

R E P O R T
OF THE
C O M M I T T E E O N S U R G E R Y
TO THE
N A T I O N A L M E D I C A L A S S O C I A T I O N ,

HELD IN BALTIMORE, MAY 1848.

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IN presenting the Report on Surgery, the committee beg leave to state, that in entering upon their duties, they felt themselves under some embarrassment from the terms in which those duties are defined. By our regulations they are directed to prepare a report on all the important improvements in the management of surgical diseases effected in America during the year. Had they confined themselves to the letter of this requisition, their task would have been a light one. Neither brilliant discoveries, nor any extraordinary improvements in the practice of surgery, have marked the past year. Many suggestive changes indeed are to be found—they are never failing—but all who devote themselves to the treatment of disease are aware how few of these bear the test either of experience or examination.

Though remarkable, as we have said, by no great discovery or very important improvement, yet the past year gives evidence of substantial progress, and in the estimation of your committee, this progress is evinced in nothing so much as in the desire which is everywhere shown to determine the actual value of operative procedures. On this account they have deemed it best to incorporate in their report, along with a notice of the improvements which are known to them to have either originated or been adopted in this country within the year, such results of surgical operations when done on a large scale, as they have been enabled to collect. In pursuing this course, the report necessarily becomes somewhat retrospective, and though the committee by so doing, have not observed the letter of the law, they, nevertheless, have endeavoured to catch its spirit by seeking after materials from our own practitioners, and dwelling chiefly on improvements not yet generally adopted among us.

In order to collect matter for this report, the committee issued a circular letter, soliciting information in regard to some points of general interest to the profession, as well as of improvements in practice, expecting by this means to obtain facts and statistical data, which, when arranged and classified, might lead to interesting conclusions. So little, however, has been communicated to them, as not to be available for the purposes originally contemplated. Your committee cannot here withhold the expression of a hope that the future Surgical Reports to this Association may be made a repository for the statistical results of operations and modes of treatment, and that they may be more freely communicated than has yet been done.

It is only by collecting together a large number of facts that general conclusions at all approaching to accuracy can be attained, in addition to which, when drawn from the several sections of our widely extended country, as they might readily be, through the medium of a society such as this, they would allow of a comparison of the methods of treatment pursued by different practitioners and institutions, and might shed much light upon the effects of climate, as well as point out the greater or less frequency of particular surgical diseases in various localities.

To arrive, however, at accurate results from statistics, not only the records of several consecutive years are required, but they must also include all the cases of the disease, or operation treated of, which occur in the practice of the institution or surgeon, from which they emanate. They would specify the subjects of fractures and luxations, of amputations, of operations for stone, aneurism, cancer, hernia and cataract, as particularly worthy of statistical investigation.

Among the subjects of inquiry, which presented themselves to the committee, none appeared to them more worthy of present attention than those of lithotomy and lithotrity; for, in addition to their practical bearing, it seems to be peculiarly fit at this time, when the attention of our brethren in Europe is again awakened to them, as it has been by the recent discussion of their merits and faults, in a learned body in Paris, that some account of the results of operations done for the relief of stone in the United States should be made known.

The causes which give rise to stone, and the relative frequency or rarity with which it is found in the different parts of our continent, are matters of much interest, and endeavours were made to gain intelligence for this report in regard to them, hoping thereby that something might be elicited to explain the probable local causes of

its production. In this, however, they have been disappointed, and until an extensive series of observations can be gathered from the different sections of the country, no accurate knowledge on the subject will be obtained. Deprived as we thus are of any precise information on the matter, it may not be amiss to state, as the general impression of medical men among us, that calculus is rare in New England, more common in the Middle and Southern States, and that it is much more frequently met with in the Valley of the Mississippi than in any other portion of the country. Negroes are thought to be rarely the subjects of it, while in Canada it is said to be not uncommon. For the cure of stone, the cutting operation still continues to be that mostly resorted to, and the lateral operation with the gorget is believed to be the procedure most commonly employed. Nor is this to be wondered at, when the prepossession in its favour, derived from our earliest teachers, joined to the ease and rapidity with which the operation is done, and the fair results which usually follow it, are considered, added to which the unprecedented success that continues to be furnished by it in the hands of the eminent Professor of Surgery, in the Transylvania University, tends perhaps not a little still to popularize it among American surgeons.

In the last account* of the practice of Dr. Dudley which has reached us, it is stated that up to the beginning of 1846 he had operated upon 185 cases of stone, of which number 180 are reported as successful. This remarkable result, according to Dr. Bush, cannot be attributed to any selection of cases on the part of the operator, since out of 188 subjects presented to him, 185 were cut. Dr. B. who furnishes this report, ascribes these results to the thorough preparation of the general system made by Dr. Dudley, preparatory to the operation, an account of which was detailed some years since, in a paper published by him in the *Transylvania Journal*, and which we can only here refer to.

From communications that have been made to the committee, it appears that Dr. Marsh, of Albany, has operated by the lateral method seven times, all of which were successful.

Dr. Mettauer, of Virginia, states that he has operated by lithotomy on seventy-three cases of calculus, two of which proved fatal. One from prostatic hemorrhage, and the other from the occurrence of spasm of the ileum.

Dr. Jno. C. Warren has operated upon thirty cases, of whom two died; one of these lost his life by an error in diet, the other had a

* *Western Lancet*, 1846.

purulent effusion, owing to the great size of the stone, and the force required to extract it. The mode of operating in his fifteen first cases, was by the lateral incision and the gorget. In the thirteen following, by the knife, and in the three last by the bi-lateral method.

Dr. Eve, of Georgia, has operated eight times, including one female, all of which were successful. Dr. Mussey, of Cincinnati, informs us that he has cut thirty-two patients for stone, all of which cases have been successful but two.

From the Pennsylvania Hospital your committee have procured a tabular statement, which is herewith submitted as a part of their report, of all the patients cut in that Institution from its foundation in 1752 to the 1st of May, 1848, which, though in some respects imperfect, is nevertheless valuable, as exhibiting the largest mass of experience in calculus, which has yet been furnished by any American Institution.

No.	Name.	Admission.	Discharge.	Result.
1	Ann Fust	October 22, 1756	January 12, 1757	Cured
2	James Miller	August 29, 1759	October 10, 1759	Cured
3	James Clark	April 14, 1763	September 5, 1765	Cured
4	James Child	May 4, 1765	June 19, 1765	Cured
5	John Harper	August 23, 1765	October 16, 1765	Cured
6	Jeremiah Tracy	October 2, 1765	April 2, 1766	Cured
7	Ann Coyle	June 27, 1782	July 10, 1782	Cured
8	Michael Fisher	November 10, 1786	December 12, 1786	Cured
9	Jacob Felkner	November 29, 1788	April 30, 1789	Cured
10	James Bennet	September 1, 1792	November 28, 1792	Cured
11	James Fox	March 20, 1798	April 7, 1798	Cured
12	Abner Lamb	January 1, 1800	January 21, 1800	Died
13	James Shaw	August 31, 1801	September 31, 1802	Died
14	John Garraghan	May 13, 1802	June 16th, 1802	Cured
15	Isaac Vanderwalker	June 6, 1804	August 22, 1804	Cured
16	John Brebaker	May 9, 1809	June 29, 1809	Died
17	Joseph Bently	November 6, 1809	June 15, 1810	Cured
18	Thomas McDowell	March 27, 1810	April 23, 1810	Cured
19	George Wall	November 7, 1810	February 7, 1811	Cured
20	John Brown	November 13, 1811	January 25, 1812	Cured
21	Francis Welsh	February 22, 1812	April 25, 1812	Cured
22	Wm. P. Price	April 29, 1813	May 15, 1813	Died
23	Needham Bryan	May 12, 1813	August 4, 1813	Cured
24	Nathan Cattell	November 4, 1813	January 22, 1814	Cured
25	Gideon Goodwin	September 21, 1814	December 10, 1814	Cured
26	Shadrach Mears	June 17, 1815	August 21, 1815	Cured
27	James Parker	July 6, 1816	August 1, 1816	Died
28	Jane Maisie	September 1, 1816	November 15, 1816	Cured
29	Claiborne Laughlin	June 21, 1817	August 1, 1817	Cured
30	Thomas Allen	June 22, 1817	August 30, 1817	Cured
31	Isabella Berry	June 29, 1818	August 5, 1818	Cured
32	James Moss	October 14, 1818	January 26, 1819	Cured
33	Richard Harris	December 5, 1818	April 15, 1819	Reliev'd
34	Penrose Fuhr	December 7, 1819	February 5, 1820	Cured
35	Samuel J. Herron	December 8, 1819	January 31, 1820	Cured
36	Isaiah Baptiste	September 9, 1823	October 25, 1823	Cured

No.	Name.	Admission.	Discharge.	Result.
37	Edward Robuck	September 23, 1823	January 7, 1824	Cured
38	Samuel Austin	February 22, 1824	April 5, 1824	Died
39	Osmin Harris	December 30, 1824	February, 1825	Cured
40	Abraham Margerum	November 14, 1825	January 2, 1826	Cured
41	James Barber	April 14, 1826	June 9, 1826	Cured
42	John Chandler	July 21, 1828	November 15, 1828	Cured
43	Samuel Suter	December 20, 1828	December 29, 1828	Died
44	Charles Lex	January 21, 1829	March 28, 1829	Cured
45	Samuel M'Donald	April 2, 1829	July 6, 1829	Cured
46	Michael Engles	October 24, 1829	November 28, 1829	Died
47	Robert Fry	September 23, 1829	April 3, 1829	Cured

No.	Name.	Age.	Admission.	Discharge.	Result.
48	William Eastwood	6	April 28, 1832	June 2, 1832	Cured
49	Houston Sigman	4	Sept. 10, 1832	Nov. 1, 1832	Cured
50	Joseph Purtz	3	October 1, 1832	October 28, 1832	Died
51	Grayson Nelson	14	April 30, 1833	July 3, 1833	Cured
52	Henry Thorp	19	Nov. 7, 1833	January 1, 1834	Cured
53	Peter Spyers	17	February 8, 1834	July 19, 1834	Cured
54	Daniel Gillan	6	May 31, 1835	Aug. 5, 1835	Cured
55	James Driver	16	June 14, 1835	July 29, 1835	Cured
56	Stephen Black	6	Dec. 22, 1835	February 9, 1836	Cured
57	Ellen Clincy	10	Feb. 29, 1836	May 11, 1836	Cured
58	Robert Thomson	24	March 17, 1836	June 16, 1836	Cured
59	William M'Elroy	12	January 14, 1839	March 4, 1837	Cured
60	Samuel Darby	16	April 3, 1836	July 18, 1836	Cured
61	Anthony Stresler	43	October 25, 1837	January 23, 1838	Cured
62	Bernard M'Kenna	7	Dec. 15, 1838	Feb. 22, 1839	Cured
63	John Hughes	4	January 19, 1839	Feb. 6, 1839	Cured
64	John Ransley	2	March 20, 1839	June 6, 1839	Cured
65	John Hughes, 2d	5	Nov. 11, 1839	Dec. 4, 1839	Cured
66	John Ramsey	3	January 8, 1840	Feb. 22, 1840	Cured
67	W. R. Patterson	3	May 5, 1840	June 5, 1840	Cured
68	William Bradley	8	Nov. 11, 1840	May 20, 1840	Cured
69	Thomas Carlin	4	Dec. 30, 1840	Feb. 6, 1841	Cured
70	James Wharton	4	January 10, 1842	April 14, 1842	Cured
71	Morgan Morgan	5	August 27, 1842	October 24, 1842	Cured
72	John M'Intyre	3	Sept. 21, 1842	March 11, 1842	Cured
73	John M'Connell	3	May, 1843	July 1, 1843	Cured
74	William Houston	3	May, 1843	June 21, 1843	Cured
75	Henry Huey	5	Sept. 19, 1843	October 11, 1843	Cured
76	C. C. Goldsborough	21	October 31, 1843	January 15, 1844	Cured
77	Thomas Hibbert	3	October 22, 1844	Dec. 2, 1844	Cured
78	Samuel Jarvis	4	Dec. 2, 1844	Dec. 13, 1844	Died
79	John O'Neill	11	Dec. 17, 1844	February 5, 1845	Cured
80	Charles Ross	41	August 18, 1845	October 22, 1845	Cured
81	James Furphy	4	Sept. 17, 1845	Nov. 8, 1845	Cured
82	John Sharkey	14	Sept. 18, 1847	October 29, 1847	Cured
83	John Beck	10	January 26, 1848	May 3, 1848	Cured

From this table, it appears that during the period mentioned, 83 cases underwent the operation of lithotomy, which, it is believed, was invariably by the lateral method, and except in a few instances

of very young children, by means of the gorget. Of this number, 72 were cured, 10 died, and 1 is set down as relieved.

