

THE
ATLANTIC MONTHLY.

*A Magazine of Literature, Science, Art,
and Politics.*

VOL. XXI.—JUNE, 1868.—NO. CXXVIII.

to believe that, under the pretext of protecting her subjects, she aspires to the control of the commerce of the vast regions of Central Africa.

It is often thoughtlessly said that England has entered upon this war that she may wrench from Abyssinia her ports on the Red Sea. The one sufficient answer is, that Abyssinia does not own, and has not owned for centuries, one foot of strand on the Red Sea. So far as anybody owns that shore the title is in Egypt, while Abyssinia nowhere approaches it nearer than twenty or thirty miles. If ports on the Red Sea are the object, the Pasha of Egypt is the person upon whom such a demand ought to be made; and the mouths of the Nile would be a more proper rendezvous for navies and transport than Annesley Bay.

But can any one read the many words of Lord Stanley, pervaded in every line and sentence with the spirit of sincerity, and a deep sense of responsibility, and for a moment believe that the English Ministry sends its army into Abyssinia for purposes of conquest? "I believe that I am not demanding too much, if I ask the house to believe that, in regard to the Abyssinian Expedition, nothing would have induced the present government, or indeed any government, to undertake it, but the conviction of its necessity. It is quite unnecessary to disclaim the idea of conquest. We have already as much territory as we can safely hold. And, if we had not, Abyssinia is not the part of the world which England would covet. No, this work comes to us as a duty, not agreeable, but which has to be done." The present Ministry then has no ulterior ends. No doubt there have been men in office in times past who dreamed of territorial acquisitions in that direction. Beyond a question, there are many men now in India, and some in England, who will use every effort to change the war from one of liberation to one of conquest. It is very possible that the exigencies of the campaign may force the Ministry to an entire change of purpose. But,

unless they are the falsest of men, no visions of conquest now allure them.

The English people and the English Ministry are pushed on by a dire necessity. They are in a position where but two alternatives are possible, — war with all the cost and peril of war, and peace with the deep ignominy of leaving English subjects to their fate in the cruel hands of a fickle tyrant. War has its difficulties. War, in these modern days, is too expensive a business to be entered upon for amusement. To use the vigorous language of the English minister: "No doubt those who have the conduct of this expedition will find difficulties in the way; but the British Empire was not built up and made what it is by men who shrank from their obvious duty." And as for the other alternative, what is that but simple, unmitigated disgrace? No power could live under it, — least of all England. The hundred millions of her subjects in Asia, in Africa, in every nook and cranny of the round earth, are held under her sway by her prestige. Let it be clearly understood, that she will tamely endure insult and wrong, that she can not or will not protect her children, wherever they may wander, and her vast dominions, won by how many glorious contests on sea and land, cemented by her best blood, would fall asunder by simple incoherence. It is stout Roland de Caxton, if our memory serves us, who maintains that "honor is the virtue from which all safety and civilization do proceed, and that it is a virtue which should be kept clear from all money-making, mercenary, pay-me-in-cash abominations." There is a spice of truth in this language, as there is in all truly chivalrous notions. And, looking candidly on the present contest, we may be content to believe that a really great and heroic nation, like that from whose loins we ourselves are sprung, however much she may be subject to utilitarian ideas, can upon occasions rise quite above them, and encounter difficulties, and dare perils, and lavish treasure and blood, from simple sense of honor and duty.

THE DISCOVERY OF ETHERIZATION.

