

report, page 10 Letheon, and page 59 Morton's memoir to the French Academy, though not one cent has yet been paid for it, *nor has Dr. Jackson ever received anything* from him, nor would he demand it or accept it. He, however, has lived in the hope that the spontaneous gratitude of his countrymen would reward him and refund the losses of time and money he has sustained by the cupidity of others.

*Boston, November, 1852.*

H. A. HILDRETH.

#### CHLOROFORM AND CHLORIC ETHER.

*Remarks of Dr. J. C. Warren to the Medical Class and other Gentlemen on a Death by Chloroform, accidentally administered in the Massachusetts General Hospital Nov. 6th, 1852.*

THE occurrence in this Hospital a few days since of two unfortunate cases, one of which proved fatal, renders it desirable that an explanation should be made of their course and cause. I shall attempt this explanation the more readily, as it will afford a great practical lesson, which you may never again have an opportunity of witnessing.

This hospital was founded about thirty years since. The most distinguished men of our community, the Lowells, Bowditches, Quincys, Sullivans, Perkinses, Lawrences, Appletons, and others, were among those who devoted their time, talents and property to the erection of the Institution, and who have continued to support it by their paternal care. These names are a pledge to the community that it has been conducted with all the wisdom human ingenuity could furnish.

Among the regulations which they have thought judicious, is one for an annual election of the medical officers. This regulation does not involve the necessity of removal of all these officers; they are changed only when it is thought necessary, or expedient; and this necessity does exist frequently in regard to the house-surgeons or pupils, and the apothecary. When it takes place in the latter office, a considerable time is required for the new incumbent to acquaint himself with the customs and practices of the Institution; and it is obvious that such a change, involving an immense number of details, cannot occur without some oversights and mistakes. No mistakes, however, of any importance have come to our knowledge previous to those connected with the late accidents.

A number of operations were to be performed, and the patients to be etherized. For this etherization, Chloric or Sulphuric Ether is usually employed. Chloroform, the popular favorite, is never used in this institution, except as an external application; but on this occasion it was introduced from the fact, that it had been poured into a bottle labelled with the title "Concentrated Chloric Ether." This bottle, then, marked as concentrated chloric ether, was placed on the table, and employed for these operations without suspicion on our part, that it was not the article designated by the label on its surface. The error escaped the observation of those who administered it, from the fact that there is a resemblance in the sensible qualities of the two articles. So that three persons were etherized with chloroform instead of chloric ether.

Many of you will immediately inquire, why we object to the use of

a substance employed by men of science, and men without science, all over the world, as the article best adapted to produce anæsthesia, or insensibility to pain. The ground of our objection to the use of chloroform is its tendency to produce dangerous consequences in a certain number of cases. The published fatal cases of chloroform now known cannot be less than thirty; and it is well understood, that many have never met the public eye. The appearance of fatal cases in 1848 led me to publish my remarks on the "Effects of Chloroform and Strong Chloric Ether as Narcotic Agents." Besides the Boston edition of these remarks, editions were published in the Medical Journals of Philadelphia and of London, and by these various publications the dangers of chloroform were made sufficiently known. Most, if not all my colleague surgeons in the Hospital, influenced by the same considerations which had guided me, concurred in disapproving its use. In the mean time, sulphuric ether in the enthusiasm for chloroform had been almost forgotten, and the question arose, whether we should return to it. The objections to its use were its pungent odor, its stimulating power, its extensive diffusibility, the subsequent dead smell, and finally its great disposition to produce nausea and headache in those exposed to its influence.

At that period many physicians were engaged in searching out new anæsthetics, and some of us thought it might be useful to unite in this investigation. An article used in medicine for a number of years back, and also as a favorite drink, the chloric ether of commerce, attracted our attention. We made trial of it, and found it possessed no anæsthetic properties. Having witnessed in the distillation of chloride of lime and alcohol the production of a liquid of different degrees of strength, part of it being much more powerful than the rest, we consulted an able chemist, and found, that by a re-distillation of part of it with the addition of two parts of alcohol, there was formed a beautiful chloric ether, which we hoped might be safe, effectual and agreeable. We therefore made a cautious trial of its effects on a patient in the Hospital, whose irritability was such as to prevent an investigation of his disease; the ether having been administered, the examination was immediately effected with perfect ease and success. Proceeding with great care, we gradually extended its use to all cases where chloroform had been employed, and found it "agreeable, safe, and effectual." Soon after, the subject having been introduced at the meeting of the American Medical Association in Baltimore, I was called on to say what I knew of its effects; and the remarks I then made being favorably received, I published an account of it in connection with the work already alluded to, recommending it as a substitute for chloroform.