A few among us have resorted to the bi-lateral method, and within a few years the profession have been favoured with valuable papers on modifications of it by Drs. Warren and Stevens. So far as your committee can ascertain, the first operation in our country by this method was performed by Dr. Wm. Ashmead, of Philadelphia, in 1832, nearly eight years after it was brought prominently into notice by Dupuytren at the Hotel Dieu of Paris. The case proved successful, and in that and the succeeding years, the same gentlemen operated upon three other patients. Dr. Ogier of Charleston repeated the operation in 1835 without any knowledge of its having been previously done in the country, and since that period it is known to your committee to have been practiced by Dr. Stevens, Eve, the Warrens, Mussey, May, Watson, Hoffman, Post and Pancoast.

Lithotripsy, too, continues to have its advocates, and though during the past year no extended notice of it has been met with, yet it is not to be inferred that it is without warm advocates, or fails to occupy the attention of our practitioners and teachers. We know, on the contrary, that earnest endeavours are still making to relieve calculous patients by this means, and have reason to think that in portions of the country the operators by this method may be said to be on the increase.

It was intended to have included in this Report, a brief history of the introduction, progress and present condition of the crushing operation among us, accompanied with an extensive statistical table of cases of lithotripsy, which would have permitted of some comparison being made between its results, and those derived from the cutting operation. In consequence, however, of the lamented death of one of their colleagues, Dr. Randolph, who had engaged to furnish important materials and aid in this inquiry, the committee have been unable to accomplish their design. That gentleman, as is well known, was one of the earliest who adopted the method in our country, and by his exertions in teaching, and skill in the performance of the operation, did much to introduce it generally among us, and it is to be regretted that the fruits of his extensive experience, and a statement of his reverses and success, which latter is said upon competent authority never to have been excelled, had not been completed by him.

As indicative of an actual advance in the science of surgery,

there is no subject which it more gratifies your committee to notice, than that of the treatment of aneurism by compression. Compression of the vessel between the aneurismal tumour and the heart, it is well known, was long ago employed, and examples of true aneurism of the lower extremity, radically cured by this means, are recorded; yet as the principle on which the treatment should be conducted was not then understood, much distress was occasioned by it, many failures occurred, and the practice fell into disuse. Scarpa emitted the opinion that it was by exciting adhesive inflammation in the internal coat of the vessel, that pressure effected the cure, and the same doctrine was afterwards held by our own experimenter, Jame-son; but the recent and accurate observations of the Dublin surgeons, particularly of Mr. Bellingham, show that obliteration of the vessel by its inflammation and consequent effusion of lymph is not requisite for the cure, and have, as we think, satisfactorily proved, that for the cure of aneurism by compression above the sac, an absolute interruption to the circulation through the vessel is not demanded—the process of cure, when it occurs, being identical with that by which nature sometimes spontaneously effects it; viz., the gradual deposition of the fibrine of the blood in the sac until it is completely filled up, and no longer permits the entrance of that fluid. The practical deduction from this principle is, that the pressure need not be so great as entirely to interrupt the circulation at the point compressed, and that in fact our object may be attained by simply diminishing the current, and thus favouring the deposit.

In 27 cases, which are related in the valuable communication of Mr. Bellingham, from the practice of seventeen surgeons, 24 were cured. One died suddenly from disease of the heart, forty-eight hours after pressure had been removed, all pulsation in the aneurism having ceased. In another case the operation was done at the request of the patient after the pressure had been continued for a fortnight, and in the third, pulsation continuing some time after compression was resorted to, a galvanic current was passed through the sac, and was followed by erysipelas and death.

The ages of the patients operated on, varied from twenty-three to fifty-five years. The greatest length of time required for the cure in the above 24 cases was 106 days; the shortest, two days. The average duration of treatment was nearly 39 days. Of the whole number of cases, three were femoral, and the rest popliteal aneurisms, and the case followed by death, as well as those in which the treatment failed, belonged to this latter class.

As to the instruments used in applying pressure, their shape and construction are matters of comparatively little importance. The essential points in an instrument for compression are: that it should admit of being readily applied; that its principle should be so simple as to be understood by the patient, and that it should effect the object intended with as little inconvenience as possible. A broad soft pad, Mr. Bellingham thinks, will generally be found to answer best, and the counter-pressure ought to be distributed over a large surface. As to the sites at which the pressure may be applied on the lower limb, either the point where the artery crosses the horizontal ramus of the pubis; between Poupart's ligament and the point at which the saphena joins the femoral vein; from the middle third of the thigh, down to the opening through which the artery passes to the back of the limb, are any of them eligible situations for it. In regard to the degree of compression, it at first ought always to be light; after a time, when tolerance is established, it may be increased to the degree we consider necessary; but, as before observed, Mr. Bellingham thinks it need never be so great as to interrupt completely the circulation in the artery at the point upon which it is applied.

In this country true external aneurisms are not common. Your committee are cognizant of but five instances in which the treatment by pressure, as now recommended, has been made use of in the lower extremity. All but one of these have occurred within the past year, and the details of them have been kindly furnished by the operators for this Report.

These cases have been treated by Drs. Buck, Rodgers, and Watson, of New York, Knight of New Haven, and Mütter of Philadelphia.

The first case was one of femoral aneurism, in which pressure was fairly tried and did not succeed, and it became necessary at last to resort to the operation by ligature.

The instance which occurred to Dr. Rodgers was that of a negro seaman, aged 47, who, two months before, observed a swelling in the popliteal region, which arose after a fall. The tumour was of the size of a duck's egg, and the symptoms of aneurism were well marked. He entered the New York Hospital, and on the 15th of January, 1847, pressure was made upon the artery near the groin by means of an arterial compressor. This was continued till the 12th of February, but it being found impossible to effect the desired object with it, Dr. Rodgers substituted another, consisting essen-

tially of a metallic plate placed upon the inner side of the thigh over the vessel, having three holes at short intervals through which screws passed, each having at one of their extremities a firm pad, and at the other a projection to which a key was adapted, by means of which pressure could be made upon the femoral artery at the different points. This metallic plate was secured over the artery by means of broad straps attached to a sliding plate of steel, secured in a metallic bar, applied longitudinally to the back of the limb.

Soon after the adjustment of this instrument, it was ascertained that the patient loosened the screw in the absence of his attendant. He was now watched night and day for three days, by the end of which time all pulsation in the tumour was entirely arrested. The swelling gradually subsided to half its original size. The only inconvenience experienced by the patient was a numbness of the limb, upon the first removal of the instrument, but this soon left him, and he was discharged cured on the 13th of April.

The case of Dr. Watson was one of femoral aneurism, treated also at the New York Hospital. The subject of it was an intemperate Irish woman, aged 38. The tumour, which was hard and painful to the touch, had existed for a month, and extended from the upper and inner third of the thigh to within a finger's breadth of the internal condyle of the femur, and at the point of its greatest circumference, reached from the inner border of the rectus muscle to the middle of the outer side of the thigh.

At midday, on the 23d of September, 1847, pressure was made by means of two pads secured to circular straps over the artery, with counter-compresses on the outer side of the thigh, the pressure produced being regulated by a screw which acted directly upon the pads over the vessel. The first compress was fastened over the artery just as it emerges from beneath Poupert's ligament, the second, a short distance below it, and both were so arranged as partially to control the circulation in the tumour, the pressure being regulated by alternately tightening one compress and slackening the other, in order to prevent abrasion of the integument. On the 24th the patient was restless; on the 25th she complained greatly of cramp and pain in the leg, which was much swollen, to relieve which a roller was applied, and the limb elevated on a pillow.

By the 26th all pulsation had left the tumour. The upper compress was now removed—sixty-eight hours having elapsed from its first application, and very slight pressure was kept up by means of the lower one. No return of pulsation followed the removal of the

compress, and in an hour afterwards the lower pad was also taken away. The skin beneath the upper compress had become somewhat abraded by the pressure, which required the application of a poultice, and subsequently simple dressings for a few days.

On the 28th no pulsation could be detected in the tumour, or in the femoral artery below the point, upon which the upper pad had rested.

By the 28th of October the tumour had much diminished in size, and become softer.

On the 12th of November, nearly two months subsequent to the commencement of the treatment, she left the hospital well, the tumour still gradually becoming smaller. There was no pulsation to be detected in the anterior or posterior tibial arteries, or at any point below the giving off of the profunda, and the femoral artery itself below that point was felt like a solid cord beneath the integument.

The case furnished by Dr. Mütter, was that of a book-keeper, aged 41, whose general health was feeble, and who, six weeks previous to the 24th of September, 1847, had been seized with stiffness in the right ham, which was soon followed by a pulsating tumour of the size of a turkey's egg. After a few days' rest in the horizontal position, his treatment was commenced by applying a roller to the limb in order to prevent swelling, and the application of one of Charrière's compressors, with a small oval pad over the femoral vessel where it passes down to become popliteal, and another similar compressor with a larger pad over the artery at the upper third of the thigh. The limb was then placed upon an inclined plane. After remaining in this position for twelve hours, the lower compressor was tightened until all pulsation ceased in the tumour. The pain produced by this procedure was severe, and could only be borne at first for half an hour. When it became insupportable, the upper compressor was screwed down, and the pressure from the lower one removed. The patient supported the pressure above for two hours without much difficulty; it then became annoying, and in order to relieve the suffering, the lower compressor was again tightened.

By thus alternating the points to which it was applied, the necessary amount of pressure was kept up without excoriation, or any other injurious consequence resulting, and from the peculiar construction of the instruments, and the previous application of the roller, the swelling of the limb was trifling. During the treatment,

the diet of the patient was restricted, and digitalis was administered to him.

By the 12th day the tumour was reduced to about half its original size; had become solid, and was free from pulsation. Notwithstanding these circumstances, Dr. Mutter did not consider it safe to allow his patient to move about, or even to relax the treatment, but continued to pursue the same course, with slight modifications, for six weeks longer. At the expiration of this period, the tumour had nearly disappeared, the collateral circulation was fully established, and the disease radically cured.

Dr. Knight's case, which is peculiarly interesting, from the novel manner in which the pressure was made, and quickly effected a cure, was that of a mulatto man, aged 48, in whom a popliteal aneurism had existed for several months. The aneurismal tumour, which was well marked, filled up the whole popliteal space. The leg was very painful and œdematous. After the œdema was removed by rest, and other appropriate treatment, pressure on the artery, by means of the hoop tourniquet, the calliper shaped instrument, the common tourniquet, guarding the limb against pressure of the strap by encasing it with thick sole-leather, and by a variety of other mechanical contrivances, was fairly tried. By whatever instrument, however, the pressure was made, and however carefully it was guarded, whether continued on one point only, or shifted from one part of the artery to another, the pain became in a short time so severe that it could not be endured. The pain complained of was not in the part pressed upon by the instruments, but was felt equally in the thigh and below the knee, and occurred whether the limb was left uncovered or was enveloped in a roller. It usually began in twenty-five or thirty minutes after the pressure was made, and became intolerable in fifteen or twenty minutes longer, and could be continued in no instance beyond one hour. These efforts were persisted in for eight or ten days, and as nothing had been gained at the end of that time, were abandoned. Before resorting, says Dr. Knight, to the ligature of the artery, I concluded, with the concurrence of his physician, Dr. Tyler, to try manual pressure upon the vessel. "To accomplish this, a sufficient number of assistants were procured from the members of the medical class, who cheerfully offered their services. They were divided into relays, two keeping up the pressure for five or six hours, relieving each other every hour or half hour, and these succeeded by two others. Sufficient pressure to arrest the pulsation in the tumour was found to be most easily made with the thumb or

fingers, without a compress, upon the artery as it passes over the os pubis, and the direction given to the assistants was to keep up this amount of pressure as nearly continuously as possible." This treatment was commenced at 3 o'clock P. M. No pain of consequence was produced by it for five or six hours, and then it was not severe, and was quieted by the eighth of a grain of morphia once or twice repeated. About eight hours after the pressure was applied, the temperature of the limb was diminished, and it appeared shrunken in size. Upon removing the pressure from the artery at 11 o'clock of the following day—twenty hours from the commencement of the treatment, the tumour was found to have diminished very little, if at all, and pulsated as strongly as before; but the tibial arteries could not be felt. The treatment was continued. Upon examining the parts the next morning, forty hours after the treatment was begun, the tumour was found to be nearly one-third less in size, firm and unyielding on pressure, and entirely without pulsation. All treatment was then discontinued. The femoral artery pulsated with its usual strength in the groin, and distinctly as far as its passage through the tendon of the adductor muscles. Between this point and the tumour it could not be felt. Several of the anastomosing arteries, especially one upon the inside of the limb, could be distinctly traced passing over the knee, pulsating strongly, and enlarged in size. From that time to the present—a period of more than four months—no change has taken place in the limb, except that the tumour has gradually diminished, so as now to be scarcely discoverable, and that the leg, which was at first cold and weak, has nearly regained its natural temperature and strength.

