee most hearty thanks, and in our heart of hearts we enshrine thee, O Anesthesia, goddess of our modern civilization! though not the firstborn, the loveliest of all the children of discovery in this our nineteenth century!

The professor was accorded long and continuous applause.

Dr. Darby then said: The discovery of Horace Wells and the discoveries which have succeeded those of Horace Wells have undoubtedly been of inestimable value to the evolution of surgery, to the medical profession,—to the surgical part of the medical profession,—and they are greatly indebted to the discovery of anesthesia, and it gives me pleasure to call upon the gentleman to respond to the toast,

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—"Anesthesia as a Factor in the Evolution of Surgery," by Dr. James William White, Professor of Surgery in the University of Pennsylvania.

Dr. J. WILLIAM WHITE responded: Mr. Chairman and gentlemen, the discovery of anesthesia affected the practice of surgery instantly; the principles of surgery more slowly. It revolutionized the art in a twelvemonth; its influence on the science was more gradual, though none the less radical. Its effect upon the individual patient and operator of the period was little less than magical. Like the enchanted carpet of the Arabian Nights, it transported them in the twinkling of an eye from the glaring light of one hemisphere to the soft darkness of the antipodes; from an atmosphere of pain, suffering, and agony, of tense nerves and noisy struggles, of mental horror and physical anguish, to one of quiet slumber and sweet oblivion. If it had done nothing more for the victim of surgical disease and injury than to blot out the pain which from the very earliest dawn of surgery was inseparable from its procedures; if it had done nothing more for the operator than to transform the shrieking, writhing patient, strapped to the table and held there by stalwart assistants, into the passive, unresisting and unconscious subject of his knife, it would have justified, a hundred times over, this commemorative gathering. It would have been an achievement beyond all praise to have diminished by this much the sum of human suffering, to have added by this much to the efficiency of surgery, if it had done nothing more.

But these most obvious and most immediate results of the discovery of anesthesia were the very least of the blessings that were to spring from it. It is not too much to say that it and it alone brought into the realms of possibility every great advance which has succeeded it. Dozens of modern operations unknown and undreamed of in 1844, each of which has been followed by a reduction in mortality, affecting tens of thousands of patients, owe their birth to our ability to secure absolute quietude and full muscular relaxation. The professional pillory, if not the actual one, would have awaited the proposer of any of them five short decades ago, and he would have been classed literally and unhesitatingly among the criminal lunatics. The processes of disease and the results of traumatism are now successfully combated in regions which were uninvasioned in pre-anesthetic days, and were thought to be surgically unassailable. Astley Cooper and Ferguson, Velpeau and Dupuytren, stood helpless and useless before cases cured to-day by any recent graduate of a good medical school. The brilliant thought, the inspiration, of Wells fifty years ago so broadened the field of operative work and widened that of experimental research on the lower animals that it made possible the discoveries of Lister and Pasteur twenty-five years later, and was thus the essential foundation of the grand superstructure which in its full development as modern antiseptic surgery saves weekly more human lives than were sacrificed in all the campaigns of the Cæsars. December, 1844.

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seems as far away from December, 1894, in the annals of surgical science as does the battle of Hastings from the last combat in the present war in the East, and it is no exaggeration to say that even in that half-civilized part of the world the surgical methods of to-day are so far beyond and superior to those of 1844 as were those of the latter date in advance of the methods of the eleventh century. The work of fifty years has surpassed and outstripped beyond all comparison that of eight hundred years. Anesthesia and antiseptics have in this short time wiped out of existence an amount of suffering, disease, and death contrasted with which the mortality and misery of war, famine, and pestilence sink into insignificance.

It is not to be thought that surgery has reached its culmination. It might be imagined that the generation which in its infancy had witnessed the triumphs of vaccination and the introduction of anesthesia, in middle life had been thrilled by the wonders of antiseptics, and in its old age, in these declining years of the century, had seen the subjugation of more diseases than had been brought under control in all the previous eighteen hundred years of the Christian era might be content; but such is not the case. Investigation, experiment, research, are going on more rapidly than ever before. The prizes to be won are as great as any yet secured. Tubercle and cancer remain to immortalize the men who shall finally conquer them, and although we of this generation may not live to see it, there can be small

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doubt of its ultimate accomplishment. While the look backward to the middle of the century is full of glorious memories for the surgeon who loves his art, the look forward is equally full of eager anticipation; and for both the magnificent advances of the past and the splendid hopes for the future surgery owes a debt of undying gratitude to Horace Wells as the builder of the foundation, the layer of the cornerstone.

In calling upon the next speaker, Dr. Darby said: We have with us to-night a gentleman who has written much and talked a great deal on the subject of anesthesia; a gentleman, I might say, whose reputation in that line is such that any statement he might make would be almost without question. It gives me pleasure, therefore, to call upon that gentleman to respond to the toast,—“The Debt of Medicine to Anesthesia,”—Prof. Horatio C. Wood.

Professor WOOD responded: Gentlemen, your much-esteemed leader and colleague, Dr. Kirk, said to me four days ago that I would not be wanted to speak on this occasion. He came to me this evening and said that in the absence of the greater Pepper you would like to hear from the lesser Wood. Of course, I hesitated, but, after all, smallness has its compensations. It takes the great lakes, the months of time, and a rolling Niagara to make the diapason of the wonderful cataract, but toss a stone in the purling stream and it sings its song; and if it only sings modestly and forgetful of

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self, men listen and are instructed or comforted; so the lesser man, forgetful of self, can often teach the wise listener. Again, the man who has only a few books in his library does not take long to find any one on occasion, and so, since I have been sitting here, I looked over my scantily furnished shelves and brought forth a book, and this is what I read in it:

That once upon a time twins were born into the world. One lusty and full of vigor, shouting always his own praises, pressing to the forefront of the battle, living in blood, accident, and death; doing manly service always to his fellows. And the other was a quiet man, keeping in the background; thinking much; laboring more; speaking never of himself, but doing what he could in God's name for humanity; and the one was Surgery and the other Medicine. (Applause.)

To the surgical twin, the man of blood and deeds, anesthesia has come as the greatest boon; to the philosophical thinker, the man of quiet reserve, anesthesia is at the first sight not so much a gift. It is true, in the agonies of the sick room, when some spasm strains the human frame, the doctor would often be powerless to give relief had it not been for the great gift which came out of the city of Hartford; but this is only a trifle, so to speak, only a rare event in the daily life of the medical practitioner. The point I want to make to you is, however, that deeper than you think, perchance, anesthesia lies at the foundation of the great science of medicine. Men may say what they please; may pour

foul epithets upon the heads of those of us who are guilty of the practice of vivisection, but had it not been for anesthesia few would have had the nerve and the hard-heartedness to inflict upon the lower animals the pains of vivisection, and were it not for vivisection there were no modern medicine to-day. (Applause.)

The old clinical method of comparing case with case, and accident of treatment with accident of treatment, was long ago exhausted. By such work, scarcely a fact has been added to medicine since I was a boy among medical students. Only as we have the power to vary the terms of the experiment can the experimental science increase, and so anesthesia has made possible modern physiology; has made possible modern antiseptic surgery; has made possible modern medicine; has made possible this great and wonderful progress, which sometimes we stand by and look upon with reverential awe. This is what anesthesia has done for medicine.

Will you pardon me a little thought that may seem digressive to you, but I cannot refrain because to-night I am bitter with indignation? It is this: That over and against modern medicine stands a great mass of the non-thinking public in bitter antagonism. We spend our lives ministering to the sick and the suffering and the dying, and they receive us with pleasure, with grateful hearts, with true eagerness, in the hour of peril, but often they scorn us and our methods, and would persecute us to the death in health. Do you ever go back in your

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memories to Servetus, as, bound to the stake before a slow fire, he gave up his soul, asking Christ to pardon Calvin, the theologian, for the bloody crime of his death? A typification of what medicine has too often been on the one hand, and the misguided people on the other. Nearly every other winter Dr. Mitchell and myself have to go to the Legislature of Pennsylvania. For what? To keep ourselves out of the Eastern Penitentiary! That is virtually true! Five per cent. of our lives—of our leisure lives that ought to be spent in the work of discovery—are spent in protecting ourselves and other physiologists against the people. Do you know what happened in this city the other day? Five men thrown into prominence by political power have degraded from position in a city hospital one of the most brilliant young physicians. For what? Because he tried to make a discovery and to follow in the footsteps of Wells. Don't make discoveries, they said, in action; you are put there to save the patients, and the patients shall not be allowed to suffer at all; and if, in our judgment, another pang is given a man in order that the world may be helped, we'll turn out the doctor that does it! Gentlemen, has the taxpayer no right in the city hospitals? Have the great bulk of humanity no rights in the city hospitals? Has it come to this that in a city hospital a man must mentally weigh every dose of medicine he will give, and say whether it is the best possible medicine that could be given to that patient, and never press forward in the science by ex-

periment? I hold it to be a truth unalienable and absolute that no doctor has a right to put a man's life in peril, or put a man to any grievous injury for gain of knowledge, but I hold it also to be a truth that medicine is an experimental science, and if there be no room allowed for clinical experiment there can be no advance in the science of medicine. If a new drug be discovered, to determine the value of the medicine, on whom does the doctor try it? Usually on himself.

When I came to the conclusion that strontium salicylate was a useful remedy, I tried it first on myself, next on my wife.

Let me say another word on a similar thought: In this republic there are few open rewards for men who—devoting themselves to science—really sacrifice their lives for other people. Is there in the whole United States, from Canada on the north and Gulf of Mexico on the south, one statue to a doctor, unless, perhaps, that doctor has been a politician? Then the marble has been erected to the politician and not to the doctor. It is not a little thing that in these United States we have no distinctions, no open rewards for great deeds done in science. Do we wonder that Mammon worship grows when there is no reward to a medical man except his own sense of doing right, for the act of self-denial by which he puts off the making of money in order to achieve the higher work of discovery? Did you ever hear of Leidy,—the greatest scientist that the city of Philadelphia has ever produced? (Applause.) Leidy,

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the one man of America that was crowned by the French Academy of Science. He died,—five or six lines in the newspapers. That was all. Where is his grave? His monument? Why, gentlemen, if he had died in the city of Berlin a great civic and military funeral would have marked the national loss. Somebody said to me within a few days: "Why didn't you Philadelphia doctors discover anti-toxin?" Why? If we had tried to have done so we would have been put out of the hospitals! Why should the man sacrifice his personal gain and labor for the general good? Why should the prophet come when the people stone him? It is not to the surgeon that anesthesia does good; it is not to the doctor that anesthesia gives aid; it is to the people. If the people were intelligent and knew what was for their own good, endowed laboratories, with large salaries for the few men of genius who are capable of running them, would abound.