Objections were taken to this substance on account of its alliance to chloroform, and articles were written to show, that it could not be used with safety; but I did not think myself justified in abandoning its use. Perhaps it will be thought I ought to have replied to these objections; but having already employed much time and labor in the investigations relating to this ether, and having fairly placed it in the hands of the public, I could not consider it a duty to go into a controversy for its support. Since then, I have given it in a great number of cases, and no fatal occurrence has ever followed the administrations.

In the course of the last summer I had some communications on this subject with Dr. Bache, the distinguished editor of the U. S. Dispensatory, and also with Dr. Hayes, of this city; in consequence of which, the following letters were written at that time, viz., in the month of June, 1852. The statements of Dr. Hayes appeared to me very important, but I was still unwilling, for reasons already alluded to, to bring them before the public. Although there is no other connection of these two articles in the cases we are about to speak of than that arising from the similarity of their physical qualities, there seems to be a propriety in making the letters public at this time:

## LETTER FROM DR. WARREN TO DR. BACHE.

*Boston, June 8, 1852.*

MY DEAR SIR,—About a year since, viz., in May, 1851, I had the pleasure of conferring with you on the properties of strong chloric ether as an anæsthetic agent, with a view to a description of the same in a new edition of your valuable Dispensatory. I promised that I would, on my return home, write to you on the subject, and did accordingly write, giving an account of the actual state of the ether practice in our Hospital. One fact, however, of importance had not then come to my knowledge.

The distilled chloric ether originally employed by my advice, had been, from some reason, changed for a mixture of alcohol and chloroform, or a tincture of chloroform. As soon as I discovered this fact, I applied to a chemist, who promised to prepare the distilled article. Circumstances prevented his doing so, and thereon I conferred with my friend, Dr. Hayes, a distinguished philosophical chemist, who readily agreed to give the necessary instructions to Mr. Atwood, a practical chemist connected with the firm of Philbrick, Carpenter & Co., Washington street, Boston, for the right preparation of strong chloric ether, or, as Dr. Hayes prefers to call it, 'Compound Chloric Ether.'

This preparation I began to use in the last autumn, and have, with Dr. J. M. Warren and other gentlemen, continued to employ it. Dr. Hayes's views on this subject you will be able to learn by the note following, which he has had the goodness to address to me.

In regard to the case of death to which you allude, supposed to be from tincture of chloroform, there seems to be some reason for doubt. But as this was not the preparation which I am in the habit of using, I should not advise it, and I have reason to believe it would not have been employed in this case, had its difference from distilled chloric ether been appreciated.

In my remarks on chloroform, published in 1849, after describing the properties and effects of strong chloric ether, I have said—"Should any one, preferring chloroform to the ethers, feel disposed to employ this article in a diluted state, he might very properly add a certain portion of alcohol." This preparation I have never used to any extent, and am now satisfied that it has different properties from those I supposed it to possess.

## NOTE FROM DR. HAYES TO DR. WARREN.

## ETHER, CHLOROFORM, AND TINCTURE OF CHLOROFORM.

*Chloric Ether.*—This substance is the product arising from the action of hypochlorites of the alkalis, alkaline earths, on a large excess of alcohol, much diluted with water. It is obtained by distillation, and when carefully prepared contains chloroform, chlorinated ether, and alcohol. In its formation, a large quantity of acetic acid is produced, and unites with chlorine and the base of the hypochlorite used in producing it.

It is a permanent compound, possessing the grateful odor and sweet taste of chloroform; when evaporated from the hand, or clean linen, it leaves no odor adhering to the surface. In this state it is efficient and convenient for use, as an anæsthetic agent. It is indefinite in composition, but when decomposed by mixture with two bulks of water, it should deposit about one third of its original bulk of heavy oily fluid.

The extended use of this substance by some of the surgeons of the Massachusetts General Hospital, has led to the attempt to substitute for it, the tincture of chloroform. It will be seen that these are not like bodies, and as it is more difficult to prepare chloric ether than chloroform, the manufacture of the former will doubtless remain in the hands of the skilful pharmacutists.