Within the past year another instance has been reported, in which a ligature was placed upon the common iliac artery for aneurism, by Dr. Lyon, of England. The bold and successful precedent for this, it will be remembered, was first done by Dr. Mott, of New York, in 1827. In 1812 the common iliac was tied, in a case of gun-shot wound, by Dr. Gibson. The patient lived thirteen days after the operation. Since this period, the case just alluded to makes the eighteenth in which the operation has been performed, of which eight have proved successful, and ten have died. The aim of this Report being to show results, rather than to give the details of operative procedures, particularly when not done among us, a bare mention of this fact will suffice. In connection with it, it may be interesting to notice the final issue of the instance in which this artery was last tied in this country. The operation was done by

Dr. Peace, at the Pennsylvania Hospital, and the details of it published in the *American Journal of Med. Sci.* for 1843. The subsequent history of it now given, has been furnished to the Committee by the operator. The artery was tied August 29th, 1842, and the patient was discharged cured on the 8th of October. Five months after it was done, the tumour, which had been very large, was found to be hard, was greatly reduced in size, and continued free from pulsation. He returned to a laborious occupation, and in November, 1843—fifteen months after the operation—his attention was directed to a re-appearance of the tumour. He now presented himself to his surgeon, who found it soft, fluctuating, and of the volume of a small orange, with the integuments covering it discoloured. He was re-admitted into the hospital, and in a few days ulceration took place, and he died after repeated hemorrhages. After his admission, ligature of the aorta was suggested, with a view of prolonging life, but it was found that pressure on this great trunk at its lower part did not arrest the flow of blood, and was, of course, abandoned. The pelvis, which was bequeathed to Dr. Peace, is now in his possession, and shows that the ligature had been placed upon the iliac vessel just above its bifurcation—a point at which it was perfectly sound—and that the hemorrhage was due to the return of blood into the tumour by the collateral vessels. These vessels being given off by the aorta, above the point at which it is prominent upon the vertebræ, and where it had been compressed in the examinations which were made.

That a ligature may be placed upon the aorta, there are recorded observations to attest: that it will ever be followed by any lasting benefit, there is every reason to doubt. Cooper's patient having died in forty; James' in three, and Murray's in twenty-three hours after it was done. As adding, however, to the list of cases, which show that the collateral vessels are fully able to carry on vigorously the circulation after its complete obliteration, a case which has been detailed by Dr. West, in the No. of the *Trans. of the Philadelphia College of Physicians* for February of the present year, is worthy of notice. The subject of it, who was aged 32, and died suddenly from the rupture of an internal aneurism, was remarkably muscular and athletic, with the superior half of his body more developed than the lower. The interesting feature of the case, for our purposes, was, that in tracing the aorta beyond the origins of the great vessels, its cavity was found to be *entirely obliterated* immediately beyond the ductus arteriosus. At the point of obliteration

tion, it presented a well defined and regular contraction, which looked as if it had been produced by a ligature thrown around the artery. Beyond this, the vessel resumed very nearly its natural dimensions, and so continued throughout its course. It gave origin, in its whole length, to the usual branches; the upper pair of intercostals coming off immediately below the stricture. The internal mammary arteries, which pursued their course along the thoracic parietes in a very tortuous manner, were fully as large as the internal iliacs, and so were the epigastrics; these vessels constituting the main channels for keeping up the connection of the circulation above and below the aortic stricture.

From answers that have been received to the circular letter of the committee, some facts have been communicated for the Association, which they will now endeavour to give, as far as possible, in the language of their correspondents. Dr. March, of Albany, describes what he believes to be an easy and prompt mode of effecting the radical cure of hydrocele. His operation consists in using a pretty large sized round trocar, by which the puncture is made, and through the canula of which the water is permitted to flow out. The canula is to be kept still in the sac, and through it a camel's hair pencil, dipped into a solution of the iodide of potassium is to be passed, and the whole inner surface of the tunic painted over, which may require the pencil to be armed with the solution three or four times. He adds, that he has operated in this way in a number of instances with complete and most satisfactory success.

Dr. Horner, of Philadelphia, in his communication to the committee remarks, that he has found the treatment of hydrocele rendered much more certain by the introduction of a few threads passed through the tunica vaginalis from the bottom to the top, even where the process by injection is the main feature of the case. His experience has shown him that no injection is to be wholly relied on, unless in connection with subsequent treatment. The effect of any irritating injection into the tunica vaginalis, he observes, is not only to produce a secretion of lymph, but also of serum, and if the latter accumulates, it will of course keep separated the opposed sides of the tunica vaginalis, hence a common cause, perhaps the most frequent, of failure in all injections. This obstacle, he adds, may be very easily overcome with four or five threads of silk, which will carry off the serum as fast as it is secreted, and thus allow the two surfaces of plastic membrane to touch and coalesce.

Dr. Brainard, of Chicago, has forwarded for the consideration of

surgeons, some practical remarks in reference to the treatment of extensive suppuration by astringent and stimulant injections into the suppurating cavity. In these cases, free openings, and washing the surface within with a solution of ʒij of alum, and ʒi of sulphate of copper to the pint of water, will check its progress, diminish the quantity, and improve the quality of the pus. He is inclined also to think that the practice prevents purulent absorption, and by exciting inflammation, limits its spread among the tissues. The same application he has found useful on the surface of large stumps where the pus is abundant and offensive.

Dr. Brainard also advises us that he has lately used iodine injections in serous effusions. "Having noticed," he says, "the rapidity with which patients often sunk after puncture of ascites, spina bifida, &c., I formed the opinion that such treatment was wrong, and determined to try injections. Having occasion soon after to treat a case of spina bifida, in the Chicago Hospital, in a child about 13 years old, in whom the tumour was situated at the top of the sacrum, being nine inches in circumference, and about three inches in height, with thin walls, I determined to inject into the sac a solution of iodine, with a view of exciting inflammation and procuring absorption. This was done on the 2d December, 1847, in the following manner. A small puncture was made with a lancet half an inch from the base of the tumour, and a trocar of the size of a knitting needle carried obliquely into the sac. Through the canula of this, a solution of gr. i. of hydriodate of potash, with gr. ss of iodine, in a fluidrachm of water, was thrown into the sac, and the instrument withdrawn without allowing the serum to escape. A sharp pain followed, which soon subsided, and compresses were applied to prevent the escape of fluid. After the operation the tumour became red, tense, and tender; but these symptoms soon gave place to a remarkable flabbiness and contraction. By the 27th of December it had diminished to about half its former size. At this date a second injection was used of half the strength of the first, which produced but little heat or pain, and the compression was continued. On the 15th January, 1848, so much of the fluid was absorbed as to render it easy to press it down almost to a level with the surrounding parts, the skin was lying in wrinkles over it, and the bony opening could be distinctly felt. Since the last date a third injection has been made without any unpleasant result. Dr. Brainard thinks that the injection of a solution of iodine, (so far as

a single case can be taken as a guide,) is attended with but little danger, and may be capable of curing hydrorachitis.

Dr. Jno. C. Warren writes, that in the treatment of fractures of the condyles of the os humeri, a course is usually recommended which he believes to be hurtful, inasmuch as it favours the worst consequence of the injury, namely, loss of motion in the joint. The common practice, he observes, in the treatment of these cases, is to apply angular splints destined to prevent motion, and in about two weeks, to make passive movements for the purpose of preventing the adhesion of the fractured portions in such a manner as to impede the free action of the joint. By this mode of treatment, the fractured piece becomes sufficiently fixed to create partial ankylosis; and there is so much pain afterwards in the proposed passive movements, as to cause the omission of these measures, until permanent stiffness takes place. The proper course in the management of these accidents, he conceives, to be—1st. To apply no splints, but in the earlier days to make use of the proper means to prevent inflammation. 2d. To accustom the patient to early and daily movements of flexion and extension. 3d. When the action of the joint becomes limited, to overcome the resistance by force, and repeat it daily until the tendency of the joint to stiffen ceases.

The accomplishment of this process, he adds, is so very painful, that few patients have courage to submit to it, and few surgeons firmness to prosecute it. The consequence has been, that in a great number of cases the use of the articulation to a greater or less extent has been lost. The introduction of etherization by preventing the pain, gives us, in the opinion of Dr. Warren, the means of overcoming the resistance. By its aid, he has restored the motion of a considerable number of ankylosed elbows, and has successfully applied the same measures to other joints, particularly to the shoulder and knee. This has now become his settled practice, with the results of which he is entirely satisfied. The inflammation consequent upon the forced movements of an ankylosed joint, is not to be lost sight of. By a reasonable abstraction of blood and other anti-inflammatory treatment, he has never found it alarming.

Within a year or two past, attention has been, in a particular manner, directed to derangement of the cerebral functions following ligature of the common carotid artery. These cerebral symptoms are attributable either to cutting off the direct supply of blood to the brain, or to disease consequent upon the altered condition of the circulation in that organ. Nearly one-fifth of the recorded cases of

the operation in question, are found to have exhibited it in a greater or less degree; and the frequency of its occurrence has been singularly overlooked by practical surgeons. Two cases have been forwarded to the committee by Dr. Mettauer, of Virginia, in which it was observed: in these the vessels were taken up, in one instance, for an anastomosing aneurism of the antrum and nasal cavities, and in the other for the cure of a false aneurism. Both patients had lost large quantities of blood previous to the operations. In each case partial hemiplegia of the opposite side to the artery which was ligatured, was noticed in a few hours, and was followed by delirium and convulsions. In one of the instances, death occurred on the 8th, and in the other on the 10th day.

Autopsic examinations showed softening of the medullary substance on the side opposite to that on which the vessel was tied, while the hemisphere corresponding to it was healthy, though pale and bloodless.

ANÆSTHETIC AGENTS.

THE recent introduction into the practice of surgery, of a class of medicines, possessing the remarkable property of annulling pain, has excited throughout the medical world an extraordinary interest.

So much has been written upon this subject, and so completely has the medical mind been engrossed with its consideration during the past year, that the profession throughout the United States may be fairly presumed to be, by this time, generally acquainted with the nature and effects of these agents.

The fact is established, that certain ethereal vapours when inhaled, will produce insensibility to pain, and that the most sensitive portions of the living body may be divided by the knife of the surgeon, while his patient lies in a state of unconsciousness.

This new revelation of science has been received by all with great interest, and by the more sanguine and enthusiastic in our profession, with admiration and gratitude. It is a truth, which, whatever may be thought of the benefits or evils which may arise from its application, cannot fail to command attention, developing as it does, a power over human suffering, now the first time revealed.

The great question, which still divides medical opinion, is: can the annulling of pain by anæsthetic agents be produced without risk to life, or is the hazard so inconsiderable as to justify their employment in all cases where it is desirable to prevent the pain of surgical operations? In other words, do the risks and evils attendant upon the use of these agents in surgery, counterbalance the advantages afforded by exemption from pain, and to what extent and under what circumstances is it proper to use them?

With a large and intelligent body of the medical community, including some of the most eminent surgeons of this and other countries, this question is considered as settled. They look upon the dangers of etherization as so inconsiderable, as to justify the induction of this state, prior to all surgical operations in which the pain is an important consideration, while they consider the advantages of anæsthetic agents to be especially manifest in all exten-

sive ones, involving life, where the nervous shock (which they believe lessened by them) might increase the risks of a fatal issue.

Another class of surgeons would restrict the use of these agents to severe operations, and discourage their general employment, under a belief that their full effect cannot be attained without a degree of danger which would render their indiscriminate use unjustifiable. While a small portion of the profession still object altogether to anæsthetics as dangerous and hurtful in their tendency, increasing the risks attendant on large and serious surgical operations, and embarrassing the proceedings of the operator, by causing delay and indecision in his movements. It is not within the province of your committee to sit in judgment upon these conflicting views, or to become partizans upon the question.

Within the past eighteen months a large mass of testimony upon this subject has been accumulated both at home and abroad, and has been freely circulated through the medium of the medical periodicals of the country, and other publications. Upon this evidence individual opinion must be based. Considering the brief period during which the powers of these agents have been on trial, it is not surprising that uniformity of opinion in regard to their value has not yet been attained. Those who differ widely upon the subject, are no doubt equally honest and sincere, and alike desirous for the final triumph of truth. The cautious and prudent may still withhold their assent from propositions, which their more sanguine brethren consider fairly proved, while the latter are at liberty to go on accumulating the facts upon which the claims of etherization must finally rest.

Your committee propose to confine their remarks upon this subject mainly to a few points.

Firstly.—To a brief history of the introduction of ether and chloroform into the practice of surgery.

Secondly.—To a description of some of the more obvious phenomena, which mark their action upon the system.

Thirdly.—To the results following their use in several large public institutions of the country, and in the private practice of some of our surgeons, who have considerable experience therein.

The second branch of this inquiry, involving a consideration of the physiological effects of anæsthetic agents, is one of much importance, and your committee submit, accompanying this report, and to form a part of it, a paper upon the subject, from a gentleman who has devoted much attention to it. (See C.—1.)

This paper, kindly furnished by Dr. Henry J. Bigelow, of Boston, treats of the mode of inhalation of ether, of the phenomena and signs of etherization, of the signification of these symptoms, the stages of anæsthesia and their mutual relations, with an analysis of the various symptoms observed, &c. &c.

