man's notion and all that he promised. However, at the specified hour, some half-a-dozen physicians and one dentist called upon him. In his room we found an ordinary operating-chair. On a small table near by was an old-fashioned "wine decanter" half-filled with a bright-red liquid; two glass tubes (one longer than the other) passed down through the large cork, and attached to the affair was some small rubber tubing, three feet in length, with a felt cone on the end, moulded so as to cover the mouth and the nose.

Soon an elderly man, dressed like a farmer, entered; with fear and agitation he seated himself in the operating-chair, and the mouth-piece was readily adjusted. He was told to breathe in, long and deep down. During the first few inhalations he was excited, and resisted; but soon his respirations became slow and stertorous, the muscular system relaxed, the lower jaw dropped and the eyelids closed. The dentist then applied his forceps to one of the patient's molars, and out it came. In fifteen to twenty minutes, consciousness returned, and the victim's face was the expression of wonderment and surprise, as he beheld the offending member within the grip of the dentist's forceps. The patient was questioned as to his sensations, of which he could only say that he knew nothing, was glad it was out, and that he felt no pain.

The physicians asked the agent a few questions as to the *modus operandi* of this Letheon, as to how long the anesthetic effects lasted, and if it had to be repeated. It was then he seemed quite oblivious and could tell us little or nothing, but said it was safe, and that no accident had happened as far as he knew. But we found that he could tell us the exact price, or the royalty per month to be paid for the right to use the article in our surgical operations. And let me say that none of us present ventured to purchase a royalty. But we left his room somewhat surprised, and somewhat doubtful as to what we had seen of the "Boston notion," or the "newly discovered Letheon."

The question of consciousness, or rather the amount of pain that the patient was sensible of? This was the unknown quantity in the problem before us. Some of the doctors seemed sceptical, and said that there were manifestations of pain; one concluded that there had been collusion between the operator and his patient. And then, to add to our perplexity, the name signified nothing as to its chemical elements; the bright color was suggestive of danger ahead. We all readily smelt the pungent fumes of sulphuric ether, and were quite certain that this was an important constituent of the oblivious compound.

Such was the humble advent of "surgical anesthesia," this mighty boon of the nineteenth century, on its mission of mercy to relieve suffering humanity.

The discovery of ether (or rather the anesthetic property of sulphuric ether) this was the beneficent gift of painless surgery, vouchsafed to our profession for all time.

The city of Boston was its home and its birth-place. The Massachusetts General Hospital was its public sponsor at its baptism and will be the fitting custodian of its memory to the "Coming Ages."

LISTER SUCCEEDS ERICHSEN.—Sir Joseph Lister has accepted the appointment of consulting surgeon to the City of London Hospital for Diseases of the Chest at Victoria Park, succeeding the late Sir John Erichsen, F.R.S., in this office.

THE SURGICAL RECORDS OF THE MASSACHUSETTS GENERAL HOSPITAL BEFORE 1846.¹

BY H. H. A. BEACH, M.D., BOSTON.

A GLANCE at the earliest events connected with the development of the hospital, reveals the interest of Dr. John C. Warren its first surgeon, and of his father, Dr. John Warren (brother of General Warren), in its organization. In a letter sent home from London, July 9, 1800, he writes: "I have heard nothing of the hospital which was to be established in Boston. Does it progress? And have you, sir, a prospect of getting appointed to it?"²

We are told by the historian of the hospital,³ that a circular letter to the citizens of Boston, signed by Drs. James Jackson and John C. Warren, "may be regarded as the corner-stone of our institution." That strong appeal for financial aid, met with a liberal recognition; and as a result the charter was obtained in 1811. It entitled the holders to real and personal estate to the yearly value of \$30,000. A board of trustees was elected in 1813.

On April 6, 1817, a consulting staff was chosen, and the positions of attending physician and surgeon were filled for the first time by the appointment of Dr. James Jackson and Dr. John C. Warren.

Land for the hospital was purchased October 6, 1817, and the Bulfinch plan was adopted by the trustees, February 1, 1818.

The corner-stone was laid on July 4th, under which was placed a tablet engraved with the following inscription:

"The corner-stone of this edifice, designed as a general hospital, founded by the munificence of the Commonwealth of Massachusetts, was laid at the request of the Trustees of the Massachusetts General Hospital by the Grand Lodge of Massachusetts, Francis J. Oliver, Grand Master; His Excellency John Brooks, Governor; His Honor William Phillips, Lieutenant-Governor, President of said corporation, and a most munificent donor, the municipal and military officers of Boston, assisting at the ceremonies.

"The fourth day of July, MDCCCXVIII, and of the Independence of the United States XLIII. Anno Luce 5818."

"The accommodations of the hospital were intended to give to a few, in a superior style, everything which their comfort or well-doing demanded. The poor patient was sure of receiving all the care and attention and of having everything which would promote his cure, equally with the rich. The man of property might find all the accommodations of his own house, in addition to those remedial measures, such as baths, apparatus, and nurses of superior order, which he could not obtain at home. There was nothing left undone which care, medical skill, cleanliness, pure air, perfect ventilation and strict discipline could accomplish, nothing was wanting that could contribute to the ultimate success of an operation or the cure of a disease."⁴

"The origin, arrangement and in a great degree, control, of this institution in its earlier years belonged to Drs. Jackson and Warren. The trustees acted by their advice as the persons most interested in its welfare and best qualified by their profession to superintend it."