And I felt, while listening to the speech of Senator Hawley, that the city of Hartford is proud of not only the man it has produced, but also of itself. And why of itself? Because, forsooth, fifty years after the man had been allowed to die in poverty it put up a commemorative tablet. Even this is a wonderful thing for an American city to do. For doing even this Hartford ought to be put upon a hill so that it could not be hid. (Applause and laughter.)

(Senator Hawley here remarked that many years ago the people of Hartford put up a very noble

statue in the City Park to Horace Wells, the discoverer of anesthesia.) "There," said General Hawley, "is our challenge."

Dr. Wood continued: Didn't I say right then, that the city of Hartford ought to be set upon a hill where we could worship it? Was I not right? (Applause.)

Dr. Darby: Nearly all that has been said to-day of the discovery of Horace Wells has been stated from the standpoint of the dentists, physicians, and surgeons. I will now call upon a gentleman to respond to the toast: "The Mastery of Pain from the Standpoint of a Layman." I shall now call upon Colonel McClure, editor of the *Philadelphia Times*.

After the applause had subsided, following his introduction by Dr. Darby, Colonel McClure said:

Mr. Chairman and gentlemen, I wish to say at the opening that Dr. Wood certainly does not read *The Times* of this city, or he missed the number issued the day after the death of Doctor Leidy. I always keep a doctor on the staff of *The Times*, and permit him to write on subjects relative to medicine. I always keep a preacher on the staff of *The Times* also, but he is not permitted to write about religion.

I am very glad to have the opportunity to respond to this toast which has been assigned to me. I know all about it. Sometimes it disqualifies men for making after-dinner speeches when they know something about the subject, but I understand the subject of dentistry from its most primitive condi-

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tion to its present wonderful achievement, and I must take chances. I was raised in the mountains of Pennsylvania, where dentists were unknown in my early days. I do not recollect even of reading of them in the newspapers. When I was quite a small boy, the man upon whom the drawing of teeth fell was the neighborhood blacksmith,—because he was very strong of arm. He had an instrument something like a gimlet with a hook to it which he used for dental operations.

In the course of time we progressed in the country as they do everywhere, and I remember the first advent of the dentist in the mountain neighborhoods of interior Pennsylvania. They stood one day at one place, and another at another. You would see handbills around the neighborhood that the celebrated horse would stand at the Bull Tavern so many days this week, and so many days next; and you would also see posted a bill stating that the dentist would be there on certain days of each month. They were peripatetic, coming and pulling out teeth in the neighborhood and arranging to do little odds and ends. That was the beginning,—of course I don't know whether there was even any dental school in the city of Philadelphia at that time, fifty years ago. (Some one sitting near the Colonel stated there was not.) Therefore you can form some idea of the kind of men we had for dentists,—generally men who were unfitted to do anything else. (Laughter.) I have also a pretty distinct recollection of the introduction of anesthesia in the country.

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Forty-six years ago I was publishing a village newspaper. It was the only period in my life, as I recall it, when I thoroughly understood the newspaper business. As I have grown older I have had more experience as an editor, but find I have now to learn something every day. Then I did not need it,—I knew it all. We had two village newspapers which employed two journeymen printers and two apprentices. One of them was a very enterprising and progressive sort of man, and I was somewhat progressive myself, especially if the experiment was to be made on somebody else. We had read and discussed this thing in the village tavern in the evenings,—this discovery of anesthesia or chloroform,—but, of course, knew nothing about it. As country people like to talk over every subject that comes up, we discussed it very exhaustively, and finally one of the enterprising journeymen printers, who happened to be my journeyman, concluded that it was something that ought to be tested and demonstrated, and he proposed himself as the man upon whom the experiment should be made. I was perfectly willing he should be that man. We got a young doctor, who did not know much more about it than we did, to administer chloroform in the printing office of this journeyman printer with great success. He upset nearly every case of type in the office, and it took four men to hold him, and took an hour to get him out of it, but we concluded then that it was a very successful experiment, and that this was certainly a very great discovery in science.

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I claim some little credit, therefore, for aiding the discovery of anesthesia. (Laughter.)

I remember some thirty years ago suffering very much with toothache, when I lived in Chambersburg. Then there were accomplished dentists,—educated dentists,—and we had one there. I went to him to have this tooth extracted. Of course, you don't go to have a tooth extracted until it is very much inflamed, everything about it very sensitive to the touch, and you can't sit still for a man to get proper hold of the tooth. It is simply a question of grabbing and jerking,—and he went at it. It was a wisdom-tooth, and he made a grab and jerk and broke it off under the gum. In a few days it became very troublesome again. I had been reading the accounts of using gas in this city for drawing teeth. As there seemed to be no other way of getting this tooth out, I came to Philadelphia and went to the office of Dr. Thomas,—I believe it was he who first introduced it here. I remember going to his office and making considerable inquiry about it, and his showing me a list of the names of the persons to whom gas had been administered. I remember that it was about eighteen hundred; that was the entire number of people in this commonwealth to whom gas had been applied to that time. I knew very little about it, of course, but felt much concerned, though he quieted me and assured me that it was perfectly harmless. There was no sign of instruments in the office. I sat down in the chair and he administered the gas. After a while I came to, and

I saw the case closed up; no sign of anything having been done, and I said: "Why didn't you draw the tooth?" "Why," said he, "here it is." I am giving you precisely what happened. When sensibility was restored I had not felt anything whatever; I supposed he had not attempted to draw the tooth. Since that time I have had a number of teeth drawn. Whenever I find it necessary to have a tooth drawn I go to my work as usual in the morning until mid-day, or about midway between meals, then take my hat and go over to Dr. Thomas's and have one drawn, come back and go to work. (Applause.)

I have never had the slightest inconvenience in any way whatever. I now think no more of having a tooth drawn than taking a glass of water. I am delighted, indeed, that we have reached this point. Dr. White tried his best to cut me in pieces during the last year. Seven times he amused himself with his scalpel upon me,—I knew no more about it than any person in this room. (Applause.) Ether was administered without difficulty,—never had any knowledge of or inconvenience from it,—and when the doctor felt ambitious he would simply administer it and whack away at me. Life was saved by it in my case beyond doubt. (Applause.) It is not a matter of dispute at all that but for the advance in medical science and the application of anesthesia I would not be among the living to-night!

It has developed not only the destruction of pain, but it has developed the very highest standard of surgery. The world never had such surgeons as

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it has to-day, never in its history; not because men are greater to-day than they have been,—although they are as great as of any period of the world, in all professions, for we live in the best age the world has ever seen,—but because of the discovery of anesthesia. It gave the profession of surgery the opportunity for the highest possible development, and, while Dr. White seems to be certain that we shall see advances in the future even yet beyond what has been attained to-day, it does seem almost impossible.

I beg my friend, Dr. Wood, to be of good cheer. I have never known a monument of an editor to be erected in the United States. I have never known a monument of a lawyer erected in the United States. I don't recollect the monument of a preacher in the United States,—I mean as a preacher. I do not know of any intellectual profession in this country, save that of statesmanship, that has received any monument from the people or the nation.

Be of good cheer, my friend. You are not behind the rest of the men engaged in intellectual development in the monuments which are reared to your great achievements. I grant we erect monuments rarely, and so has all the world, and we haven't got beyond it,—perhaps never shall,—I am not certain we ever should. We erect monuments to statesmen. Why should we not? They are the leaders and idols of the people. The men who create our laws; the men who mold our Govern-

ment; the men in whom the people place their very highest confidence; and not one of them who has ever achieved has failed to have his praises sounded, and so it must be until time shall be no more.

He makes one just complaint against the people. That is that medical advancement, medical science, is hindered by the people,—by ignorance. He did not use that term, but I do. Hindered by demagogues and notoriety seekers, who play upon the passions and prejudices of the ignorant, who teach them that medical advancement is brutal. But we'll get beyond that, doctor. The newspapers are growing very much in importance and circulation, and just as they have grown so has intelligence widened and liberality progressed. In teaching as you do the right of the medical profession to employ every just means for its advancement, the press will sustain you. There has never been a contest of the kind in Pennsylvania when the press has not made public sentiment, so that you don't have to go to any special trouble to keep out of prison. We are living in an age so full of hope and beauty that I almost regret I am getting old myself. I think it is a great mistake for men to brood over the fact that they are getting old. There is nothing in the world more beautiful than he who grows old gracefully. I have never seen a day when I would want to turn back the march of progress. Every condition has its compensations, its duties, its achievements, its pleasures. And when I look at the young men around me on occasions like this, men of intelli-

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gence, men of other professions, and think what opportunities they have which we had not, and how the great highway to advancement is to be widened and broadened and the goal made more easy of access from year to year, I envy you that which you may achieve far beyond what we have achieved. It is, indeed, a season and time of hope; a time that should inspire every young man to the noblest efforts in his profession in the advancement of all that can benefit mankind.

Only appreciate your opportunity, and when you shall come back to an occasion of this kind, a generation hence, you will find that you have surpassed all that has been reached in the brilliant records of present achievement. The world is progressive; it moves, and, though it may be hindered and bothered by ignorance and superstition, it will as steadily settle to the right to the grand consummation as the quivering needle settles to the pole.