In considering the origin of the discovery of the anæsthetic properties of ether, it must be a source of satisfaction to every American to know that the world is indebted to our country for this valuable tribute to science and humanity; while, at the same time, we must regret that the early history of the discovery is encumbered with angry disputes amongst rival claimants for the honour, and that attempts were made by those most intimately interested in the claim, to render their private interests paramount to those higher considerations which should animate the disinterested lover of truth.

Your committee will avoid, as far as possible, entering into these discussions, and proceed to give a succinct history of the introduction of ether inhalation into the practice of surgery. It appears that the idea of annulling pain by the nitrous oxide gas had been suggested long ago by Sir Humphrey Davy, and the late Dr. Horace Wells, of Hartford, Conn., had used this gas for this purpose as early as the year 1844, with partial success. Dr. Wells appears to have devoted much time and research to the subject: he went to Boston and lectured upon the feasibility of the practice, and performed an experiment in the presence of a number of gentlemen, at the Massachusetts General Hospital; but his experiments not being satisfactory he abandoned his plans, and the idea of annulling pain by inhalation of gases, slept, until revived in the year 1846 in a new form, and under circumstances which have conferred upon it its present importance.

The first successful experiment was performed by William T. G. Morton, a dentist of Boston, upon a patient, from whom he extracted a tooth on the 30th of September, 1846. This individual was made to inhale sulphuric ether from a glass globe constructed for the purpose, and in a few minutes passed into a state of unconsciousness, resembling sleep, during which a molar tooth was extracted, without any indication of feeling upon his part. On awaking, he was amazed at seeing the tooth upon the floor, and declared "that he did not experience the slightest pain whatever." No unpleasant effects followed, and the experiment was considered successful. New trials

were made in rapid succession by the same operator, without mishap; until the fact was considered fairly settled.

These experiments were not undertaken blindly, nor were the results discovered by accident. Dr. Morton had long harboured the idea of getting hold of something which should destroy the pain consequent upon his dental operations, and he had consulted with Dr. Charles T. Jackson, an eminent chemist of Boston, upon the subject. This gentleman alleges that he first communicated to him the fact, that sulphuric ether would answer the purpose—Dr. Morton being before ignorant of the properties of this article. Upon this latter point the parties are at issue, though it is understood that their names subsequently appeared in a patent, as joint inventors or discoverers of this new method of destroying pain.

About the 10th of October, Dr. Morton being desirous of testing the powers of this new agent in a surgical operation, applied to Dr. John C. Warren, for the liberty of administering it to a patient upon whom he was about to operate. Dr. Warren having satisfied himself of the safety of the experiment, yielded to the request, and it was accordingly administered by Dr. Morton to a young man, from whom a tumour was excised, in the Massachusetts General Hospital. The tumour was composed of tortuous, indurated veins, and was situated on the left side of the neck, just below the left portion of the lower jaw; it extended from the surface quite deeply under the tongue. The operation is thus described by Dr. Warren, in his late valuable treatise on Etherization:—"The patient was arranged for the operation in a sitting posture, and everything made ready; but Dr. Morton did not appear for the lapse of half an hour. I was about to proceed when he entered hastily, excused the delay which had been occasioned by his modifying the apparatus for administration. The patient was then made to inhale a fluid from a tube connected with a glass globe. After four or five minutes he appeared to be asleep, and was thought, by Dr. Morton, to be in a condition for the operation. I made an incision between two and three inches long, in the direction of the tumour, and to my great surprise, without any starting, crying out, or other indication of pain. The fascia was then divided, the patient still appearing wholly insensible. Then followed the insulation of the veins, during which he began to move his limbs, cry out, and utter extraordinary expressions. These phenomena led to a doubt of the success of the application; and, in truth, I was not satisfied myself, until I had, soon after the operation, and on various other occasions, asked the question, whether he suffered

pain? To this he always replied in the negative; adding, however, that he knew of the operation; and comparing the stroke of the knife to that of a blunt instrument passed roughly across the neck. Now that the effects of inhalation," adds Dr. Warren, "are better understood, this is placed in the class of imperfect etherization." On the 17th of October, this agent was administered a second time, to a patient in the hospital, from whom Dr. George Hayward removed a fatty tumour of the arm. The operation lasted seven minutes, and the patient was entirely unconscious during its progress.

At this stage of the proceedings, the surgeons of the hospital determined not to proceed with the experiments, unless informed of the precise nature of the agent employed. This decision was communicated to Dr. Morton, who thereupon addressed a letter to the senior surgeon, Dr. Warren, informing him that the article used, was sulphuric ether. On the 7th of November, this fact was communicated to a consultation of the surgeons in the case of a young girl about to submit to amputation of the thigh, and it was unanimously agreed that the ether should be administered to her as in the preceding cases. Dr. George Hayward, the operator, thus describes the effect in this important case:—"The patient," says Dr. Hayward, "was a girl of 20 years of age, named Alice Mohan, who had suffered, for two years, with a disease of the knee, which terminated in suppuration of the joint, and caries of the bones. For some months before the operation, her constitutional symptoms had become threatening, and the removal of the limb seemed to be the only chance for life. The ether was administered by Dr. Morton. In a little more than three minutes, she was brought under the influence of it; the limb was removed, and all the vessels were tied but the last, which was the sixth, before she gave any indication of consciousness or suffering. She then groaned and cried out faintly; she afterwards said that she was wholly unconscious and insensible up to that time, and she seemed to be much surprised, when she was told that her limb was off. She recovered rapidly, suffering less than patients usually do after amputation of the thigh, regained her strength and flesh, and was discharged well on the 22d of December."* From this time the inhalation of ether was adopted in the practice of the Massachusetts General Hospital, and received the warm approval of the Board of Surgeons attached to that excellent institution. Various instances of its successful employment also

* See Dr. George Hayward's Paper, Boston Med. and Surg. Journal, vol. xxxvi., No. 12.

occurred in the private practice of gentlemen in Boston and vicinity. Dr. A. L. Pierson, of Salem, Mass., used ether with perfect success in the removal of a fatty tumour as early as November 14th, 1846.

On the 3d of November, 1846, Dr. Henry Jacob Bigelow, one of the surgeons of the hospital, read a paper to the American Academy of Arts and Sciences, and on the 9th of November, to the Boston Medical Improvement Society, detailing the facts which had fallen under his observation, and vouching for the efficacy of this new agent in annulling pain. This paper was published in the *Boston Medical and Surgical Journal* of November 18th, and deserves special notice as the first medical publication on etherization, whereby the news of the discovery was promulgated to the world.

Within six weeks of the publication of this paper, ether had been tested in London, and found warm advocates amongst the surgeons of that metropolis; and in less than three months it was introduced into the Parisian hospitals, and was highly eulogized by the leading surgeons of Paris. From this point the fame of etherization spread rapidly through Europe. While these events were in progress, the practice was slowly adopted in the country of its birth; several weeks elapsed after the publication of Dr. Bigelow's paper before the subject was noticed by the medical press of the United States, and then it was in tones of doubt and incredulity, and it was not for several months that the practice became at all popular south of Boston. The first operation performed under the influence of ether, in the New York Hospital, was in February 1847. At the coming together of the last meeting of the National Medical Association in Philadelphia, but few of the members had any practical experience of the effects of this novel remedy.

This indifference to the discovery was probably owing to several causes. One of the most prominent of which was the taint of charlatanism which attached itself to its early history, and which created a prejudice against it, in some minds so strong as to prevent them from giving to the subject a full investigation. This feeling against secret and patented medicines happily prevails in the medical profession to a great extent, it is deep-rooted and sincere, and is based upon the highest considerations of public utility; if, in this instance, it was carried too far, the motive was, at least, just and honourable; and the fault lies more with the discoverers, who attempted to conceal the nature of this new agent under the name of "compound letheon," than with the profession. Another reason why etherization was slowly adopted, was the in-

stinctive fear of an agent which produced such peculiar and apparently alarming effects, which possessed the minds of the profession, and which prevented many prudent practitioners from pushing the practice to a point at which its full effects were attained. This caution gave rise to many apparent failures, and discouraged experimenters from further trials.

The favourable reports which were continually received from our brethren in Boston and its vicinity, and from the other side of the Atlantic, were, however, not without their effect; and within the past year, the inhalation of ether has been extensively used throughout the United States. It is resorted to in most of the large hospitals of the country, and at the public clinical dispensaries of the schools, as a preparatory measure before all important operations, as well as in the private practice of many physicians and surgeons. The medical press of the country, although not unanimous in its favour, (so far at least as its general application is concerned,) teems with cases and results in which ether has been safely employed, under a great variety of circumstances.

In the latter part of the past year a new and more powerful anæsthetic agent was announced under the name of chloroform, an article which is but another variety of ether. This substance, though previously known both in this country and in France, was first used for the purpose of annulling pain in the human subject, by J. Y. Simpson, M. D., the eminent Professor of Midwifery in the University College of Edinburgh, and the first accoucheur who ventured to employ ether as a means of destroying the pains of parturition.

Professor Simpson's paper on the "Super-induction of anæsthesia in natural and morbid parturition; with cases illustrative of the use and effects of chloroform in obstetric practice," was read before the Medico-Chirurgical Society of Edinburgh, on the 1st of December, 1847, and reached this country in the early part of this year. It created a strong impression favourable to the new agent proposed by Dr. Simpson, and induced many practitioners at once to adopt it as a substitute for ether. The advantages claimed for chloroform over ether by its advocates, are its more rapid and intense action; without the vascular, muscular and intellectual excitement, which usually precedes the full impression of ether. The several stages of etherization are blended, as it were into one, the full impression of chloroform being induced in from 30 to 40 seconds, while an average period of four minutes may be considered as necessary to produce a like effect from ether. The quantity required is

also much smaller, from thirty drops to a drachm being generally sufficient—and ʒi of chloroform being equal in strength to ʒiv of ether.

The odour and taste of chloroform are also said to be more agreeable, and the bronchial irritation produced by inhalation less than with ether.

These and other supposed advantages are claimed for chloroform, and have been considered sufficient by many surgeons to give it the precedence, as an anæsthetic over its predecessor. How far this confidence may be deserved, future experience must determine. We know of several American surgeons who, after repeated trials with chloroform, have returned to the ether with renewed confidence in its superior safety and its equal efficacy. We shall quote the sentiments of these gentlemen in another part of this report, hoping that the observations of another year will determine the relative merits of these two articles, or that others may be discovered of still greater value.

Having thus endeavoured to present a brief sketch of the history of the introduction of ether and chloroform into surgical practice, your committee will proceed, in the same brief manner, to state some of the more prominent phenomena which mark the action of these agents upon the system. For a more full exposition of this part of the subject, they must refer to the several able treatises upon the physiological action of anæsthetic agents, which have recently appeared; and to the very interesting paper of Dr. Bigelow, which accompanies this report. Their object is only to notice some of the effects of these agents, as they are influenced by idiosyncrasy or temperament, as these have direct reference to the question of their applicability to surgical practice.

Although the general effects produced by the inhalation of ether are similar, yet peculiarity of temperament, and particular states of the system, have an important influence in modifying the phenomena which manifest themselves. In this respect these agents present a striking analogy to anodynes and stimulants generally.

While in most individuals, inhalation will produce calmness, repose and sound sleep, placing the patient in a favourable condition for operative procedures; in others, the same article administered in the same way, will produce high nervous excitement, great restlessness, and even convulsions, rendering it necessary to postpone the projected operation. Though the general effect is to destroy pain, instances occasionally happen where it is impossible to produce this

result, either by ether or chloroform, in justifiable doses; while there are other cases in which a very small quantity of either of these agents will produce a degree of unconsciousness not to be attained at all in the cases referred to. In some instances pain will be annulled by ether, while the intellectual faculties, and even the sense of touch, will be preserved—the patient is aware of what is passing, can express his wishes, and can feel the movements of the surgeon, and yet the sense of pain is obliterated—while in others the full impression of the article carried to the point of entire unconsciousness, is necessary to destroy the pain. Vomiting occurs as an accompaniment of etherization in a considerable number of cases, while in others it is absent. The condition of the circulation varies also; generally in the earlier stages of the process the circulation is quickened, the pulse becoming slower as the impression of the ether deepens—while in other cases it is slower from the first, or continues rapid through the whole process. When etherization has been carried to its full extent, the phenomena are, perhaps, more uniform. At this point the muscles become relaxed, the breathing is deep, slow, and stertorous; the eyes are turned up, and the countenance is devoid of expression, as in sound sleep. Sometimes the features are so relaxed, as to exhibit the peculiar expression of idiocy or drunkenness. In this stage, according to the recent observations of Dr. Snow, of the University College Hospital of London, (whose essay on the effects of ether inhalation contains much valuable information,) the patient always remains perfectly passive under every kind of operation; and as the muscles are so perfectly relaxed, this is the proper time for the reduction of dislocations, &c. This condition would appear to those unaccustomed to it, as alarming, but, according to this author and others who have practiced etherization extensively, it is unattended with danger, and passes off in a few minutes after the discontinuance of the inhalation.