The first patient was admitted to the surgical wards for treatment on September 20, 1821, beginning the long and eminent services of Dr. Warren to the hospital, which only ended with his retirement in 1852.

¹ Read at the Clinical Meeting of the Staff of the Massachusetts General Hospital, December 1, 1896.

² Life of John C. Warren, p. 206.

³ Bowditch.

⁴ Edward Warren: Life of John C. Warren.

As the advantages of hospital treatment became known, the attendance increased until the admissions which, in 1846, had reached the number of 9,980, have to the present time become 101,162. During the past thirty years the increase in surgical operations, especially those of large scope, has risen, in the ten years ending at 1877, to 7,443; at 1887, to 7,880; and to October 1, 1896, to 12,425; a total of 21,748 in thirty years lacking six months.

In addition, the number of out-patients treated since the establishment of that department in 1864, has reached the number of 120,000; and the minor operations performed in that department and in the accident-room average 3,216 in a year (not included in the estimate of operations just given).

An eye-witness of many a bloody struggle between operators, patients and assistants in and out of hospitals, has characterized the fearful scenes that commonly occurred before the days of anesthesia, as fights exhausting alike to all concerned, but to which suffering humanity willingly turned for the relief of deformity, pain and the saving of life.

The grim associations of the old operating-theatre have been dispersed by what Sir Joseph Lister calls "the priceless blessing to mankind from America."

Present generations have appeared with the birth-right of anesthesia, sunshine and air. Few living witnesses can paint for them a perspective of surgery without anesthesia, describe the wonder and astonishment it produced, or its power in developing the science and art of surgery.

A short review of the earlier records may supply facts that will revive the atmosphere of the period and convey some idea of the relief that ether brought, alike to patient and surgeon — whose great and stern duty it was to be self-forgotten, strong and faithful while inflicting the worst tortures upon suffering men, women and children.

The first surgical record was a folio volume of 247 pages. It was sufficiently large to contain the histories of surgical patients admitted in the years 1821, 1822 and 1823. At the present time, six volumes of very nearly the same size are used in making the records of eight or nine months. The operations to be described, selected with care after an examination of every record of surgical cases admitted between the establishment of the hospital and the year 1846, were performed with few exceptions in this theatre.

The first history recorded is that of a seaman who had been afflicted with hemorrhoids for eleven years. His many voyages to India, China, the West Indies and America in that time were complicated with much pain, tenesmus, bleeding, debility, difficulty in walking, and at times with complete disability. Purgative medicines were continually necessary for his comfort.

An examination was made in order to ascertain the cause of his complaint. A stricture was found to exist in the rectum two or three inches from the verge of the anus, which with great difficulty would admit the tip of the forefinger. Several tubercles were found around the anus. Three of them were removed, first passing a curved needle with a large ligature through them and drawing them out in order to extirpate them at their bases with a knife. Very little blood was lost. Light dressing. Five days after, hemorrhage of a pint of blood, checked by cold applications and injections of a solution of sulphate of copper.

Bougies were passed to dilate the stricture, as the wounds gradually healed.

Patient discharged cured.

The second patient was a young man who had suffered intolerably for a year with symptoms of stone in the bladder. They had followed the introduction of a bean into the bladder with the intention of dilating an obstructed urethra. The obstruction had followed a slight injury of the urethra received from a fall. The record is illustrative of the care taken in preparing for an operation and exemplifies the surgical therapeutics of the times.

On the 8th of October a convention of the consulting staff (seven in number) was held, but the stone was not felt and the operation was postponed. In the following week, after an injection of the bowels, the sound was passed and heard to strike distinctly upon a stone. The operation was decided upon for October 18th, at 12 o'clock.

MEMORANDUM OF ARTICLES, ETC., TO BE IN READINESS FOR THE OPERATION.

A heavy table; table for dressings; pillows, blankets and sheets; binders, sponges, lint compresses and bandages, towels, oil, ice, syringe, ligatures, warm and cold water, wine and water, warm barley-water, basins, blood-catcher, coat.

INSTRUMENTS.

Staff-knife, pointed knife, Cooper's knife, probe, pointed bistoury, gorget, forceps, scoop, sound, needles, tenaculum, canula, needles and forceps.

PREPARATION.

The patient, well-purged the day before, early in the morning of the operation should have a good injection. After this has operated, a string must be tied on the penis four hours before the operation to retain the urine. The hair must have been well-shaved. Laudanum injected, 120 drops to the cup.

ARRANGEMENT OF PATIENT.

Assistant adjusts head, secures the feet. Two at shoulders. Staff introduced. Assistant holds it straight; then to the right; then carries the handle down; retains it until ordered, touching the stone.

OPERATION.

Tighten skin, take knife. Incision of four inches deep above. Cut transversus, avoid rectum, feel bulb, touch staff, lay bare staff. Introduce probe-knife flat, and push into bladder. Observe urine. Cut gently towards ischium, following knife with the forefinger into the bladder. Enlarge if necessary. Scoop or forceps introduced. Staff withdrawn, first touch stone. Carry forceps along staff to stone, finger in the wound, finger in the rectum. Search stone, low down. Withdraw downward. Dressing, lint in wound. Patient untied.

The stone was small, and broke during its extraction; the remainder was removed with difficulty with a scoop, and the bladder syringed out with warm water. The latter gave great pain, and did not appear to remove any fragments of stone. The patient expressed great pain in every part of the operation as he had done in sounding. One hundred and eighty drops of laudanum were given to relieve pain at intervals after the operation.