In introducing the next speaker, Dr. Darby said: We have with us a member of the dental profession who has made for himself a reputation as an author and a teacher; a gentleman who has prepared and published the most exhaustive and magnificent chapter upon anesthesia, in that most magnificent work,—the system of dentistry,—that we have ever seen, and it gives me pleasure to call upon him to-night to respond to the toast,—“The Development of Our Knowledge of Anesthesia,”—Wilbur F. Litch, of the Pennsylvania College of Dental Surgery.

Dr. LITCH responded: Mr. President and gentlemen, with the admirable addresses of Dr. Fillebrown and of Dr. Garretson fresh in my memory, I have listened to the interesting responses which have been made to the toasts of the occasion, and there has come to my mind with renewed force and significance that utterance of the great English historian, Lecky, who said: "It is probable that the American inventor of the first anesthetic has done more for the true happiness of mankind than all the moral philosophers from Socrates to Mill."

In the year 1832 the distinguished French surgeon, Velpeau, published a work upon operative surgery in which he made this assertion: "To avoid pain under incisions is a chimera which is no longer pursued by any one. A cutting instrument and pain in operative surgery are two words which never present themselves separately to the mind of the patient, and of which he must of necessity admit the inevitable association."

Some fifteen years later the same great surgeon recorded the fact that, under the influence of sulfuric ether, he had just removed a cancer from the thigh of a patient without the slightest sensation. Now, this was a wonderful and memorable revolution in sentiment, and I have been asked to trace the development of our knowledge of anesthesia,—to follow the progress of the events which made that wonderful reversal of opinion and that marvellous result possible.

To do this systematically I should have to go

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back through the crude empiricism of the ancient, medieval, and modern world, down to the discovery of Horace Wells, and so on through the patient and painstaking investigation of the past half-century. There is, of course, here neither time nor space for a retrospect so exhaustive in character,—exhaustive not only of the subject, but in all probability of the audience, as subjects exhaustively treated are apt to be.

It will, I think, suffice to say, in regard to obtunding pain, that it is a primitive instinct of man, and that there has never been a time when anesthesia has not been sought for, and, as was stated this afternoon, by many of the nations of antiquity, and even of more modern days, anesthesia was practiced, although, of course, by methods all more or less crude and imperfect. Still, imperfect as these methods were, they were not by any means entirely ineffective if the statements of many writers on this subject can be believed, and the marvel is that some one of these methods was not systematized and perpetuated. It is true, of course, years ago, that in the employment of mandragora, hyoscyamus, hemp, and opium, the agents chiefly relied upon, the dose was difficult to regulate, and there was always great danger that in narcotizing the sensory nerve-tracts there might be produced fatal narcosis of the centers of respiration and circulation.

A much safer and often a more effective anesthetic, however, was alcohol in its various forms, the stupefying effect of which mankind has been acquainted with from quite a remote antiquity.

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Sulfuric ether was known for some five hundred years before Morton used it, and nitrous oxid gas was known for seventy years before it was applied by Wells. Why, centuries ago, was not alcohol to full intoxication systematically administered for anesthetic purposes, as has been successfully done in our own day? Why was not nitrous oxid gas earlier used, as Wells used it, or ether, after the manner and for the purpose to which Morton applied it? These are among the puzzling questions which confront the student of human history. "The years teach much which the days never knew," says Emerson. That mysterious power which works in us and through us and for us, and which always makes for righteousness, has its own appointed seasons in which to nations, as to individuals, it grows in full measure the fruitage of that which they have sown, —whether for good or for evil. Anesthesia is as a flower which has slowly bourgeoned and at last blossomed on the cross of human suffering. To His lips who once hung there, typifying our humanity and sharing our human anguish, the rude Roman soldiery pressed a draught bitter but lethal; suffering humanity to-day breathes deep of subtler essences, and who shall say that the lesson of that life and of that death has not had, through its humanizing power, a controlling influence in determining the great discovery which to-day we commemorate?

We marvel at the slow development of knowledge regarding anesthesia in the past; perhaps future generations will find cause for equal wonder-

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ment that we are oblivious to facts and principles which to them may possibly be so simple and so obvious in character. Even now we have no exact knowledge as to how or why anesthetics anesthetize. So far as the mechanism of their operation is concerned, the probability is that, as first taught by Bernard, they effect upon the protoplasmic constituents of nervous tissue a change closely allied, if not identical, with coagulation. The progressive sequences of these effects upon the centers of intellection, co-ordination, nervousness, respiration, and circulation were clearly described by Flourens in 1847, and, with the exception of later investigations as regards the effects upon the sympathetic system, the facts as he then presented them still remain practically unquestioned and unchanged.

As the result of careful experimentation of the Hyderabad Commission, the previous generally accepted view that chloroform is an agent having a specifically depressant power over the cardiac motor ganglia has been brought in question, the commission's experiments apparently establishing the fact that the depression which results from chloroform narcosis is produced not by cardiac paralysis, but by capillary dilatation through the vasomotor system. Whether a knowledge of this fact will have any influence in reducing the large percentage of fatalities which have attended the use of chloroform heretofore remains to be seen. It is a result sincerely to be hoped for, if not anticipated, because the more thoroughly we understand the true *role* which any agent

plays in the economy of nature the more intelligently and effectively can that agent be applied.

As a result of the discovery of the anesthetic properties of cocain locally applied, painless surgery in minor operations is now practicable in a large number of cases where before general anesthesia would, of necessity, have been resorted to. Unfortunately, even this agent is not entirely free from danger, because there have been quite a number of fatalities, and no inconsiderable number of cases in which dangerous symptoms have arisen are already on record. Thus the fact remains that, notwithstanding all the progress which we have made, the really ideal anesthetic for prolonged operations, at any rate, remains to be discovered,—an anesthetic which shall at once be perfectly safe, perfectly effective, and entirely convenient of administration. Were it not for certain mechanical difficulties, nitrous oxid itself, in due admixture with oxygen,—a combination which is at once lethal and life-giving,—would very closely approximate the ideal which we seek. That these mechanical difficulties may yet be overcome is quite among the possibilities of the future.

One word in closing, and I hope I shall not be held to have struck a false note in this symphony of praises in what I have to say on this point. Great as is the boon which anesthetics and pain-obtunding agents in general have bestowed upon humanity, is there not some danger that, like all other good things, their use may be perverted? Are we not grow-

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ing too timid in regard to pain,—too clamorous for instant and immediate relief, even from the slightest suffering, for suffering which is often salutary, and which generally comes as a punishment for violation of natural laws, a punishment really intended by nature to be disciplinary and educational in its character? Upon this point a recent writer, La Galliene, has this to say: “No observing man will deny that this is comparatively an age of cowardice; at any rate it is an age of anesthetics. * * * And we may well pray for the spirit of our brave forefathers, who went to battle with stouter hearts than we take to the dentist.”

The “peach of emerald hue” and the aching molar alike have their mission on earth,—a mission which is far from being done. The hypoderm of the doctor and the gas bag of the dentist may somewhat interfere with the efficiency of nature’s teaching by diminishing the severity of the punishment which in her school always follows lessons badly learned; but, after all, nature does not allow her disciplinary methods to be seriously interfered with, and, excellent buffer as it is, the gas bag, allowing that to typify analgesic agents in general,—however placed or wherever placed,—cannot do more than somewhat mitigate the anguish of the child or of the man to whom the good old mother of us all is administering a salutary spanking.

Dr. Darby, introducing the next speaker, said: We have with us a gentleman who has the friendship

and respect of all law-abiding citizens, but for whom all the criminals stand in awe. It gives me pleasure to call upon him to respond to the toast,—“The Medico-Legal Aspect of Anesthesia,”—District Attorney George S. Graham.

Mr. GRAHAM said: Mr. Chairman and friends, I remember reading some time ago a story that may be familiar to you all, but its applicability to myself, under the present circumstances, is so very clear that I am sure I will be pardoned for its repetition. An old man was passing through the streets of a busy city when he observed a laborer with crowbar in hand, hammering lustily at a cellar wall which projected above the sidewalk. The old man stopped for a moment and said: “My friend, what are you doing?” “Why,” said he, “this cellar is exceedingly dark and I want to let some light in.” The old man went about his business, but came back an hour or two afterward and found the man still hammering with the crowbar against the wall, and he saw that very little, if any, progress had been made in widening the small aperture in it. He said: “My friend, you don’t seem to have made much progress; you have not illuminated the darkness of that cellar very much.” “Oh,” said the man with great gravity, turning to the interrogator, “I have not let much light in, but I have let a power of dark out.” (Laughter.)

“The Medico-Legal Aspect of Anesthesia,”—upon that subject, when I have done, you will unani-

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mously say: "My friend, you have not let much light in, but you have let a power of dark out."

It was said once of the famous Daniel O'Connell that in a burst of indignation, which must have been somewhat akin to that which enveloped and energized our good friend, Professor Wood, to-night, he was at a loss,—I do not mean Professor Wood, for he is never at a loss,—but O'Connell. He was at a loss for a word to express his indignation, and he said, turning to the man: "You unflamblasticated ruffian." Afterward a friend said to Mr. O'Connell: "What did you mean by that word?" and he said: "Indeed, I don't know; I only used it because it was a big one and had a mighty sound." (Laughter.) I think your committee, when they selected the toast to which I was to respond, in choosing this term, "the medico-legal aspect of anesthesia," must have selected it because it was a big phrase with a mighty sound. And so I will not attempt to discuss before this learned and intelligent body of men the relationship between anesthesia and the law, or, as this term would indicate, how the medical effects which you have discussed are constantly applied to or affect the legal profession in the administration of justice.

If we were to take anesthesia in its broad sense, as the professor used it in his splendid speech to-night, I would say that it sets justice at defiance and makes courts ludicrous. (Laughter and applause.) It furnishes many a subject for the knife of the legal surgeon in the person of the Prosecutor of the Pleas.

Discovery of Anesthesia.

On one occasion,—it must have been in the country where that blacksmith of whom we heard to-night, with sinewy arms, drew teeth with the prong of a pitchfork or a gimlet, that this scene occurred. A lawyer entered the courthouse and he was greatly under the influence of this anesthetic. (Applause.) As he stood in the presence of the court, hardly able to balance himself aright, the court thought it was proper to administer to him a severe rebuke, so he said: "Mr. Jones, you are a disgrace to yourself; you are a disgrace to your family; you are ruining your own career, and involving them in suffering." "And does your Honor address me?" "Yes, sir; I am addressing you." "Then, sir, it is the first time, although I have been practicing fifteen years, that I have heard your Honor deliver a correct opinion." (Laughter.)