*Chloroform.*—This substance, as a secondary product, is found after many reactions, in which chlorine and hydrocarbons are present. When obtained from hypochlorites and alcohol, the proportion of the latter substance is very small, relatively to that of the hypochlorite used. After careful purification it is a definite compound of well-known physical characters. There is, however, an important chemical character recently observed, which should form a part of its history—it is decomposed by solar light. In the early stages of its changes, the odor remains fragrant for some time, but is succeeded by a suffocating and corrosive vapor, arising from the action of hydrochloric (muriatic) acid on hydrocarbons present. If the remaining chloroform is carefully washed and purified, and again exposed, the same changes succeed; conclusively proving that the property is inherent.

The risk attending the use of compounds having the same odor, but really foreign in composition arising from the use of alcohol, which contains fusel oil in the manufacture of chloroform, has been already pointed out in the Medical Journals.\* There is, however, a preparation sold under the name of Tincture of Chloroform, which is objectionable, and as it has been substituted for chloric ether, has been examined.

When chloroform is added to alcohol of 85 per cent., it dissolves until about double the volume of the alcohol has been mixed. After subsidence, a singular change has taken place; the water, fusel oil and some alcohol unite to form a layer on the surface of the dense alcoholic solution of chloroform. This may be removed, but the solution remains too strong for use. Any alcohol of the shops added, introduces water, hastening the change which chloroform undergoes. When anhydrous alcohol is used, unless distillation has been a resort, the tincture is subject to the same change from neutral to acid state, as chloroform exhibits. After such change hydrochloric acid may be found in it uncombined, unfitting it for any use.

Theoretically and from observation, the compound chloric ether seems to be the most permanent and convenient form in which the power of chloroform can be exhibited, and as such, should take the place of chloroform, in medical and surgical practice.

During the past summer, two or three deaths are said to have occurred from the use of the tincture of chloroform, under the name of chloric ether, an article different from the true chloric ether, as pointed out in the preceding papers. It consists of a mixture of alcohol and chloroform, in the proportion of two to one, without distillation. This mixture was adopted no doubt as more economical than the distilled compound chloric ether—a fact which accounts for its introduction and substitution for the other, but I have never used it, intentionally, except for the purpose of experiment, and by the aid of Dr. Hayes I have obtained a pure distilled compound chloric ether, as mentioned above. From this article, so far as I know, no fatal cases have ever occurred.†

\* Vide Boston Medical and Surgical Journal, Jan. 21st, 1852.

† The following correct method of preparing this chloric ether has been kindly furnished me by Mr. Atwood.

“In my process for the production of chloric ether, the alcohol is perfectly freed from fusel oil. A larger proportion of alcohol and water are also employed than in the manufacture of chloroform. The following are the proportions I use, viz.—Chloride (hypochlorite) of lime, 10 lbs.; Water, 8 gallons; Pure alcohol, 1 gallon; Carbonate of soda (crystallized), half pound. Break down the chloride of lime in the water until the excess of hydrate of lime is in a uniform pulpy mass, and the chloride is perfectly dissolved. Place the mass in a still capable of containing twice the quantity, and introduce the alcohol. Mix perfectly and apply a moderate fire under the still until distillation commences. Continue the distillation as long as a portion of the distillate will

This ether is used in this city, in Salem, in New York, the South and West, and is considered a beautiful and valuable article. Families who have employed it here, have sent from Europe to obtain it. Chloroform, as already stated, notwithstanding the mortality which has followed its use, is more extensively employed all over the world than any other article, and this happens because it is more speedy in its effects than any thing else. Sulphuric ether, although there have been scarcely any, or very few authentic accounts of its fatal effects,\* is not known to be employed to any great extent in other places than Boston.

I shall now proceed to give an account of three cases, in which chloroform was accidentally administered in this Hospital on last Saturday. In my account, I shall endeavor to avoid the use of names, as more delicate and proper; but I would say that all who aided me on this occasion, performed their duties with activity and with credit.

Three cases presented themselves for operation. The first was on a contracted hand. The patient was etherized with the supposed chloric ether. In two or three minutes, anæsthesia being produced, the operation was performed under the continued administration of the same article during from five to ten minutes. The patient escaped without any other inconvenience than a slight soreness of the throat—an effect of the inhalation of chloroform which I have myself experienced.