October 19th (the following day). Complaints of severe pain in the bowels and hypogastric region. Slight flush on the cheeks. Sixteen ounces of blood taken from the arm. Tartrate of soda and potash, half an ounce every three hours until a discharge from the bowels occurs. At 5 P. M., a small discharge. No flush on the face. Skin warm. No opiate.

Hyd. submur. gr. xii
Pulv. opii gr. iiii
Ft pil, no. xii. Take one every three hours.

October 20th. Much better. No flush on the face. Slept well. Had three discharges from bowels.

Tartrate of soda and potash . . . 3 ss at once.
Pills as before.

Evening: Skin warm. An injection of one pint of gruel with a tablespoonful of salt, wine-glass of molasses and sweet-oil. Suffered from great pain after the injection. In fifteen minutes one-half came away; pain continued but not so violent.

October 21st. Had three discharges during the night. Evening:

Tartrate of soda and potash 3 ss

October 22d. A little sallow in the face. Pulse 77, quick, but not hard. Suppuration going on well in the wound. Evening, pulse 80, a little hard.

Tartrate of soda and potash 3 ss
Pills as before.

October 23d. No evacuation from the bowels.

Tartrate of soda and potash 3 ss
Immediately.

At 1 P. M., as before, gums sore. Omit pills.

Tartrate of soda and potash 3 ss

At 7 P. M., considerable pain and movement of the bowels. One small discharge. Fomentations applied.

Tartrate of soda and potash 3 ss
Immediately.

At 8 P. M., medicine not operated. Complains of wind in bowels, with pain. Pulse 90, a little hard and more full.

Tartrate of soda and potash 3 ss

Midnight: Great pain in the bowels; very restless; pain in the wound. Pulse 100. Take twelve ounces of blood from the arm. Fulness of pulse subsides. Pain continues. Forty drops of laudanum.

October 24th. Medicine operated four times toward morning. Considerable pain all night. Slept half an hour. Pulse 92. No pill this A. M. Take one to-night. At 5 P. M., pulse as before. Tongue moist. Pain and soreness in the bowels.

Vinl antimonii 3 i
Spt. nit. eth. 3 ss M.
Camph. tr. opil }
Thirty drops every two hours until asleep.

Wounds look better. Hot fomentations, with tansy and wormwood.

October 25th. Took drops twice. Bowels easier. Sleeps considerably. Pulse 120, more hard. White fur on tongue; edges well-defined. Mercurial fetor in the breath. Wound looks well; edges not much swollen; good granulations shooting up. Urine passes freely from wound.

Ol. ricini 3 ss
Essent. menth. ptp. gtt. x
Every three hours until it operates.

October 26th. Mouth and throat very sore. Oil operated twice. Pulse 120, hard. Tongue as before.

Evening: More pain in bowels. Hot fomentations. Abdomen rather tense. Skin hot and sweating. Cold chills. Pulse as before. Brown fur on tongue. Very thirsty. Blister to abdomen. Ol. ricini half an ounce.

October 27th. Blister on four and one-half hours. Five discharges in the night. Wound inclined to heal.

October 28th. Countenance better. No pain in bowels. Pulse 120, less full. Tongue moist. Mouth and throat more inflamed.

Ol. ricini 3 ss

October 29th. Slept well. No pain but in mouth and fauces. Pulse 108, not hard. No discharge from bowels.

Pulv. rhei 3 i
Aq. bul. 3 ii
Aq. cinnan. 3 i M.

October 30th. Pulse 92. No pain in bowels.

October 31st. Discharge of urine by urethra. No movement of bowels.

Ol. ricini 3 ss

November 1st. Pulse 112. Wound diminishing. Suppuration healthy. Medicine operated twice.

November 2d. Good night. No movement of bowels.

Ol. ricini 3 ss

November 3d. Two operations from oil. Face and throat still painful. Little salivation.

November 4th. One discharge from bowels. Pulse 90. Pains as yesterday.

November 5th. Pulse 88. Considerable wind in the bowels last night.

Ol. ricini 3 ii
Comp. tr. senna 3 i
Essent. menth. ptp. gtt. x M.

November 6th. Face sore without pain. Pulse 82. Good night. Medicine operated twice yesterday.

November 7th. Face better. Pulse 86. Appetite improving.

November 8th. No discharge from bowels. Symptoms same.

November 9th. Disposition to diarrhea. Pulse 85.

November 10th. Pulse 76. One stool yesterday and one in the night. Urine passes freely through the urethra.

During the following six weeks his progress had the usual interruptions of no movement, cathartics movements, diarrhea, the wound in the meantime becoming firmly healed. He left the hospital well.

The next case of interest was one of popliteal aneurism. The preparation for operation consisted of a bath, clearing the bowels for a few days, opium to relieve pain, and eight ounces of blood from the left arm three days before the time appointed. Two hours before the operation the patient (a woman) took six grains of opium; and as the muscles were relaxed so that their course could not be determined, the place for making the incision was settled by carrying a line from the point of the inguinal artery in the groin down to the inner edge of the patella. Another line was carried from the anterior superior spinous process of ilium to the back part of the internal condyle. One inch and a half below the point of meeting of these two lines, the incision began, and was extended upward nearly three inches toward the inguinal artery (left side). The usual dissection for tying the femoral artery was made and afterward closed. A flannel bandage was applied, and forty drops of laudanum given. The wound healed by first intention above and below the ligature. She left the hospital cured of her aneurism.