As personal reminiscences seem to be in order to-night, I will be pardoned, I am sure, for saying that I, too, can speak gratefully of this great discovery and its use. In that same chair, doubtless, in which Colonel McClure sat, it was my privilege to sit. I went to that office with a palpitating heart, sir; not as our ancestors went to the field of battle, with flaming courage and high hope, but I went there trembling and wondering if there would not be some restriction of circulation, or some destruction of the breathing apparatus, and thought that perhaps I would never come back again to the practice of my profession, and I was deploring the great loss to this community. (Laughter.) So I seated myself in

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the chair under the persuasive and eloquent voice of Dr. Thomas,—and all those who have ever listened to it know what sweet music it is, when we hear him say: “Now, just rest quietly; think of something pleasant; now, gently, gently; just one more.” And then, in the last supreme effort to retain consciousness, you hear him say, “Now, then just one full inhalation,” and everything around you ceases to be. But it didn’t for me. That is, I was oblivious to pain, but my mind seemed to be active. I had one of the strangest experiences, for a lawyer (Laughter), that ever fell to the lot of man. I was pondering upon that question which agitated my mind when I went under the influence of the gas,—would I die, or would I know when I ceased to exist? I thought I had reached the point where separation of the soul from the body took place; I felt myself lifted and floating, but, oh, with such delicious sensations, and with musical accompaniment so inexpressibly sweet. I was satisfied when I heard the music, for I said to myself: “I know from the motion that I am rising, and these sweet sounds of music can be no other than those which would come from heavenly sources; I certainly am not going down, but I am rising to celestial worlds.” I was in perfect rhapsody, and I said to myself: “Well, if this is the end it is the right end, and I am satisfied it is all over, and I will have no more troublesome cases to try.” When filled with this seraphic music and these delicious sensations of pleasure and delightful contemplations, I was rudely startled by a push on

the shoulder, and a voice saying, "Wake up, wake up!" Perhaps not as sharp an intonation as that, for Dr. Thomas never speaks sharply. Then I found the trick of the music, which was wholly due to a music box in operation upon the mantelpiece, and half of that dream was properly the result of this artificial cause, and was produced with malice aforethought. (Laughter.) That is an account of my first connection of anesthesia with law.

Now, the first criticism I have to make from a legal view point is this: That that experience and those charming effects gave the lie to history and tradition, for there is not a man outside of my own profession—of course we stand by our profession and each other—but would have said that all history and tradition prove that at the Great Gate there is hardly ever an admission of a lawyer, yet the exalted effects of this state of insensibility opened to me a vision of a member of my proscribed profession entering that shining portal, and the history and traditions concerning our profession were flatly contradicted. (Applause.)

Now, there is another word, and it is a word of caution, for, after all that has been said here to-night by my friend, Dr. Wood,—and I have very great and high respect for him, both as a professor and a citizen,—there is a word of caution. These doctors who fancy that all humanity is indebted to them; these speculators upon the suffering of the human frame; these guessers in their diagnoses as to what ails us when we come to them with an ache or pain,

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—and who know very little about it until after they have experimented on us for a very long time,—and these men in the dental profession who take up and administer these dreadfully potent agents, I have simply to say to you that for these strange imaginings that came to me, and which may have come to others, beware! For some time the patient will rise from the chair and seek the District Attorney's office, and tell the terrible scenes through which he has been compelled to pass, with all the earnestness of reality, and perhaps charge you with all sorts of crimes. Therefore, I say to you always do as Dr. Thomas did,—he always had a witness present. If you do not do business enough to have a witness present, make the patient bring a sister or a cousin or an aunt, and then all will be peaceful and well.

There is another branch, however, of this great topic upon which I am letting out so much darkness, and it has been adverted to already to-night in the remarks upon the relationship between vivisection and the law. We find a great deal of trouble in harmonizing these two great classes of benefactors of the human race,—the doctor who practices vivisection and the humanitarian who says this is the very quintessence of cruelty and it ought to be stopped! We may have the physician in court for cutting to pieces some beautiful dog,—I feel keenly on this subject, because I once lost a dog myself (Laughter),—and there will be arrayed over against him splendid people, some of his own, and also of the other sex,—men and women,—with big hearts,

warm, thoughtful, and considerate. On the one side will be the cold, icy surgeon with his knife of glittering edge, and on the other these zealous humanitarians. And we have to stand—that is, we of the law—between them, as it were, to administer equity. So, after the prosecutors have had their say and the doctors have spoken in reply, and had their say, we of the law, protecting you in your bloody pursuit of knowledge, allow the jury to have its say, and that is always: “Not guilty, but don’t do it again.”

Speaking, however, for the moment seriously upon that question, I feel just as earnestly as Professor Wood the necessity of making these experiments, and I believe most earnestly that they are essential to progress and discovery, and result in great benefit to humanity.

I want to-night to bring my little tribute from a sister profession and join with you in honoring the memory of this great discoverer of anesthesia. I want to come and say with you that it is well to recall what he has done, and to speak of him the well-earned words of praise which have been spoken here to-night.

What matters it though the statue of marble or bronze be not reared, if a man lives in the memory of the intelligent observers of his own profession, and is honored as the discoverer of something that brings great good to suffering humanity? There, there, my brothers, is found the loftiest pedestal on this footstool of God! (Applause.) It is only this

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spirit which has convened this distinguished assemblage to-night, and it is only this spirit which will make the distinguished men in any profession to be properly and suitably honored and respected for what they have done. Let me say as an axiomatic truth: Respect for a man in any profession must begin among his brethren in that profession, and never begins outside of it. (Applause.) First let it be generated there, and then it spreads until, like a little leaven, it leaveneth the whole lump. Let the legal profession honor and esteem its mighty men and the world will recognize their merit. Let your association esteem and honor your pioneers in advancement and discovery, and the whole world will join in the sweet acclaim of praise and honor to them and to their memory. (Applause.)

But, after all, what is there that is sweeter, better, stronger, more energizing, invigorating, and grander than a man's own conscience, clear in itself, conscious of and approving what it has done? No ungrateful world can rob a discoverer of that one great source of unextinguishable pleasure. That man is supremely blessed who, in himself, knows that he has done something for humanity. He carries with him in his life and takes with him at death something that is grander than monuments. Aye, something that is greater even than the gratitude of his fellow-men in his chosen profession. (Applause.)

In introducing the next speaker, Dr. Darby said: We have listened with great pleasure to a statesman,

a journalist, a lawyer, and doctors, and now we want to hear from the clergy. It gives me pleasure to call upon the Rev. S. D. McConnell to respond to the toast,—“The Humanitarian Aspect of Anesthesia.”

Dr. McCONNELL said: Mr. Chairman and gentlemen, I wish to make my acknowledgment of your hospitality in inviting me to share your dinner, which, unfortunately, I was not able to eat on account of having had an engagement elsewhere. The same reason which prevented me from eating the dinner has also prevented me from sharing in the feast of reason and flow of soul (and other fluids) which have gone with it.

I fancy if the District Attorney had as much experience in certain directions as some of the rest of us have had, he would not have felt disturbed, as he complains, by the text which was assigned to him, for if there is one thing which a parson has learned, it is the ability to escape from a text. (Laughter.)

But, seriously, I do not know of any sort of commemorative banquet or public function which I would have traveled as far to attend, or be as happy in attending, as the public celebration of the practical discovery of anesthesia. (Applause.) I have no hesitation in saying that I would rather be the man who had discovered anesthesia than any other mortal man who has ever lived. (Applause.) I believe that when, in the centuries to come, the achievements of this century shall have been summed up

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and weighed and measured, and the insignificant things shall have dropped out of sight, and only the really valuable things shall have survived, the one thing for which the century will be remembered will be that it was the one in which anesthesia was discovered and applied. (Applause.) I do not, of course, minimize the value of the progress which has been made in innumerable directions, more particularly in the physical sciences, by this generation which it has pleased God to allow us to achieve; but it seems to me we have before us this evening one of those great, controlling events that do not happen once in a generation, or once in an age, or even once in a millennium, but which happen once—only once—in the history of humanity.

We are familiar, of course, with the fact of pain, so familiar that its unbounded wonder escapes us. Nothing is more dreary, I think, than the disquisitions, learned and otherwise, wise and otherwise, which have been made concerning the function of human pain in the economy of humanity. It has always been a favorite subject with a certain class of theologians. In any old book or system of theology you will discover a very large section given to the discussion of this question,—the meaning and use of pain. It runs very close to one of those baffling problems which underlie all human thought; that is, the origin and function of evil in the universe. The form which evil takes, ordinarily, is physical pain. It is the most common phase of all facts, but it is the most *insistent* of all facts. The strange property of

physical pain is that it produces results out of all relation to its own magnitude. A very small modicum of pain always makes itself felt, and is so insistent that it compels examination into itself. Now, here we have, in this discovery of anesthesia, a power which seems to reverse one of the elemental forces of nature. By anesthesia that force is turned backward and nullified, and apparently by the most insignificant appliances. It is a reversal of forces as striking as though a cyclone were arrested by oiling the hinge of the weathervane. Nothing, I think, could have been dreamed of, more utterly incredible to the generations that have gone before our own, than the simple statement that this great elemental force of the universe is to-day arrested or turned backward. There seems to be no relation in the magnitude between the cause and the effect, and here I approach my text. (One never does approach his text until toward the end of his sermon.)

And that is this: The wonderful way in which the universal use of anesthesia has modified and influenced human life, men's ways of thinking and living, their whole attitude towards life and all that belongs to life.

Its humanitarian influence has been, it seems to me, one of the most marked and wonderful of all these effects. You have all had your attention called, no doubt, to the fact—or at least what I believe to be the fact—that the measure of sensibility to pain is the measure of civilization. The two things always go together. The lower civilizations

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are indifferent both to the spectacle and experience of pain.