The second case was of a tumor on the right side of the face in the region of the parotid gland, supposed to lie in the substance of this gland. The attendants being arranged so as to give every assistance to the patient and the operator, the anæsthetic liquid was applied as usual with a sponge, and with the freedom employed in the use of ether, but not proper where chloroform is known to be used. As soon as the application was made, the patient began to struggle and throw his limbs about in so violent a manner that we were compelled for the moment to resign him into the hands of the assistants. But being soon exhausted by the excessive motion, he necessarily inhaled more freely, thus filling his lungs with the vapor of chloroform, and in three or four minutes rendering him insensible. The operation was begun, the parotid gland laid bare, the tumor found to lie behind it, the parotid gland itself incised, and a round regular tumor enclosed in a fibrous sac was brought into view. At this moment those appointed to watch the patient gave a signal that the pulse was failing and respiration scarcely perceptible. Immediately cold water was dashed on his face, and this not reviving him, motions of the chest (in imitation of respiration) by moving the ribs up and down, blowing of air into his face, and afterwards into one nostril, stopping the other (pressing back the larynx so as to prevent the air

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deposit chloroform on being mixed with its bulk of water, then change the receiver and collect one gallon of alcoholic liquid.

Add water to the first portion of the distillate as long as chloroform is precipitated. Separate the light liquid from the chloroform, and wash the latter in twice its bulk of water containing the carbonate of soda. Separate the chloroform from the carbonate of soda and weigh it.

Mix the chloroform, washings, and alcoholic liquid in a still placed in a water-bath. After twenty-four hours' repose, distil three times the weight of the chloroform, and mix perfectly. Preserve in well-stopped bottles.

The 'chloric ether' must not redden litmus paper, or give rise to a precipitate when mixed with a solution of nitrate of silver."

\* Vide British and Foreign Medico-Chirurgical Review, Jan. 1852.

from going into the stomach), frictions of the limbs, clearing the mouth of saliva and froth, and removing the mucus from the throat by the finger, were resorted to. At this period I called for ammonia. During the past year I have been in the habit, when a patient was to be etherized, to direct a bottle of ammoniated alcohol to be placed on the table. This substance is a powerful stimulant, and has been employed from an ancient period to revive persons affected with many of the forms of suffocation, or asphyxia, and also for fainting. Its object is not to oxygenate the blood, which it cannot do, but to give a spur to the nervous system, and put in motion the dormant vital energy, for which purpose it is superior to any other stimulant. This is not the strongest preparation, but there was brought by mistake, and without my being aware of the fact, a bottle of aqua ammonia, which is three times stronger than that above named. It has the same color, and also the same odor, though the latter in a greater degree, with the ammoniated alcohol. The difference, however, would not be detected in a case of urgency, where a few seconds lost might be fatal to the patient. This article then was applied on a sponge to the nostrils, and not producing any effect, a small portion was insinuated into the mouth. At this moment some faint appearance of respiration was exhibited, and by the continued efforts of artificial respiration and friction, the pulse returned, the patient began to breathe freely, and in from five to ten minutes more he seemed quite out of danger. The operation was then concluded, and the patient carried to his bed.

After lying a few hours he recovered his usual state, at least so far as to speak and drink without difficulty; he was, however, much troubled with a secretion of mucus from the lungs, and a cough necessary to extricate it. He had also soreness of the throat in swallowing. The latter symptom has at this time disappeared, but the cough and expectoration continue. The patient wishes to leave the Hospital this afternoon, but I shall previously take occasion to call him into your presence.

The third case is the most important. It was that of a young man, about twenty years old, a native of Ireland, who had had his arm entangled in the machinery of a bark-mill about five days before. The muscles and other organs were torn from the fore-part of the arm, and some loss of blood took place. On his entrance to the Hospital the hand was found cold and without sensation, showing that the nerves had been destroyed, and that his arm could not be restored. Amputation was proposed to him, but he rejected it, and notwithstanding the danger of mortification and lockjaw, and the ultimate uselessness of the limb, were pointed out to him, he insisted he would die with his arm on.

On Saturday, partial mortification having taken place in the mean time, rendering the arm excessively painful and fœtid, and being convinced that he could never recover the use of it, even if he lived, he agreed to have it amputated. The surgeons and assistants took their places around him, as in the last case, while I myself watched his pulse. Etherization was carefully made; immediately on the application of the anæsthetic fluid he became perfectly quiet; the operation proceeded, and was accomplished in about two minutes. Just as it was finished, I perceived his pulse was rapidly failing. Word was given to suspend the dressing, and dash water on his face, which was immediately done. Notwithstanding this the

respiration and pulse went on diminishing, and soon ceased. He was to all appearance entirely dead. Artificial respiration was directly produced by moving the ribs; the limbs were rubbed, ammonia was momentarily applied to the nostrils and mouth, and when these things failed, ammonia was introduced into the mouth, as in the other case. Soon after this, to our great joy a slight inspiration followed, and the efforts being continued, his respiration improved, though he breathed with difficulty, owing to the quantity of mucus in the lungs. By great efforts on the part of the gentlemen standing around, in lifting and turning him on his side, so as to drain out the mucus from his lungs, and by frequently sponging the back part of his mouth, he was from time to time relieved. At last, passing an empty spoon into his mouth, and pouring some brandy and water from another into it, he was made to swallow fully. A stimulating injection into the bowels was also administered.