THE essential points of the discovery of etherization are contained in the following statement: the vapor of *pure sulphuric ether*, inhaled *with a due admixture of atmospheric air*, has the power safely and surely to paralyze for a short time the nerves of sensation, and thereby produce a total insensibility to pain during the severest surgical operations. The discovery was made by Charles T. Jackson, M. D., of Boston, chemist, geologist, and State Assayer, who, after taking a medical degree in 1829, and spending three years in Europe in the pursuit of professional and scientific knowledge, commenced the practice of medicine and surgery in Boston in 1833. Subsequently he repeated Davy's experiments with nitrous oxide, but with results no more satisfactory with respect to the safety or utility of its inhalation, than those obtained by Davy himself. At a later period, but previously to the winter of 1841-42, having been presented with some perfectly pure sulphuric ether (oxide of ethyle, which has for its symbol $C_2 H_4 O$) by his friend John H. Blake, Esq., of the Norfolk Laboratory, he conceived the idea of inhaling its vapor, to ascertain its effects on the human system. As a learned chemist, he knew that the sulphuric ether then sold in the shops was very impure, containing alcohol and various acids; as a physiologist he knew that the want of an admixture of atmospheric air, in the common mode of inhaling it, was quite sufficient of itself to account for the dangerous, and, in some cases, fatal consequences known to have resulted from its inhalation; and he thought it highly probable that the vapor of *pure sulphuric ether, duly mixed with atmospheric air*, might be inhaled without causing any unpleasant effects. He therefore, — though all the authorities on the subject, as Orfila, Christison, Pereira, &c., represented the inhal-

ing it to such an extent as to produce unconsciousness to be attended with great danger, — determined to try its effects on himself. On inhaling it, he experienced a total loss of consciousness, preceded, accompanied, and followed by a total loss of sensation; and he suffered no injurious or disagreeable consequences. From this and other experiments in which he inhaled sulphuric ether without producing loss of consciousness, he inferred that, if pure and duly mixed with common air, it might be inhaled without danger.

In the winter of 1841-42 he inhaled the vapor of sulphuric ether to mitigate the excruciating pain caused by the accidental inhalation of chlorine, but not to such an extent as to produce unconsciousness. The next morning, his throat being severely inflamed and very painful, and his lungs much oppressed, he resolved to make a more thorough trial of ether vapor. Having seated himself in a rocking-chair, and put his feet in another chair so as to secure a fixed position, he soaked a folded towel in sulphuric ether, placed it over his nose and mouth, and began to inhale the mingled ether vapor and air deeply into his lungs. Soon he lost all consciousness of pain in his throat, all feeling of the chair as if afloat in the air, and experienced sensations of the most agreeable kind. He soon afterwards became unconscious. On his recovery of consciousness, the same state of insensibility to pain and absence of feeling that had preceded the loss of consciousness followed. In a short time consciousness and sensations of pain in the throat returned. From the cessation of all pain and the total loss of feeling both before and after the period of unconsciousness, combined with his previous conviction of the safety of inhaling the vapor, when it is pure and duly mixed with common air, Dr. Jackson inferred that, during the

period of unconsciousness, pure ether vapor, properly administered, would certainly, completely, and safely prevent all pain in the severest surgical operations. This inference he made the more confidently from his knowledge of the fact, discovered by Sir Charles Bell and well known to all medical men, that the nerves of sensation are distinct from those of motion and of organic life, and that the temporary paralysis of the former does not necessarily involve any important disturbance of the functions of the latter.

The inference was a legitimate philosophical induction from the facts of the case, but, like Jenner's discovery of vaccination, it required numerous and diversified verifications. So strong was his conviction of the truth of his induction, that in speaking of the subject in 1842 or 1843 to Mr. Henry D. Fowle, to whom he had administered nitrous oxide some years before, he used, as the latter testifies under oath, words to the following effect: "If you will come to me some time hence and inhale this ethereal vapor, you can have a tooth extracted or a limb cut off without pain, and without knowing anything about it." To the same gentleman he expressed the intention of making further experiments, and subjecting his conclusions to a practical test, and spoke of his attention being then so completely engrossed by his geological surveys as to leave him no leisure for other researches.