Low organisms are relatively insensible to pain; human beings of a low moral organization are relatively insensible to physical pain.

The measure of the capacity to suffer is the measure of the capacity to do.

Now, no one will question that, while we live in an age of physical anesthesia, we live in an age of moral and intellectual esthetics.

It may be a question,—the intimation has been very wisely suggested by my friend on my right,—that it is possible we are becoming hyperesthetical; that we are losing something of the virility we ought to have, and the courage, in consequence of the fact that we have in our power an appliance which is able to obtund, often absolutely destroy, pain. I do not think, however, there is any peril from that; for, as he wisely concluded, after all that is done that can be done, the most that anesthesia will ever be able to do is to reduce and confine the operation of physical pain within the limits of use and healthfulness. It will never go beyond that. It may put an end to all these useless philosophical discussions as to the meaning and function of physical pain, which have never practically resulted in anything except to enable the philosopher to bear with equanimity some other fellow's pain.

There are ways, however, in which the discovery of anesthetics does constantly affect humanity as a whole. All who have had any necessity to observe

the effect of human suffering must have been painfully impressed with its power to demoralize. The demoralization caused by physical pain is something with which all physicians and clergymen are perfectly familiar. I know it has often been thought, and frequently been asserted, that suffering physical pain has in itself a certain educative power, and that its intention is to elevate the patient in his spiritual state. My own observations, so far as I have been able to make any, lead me to precisely opposite conclusions. I think sharp, long-continued, and unendurable physical pain usually has quite as bad an effect on the moral structure of the sufferer as it does upon his physical make-up, so that anything which tends to remove physical pain tends in the same direction to elevate him morally.

Now, we have all grown more and more sensitive; gentler in manner, gentler in thought. Tenderness, which is constantly increasing in humanity, is the measure of its civilization. The world is growing constantly more gentle just in proportion as it is not compelled to look constantly upon physical suffering. If you take a man and set him down where he is compelled to continuously look at physical pain that man himself will grow hard. He is compelled to grow hard in self-defense; the strain upon his body and mind, long continued, is more than he can bear. The same is true of humanity as a whole. The simple fact that to such an extent the contemplation of physical pain has been removed from us makes humanity as a whole more

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human. Now, the discoverer who has done this for humanity has not only relieved pain; he has not only taken away a part at least of the primeval and original curse,—the unspeakable agony of parturition; he has not only made men, who would not otherwise have been able to live; he has not only made men who have been cripples and helpless and a burden upon society self-supporting and self-respecting, but he has done more than that. He has enabled many and many a timid soul that was frightened in the presence of the awful fact of existence to look serenely upon life itself, upon suffering itself, and to walk down serenely into the last great mystery with more hope for the future, because he has found this life itself better than he had feared. (Applause.)

Dr. Darby: Many of us were not present when Wells made his great discovery, hence such testimony in a court of justice would be valueless, but we have with us this evening a gentleman who was present when Horace Wells made his great discovery, and who was an important factor in that event. It gives me pleasure now to call upon the gentleman who, notwithstanding his years, is apparently vigorous and hale and is with us this evening. I shall ask him to respond to the toast,—“Historical Reminiscences,”—G. Q. Colton.

Dr. COLTON said: Mr. President and gentlemen, I have a little news to give you which I think will please you, and that is that I am going to make a very short speech. I am

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put down for reminiscences. Well, we have said all this afternoon about gas and the discovery of anesthesia that I think is necessary. Now I will give you one or two little items. It has been said by somebody that "a little nonsense now and then is relished by the wisest men."

I remember when I was in California, in 1849, I carried a pair of forceps with me, because I thought that possibly somebody in the company might want a tooth extracted. I had never drawn a tooth, but still, possibly, I might try it at any rate. Well, somebody heard that I was a doctor. One night a man came and roused me up from my tent, a great big, strapping fellow, who said: "I want you to draw a tooth." He said it was giving him terrible pain. Well, I got up, struck a light and looked at the tooth. It was a great big molar,—an upper molar. I had a pair of straight forceps, and I said to him: "I cannot draw that tooth. I know it is impossible for me to draw that tooth." "Well," says he, "you can try." He said, "I will pay you whether you pull it or not,—whether you get it out or not." Well, I put the forceps on and I wrenched and wrenched, first one way and then the other, to get it started, but never started it at all,—never moved it at all. "Well," said the man, "you have scared the ache out of it, anyhow, and I will pay you." So I only charged him eight dollars,—half price.

I remember that once I was giving an exhibition of laughing gas in Cooper Institute, New York, and had a very large audience. I gave my lecture be-

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fore giving the gas. I talked and talked along about the properties of the gas and the effect of the gas, and all that, and I suppose a fellow on the outskirts somewhere thought I was talking a little too long, and he said: "Give us some of the other kind," as much as to say that all I was giving them then was gas,—and I suppose it was.

I never really drew but one tooth in my life. Two ladies came in my office one day; one of them had her face all done up, and I said to them: "There is no person here to draw teeth,—I don't draw teeth." But she said she came a great distance. I looked at the tooth and found it was a lower wisdom-tooth with no crown to it, standing all alone by itself, and I told her I could possibly get it out, so I said: "If this lady will assist me in holding the tube, so we can give the gas, I will do the best I can. I will be careful about getting hold of your gum, and all that, and if I don't get the tooth out you won't be any worse off than you are now." She took a seat in the chair,—I knew the instrument the doctor used for that tooth,—and I gave her the gas and got her thoroughly under the influence of it. Now, the doctor just puts his finger under the patient's tongue and jerks the tooth right out; but I couldn't do that. It got in the way and the tongue bothered me. I was working away, and thought I had hold of the tooth, but was not quite sure of it, and I wiggled and wiggled away, and for so long that she began to recover. I took the instrument out and the tooth dropped out on her dress. I had it in the instru-

ment and didn't know it. She said it was a splendid tooth-drawing.

Now, you may remember a little story that went the rounds of the papers a few months ago, of a young man who called upon a gentleman and said: "I have called, sir, to ask you for the hand of your daughter. I am poor but have good prospects." "Well," said the gentleman, "before we enter on that question, can you accommodate me with five dollars?" "No," said the young man, "I cannot." "Take her," he said: "I didn't know you had so much sense." (Laughter.) Now, there are, I suppose, some young men here who will be interested in a little bit of Shakespeare. There is one passage in the play of "Hamlet" which, if a young man will commit to memory and govern his life accordingly, he will escape a great many pitfalls.

Now, it is the advice of Polonius to his son, Laertes. Laertes is going abroad to travel, and his father gives him this advice:

"Yet here, Laertes! aboard, aboard, for shame!
The wind sits in the shoulder of your sail,
And you are stay'd for. There; my blessing with thee!
And these few precepts in thy memory
See thou character. Give thy thoughts no tongue,
Nor any unproportion'd thought his act.
Be thou familiar, but by no means vulgar.
Those friends thou hast, and their adoption tried,
Grapple them to thy soul with hoops of steel;
But do not dull thy palm with entertainment
Of each new-hatch'd, unfledged comrade. Beware
Of entrance to a quarrel, but being in,
Bear 't that the opposed may beware of thee.

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Give every man thy ear, but few thy voice;
Take each man's censure, but reserve thy judgment.
Costly thy habit as thy purse can buy,
But not express'd in fancy; rich, not gaudy;
For the apparel oft proclaims the man,
And they in France of the best rank and station
Are of a most select and generous chief in that.
Neither a borrower nor a lender be;
For loan oft loses both itself and friend,
And borrowing dulls the edge of husbandry.
This above all; to thine own self be true,
And it must follow, as the night the day,
Thou canst not then be false to any man."

Dr. Darby next introduced the son of Horace Wells, saying: There is but one other speaker, and that will be the son of Horace Wells. We are very glad to have here to-night a lineal descendant of Horace Wells, and it gives me pleasure to call upon Charles C. Wells, of New York, to respond to the toast,—“Personal Reminiscences.”

Dr. WELLS responded: Mr. President and gentlemen, the subject “Reminiscences” calls up to me much of the past and much that is sad. I was but little more than five years of age when this discovery you celebrate to-day was made, and too young then to comprehend its full value or realize its importance, as I did later. I remember my father well, and my recollection is helped somewhat by friends of his and mine, some of them living to-day, who knew him intimately and are familiar with the facts connected with this discovery. He was gentle and quiet in temperament, considerate of others, and beloved by all. He was a Christian gentleman. He studied much; was observant

and interested in whatever of discovery and invention took place in those days. He was a good deal of a naturalist, and at one time lectured on natural history, and I remember attending one of those lectures. He had inventive faculties of a high order, and had invented some of the instruments used in his practice and some household appliances only for personal use, which have since come into general use. I remember well his office where this discovery was made, and was often there. I liked to be with him, and it was an attractive place to me, for he had there cases of butterflies and stuffed birds, and other things that interested me.

Professor (afterward President) Abner Jackson, of Trinity College, testified: "Dr. Wells was a person of a peculiarly philosophical turn of mind, and was very much more than an ordinary man. He was accustomed to extend his inquiries much beyond the sphere of his profession, and was well suited to make such a discovery."

Dr. Marcy testified: "He possessed a peculiarly active, investigating, and philosophical mind, and was therefore almost constantly engaged in researches and inquiry such as would naturally attract the attention of a man of his tastes."

Dr. Ellsworth testified: "He possessed an active and inquiring mind, and was inventive and versatile."

I remember his times of abstraction when, with eyes closed, he was studying some subject, as he did often, and we were careful not to disturb him then.

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He was sensitive to the infliction of pain in his practice, and had given much thought for at least two years before the event you celebrate to-day to the possibility of rendering one unconscious of pain during surgical operations. That discovery was not one of accident or chance. He was looking for it and realized it on that 11th day of December, 1844, exclaiming: "It's the greatest discovery ever made." More than this, he followed this by experiments (always upon himself), with a view of finding other agents to produce the same effect, and hoped in the possibility of some by which one could be rendered insensible to pain while conscious otherwise. He used ether, too, but gave the preference to nitrous oxid gas.