The causes of these varied effects are not well understood, and may furnish an objection to the general employment of these agents, by rendering their administration in some instances improper, or even dangerous. And it is only by the future observations of physicians of calm judgment and of enlightened experience, that we are to look for rules which shall regulate their employment, and shall indicate the class of cases to which they are inapplicable.

As it relates to the safety of the practice of etherization; your committee have before remarked that a difference of opinion still exists.

It is nevertheless true, that ether and chloroform have been largely employed in the hospitals of this country and of Europe, and in other situations where surgery is practised upon an extensive scale, and that many thousands of persons have been subjected to their influence without apparent injury. In the St. Bartholomew's Hospital alone, we are informed by a recent letter from Mr. Lawrence to Dr. John C. Warren, of Boston, that they have been used between two and three thousands times without injury or accident; while the statistics of several large institutions where etherization has been extensively practiced, from the period of its first introduction, would seem to indicate at least as favourable a termination of the large operations involving life, as at any previous period. In the late paper of Professor Simpson, before referred to, it is stated that, "out of above 300 cases of the larger amputations performed during the current year, upon patients in an etherized or anæsthetic state, and which I have collected from different hospitals in Great Britain, Ireland and France, a smaller proportion died than formerly used to perish in the same hospitals, under the same operations without etherization." The statistics upon which this assertion is founded, so far as it relates to amputation of the thigh, (one of the most severe of the large operations,) will be found in the paper of Dr. Simpson, pp. 14 and 15. (*American edition.*)

A list of all the operations performed in the hospitals of Paris upon etherized patients up to the 1st of March, 1847, was collected by Dr. Yandell, of Kentucky, at that time residing there; and published in the *Western Journal of Medicine and Surgery*, at Louisville, in June of the same year, which go to confirm the assertion of Professor Simpson in reference to this point. M. Burguieres, a French writer, made a similar investigation, and has published a table of 211 operations performed in the French hospitals, which would also show a diminished mortality, in the classes of operations where the anæsthetic state was induced. This table will be found in *Ranking's Abstract* for 1847.

The reports of many eminent surgeons, who have used these agents extensively, are equally favourable, and some of these gentlemen believe that not only do they possess the power of preventing pain, but of increasing the chances of life after large operations.

With a view of collecting the results of operations performed upon persons in an anæsthetic state in the hospitals of this country within the past year, your committee addressed letters to gentlemen connected with these institutions in several of the larger cities

of the Union, where they believed ether had been employed to the greatest extent. They have received tables from the Massachusetts General Hospital, from the New York Hospital, and from the public clinics of the University of Pennsylvania and Jefferson Medical College, Philadelphia, which are herewith presented. (See *Appendix C.—2., C.—3., C.—4. and C.—5.*)

Your committee are aware that etherization has been practiced in the clinical dispensaries and hospitals of other cities of the Union, and that it has been used extensively in the private practice of many American surgeons; but the period allotted to the preparation of this report, and the desire not to extend it beyond reasonable limits, have prevented the collection of all the facts which might have been derived from these sources.

Before introducing the tables referred to, your committee will, however, communicate some valuable information, which is contained in the Medical Journals of the country; or, which has been communicated to them by letter, in which the experience of several American surgeons, not connected with the institutions referred to, is detailed.

Dr. Paul F. Eve, of the Medical College of Georgia, reports 12 cases of important surgical operations performed by him upon patients under the influence of ether and chloroform in the months of January, February and March 1848; one case of amputation at the shoulder-joint, and one of lithotomy are included in this number. Complete insensibility was induced in all the cases except two. Those in which ether was used, required more time to produce the effect, but it was equally complete. The chloroform acted promptly and efficiently in all the cases but one. Dr. Eve is a warm advocate for etherization in surgery, and prefers chloroform to ether.*

In the city of Louisville, the seat of a large and thriving medical school, ether and chloroform have been extensively used during the past winter, and we learn from the *Western Journal of Medicine and Surgery*, that Dr. Gross, the Professor of Surgery in the school there, has frequently employed these agents in important operations with gratifying results.

In Chicago, Illinois, the location of the Rush Medical College, etherization has been recently employed by Dr. Brainard, the Professor of Surgery, with happy effects, in several surgical operations.

* See *Southern Medical and Surg. Journ.*, March and April.

In Cincinnati, Dr. Mussey, Professor of Surgery in the Medical College of that city, reports a series of sixteen surgical operations, in which anæsthesia was induced by him, in a paper in the *Boston Medical and Surgical Journal*, of April 15th, 1848. Chloroform was used in all these cases, without a single unpleasant symptom. A letter from Dr. Mussey containing some additional facts upon this subject, has also been received by the committee, which they present with this report. (See *Appendix C.*—5.)

Dr. Charles Bell Gibson, Professor of Surgery in the Medical College of Richmond, Va., and a member of this committee, reports five cases, in three of which chloroform was used, and in two, sulphuric ether. One of amputation of the thigh, for disease of the knee-joint, in which the effect of ether was perfect, and the patient recovered without a bad symptom—and another for the removal of a large malignant tumour from the neck, the operation lasting twenty-five minutes, and the patient sixty years of age. In this case the effect was less decided. In the three cases in which chloroform was used, the anæsthetic influence was not fully induced, and in one a degree of excitement took place, amounting to frenzy, which delayed the operation.

Dr. A. L. Pierson, of Salem, Mass., also a member of the committee, reports sixteen cases of operations performed under the influence of ether or chloroform, (besides several amputations of fingers,) since November, 1846, without the slightest permanent bad effects in any case. One amputation of a leg, and another of the arm, with two cases of strangulated hernia, are included in this number. In twelve operations ether was used, and chloroform in four.

In regard to the relative merits of ether and chloroform as anæsthetic agents, the profession is divided in sentiment. Many surgeons prefer the latter agent as more prompt, energetic and controllable; while others, who have had considerable experience with both articles, prefer the former as more safe, and equally effectual. As this question is one of great interest at the present time, your committee will quote the recent observations of several gentlemen on this point.

Dr. John Watson, of New York, one of the Surgeons of the Hospital, and a member of this committee, in a letter, dated April 8th, 1848, states:—"It will be perceived, by referring to the accompanying tables, that at the hospital we have been in the habit of using chloroform to the exclusion of ether, ever since the former

was brought to the notice of the profession in this city, but for reasons above stated (the increased risk of the chloroform, &c.), I am disposed to return to the ether, and since resuming duty on the 1st of the present month I have laid the chloroform aside. My colleague, Dr. Buck, is also disposed to coincide with me in this. We have as yet become aware of no decidedly fatal case from ether as we have from chloroform, or any, in which its ill effects have been so serious as to lead to its total condemnation, but would not, however, use it for trifling operations."

Dr. Geo. Hayward, of Boston, in a letter dated April 10th, after stating that he had used ether in hospital and private practice since its first introduction, "without any bad effects in a single case," remarks: "I have also used chloroform to some extent, and it has answered the purpose in every case without causing any alarming or troublesome symptoms. At the same time, I confess I am somewhat timid about it, from the unfavourable reports in relation to it from various quarters." Dr. Hayward further states, in this communication, that within the last few weeks the Surgeons of the Mass. General Hospital have been using pure chloric ether, and thus far it has succeeded perfectly well. It has the advantage over the sulphuric that it is entirely free from unpleasant odour.

Dr. Horner, of Philadelphia, remarks on this subject, in a letter dated April 9th, 1848:—"The use of ether and chloroform inhalation has become so extensive that anything said now can scarcely affect public opinion. The first I have used very freely since May last, and especially during the last six months, and am happy to say that no accident has occurred with it that would impair materially its fame. I believe it to be one of the admirable discoveries of modern science in its application to medicine.

"Chloroform strikes me as being more uncertain in its action, and subjecting the patient to high cerebral excitement, and accumulation of blood in the brain. From some few limited observations I have come to the conclusion, that however innocuous these articles may be after puberty, both care and judgment should be scrupulously exercised in the anterior periods of life."

Dr. Mutter, of Philadelphia, remarks in a note accompanying the tables, from the Jefferson Medical College—"I have witnessed in my own practice, and that of others, at least two hundred experiments, in severe operations with ether and chloroform, and up to the present moment no accident or serious mishap has occurred. Indeed, with the ether, I have witnessed nothing approaching to

inconvenience, much less danger. The chloroform, however, has in two or three cases produced symptoms, which, for a short time, occasioned some alarm, but in the end no evil consequences ensued. In consequence of these examples of what seemed to be dangerous effects, I have, for some months past, confined myself ordinarily to the use of ether."

Etherization has also been found a convenient means of enabling the surgeon to execute painful explorations of the bladder, and other sensitive parts. On this point, the committee refer again to the interesting letter of Dr. Warren, before quoted. Dr. W. states: "The operation of lithotrity has been prodigiously improved by the practice of etherization. The patient, instead of disturbing the search of the operator by his movements, experiencing no suffering, lies perfectly tranquil. On this day, March 8th, I attended with Dr. J. Mason Warren, a patient suspected of calculus. He had been examined a number of times, however, without discovering any stone. In fact, the excessive agitation of his body rendered it impossible to sound him thoroughly. We etherized him pleasantly by chloric ether, and, though his consciousness was not lost, he was sounded without pain or movement. A very hard stone was discovered and struck half a dozen times by each of us. Before the instrument was withdrawn, etherization passed off, and he began to cry out. The whole process required fifteen minutes, seven before the instrument was introduced. We have had opportunity of employing etherization in one case only of lithotomy. It answered perfectly, and must, I think, prove of great utility in all cases of this operation."

DANGERS OF ETHERIZATION.—Although the anæsthetic state, so far as the results have been recorded, does not appear to be generally attended with danger, yet it must be admitted that agents capable of rapidly annihilating sensation, volition, and intellect, and of producing sudden changes in the circulation and respiration, and even of altering the constitution of the blood itself, must be liable to abuse and danger in their use. In this respect they are like other potent articles of the materia medica, which have the power of greatly and speedily modifying the functions of the economy.

There may also be idiosyncrasies of constitution, peculiarly obnoxious to the influence of these agents, and diseased states of the

system, in which even their cautious use may prove dangerous or even fatal.

Many cases of apparently alarming symptoms from the use of both ether and chloroform have been reported, amongst which may be mentioned convulsions more or less severe and protracted, prolonged stupor, high cerebral excitement, alarming and long continued depression of the vital powers, and asphyxia. As secondary effects, bronchitis, pneumonia, and inflammation of the brain, have, in a few cases, been attributed to the inhalation of these vapours; while some have supposed that they produced deleterious effects upon the blood, which interfered with the reparative processes of nature, after wounds, accidents, &c.

As it relates to the relative safety of the two articles, ether and chloroform, there would seem to be a decided preponderance of testimony favourable to the former.

The action of ether is slower and less intense, and the anæsthetic state is generally preceded by a greater degree of excitement than is observed with chloroform, but this fact would seem to render the ether more controllable.

It is the sudden and powerful impression produced upon the vital energies, which constitutes one of the chief dangers of anæsthetic agents, and hence, *à priori*, the rapidity and intense energy with which chloroform acts would seem to render it less safe than ether.

The dangers arising from asphyxia from exclusion of atmospheric air in the process of inhaling, by the present improved methods of inhalation are, for the most part, guarded against. During the brief period in which chloroform has been on trial (less than six months) the number of fatal results, fairly attributable to its use, exceeds those of ether, (at least so far as the reports from this country testify,) while ill effects arising from it have been reported from various quarters, and, as before remarked, have determined several of the most eminent surgeons of the country in returning to the article originally employed.

The number of well attested fatal cases resulting from the inhalation of ether is small, and in this country we know of no case having been published.

The committee having been informed that a fatal case had recently occurred in the practice of Dr. J. W. B. McClellan, of Philadelphia, after an operation for lithotomy performed upon a child, while under the influence of ether, addressed a letter of inquiry to Dr. McClellan on the subject, to which the following reply has been

received. As the case is here fairly reported, and as the letter contains other important information, they have deemed it proper to incorporate it into this report.

MY DEAR DR.

In compliance with your request of this morning, I enclose you the result of my experience with sulphuric ether and chloroform.

I have used the ether in a number of surgical operations, twice for lithotomy, many times for the removal of scirrhus mammæ and other tumours—for strictures of the urethra—both in dilatation and cutting to the bladder, besides a great variety of cases of lesser importance, and altogether must have administered it on upwards of fifty occasions. In all these instances I have never seen any bad effects following its employment excepting in *two cases*—one of them was a case of lithotomy, and in the other, where it was given for the removal of a tumour in the femoral region, it produced the effects of the nitrous oxide gas in so violent a degree, that I was compelled to postpone the operation, and the patient was seriously ill for several weeks. In the case of lithotomy, regarding which you have desired information, the child died on the morning of the third day after the operation, apparently from the effects of the sulphuric ether.