In the month of March, 1846, William F. Channing, M. D., then a student in Dr. Jackson's laboratory, and now a Fellow of the American Academy of Arts and Sciences, accidentally inhaled chlorine in the laboratory. In speaking of the accident he uses these words: "The effect was to produce spasms of the chest, and distress of respiration of such a character as to make me apprehend an immediately fatal result." After he had tried various remedies with little benefit, Dr. Jackson came in, and advised him to try the inhalation of sulphuric ether, "which," says Dr. Channing, "he stated he had himself used

with success in an accident of the same kind," and which, Dr. Channing adds, "produced an immediate suspension of the spasms, with entire relief from distress. They recurred again after a time with less violence, but subsequently were entirely relieved by occasional inhalations of ether." Mr. James T. Hodge met with a similar accident, and states that he was "rendered speechless for several hours." Professor John B. S. Jackson, of the Medical School of Harvard University, says, in speaking of the pain caused by the inhalation of chlorine, that it is "quite as agonizing, as every chemist must know, as the pain inflicted by the surgeon's knife." These facts show that Dr. Jackson's induction from his experiments on himself, that ether vapor has power to render the severest surgical operations painless, was neither extravagant nor far-fetched.

Dr. Jackson communicated his plan for destroying the pain of surgical operations to numerous individuals: in 1842, to W. F. Channing, M. D.; in September, 1842, to Dr. S. A. Bemis, an eminent Boston dentist, to whom he recommended the use of ether in his dental operations; to the late A. A. Gould, M. D., a Fellow of the American Academy of Arts and Sciences, "some three or four years before the time of Dr. Morton's experiments," as Dr. Gould testified under oath in 1852; to George T. Dexter, M. D., of Lancaster, N. H., in 1842; in 1845, to D. J. Brown, Esq., an engineer; in March, 1846, to Mr. Joseph Peabody of Salem, a graduate of Harvard College, and then a student in his laboratory, who, being about to have two teeth extracted, and having been fully instructed by Dr. Jackson how to purify sulphuric ether for inhalation, and how to use it, began to prepare it for this purpose at his father's house in Salem; but who, on finding that all the authorities represented its inhalation to be dangerous, and that his father, a scientific man, was opposed to his breathing it, relinquished his design.

On September 30, 1846, W. T. G.

Morton, a dentist and nominal medical student of Dr. Jackson, called at his laboratory to borrow a gas-bag, intending, as he said, to inflate it with common air to be inhaled by a refractory patient, as a means of acting on her imagination, and thus inducing her to allow him to extract a tooth. Dr. Jackson refused to be accessory to any such deception. He then told him of the anæsthetic power of ether vapor, where to get it, showed him exactly how to administer it, and assured him that it would make the patient completely insensible to pain, and that a tooth could then be extracted without her knowing anything about it. He further assured him of the safety, and assumed in express terms all the responsibility of the experiment. After showing total ignorance of the substance, saying, "What is that? is it a gas?" and long hesitation, Mr. Morton consented to apply the ether vapor in a dental operation. All these facts have been testified to under oath, by persons of unimpeachable character, who were present at the interview. He did exactly what Dr. Jackson had taught him to do, and extracted a tooth from a patient without causing any pain. "In obeying these directions," says the late Dr. Martin Gay, "Mr. Morton assumed only the responsibility of the nurse who administers a new and bold prescription of a physician." The next day he called at Dr. Jackson's laboratory to report to him his success. "Dr. Jackson," as a witness then present has testified under oath, "expressed no surprise, but appeared as if he had expected such a result." Dr. Jackson then said to him, "You must go to Dr. Warren, and obtain his permission to administer it at the Massachusetts General Hospital; and, if possible, it should be in a capital operation." He said that people would not believe in complete insensibility to pain on the mere ground of the painless extraction of a tooth. The witness adds: "Morton strongly objected to going to the Hospital, — that everybody could smell the ether, and it would not be kept secret, which