He suffered in health by these experiments, and at times was obliged to relinquish his practice for a while.

He did not seek, as some other claimants did later, to restrict its use or to profit in its use by others, but expressed the wish that "it be as free as the air we breathe."

In December, 1846, he went to France and was received with honors, and was afterward made an honorary member of the Parisian Medical Society, and received an urgent and distinguished call to remove to Paris.

This discovery brought to him little but trouble and controversy, and he died at the early age of thirty-three, leaving only the legacy of a good name and the honor of this discovery. For many years

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following his death others sought to rob him of the honor due him and obtain recognition and public money. Those years were full of trouble, and I wish at this time to pay a grateful tribute to the Hon. Truman Smith, United States Senator from Connecticut, to whom we owe much. Other claims coming before Congress, upon investigation, he became convinced of the justice of that of Horace Wells, became his defender and champion, ever after giving his time and pen freely to his cause and defeating attempts by others for recognition and appropriation of money.

Justice moves slowly at times, but it has come in these later years, and it is a satisfaction to me that my mother, ever loyal to his memory, suffering much in the earlier years, refusing more than once offers of compromise by which large sums could probably have been obtained, lived to see him fully recognized and honored as the author of this discovery.

You of his profession have repeatedly honored his memory; for this and the honor and justice you pay him to-day I thank you.

It means much, very much, to me, his only descendant; more, I believe, than it can to any one else living, and it is a satisfaction to me that he accomplished so much of blessing to mankind.

This closed the exercises of the day.

APPENDIX.

The following statements are taken from the depositions of participants in the events described in the foregoing papers. The full text of the evidence may be found in the library of the Boston Medical Library Association, and also in Smith's "Anesthesia," published in Hartford in 1853:

Linus P. Brockett, M.D., deposed: "I resided in Hartford in 1840, and knew Dr. Wells. At this time, in conversation with me, 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 on him without any sensation of pain on the part of the patient.' "

Deposition of G. Q. Colton, of the city of New York: "In the month of December, A.D. 1844, I delivered in the city of Hartford, in the state of Connecticut, a course of lectures on chemistry and natural philosophy. I believe the first lecture was delivered on the 10th of December. On the same day, as I now think, I took a bag of the gas to Dr. Wells's office, and he (Dr. Wells) went out and called in Dr. Riggs, a dentist nearby. Dr. Wells sat down in a large armchair, took the bag into his hands, and breathed the gas until he became insensible, when Dr. Riggs extracted the tooth, which was a large double tooth. Dr. Wells remained insensible a short time after the tooth was extracted, but on re-

covery he cried out: 'It did not hurt me more than the prick of a pin; it is the greatest discovery ever made,' and continued for some time similar exclamations, but what I cannot precisely recollect. I soon after left Hartford, and did not hear any more of the subject till I saw, a few weeks subsequent, a paragraph going the rounds of the newspapers announcing that Dr. Wells was extracting teeth without pain, and I stated on several occasions, in connection with that paragraph, how and when the discovery originated."

Extracts from the deposition of John M. Riggs, dentist, of Hartford, Conn.: "On the evening of the 10th of said December, Dr. Wells came into my office after Mr. Colton's lecture and said that he and others had taken the above gas; and remarked that one of the persons had injured himself and stated, after recovering from the effects of the gas, that he did not know at the time that he had sustained such injury. Dr. Wells then said: 'He did not feel it; why cannot the gas be used in extracting teeth?'

* * * * *

"The next morning Dr. Wells came with Mr. Colton and his bag of gas to his (Dr. Wells's) office and called me in. There were present, besides Dr. Wells and myself, Mr. Colton, Mr. Samuel A. Cooley, and some others whose names I cannot now recall. Dr. Wells, after seating himself in the operating chair, took the bag and inhaled the gas, and after he had been brought sufficiently under its influ-

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ence he threw back his head and I extracted the tooth. It was a large molar tooth in the upper jaw, such as is sometimes called a 'wisdom-tooth.' It required great force to extract it. Dr. Wells did not manifest any sensibility to pain. He remained under the influence of the gas some time after, and immediately upon recovering from it he swung his arms and exclaimed: 'A new era in tooth pulling!' He remarked he did not feel any pain from the operation.

* * * We were so elated by the success of this experiment that we immediately turned our attention to the extraction of teeth by means of this agent, and continued to devote ourselves to this subject for several weeks almost exclusively. * * * Dr. Wells continued to use the gas freely in the practice of dentistry during the remainder of that year and the year following, and at all times when he was in the practice of his profession. I myself also used it as people demanded it, which they ordinarily did.

"It was the subject of profound interest in Hartford, and attracted unusual public attention through the years 1845 and 1846. It was notorious here in the winter of 1844-45 and afterward that Dr. Wells had made the important discovery that the system could be made insensible to pain during dental operations. Dr. Wells was enthusiastic and sanguine in the pursuit of objects toward which he turned his attention, and was one of the most inoffensive men I have ever known.

"He pursued his business with great ardor when able to do so, but was obliged occasionally to aban-

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don it, owing to failure of health, but at no time did he abandon his claim to this discovery or the use of it. During the intervals of interruption he referred his patients to me, and would bring them to my office and ask that gas might be given.

* * * * *

"I find on reference to my books that this agent was used by me in extracting teeth up to November 2, 1846, which is my last charge."

David Clarke deposed: "I attended the exhibition in Hartford given by Mr. Colton, and saw Mr. Cooley injure himself and heard him remark: 'I did not feel pain at any time'; still the blood was running down his limbs. Wells turned to me and said: 'I believe a man by taking that gas could have a tooth extracted or a limb amputated and not feel any pain.'

"A month or two afterward I was in the office of Dr. Riggs, of this city (Hartford), to have some dental work done, and Dr. Riggs administered the gas to me and extracted for me a large tooth without the least pain."

Extract from a deposition of C. A. Taft, M.D., of Hartford, Conn.

"I knew the late Dr. Horace Wells, dentist, of Hartford. I think I first met and knew Dr. Wells when he came to Boston in January, A.D. 1845, for the purpose of making known his discovery of an anesthetic agent to the medical faculty of that city.

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I was at that time a member of the medical class of Harvard University.

"Dr. Wells was introduced to our class by Dr. John C. Warren, then Professor of Anatomy at the University. Dr. Wells then made a statement of his discovery, spoke of its importance, and his hopes of introducing it—the anesthetic agent—into general use in surgical operations.

"On the same or the following evening Dr. Wells proceeded to administer the nitrous oxid gas to several of the students and spectators present. At this time Dr. Wells extracted a tooth for some one under the influence of the gas. The patient hallooed somewhat during the operation, but on his return to consciousness said he felt no pain whatever. I took the gas with others at that time, and while under its influence I was entirely unconscious. Others to whom the gas was administered made the same declaration. The gas was administered and inhaled from a mouth-piece attached to a bag.

"I regarded the operation at Boston, above described, as successful and as proving the truth of Dr. Wells's theory. For, although the patient made some noise,—a phenomenon constantly witnessed in the use of any anesthetic agent,—he nevertheless said he felt no pain."

Deposition of David S. Dodge, M.D., of the city of New York.

"I, David S. Dodge, physician, of the city, county, and state of New York, being duly cau-

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tioned and sworn, do depose and say that I was for many years a practicing physician and surgeon in the city of Hartford, in the state of Connecticut, and was well acquainted with the late Horace Wells, dentist, and had knowledge of the fact that Mr. Wells discovered the anesthetic properties of nitrous oxid gas and sulfuric ether as early as the year 1844; that he was frequently in the habit of using the former agent in producing insensibility while pursuing his usual avocation. * * * In conversation he mentioned several disappointments he experienced during a visit to Boston, about the winter of 1844-45, when he was invited to administer the gas to a patient previous to an operation to be performed in the presence of the class of Dr. Warren's medical students; that the gentlemen of the faculty had no confidence in the proposed use of the gas, and that while he (said Wells) was endeavoring to administer the gas to a patient as above, he was greatly annoyed by the offensive remarks and the occasional sneers of the audience."

Extracts from the deposition of P. W. Ellsworth, M.D., Hartford, Conn.

"Toward the close of 1844 I was informed that Dr. Wells had discovered an agent by means of which the body could be rendered insensible to pain under dental operations. * * * It was then notorious here that such a discovery had been made. * * * In January, 1845, I witnessed a success-

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ful dental operation, being the extraction of a tooth without pain, by administering nitrous oxid gas.

* * * * *

“Very early after the discovery of Dr. Wells, and before I heard anything of the pretensions of Dr. Morton, to wit, some time in the year 1845, Dr. Wells spoke to me respecting the comparative safety of nitrous oxid gas and sulfuric ether, and I gave him my opinion in favor of nitrous oxid gas, and advised him to confine himself to the use of that agent.”

Extracts from the deposition of E. E. Marcy, M.D., of the city of New York.

“About the year 1838 I settled as a physician and surgeon in the city of Hartford, Conn., and continued to reside there and practice my profession up to 1859, when I removed to this city and have since been engaged in practice here. I was intimately acquainted with Dr. Horace Wells, surgeon-dentist, late of said Hartford, deceased.

* * * * *

“I further say that some time in the fall of 1844 Dr. Wells came to my office and informed me that by administering the nitrous oxid gas he could extract teeth without pain. * * * I went to his office and witnessed the extraction of a tooth from the person of F. C. Goodrich, Esq., of said Hartford, by Dr. Wells, after nitrous oxid gas had been inhaled, and without the slightest consciousness of

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pain on the part of the gentleman to be operated upon. * * * That it was in the fall of 1844, I am positive; and within two or three days after I had understood Dr. Wells had made the discovery.