After aiding in clearing his lungs for some length of time, it was thought he might be removed to his bed; there a little brandy and water was given occasionally, which he swallowed readily. He also spoke and answered all questions proposed to him until the last moment, showing that the organ of voice was not injured. When asked if he suffered, he said "yes," and placed his hand on the region of the heart. Mucus continued to fill his throat. There was no obstruction in the opening of the larynx, for mucus issued from it in a copious stream, showing that his whole lungs were affected. Having remained with him until the pulse had become pretty good, and the respiration apparently better, we adjourned, to meet again in an hour and a half; placing at the same time the house surgeon at his side, with instructions to keep his throat clear of mucus, and support him by stimulants, with the strongest injunctions not to leave him till our return.

Shortly before the time fixed for the return of the surgeons, which was half past three o'clock, the house surgeon perceiving his pulse to suddenly fail, and that his breathing was more hurried, uncovered the stump to see if it was bleeding, and found some effusion of venous blood, probably produced by the liquefaction of blood from the chloroform poison. He then cleared the mouth of mucus, which he had hardly completed when the patient breathed his last without any effort or convulsion. Soon after, an opening was made in the trachea and air blown into the lungs for the purpose of inflation, but without effect. A proposal had been made to do this during life, but it was objected to, because air had already been thrown into the lungs through the nostril, because there was no obstruction in the larynx, because blood might escape through the aperture into the trachea and combine with congestion and mucus in the lungs to increase the difficulty.

On the following morning an examination of the body was proposed, but his friends arriving, objected, and although we urged the importance of ascertaining the immediate cause of death, they continued to object decidedly.

*Remarks.*—Immediately after the occurrence of alarming symptoms in this case, it was discovered that the substance which had been used was not chloric ether, but chloroform; and not till then did we understand the extraordinary phenomena which presented themselves in this and the preceding case. This patient died with the usual phenomena of chloroform poison.

If we consult the records of fatal cases of chloroform, published by me

in 1849, we shall perceive that of fifteen cases there mentioned, the principal part took place in a very sudden manner, some of them occurring a minute or two after the application, and some of them in a period of from ten minutes to fifty hours. In the latter cases the lungs were remarkably congested or filled with blood, owing to the poison applied to the air-cells of the lungs, or circulating with the sanguineous fluid, as in asphyxia. From various causes asphyxia is of frequent occurrence; the phenomena are the same with those presented in these cases, and the remedies are the same—hence the great importance of being well acquainted with the treatment adopted in all such casualties.

The first class seem to have perished almost as if they had been struck by lightning, the powers of the nervous system appearing to be at once annihilated. In the second class the lungs exhibited a most remarkable state of congestion. In the death at ten minutes after the application, the lungs were “a good deal congested; and discharged, when cut, a large quantity of bloody serum.” In the death in three quarters of an hour no examination was made, but “the respiration was infrequent and sighing,” showing that the function of the lungs was interrupted. In the third case, “the lungs were filled with blood and softened; bloody serum in pleura.” In some of the cases the heart was found disordered, in others the brain, but in the whole number, I believe without exception, the lungs were charged with blood, or congested—the common, decided effect of chloroform.

The revival from anæsthetic symptoms and prolongation of life for ten minutes, three quarters of an hour, and fifty hours, bring these cases into the same category with ours. The vital principle after appearing to be extinguished lights up, and gives the hope of recovery, but the blood continuing to accumulate in the lungs from the effect of the poison, and the weakness of the patient, its oxygenation is prevented, and from want of the animating principle life is suffocated and extinguished.