I say *apparently*, as the congestion of the lungs, of which the patient died, might have happened from other causes, and it has been questioned by some, who saw the case with me, whether it was not brought on by exposure to cold after the operation, to which the child was somewhat carelessly subjected. There can be no doubt that congestion of the lungs, ending in effusion, was the cause of death. The patient, whilst in this state, was carefully examined throughout its progress by Drs. Clymer, Keating, Mayer, and others, who all concur in opinion. The calculus was of so large and unusual a size, and required necessarily so long a time to extricate it from the bladder, and the child so young (18 months), that even without the use of the ether he might have sank from the shock of the operation. There was, however, no evidence of such a shock to be perceived; in all other respects, as before stated, everything did as well as could have been desired. The urine flowed freely from the incision, which looked sound and healthy.

If the fatal result was owing to the ether, I am convinced that it was from its too long continuance and too powerful administration; indeed I have never witnessed a patient more completely under its influence, so unconscious and lifeless. The child was under its influence for twenty-five minutes, and was roused with great difficulty by the application of cold water to the head and breast. The ether was administered by means of Dr. Roper's inhaler. Most unfortunately the opposition of the parents and friends prevented our obtaining a post-mortem examination. These, my dear Dr., are the facts of the case. My own opinion, as well as that of the gentleman before mentioned, is that the congestion of the lungs was pro-

duced by the long-continued irritation of the ether upon the delicate structure of the lungs. I have stated all the circumstances which might tend to modify that conclusion.

But viewed in any aspect, I cannot see how this or any unfavourable case reported, can militate against the general use of ether. Like all powerful and efficient remedial agents, there must be *some cases* to which it is not suited, and were we to reject this account, we might, with equal propriety, dismiss from the materia medica many of our most useful and indispensable agents.

I am convinced that its use *has saved many lives*, and enabled many patients to safely bear severe operations, which otherwise they could not have done. In the other case of lithotomy, which I performed under its influence, I am satisfied this was the result. In that instance, a boy of 9 years old, the patient was in such a wretched condition that I do not think he could have borne the slightest shock to the system. And with the assistance of the ether there was none whatever perceptible, though I was obliged to crush the stone in the bladder, as it was too large to come through the bones of the pelvis, and the operation, owing to the unexpected difficulty, and my not having the requisite instruments with me, was prolonged, and the patient under its influence thirty-five minutes. The fragments of the stone weighed, when I reached home, (the operation was performed in Luzerne Co.,) eleven drachms (troy), and several drachms more must have been lost.

The boy recovered without the slightest bad symptom; the wound was entirely healed in four weeks and one day, and he is now running about well and sound.

This case I have mentioned in contrast with the unfortunate one before spoken of.

The ether, then, I am convinced from my own experience, as well as that of the great body of the profession, is one of the greatest blessings of our science, and each day the more confirms my opinion.

The chloroform has, in one case, in my hands, caused dangerous convulsions, and, after a fair trial, I give my preference altogether to the ether.

The best method, and the safest one, I think, of administering the ether, is as done at Boston with the sponge.

These remarks I have hastily thrown together on the spur of the moment, in accordance with your request.

Truly yours,

J. W. B. M'CLELLAN, M.D.

DR. ISAAC PARRISH.

PHILADELPHIA, April 29th, 1848.

Fatal effects following the use of chloroform have been more frequent than from ether. Besides several cases which have occurred abroad, and have been published in the foreign journals, two well authenticated instances of death, under the immediate influence of

this agent, have taken place in this country, one in New York, and the other in Cincinnati.

As every fact connected with the toxicological effect of these agents is important, we shall briefly record the history of these cases as derived from the published statements of them which have appeared. The case in New York has not been reported in the medical journals; but the following sketch of the facts, which appeared in evidence before the Coroner's jury, is sufficiently full for our purpose, and is believed to be substantially correct:—

“Coroner Walters yesterday held an inquest, at the house of John Howard, 50 Cherry Street, on the body of Patrick Murphy, a native of Ireland, aged 28 years. From the testimony adduced, it appears that the deceased was married about four months since, and resided at Mamaroneck. For some months past the deceased had been afflicted with fistula; otherwise he had apparently good health. About four weeks since, the deceased came to this city to have an operation performed. Last Monday four weeks ago, the deceased attended the clinic of the College of Physicians and Surgeons, and was operated upon by Dr. Parker; previous to the operation, the deceased inhaled chloroform, under the direction of Dr. Parker, until insensibility was produced. The operation was unattended with pain, and after the operation was over, deceased inquired whether the doctor had done. In a short time afterwards, he was able to walk home. Dr. Beers visited him the same day, and continued his visits daily. The health of deceased seemed to improve; his appetite was good, and, in every respect, appeared to be doing well. Drs. Beers and Otto Rotton informed the deceased, last week, that to make the cure effectual, it would be necessary to perform another operation, as one of the sinuses had not been opened. The deceased expressed a willingness to have the operation performed, if they would administer to him the chloroform. Yesterday morning, Drs. Beers and Rotton called upon the deceased, and, previous to performing the operation, dropped upon a sponge about thirty drops of chloroform, and caused the deceased to inhale it. The drug did not cause complete insensibility. The operation was performed in about a minute; the deceased showed signs of pain, by placing his hand on the part operated upon. In a moment, his pulse, which was full and natural, sank. Stimulants and frictions were applied—the temporal artery opened, no blood flowed—life was extinct. Dr. James R. Wood made a *post-mortem* examination of the body; the features of the deceased were calm, countenance pale, and the pupils of the eyes much dilated—the anterior aspect of the body natural—the posterior livid. On opening the head, the brain and membranes were natural and healthy—the lungs were found studded with tubercles—in the right lung was an abscess the size of a hen's egg, filled with pus—there was, also, an abscess in the left lung—the lower portions of the lungs were congested with blood—there were, also,

extensive adhesions of the pleura to the chest, showing that the deceased had at some remote time, had an attack of inflammatory disease of the chest. The heart was enlarged, pale and soft; the blood-vessels filled with a dark fluid blood, and two or three ounces of serum in the membrane covering the heart. The other viscera of the body were healthy, except the stomach—the mucous membrane of which was softened, and the veins turgid. Dr. Wood gave an opinion that there was sufficient disease of the lungs to cause death, but could not say that the administering of chloroform had hastened death—where abscesses exist in the lungs, any excitement might cause sudden death. Where disease of the brain, lungs, or heart exists, or where there is a predisposition to either of these diseases, it would be improper to administer chloroform. Disease of the lungs may exist without presenting symptoms to attract attention. The existence of fistula would go far to conceal the existence of disease of the lungs. The *post-mortem* examination was made in the presence of Dr. Rotton, Dr. Sayne, Dr. Beers, and Drs. Robson, Elliot and Witherell. Verdict of the jury, 'That Patrick Murphy came to his death by disease of the lungs. The jury are unable to say whether the inhalation of chloroform in this case, or the excitement of the operation was the immediate cause of death.' "

The case in Cincinnati is as follows:—A lady, in her 36th year, in the enjoyment of good health, and the mother of six children, repaired to the office of a dentist, for the purpose of having some roots of teeth extracted. Fifteen minutes after her arrival, and without any apparent alarm or excitement, she commenced inhaling chloroform. While inhaling, the face became pale. According to the testimony of the female attendants, the instruments were applied, and four roots of teeth extracted, at the expiration of two minutes. As the last root came out, the patient's head turned to one side, and the arms became slightly rigid, the body was drawn somewhat backward, with a tendency to slide from the operating chair. The pulse and respiration are said to have ceased about the same time. The face now became livid, as also did the finger nails, the lower jaw dropped, and the tongue projected a little at one corner of the mouth, and the arms were perfectly relaxed. Efforts were made to resuscitate the patient—ammonia was applied to the nostrils, cold water dashed in the face, mustard, brandy, &c., applied. The patient was now removed from the operating chair, and laid on a sofa, but the witnesses thought that she did not breathe, nor exhibit any sign of life, after being placed in the recumbent posture.

The dentists stated—that they administered the chloroform vapour from Morton's inhaler; it contained a sponge (perhaps one-third filling the glass globe of 4½ inches diameter) saturated with the

liquid; to this twenty-five drops more were added, when the patient began inhaling. Breathing at first slow; inhaled 12 or 15 times, occupying from a minute to seventy-five seconds. "One of the dentists thinks she remained about 10 minutes in the operating chair, and that life was not extinct until the end of that time; the other estimates the time at 5 minutes."

One says he does not know whether she breathed after being laid on the sofa or not, the other thinks she did not. The chloroform used was the same as previously employed in numerous cases, without unpleasant results.

Medical aid was not obtained until after the patient was laid upon the sofa. Dr. A. H. Baker, who was the first physician there, did not reach the house until probably 30 minutes after respiration had ceased. Even at this period, vigorous measures were instituted for resuscitation—under the direction of Drs. Locke, Mussey and Lawson, but without effect. A post-mortem examination was made 26 hours after death, by Dr. Lawson, in the presence of Drs. Mussey, Baker and Mulford. A minute account of which is detailed, with the history of the case, in the *Western Lancet* for March, 1848. We need only state here some of the more prominent post-mortem appearances. The lungs were considerably but not intensely injected, crepitated freely at all points, no extravasation. Lining membrane of the bronchiæ slightly congested, apparently the result of recent catarrh. Pleura at all points highly injected; six drachms of bloody serum in the right, and two ounces in the left chest.

Pericardium contained six drachms of bloody serum, heart flaccid, and all its cavities entirely empty; inner surface of both ventricles and auricles deeply stained. Aorta and pulmonary artery empty; no blood in the cava within the chest, and a very small quantity in the part which lies within the abdomen.

Nothing remarkable in the brain, or cavity of the abdomen. The blood was as fluid as water in every part of the body; not a coagulum was seen in any vessel. Examined with a microscope, the globules appeared altered somewhat in form, some were irregular in shape, and they seemed generally distended and more globular than is normal; they were also somewhat fragmentary, a part apparently having been ruptured; their number seemed somewhat diminished. The colour in every part of the system was that of dark venous blood. Some judicious remarks on the above case will be found in the paper of Dr. Mussey, in the *Boston Medical and Surgical*

Journal, before referred to, and in the April number of the *Western Lancet*, by Dr. Lawson.

Your Committee have endeavoured, in the preceding sketch of the history of anæsthetic agents, to bring before the Association the prominent facts which have transpired; and to embody the results of the experience of the surgeons of the country who were known to them to have practiced etherization extensively.

They have, as far as practicable, avoided the discussion of theoretical questions, or the expression of positive opinions relative to the merits of this discovery. On this latter point, their views are not accordant; while a portion of the committee believe that the facts now before the profession have fully established etherization as a powerful, highly useful, and practicable means of annulling pain, if judiciously employed; yet another portion do not feel prepared, from the evidence presented, to recommend the use of these agents.

Your committee have had their attention directed to the important subject of the curability of cancer, and to the results of operations upon this class of tumours.

They have received interesting letters from a number of gentlemen experienced in this matter, but owing to the press of other business, they have not been able to place this information before the Association in a matured form. And they, therefore, place these letters in possession of the Association, for the benefit of their successors.

All which is respectfully submitted.

GEO. W. NORRIS, *Philadelphia,*

ISAAC PARRISH, *do.*

JOHN WATSON, *New York,*

A. L. PEIRSON, *Salem, Mass.,*

HUGH H. McGUIRE, *Winchester, Va.*

List of patients who have inhaled ether or chloroform for surgical operations in the Massachusetts General Hospital, up to April 1st, 1848. Furnished by H. J. BIGELOW, M.D.