it was Morton's object to do." "After some argument and Dr. Jackson's further insisting upon it, Morton promised to go to the Hospital." In the course of this conversation Morton repeatedly begged Dr. Jackson to keep the matter a secret. "No!" answered Dr. Jackson, "I will have no secrets with my professional brethren; I intend to give Dr. Keep the same information that I have given you." Mr. Morton (now Dr. Morton) went to Dr. Warren, and obtained his consent to administer by inhalation to a patient what he called "a compound," concealing its nature and the fact of his being indebted to Dr. Jackson for all he knew of its anæsthetic power. After two or three successful trials of ether vapor at the Hospital in surgical operations, the odor of which he had disguised, he was obliged to disclose to the surgeons what it was, they refusing to permit it to be applied in their operations on any other condition. When the first capital operation was performed, in which Dr. Jackson was requested by Dr. Warren both orally and by letter to administer the ether vapor, he was obliged, in fulfilment of a previous professional engagement, to be absent from New England. He, however, stated to Dr. Warren, that he had fully instructed Dr. Morton how to administer it.

The great discovery was still further verified by other surgical operations at the Hospital, soon became known throughout the civilized world, and was hailed with an enthusiasm without a parallel in the history of mankind.

Imperfect accounts of the discovery reached London and Paris, and led to the application of ether vapor in surgical operations; but, for want of more definite information, they were attended with very unsatisfactory results, and it fell into disrepute. Liston, the great English surgeon, said, "that he had at one time doubts about the utility of ether," in consequence of its having been improperly administered in his operations. (See the London *Lancet* and the *Comptes Rendus* for 1846, and 1847, and letters from Paris communicated

to the Boston Medical and Surgical Journal in March, 1847, by F. Willis Fisher, M. D.)

The prosperity of etherization in Europe dates from the publication of a communication of Dr. Jackson, dated November 13, 1846, to the French Academy of Sciences, through his friend and correspondent, Elie de Beaumont, now Perpetual Secretary of that learned body. On hearing Dr. Jackson's paper read,* the celebrated surgeon Roux exclaimed, "J'y prends part en ce moment," (I take part in it from this moment.)

Dr. Jackson has received most flattering testimonials of high appreciation of the value of the services he has rendered to mankind by his discovery, from the French Academy, the emperor of the French, the king of Sweden, the king of Prussia, the king of Italy, and the sultan of Turkey.

The French Academy of Sciences appointed a commission of nine eminent scientific and medical men to examine the evidence of the various claimants of the discovery. Dr. Jackson, Dr. Morton, Dr. Horace Wells, and other claimants, sent each his evidence. The Academy, after a long and careful examination of the evidence by the commission, awarded, on March 4, 1850, — to translate the words employed by it, — "a prize of 2,500 francs to M. Jackson for his observations and experiments on the anæsthetic effects produced by the inhalation of ether; and a similar prize of 2,500 francs to M. Morton for having introduced this method into surgical practice according to the instructions (*d'après les indications*) of M. Jackson." M. Elie de Beaumont, in a letter to Dr. Jackson dated May 17, 1852, uses the following language in reference to the award: "In point of fact, the Academy decreed one of the Montyon prizes of 2,500 francs to you for the discovery of etherization." Both parties accepted the award made by the Academy as their umpire.

Baron Humboldt sent a request

* Through a mistake, Dr. Jackson's paper was not read before the Academy till January 18, 1847.

through Baron Gerolt, the Prussian Minister at Washington, that the American Secretary of State, then Hon. Daniel Webster, would procure and transmit to him the evidence of the various American claimants of the ether discovery. The request was complied with by Mr. Webster. Humboldt, after a laborious examination of the documents, decided in favor of Dr. Jackson; and in October, 1852, the king of Prussia conferred upon Dr. Jackson the order of the Red Eagle. In 1847 Sir Robert H. Inglis, then President of the British Association for the Promotion of Science, referring in his annual address before that body to the discovery of etherization, ascribed its authorship to Dr. Jackson. It appears to be universally conceded to him in Europe. The belief of very numerous persons in this country of the highest character and ability has been published, that the discovery belongs exclusively to Dr. Jackson. In 1852 more than one hundred and forty physicians of Boston and its vicinity signed memorials to Congress declaring such to be their belief.