The operation for fistula ani was commonly done with giving opium or spirit.

C. B., an officer of the frigate *Constitution*, entered the hospital October 25, 1821, with urethritis; and he left it, cured, on November 9th.

C. L., male, adult, was admitted December 7, 1821, with dislocation of the left femur. The accident occurred in September, when he was thrown from a horse, and while lying on his back received the body of the horse across his thigh. His physician recognized the dislocation. The leg remained fixed in an oblique position with respect to his body; he had not the least command of it, and was in considerable pain.

The physician immediately undertook the reduction, and after about ten minutes of considerable force told him that it was reduced. The patient experienced no alleviation of his pain, neither had he the power of motion in the limb; it still remained in the same position. Not satisfied, he sent for another physician who arrived in four hours, and he declared the dislocation to be still unreduced. He immediately bled the patient about twelve ounces, and then undertook the reduction. After trying a short time, he told the patient that it was then reduced, and the patient agreed that it was. The leg could be brought nearer the other; but still there was a tendency to the oblique position — a constant inclination outward. A bandage was put about the knees to keep the thighs together. This physician then left him. He felt some relieved, and was able to sleep some that night. The next day he was again bled about a pint, and took some purgative medicine. He was then seen by the physician who first examined him, and told that the bone was broken in the neck. The patient lay on his back for fourteen days after, and then began to walk with crutches. The second physician examined him again after eight days, and told him that he was doing well. He came again in about ten days and said the same, although the patient had then no command over his leg.

About two months from the time of the accident, on visiting him his physician ascertained that the affected leg was longer than the sound one; he then told him that the thigh was not reduced. No efforts had since been made for its reduction. His health otherwise was good. Upon examination it was ascertained that the femur was dislocated and the direction as far as could be ascertained was downwards and backwards, in consequence of which the affected limb was longer than the sound one. The head of the bone was distinctly felt through the inferior border of the gluteus muscle. Considering the time that had elapsed since the accident and the difficulty of reduction of dislocations in this direction even when recent, it was thought advisable not to undertake an operation; but the patient being very anxious to have a trial made, and still desiring it after it was stated to him that there was hardly a possibility of succeeding, it was thought justifiable to attempt the reduction of the bone. On the day of the admission of the patient he was ordered to take

Magnesiæ sulph.	:	:	:	:	:	:	31
Fol. sennæ	:	:	:	:	:	:	3 ss

and to live light; next day a warm bath was ordered. At two o'clock he began taking tart. antim., gr. i, every ten minutes, until the operation. He took five grains, when vomiting was induced. At three o'clock was bled to sixteen ounces, but no faintness was produced. The operation was immediately proceeded with, and after continuing it about an hour the case was abandoned as hopeless.

December 10th. Discharged by request.

This case became celebrated through the suit of the patient against the two physicians who first attended him, for damages, contrary to the advice of Dr. Warren. In the testimony given Dr. Warren maintained the fact of dislocation, and in that view of the case he was supported by the consulting surgeons of the hospital. The juries disagreed, and the patient lived with a shortened and partly-flexed leg until thirty-seven years afterward, when at his death, Dr. J. Mason Warren was notified by his friends that an examina-

tion was desired. At Dr. Warren's request, Dr. H. K. Oliver went to Ellsworth, Me., and removed the pelvis with the upper part of the femur of each side, and brought the mass to Boston for a careful dissection of the parts. In the course of the dissection Dr. Warren's diagnosis of dislocation was verified; and after the bones had been macerated they were mounted and deposited in the museum of the Harvard Medical School. An interesting account of the case and the dissection of the specimen, with a plate illustrating the latter, may be found on page 372 of "Surgical Observations, with Cases," by J. Mason Warren, M.D.

In a case of gangrene of the foot and leg following a compound fracture of both bones of the leg, the following preparations were made before amputating the limb: "The patient was gently purged with tincture of rhubarb the day before, supported by some wine and water and good broth. Laudanum, if necessary. Forty minutes before operation a strong dose of laudanum was given before being carried to the operating-theatre at ten o'clock with dressings on except pillows and cradle. Laid on table, with his hands raised and held by two persons; knees six inches below the edge of table; each leg supported by an assistant."

A woman of forty-nine entered, with a tumor of the breast, April 24th. All things being ready, operation commenced by making a semilunar incision from the axilla to the sternum, and a similar one from the same point above the nipple. The tumor was dissected out with about one-third of the breast, beginning at the sternal part and advancing toward the axilla. Several glands there were enlarged and indurated. They were taken out (a foreshadowing of the modern operation).

Compound fracture of both patellæ. The injury was caused by the kick of a horse. A loose portion of the right bone removed. Both knees became much swollen. Had been bled freely. Alkaline cathartic. Calomel and opium every three hours. Leeches to the joints. Gruel and tea. No solid food. Apply a wash to the joints of plumbi acet. Profuse suppuration of the right joint followed. Discharged well, in two and one-half months, with good union.

In the description of the excision of a considerable tumor of the lower jaw from a man about thirty-four years old, the record states that the operation was performed and the wound dressed in forty-five minutes — rather tedious to the patient from the proximity of the tumor to an important artery and other parts of consequence. It was borne, on the whole, with a good deal of fortitude. During the operation the patient occasionally took wine and water to drink.

For the removal of piles in another case, a spring-hook was now passed through the largest tumor and drawn downwards, which exposed its full extent. The tumor was then removed by a single excision with a scalpel, and with the loss of a small quantity of blood. The others were treated in the same way. The patient was allowed a little wine and water for faintness.