N. B.—Those marked * inhaled chloroform; the rest ether.

Date.	Sex.	Age.	Operation.	Disease.	Discharge.
1846. Oct. 16	Male	20	Ligature of	Erectile tumour	December 7, well.
" 17	Out patient		Removal of	Fatty tumour	Well.
Nov. 6	Female	19	Amputation of thigh	Dis. of knee	December 22, well.
" "	do	53	Remo. of lower jaw	Carcinoma	November 30, well.
Dec. 5	do	55	Amp. of breast	do do	February 12, well.
" 9	Male	30	Reduction of	Dislocated humerus	December 10, well.
" 12	Female	58	Removal of	Carcinoma (up. jaw)	December 24, well.
" 13	Male	47	Plastic operat. after	Slough. of scrotum	December 31, well.
" 19	do	21	Removal of	Deformity in lip	December 24, well.
" 22	Female	58	Reduction of	Dislocated humerus	December 29, well.
1847. Jan. 2	Male	27	Operation for	Fistula in ano	January 14, well.
" "	Female	42	Amputation of leg	Dis. of ankle	February 23, well.
" "	Male	24	Amp. of fingers	Accidental injury	Jan. 3, much reliev'd.
" 9	Female	57	Amputation of leg	Necrosis	April 29, well.
" 19	do	27	Removal of	Malign. dis. of labium	Feb. 8, much reliev'd.
" 23	Male	51	do do	Fatty tumour	February 8, well.
Feb. 6	do	42	do do	Cancer of lip	February 9, well.
" "	do	23	Operation for	Traumat. aneurism	March 4, well.
" "	do	27	Removal of	Vascular tumour	February 20, well.
" 20	do	27	Amputation of leg	R.R. accident	July 31, well.
Mar. 6	do	25	Removal of	Exostosis	April 15, well.
" "	do	50	Actual cautery	Dis. of spine	Nov. 1, not relieved.
" 13	do	32	Removal of	Tumour on face	March 19, well.
" "	(out patient)				
" "	Female	24	do do	Encysted tumour	Well.
" 14	do	40	Operation for	Vesico vag. fistula	Vide infra.
" 24	Male	39	Amputation of leg	R.R. accident	March 29, dead.
Apr. 3	do	50	Actual cautery	Dis. of spine	Vide supra.
" "	Female	25	do do	do do	June 24, not relieved.
" "	(out patient)				
" "	Male	34	Removal of	Tumour on face	Uncertain.
" "	Female	19	Amputation of leg	Dis. of tarsus	May 13, well.
" 7	Male	30	Amputation of thigh	R.R. accident	May 9, dead.
" 14	Female	40	Operation for	Vesico vag. fistula	May 3, well.
" "	(out patient)				
" 17	Female	32	Reduction of	Dislocated radius	Well.
" "	do	35	Removal of	Colloid tumour	May 10, well.
" 24	Male	21	Operation for	Necrosis of tibia	June 15, much rel'd.
" "	(out patient)				
" "	Female	20	Removal of	Polypus nasi	Well.
" 29	do	38	do do	Tumour on knee	September 24, well.
May 1	do	23	do do	Scirrhus parotid	June 18, well.
" "	do	39	do do	Epulis	May 3, well.
" 8	do	39	Amp. of breast	Carcinoma	June 9, well.
" "	do	23	Eulsion of nail	Onychia	Vide infra.
" "	(out patient)				
" "	Male		Breaking down	Stiff elbow	Uncertain.
" 13	Female	23	Amputation of toe	Onychia	May 29, well.
" 15	do	34	Amp. of breast	Carcinoma	June 15, much rel'd.
" "	Male	67	Amp. of penis	do do	June 9, well.
" "	do	49	Removal of	Cancer of lip	May 17, well.
" 26	Female	53	do do	Tumour on face	July 19, well.

Date.	Sex.	Age.	Operation.	Disease.	Discharged.
1847, May 26	Male	20	Amp. of finger	Whitlow	June 25, well.
" "	Female	25	Actual cautery	Dis. of spine	Vide supra.
" "	Male	22	Laying open	Sinus in thigh	July 19, well.
" 29	do	49	Amp. of breast	Carcinoma	July 28, well.
" "	do	29	Introd. of seton	Ununited fracture	Oct. 31, much rel'vd.
June 5	do	60	Amputation of thigh	Necrosis of tibia	July 4, dead.
" "	do	23	Division of cicatrix	Contracted fingers	August 7, relieved.
" 8	do	22	Amputation of arm	Injury by mach'y.	September 11, well.
" "	Female	35	Amp. of breast	Carcinoma	June 28, well.
" 11	Male	17	Removal of	Glass in thigh	June 19, well.
" 13	do	31	Punct. of bladder	Retention of urine	August 27, well.
" "	(out patient)				
" 19	Male	33	Removal of	Fatty tumour	Well.
" 24	do	45	Amputation of arm	R.R. accident	June 24, dead.
" 25	do	59	Ligature of	Hæmorrhoids	July 8, well.
July 3	Female	19	Removal of	Epulis	August 18, well.
" "	Male	19	Operation for	Dis. of fibula	Vide infra.
" 14	do	39	Amputation of thigh	Dis. of knee	August 9, well.
" 19	do	23	Division of cicatrix	Contracted fingers	Vide supra.
" 21	Female	19	3d operation for	Epulis	Vide supra.
" 30	Male	45	Breaking down	Stiff knee	Dec. 2, much rel'vd.
Aug. 3	do	29	Insertion of pegs	Ununited fracture	Vide supra.
" 7	Female	30	Operation for	Fistula in ano	October 25, well.
" "	Male	47	do do	Strangulated hernia	August 21, dead.
" 14	Female	39	Breaking down	Stiff shoulder	September 3, well.
" "	Male	3 m.	Extirpation of testis	Encephaloid dis.	August 17, well.
" 18	Female	30	Amp. of breast	Carcinoma	September 4, well.
" 21	do	25	do do	do do	
" "	do	10	Dissecting out	Cicatrix of burn	Sept. 23, relieved.
" 28	Male	43	Ligature of	Hæmorrhoids	September 10, well.
" "	do	57	Removal of	Cancer of lip	September 14, well.
Sept. 2	do	40	Amputation of leg	R.R. accident	September 3, dead.
" 4	do	25	Amputation of thigh	Fungoid tumour	October 25, well.
" "	Female	36	Removal of up. jaw	Carcinoma	Sept. 14, relieved.
" 8	Male	28	Trephining os calcis	Caries	November 2, well.
" 18	do	37	Removal of	Polypus nasi	September 20, well.
" "	do	60	Amputation of arm	Malignant ulcer	December 15, well.
" 25	do	42	Removal of	Fatty tumour	Sept. 28, much rel'd.
" "	do	25	Trephining tibia	Caries	Nov. 2, much rel'd.
" 27	do	25	Amputation of leg	R.R. accident	January 14, well.
" "	do	26	do do	do do	December 21, well.
Oct. 2	do	19	do do	Spina ventosa	March 2, well.
" "	do	63	Amputation of arm	Encephaloid dis.	Oct. 16, much rel'vd.
" "	Female	28	Amp. of breast	Carcinoma	October 19, well.
" 6	Male	32	Operation for	Fistula in ano	November 13, well.
" 9	Female	70	Amp. of breast	Carcinoma	November 5, well.
" "	do	4	Evisulsion of nails	Onychia	October 20, well.
" 11	Male	60	Operation for	Reducible hernia	Oct. 30, much rel'vd.
" 14	do	19	Amp. of finger	Caries	October 28, well.
" 16	Female	19	Operation for	Necrosis of tibia	January 14, well.
" "	do	20	Laying open	Sinus in breast	
" "	Male	42	Removal of	Fatty tumour	December 3, well.
" "	do	45	Amp. of breast	Carcinoma	November 8, well.
" 22	do	7	Division of	Cicatrix in mouth	November 9, well.
" 23	do	24	Reduction of	Dislocated ulna	November 5, well.
" "	(out patient)				
" "	Female	34 m.	Ligature of	Cutaneous nævus	Oct. 23, much rel'vd.
" 26	Male	72	Application caustic	Malignant ulcer	Dec. 19, not relieved.
" "	do	33	do do	Varicose veins	Nov. 19, relieved.
" 27	do	38	Removal of	Cancer of lip	Nov. 5, much rel'vd.
" "	Female	17	do do	Encephal. tumour	February 2, well.
" 29	Male	45	Incis. of abdomen	Infiltration of urine	November 5, dead.
" 30	Female	22	Amputation of toe	Caries	February 21, well.
" "	(out patient)				
" "	Male	50	Actual cautery	Dis. of hand	
" "	do	25	Removal of	Deformity of lip	December 6, well.
Nov. 6	do	34	Amputation of thigh	Disease of knee	November 12, dead.
" "	do	12	Operation for	Necrosis of femur	February 12, well.
" "	do	72	Removal of	Cancer of lip	November 22, well.
" "	(out patient)				
" "	Male	64	Excision of	Tumour on nose	Nov. 20, much rel'd.
" 13	Female	18	Dissecting out	Cicatrix on face	November 26, well.
" "	Male	72	Actual cautery	Malignant ulcer	Vide supra.
" 17	Female	30	Amp. of fingers	Compound fracture	January 31, well.
" 20	do	48	Ligature of	Hæmorrhoids	December 15, well.
" "	Female	56	Amp. of breast	Carcinoma	January 7, dead.
Dec. 4	Male	72	Actual cautery	Malignant ulcer	Vide supra.
" "	do	46	Plast. operat. after	Slough. of scrotum	February 17, well.
" "	do	50	Operation on	Tumour in neck	Jan. 22, much rel'vd.
" "	Female	35	Amp. of breast	Carcinoma	December 25, well.

Date.	Sex.	Age.	Operation.	Disease.	Discharged.
1847. Dec. 11	Male	14	Operation for	Necrosis of tibia	
" "	(out patient)				
" "	Male	50	Actual cautery	Dis. of hand	Vide supra.
" "	do	4	Operation for	Hare-lip	December 15, well.
" "	do	25	2d amp. of leg after	Sloughing of flap	Vide supra.
" 12	do	3	Operation for	Reducible hernia	Dec. 30, much rel'd.
" 18	do	27	Removal of	Encephal. testicle	January 15, dead.
" "	do	73	do do	Cancer of lip	December 29, well.
" 24	Female	29	do do	Tumour in labium	January 13, well.
" 29	Male	50	Actual cautery	Tumour in neck	Vide supra.
1848. Jan. 1	do	39	Operation for	Fistula in ano	January 21, well.
" "	*Female	16	Division of	Contracted tendon	February 2, well.
" 8	*Male	27	Removal of	Abdominal tumour	January 8, dead.
" 10	*do	23	Amputation of thigh	Gangrene	
" "	*Female	32	Reduction of	Dislocated humerus	January 19, well.
" 22	*Male	9	Operation for	Hare-lip	January 31, well.
" 23	*do	51	Reduction of	Strangulated hernia	January 24, well.
" "	Female	20	Insertion of seton	Sinus in breast	
" 29	*Male	54	Operation for	Cancer of lip	February 5, well.
Feb. 5	*do	22	Removal of	Preputial warts	March 2, well.
" 12	*do	29	Evision of	Inverted toe-nail	Mar. 25, much rel'd.
" "	*do	48	Removal of	Tumour in neck	March 1, well.
" 23	*Female	6	do do	Pin in throat	March 1, well.
" 26	*Male	30	do do	Scrofulous testicle	March 13, well.
Mar. 4	*do	31	Operation for	Fistula in ano	March 16, well.
" 11	do	18	Lithotrixy		
" "	do	22	Amputation of thigh	Dis. of knee	
" 12	do	30	Amp. of fingers	Injury by mach'ry.	
" 13	Female	6	Amputation of leg	R.R. accident	
" 22	Male	33	Reduction of	Dislocated hip	
" 25	Female	12	Operation for	Hare-lip	
" 31	Male	20	Amputation of thigh	R.R. accident	

RESULTS.

Well	95
Much relieved	17
Relieved	5
Not relieved	7
Dead	11
Uncertain	2
Still under treatment	17

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These operations include—

Amputations of thigh 9; of which 3 were cured, 3 died, and 3 remain under treatment
 " " leg 11; " 8 " 2 " 1 remains " "
 " " arm 4; " 2 " 1 " 1 was relieved.
 " " breast 12.

List of cases in which operations have been performed, while under the influence of ether and chloroform, in the First Surgical Division of the New York Hospital. Furnished by JOHN WATSON, M. D.

Date.	Sex.	Age.	Disease and operation.	Agent.	Result.
1847. Jan.	Female	11	Ectropion	Nitrous oxide gas	Pain diminished, patient excited and uncontrollable.
Feb. 13	Male	27	Amputation of thigh for chronic sinovitis	Ether	Partial insensibility, with excitement; result not stated.
" "	Male coloured	27	Caries of the knee joint, tubercles of the lungs; amputation	do	Produced excitement; death in 3 or 4 days from disease of lungs.
March	Male	26	Dislocation of femur into ischiatic notch; attempt at reduction	do	Complete insensibility—operation unsuccessful; no injury from ether.
Apr. 17	do	34	Severe gun-shot wound, compound fracture of arm and forearm; amputation at shoulder-joint	do	Not perfectly insensible, had confused unconsciousness. Died of tetanus on the 12th day after the operation.
May 11	Female	40	Scirrhus breast; removal	do	Failed in inducing insensibility; recovered.
July 24	Male	28	Amputation of leg, for compound luxation of tibia	do	Entire unconsciousness; recovery.
Oct. 25	do	25	Amputation of leg, for chronic disease of ankle-joint	do	Complete insensibility, slight convulsions, roseolous eruption of neck, which soon disappeared.
" 29	do	19	Dislocation of head of thigh bone, in the thyroid foramen; reduction	do	Complete insensibility and relaxation of voluntary muscles; reduction easily accomplished.
" 25	do	12	Laceration of foot and amputation	do	Complete insensibility; recovery.
Nov. 11	Female	19	Malignant tumour; extirpation	do	do do
" 9	do	55	Carcinoma of Breast; extirpation	do	do do
" 30	do	30	Congenital union of middle and ring fingers; division	do	do do
" 11	Male	35	Scirrhus testicle; extirpation	do	do do
1848. Feb. 18	Female	50	Scirrhus mamma; extirpation	Chloroform	do do
" 26	do	10	Autoplastic operation for cicatrix following burn	do	do do
" 15	do	20	Amputation of little finger	do	do do
Apr. 1	Male	19	Injury of hand; immediate amputation	Ether	Totally unconscious; recovery.
" 27	Female	16	Necrosis of the whole shaft of the tibia; extraction of dead bone	do	Complete insensibility during a protracted operation; doing well.