Some months after performing the experiment devised and committed to him for performance by Dr. Jackson, Dr. Morton set up a claim to the discovery himself, though neither he, nor anybody else, has ever specified a single new idea connected with it which was originated by him. His ignorance in October, 1846, as appears from the testimony of Mr. G. Barnes, then a student in Dr. Jackson's laboratory, of the necessity, in order to prevent asphyxia, of common air being largely mingled with the ether vapor inhaled, (he proposed to administer the vapor by means of a glass bulb having no provision whatever for admitting common air,) and his being in December, 1846, "in no sense aware of the importance" of it, — as testified by N. C. Keep, M. D., an eminent dentist, and a gentleman of the highest character for truth and integrity, — show conclusively that he could not by any possibility have been the author of a discovery of which the

admixture of atmospheric air with the ether vapor inhaled, is an essential part. It is unnecessary to dwell on this point. It is sufficient to quote Dr. Morton's own words in reply to a question of Dr. Keep, — as testified by the latter under oath, — near the end of November, 1846: "The discovery belongs to Dr. Jackson; Jackson shall have the credit of it; I want to make the money out of it."

Dr. Franklin's claim to the discovery of the identity of electricity and lightning, and Dr. Jackson's claims to the discovery of etherization, rest on nearly similar grounds. Dr. Franklin inferred from his experiments and observations and those of others, that electricity and lightning are identical, and devised and published to the world an experiment to verify his induction. In pursuance of his published directions, Dalibard erected an iron rod at Marly-la-Ville, near Paris, and instructed Coiffier, an ex-dragoon, to perform the experiment devised by Franklin. Coiffier, on the approach of a thunder-cloud, took an electric spark from the rod, and thus verified Franklin's great discovery. Franklin's experiment with the kite was performed a month afterwards, and was but a further verification of a discovery already complete. Dr. Jackson verified on himself and Dr. Channing his induction respecting the power of ether vapor to produce safely and surely insensibility to very severe pain. He afterwards committed his experiment, with full instructions how to perform it, to Mr. Morton, assuming all the responsibility of it. The success of that experiment was a further verification of Dr. Jackson's discovery. The successful applications of ether vapor at the Massachusetts General Hospital in severe surgical operations were still more conclusive verifications of the same discovery. The following words of Whewell, the celebrated author of the "History of the Inductive Sciences," and an eminent man of science, completely set aside the preposterous claims to discovery on the mere ground of the mechanical performance of an experi-

ment devised by another. "I do not concede that experiments of verification, made after a discovery has been clearly brought to view by one person, and devised by the discoverer, and committed by him for performance to another, give the operator a right to claim the discovery as his own." And Roget, formerly secretary of the Royal Society of London, and author of the admirable treatise on Electricity in the Library of Useful Knowledge, after describing Franklin's experiment with the kite, and stating that several philosophers had about a month before obtained similar results in France, "by following the plan recommended by Franklin," adds: "But the glory of the discovery is universally given to Franklin, as it was from his suggestions that the methods of attaining it were originally derived." The applicability of the principles here laid down to the discovery of etherization and its introduction into surgical practice is obvious. In direct opposition to them, the mere performance by Dr. Morton of the experiment of verification devised in the minutest particular, and intrusted to him by Dr. Jackson, with full instructions how to perform it, and with the assumption of the entire responsibility for its safety, has been alleged by certain persons, strange as it may seem, to give to Dr. Morton an exclusive right to the discovery of etherization; — as if a great discovery in the inductive sciences were the work, not of the intellect, but of the muscles; as if such a discovery could be made without devising a single experiment, without a single original observation; without a single philosophical induction, the essential, the only common element in all discoveries in the inductive sciences; without, in fine, originating a single new idea! While Dr. Morton performed experiments of verification, but did nothing whatever involving scientific discovery, Dr. Jackson's exclusive claim to the discovery would have been valid had he done much less than he did, and devised his experiment to verify the conjecture of another person, in-