During an operation for fistula in ano upon a young man, the integuments and a portion of the cellular substance was divided for the space of half an inch towards the anus and through the whole depth of the ulcer. No obstacle now presenting, the patient being secured upon the bed by five assistants, one at each lower and upper extremity and one at the head and one on each side to assist in extending the parts, an attempt was made to thrust the bistoury through the

coats of the rectum; but such was the resistance and the danger of breaking the instruments that a further attempt was useless. A careful dissection was, however, made. The patient during the operation complained of great pain, but bore it well.

The large variety of operations undertaken at the hospital included a number for cataract, from one of which the notes are as follows:

A woman of seventy-five years entered the hospital November 4th. From then until the 27th, when the operation was performed, she was purged and dieted. The eyelids, which were somewhat irritated, were treated, and the pupils kept well dilated by the external application of a preparation of belladonna. The operation was done by breaking up the cataracts with a needle and pushing the fragments into the anterior chamber. This was accomplished without much pain to the patient. Later, as the right eye did not clear up satisfactorily, the operation was repeated, and the cataract, which was very firm, depressed into the vitreous. A successful result occurred.

In another case, during the removal of some carious bone from a rib, the patient was given eighty drops of laudanum forty-five minutes previously. Being fixed upon the table and secured, by three assistants, the bone was exposed and the carious portion removed by chisel and forceps. The operation was borne with a good deal of fortitude.

Large fatty tumor of abdomen. The patient, a young woman, was given forty drops of laudanum half an hour before operating. The incision required was twelve inches, and she was held by three assistants. For most of the time during the operation was very uneasy and complained of great thirst and exhibited some signs of delirium. After being removed to her bed she became more tranquil.

In a case of aneurism, during the dissection necessary to expose the iliac artery (the patient having previously taken an opiate), when the time arrived to open the sheath of the vessel "the patient was directed to keep himself perfectly still at the moment when a division of the sheath was made over the artery in order to lay bare the coats of the artery and to separate it so as to pass the aneurismal needle completely around it and under its sheath, after which, the ligature was tied with a double knot. The patient endured the operation with considerable firmness."

An early employment of surface thermometry occurs in the subsequent treatment of the case when the following entry is made:

"February 20, 1823. Temperature of the limbs by the thermometer as follows; right limb, just below groin inside, 98°, at sole of foot, 96°; left limb (sound), inside of thigh, 97°, at sole of foot, 94°."

The ligature came away on the nineteenth day, there having been abundant suppuration.

March 18th. Limbs both alike as to strength and temperature. Discharged cured.

Nerve section. The case was one of severe neuralgia of the fifth pair. After the facial nerve had been severed at the point where it emerges from the skull, there was so much suffering that another operation was undertaken.

February 26, 1823. The patient having taken three grains of opium was seated in a convenient chair and an incision made beginning just below the zygomatic process of the os temporis and over the body of the inferior maxillary bone on the right side.

The first incision through the integuments and subjacent cellular membrane exposed the anterior portion of the parotid gland and the fibres of the masseter muscle. The dissection was then continued through the glands dividing the duct and thence carried through the muscle to the bone without dividing any considerable artery except one which was secured by a ligature. The great facial artery was exposed in the upper part of the wound. The bone being laid bare of the muscles which covered the spot opposite to the foramen for the passage of the inferior maxillary nerve into the bone, the raspatory was applied, and the periosteum removed. The trephine was next applied, and the bone perforated just opposite to the foramen, as was shown by a furrow or notch in that portion of the bone which was removed, bringing with it a portion of the nerve with one of its branches. The remaining part of the nerve was then drawn out by the forceps and cut off at the foramen, and the other end divided, making the piece removed about half an inch long and something more. The divided ends of the parotid duct were brought together by a suture. The patient walked to his room pretty well satisfied that the desired relief was obtained. Discharged cured.

Necrosis of the tibia. The necessity of a protracted operation without anesthesia is well illustrated by the next case described.

The patient (a man) was placed upon the table and held by assistants. Surgeon first made an examination with probe, learned the extent of the dead bone and the firmness and strength of the living bone. He then commenced the operation by making a longitudinal incision through the integuments of about four inches, which he afterwards crossed with another of two inches, and then carefully dissected up the integuments and exposed the bone, which proved to be thick and firm. The sequestrum was completely encased, excepting at the orifices where the matter escaped. To effect the removal of this, the raspatory was applied to the external surface of the bone. The trephine was then used and the chisel and gouge until a portion of the living bone was taken out and a part of the dead bone laid bare. A probe was again passed in, a further examination made, and the cavity ascertained to be well filled with the old bone. The operator proceeded to the removal of more of the new-formed bone using one of Hey's saws, gouge, chisel, etc., as particular circumstances required. At the same time incisions through the integuments were carried further, others made cross-wise and the flaps dissected up.

Though a good part of the sequestrum was now exhibited, it was found necessary to divide it before it could be taken out. It was accordingly done with Hey's saw, and two portions of the bone extracted without any difficulty. In consequence of the ragged edges of the dead bone being strongly interlocked in those of the new-formed bone, successive portions of the sound bone were again and again removed by the same instruments until the whole sequestrum was extracted and the operation completed. The dead portion of the bone was found to extend nearly the whole length of the tibia, and the newly-formed bone sufficient for the strength of the limb.