Total—19 cases.

In 15 Sulphuric ether was used.

In 3 Chloroform.

In 1 Nitrous oxide gas.

*Operations under the use of chloroform and ether, in the Second
Division of the New York Hospital.*

Date.	Sex.	Age.	Disease and operation.	Agent.	Result.
1847. July 7	Male	13	Gun-shot wound; partial amputation of the hand	Ether	Anæsthesia perfect, no pain: all cases prior to this had been imperfectly etherized; recovery.
" 24	do	38	Removal of tumour involving ulnar nerve	do	Complete insensibility to pain.
" 24	do	31	Removal of hemorrhoid	do	Complete insensibility; recovery.
" 17	a boy		Fracture of lower jaw; reduction	do	No pain.
Oct. 26	Male	27	Stricture; operation	do	No pain or ill effects from ether. Death Nov. 3.
No date noted	do	66	Compound fracture; amputation of thigh	do	No pain or ill effects; in hospital.
Nov. 19	do	50	Amputation of leg	do	Was apparently unconscious, but said afterwards that he suffered greatly; cured.
1848. Jan. 2	do	27	Extensive laceration and fracture; amputation of the thigh	do	No pain; recovery.
" 3	do	21	Necrosis; amputation of the finger	Chloroform	do do
" 4	do	19	Opening abscess of thigh	do	No pain; in hospital.
" 24	do	18	Diffuse suppuration and sloughing of arm; amputation	do	No pain, anæsthesia attended with vomiting; cured.
Feb. 8	do	19	Lacerated wound and fracture; amputation of the hand	do	No pain; cured.
" 11	do	30	Compound fracture and luxation of ankle joint; amputation	do	No pain; continues in hospital.
" 15	do	49	Gangrene after first amputation of feet	do	do do
" 19	do	38	Compound fracture of the thigh; amputation; secondary hemorrhage; tying of the external iliac and femoral arteries	do	No pain: in three operations no ill effects from chloroform. Died of secondary hemorrhage.
" 16	do	43	Compound fracture; amputation of ring finger	do	No pain; vomiting; cured.
Mar. 3	do	18	Paronychia; incision	do	No pain; cured.
" 3	do	19	Injury; amputation of thumb	do	No pain; vomiting; cured.

Total—18 cases.

In 11 Chloroform was used.

In 5 Ether.

In 2 Not stated.

Total in both Divisions, 37 cases.

It is added, that numerous cases of minor surgery occurred, in which one or the other of these agents was employed, and of which no record was kept, as most of the patients were not inmates of the hospital, and left immediately after being relieved. Amongst these, besides a number of cases of tooth drawing and opening of abscesses, three cases of dislocation of the humerus were satisfactorily reduced under the influence of chloroform; in one case the bone had been out for three weeks. A dislocation of the same bone of six weeks' duration, was also reduced with like success, under the use of ether, the extension being effected in this instance by means of Jarvis' apparatus.

Report of cases in which ether and chloroform were used in surgical operations at the Clinic of the University of Pennsylvania, in the Session of 1847-48. Furnished by H. H. SMITH, M. D.

Date.	Disease.	Article used.	Surgeon.
1847. October 20	Fissure of the anus; by caustic	Ether	Dr. Horner.
" 27	Amputation of leg	do	do
" 27	Fungus of eyeball; extirpation	do	Dr. Gibson.
" 27	Fissure of the anus	do	Dr. Horner.
November 10	Necrosis of the tibia	do	Dr. Gibson.
December 1	Scirrhus of mamma; extirpation	do	Dr. H. H. Smith.
" 15	Fistula in perineo	do	Dr. Horner.
" 15	Necrosis of femur	do	do
1848. January	Encysted tumour of scalp; excision	do	Dr. H. H. Smith.
"	Fistula in ano	do	Dr. Horner.
" 26	Fistula in perineo	Chloroform	do
February 9	Stricture of the Urethra	do	do
" 16	do do do	do	do

Total—13 cases.

Operations in which ether or chloroform was used, at the Clinic of the Jefferson Medical College. Furnished by T. D. MUTTER, M. D.

Date.	Sex.	Age.	Operation.	Disease.	Agent.	Result of the agent.	Result of the operation.
1847.							
July 19	Male	19	Resection	Conical stump	Eth.	Part. successful	Cured.
Sept. 15	do	30	Removal of	Fungous testis	do	Successful	do
" 22	Female	25	do do	Wens of scalp	do	do	do
Oct. 13	Male	38	Extirpation	Fungus of eyeball	do	do	do
" 20	do	14	Amp. of thigh	White swelling	do	Part. successful	do
" "	do	30	Removed	Tumour of eye	do	Successful	do
" 23	Female	30	do	Tumour of shoulder	do	Failed	do
" "	do	35	Excised	Scirrhus of mamma	do	Perfec. successful	do
" 27	do	46	Removed	Tumour of scalp	do	Part. successful	do
" "	Male	27	Operation for	Fistula in ano	do	Successful	do
" 30	do	40	Amp. of finger	R.R. accident	do	Part. successful	do
Nov. 3	do	6	Operation for	Deformity. Burn	do	Failed	do
" 7	do	49	Removal of	Tumour of neck	do	Perfec. successful	do
" 10	do	32	Operation for	Fistula in ano	do	Failed	do
" 13	Female	36	Removal of	Tumour of scalp	do	Part. successful	do
" "	Male	17	do do	Tumour of thigh	do	Failed	do
" 24	do	22	Extraction of	Cartilage from the knee-joint.	do	do	do
" 27	do	14	Removal of	Inverted toe-nail	do	Perfec. successful	do
Dec. 1	do	25	do do	Tumour of neck	do	Part. successful	do
" "	Female	20	do do	Tumour of jaw	do	Failed	do
" 8	Male	30	Operation for	Fistula in ano	do	Successful	do
" "	Female	20	do do	Ectropium	do	Part. successful	do
" 15	Male	47	Removal of	Lupus tumour	do	Successful	do
" "	do	18	do do	Inverted toe-nail	do	Perfec. successful	do
" "	do	20	do do	Carcinoid tumour	do	Successful	do
" 22	do	14	Operation for	Phimosis	do	Part. successful	do
" "	do	31	do do	Fistula in ano	do	Successful	do
" 25	do	34	Resection for	Pseudarthrosis of humerus	do	Failed	do
1848.							
Jan. 5	Female	56	Removal of	Scirrhus of mamma	do	Successful	do
" 8	Male	43	Operation for	Fistula in ano	do	do	do
" 12	Female	48	Excision of	Scirrhus of mamma	do	do	do
" 15	Male	27	Removal of	Lupus tumour	do	do	do
" 22	Female	37	Removal of the whole of the super. maxil. and malar bones, with part of the ethm'd. and palatine.	Epulis tumour of the upper jaw	Chl.	Great prostration, accompanied with vomiting and purging	Cured.
Feb. 2	Male	40	Removal of	Scirrhus testicle	do	Successful	Cured.
" 5	Female	66	do do	Fib. tumour of breast	do	do	do
" "	do	25	do do	Tumour of shoulder	do	Part. successful	do
" 9	Male	56	do do	Lupus of eye	Eth.	Successful	do
" "	do	25	Excision	Tumour of zygoma	do	do	do
" 12	do	35	Operation for	Hemorrhoids	Chl.	Part. successful	do
" "	Female	50	Removal of	Tumour of shoulder	do	Successful	do
" "	Male	37	Operation for	Ptosis palpeb.	do	Part. successful	do
" 16	do	19	Amp. of the leg	Caries of the ankle	do	Successful	Died of tetanus.
" 19	Female	24	Removal of	Tumour of head	do	Part. successful	Cured.
" 23	Male	32	do do	Tumour of face	do	Successful	do
" 26	Female	58	do do	Wens from the scalp	do	Part. successful	do

Whole number of cases—45.

Ether used in cases	32
Chloroform in cases	13
	—
	45

CINCINNATI, April 24th, 1848.

MY DEAR SIR:—

IN reply to your communication, I may say that I have not time, before the meeting of your Association, to furnish you with a detailed account of the use of *ether* and *chloroform* in our hospital; but will briefly give my opinion, formed from my own observation in hospital and private practice.

It was not without hesitation that I commenced the use of ether, believing that an agent which can so speedily suspend the intercourse between the brain and sentient nerves, must be liable to do mischief. After having tried it, however, in several cases with rather favourable results, I was induced to try it still further, and ultimately employed it in most cases of severe operations.

In two cases of lithotomy upon adults, the ether did not place the patients fully under its influence, and I think both of them would have done quite as well or better without it. The sensibility was, perhaps, a little diminished at the commencement of the operation, but not through it; and, although I am not confident that a single unpleasant symptom followed, which might fairly be attributed to the ether; yet in one case a pustular eruption, preceded by headache appeared on the third day, upon the face and scalp, and subsided in three or four days, without any unfavourable sequel, during convalescence. As the eruption was unlike anything the patient had had before, it was problematical whether it was not, in some degree, due to the ether.

In two amputations of the thigh the patients had no consciousness whatever of pain in any part of the operation, nor indeed of anything passing around them. The blood, which flowed from the large arteries of the stump, was of a dark colour, nearly that of venous blood. Both were young men, enjoying a fair state of health. One operation was undertaken to improve a bad stump from an amputation performed in Mexico; the other, to remove a stiff knee and badly flexed leg. The first suffered terrible pain for the first twenty-

four hours after the operation, notwithstanding the pretty free use of opium. The second was comfortable for half an hour, and then an indomitable pain came on, which lasted thirty-six hours; during which period the patient scarcely slept a moment, but uttered almost incessant cries, and tossed himself to and fro, with a pulse a great part of the time upwards of 150 in the minute. These symptoms at length gradually subsided, and the poor fellow, like the other, finally recovered. If these uncommon symptoms were not attributable to the ether, I should not know how to explain them. Other amputations, however, one of the arm and several of the fingers, were not followed by similar sufferings.

In a case of dislocated hip, in a stout Irishman, after bleeding, the warm bath, with antimony, and the tension of the pullies for about an hour, the inhalation of ether put the man asleep in about three minutes, and the hip came in place immediately. In the case of an athletic German, with a displaced shoulder of four days' standing, the ether and the pullies were tried without any other means, and in about half an hour the reduction was effected. This man breathed a great deal of ether, but could not be put asleep by it; he was conscious and able to converse all the while, and although the tension was very great, he experienced no pain during the whole operation.

The chloroform I have used in *twenty-two* operations. In all the cases the patient either felt very slight pain, or none at all. In a small proportion of the cases, consciousness remained through the operation. Every patient, I think, expressed entire satisfaction with its effects. I have employed it in amputations of the upper and lower large limbs, as well as the fingers and toes; in the application of the actual cautery in vesico-vaginal fistula—in operations for phymosis and paraphymosis—for urinary and anal fistulae—excision of tumours, in aplastic operations upon the face and neck, and in one case of lithotomy. In the case of vesico-vaginal fistula, the actual cautery was repeatedly applied with the same results, viz. full consciousness, but *no* pain. The plastic operation for bad deformity, was necessarily prolonged; but there was next to no pain, though consciousness existed a considerable part of the time. In an amputation of the thigh, the patient, a young man, slept through the operation, and, by estimation for eight or ten minutes after with a good pulse and natural respiration. On the application of volatile alkali to his nose, he awoke, and was perfectly comfortable through the day, and slept well the following night.

The case of lithotomy was in a boy of twelve years, one of the most obstinate, self-willed patients of his age I have met with; it was difficult to secure him upon the operating table. The stone, weighing 282 grs., was extracted while he was in a quiet sleep; a few minutes afterwards rousing up, he requested me, as he had done before he went to sleep, not to begin to cut before he got to sleep. He was saved all the pain of the operation; was comfortable from that time onward; has had not a single unpleasant symptom, and now, seven days from the operation, is almost well.

I must give the preference to chloroform compared with ether. It is more sure to control the sensibility, exerts its sedative influence sooner, is less liable to agitate the voluntary muscles and craze the patient, and its effects pass away sooner. In not a single instance, among my twenty-two cases, have I witnessed an unpleasant symptom indicative of injury to the patient. In administering the chloroform, I introduce it slowly by allowing the patient to inhale small quantities in succession, till the requisite insensibility arrives. My opinion is that it can be safely administered in all ordinary cases in which the viscera of the head and chest are sound.

In the case of Mrs. Simmons, who died under influence of the chloroform, it is evident that too large a dose was given, considering the time occupied in the inhalation. She went to the breathing of it with her characteristic resolution and energy—and a dozen or fifteen deep inspirations did the work. She was probably dead in five minutes from the time of the first inspiration. Her organs were sound; but the entire fluidity of the blood, as if from a stroke of lightning, and the broken and fragmentary state of its corpuscles as revealed by the microscope, would seem to show that a powerful agent had been at work in it.

Accompanying this, is a pamphlet, containing a full account of the case, with the post-mortem appearances.

Very respectfully yours,

R. D. MUSSEY.

DR. ISAAC PARRISH.