stead of an induction of his own. This is set in a clear point of view by the following facts : From the known relations of electricity and magnetism to each other, many scientific men had conceived, as being highly probable, the idea that the electric spark could be obtained by means of magnetism. Faraday devised a highly ingenious experiment to verify that idea; and he thereby became the discoverer of the magneto-electric spark. In March, 1847, Jacob Bigelow, M. D., late President of the American Academy, and then professor in the Medical School of Harvard University and one of the physicians of the Hospital, publicly complimented Dr. Jackson as "the original suggester of etherization"; and in a communication published in the Boston Medical Journal he used these words: "Dr. Jackson made partial experiments, and recommended, but did not make, decisive ones." Although this is far from being a complete statement of Dr. Jackson's agency in originating and diffusing a knowledge of anæsthesia by ether vapor, the facts stated by Dr. Bigelow are more than sufficient to establish his right to the discovery. Faraday devised the means of verifying an idea previously existing in many other minds as well as his; Dr. Jackson not only devised the means of verifying, but was the first to conceive, the idea of rendering surgical operations painless by means of ether vapor. Nobody could have devised Faraday's experiment without a large amount of scientific knowledge; nobody could have devised Dr. Jackson's experiment — involving, as it did, the purity of the ether employed and a due admixture of common air as essential conditions of safety and success — without an amount of chemical and physiological knowledge which was not then generally possessed even by eminent surgeons in Europe. This want of knowledge was shown in their using impure ether, and administering it with little or no admixture of common air, and their consequent failure to obtain satisfactory results, till Dr. Jackson's commu-

nication, making known the two essential points of the discovery, was read before the French Academy in January, 1847, and at once changed failure into success.

After Dr. Jackson had partially verified his discovery of etherization in the winter of 1841-42, nothing was wanting to demonstrate it to the world as a fact but the performance of further experiments of verification; in other words, to perform with the hands certain prescribed acts, and watch and report the result. It would be wrong not to acknowledge, in this connection, the great merit of Dr. John C. Warren, Dr. George Hayward, and other surgeons in both hemispheres, in verifying the discovery as applicable to the severest surgical operations, and introducing it into general surgical practice. The value of the great boon conferred on humanity by Dr. Jackson no words can adequately describe. Hundreds of thousands of human beings have already been saved by it from the most excruciating sufferings, and all future generations will be under obligations to him.

It is a lamentable fact that every great improvement and discovery in medicine and surgery has brought persecution upon its author. Ambroise Paré was persecuted for substituting "a mild treatment for the cautery in gun-shot wounds"; Boylston, for introducing inoculation into New England; Harvey, for his discovery of the circulation of the blood; Jenner, for his discovery of vaccination; and Dr. Jackson has been subjected to loss of time and to expense he could ill afford in repelling base attempts to rob him, not only of his rights of discovery, but of his fair fame as a man. No other discovery can be compared in value to Dr. Jackson's, except Jenner's discovery of vaccination; and it is to be hoped that so great a benefactor of mankind may yet, like Jenner,* receive from the

* The British Parliament, after instituting an inquiry into the value of the new method of preventing the small-pox, including Jenner's claim to the discovery of it, voted him, in 1802, 10,000 pounds, and 20,000 pounds in addition in 1807.

recipients of his inestimable gift some substantial token of their gratitude.

Dr. Jackson's failure to cause, though not his neglect to urge, the full verification of his discovery, and its consequent introduction into surgical practice till 1846, has been alleged as an objection against his claims to it. Such reasoning shows great disingenuousness, or great ignorance of the history of science. Harvey, Jenner, (who did not perform a single experiment of verification till more than twenty-five years after he had conceived the idea of vaccination, and did not publish it to the world till two years afterwards,) Newton, Wollaston, and other scientific men, forbore for many years to make known their discoveries to the world. Dr. Jackson discovered chlorine in meteoric iron in 1834, but published no account of it till 1838. From 1840 till after the full verification of his discovery of etherization he was pressingly occupied with labors of geological surveys and explorations, chemical researches connected with them, and with the preparation of reports, one of which, on the geology of New Hampshire, fills a large quarto volume.