The patient was conveyed to his bed much exhausted. During the operation his strength was supported with wine. The operation continued about two hours, and was borne by the patient with great fortitude.

Some of the difficulties in operating for cataract are shown by the next case, which was that of a child.

April 26th. The usual preparation being made, seats adjusted and the child held by a female sitting in a chair, the speculum was applied, and the surgeon passed the needle into the eye, puncturing and dividing the cataract. During the operation the child made much resistance, with cries. The upper eyelid was inverted, which together with the tears almost entirely obstructed the site of the operation. Occasionally the opaque spot appeared to view, and was very well lacerated. Small compresses of lint were applied with bandages around the head and in a short time, the child was perfectly quiet.

The following quotation is made from the description of another case of double cataract: "Depressing the cataract was somewhat embarrassed from the circumstance that the patient, a woman of sixty-five, during the operation sunk a little forward in the chair, which of course depressed the head and altered its position in such a way that the operator was obliged to raise his head, which gave only an imperfect support to his elbow and proved rather inconvenient. The operation for depression was performed on the right eye with the left hand of the operator."

In another double cataract operation the "patient suffered considerably during the operation upon the left eye, very little in that of the right."

Dr. Warren's biographer tells us that not an eye was lost by cataract operations.

Shoulder-joint dislocation. The patient was a man sixty-two years old, and the dislocation had existed eight weeks. It was sub-coracoid. *Magnesiae sulph. sol., qs.* Warm bath.

"To-morrow at 10 let him be bled in the erect position so as to faint. At 11 take 1 grain of tartarized antimony every fifteen minutes until nauseated. Operation at 12.

"Patient placed upon a stool. Pulleys and straps applied. Padded belt under the axilla, and secured to opposite wall. Extension then made by pulleys attached to a strap buckled at the arm, the latter at right angle with the body. The muscles became relaxed very considerably, and an effort was made, by bringing the arm forward and upward to replace the bone, but ineffectually.

"Extension was next made nearly in front of the patient, downward, and a powerful, but gradual, extension made, but without reducing the bone. The patient suffered much pain from the severity of the process, but did not refuse a further trial. Accordingly he was directed to lie on his back. The bite was passed under the axilla and secured firmly to the floor by the cord used for counter-extension, then extension was made on the arm nearly in the natural direction of the limb, the body of the patient being in line with that of the extending force. This position was very favorable for reduction, and the bone had apparently got into its place, for a hollow on the outside of the shoulder was filled up, and the head of the bone, by the pressure of the belt in the axilla, was carried toward the socket. At this time the extension was relaxed, the arm brought forward and upward over the body, but without effecting the desired object. Is thirsty. Wishes for brandy and is given two glasses. Eloped."

Neuralgia of the intra-orbital branch of the fifth pair, left side. The patient was a woman of fifty-one

years, who had suffered for eighteen years almost constant pain. For six months anodynes had been occasionally taken at night with advantage. Patient given half an ounce of sulphate of magnesia. "On the following day, the back and head supported by assistants, an incision made over the nerve from the orbit downward" the seat of the nerve was determined by passing a probe into the wound. Then with the forceps a portion of the nerve was removed. As the pain persisted without much abatement and extended to the lower jaw, three teeth were extracted; and she was discharged cured in a few days.

An amputation by transfixion of the thigh, for white swelling of the knee-joint, is described as having been done in sixty-five seconds. The patient died in three days.

A carpenter, while engaged in erecting an arch in honor of Marquis Lafayette, on August 23, 1824, fell from the ladder on which he was working to the ground. He jumped, and fractured his left femur. The limb was placed in a fracture box, and an eighteen-tailed bandage applied. He was discharged cured.

From the record of a patient who submitted to the removal of a large tumor of the breast with extensive dissection: "She sustained the operation with great calmness — was much exhausted and faint."

Necrosed bone from the tibia. "Let the patient take twenty drops of tincture of opium one hour before operation. An incision from three inches below the knee, carried down over the anterior edge of the tibia to the ankle, also a cross incision at each end of the longitudinal one. This portion dissected up, leaving bare the tibia. The bone at the lower part was sawed through to the diseased part by Hey's saw. So also at upper end. Then by chisel and mallet the portions of newly-formed bone lying over the diseased bone were removed. The edges were afterwards removed by a gouge and the bone nippers, so that the diseased portion might be removed, which was then done, the lower part of it being first raised by the levator; then the bone drawn down, as it extended a little under at upper part, and was removed. Wound was then cleansed and all parts adjusted. Compresses applied, and a roller passed around. Considerable loss of blood, faintness and vomiting during the operation; and at the termination of the operation, faintness, which lasted for some time. Was cold. Hot water and spirit was applied to the extremities, and brandy with water as freely as she could bear, with the occasional addition of six drops of ammoniated alcohol. She revived, but continued much exhausted, and became delirious. Pulse extremely rapid and feeble. Had several faint turns in the evening, with catching for breath. Hot baths and bottles were continued, with internal stimulation. She finally sank, and died at half-past nine in the evening, from the exhaustion, irritation and shock of operation, her constitution being delicate and very irritable."