* * * * *

"Immediately after the discovery the fact became generally known in Hartford, and was the subject of much conversation. Dr. Wells was exceedingly enthusiastic upon the subject; was incessantly conversing about it, and prosecuting his experiments. Numerous trials were made by Drs. Ellsworth, Berresford, Riggs, Terry, and myself, both in large and small operations, which fully established the efficacy of the gas. * * * Knowing, as before remarked, that the inhalation of sulfuric ether vapor produced similar effects to those of the gas, from numerous former trials, as above alluded to, I suggested to Dr. Wells the employment of the vapor of rectified sulfuric ether, at the same time detailing to him its ordinary effects, upon the economy, and the method of preparing the article for use. Our first impression was that it possessed all the anesthetic properties of the nitrous oxid gas, was equally safe, and could be prepared with less trouble, thus affording an article which was not expensive, and which could be always kept on hand. At the same time I told Dr. Wells that I would prepare some ether and furnish him with some of it to administer, and also make a trial of it myself in a surgical case which I expected to have in a few days. This conversation took place in Dr. Wells's office at

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the time the tooth was extracted from Mr. Goodrich. Accordingly, within two or three days after that event I administered the vapor of rectified sulfuric ether in my office to the person alluded to in my conversation with Dr. Wells, and after he had been rendered insensible to pain I cut from his head an 'encysted tumor' of about the size of an English walnut. Dr. Wells came in during the operation, and sufficiently early to form an opinion on the subject. It was entirely successful, and conclusively proved to Dr. Wells and myself the anesthetic properties of ether vapor. Dr. Wells then wished me to investigate the subject carefully and endeavor to ascertain whether this vapor was as safe as the gas. He informed me that Dr. Riggs had told him he had inhaled both of these substances when in Washington (now Trinity) College, and that it was his impression, from the effects of the two upon himself and others, as well as from the views inculcated by Professor Rogers in his lectures upon these substances before the class, that the inhalation of the ether vapor was more dangerous than that of the nitrous oxid gas. Accordingly, at the urgent request of Dr. Wells, I read what could easily be procured in relation to both articles, and formed the opinion that the constituents of the gas were more nearly allied to the atmospheric air than those of ether vapor; that the former was more agreeable and easy to inhale than the latter, and upon the whole was more safe and equally efficacious as an anesthetic agent, which opinion I communicated to Dr. Wells.

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All this took place before Dr. Wells went to Boston to announce his discovery to the faculty there."

Extracts from the deposition of John B. Terry, dentist, of Hartford, Conn.

"That I was well acquainted with the late Dr. Horace Wells from about the year 1840. In the year 1844 I was residing in this city in practice of my profession as a dentist. Immediately after the reputed discovery of Dr. Wells, in 1844, I was informed respecting it by himself and witnessed many experiments by him, and saw the apparatus by which he administered the nitrous oxid gas for the purpose of rendering his patients insensible to pain in the extraction of teeth. I knew of his discovery prior to his going to Boston to make it known to the medical men there; on his return from Boston, Dr. Wells told me he was disappointed in its operation; there was, he said, too great hurry or some defect in preparing the gas; that the ammonia perhaps was not good; but he still expressed a determination to convince the world that it was a valuable discovery, and a full belief that any surgical operation could be performed without pain under the influence of nitrous oxid gas. Dr. Wells was obliged to suspend his business at intervals, much to his regret, as he said if he could have continued it he could have made a great deal of money in extracting teeth under the influence of the gas. During the time he was engaged in his profession he continued to make improvements in the construction of his inhaling ap-

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paratus, in the nitrate of ammonia, of which the gas was made, in the gas itself, and its mode of preparation from the time of his discovery to his death. These improvements I continued to use afterward; I had an office adjoining the one usually occupied by the late Dr. Wells, and we were associated together on the 19th day of December, 1846, in the practice of dentistry; for nearly a year before this we were associated without terms of partnership, and while he was absent I attended to his business in part and made him an allowance. * * * When he was absent I administered the gas for him. I am certain that prior to October, 1846, I was in the frequent habit of administering the gas. * * * I think I have administered more of this gas for dental purposes than any other person, and I am well acquainted with all its effects. Before Dr. Wells left for Europe he spoke about making known his discovery there, and at my recommendation took out an apparatus for administering the gas. * * * One of his objects in going to Europe was to publish his discovery there; when Dr. Wells was in Europe I received letters from him saying he was meeting with great success; our partnership was then existing, and was not dissolved till after his return."

Extracts from the deposition of John Braddock, dentist, of Hartford, Conn.

"During the year 1845 I was in the practice of dentistry in this city for the period of about six months. I came to Hartford in the month of Jan-

uary, 1845, from the city of Philadelphia, where I had been in business about a year. Immediately on my return from Philadelphia I learned from Dr. Wells himself that he had discovered that, by the use of the nitrous oxid gas, teeth could be extracted without pain. * * * * *

"The discovery of Dr. Wells was notorious in Hartford at that time; it was a common topic of conversation, and I have no hesitation in saying that in my opinion Dr. Wells was the first to discover and use an agent by means of which dental and surgical operations could be performed without pain.

"In the spring of 1845 I saw several teeth extracted for different persons under the influence of this agent, by Dr. John Riggs, with the most satisfactory results. The patients seemed to experience no pain whatever, and after the operations were performed and the effects of the gas had passed away they so expressed themselves."

Deposition of E. E. Crofoot, dentist, of Hartford, Conn.

" * * * I knew the late Dr. Wells intimately; he had the reputation of having discovered a mode of extracting teeth without pain; I never saw any of his operations, but have seen those on whom he had performed. I have had some personal experience in the use of anesthetic agents, having extracted two teeth for a Miss Angelina Griswold, of West Hartford, while under the influence of nitrous oxid gas. Both teeth were removed at one sitting, and in a sat-

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isfactory manner. This was in the year 1845 or 1846, previous to a severe sickness which I had, commencing in September, 1846, which continued many weeks."

Deposition of Abel Ball, dentist, of Boston, Mass.

" * * * In 1845 Dr. Wells called at my office and informed me that he had made 'an important and valuable discovery.' He stated that he had discovered that by the inhalation of nitrous oxid gas pain could be entirely prevented during dental and surgical operations, and added that he had come to this city for the purpose of introducing his discovery to the notice of the medical faculty and the public generally here. And I believe this to have been his only object in coming to Boston at that time. * * * Shortly before he left for Europe he called on me and stated that he was going to Paris to establish his claim as such discoverer before the medical faculty there. After his return from Paris he called on me again, and spoke of his success in establishing his claim."

Extracts from the deposition of Francis C. Goodrich, of Hartford, Conn.

" * * * In the latter part of the year 1844 I learned that Dr. Wells had made a very important discovery, by which he could render the nervous system insensible to pain under severe surgical operations. This was accomplished by the use of nitrous

oxid gas. In the month of November or December, I think in November of the year above mentioned, and after the experiment had been tested in a measure, I submitted to the operation of having a tooth extracted by Dr. Wells while under the influence of nitrous oxid gas, which was performed in the presence of Drs. Marcy, Kitteridge, and Riggs, and was unattended with even the slightest sensation of pain to the nervous system. * * * Soon after the operation to which I submitted, as mentioned above, I witnessed a similar experiment upon two persons,—namely, J. Gaylord Wells and William H. Burleigh, Esq., both having one or more teeth extracted by Dr. Wells, apparently, and as they testified, without pain.

“I was also familiar with the fact that, succeeding these experiments, Drs. Riggs and Terry commenced and continued the use of the gas more or less frequently in their extensive practice of dental surgery, and I regard it as a fact with which the people of Hartford were more or less familiar that nitrous oxid gas, when inhaled in the respiratory organs, would have the effect upon the nervous system to produce insensibility to pain; that it had been and then was successfully used in severe dental and surgical operations. * * * I am quite certain that, at a period commencing as early as December, 1844, it was a matter with which many of the citizens of Hartford were personally familiar.

* * * * *

“Immediately after this operation to which I submitted (referring to the extraction of one of the

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teeth, which he so pertinently describes), a conversation ensued between Drs. Marcy and Wells in regard to the use of ether as a substitute for nitrous oxid gas, in favor of its use as being more easily prepared, though not so safe to use, and nearly if not positively identical in its effects upon the nervous system. Dr. Marcy expressed himself as perfectly familiar with the effects of ether on the system, and decided to use it in a surgical operation which he was shortly after to perform."

Extracts from the deposition of John Gaylord Wells, of Hartford, Conn.

" * * * Having heard of the discovery I availed myself of the opportunity, and Dr. Wells extracted a tooth for me immediately after the extraction of his own. It was certainly in the month of December, 1844. The gas was given from a large bag. On this occasion I had one tooth removed, and a number afterward at different times, and all without pain. * * * * *

"I heard of others having teeth drawn under the influence of the gas, and induced some to go. The subject was a topic of common conversation among my friends for several years after my first tooth was extracted under the influence of the gas, and I often heard Dr. Wells converse on this subject, and he continued to consider it a very valuable discovery."

Deposition of William H. Burleigh, of Hartford, Conn.

"A little more than two years since I learned that Dr. Wells, dentist, of this city, had made the discov-

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ery that by the use of an exhilarating gas or vapor he could render the nervous system insensible to pain under severe surgical operations, and that he was using it in his practice with great success. Having an opportunity to witness its effect on several persons during the operation of extracting teeth, I was so delighted and surprised with its manifest success that I desired a trial of it on myself. The gas was accordingly administered and two carious teeth were extracted from my lower jaw without the least suffering on my part, though ordinarily, owing to the firmness with which my teeth are fixed in my jaw, I suffer extreme pain from their extraction."

Deposition of Norman W. Goodrich, of Hartford, Conn.

" * * * In the month of December, A.D. 1844, I heard that Dr. Wells had discovered a mode of preventing pain during dental operations. I first learned this fact from J. G. Wells, of this city, who informed me that he had a tooth extracted by Dr. Wells without any pain whatever. Soon after this I learned that Dr. Wells was constantly extracting teeth for persons without pain by administering exhilarating gas, as it was sometimes called. Sometime during the month of December, aforesaid, I accompanied J. G. Wells to the office of Dr. Wells for the purpose of witnessing an experiment upon said J. G. Wells, while under the influence of the gas. On reaching the office of Dr. Wells and making known our object, he informed us that Dr. Riggs,

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who occupied an adjoining office, was desirous of experimenting with the anesthetic agent discovered by him (Dr. Wells), and he would therefore administer the gas and allow Dr. Riggs to extract the tooth. Accordingly, Dr. Riggs was called in and extracted the tooth, after Dr. Wells had administered the gas. After Mr. J. G. Wells had inhaled the gas a few times he appeared to lose all consciousness, and manifested no signs of pain during the extraction of the tooth. On recovery from the effects of the gas he remarked that he felt no pain whatever.