It is interesting to compare the former with the present state of knowledge respecting sulphuric ether. Pereira's *Materia Medica*, published in 1839, a standard work, contains this sentence: "Vapor of ether is inhaled in spasmodic asthma, chronic catarrh, dyspepsia, whooping-cough, and to relieve the effects caused by the accidental inhalation of chlorine." Dr. Weiger, of Vienna, speaks of its having been used for centuries in various diseases, both internally and externally, "without exciting a suspicion of its newly discovered and beneficent effects." Books contained accounts of a gentleman's being "thrown, by inhaling it, into a state of dangerous stupor of thirty hours' duration, in which his life was considered in imminent danger"; and of several instances of death from the same cause. To pass from such facts as these to a rational conviction of the safety of inhaling it so as to produce a state of

unconsciousness is a stride so long and difficult that nobody could have compassed it without accurate and extensive chemical and physiological knowledge, together with a scientific sagacity that comes only from long training and experience, and a deliberate courage wellnigh bordering on rashness. Nor could any one — without a self-possession, a nicety of observation, and an insight rarely possessed even by scientific men — have, with a sort of intuition, inferred, from certain painful sensations and their absence for a brief period, combined with previous knowledge, the great facts comprehended in the discovery of etherization. Dr. John C. Warren, who performed the first surgical operation on a patient under the influence of ether vapor, on learning that Dr. Morton, a dentist of little medical and almost no scientific knowledge, in administering the ether vapor in its early applications as an anæsthetic, at the Hospital, had acted under Dr. Jackson's directions, expressed his satisfaction that the discovery of etherization had had "a scientific origin." The truth is, it involved so much scientific knowledge, that it could not *possibly* have had any other origin. In this connection the following facts are of interest. In 1844, two years after Dr. Jackson had partially verified his discovery, Dr. Horace Wells, of Hartford, a dentist, after having successfully used nitrous oxide as an anæsthetic in a number of dental operations, unsuccessfully applied sulphuric ether in a single surgical operation. The following extract from a communication dated February 17, 1847, and published by him in Galignani's *Messenger*, at Paris, may, perhaps, account for the failure; it certainly proves the groundlessness of the claims he was then urging to the ether discovery, by showing his ignorance, even then, of one of its essential conditions, — the plentiful admixture of atmospheric air with the ether vapor inhaled: "The less atmospheric air is admitted into the lungs with any gas or vapor, the better, — the more satisfactory will be the result of the operation."

His total silence, in his communication, respecting the purity of the ether to be inhaled implies a like ignorance of the other essential point in the ether discovery. Dr. E. R. Smiley successfully used, in the same year, an ethereal solution of opium, in a single surgical operation, to prevent pain; but, attributing the anæsthetic effect to opium, and being warned of the danger of producing insensibility by that substance, he made no further experiments with the solution.

After the introduction of etherization into surgical practice, Dr. Jackson and other physiologists experimented with many other substances to test their anæsthetic properties. Sulphuric ether, nitrous oxide, and chloroform are the only anæsthetics now in use. Nitrous oxide is used by some dentists. It produces insensibility to pain of a few seconds' duration, sufficient for the extraction of a tooth, but too short for most surgical operations. The only capital operation, so far as is known to the writer, alleged to have been rendered painless by it, is the amputation of a thigh by a surgeon of Hartford; but, though the inhalation was frequently renewed, the testimony of the patient is in print, that the operation was by no means painless.