An operation for the removal of a tumor of the lower jaw. Incision carried from the cheek-bone down over jaw and two inches below, in a semicircular line. A second incision meeting the extremes of the first was made, and part of the skin, etc., included, removed. The parts covering the bony tumor were then carefully dissected up on the exterior and also on the interior parts. It was then found necessary to remove two teeth from the jaw. The surgeon then proceeded to divide by Hey's saw the middle, about one and one-

half inches from the point of the chin. The bony tumor was then, by means of the levator and with some difficulty, raised; in doing which the bone gave way in the diseased part. This portion was then removed. The remaining part was then separated from the muscles covering it, and with considerable difficulty detached at its articulation, the ligaments, etc., being exceedingly firm. The facial and maxillary arteries were secured by ligature, the wound cleared and brought together. Sponges were laid upon the parts, also a compress followed by a roller. Loss of blood inconsiderable. Had some faintness at times, but bore the operation well. Tumor size of large egg.

A patient with symptoms of stone. After giving one hundred drops of laudanum, the patient was placed on the table with hands bound to feet and legs drawn up. The usual lateral operation was performed, and a stone of the size of an egg removed. Patient bore the operation well.

Cancer of penis. "Penis held fast, divided about an inch from the pubes by one stroke of the knife."

Cancer of the breast. Two semicircular incisions of five or six inches. The gland carefully dissected out. The glands of the axilla, being schirrous, were dissected out, in the course of which the axillary vein was opened. It was closed by compression.

The following brief histories appear:

January 7, 1825. "Breast was cut out with the integuments over it and the glands of the axilla."

February 4th. "Hemorrhoids cut off."

Cancer of penis. "Eighty drops of laudanum before operation. Amputation."

Up to June 26, 1826, when erysipelas was first mentioned in the records, wounds had behaved admirably, many healing by first intention, and the admissions had included many severe injuries, such as burns (largely lacerated wounds) followed by foul and suppurating discharges. The "erysipelatous affection" became so troublesome that all of the staff were requested by the trustees to propose measures fitted to eradicate the disease. They proposed the vacation of the hospital from four to six weeks. Those already sick to be isolated, and those who could bear removal to be sent to an adjoining house that could be hired for the purpose. All clothing and beds to be washed or baked. Old straw to be thrown away. The hospital wards to be exposed to the fumes of burning sulphur for three days, and one day to the strongest fumes of chlorine; then to a free current of air for at least one week, day and night. In the mean time all the sick-rooms to be whitewashed. The cellar to be thoroughly cleansed.

For the prevention of a return of this calamitous occurrence, they propose that the number of beds be diminished one-third from the late establishment, and never to be increased beyond this without a formal order from the trustees upon consultation with the Medical Board; that fireplaces be constructed where it is possible; that the water-closets be more thoroughly ventilated; and that in case of any further appearance of erysipelas the patient shall be moved out of the hospital, and everything about him removed or thoroughly disinfected.

It shall be the duty of the medical officer having such cases to report them at once to the superintendent, who shall be directed to remove such patient to some proper place without delay.

JOHN C. WARREN,
WALTER CHANNING,

JAMES JACKSON,
GEORGE HAYWARD.

On December 28, 1827, catgut ligatures were used for the first time. The patient was a woman with a tumor of the meatus urinarius.

In preparation for an amputation on September 20, 1832, the patient received at 10 A. M., pulv. opii, gr. ii; at 10.30, tinct. opii, grt. xxx; at 11, tinct. opii, grt. xx; without much effect.

Dislocation of the hip. The patient was admitted October 9th. From that time to the 17th, he was given saline cathartics and a light diet. On the 18th, at 10 A. M., tartrate of antimony, one grain, and repeat every twenty minutes; omit when nauseated. At 20 minutes past 10, warm bath at 100°, increased to 110°; to remain in it one half-hour.

Patient being placed on the operating table, the cords and pulleys were attached to the dislocated limb. The fourth dose of antimony produced nausea. The vein in the left arm was opened. At this time (11.40) the extension commenced. At eight minutes before twelve o'clock faintness and great prostration. The extension was steadily continued by one person. A lengthening of the limb was perceptible. Complaint of pain in the vicinity of the head of the bone. The limb was rotated inwards across the left thigh. It now appeared longer than the sound one. A broad bandage was now placed around the upper part of the thigh, passing across the shoulder of an assistant. A belt was passed around the pelvis, thus making a counter-extension to the broad bandage. The limb was again rotated inwards. No success following this direction, and the head of the bone appearing to be on the edge of the acetabulum, the limb was rotated upwards and outwards. At this time, twenty minutes before one o'clock, the patient exclaimed, "It is in!" The motion was felt by Dr. Warren while rotating, and by Dr. Hayward, whose hand was on the cervix. It was a success.

December 6, 1829. During the removal of a tumor of the lower jaw the bleeding became so profuse that it was necessary to apply the actual cautery. This checked it for a while; but as it recurred after reaching his room, it only stopped when he fainted. Five days after he had more hemorrhage, arrested by styptics.

The first case to be classed as abdominal, excepting strangulated hernias, etc., was that of a woman who entered the hospital October 28th, aged forty,⁵ with an abdominal tumor that had grown from the size of a goose-egg until it extended from the right groin to the false ribs of that side, measuring fourteen inches in that direction. It was first noticed on the same side, below and to the right of the umbilicus. Tumor movable, not tender, very firm and not fluctuating. Urine, thirty ounces, natural. No disturbance of functions. No pain. General health, appetite, and sleep good. Catamenia regular and profuse during the past ten years. Vaginal examination shows os high up above symphysis. Not tender or enlarged. Uterine fundus and body felt upon rectal examination. No tenderness or compression of gut. Enema at 10 A. M., and thirty drops of laudanum at 10.30. Operation at 11.