"A few days after the above experiment Mr. William H. Burleigh and myself went to Dr. Wells's to have teeth extracted. We were accompanied by T. C. Goodrich, Henry R. Tracy, and others, whose names I do not now recall. This was just before dusk. When we entered the office we found, among others, a boy who held a large tooth in his hand, which he showed us, saying that Dr. Wells had just extracted it for him under the influence of the gas. He said he felt no pain, and did not know when the tooth was pulled. Mr. Burleigh and myself told Dr. Wells we had come to take the gas and have teeth extracted. Dr. Wells replied that he had been giving the gas and pulling teeth all day, and was so tired and lame in consequence that he was unable to do anything more that day. But if we wanted our teeth out then he would administer the gas and let Dr. Riggs come in and draw the teeth. We agreed to that arrangement. Dr. Riggs came in; the gas was administered first to Mr. Burleigh and

his tooth extracted by Dr. Riggs. Mr. Burleigh seemed to experience no pain, and afterward said he felt none whatever. * * * * *

"A few months after this operation I accompanied Walter S. Williams and our wives to the office of Dr. J. B. Terry, dentist, of this city, for the purpose of witnessing further experiments with this agent. Mr. Williams took the gas for the purpose of having a large tusk, which was very prominent and inconvenient, extracted. After inhaling a sufficient quantity of gas, Dr. Terry applied his instruments and endeavored to draw the tooth; he pulled upon it several times, and finally laid down his instruments and said he was unable to extract it. During all this operation Mr. Williams seemed to suffer no pain, and on his recovery from the effects of the gas he said he had not felt the slightest sensation of pain.

"During the years 1845 and 1846 I was constantly hearing of successful experiments with this gas by Dr. Wells and other dentists of this city."

Deposition of Horace E. Havens, of Hartford, Conn.

" * * * That some time between the 1st of November, 1844, and the 1st of November, 1845, I called at the office of Dr. Horace Wells, corner of Asylum and Maine streets, in this city, and requested Dr. Wells to administer the gas to me for the purpose of having a tooth extracted; the gas was given to me from a large black bag with a mouth-piece; I had heard that it was very successful in allaying pain in the extraction of teeth; I breathed

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it a short time and Dr. Wells took out the tooth; Dr. Wells thought I should be easily affected, and gave me a smaller dose than usual, as he said the consequence was that I was not fully affected, though the pain was very much mitigated; I felt the operation some, though it was very trifling; I had two teeth extracted after this by Dr. Riggs (J. M. Riggs, of Hartford), and then took nitrous oxid gas made by him in a large cask; the gas was taken from a bag, and during the operation I felt no pain whatever; this was while John G. Wells was with Mr. Burr in the Secretary's office, and was in 1845, previous to November 1."

Deposition of Thomas Martin, of Hartford, Conn.

" * * * In the summer of 1845, I think before the middle of July, Dr. Wells extracted a tooth for me while I was under the influence of nitrous oxid gas. * * * The tooth—a large double one—was extracted by Dr. Wells himself. I felt no pain during the operation, and was much pleased with its effects. * * * It was a notorious fact that Dr. Wells and other dentists in this city were and had been extracting teeth for a long time prior to October, 1846, and under the influence and by the agency of some anesthetic agent."

Extract from the deposition of John Gaylord Wells, of Hartford, Conn.

After having stated that he had one tooth extracted while under the influence of the gas in the

month of December, 1844, and a number after at different times, and all without pain, he proceeds as follows:

"On one occasion sulfuric ether was administered by Dr. Wells. I am quite sure it was early in 1845, a long time anterior to the period when Dr. Morton, of Boston, first announced his discovery. The ether was unpleasant in its effects, though the tooth was extracted without pain. I therefore advised my friends not to use it, but rather the exhilarating gas.

"The number of teeth extracted under the influence of the gas was five, and one under the influence of the ether. In my former deposition it was stated six were extracted. It might be inferred that it was at one sitting. They were extracted, however, at most part at different sittings. Only once did I have two removed at a time. I am sure the ether was given early in 1845. The ether was not given from a bag, but from some different apparatus."

Deposition of Lydia Goodwin, of Hartford, Conn.

" * * * That in the spring of the year A.D. 1845 or 1846,—according to the best of my recollection, in the year A.D. 1845,—I had two teeth extracted by Dr. Horace Wells, then a dentist in this city. * * * The agent used in the extraction of my teeth was called by Wells gas."

Deposition of Angelina Griswold Whiting, of West Hartford, Conn.

" * * * That in the month of July, 1846, I was spending a few days at Dr. E. E. Crofoot's, in

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the city of Hartford, and during that time I had two teeth extracted by Dr. Crofoot while I was under the influence of nitrous oxid gas."

Extract from the deposition of Walter S. Williams, of Hartford, Conn.

"I accordingly took the chair, and Dr. Terry administered to me what I supposed to be the newly-invented gas by Dr. Wells. This was administered to me from a mouth-piece attached to a pipe leading to a bottle or bag. I inhaled the gas and very soon became insensible. Dr. Terry then applied his instruments, but did not succeed in extracting it. When I came to myself, which seemed like waking out of sleep, I saw Dr. Terry standing by my side seemingly exhausted; he said: 'I tried with all my might, but could not fetch it.' I experienced no pain whatever during the operation."

Extract from the deposition of Hon. James Dixon, member of the House of Representatives in the twenty-ninth and thirtieth Congresses from the First Congressional District of Connecticut.

" * * * I would add that the discovery of Dr. Wells was notorious in Hartford in the spring of 1845, and was then, and for some time had been, and continued to be, a frequent topic of conversation. It excited great attention, and was deemed of much importance."

Deposition of William W. Goodwin, of Boston, Mass.

" * * * I am a native of Hartford, Conn., where I resided and pursued my business until Feb-

ruary, 1845, with the exception of the years of 1837 and 1838. About the middle of February, 1845, I came to this city, where I have since resided. Several weeks before leaving Hartford it was very generally reported that the late Dr. Horace Wells, of that city, was extracting teeth without pain by an agent called by him nitrous oxid gas. Shortly before leaving Hartford, I called at the office of Dr. Wells and he showed me the nitrate of ammonia from which he prepared the gas; also some bags and apparatus used by him in administering the gas."

Letter from C. B. Brewster, dentist, of Paris.

"PARIS, January 12, 1848.

"*My Dear Dr. Wells*,—I have just returned from a meeting of the 'Parisian Medical Society,' where they have voted that 'to Horace Wells, of Hartford, United States of America, is due all the honors of having first discovered and successfully applied the uses of vapors or gases, whereby surgical operations could be performed without pain.'

"They have done even more, for they have elected you an honorary member of their society.

"This was the third evening that the society had deliberated upon the subject. On two previous occasions Mr. Warren, the agent of Mr. Morton, was present, and endeavored to show that to his client were due the honors; but he, having completely failed, did not attend at the last meeting.

"The use of the ether took the place of nitrous oxid gas, but chloroform has supplanted both; yet

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the first person who first discovered and performed surgical operations without pain was Horace Wells, and to the last day of time must suffering humanity bless his name.

"Your diploma and the vote of the P. M. S. shall be forwarded to you. In the interim you may use this letter as you please.

"Believe me ever truly yours,

"BREWSTER."

Extract from the deposition of Mrs. Elizabeth Wells.

"In the fall of 1846 my husband received a letter from Dr. Wm. T. G. Morton, of Boston, informing him that he had discovered some preparation or compound that would produce insensibility to pain, and which he had patented, and proposed that my husband should undertake a sale of the rights; to which letter my husband replied. Shortly after my husband concluded to go to Boston, with a view to ascertain what Dr. Morton had discovered, and invited me to accompany him. This was, if I mistake not, on Saturday. We left home in the early morning train, and arriving in Boston in time to take dinner with the family where we stopped. Immediately after dinner my husband went out to see Dr. Morton, and returned after an absence of about two hours. On his entering the room I asked him whether Morton had discovered anything new. He replied: 'No; it is my old discovery, and he does not know how to use it.' He added that he perceived

what it was immediately on entering Dr. Morton's room, from the atmosphere; he said it was nothing but ether. I asked my husband whether he intended to assist Dr. Morton in selling his patent rights. He replied: 'No; he would have nothing to do with him.' We spent the Sabbath in Boston, and took the morning train for Hartford on Monday following."

Extract from the deposition of Elizabeth Williams, of Hartford, Conn.

"Some time after this I saw Dr. W. T. G. Morton at Stafford Springs, and learning that he was a dentist I spoke of my tooth, and mentioned the fact that Dr. Wells had administered gas to me. I remarked to him that I was among the first that took the gas. He asked about the effect and operation of the gas, and made no intimation of any acquaintance with or knowledge of the gas, or of any anesthetic agent, and the conversation passed off by Dr. Morton's saying that he had recently invented some framework for teeth. According to the best of my remembrance and belief, I took the gas of Dr. Wells in the office of Dr. Riggs, on the 6th day of March, A.D. 1845, and I saw Dr. Morton at 'Stafford Springs' and had the conversation above referred to in the summer of 1846; it was certainly at no later date."

Deposition of Oswin R. Roberts, of Hartford, Conn.

"I came to Hartford in June, 1845, and soon after my arrival I heard of Dr. Wells's discovery.

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"Dr. W. T. G. Morton called at our office this winter, prior to January, 1853, and had a long conversation with us respecting the discovery of anesthetic agents. He called to inquire about Wells's buying picture frames of us. Dr. Morton stated that he took his idea from Dr. Wells's use of nitrous oxid gas, but that the gas failed, and he went on perfecting the discovery until it resulted in the use of sulfuric ether."