Chloroform was discovered by Soubeiran in 1831. Flourens, an eminent French physiologist, experimented with it on animals, soon after the ether discovery was made public; and Mr. Waldie, of Edinburgh, a chemist, suggested the use of it in surgery to Dr. Simpson, who applied it with success. Being more convenient to the surgeon,

and more prompt in its effects than sulphuric ether, it has been very extensively used; but it is far from being a safe anæsthetic. Dr. George Hayward, the distinguished surgeon who performed the first capital operation upon an etherized patient, stated, in the Boston Medical and Surgical Journal, in 1850, that there was not a single well-authenticated case on record of death caused by pure sulphuric ether properly administered, and that there were more than twenty well-authenticated cases of death by chloroform. In 1861 a committee of nine prominent physicians and surgeons, appointed by the Boston Society for Medical Improvement, after collecting all possible information from all parts of the civilized world, unani- mously reported, "that sulphuric ether is safer than any other anæsthetic"; "that their careful search of journals and monographs furnishes not a single case of death from the proper inhalation of pure sulphuric ether"; and that the friends of chloroform admit that "over one hundred and fifty deaths have already occurred from its use." After quoting the words of Erichsen, a London surgeon, that "when a patient is fully under the influence of chloroform, he is on the verge of death," they add: "The epithet *fléau chloroformique* [chloroform scourge] is therefore no undeserved one; for, in any man's hands, chloroform may indeed become a scourge whose blows shall fall so suddenly and mysteriously, that, before the surgeon's knife is taken up, the patient's life may have passed away beyond resuscitation."

A CASTLE OF INDOLENCE.

"The tales
Which poets of an elder time have feigned
To glorify their Tempe, bred in me
Desire of visiting that Paradise."

JOHN FORD, *The Lover's Melancholy*, Act I, Sc. 1.

EVERY one who has attended two courses of lectures at the Lowell Institute or at the Sorbonne, must have noticed those withered immortals that are always to be seen in the same seats, wearing the same coats, holding the same note-books; that nod stiffly to one another, and disappear with the lecturer. Some people are still trying to solve the problem of their origin, as a faithful few are still trying to square the circle, but it remains insoluble.

"The earth hath bubbles, as the water has,
And these are of them."

The students who frequent the Sorbonne ignorantly jeer at the myopic old gentlemen upon the front benches; and the young girls who brighten the Lowell Institute, now and then, cast but a passing glance of wonder at the venerable seekers after knowledge.

Not so with the mystery which envelops the apparitions of Class-day at Harvard. We would know all that is to be learned about the fairy beings who, with hats and gloves from Paris and scarfs from Rome, bless one day in every year, not only for the boys, but for the graduate of ten years ago. Are they created for Class-day as the old gentlemen of the Lowell Institute are created to make an audience? After night has fallen upon that day of days, where are they to be found? Toward which point of compass shall a pursuer direct his steps? By what route, in what conveyance, shall he go? Let me attempt to answer; let me, while my old hulk is taking in coal for another voyage, recall the two midsummer months during which it was laid up in ordinary, — two months undisturbed by the wrangling of newspapers, the clatter of street-cars, or the jingle of pianos.

One July evening, with other passengers, in an old-fashioned stage-coach, I entered Tempe. The full-faced moon watched by the sea, that murmured in its happy dreams. Green pastures, intersected by walls over which leaned aged apple-trees, sloped from the hard sand of the beach toward a dark pine forest. Great naked promontories, to which the forest line led the eye, formed the boundaries of the beach to the right and to the left. The low voice of the tide united the stillness of the land with the silence of the water. Seaward, a bright light shone, went out, and shone again; landward, a small but steady gleam emerged from the open door at which I was soon set down.

The next morning showed me that no part of what I had seen in the evening was a dream; that Tempe was really bounded on the west by a pine wood, on the north and south by headlands of rock, and on the east by the ocean; that the island, the existence of which had been intimated by a revolving light, lay in the offing; and that the gnarled trunks against the wall bore common cider-apples. Croquet-hoops had been set where these apple-trees would throw their deepest shade in the afternoon, as well as in the thinner shadow of an elm. A quarter of a mile perhaps from my window, a slender stream crept out of a copse of willows toward the sea. At the line of high tide, an arch of rustic wood-work had been thrown from bank to bank, at each end of which crouched little brown bath-houses. On the edge of the forest, a picturesque mill, whose broken wheel the little brook had long forgotten to turn, waited for the pencils which were to put life into its old timbers again.