Directions for operation: Patient to have sixty drops of laudanum. Theatre heated carefully to 70°. Rain-water of blood-heat, and soft cloths to cover intestines. Usual instruments for an extensive operation.

⁵ Vol. ix, p. 531.

Dr. Warren operated by an incision through the integuments in the linea alba, beginning three inches below the umbilicus and extending downward four inches. Subjacent muscles then carefully divided and the peritoneum opened, exposing the surface of the tumor to view. An attempt now made to reduce the size of the tumor by puncturing it with a trochar and canula. No fluid followed. It was found necessary to enlarge the incision upwards above the umbilicus. Tumor was then brought through the wound without difficulty, as it adhered only at its base. A strong cord was then tied firmly around the neck of the tumor, great care being taken to avoid including any of the intestines and to diminish the loss of blood. On cutting partly through the neck, the divided parts were found to retract, by reason of which the ligature was loosened. Another was accordingly passed around the undivided portion of the tumor, and it was then completely removed. Attempts were then made to stop the flow of blood, and several arteries were tied. After this object had been nearly or quite accomplished, the patient was found to be quite faint. Cold water was dashed upon her face, and brandy and water poured down her throat. Brisk friction of her limbs and application of blankets dipped in warm water were also made. The patient not reviving, artificial respiration was kept up for some time by inflating the lungs with a pair of bellows. The stomach-pump was then brought, and half a pint of hot brandy thrown into the stomach; but all these attempts proved fruitless, and the patient was finally given up for dead.

One of the popular methods of treating sore eyes among the public at that time was to apply a *frog that had been broiled alive in a pound of butter*. A patient entered who had found this a valuable remedy; but in spite of its efficacy he was unable to open his eyes without force.

Amputation of the thigh, May 25, 1839. "Patient had one hundred drops of laudanum. He thinks that he did not feel the opium until after the operation."

Tumor of the tongue. Tumor being grasped by double hooks, it was removed by one stroke of the scalpel. Hemorrhage considerable; not being controlled by ligature, the actual cautery was applied. At 4 p. m., another hemorrhage; compression by sponges. At 5 p. m., another hemorrhage, controlled by sponge.

During an enucleation the eye was grasped by the forceps in the same way.

Removal of tongue. Tongue being protruded, it was seized with a long-bladed polypus forceps, transversely behind tumor, and firmly compressed. Tumor then being seized between the left thumb and forefinger of the operator, a straight, sharp-pointed bistoury was passed across behind tumor through the healthy portion of the tongue, and the two lingual arteries secured by ligatures. Little blood was lost. Patient bore the operation with great fortitude.

An extensive, malignant, ulcerating growth involving the labia, nympha, clitoris and urethra in a woman of twenty-nine years. A careful dissection was made of the whole ulcerating surface. Great pain and persistent syncope accompanied the protracted dissection.

A long story of agony and blood, to which man was born from earliest prehistoric time; the shadows of which were lightened by the results of brilliant operations that restored life, health and limbs to the dis-

abled and unfortunate, and by the opportunities for teaching the way of saving lives to others. So far as humanity could suggest remedies or the science of the times permit, pain was relieved. The terrors of the past, which had cast their gloom over hospitals and surgeons alike, restricting the natural growth of science, that held in its grasp the suffering and mortality of millions waiting for its beneficent protection, were dispersed and shorn of their sting by the light shining from this Temple of Health on October 16, 1846. That light has been reflected to the surgery of the whole world, comforting the sufferer, arming the surgeon, and illuminating the pathway of Science throughout the Universe of Pain.

"The heart of every American physician is filled with thankfulness when he remembers that, in the providence of God, this great boon to humanity was vouchsafed to this country. The very ground upon which stands the Massachusetts General Hospital is sacred to us all."⁶

Recent Literature.

Medical Jurisprudence, Forensic Medicine and Toxicology. By R. A. WITTHAUS, A.M. M.D., Professor of Chemistry, Physics and Hygiene in the University of the City of New York, etc., and TRACY C. BECKER, A.B., LL.B., Counsellor-at-Law and Professor of Criminal Law and Medical Jurisprudence in the University of Buffalo. With the aid of numerous collaborators. In four volumes. Vol. IV. New York: William Wood & Co.

In a notice of the first volume of this comprehensive work, the JOURNAL said that if the standard of excellence illustrated in that volume was continued in those to follow it, the two professions of law and medicine would have at their disposal an encyclopedic production of the highest character. And now that the final chapter has been written and the last volume of the series has come from the press, it gives us pleasure to declare that our early anticipations have been realized, to congratulate the editors and publishers upon the completion of their task, and to express a candid and cordial appreciation of the publication as the best treatise on Legal Medicine which is now available in the English language. In scope, in the intelligence shown in the treatment of the many topics, in the discrimination with which the latest advances in medico-legal knowledge have been used, these volumes represent a success of which their projectors may well be proud.

This fourth, and final, volume is devoted exclusively to Toxicology and is the sole work of Professor Witthaus. The same purpose dominates this book as has found expression in the three earlier volumes in the series, namely, to gather and present whatever, relating to the subject, was most useful to the two professions for which the whole work was designed. After an interesting review of the literature and history of poisoning, setting forth the indefensible manner in which royal personages and popes, as well as people of lower degree, have used poisons to rid themselves of uncongenial acquaintances, the author wrestles acceptably with the question, "What is a poison?" A considerable section is devoted to topics

⁶ Dr. W. W. Dawson: Life of Ephraim McDowell.