Is the fatal termination of the third case to be attributed to any cause other than that which exists in the preceding cases? There is no reason to believe this to be the fact. The sinking after revival might lead to a suspicion that some other than the usual cause—congestion of the lungs—existed; and some one has suggested that it might have arisen from ammonia having entered the lungs. How could it be the cause of death in this case? By being introduced into the lungs and irritating and burning these organs? This was impossible in the given circumstances; the patient neither swallowed nor breathed after the ammonia had been employed until the whole had been washed out of the mouth by the abundant mucus. It may have been thought that the ammonia irritated the opening into the larynx and swelled it so that no air could pass through. The air did pass through freely till he died, and so did the mucus, a less volatile fluid than air. Further, when ammonia is introduced into the mouth, its entrance into the larynx is repelled by contraction of the laryngeal muscles, so that it cannot enter. Moreover, it was in excessively small quantity. A saturated solution of nitrate of silver, it may be remarked, is frequently introduced into the mouth and even larynx for curative purposes. Most of the ammonia immediately ran out, and the rest was thrown off by the mucus of the lungs and throat. Had any disorganizing effect been produced, how could the patient have swallowed repeated draughts of brandy up to the period of his death? Finally, if the ammonia destroyed the last patient, how did the second escape the action of the same cause? He used the same quantity, so far as can be judged, and was able to swallow through

the day and ever since, and to take even solid food. True he was stronger than the other, but this difference of strength would have made no difference in the chemical, or even vital action, more favorable to the one than to the other; yet the one is well—the other is dead. But I will insist no further on this point, and perhaps have already said more than was required.

We believe that the temporary resuscitation of one of these individuals, and the permanent restoration of the other from apparent death, must be considered as a triumph honorable to Medical Science and to this Institution.

THE BOSTON MEDICAL AND SURGICAL JOURNAL.

BOSTON, NOVEMBER 24, 1852.

*To Readers and Correspondents.*—As will be noticed by the reader, much space has been devoted in the present number of the Journal to Dr. Warren's explanation of a recent unfortunate occurrence at the Massachusetts General Hospital. The peculiar circumstances connected with it seemed to require that this large space should be allowed for an explanatory statement, although it had previously appeared in the columns of the American Traveller, and although, by inserting it at the late period when it was received, we have been obliged to postpone the continuation of the interesting papers of Drs. Channing and Coale, besides the insertion of a number of others which have been awaiting their turn. A statement by Mr. Hildreth is also contained in the Journal to-day, which was considered by the friends of Dr. Jackson to be called for, in reply to some of the assertions in the debate of the United States Senate, recently presented to our readers in a supplement. As in the case of that supplement, we are not answerable for anything contained in the present statement.—The following papers are on file, in addition to those already acknowledged:—Media Sacra; Thermometrical Observations in Missouri; Medical Application of Electricity; and Use of the Stethoscope in Midwifery.

*Diseases of the Mouth—Apparatus for Cleaning the Teeth.*—A compilation of aphorisms on the prevention and treatment of diseases of the mouth, prepared agreeably to a resolution of the American Society of Dental Surgeons, has been some days on our table. Dr. L. S. Parmly, a distinguished dentist, has contributed largely to this collection of wise directions. He is also the inventor of some singularly shapen instruments of white clay, which are used for polishing the teeth, and giving to them a bright, healthful appearance. Our food is so fine, in these days of civilization, that the teeth meet with little or no resistance in crushing morsels, and hence a want of friction, which in lower animals is most perfect, in gnawing and tearing their food, and which keeps their manducatory apparatus in excellent condition. Dr. Parmly is an experienced man, and whatever he says in respect to the beneficial result of his clay polishers, is taken for truth, although the instruments are a novelty, and at first sight strike the eye as being better in theory than in practice.

*Deaths in Boston*—for the week ending Saturday noon, Nov. 13th, 72.—Males, 29—females, 43. Accidental, 2—inflammation of bowels, 1—inflammation of brain, 4—bronchitis, 2—consumption, 14—convulsions, 4—croup, 4—diarrhoea, 1—dropsy, 4—dropsy in the head, 2—infantile diseases, 7—puerperal disease, 1—scarlet fever, 9—gangrene, 1—disease of heart, 2—intemperance, 1—inflammation of lungs, 4—disease of liver, 1—marasmus, 1—old age, 1—palsy, 1—pleurisy, 2—teething, 1—unknown, 1—worms, 1.  
 Under 5 years, 26—between 5 and 20 years, 9—between 20 and 40 years, 16—between 40 and 60 years, 11—over 60 years, 8. Americans, 32; foreigners and children of foreigners, 40. The above includes 3 deaths at the City Institutions.